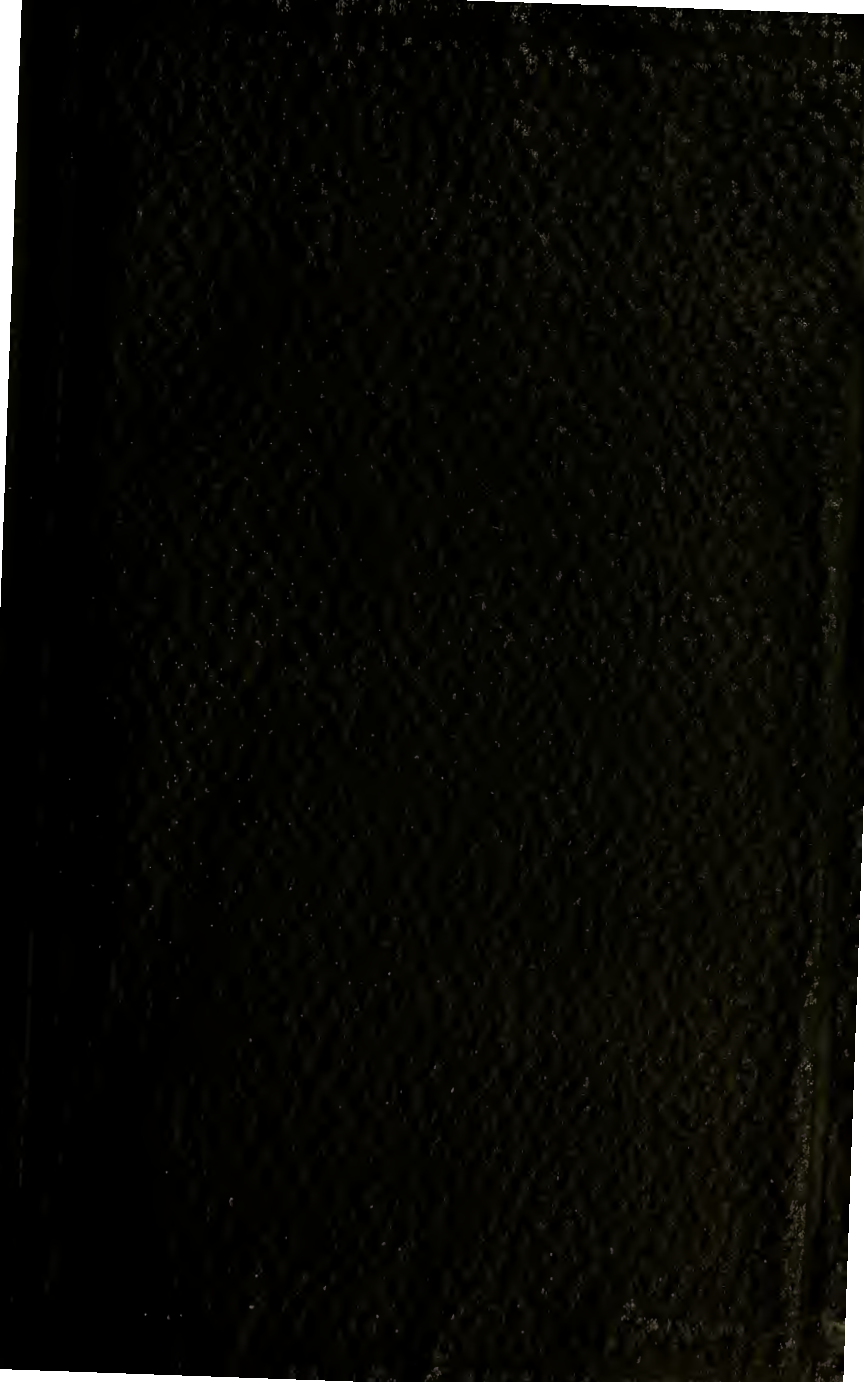
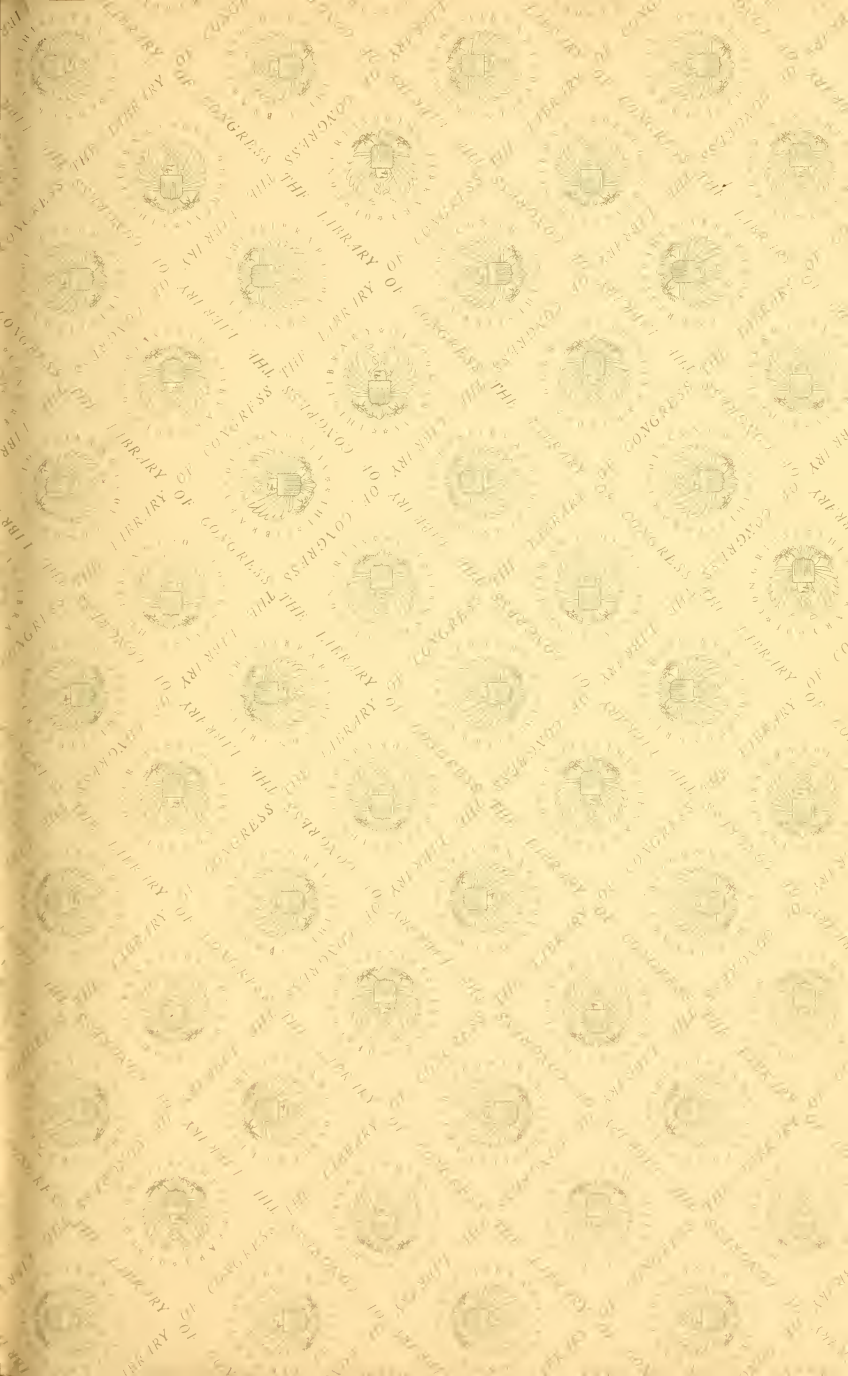




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THE PRACTICE OF OSTEOPATHY



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FOURTH EDITION

Rewritten in collaboration with osteopathic specialists of note
with much new and original matter

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DEDICATED
TO THE MEMORY
OF
ANDREW TAYLOR STILL

FIRST EDITION 1899
SECOND EDITION 1902
THIRD EDITION 1906
FOURTH EDITION 1920

PREFACE TO THE FOURTH EDITION

A science is said to be known by its literature and, if that be true, Osteopathy is backward for there are few available books on the subject for the student and investigator although there is a vast amount of unclassified journalistic matter. A pretentious start was made and, for a time, it appeared that we should have texts on all subjects for the teaching of Osteopathy but, for reasons not necessary to give here, these books did not live although their value and need was never questioned.

The third edition of the Practice of Osteopathy was exhausted very soon after publication and there have been insistent calls for a fourth which is now presented with the hope that it will find as friendly a reception as was accorded the previous editions. Close attention to current literature has been given and reports from experienced practitioners in the field has been sought and this material made use of wherever possible. Besides this, certain sections have been written by specialists in their several lines whose signed articles we confidently present. The subject of osteopathic practice has been handled to avoid undue optimism in the light of experience but, also, not to lose sight of the fact that osteopathy won its way by performing the so-called impossible in a multitude of cases. Therefore, it has been thought best not to draw a hard and fast line on our limitations.

The border line between osteopathy and surgery has been demonstrated as well as can be done on paper without the actual patient in hand. Medical literature has been called upon to give its store of knowledge wherever our needs have appeared and all osteopathic prints have, also, given from their accumulated wisdom and experience.

The authors acknowledge, with thanks, this information from the many writers for osteopathic journals who have created a great fund of knowledge on osteopathic subjects and particularly those who have contributed special sections.

CARL PHILIP MCCONNELL.
CHARLES CLAYTON TEALL.

1920.

“ STEOPATHY is not so much a question of books as it is of intelligence. A successful osteopath is in all cases, or should be, a person of individuality with a mechanical eye behind all motions or efforts to readjust any part of the body to its original normality, because unguided force is dangerous, often doing harm and failing to give relief that should be the reward of well directed skill.”—A. T. STILL

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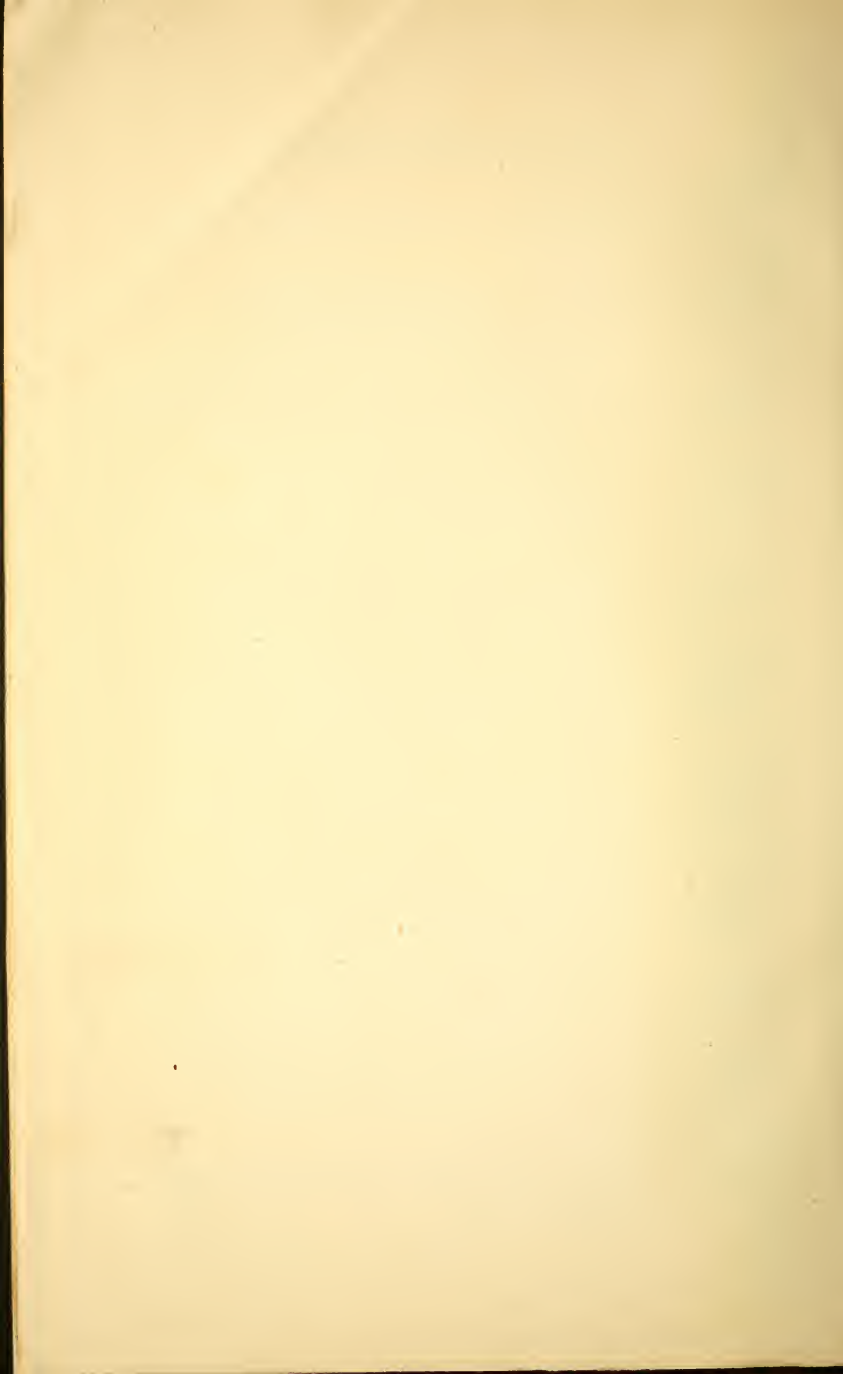


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PART FIRST



INTRODUCTION

What Hippocrates was to the Allopath, what Hahnemann was to the Homeopath, Andrew Taylor Still is to the Osteopath, and it is safe to say that when another century shall have rolled away, his fame will be equal to that of either. That he is a maker of history, even the most skeptical will admit. His teachings are revolutionary but are borne out in fact, and on that as a foundation, is built the superstructure of the young therapeutic giant—Osteopathy.

It would be of great interest to trace the history of the first inception of the thought that drugs were not only unnecessary but harmful, then view the struggle to grasp something tangible to take their place, then see the development of the idea that the human body has within it all that is needed for its upbuilding and repair until he came to this fundamental: "The power of the artery must be absolute, universal and unobstructed or disease will result. The moment of its disturbance means the period when disease begins to sow the seeds of destruction in the human body; and in no case can it be done without a broken or suspended current of arterial blood," capped by the epoch-making discovery of the cause for this interrupted flow of the blood stream—the theory of obstruction by anatomical displacement. It is the only theory of the etiology of disease that will stand the test of science and its acceptance and practice means a revolution in the field of therapeutics.

As it is, he sets the exact date, June 22, 1874, when the light dawned and he saw the outline of his great philosophy—Osteopathy. Then came the years of adversity and struggle. With the eye of a prophet he saw the future of that philosophy, and with the firmness of a Spartan has defended it since birth. It must be a separate, distinct system. Outside the fact that it was to heal the sick and was founded on a knowledge of anatomy and physiology it had nothing in common with existing schools, and if it were ever to grow it must be alone, for his brother practitioners would have none of it and if left to their tender mercies it would have "died a-borning." Even had it been taken up the result would have been the same for they would never have fully developed it. And so through the lean, terrible years he struggled, buoyed by the faith of a discoverer, urged on by love of this child of his brain, fanatical in his determination to win. And win he did for it was vouchsafed to him in his vigorous old age to sit on his hearthstone and see the results of his work, his struggle and his faith. It is something to know that his fame has

circled the earth, to be honored and sung by millions; a boon not accorded many a sage or philosopher. Not only has the public accepted it but the medical profession is making tardy but forced recognition of certain cardinal principles of osteopathy by using them, but, of course, without credit.

Osteopathy has been defined as "that science or system of healing which emphasizes, (a) the diagnosis of disease by physical methods with the view of discovering, not the symptoms but the cause of disease in connection with misplacements of tissue, obstruction of the fluids and interference with the forces of the organism; (b) the treatment of disease by scientific manipulations in connection with which the operating physician mechanically uses and applies the inherent resources of the organism to overcome disease and establish health, either by removing or correcting mechanical disorders and thus permitting nature to recuperate the diseased parts, or by producing and establishing anti-toxic and anti-septic conditions to counteract toxic and septic conditions of the organism or its parts; (c) the application of mechanical and operative surgery in setting fractures or dislocated bones, repairing lacerations and removing abnormal tissue growths or tissue elements when these become dangerous to organic life."¹ In a word, osteopathy is adjustment and the osteopath is an anatomical engineer who knows what is wrong and has the ability to correct it. Dr. Still changed diagnosis from guess work to fact and on it his fame may well stand, for when the cause of the disease was found, treatment was easy. He has ever emphasized the necessity of thorough examination and correct diagnosis. All treatment must be based on the definite, specific object to accomplish certain definite, specific things.

"Osteopathy would expound and apply the true philosophy of manipulation. While the hands are used, it is not this alone and chiefly that distinguishes its method of operation, but the idea and purpose that lie behind manipulation."²

All manipulators are not osteopaths any more than all butchers are surgeons. The need for deep study of the subject is apparent from this characteristic statement of Dr. Still's: "Osteopathy is a science; not what we know of it, but the subject we are working is deep as eternity. We know but little of it. I have worked and worried here in Kirksville for twenty-two long years, and I intend to study for twenty-three thousand years yet."³ This brings us to the point of the relations of oste-

1. Littlejohn, (J. M.)—Journal of the Science of Osteopathy.

2. Encyclopedia Americana.

3. Booth—History of Osteopathy.

opathy with other manipulative forms of treatment. They are not many, for Gerdine,¹ in closing a long article on the "Physiological Effects of Mechanical Therapeutics" says: "I have striven to show that in no way is Osteopathy similar to massage either in theory or practice if Osteopathy is conceived of, according to its founder, Dr. A. T. Still, as a system of healing in which a definite lesion in form of a bony displacement is the causative factor and a removal of the same, the curative factor in disease."

The fact that use is made of the hands to the extent it is by both osteopaths and masseurs or Swedish movement operators gives rise to the mistaken idea of similarity in treatment.

"The essential distinction," says G. D. Hulett, "between Osteopathy and all other systems of healing based on manipulation, clusters around the etiology of disease. While these other systems, as indicated at least by their practice, look at disease from a peripheral standpoint, osteopathy views it from a central standpoint."²

Massage is a small branch of manipulative therapeutics, but conceding that it is perfect and scientific it can only resemble osteopathic treatment in one ramification of osteopathic practice, viz: relaxation of muscles.

The fact that massage is often employed by osteopaths in connection with their work shows the limitations of that form of treatment. Says McConnell³: "In the human body, as in any delicate, complicated mechanism, there is mechanism within mechanism; and, in order to obtain certain mechanical effects, many times there is required a series of complicated movements, all of which bear a ratio one to the other according to the energy utilized and the mechanical principle involved." No other form of manual treatment takes this principle of mechanics into consideration. It is possible, as Gerdine points out, for an undeveloped osteopath to practice massage under another name. That the two should be confounded before the public is due to his ignorance and not from any fault of the system. Massage is a valuable aid in the treatment of disease but it is not Osteopathy.

"In the bright lexicon of osteopathy there is no such word as rub⁴."

Osteopathy in its relation with medicine has little in common. From the beginning, its founder realized their paths should run divergently,

1. Journal of Osteopathy, May, 1905.

2. Principles of Osteopathy, p. 190.

3. Journal of the Science of Osteopathy, Dec. 15, 1900.

4. Osteopathic Calendar, 1900.

so the first step, its teaching, must be considered from a different viewpoint. To quote from an address by Teall¹: "But to adequately teach osteopathy a vast amount of original work must be done. Anatomy is anatomy but there is a vast difference in its application. Physiology must be taught to mean something more than an interesting phenomenon. Pathology has an unfilled gap between cause and effect which must be bridged. The post-mortem has a great story to tell but an osteopath must tell it. A slide of degenerated tissue under the microscope is of interest, but why the degeneration? It is described at length by the authorities, but the reason for the causes and morbid changes are not carried out. Obstetrics along strictly natural and physiological lines insuring both mother and babe against injury; gynecology, minus the knife and plus common sense; all these, and more must be put into shape to teach the osteopathic student. The archives of osteopathy were empty ten years ago. There was no precedent to follow and the ideas in teaching which had prevailed for centuries dominated. All this is changed. The colleges teach the science along strictly osteopathic lines, making the application of the truths which have escaped the notice of centuries of investigation."

All schools recognize the wonderful recuperative power of nature, as this from the introduction of a standard allopathic text book will show²: "There is no scientific dogma better established than this: that the living organism is in itself adequate to the cure of all its curable disorders. This natural law sustains the medical skeptic in his infidelity, enables the homeopath to report his sugar cures, and helps all physicians out of more close places than they are generally willing to acknowledge." But at times, as all will agree, nature is not able to overcome its maladies and assistance is needed. Here, again, is a divergence as to the method and character of that assistance. There is no system so trivial or absurd which cannot point to its cures, but a school of medicine should have a settled system with established methods of procedure. This is not true of any school employing drugs as its principal therapy. In the President's annual address at Cleveland he says³: "The observant reader of the progressive medical press is struck at once by the unsettled condition in the field of modern therapeutics. The trend is emphatically away from drugs. But, in the effort to get away from medicine, the medical investigator has wandered far afield,

1. Reported, Portland, (Me.), Advertiser, Feb. 27, 1905.

2. Potter's Materia Medica.

3. Teall—Journal of the American Osteopathic Association, Aug., 1903.

cutting loose from nature and resorting to the artificial." It is the last paragraph of the extract quoted which particularly emphasizes the point of divergence, natural *versus* unnatural methods. It must be understood at once that the osteopath admits the reality of drug action for "there is no doubt that the pharmacopeia records many drugs whose action is rapid and effective so far as securing activity or decrease of secretion is concerned, but the element of danger, i. e., their destructive power is great. Oftentimes their power does not stop at the point desired or limit its effect to the therapeutic action sought¹." This point of unreliability of the drug is emphasized by the following from recognized medical authority²: "We give drugs for two purposes: (1) To restore health directly by removing the sum of the conditions which constitute disease. Here we act empirically with no definite knowledge—often indeed with little idea of the action of our drugs, but on the ground that in our hands or in the hands of others they have restored health in like cases. (2) To influence one or more of the several tissues and organs which are in an abnormal state so as to restore them to or toward the normal; with the hope that if we succeed in our purpose recovery will take place. The purpose we effect by means of the influence which the chemical properties or drugs exert on the structure and function of the several tissues and organs. Minute information, therefore, of the nature of drugs and their action is essential for their proper employment." Osteopathy brings into action the latent or stagnant forces of nature by specific methods which are usually reliable. Naturally there being such a wide difference in theory of the cause of disease it would be also shown in diagnosis as well as treatment. The most striking points to the layman in medical procedure are: first, wide difference in the system of diagnosis and in its findings by physicians of the same school; second, the great variance in remedies employed by different physicians of the same school for the same disease.

Osteopathic diagnosis is so physical in its character, depending upon actual conditions found and not upon the subjective symptoms alone, that the same patient examined by a number of experienced osteopaths will be given the same diagnosis, and he will also be able to detect in each the same effort to correct in all their technique. All the methods of physical diagnosis are used plus the distinctive osteopathic procedure. Results wherever used bear out the effectiveness of the system.

1. Tasker—Principles of Osteopathy, p. 110.

2. Allbutt's System of Medicine.

The osteopath must and does consider the necessity of surgery, but his effort is always to prevent the operation if possible. There can be no doubt that surgery is carried to extremes and there is a strong sentiment growing that much of it is unnecessary. Says Homer Wakefield, M. D.¹: "It is to the everlasting disgrace and mortification of the medical man that the wealthy classes who are continually under the observation and direction of eminent men, in dietary, and all life habits, in health as well as in sickness, are not only the very ones who develop appendicitis and most largely go to operation, but are almost exclusively those who attain to this distinction." The operations of to-day are wonderful and the surgeon shows great skill and genius in their performance, but great as he is in these matters how infinitely greater is the man who can prevent them. The need of the osteopath to-day is to be trained to recognize surgical conditions and neither allow surgery unnecessarily nor make the more terrible error of not acting soon enough. Where surgery is a necessity there is always an etiological factor to be considered. The cause of the manifestation not always being removed what is to prevent a recurrence or serious sequela in spite of the operation? "The specialist. . . . if he has wit enough to read the lesson presented to him, that it is not sufficient to remove an ovarian tumor, e. g., and that if nothing is said at the same time or subsequently as to the causes which induced it, a positive damage may be done to the woman, who may, therefore, while considering herself cured, proceed to manufacture one on the other side, or may find herself in a few years suffering from cancer in the stump of the previous one²." And so the combination of osteopathy with surgery may be necessary that the cause shall be removed. Osteopathic treatment before operations in reducing congestions and inflammations, also in toning the nervous system, is particularly efficacious while the after treatment gives gratifying results. In fact, the two go hand in hand when conservatism rules both.

That diet should receive particular attention from the osteopath is not strange, for his veneration of nature peculiarly fits him to realize the necessity of correct feeding. Probably no subject is more discussed or presents a wider range of opinion than diet. There is overfeeding and underfeeding; long intervals and short between feedings. There is the no breakfast and no supper plan, mixed diet and the vegetarian, uncooked foods, and one exclusively of milk, anything you want so long as you are hungry but chew it well, etc., ad. lib. All are represented by

1. Cyclopædia of Practical Medicine, June, 1906.

2. Rabagliati—Air, Food and Exercise, p. 129.

osteopaths in their following as they are from other professions, but probably this would more nearly represent the views of them as a school: In health, first, most people eat too much and do not thoroughly masticate and insalivate. This applies to all stations of society. Second, meat forms too large an item in the daily dietary. Third, there is not enough variety and the ration is not well balanced as to elements. Fourth, not enough care is used in preparation of foods. In illness, first, the stopping, complete or partial, of food until the system can take care of it; second, the giving of easily digested foods. The man who avoids violent extremes in diet as well as in other habits of life will usually last longest. It is to be hoped that some rational system can be evolved on which all factions may agree, for the present confusion of authorities is bewildering. The osteopath gives attention to hygiene, sanitation, exercise, environment, mental attitude, etc., as they may affect the welfare of his patient.

Osteopathy can cure all curable diseases, for the same forces which will overcome one malady will overcome another when set in motion. Forces that produce a diseased condition will if normalized restore the established type.

OSTEOPATHIC ETIOLOGY AND PATHOLOGY

Osteopathic Etiology

Osteopathic etiology and pathology constitutes the most interesting chapter of osteopathic science. The primal divergence of the osteopathic schools from previous systems is to be found in the osteopathic interpretation of disease causes and processes, and not in osteopathic therapy as some may think. Osteopathy makes claim to an independent school because it possesses a distinct etiology, pathology, diagnosis and treatment. Thus osteopathic practice is not a mere method, but instead a system, a school, a science.

At no period of medical history have physicians of the older schools felt more keenly the futility of medical methods and the lack of an all-embracing principle of medicine than at the present. A recent writer¹ who claims to have discovered a principle that encompasses the entire field of medicine, says: "We found, we may say, that the backbone of medicine was the absent factor, and that if the patient labors of so many great minds had not proven as useful in the development of practical medicine as they should, it was because they lacked such a fundamental framework to afford a fixed *nidus* for each discovery, wherein its true relation to other discoveries would at once become evident."

Since the conception of osteopathy its fundamental framework has not changed one iota as to principle, although the application of the principle has been greatly elaborated. When Dr. Still proclaimed that "the rule of the artery is supreme" he gave utterance to a basic physiological truth. But when he demonstrated that osseous and other anatomico-mechanical lesions disturbed the artery and caused disease, and that readjustment of the anatomical cured the disorder, thus allowing the physiological to potentiate and revealing that the living body contains all the attributes of a vital and physical mechanism, did his teaching contain the germ of a comprehensive philosophy; this gave osteopathic science a "backbone" with a consequent fixed *nidus* for all existing facts and future discoveries. And thus, it should always be emphasized that mechanical readjustment of the component parts of the vital body is the eternal keynote of the osteopathic school of healing.

The Osteopathic Lesion.—Broadly speaking a lesion is "any morbid alteration in a tissue whether attended by a recognizable structural change or not; but especially a change in which the continuity of

1. Sajous—The Internal Secretions and the Principles of Medicine.

some of the tissue elements is broken in upon.¹” There are several kinds of lesions expressing the tissue involved, character of degeneration, locality of same, etc. But upon analyzing the medley of arbitrarily defined lesions the fact will be evident that much of medical etiology and pathology has not been logically and consistently sifted and arranged; and moreover, it will be found the **cause of causes** of many diseases is unknown.

Herein, arises the great significance of the osteopathic lesion, for the lesion alters the very governing and controlling tissues of the body, viz., the nervous tissue and the vascular channels. Hulett² defined the osteopathic lesion as “any structural perversion which by pressure produces or maintains functional disorder.” The constant maintenance of the structural perversion will, also, cause organic disease, although it is granted that functional disorder must necessarily result prior to any organic change.

The osteopathic conception of a lesion, functional and organic disorder caused by pressure from disturbed structures, does not bring us into an absolute new field. Medical literature of all ages contains references to diseases caused by pressure of tissues on nerves, blood vessels, or other channels. But the osteopathic idea is an absolutely new one in the application of this principle universally. It simplifies and makes uniform the arbitrariness of present semeiology.

Thus the osteopathic idea that many diseases originate, primarily, from anatomically mal-aligned, mal-positioned, or mal-related tissues causing a blockage of vital processes, immediate or remote, is a theory inclusive of disturbances to all tissues. This principle is fundamental and is supported by the physiological truth that uninterrupted vital channels preserve health; moreover clinical and experimental data, as will be shown later, substantiate this fundamental. It at once places interpretation of a lesion in an entirely new light from preconceived concepts, and is analagous to and co-extensive with etiology and pathology.

Etiological Factors.—The osteopath believes in the potency of inherited and environmental influences. There can be no question that a few diseases and certain disease tendencies may be inherited, the principle feature, however, from the standpoint of heredity is, various organs and tissues have less vital resistance. These should not be confounded with congenital weaknesses and diathetic tendencies.

Environmental influences are very important factors. One's sur-

1. Foster—Medical Dictionary.

2. Hulett—Principles of Osteopathy.

roundings and daily habits in the home, shop, or office count for much in the aggregate. Food, drink, air, rest, sleep, clothing, exercise, mental attitude, etc., are all factors in the sum total of health, and consequently ill-health may be traceable to their abuse. In fact, all hygienic and sanitary measures are duly considered by the osteopath. Various abuses, over use, and disuse of the functions will certainly be followed by physiological discord.

The germ theory contains much truth, but in the very large percentage of cases where the micro-organism is a factor its significance is only of secondary consideration. Immunity and resistance comprise an important part of the health problem, of which the intact anatomical is of first consideration. Usually the micro-organism plays the role of an exciting and determining factor; before it can multiply and grow there must be a field that is first nutritionally disturbed. Nutrition of the tissue is the one great point always to be considered. The constitution of an individual is the pivot about which predisposing, environmental, and exciting factors of disease center. Health represents the integrity of the artery as well as a maintenance of that master tissue, the nervous system, and anything that produces or influences, directly or indirectly, a disturbance of physiological functioning borders on the pathological.

Hence the osteopath recognizes many of the common medical causes of disease, but reserves the privilege of rearranging their relative positions, for the osteopathic cause of disease greatly modifies their value.

Osteopathic Etiology distinctively emphasizes structural derangements. and perversions Of **first** importance, owing to static requirements, is the **osseous lesion**. This lesion is represented by any abnormal change of position or relation of the many bony constituents of the body. The framework of the body is subject to not only any and every physical violence of any mechanism, but moreover being the corporeal foundation of a vital mechanism is subject to both direct and indirect biochemic changes and influences.

Thus the osseous lesion is caused (a) by traumatism, e. g., strains, falls, blows, etc.; (b) indirectly by atmospheric changes, over and violent exercise, the slumped posture, debilitating habits, etc., through the media of muscle changes and imbalance; (c) by nutritional effects disturbing the elements of bony tissue; (d) by ligamentous change such as thickening of a capsular ligament; (e) by infections; (f) compensatorily and reflexly through the media of body distortions and muscular irritability or debility, e. g., an innominate lesion may be compensatory to

a lumbar curvature, dietetic errors may cause dorsal muscular irritation and contraction produce a constant osseous lesion which in turn may result in chronic indigestion.

The pathological changes in the osseous lesion are commonly one of structural derangement, deviation or complete displacement. The vertebral segments are of primary consideration owing to their important relations to the spinal nerves, spinal cord centers and sympathetics; the ribs owing to the close sympathetic and spinal nervous relations; and then other osseous tissues, as the innominate, clavicles, etc., depending upon their importance to contiguous vessels, nerves and organs. It should always be remembered and emphasized that mechanical changes of the anatomical structures is the primary essential in osteopathic etiology; this is the one great inception of pathological variations from the distinctively osteopathic conception, which the osseous lesion typifies. Consequently the osseous lesion factor is actually a luxation (complete, or partial, even to a very slight degree), or malalignment of the bony constituents, which by virtue of their physical malposition impinge or irritate contiguous tissues. The essential test is the functional one, movement. The degree of involvement may be one of many gradations ranging from a slight malposition or impaction to a marked deviation or firm anchorage.

Second in importance from the static requirement of support is the **muscular lesion** though from the standpoints of movement and dynamics it is often of the first consideration etiologically. Many inter-osseous lesions are the result of spastic involvement of deep seated spinal muscles, of fibrotic changes and of tensions and weaknesses that either establish a rigidity of the segments, compromising nervous stimulus or vascular channel, or produce an imbalance of muscular tone and tension. In the latter instance some type of side-bending-rotation osseous lesion occurs, commonly anchored within the physiologic movements of the spine. The muscular lesion may be an actual dislocation of either muscle or tendon, but rarely. Commonly it is a contracted, or tensed, or contractured muscle. The muscle, also, may be diseased either from primary or secondary causes through nutritional and infectious sources and thus be an etiological feature.

The muscular lesion is caused, (a) by direct or indirect violence the same as the osseous lesion; (b) by atmospheric influences; (c) by slumped posture, debilitating habits and various errors of living; (d) infections; (e) by reflex irritations; (f) by compensatory changes; (g) by disease causing hypertrophy or atrophy; and, (h) secondary to osseous

lesions, being the result of impingement to the muscles' nervous control. The tensed or stretched muscle may result from a separation of the points of origin and insertion.

Herein the fundamental osteopathic concept is the resulting affection due to the physical encroachment, directly or indirectly, of the muscle tissue upon vascular channel or nerve fibre, or the effect upon the movement or alignment of the osseous tissue.

Muscular contractions, displacements, and tensions play a most important part in acute disorders, although muscular lesions that are secondary to other lesions are usually taken into account when treatment is given. Muscular lesions affect, (a) blood and lymph vessels; (b) nerve fibres. Muscular contractions, especially, impede mechanically the return of the venous blood to the heart. The lesions to the nerves may be manifested in innumerable ways, depending upon the location of the muscle and the function and distribution of the nerve affected.

Then there is the relaxed, overstretched, and atonied muscle. This condition results as a secondary effect to mechanical strains, these being so severe and constant as to cause direct stretching and possibly tearing of the muscle fibres. This should be distinguished from the exhausted or debilitated muscle, e. g., as found in neurasthenia and anemia.

Diagnostically there are, (a) contractions of more or less area, due to atmospherical changes; (b) the deeply seated contractions involving a very small area, caused by vertebral and rib lesions; (c) contractions due to reflex disturbances; (d) contractions caused by postural effects and deformities; (e) contractions from spasms of the blood vessels as a result of nervous irritations; (f) contractions due to toxicity of the blood. All of these characteristic muscular lesions give a direct hint as to both etiology and prognosis.

Third, the ligamentous lesion, as a lesion *per se*, is usually of secondary importance to the osseous lesion. In chronic cases affections of the capsular ligament and muscular fibrosis commonly maintain mal-alignment or rigidity. There are two features that should be noted in particular when considering this lesion; first, thickenings and adhesions; and, second, relaxations.

The tone and integrity of the ligaments cannot but be of vital concern to the stability, suppleness, and adaptability of the bony framework in all physical movements. No matter how slight the osseous lesion may be the ligament must of necessity be involved. The osseous derangements are either a source of irritation to the ligamentous tissue, resulting in congestion and inflammation and hence thickening and

adhesions, or else the ligaments are so strained and tensed that in time atony may occur. Probably, in a fair percentage of atonied cases the first disturbance to the ligament is one of irritation and congestion, and from long continued involvement irritation is supplanted by debility.

Consequently the primary consideration of the ligamentous lesion from the etiological standpoint is the character of the tissue (ligament) changes. This, also, gives us a direct hint that is of the utmost value in prognosis. The independent displacement of a ligament is rare, thus ligamentous lesions from the viewpoint of purely physical displacements are secondary to if not an actual part of the osseous lesion. Ligaments, when displaced or tensed, readily impinge or irritate contiguous tissues, but the original cause of the structural perversion is commonly either the osseous or muscular lesion. Hence, whatever factors enter into the production of these lesions will at least indirectly produce the ligamentous lesion.

Fourth, the visceral lesion is frequently overlooked as being of much moment as an osteopathic lesion. Visceral displacements acting as a source of functional and organic annoyance on the physical plane (structural perversion which produces and maintains pressure) alone are not in the least uncommon.

Any or all of the abdominal viscera, or even the organs of the thorax, may be displaced (physically) pathologically. Actual displacement of the viscus is a prolific source of distinct disorders and many obscure symptoms. True it is the organs are most frequently displaced from indirect causes, but nevertheless the actual physical malposition is in turn a primary cause of still another train of symptoms and diseases.

Visceral lesions are caused by, (a) vertebral lesions; (b) postural defects; (c) direct violence; (d) nutritional disorders; (e) childbirth; (f) unhygienic measures (tight lacing, heavy skirts, etc.); (g) congenital weakness.

From the displaced heart due to valvular and debilitating influences to the displaced liver, the stomach, the kidneys, the intestines, the ovaries, and the uterus, may arise a source of direct or indirect irritations, a train of apparent or masked symptoms, or a group of nutritional disturbances that include an extremely important chapter in etiology. Moreover not only may one organ alone be involved but several may be displaced or prolapsed as a whole as in splanchnoptosis; and even these in turn may be the direct cause of further organic displacements as the abdominal viscera prolapsing upon the pelvic organs. Here

is a very fruitful field for the diagnostician, for to separate cause from effect requires keen perception, an acute sense of touch, and above all, most careful weighing of all the factors that enter into the maze.

Fifth, the **composite lesion** is not always recognized as an extremely important osteopathic factor. By composite lesion is meant a structural lesion that primarily includes the osseous, muscular, and ligamentous tissues as a whole. This may be termed a lesion *en bloc* or *en masse*.

Composite lesions are of exceedingly frequent occurrence. Indeed, many composite lesions are overlooked and instead of treating the *en bloc* disturbance as a consistent whole the component factors are treated separately with no concern or attention to the whole.

Postural defects are excellent types of the composite lesion. The various curvatures, the tilted pelvis, etc., are representative of the composite lesion. Etiologically, pathologically, diagnostically, and therapeutically the contour of the spine and ribs, the relation of the innominate to the sacrum and spine, and the symmetry of the body generally should be recognized and appreciated. The relation of the part to the whole and of the whole to the part are of vital etiological concern. An incipient curvature may be easily overlooked, a pendulous abdomen neglected, and a slipped innominatum passed unnoticed wherein as a result the entire vertebral column is malaligned in relation to the physiological curves or to the perpendicular line of gravity.

Frequently attempts are made to correct individual lesions when attention should be directed to the composite lesion and *vice versa*, e. g., a displaced rib is usually dependent upon a corresponding vertebral lesion, and thus the transverse plane or section of the body should be considered as a whole. A single lesion may be dependent upon a composite lesion or a composite lesion dependent upon one or more single lesions. A slipped innominatum or a disordered hip joint may bring about a strain to a greater or less section of the spinal column, or a twisted vertebra may cause a curvature, whereas on the other hand postural defects may cause a strain at its maximum focal point resulting in overstretching and relaxing of ligaments so that an osseous lesion results, or a spinal curvature cause an innominatum displacement. Thus there is a constant establishing of equilibrium, physically and physiologically, through the medium of compensation, but at some phase of the change there are apt to be pathological phenomena resulting, and very frequently physiological harmony is not re-established but instead irritation, debility and other disease symptoms are constant effects until relieved.

Consequently osteopathic etiology is many sided and complicated. To know whether an osseous, ligamentous, muscular, visceral, or composite lesion is primary or secondary, compensatory, reflex, predisposing, or exciting, requires a command of theoretical knowledge backed by much actual clinical experience.

In noting the above distinctive osteopathic etiologic features the student should not lose sight of the constitutional status of the patient which may be modified by inherited, congenital, diathetic, and environmental influences, all of which go to make up the predisposition of the individual and have an important relation to osteopathic factors. Then it should be recalled that disease processes may be of insidious progress, and the products and effects of pathologic changes accumulative.

Osteopathic Pathology

In the etiologic study the osteopathic characteristics have been designated structural mal-adjustment, although at the same time not losing sight of the angle that the body is not only a physical mechanism but also a vital organism. Structural perversions characterize the osteopathic distinction when dealing with the physical body, and remembering the vital or biochemic mechanism, mental attitude, diet, hygiene, etc., are not forgotten. To retain or attain health, thorough appreciation of both the physical and vital mechanisms should be kept in view, for there is both an independent and dependent interaction on the part of each. The living body being an entity premises a system of therapeutics both physical and vital, that acts in direct accord and harmony with physical laws and physiological functioning.

Osteopathic pathology deals with the distinctive osteopathic lesion as a factor in production and maintenance of disease. Then the province of pathology is, first, to determine whether the lesion is in reality an etiologic factor; second, the immediate character of the lesion disturbance; and, third, how organic life becomes involved.

Inspection, palpation, clinical results, dissection and laboratory experimentation include the methods employed to prove that the lesion is of practical consequence. That the lesion is an etiological factor can be known only through clinical and experimental proof; the immediate character of the lesion disturbance can be determined by dissection; and how organic life becomes involved requires the summation of histological, physiological and pathological data.

The following outline assumes that the reader is familiar with anatomy, physiology and pathology. Osteopathic pathology does not add

to medical pathology an absolutely new pathology in all of the present known numerous details, but instead interprets much of clinical pathology anew, and furthermore it presents absolutely new data that is exclusive, but germane to the present general medical and surgical fields.

Nervous tissue and arterial blood are the master tissues, the controlling and governing factors in health, and disturbances of these tissues are necessarily the cause of ill health. The rule of the artery and the control of the nerve must continue uninterruptedly in order that physiological functioning remains intact. The body should be looked upon as a being complete, no more or less, each tissue and organ essential to the whole and the organism as a whole essential to every part. This is fundamental and germane to a living structure, and hence disturbance to the governing and controlling tissues, the nerves and vascular channels, must necessarily cause a break in the concatenation and disease must logically follow.

Thus in the osteopathic pathology we look to those influences that primarily disturb the nerve or artery, study the disease process or extension from inception to effect and from primary lesion to morbid results, and note action and interaction of tissue upon organ and organ upon organ.

That all parts of the body are in intimate and dependent relations each with the other through the media of the nervous and endocrine systems is a well known fact based upon histological and physiological grounds. The neurone being the physiological unit implies that any disturbance to the cell quickly disturbs any or all of its processes. It may be said that "nervous tissue is dependent for its integrity upon two things, blood supply and trophic influences. The nerve cell is solely dependent on a proper supply of blood, and dies when this is withdrawn. But the nerve fiber is more dependent on the trophic influence of the cell of which it is a prolongation. It dies when cut off from the cell but it can get along for a time with but little direct blood supply. On the other hand, if the nerve fiber is injured it reacts on the cell, leading to a partial but curable degeneration of the cell body."¹ Here is the immediate pathologic key to many diseases. Whatever cuts off or obstructs the artery leading to the cell is a primary etiologic factor; this then leads to degeneration of protoplasmic processes and axone. It should be carefully noted that if the obstructed blood vessel is one to the nerve fiber only the resultant partial injury to the cell is curable.

"When an axone degenerates the retrogressive process involves

1. Dana—Text Book of Nervous Diseases.

not only the main axone, but also its terminals, together with the collaterals belonging to it with their terminals."¹ This is an exceedingly important link in the explanation of osteopathic pathology, that distant organs may be affected by the osteopathic lesion. Moreover, "degenerations of a secondary character may occur in those systems of neurones which are more or less dependent upon the peripheral sensory neurone system for their impulses."² This is equally true with the central motor neurone, or any neurone. It shows how far-reaching a degenerative process and its effects may be. It further makes clear that nerve intactness is directly and absolutely dependent upon a normal circulation, and that it is self-evident any blockage either to blood vessels or to neurones will vitally affect those tissues that govern and control the life processes of the body. The integrative action of the nervous system is one of the outstanding facts of physiology.

The above is presented so the student may see how osteopathic spinal lesions, if deeply seated and effective enough, can involve remote tissues and organs. No one will doubt that fractures and complete dislocations of the spinal column will seriously affect visceral life, or a prolapsed kidney will be a cause of nutritive disturbance, or a displaced uterus the cause of ovarian congestion, or a dislocated hip the cause of atrophy of the leg muscles, but it has remained for the osteopath to offer proof that slight misplacements of the vertebrae or ribs, incipient curvatures, postural defects, slight deformities, and unsymmetrical bodies are of sufficient etiological importance on the physical plane to affect neurone integrity and obstruct artery courses, and thus organic life.

The question at once arises, what is the immediate or direct effect upon blood vessel or nerve of the osseous, ligamentous, muscular, visceral or composite lesion? The osseous lesion will be taken as a type. The direct effect is usually one of hyperemia or ischemia, generally the former, for as physiologists and clinicians observe irritation commonly precedes debility. In the vertebral and rib lesions there may be direct pressure upon the spinal nerve at its spinal foramen exit or on the sympathetic chain directly contiguous to the heads of the ribs. This causes congestion, inflammation, ecchymosis, and degeneration of the nerve fiber, followed by macroscopic and microscopic changes as connective tissue proliferations, arterial scleroses, etc. Or, as seems probable in experimental work, the inception of the pathology may be frequently the result of blockage to nervous stimuli, which when maintained affects

1. Barker—Reference Hand Book of the Medical Sciences.

2. Delafield & Prudden—Hand Book of Pathological Anatomy and Histology.

the efferent vasomotor, secretory, trophic and other fibers so that circulation and nutrition are definitely involved.

Thus the cells so sensitive to altered vascular changes are directly and remotely affected, and disease characteristics dependent upon structure and function of tissue, and degree of irritant are evident. This can vary, in degree only, with the muscular lesion that involves collateral spinal cord circulation, the visceral lesion that irritates sympathetic life, or the composite lesion that deforms or perverts structure *en masse*.

But is the physical noxa as potent an etiologic factor as the chemical or bacteriologic? Adami¹ informs us whether an irritant is physical, bacterial or chemical, no satisfactory distinction can be founded on the duration of the irritation; that a local irritation of the nervous system may lead apart from "direct reflex action, to changes of nervous origin, in the region of the injury and in the reflexes affecting associated regions, the higher centers; and through them the system at large, may become affected by paths that it is not always easy to trace." Again he says that "centrifugal impulses alone, apart from any local injury, may originate a succession of phenomena of inflammation in a part." And "in all probability a nervous and central origin must be ascribed to some, at least, of the sympathetic inflammations seen to occur in areas supplied by the other branches of a nerve supplying a part primarily inflamed; and again in areas supplied from the same region of the brain or cord as the inflamed organ." Other inflammatory changes, of course, may occur independently of centrifugal nervous influences, and the vessels react independently of central influences.

This, then, presents a situation postulated thus:

1. The body follows definite structural relations and is influenced by mechanical arrangements in its morphology.
2. The integrity of tissue depends upon structural freedom of nutritive courses.
3. The above predicates a structural etiology as exact and precise as structural relations are important to nutrition.

What proof, then, of the foregoing have we to offer?

First, the **clinical proof**. Clinical results have been obtained in tens of thousands of cases that include disease of various types and lesions, and of all sections and organs of the body. The art of osteopathy has been perfected in many of its details, based upon actual experience and splendid results. The cure of the patient is paramount to all other consideration, and whereas the osteopathic school has been shown a

1. Adami—Inflammation, Allbutt's System of Medicine.

superior system it logically follows on *a priori* grounds that relief and cure of suffering is of the first and final importance.¹

Were it not for clinical results no new system of therapeutics could withstand criticism and calumny and finally triumph and be publicly, legislatively, and scientifically recognized.

Second, the **autopsy proof**. Many dissections have been made and autopsies held with the view of discovering the character and the potency of the osteopathic lesion. This very important work has borne out the osteopathic theory of disease. Vertebral and rib displacements have been noted, corresponding ligamentous tissues thickened, associated nerve tracts and vascular channels disturbed, and finally the related organ found diseased.²

Third, the **experimental proof**. Experimental proof appeals, logically, to the scientific mind. This proof³ is being gradually developed.

Experimental investigation has been successfully carried out upon numerous animals. The experiments conclusively prove that not only spinal inhibitory and stimulatory manipulations (mechanical) are productive of immediate physiological changes in the viscera, but that the structural anatomical lesion or noxa is an important factor in the etiologic field. Pathological changes in several organs directly follow the artificially produced vertebral and rib lesions, showing beyond doubt the reality and effectiveness of the osteopathic lesion. This emphasizes the point that centrifugal impulses originate an inflammation in a previously healthy and uninjured tissue or viscus. And as "inflammatory phenomena may be sympathetically developed in regions innervated from the same area in the brain or spinal cord" it remains to prove the actuality of vertebral and rib lesions, i. e., structural perversions really affect contiguous nerve courses and vascular channels; and this has been demonstrated in laboratory experiments and at the autopsy. Consequently the vertebral, rib, or other lesion may be an important etiologic factor either to the nerve strand from cord or brain to viscus or from viscus to cord or brain.

Dr. Still says in his Autobiography that all nerves depend wholly on the arterial system for their qualities, such as sensation, nutrition

1. See Case Reports, American Osteopathic Association.

2. Clark—Applied Anatomy.

3. McConnell—Numerous articles Journal A. O. A. 1905-19, Bulletins Research Institute; Deason, Bulletins Research Institute, Deason's Physiology; Burns' Osteop. World, Aug. 1905; Basic Sciences, Bulletins Research Institute; Pearce, Osteopathic Physician, Nov. 1905.

and motion, even though by the law of reciprocity they furnish force, nutrition and sensation to the artery itself." It matters little in this outline whether obstruction to nervous integrity is by way of an impinged artery or by direct pressure, or both, or otherwise, for the primary consideration is the noting that the osteopathic lesion is a real and potent factor of disease. Sajous¹ informs us that "a neurone is directly connected with the circulation (via neuroglia-fibril) by one or more of its dendrites, which serve as channels for blood plasma," that a neurone receives its nutrition directly from the general circulation, and that from the axone the blood passes into a lymph space connected with a vein. Thus in reality a part of the circulatory system is that of the entire cerebro-spinal system.

The student is referred to the various publications of the Research Institute and Deason's Physiology for experimental data confirming the validity of the osteopathic theory, although it should be emphasized that clinical evidence is quite conclusive. Malalignment injuries of the vertebral articulations, for example, ranging from imbalance of muscular tension to infections, is certain to result in some type of rotation and sidebending of the segments to an extent that apposition is compromised and abnormal anchorage supervenes. There are many factors of the pathology: muscular tension and fibrosis; damaged ligaments, particularly the capsular; interference of nervous stimuli, blockage of impulse directly and reflexly as shown by pathologic involvement in cord centers and sympathetic ganglia, and in certain cases direct obstruction of nerve fibers as revealed by Wallerian degeneration; involvement of circulation as shown by damage to bloodvessels, local edema and local acidosis, and effect upon local tissue respiration and drainage. Through a combination of these various factors circulation, nervous equilibrium and chemism of related parts are involved, both anatomical and physiologic balance is upset, and resistance of corresponding viscera affected. Reciprocal innervation and the axone reflex are also disturbed, all of which are important predisposing causes that disturb resistance of tissues and organs, upset their correlated mechanisms and render active various possible infections and toxins that otherwise a normal circulation, nervous and endocrine systems, and oxygen supply would rapidly and successfully combat and restore the organism to normal. Thus from the practitioner's standpoint there are three points to always keep in mind: readjustment of the lesion; correction of the forces, habits, environment, etc. that produce the lesion; and hygienic

1. Sajous—Internal Secretions and the Principles of Medicine.

attention of the body after lesion adjustment in order that normal condition may be maintained. A thorough study of the physiologic movements of the spine is a prerequisite to an understanding of the various possible abnormal appositions, though it should be appreciated that these movements are not consonant or applicable to many abnormal conditions. Pathology reveals many gradations and combinations not found in normal conditions. Frequently the key of a successful technique rests upon an understanding of the individual make-up of the interosseous lesion.

It has not been the purpose of this section to go into details but rather to follow logically an outline of osteopathic etiology and pathology. The various details will be found in the osteopathic works on Principles as well as in the experimental articles referred to. It should be understood that the osteopath believes thoroughly in *vis medicatrix naturae* whether the indications are for stimulation or inhibition or for the basic readjustment. Generally speaking, however, therapeutic philosophy resolves itself (ultimately) into the principle that a cure depends upon giving an impetus to impaired, habitual and latent forces, which in the osteopathic field implies fundamentally adjustive manipulation whereby the resultant impetus or physiological stimulus is initiated.

In a word, osteopathy premises that the body is a vital and physical mechanism subject to derangements, structural alterations, and functional changes, as results of violence on the mechanical plane, as well as disturbances on the psychic and biochemic planes. Hence, osteopathic philosophy is inclusive of preventive, paliative and curative measure

OSTEOPATHIC DIAGNOSIS AND PROGNOSIS

Osteopathic Diagnosis

In osteopathic diagnosis the spine is the first and greatest object of interest, for on the result of its examination will depend the treatment to be given which is in turn hoped to bring about recovery.

As it is the structure on which rests the weight of the body the practiced eye is able to detect at a glance, by the poise and gait of the patient, if there is an abnormal condition affecting any considerable area of the spinal column. It is well to observe these points, especially in the female, before having them prepare for examination, as it will often give a clue to sources of trouble through faulty carriage, improper dress, particularly corset and shoes. Slight changes of gait, unnoticed by the patient may be of great aid in determining the beginning of disease in the spinal cord.

No osteopath is justified in accepting a patient who will not permit every examination deemed necessary, as remote and obscure lesions are frequently the cause of disease, so preparation of the patient for the first scrutiny is of importance. This cannot be made with the patient fully clothed, as visual observation is second only to the touch in making one's deductions. Neither can palpation be made through more than one thickness of clothing with accuracy, and examination next to the skin is always preferable. This need in no way ever cause complaint, for with the use of a loose fitting short kimono, with all outer clothing removed except the knit undergarment, and with skirt bands loosed, a complete survey of the whole dorsum from occiput to coccyx can be had without the slightest unnecessary exposure. It is well to remember that the patient has come for help and the osteopath is not justified in sacrificing thoroughness for any exaggerated feelings of modesty. With tact and care in the use of the garments the most sensitive ones need feel no hesitation in coming for treatment.

A complete history of the case should be taken before the examination begins, former methods of treatment, symptoms, environment, etc., as it will aid in the final conclusions. It is well to have blanks for keeping records of all cases.

Probably the most comfortable manner to begin physical examination is to seat the patient on a table squarely with hands placed upon the knees, then raise the garment and expose the whole back. Begin by noting the texture of the skin, if it is clear, pigmented, blotched, or has

eruptions. Try the capillary reflex by pinching or stroking quickly with the finger tips or the blunt end of a pencil. Find if it is moist or dry and also outline the areas of changed temperature, if any. Then observe the general contour of the spine with the patient sitting upright, to find how near it is to the normal body curve.

Occasionally having the patient alternately sit and stand will, by comparison, throw light upon the condition. With the patient bending forward place the hands on the crest of the ilia and see if they are of equal height.

Occupation may result in over development of one side or there may be congenital asymmetry¹. Note position of the scapulæ and habit of posture in sitting and standing.

Before taking up the subject of a critical examination of each vertebra there are certain points it will be well to consider. It is easy to know instantly, without counting, the number of the vertebra causing the lesion if these landmarks are remembered: First, the spine of the third dorsal is on a level with the spine of the scapula. Second, the spine of the seventh dorsal is on a level with the inferior angle of the scapula. Third, the spine of the last dorsal is on a level with the head of the last rib. It will save much time for the busy osteopath to have these well in mind.

The **pathognomonic symptoms** of the osteopathic lesion are: (a) maladjustment; (b) contracted muscles; (c) tenderness; (d) limited movement. To these might be added changes in local temperature and disturbance of function, but the former is not constant and the latter may be remote. Here the primary lesion is considered, for an osteopathic lesion may be, also, secondary or compensatory. Forbes speaks of compensatory changes as being an important diagnostic sign.

Diagnosis of the position of a vertebra is sometimes difficult to the beginner from its having longer or shorter spines than normal. Horsley speaks of the occasional congenital absence of a spinous process. They may be bent laterally, upward or downward and thus have all the appearances of a marked displacement, while occasionally the body itself seems much at fault. These present what might be termed normal abnormalities and make it necessary for the osteopath to be very sure of his diagnosis before attempting to correct what is not abnormal, for disappointment, at least, and injury, perhaps, may follow.

To avoid mistake, carefully palpate the transverse processes and determine if they are at right angles with the adjoining normal spine.

1. See Tubby, Deformities.

In the cervical and lumbar vertebræ it is possible to reach the tips of the transverse processes, and on moderate pressure, if a lesion exists, pain will be elicited. Further, where tenderness is associated with other diagnostic points it can be safely assumed that a lesion exists, and by outlining the suspected vertebra with the finger and localizing the sensitive spot one can be sure of the point of greatest irritation and the character of the displacement. Associated also with these signs will probably be evidence of congestion, such as thickened tissues, contracted muscles, etc.

After having examined the condition of the spinal column thoroughly by inspection, begin at the first dorsal and examine the spinal column down to the sacrum. Place the middle and ring fingers over the spinous processes and stand directly back of the patient and draw the flat surfaces of these two fingers over the spinous processes from the upper dorsal to the sacrum in such a manner that the spines of the vertebræ pass tightly between the two fingers, thus leaving a red streak where the cutaneous vessels press upon the spines of the vertebræ. In this manner slight deviations of the vertebræ laterally can be noted with the greatest accuracy by observing the red line. When a vertebra or a section of vertebræ are too posterior a heavy red streak is noticed and when a vertebra or vertebræ are anterior the streak is not so noticeable. Thus when suspicious points are noticed a special examination of the localized point can be given. This examination simply takes into consideration the contour and superficial condition of disordered portions of the spinal column. In a few cases such an examination will not be necessary, for the symptoms and signs of the disease will be so clearly manifested that one's attention will be called directly to the cause. Still, great care should be taken in the majority of cases, as the osteopath finds causes of disease remote from the seat of complaint. We must always bear in mind the significance of reflex stimuli and sympathetic radiation.

In making a critical and exhaustive diagnosis of the spinal condition after the foregoing general examination has been made, it will be best to have the patient lie on the side upon the operating table. When the patient is in this position a more thorough examination can be made, as then the spinal muscles are not contracted unless abnormally so, for when a person is in the upright position muscles are continually contracting first on one side and then on the other, as one of their functions is to act as a support in keeping the spinal column erect. The patient lying on his side, the physician should then stand in front of him and reach over upon the back and make a thorough examination of the af-

fectured portions of the spinal column, chiefly through the dorsal and lumbar regions.

Consideration should be given the contraction of the muscles along the back, chiefly the deeper layers of muscles. It may even be necessary to relax some of the muscles before a thorough examination of the vertebræ can be made. From a pathological point of view too much stress should not be put upon the contracted state of the muscles; although in a number of instances the contracted muscles may be the primary cause of the patient's trouble; especially so when the affection is due to atmospheric and other changes. Contraction of the muscles may be secondary to the lesions presented in the bony frame work. For instance, a dislocated vertebra may be the cause of an irritation to the innervation of certain muscles along the spinal column and thus cause them to contract. Still, we must not lose sight of the importance of the contracted muscles from a diagnostic point of view. They are oftentimes prominent signs that a lesion exists in the immediate region and are thus faithful guides in locating the cause of diseases.

In closing the general consideration of the spinal column it is well to emphasize the importance of training the faculties to grasp at a glance the story told by the back as a region, instinctively placing the proper value on each physical sign and weaving them into a composite whole so that the patient's condition stands out a vivid picture on the osteopath's mind. When this is accomplished the more detailed observations are but incidental. Relative to the examination of the spinal column Clark¹ says: "To the osteopathic physician, the most important part of the human body is the spinal column. By its changes in contour and condition the various visceral diseases can be diagnosed, in most cases. I believe that every disease is characterized by extreme changes or signs, and I further believe that every chronic visceral disorder is manifest by changes in the spinal column that can be, by the practical eye and touch, readily interpreted. In short, there are various signs along the spinal column that point out the weakened or diseased parts of the body. This method of diagnosing disease, that is by noting these spinal changes, is distinctly osteopathic, and I believe the time will come when it will become such an exact science that the character of the spinal change or lesion is diagnostic not only of the viscus affected, but the way it is affected."

Regional examinations and diagnosis will now be taken up.

Neck, Head and Face.—To make a thorough diagnosis of the condition of the cervical vertebræ probably requires more skill and a more

1. Clark's Applied Anatomy, p. 334.

acute sense of touch than of any other region of the body. The irregularities and variations of the cervical vertebræ, the numerous muscles and the passage of many vessels through the neck are very liable to mislead one.

One may examine the cervical vertebræ by having the patient either lying down or in a sitting posture. The former position is preferable, as then the muscles of the neck are passive, and besides it is much easier to relax the muscles if such should be necessary. Also one has better control of the field of examination.

It is undoubtedly best for the student when learning to examine the cervical vertebræ to first examine along the base of the skull the condition of the occipital muscles (after the patient has assumed the dorsal position upon the treating table) for any contractions; for if disorder exists in the upper five cervical vertebræ the condition will be manifested by contraction of muscular fibres along the base of the occipital bone. The muscles of the occiput are supplied by fibres from the posterior branches of the upper five pairs of spinal nerves, and if lesions exist to these upper nerves a contracted state of more or less extent of the occipital muscles will occur, no matter how slight the lesion. Thus the examiner after locating contracted fibres under the occiput has a direct clue to lesions existing somewhere in the upper five cervical vertebræ. After locating these contracted fibres of the occipital region and then still keeping the finger upon the contracted muscular fibres and following them downward until the contractions are lost and seem to enter the spinal cord, one has then located the exact point of disorder that is causing the irritation to the muscular fibres involved, and most probably the cause of the affection from which the patient is suffering, i. e., provided one has reason to suspect the trouble is in the cervical vertebræ. Simply follow the contracted muscular fibre downward until it seems to enter the spinal cord and there one will find a lesion. After the osteopath has become expert in diagnosis this will not be necessary unless he has to make a very fine diagnosis or unless he is examining a stout neck where it is hard to examine through the heavy muscles. With this method one has a firm, flat, broad surface to work on (the occipital bone) making it very easy first to locate contracted muscles and second to trace the course of contracted muscles and thus find the disorder. Otherwise the beginner is apt to get confused by trying to examine the condition of the cervical vertebræ. Later, when a student becomes more expert such a procedure will rarely be necessary only in cases that require special work in the examination.

When the point of disorder has been located the diagnosis as to the exact character of the maladjustment has to be determined. The abnormal position of the vertebra, tenderness at the point involved, local contracted muscles, and limited motion are the four diagnostic points, although the temperature of the affected part as compared with the general cutaneous temperature and the state of the local vascular channels (blood and lymphatics) will occasionally be of aid.

Owing to the irregularity of the spinous processes of the cervical vertebrae in regard to their length, great care has to be taken in the examination. Probably there is no other region of the body that will tax the patience of the osteopathic student so much in his practical work as making a diagnosis of disorders in the cervical spine. It requires patient and persistent work to become a fair diagnostician of the cervical region, and it will take much experience to become expert in both the examination and treatment.

One can depend that lateral deviations of the spinous processes are abnormal in most instances. Placing the finger upon the spinous processes of two consecutive vertebrae the student can readily tell whether or not there is any lateral displacement; but telling as to other features is impossible as the spinous processes vary greatly in length. When a vertebra is lateral, a slightly twisted condition will be felt by the finger when placed upon and between the two spinous processes.

To elicit the various degrees and combinations of rotation and sidebending one should depend upon the symmetry of the transverse processes. Reaching anterior to the sterno-cleido-mastoid muscle, or better still, pushing the cleido muscles forward and reaching posterior to them upon the transverse processes, a very fair examination can then be given the vertebrae. When the vertebrae are deranged, especially anteriorly or posteriorly, that is the apposition of the articular facets, a slight elevation will be felt, possibly not any larger than a very small pea, either the anterior or posterior aspects of the transverse processes, depending upon which way the vertebrae are deranged. Remember that accompanying this slight elevation will be degrees of sensitiveness of the vertebra at the point deranged. In cases where the vertebra is lateral a slight eminence will be noted along the outside of the process. Commonly disordered vertebrae are not entirely deranged in one direction but are oftentimes slightly rotated, so we may find them dislocated antero-laterally or in various combinations of sidebending-rotation. Several consecutive vertebrae may be deranged in like manner of direction; this condition is chiefly found in pathological curves of the spinal column. Probably the most common general lesion is a strained

condition of several consecutive vertebræ, each one being nearly intact but all of them as a whole somewhat strained or twisted. Thus there are many pathological states to take into consideration, although it is not surprising to the osteopath when he realizes that many of our pains and aches are due to anatomical derangement. Frequently bending the head strongly forward and downward, or downward pressure with slight rotation will produce pain at the point of lesion.

Sub-dislocations of the **atlas** are probably among the most common lesions presented to the osteopath. Owing to the articulation of the atlas and occipital bone being an anatomically weak point and the neck muscles being exposed constantly to atmospheric changes, besides the articulation between the head and neck receiving the brunt of many jars, falls and strains, the atlas is especially susceptible to derangements. On account of the intimate relation of the atlas to the superior cervical ganglion of the sympathetic and to the vertebral blood vessels it is certainly very necessary that the atlas should be well taken care of. No other tissue maintains such a significant position in relation to the blood and nerve supply to and from the brain. To diagnose correctly the position of an atlas and to be able to correct it is undoubtedly one of the most essential achievements of the practitioner of osteopathy.

The most common disorders of the atlas are anterior and lateral displacements. Next in order come "rotary" lesions of the atlas, i. e., where the atlas has been deranged diagonally or simply twisted. It may also be luxated anteriorly and laterally, or posteriorly and laterally, etc. A posterior derangement of the atlas is comparatively a rare disorder, although owing to the many lesions that are found in atlases one has, during the course of a year's practice, several to correct. The atlas may occasionally be slightly tipped laterally, anteriorly, or posteriorly, and in a few cases it may be somewhat impacted against the occipital bone. Many times when the atlas is displaced the axis is also deranged on account of the close relation between the atlas and axis by the odontoid process of the axis.

To examine the atlas the patient may be either in the sitting or dorsal posture; it matters but little which position is taken. Possibly the dorsal position is better, as then the neck muscles are more relaxed and if necessary an examination of the cervical spine, below the atlas, can easily be made.

By placing the middle finger of either hand on the transverse processes of the atlas when the patient is in the sitting posture, or the thumbs on the transverse processes when the patient is in the dorsal posture and

comparing the two sides, undue prominence of one side or the other can easily be noted. Remember the transverse processes of the atlas are slightly above and posterior to the angle of the inferior maxilla. Always, in examining one side of the patient, compare it with the other; it may save considerable embarrassment. One side may seem abnormal when by comparing it with the other side, both sides may be found the same and still be normal. With the fingers still on the transverse processes note the distance between the process and angle of the jaw, besides take into consideration the tenderness of the locality, and, also, what is of essential importance in all interosseous lesions, its articular range of movements. There should be room enough (approximately) to just comfortably wedge the end of a medium sized middle finger between the transverse process of the atlas and the angle of the inferior maxilla when both are normal. Thus with the fingers on the transverse processes an expert will be able to readily determine whether or not an atlas is lateral or anterior. If an atlas is posterior the distance between the angles of the jaw and the transverse process will be increased, besides the atlas will be quite prominent posteriorly. In conjunction with the abnormality of the tissues (prominence or depression of the bone and state of the muscles) the sensitiveness of the locality is extremely significant.

Outside of displacements of the atlas, a lesion between the **axis** and **third cervical** is most common; following next in frequency are lesions of the **skull** and **atlas**. By that is meant where all the cervical vertebræ are intact as far as their individual relation is concerned, but the skull is forward, backward or lateral upon the spinal column. This condition occurs quite frequently. To determine its condition the same methods are employed as in diagnosing a deranged atlas; for if the dislocations exist between the atlas and skull the same diagnostic points are presented as far as the skull is concerned as when the atlas, or atlas and axis, are dislocated from the occipital bone or from the axis or third cervical. Following the preceding examinations, additional examination will have to be made to see whether or not the atlas is intact with the vertebræ below. If the atlas is found to be intact with the vertebræ below and lesions are presented between the atlas and the skull, then the disorder must be between the atlas and the skull and nowhere else. Occasionally there are cases where the skull is so far posterior upon the spinal column that the angles of the jaw strike against the transverse processes of the atlas when the jaw is opened widely.

Derangement of the **muscles** of the anterior and lateral regions of the **neck** are common. Especially are contractions of the muscles on either side of the larynx liable to occur. In examining the cervical region

do not pay too much attention to the superficial muscles, but examine carefully the deeper muscles. It is from these that impingements of nerves and constrictions of vessels are likely to take place in the contracted fibres. Also, imbalance of muscular tension may be the source of the resulting malalignment. In examining for contracted muscles do not gouge into the muscle nor grasp the muscle roughly, but bear down lightly (inhibitory) upon the muscles and then gradually exert firmer pressure. By carefully and firmly exerting pressure over muscular areas the deep muscles can then be felt beneath the superficial ones. Otherwise when the muscles are manipulated severely the superficial ones will contract to such an extent that the deeper ones cannot be felt. The muscles contracting on either side of the larynx tend to draw the larynx downward and thus there may arise a source of irritation. The various muscles contracting in the antero-lateral region of the neck are very often the source of chronic irritations of the pharynx or throat. The omo-hyoid muscle may become contracted and cause slight traction on the hyoid bone and thus produce an irritating cough. To examine the muscles of the neck thoroughly it is best to have the patient flat upon the back, for then all the normal muscles are relaxed.

Lesions quite frequently occur in the **temporo-inferior maxillary** articulation. The lesion may be either unilateral or bilateral, more commonly the former. The disorder usually consists of a relaxation of the muscles and ligaments about the articulation which allows a slight but perceptible dropping of the inferior maxilla on the side involved. In other cases there may be presented a spasticity of tissue, while in still others some degree of joint infection may be found. Lesions of this articulation particularly impinge upon fibres of the fifth cranial nerve. The points of diagnosis are clicking and tenderness at the articulation. These two points are the symptoms of which the patient complains; those noticed by the osteopath are a slight deviation of the jaw to one side or the other when the jaw is opened and a flinching of the patient due to tenderness when pressure is exerted over the articulation of the jaw. When the physician places his fingers around the jaw, anterior to the angles, and the thumbs over the bridge of the nose, having patient open the mouth, at the same time exerting pressure with the fingers and thumb, a sharp click may be elicited by the return of the jaw into its articulation.

In disease of the **scalp** the condition of the muscles of the scalp should be taken into consideration. The muscles are usually found contracted. The contraction of the muscles is generally due, as well as

the disease of the scalp, to derangement existing in the posterior branches of the upper five pairs of the cervical spinal nerves.

In the **neck**, anteriorly the **hyoid** is the only bone to consider. It is easily palpated by standing at the head of the table and with the second finger of each hand outline both ends to ascertain its relation with the thyroid cartilage. Note carefully any contracted tissue or glandular enlargements which might cause undue tension. The tilting of either end of the hyoid from these contractions is productive of much throat irritation. At the same time the **larynx** may be examined. It may be prolapsed, causing irritation of the laryngeal group of nerves. The **thyroid** and **cervical** glands should be palpated for enlargements, and all the muscles and ligaments for contractions. Externally the **tonsil** may be felt by deep pressure in front of the angle of the inferior maxilla.

The Ribs.—Under the osteopathic diagnosis of the ribs will be included the examination of the clavicle and sternum. To be able to diagnose intelligently, the position of the ribs in detail is very necessary to the osteopath. Many of the diseases of the heart and lungs, besides a large number of the diseases of the digestive tract, may be traced to a deranged rib; also, occasionally diseases of different regions of the head and neck may be due to dislocated ribs. In making a thorough examination of the ribs each rib should be carefully noted as to its position. The ribs may be examined when the patient is sitting up; but it is better to have the patient flat upon the back and especially so if the floating ribs are to be carefully examined, because the muscular tissues of the side if contracted will interfere with the diagnosis. In many instances the rib lesion is secondary to a vertebral subluxation.

An expert osteopathic diagnostician will be able to detect at once by a single passage of the hands down over the ribs if there are any disorders of them. In passing the flat of the hand, especially the flat part of the fingers over the ribs, carefully observe if the intercostal spaces are too narrow or too wide, and if any of the ribs are unduly prominent or depressed. If an intercostal space is too narrow it shows that the ribs on either side of the intercostal space are too close together. Then the question arises, which one of the ribs is crowding upon the intercostal space, or whether both of the ribs are crowded together. Usually when the sternal end of the rib is displaced upward, the involved rib is prominent and when displaced downward the rib is depressed. Thus it is commonly easy to diagnose which is the involved rib. Besides finding an abnormal position of the rib there will be more or less tenderness over the rib.

Finding a rib prominent or depressed and tender is generally quite conclusive that the rib is displaced. Then the range of movement as expressed through the sense of resistance is a helpful guide in diagnosis.

If a **typical rib** is placed upon a flat surface and one end of it is depressed the other end will be elevated and *vice versa*. This peculiarity holds true as well when the ribs (typical) are dislocated in the living body. If the anterior end is elevated the posterior end is commonly depressed and *vice versa*. Care should be taken in examining the first rib and the false ribs, for in these ribs this peculiarity is not found.

As a whole a very complete diagnosis can be made of the condition of the ribs by examining the anterior part of the thorax, although it is always best to examine along the angles of the ribs if for nothing more than to confirm the diagnosis made at the sternal ends. Still it must be remembered that the preceding only holds good when the entire rib is dislocated. Many times simply one end of the rib is deranged and the other end is practically intact.

Besides careful examination of the sternal end of the rib, attention should be paid to the condition of the costal cartilages. The costal cartilages may become deranged at either the articulation with the rib or with the sternum. The same rule holds good when the costal cartilages are dislocated as when the ribs are dislocated, i. e., when the cartilages are prominent, they are usually displaced upward and when depressed the cartilage is displaced downward toward its neighbor.

One is apt to think that a rib is only dislocated at its vertebral end. Although lesions of the vertebral end are generally of greater significance as far as the etiological factors are concerned, still the sternal end of the rib must not be overlooked. In examining the vertebral end of a rib attention should be paid the angles of the ribs, for at the angles a better opportunity for examination is given on account of the prominence. It will be necessary in many cases to find out whether or not the vertebral end of the rib is lying between the transverse processes instead of in front of them. In many severe lesions of the ribs the vertebral end of the rib is dislocated upward or downward from the transverse process of the vertebra and lies between the transverse processes of the vertebræ above and below its attachment. This certainly requires considerable skill in the diagnosis, for oftentimes the point to be found is barely an eighth of an inch in diameter. It is usually best before making such a close examination to relax the tissues well over the field of examination.

The **ribs** as a whole may be too transverse or too oblique upon one side. This is chiefly found in pathological curves of the spine, but still such conditions may exist where there are severely contracted muscles,

especially in some cases of paralysis. Thus the contour of the ribs must be taken into consideration by comparing one side with the other.

In examining the **first rib** an examination somewhat different from the other ribs should be given. It is best to have the patient assume a sitting posture; then place the middle fingers of each hand upon the first ribs near their centers and compare one with the other. Also note the difference of the spaces between the ribs and clavicles. Generally the first rib is dislocated upward, rarely downward. Besides finding an abnormal prominence or depression of the rib at its center considerable tenderness will be noticed. Examinations of this region are every day experiences with the osteopath.

When diagnosing the position of the **floating ribs** it is best to have the patient lie flat upon the back with the thighs flexed upon the abdomen, so that the tissues about the lower ribs may be entirely relaxed. Then by placing the flat of the fingers carefully over the ribs the outline and position of them can be easily discerned. The floating ribs are oftentimes found deranged and are the source of a great deal of suffering through the iliac regions. These ribs may become dislocated from the vertebral ends and drop down obliquely toward the iliac crest, or else the free end may become locked beneath the rib above. Occasionally both ends of the rib drop down quite perceptibly and consequently is the cause of considerable distress. In such instances the rib is depressed inward so that the normal contour of the lower thorax is lost.

An examination of the **clavicle** should be carefully made. Always compare the clavicle with its fellow and examine thoroughly its articulation with the sternum as well as at the acromial prominence. Often the sternal end of the clavicle is slightly dislocated posteriorly to the sternum; although it may become completely luxated. The acromial end may be dislocated upward or downward.

In examining the **sternum** special attention should be given the articulation of the manubrium and gladiolus. This is due to the crowding anteriorly of the articulation of the sternal parts. Normally until well along in adult life there should be some movement here due to its membranous attachment. Occasionally the ensiform cartilage is turned inward, producing a tender point, but this rarely occurs. Also the articulation of the cartilages in the region of the eighth, ninth, and tenth ribs may be found considerably deranged, causing local tenderness and even stomach trouble.

Dorsal and Lumbar Spinal Region.—With the patient sitting on the table abnormal deviations can be readily noted. There may be

lateral swerves, from muscular weakness, or unilateral tension, involving the whole spine or less, or a reversal of natural curves, i. e., the spine depressed anteriorly between the shoulders and posteriorly in the lumbar making the straight spine. There may be, also, an exaggerated normal curve in the dorsal region producing a kyphosis with a compensatory lordosis in the lumbar region sufficiently great to change its relations with the pelvis. By the method previously given, now outline the spinal column for lateral and bilateral scoliosis. These, frequently, are at their incipiency, and to the casual observer would pass unnoticed. It is well to make an outline of the spine before beginning treatment, and at times following, that progress may be observed. A simple method is lead tape which can be had from any plumber shop and can be molded to the deformity and traced on paper together with date of examination. H. F. Goetz has perfected an appliance for outlining and recording these deviations. Observe well the ligaments, as well as extent of joint movement, under deep palpation; from irritation they may become thickened and more or less fill the spaces about the spines and transverse processes, causing a rigid, smooth spine.

To make a detailed examination the patient should be stretched out on one side upon a treating table, although the general examination may be sufficient. Then, standing in front of the patient and reaching over him, a most careful diagnosis can be made. Do not stand back of the patient as the flat of the fingers can not be used to advantage in outlining the different vertebræ. The various contracted muscles that may be found along the spinal column will be of valuable aid in locating derangements of the vertebræ and vertebral ends of the ribs. By using contracted muscles along the spinal column as a guide for locating lesions, reference to the large superficial muscles is not made, but to the small areas of contracted fibres of the deep muscles. It is the deep muscles that become more or less contracted, and even fibrotic, when lesions of the vertebræ and ribs exist. The superficial muscles are generally contracted by atmospheric changes, slumped postures, wrong habits, etc., and are not generally the result of disorders in the osseous system. The preceding points in regard to contracted muscles cannot be too carefully observed for there is a tendency among many osteopaths to treat the contracted deep muscles as primary lesions in nearly every case. Remember that if they are not due to the motor nerve fibres of the muscles being irritated by the spinal lesion, or to a reflex stimulus, or to a compensatory change, that although the muscular tension may be the inception of the almost certain interosseous lesion, still the leverages se-

cured through bony adjusting are very essential not only in correcting the osseous malposition but in loosening and releasing fibrous muscles and thickened ligaments.

Thorax.—Examination of the thorax as a region has been largely gone over in speaking of the ribs and their sternal attachment, cartilages, sternum and the clavicles, but its appearance as a whole should be carefully noted for it will be a valuable aid in diagnosis. Deviations from the normal, such as the emphysematous or barrel-shaped chest in asthmatic affections, or chronic cough, or accompanying kyphosis, the flat chest and its association with phthisis, the rachitic, etc., should be considered. Spinal deformities are reflected in the thorax by marked changes in contour, such as elevations and depressions corresponding to the spinal changes. These result in marked interference with the thoracic organs and in young subjects are of particular interest. Rib changes are frequently the result of vertebral deviations.

Abdomen.—The position for examination of the abdominal viscera is usually with the patient supine, head slightly elevated, knees drawn up partially and supported to relieve any muscular strain, and with the hands at the sides. In this position complete relaxation is obtained. Observe any enlargements from gas, fluid, or tumor, muscular changes, color, etc. The patient may, also, be placed upon the side, and in the knee-chest position for further verification of the diagnosis. Where the abdominal wall is much relaxed, or there is a pendulous abdomen with enteroptosis, there will be found a change of relations of the viscera by these different positions, allowing them to be palpated in another position. When there is marked tenderness it is often possible to go deeper with less discomfort with the patient in the knee-chest position. The Trendelenburg position may also be utilized. Where ascites is suspected palpation should be made with the patient in various positions in order to note changes of location of the fluid. Frequently much can be learned by inspection with the patient standing. Clues to visceral disturbance can often be had by tracing the nerve connection from the spinal lesions to the suspected part.

In examining the **liver** care must be taken that any gouging or severe bruising of the organ does not take place. The liver can be outlined by percussion and also by palpation of its lower and inner borders. Congestions, atrophy, enlargement or hardening should be noted, also any change in position.

A rather complete examination can be given the **biliary tract** from the **gall-bladder** to the **duodenal orifice** of the **biliary duct**.

By a careful inhibitory pressure over the duct the outline of the tract can be discerned providing the patient is not too stout. When the tract is swollen considerable tenderness will be present. The patient will complain of a stabbing or piercing pain upon pressure and manipulation if the duct is inflamed.

Usually the tenderness is greatest nearer the **duodenal orifice**. The duodenal orifice is about one and one-half inches diagonally downward to the right from the umbilicus. In cases of impacted **gall-stones** the osteopath as a rule has very little trouble in locating the stone.

The **spleen** may be percussed and when in a markedly enlarged condition its lower border can be palpated. Great care must be used in the latter condition as there is danger of rupture.

In examining the **stomach** the usual methods of inspection, palpation, percussion, analysis of the contents, etc., are employed.

Palpation and manipulation over the **intestines** are practiced a great deal by the osteopath in various intestinal diseases. By his educated sense of touch he is usually able to locate at once any **impactions of fecal matter**. Such impactions are generally found in the ilio-cecal and sigmoid regions. In the various acute **obstructions** from invagination, tumors, twists, adhesions, spasticity, knots, etc., many times one is able to readily locate the seat of the disturbance. There is one point to specially emphasize; that is, do not overlook prolapsed regions of the intestines; such occur frequently and are a source of considerable distress, especially constipation. Simple manipulation will never do much good, neither will spinal treatment or injections, as a rule. A specific treatment must be given and, that is, after locating the exact point of prolapse, to reach carefully beneath the fold and replace it.

In emaciated subjects the **kidneys** can be readily located, and in a few instances when they are diseased one can feel the contracted tissues about them. Be very careful not to injure the **capsule** about the kidney. Do not punch or gouge them in the least; but locate the kidneys by a careful inhibitory palpation.

Lumbar and Pelvis.—The intimate relation between the lumbar spine and pelvis make a consideration of them as a region necessary. Outside of ordinary curvatures involving both the dorsal and lumbar regions there are certain conditions which involve but one structure and require careful differential diagnosis to determine whether the lumbar or pelvis is at fault. In the former the fifth vertebra is a weak point and is most frequently at fault. The deviations are usually a sidebending and frequently accompanied with some rotation. Occasionally a mal-

structure of the lower lumbar or pathologically relaxed ligaments will approximate the spines and be misleading as to the real condition. A rotation or lateral tilting of the fifth lumbar may have the effect of elevating the crest of the ilium so that the innominatum would appear involved. There will be a difference in the length of the legs, angles of feet when patient is lying on the back, anterior spines out of line and tenderness of the muscles attached near them. However, other diagnostic points of innominate lesions, i. e., tenderness of symphysis and sacro-iliac articulation, and prominence of the posterior spine, will be lacking. Marked deviation of other lumbar vertebræ may produce practically the same effect, but the lesion will be so apparent that there will be no doubt as to the cause.

To be able to diagnose accurately and intelligently the pelvic region requires nearly as much skill as in examining the cervical region. The pelvic bones are liable to many subdislocations, especially in the female. However, it should be remembered that many apparent innominate lesions are secondary or compensatory changes due to lumbar lesions. The pelvis as a whole may be tipped anteriorly or posteriorly upon the spinal column. It also may be twisted or rotated laterally upon the spinal column. The most common lesions are subluxations of an innominatum forward, backward, upward, or downward, or various combinations of these displacements, such as a tipping forward and downward of an innominatum, or a tipping backward and upward, but these combinations do not always exist in the manner given. As a rule when the ilium is anterior, the ischium posterior, then the innominatum as a whole is downward; when the ilium is posterior, the ischium anterior, then the innominatum as a whole is upward. This is only a rule, there are exceptions to it; for in some few cases when the ilium is anterior, the ischium posterior, the innominatum may be higher, and when the ilium is posterior and the ischium anterior the innominatum may be lower.

To be able to diagnose such derangements will require skill and practice; still there are symptoms and signs that are characteristic of such disorders. In examining the pelvic bones have the patient flat upon the back at first. Be sure he is flat upon the back for a very slight variation may make considerable difference in the relation of the pelvic bones, one to the other, so far as the diagnostic points are concerned. Then go to the feet of the patient and grasp the ankles firmly, rotate laterally both legs, first to one side and then to the other, as well as pull and push both limbs slightly, and then bring the heels together directly in the median line of the body and compare the length of the limbs at the heels.

If there is any disorder whatever in one innominatum, and the thigh muscles have been relaxed thoroughly by the preceding movements and the heels are brought together in the median line of the body, a difference in the length of the limbs will readily be observed at the inner malleoli or the heels. For if the ilium is forward the ischium must be backward and as a rule the innominatum is thrown downward, thus causing an apparent lengthening of the limb which will be noticed by comparing the heels; if the ilium is backward the ischium must be forward and as a rule the innominatum is then upward, causing an apparent shortening of the limb on the affected side. A very slight variation in the pelvis will make considerable difference in an apparent lengthening or shortening of the limbs. Such conditions are generally met with several times a day by osteopaths. The object of the lateral rotary movement and the pushing and pulling of the limbs is to make sure that all the thigh muscles are thoroughly relaxed, for it is a very easy matter for contracted muscles in one thigh to produce an apparent shortening of the limb. Also be very careful in comparing the length of the two limbs at the heels where they come together that they are exactly in the median line of the body, for if they should be to one side or the other, however slightly, there would be an apparent lengthening of the outer limb as compared with the limb near the median line. While the patient remains flat upon the back it is a good plan to compare the anterior spines of the ilia. It may be readily noticed that one is higher or more depressed than the other, which will help to confirm the diagnosis. It is a good plan also to have the patient sit up squarely upon the table and compare the crests and posterior spines of the ilia; thus one may be seen to be higher than the other. Then, also, note the angles of the feet when patient is supine; an everted foot usually means that the limb is shorter due to the tilted pelvis; the opposite is commonly true when the foot is inverted. However, this is not an absolute rule. Care should be taken in differential diagnosis of possible old fracture of leg, of infantile paralysis, of asymmetry, etc.

There are **three diagnostic points** exclusive of all other signs that are quite conclusive when coupled with the preceding examination. If an innominatum is dislocated or subdislocated there will be tenderness over the symphysis pubis on the side affected, tenderness over the ilio-sacral articulation on the side affected, and tenderness along the crest of ilium where the abdominal muscles are attached. When tenderness is found at these three points it is quite conclusive that the innominatum is deranged, for at the symphysis pubis and ilio-sacral articulation ten-

derness must exist if the innominatum is disturbed, and by a change in the crest of the ilium the abdominal parietes will be affected, provided they are not too much debilitated. Marked tenderness of the external cutaneous nerve as it passes over the crest of the ilium below the anterior spine will be noticed on the unaffected side (Dr. Still). There will be, on rectal examination, marked tension of the tissues on the affected side. Possibly the patient may complain of pain exclusively in one side along the pelvis and limb which will be a leading symptom telling which side is affected.

Additional diagnostic signs will be rigidity of muscles along the ilio-sacral articulation and abnormal prominence or depression of the ilium at its articulation with the sacrum, depending upon which way the innominatum has slipped. Considerable deviation of the pubic bones may be noticed. The pubic bone on the side affected may be either thrown upward or downward.

Radiographs have repeatedly revealed subluxations of the innominate bones in many instances. This is certainly quite conclusive in confirmation of the osteopathic ideas in regard to the pelvic bones becoming dislocated.

Sacrum.—Examination of the sacrum is best made with the patient lying on the side, with the osteopath standing in front and with the hand palpate its posterior surface. In the sitting posture its relation with both innominates can be determined. It is displaced posteriorly but seldom, the most frequent being anterior, downward, and a combination of the two. In the anterior conditions tenderness at the sacro-iliac articulations is a good point, but it must not be confounded with an innominate lesion. The downward displacement is shown by comparison with the lower lumbar vertebræ. Observe the relation between the two, as a change in contour of the spine will also change the angle of the sacrum and *vice versa*.

Coccyx.—With the patient and operator in same position as for the sacral examination outline the coccyx, as to first, **contour**; second, **rigidity**, third, **sensitiveness**. If abnormalities are detected go to the other side of the table and with a well lubricated index finger palpate its anterior surface. Changed contour, displacements, and old fractures can be readily determined. The most common deviation is anterior at its union with the sacrum. The lateral form generally resulting from muscular contraction is next, with posterior but seldom. "If the lower part of the sacrum is rotated backward, the sacro-coccygeal articulation or angle is affected or becomes more acute, since the tip of

the coccyx is not displaced, but held in position by structures attached to it. If the sacrum is displaced downward the effect is about the same. Often this sort of sacral lesion is mistaken for an anterior luxation of the coccyx."¹ Remember that normally there should be some movement of the coccyx. It has a fibro-membranous articulation.

Uterine, ovarian and rectal examinations are largely of the same nature as those given by other practitioners, although osteopaths find that oftentimes other practitioners are mistaken in regard to the etiology of many diseases to which these organs are subject.

Arms and Legs.—There is comparatively little that is exclusively osteopathic in regard to the diagnosis of disorders of the arms and legs. One important feature that the osteopath finds in examining the arms and legs is that many of the disorders supposed to originate in the affected member are found to be caused from vertebral or rib dislocations. Innominate and lumbar lesions are particularly fruitful sources of trouble in the legs and feet. Always carefully examine the spine in the region of innervation to the arms and legs when they are affected. The shoulder and hip joints, as well as all joints, are subject to partial dislocations. Many times when pain or other symptoms are presented in the arms or legs the trouble is at the shoulder or hip joint or in the spinal column. There are two regions that are very apt to be overlooked in the examinations of the arms and legs and they are the elbow joint and the fibula. The small bones of the **ankle** and **wrist** as well as of the foot and hand are subject to many dislocations which are easily discerned upon examination and often overlooked. Special emphasis should be given in regard to many supposed diseases of the knee joints which are really caused by lesions in the spine or at the hip joint.

Osteopathic Prognosis

Everyone is of the opinion that to forecast the probable result of a disease is one of the most difficult problems the physician has to meet. To state the duration, course, and termination of an attack of disease as presented by its nature and symptoms implies an accurate knowledge of both disease processes and changes, and an insight into the individual's idiosyncrasies backed by ripe clinical experience. And after each of these factors has been carefully considered to balance one against the other, nothing short of superhuman knowledge may present a sufficient insight in order to render an accurate prognosis. A prognosis represents

1. Clark's Applied Anatomy, p. 331.

the culmination of one's learning, an understanding of disease characteristics, and an insight into temperament.

C. M. T. Hulett¹ says: "Only when we can know all the conditions, causative and sequential, with their possible complications and terminations, together with a full history of therapeutic results in a large number of similar cases, and carefully analyzing and weighing these various elements, are we prepared to really make a prognosis." Nettie H. Bolles² writes as follows: "The prognosis depends upon the cause of the disease, the possibility of removing the cause, or the likelihood of recurrence of causes, and the chances of avoiding such recurrence. The circumstances to modify the outlook are various and deserve careful consideration." It is not the purpose here to go into the many essential details, for that would mean an outline and forecast of all disease processes, and the effect of numerous extenuating circumstances. The medical profession have been gathering data for these three thousand years and prognosis with them is still inaccurate and incomplete. Osteopathic science will add just so much to the accuracy of prognosis as the sum total of the knowledge displayed in the fields of osteopathic etiology, diagnosis, pathology and therapeutics. Suffice it to give here a few salient practical hints as noted in the osteopathic treating room and at the bedside.

Osteopathically it may be said that prognosis depends, first, upon the true conception of osteopathy; second, upon the relative value of all factors pertaining to health and disease; and, third, upon the skill (technique and native ability) of the osteopath. The first and second being granted, the third includes a remarkably practical and pregnant field, for in no school does the physician get into as close touch and understanding of the actual condition of the patient's disorder as in the osteopathic. Although the fundamentals and principles of the osteopathic conception of diseases are really broad, liberal, and all-inclusive, still owing to the fact that each individual (and thus each disease) is more or less a law unto himself should there not be absolute tables and prescriptions to be governed by; remember, however, this does not imply our fundamentals are not basic or our principles are not truths, but rather the application and execution of the same are as varied as the individual's constitution, temperament, and disease. Herein rests the really difficult practical consideration of etiology, pathology, diagnosis, treatment, and prognosis. In other words, if the diagnosis and treatment are accurate the result rests entirely with the patient.

1. Prognosis—Journal of the American Osteopathic Association, Jan., 1906.

2. Prognosis—Journal of the American Osteopathic Association, Nov., 1902.

First, too much emphasis cannot be placed upon the fact that prognosis is dependent upon the osteopath—his education, training, ability, experience, and technique. One's fitness is most important. And fitness and personality complement each other. An osteopath may know theory and still not be practical; still one cannot be practical unless he knows theory.

Second, osteopathic treatment frequently changes the usual course of acute disease. It is well known that many diseases have a certain regular course in their history. Many times the osteopath will be able to abort, lessen the severity, or cut short the ailment, thus changing the recognized symptoms and termination.

Third, the knack of treatment, or knowing how to treat, not only one region of the body but all regions, not only one temperament but all temperaments.

Fourth, the preparatory treatment before correcting the lesion. Prevention, palliation, or cure, and thus prognosis, may be dependent upon a necessary preparatory treatment. Here is where a study of the patient's temperament is very essential.

Fifth, a prolonged treatment may defeat one's purpose. As a rule a comparatively short, thoroughly indicated, specific treatment is best.

Sixth, much, relative to prognosis, can be told by the tone of the vertebral ligaments. When a lesion corrects too easily or does not remain well in place it shows a lack of tonicity on the part of the ligaments and muscles. Improvement is in direct ratio to the increase of tonicity.

Seventh, special care should be taken with the irritable spine. This spine commonly precedes the debilitated spine. Unless precaution is taken to apply inhibition before treating specifically a cure may be prevented or at least the disorder prolonged.

Eighth, relaxation of muscles is not always essential, although the lack of it may prevent the correction of primary lesions. The relaxation should be carried out with care in order that all shock and irritation may be kept at a minimum.

Ninth, needless stretching, traction, extending, rotation, and snapping of the neck is not only useless but may be positively dangerous. Rarely is it necessary to go through the above "movements" as many are accustomed to do.

Tenth, it may be necessary, but not always, to give as additional treatment, after the anatomical defect has been specifically treated, a certain amount of stretching and moulding of the parts.

Eleventh, owing to the close personal relations of physician and patient, personality has a powerful influence on prognosis.

Twelfth, too much emphasis cannot be placed upon the uselessness and injurious effects of over and misapplied treatment.

All of the above have a positive bearing on prognosis. The osteopath should study his technique well. He will find that it gradually changes and improves from year to year. In a word, as he gains in experience he will become more skillful by giving careful attention to the development of the sense of touch, by noting the resistance of the tissues, and a score of details that are very hard to describe but the sum total of which determines and indicates the successful osteopath.

Another practical point that bears upon prognosis as well as upon the health of the osteopath is the manner of giving treatment. First, the height of the treating table should correspond to the height of the practitioner. The table should be made for the practitioner and not the practitioner fitted and warped according to a certain table. Second, give part of the treatments on a treating stool. Here there is greater freedom of movement on the part of the patient, hence greater and more effective leverage can be obtained. Suit your treatment to the patient, not your patient to the treatment. Third, make your weight count for energy expended in the treatment. As soon as one set of muscles become tired substitute another set, e. g., the back muscles and the arms, the arms and the hands. Fourth, whenever possible substitute the weight of the patient for expended energy. Fifth, when lifting keep the spinal column straight; do the bending of the body at the knees. Hence a better treatment and a more favorable prognosis, and besides that new occupation-neurosis, the **"osteopathic back,"** will be materially lessened in both severity and frequency.

OSTEOPATHIC TECHNIQUE

The technique of treatment is, in a sense, a personal factor, for it is a well known fact no two osteopaths treat just alike. Nevertheless, the principles of technique are constant and universally applicable, and he who applies them with specificity manifestly secures the best results, and exhibits a technique that is finished and characteristically osteopathic. General manipulations are not essentially osteopathic, although by employing them a few definite results may be obtained; still such technique should not be classed as distinctive osteopathic therapy. Every case is a law unto itself and must be studied individually in order to be able to understand it perfectly. So much depends upon the ability of the osteopath in the treating of a case, that in order to meet the indications intelligently he must have command of the various anatomical details of the body, not only in his mind but upon his finger tips.¹

The **sense of touch** should be very acutely developed and this requires months of persistent, practical experience. A carefully educated sense of touch is the key-note to both osteopathic diagnosis and operative technique. From the very nature of the osteopathic conception—the physical body viewed as a mechanism whose disordered or diseased conditions demand anatomical readjustment—it is imperative that a delicate and educated sense of touch be acquired in order to logically and successfully apply its tenets. Proficiency means not only being able to note certain small physical irregularities, and various degrees and areas of muscular contractions, and variations in body temperature, but the extent and state of vital resistance, that is, tissue condition, and the feeling of organic resistance, e. g., the heart, lungs, liver. These are the special features wherein osteopathic fingers detect disease causes and traces. To know the difference between normal and abnormal structural deviations and distortions, as well as organic changes, requires an accurate, detailed knowledge of anatomy and pathology with a systematic daily education of the sense of touch; but to realize, appreciate and know by tissue resistance feeling that nutritional condition is improving requires much more practical experience.

Thus two very practical points should be taught to and thoroughly impressed upon every osteopathic student: First, **the sense of resistance of the tissues**. This gives us an absolute clue to the vitality of the patient. As has been stated, there is a vast difference between the

1. See Ashmore's Osteopathic Mechanics.

feel, the sense of resistance, of normal and abnormal tissues; for instance, a normal muscle and a contracted muscle, a normal liver and a congested liver, a normal intestine and a prolapsed intestine and these differences comprise innumerable gradations.

Second, **the receptivity of the patient to treatment.** This is dependent upon the vitality of the tissues. The sense of resistance to touch gives us an important diagnostic clue; the receptivity of the patient to treatment tells us much as to prognosis. After a few treatments the receptiveness will be positive or negative; that is, the patient is, or is not, responding to treatment. Consequently the receptivity of the patient usually tells much as to the state of nutrition.

Definite principles should be followed when applying the technique, for the osteopathic lesion is a "structural perversion," thus indicating mechanical readjustment for its correction. The time is coming when the technique will be taught graphically and mathematically. This would not be a difficult thing to do, and it could not but prove invaluable aid to the student. He can then the more readily and comprehensively grasp the principles involved. To resolve and illustrate manipulative readjustment to and by the principles of mechanics would add considerable to osteopathic development. For example, how nicely the correction of certain innominate maladjustments illustrates the principle of the wheel and axle. Vertebral and rib displacements when readjusted make application of the principles of the simple machines. We are gradually approaching a more comprehensive understanding of the physiologic movements of the spine and of the etiologic role of muscle tension. This is part of the foundation work. Great care must be exercised in correlating this data with the individual case, for in therapy we are dealing with abnormalities—not alone normal physiologic changes. If our distinctive dynamics and therapeutics were taught in this manner the average osteopath would be more specific and comprehensive in his work and as a consequence more scientific. And consequently the principles involved in each and every case would stand out clearly. Hence diagnosis would be more exact, routine pommeling discarded, and better all around technique executed.

Two general rules are applicable to all dislocations, whether partial or complete: 1. Exaggerate or increase the dislocation. This is to relax the tissues about the dislocated articulation and to disengage the articular points that have become locked. 2. Reduce the dislocation by retracing the path along which the parts were dislocated. Hence to **correct a lesion**, for example, a vertebral lesion: (1) Exaggerate the

lesion. (2) Place the fingers of the hand that are not employed in exaggerating the lesion over the extended portion of the lesion. (3) Extend the region that is flexed when the lesion was exaggerated. (4) When the lesion is being extended produce traction and slight rotation of the region. (5) At the same time extension, traction and rotation is being produced push in upon the extended portion of the lesion. To this might be added for sake of clearness and greater assurance of success: (a) Be positive the focal point absolutely corresponds to the lesion, or else most if not all of your effort will be useless. (b) Just before reaching the maximum of exaggeration have your fingers correctly placed for the readjustment, and at the very moment of maximum exaggeration or just a fraction of a second prior begin to correct or readjust, or else you will lose the vantage gained and the operation will probably be a failure. (c) The general traction and rotation are to aid in unlocking the lesion, not to readjust as some may think. Inhibiting and releasing the soft tissues, such as spasms, contractions and contractures of muscles, and stretching thickened and adherent ligaments is very important preliminary work. Then, next to securing exact leverages an essential point is to maintain the release or exaggeration until the readjusting step is incepted. In other words, coordination of all factors is the desideratum. The lack of this is the cause of many failures. Hot fomentations frequently assist in relaxing irritable and spastic soft tissues. This, however, is but a preliminary measure. All rough handling, needless snapping of parts, and excessive rotation and stretching are not only apt to tighten the lesion more, shock the system and irritate the parts, but it may be absolutely dangerous.

It should not be forgotten that the osteopath includes many measures in his treatment of various diseases, as nursing, dieting, hygiene, sanitation, hydrotherapy, antidotes, antiseptics, etc., and does not depend upon readjustive manipulation alone, although correcting disordered anatomical structures and perversions are paramount in the treatment.

The General Treatment.—A general treatment but accentuates the ignorance, in a majority of cases, of many so termed osteopaths. It is a deplorable fact that there is a tendency among some osteopaths to give general treatments in every case presented. The only explanation of such a procedure that one can think of is a lack of conception as to what osteopathy really is. To give a general treatment in every case is not only actually detrimental to the patient but it is the height of folly on the osteopath's part, for it gets him into a slovenly habit of procedure

from both scientific and curative points of view, besides giving the outside world an impression that osteopathy is but little different from massage and Swedish movements instead of skillful, mechanical engineering of the human body. But a "general treatment" is not to be confused with definite attention to be a series of more or less interrelated lesions. The essential point is to normalize the body when and where distinctly indicated and after a skillful manner.

A general treatment, broadly speaking, should be given only under three conditions: (1) Constitutional diseases that are to be treated symptomatically. (2) Certain anemic cases. (3) When one is ignorant of the real cause of the disease. Each of these conditions is self-evident why a general treatment should be given. A fourth might be added, for those individuals who think they are not getting value received unless they are treated from head to foot. Such patients are usually ignorant of the philosophy of osteopathy and it is the osteopath's duty to teach them differently.

The general treatment consists in stretching the spinal column from the atlas to the coccyx and relaxing all contracted muscles along both sides of the spinal column, besides giving special treatment to the cervical region, between the scapulæ, the splanchnics and internal and external rotation of the legs. It is no wonder that fake osteopaths do cure a case occasionally. They are quite certain to correct some disorder by pulling and hauling a patient around in such a manner. Still on the other hand they are very likely to do injury to the patient. Those who claim that no injury can come from osteopathic treatment are mistaken. One can injure a person by treatment if he is not careful. It does not stand to reason that the most delicately constructed mechanism should stand any amount of manipulation and misdirected force that may be given it.

Positions of the Patient and Physician in Treating.—The position of the patient when a treatment is given depends altogether upon the affection to be treated. Probably about one-half of the cases can be treated to advantage upon a table, the remainder sitting on a stool. Many osteopaths treat nearly all their patients upon a table. It is much better to change back and forth, because to correct a certain disorder may be hard upon the table, but will be comparatively easy when the patient is on a stool, and *vice versa*. Besides, constantly changing back and forth rests a physician greatly.

Learn to treat in various positions, because it will be impossible to have all cases assume a certain position when being treated; and especially in treating acute cases one is obliged to suit his treatment to

the patient and not the patient to the treatment. There is also a tendency for one to get into slovenly habits of treating when patients are all placed practically in one position, and certainly one cannot treat all cases in one position to equal advantage. Also learn to treat as well with one hand as the other. Many times one will be in such positions that equal use of either hand will be required. Carefully educate the sense of touch in both hands.

Another point should receive consideration: learn to shift the strength exerted in treating from one set of muscles to others. For example, when one is standing for a long time he will continually shift his weight from one limb to the other. In the same manner in treating use the strength of the hands awhile, then the arms, then the muscles of the back, then the weight of the body, etc.; all in such a manner that there is a constant change by utilizing certain groups of muscles for the same work, as well as utilizing the weight of the body of both physician and patient to advantage. It rests a physician greatly and thus allows him to perform a maximum amount of work with a minimum amount of strength and labor.

It is frequently an advantage to the physician to treat upon the nude skin, thus preventing the fingers from becoming tender. Gowns can be easily made that open down the back so that the patient does not have to disrobe.

The Neck and Head.—In the treatment of the neck the patient may assume the sitting posture or lie flat upon the back. The latter is preferable, as then one has complete control of the neck and head. Absolute control of a part is always necessary and when this is secured the dangers are reduced to a minimum, provided always that reasonable discretion as to the amount of strength, is used. Before correcting the various deviations of the cervical vertebræ it is usually best to thoroughly relax all the muscles, superficial and deep, about the field of operation. In relaxing muscles three methods may be employed. The muscle may be firmly grasped and manipulated until relaxed, or a firm pressure may be exerted upon the muscle and thus inhibit its nerve force until the muscle relaxes, or the muscle may be longitudinally stretched. The second method is comparatively slow and is usually given in acute cases where the patients are so weak and exhausted that they cannot stand any severe manipulation. This method, however, has certain advantages when employed as a preparatory step in interosseous adjustments, though steady traction accompanied with slight rotation, if precisely localized, has many advocates.

In relaxing muscles by manipulation, grasp firmly the belly of the muscle and draw outward on the muscle several times until it relaxes. If the patient is sitting, place one hand upon the head of the patient or about the chin in such a manner that complete control of the head is maintained throughout the procedure; then with the fingers of the other hand upon the contracted muscular fibres a manipulating or kneading of the muscle can be given. It is best to flex the neck and head to the side where the contracted muscles are, so that a better hold of the muscle may be maintained; then by a series of flexions and extensions with manipulation of the contracted muscles outward, results can be readily obtained. When the patient is lying on the back the physician may stand to one side of the patient's head and with one hand on the forehead of the patient and the other hand around the opposite side of the neck, a rotary motion of the head and neck, which is equal to flexion and extension in the sitting posture, may be given by the hand on the frontal region while the other hand relaxes the muscles; or the osteopath may stand at the head of the patient and with either hand on the side of the head and neck of the patient a series of rotary movements of the head and neck may be given with manipulation of first one side of the neck and then the other; the hands and fingers being placed in such a manner that when the fingers of one hand are relaxing the muscles on its side the other hand is executing the movements of the head and neck, each hand continually alternating in the work. This latter method requires some practice in order to do the work readily and successfully, for quite a variety of movements are required.

In the former method after one has worked on one side he is obliged to change to the other side and go through the same process. Movements may also be given to stretch the contracted muscles, thus overcoming the contraction and producing relaxation of the muscles.

After having relaxed the muscles over the field of operation, correcting the vertebræ will generally be easier to accomplish. In readjusting an atlas it matters but little whether the patient is sitting up or lying down. A firm hold of the atlas can be gotten in either instance. In correcting the middle and lower cervical vertebræ it is best to place the patient upon the back.

In correcting dislocations, as heretofore suggested, two general rules should be followed: (1) Exaggerate or increase the dislocation. This is to relax the tissues about the dislocated articulation and to disengage the articular points that have become locked. (2) Reduce the lesion by retracing the path along which the parts were dislocated. One can readi-

ly see that a dislocated ball and socket joint could be reduced only by the dislocated bone retracing the path by which it left its socket, for the capsular ligament would at once prevent its returning to the socket by any path other than that taken when dislocated. This applies to all dislocations to a greater or less extent.

After locating the exact position of the abnormal vertebra the first rule is applied, i. e., exaggerating the lesion by flexing the head in the opposite direction to which the vertebra is dislocated. Then with one or two fingers placed firmly upon the side of the vertebra in the direction dislocated, so that when the proper time comes the vertebra may be pushed or slightly rotated back into its normal position, with the other hand produce flexion of the neck, so that the angle of flexion is exactly over the involved vertebra; next produce slight traction, so as to be sure that the articular points will be disengaged; and then with rotation and extension of the head to a normal or upright posture, at the same time pushing in on the disordered vertebra, are the movements to be executed in reducing a dislocated vertebra. It takes considerable practice to be able to correct a vertebra and to know when it is corrected. The amount of force applied varies greatly in different cases. Cases of recent subdislocation require but little force unless there is marked spasticity of tissue, while in long standing cases many times the amount of force required is about all that one wishes to exert. As a rule in many chronic cases it is better to give a series of preparatory treatments in order to reduce muscle fibrosis and thickening of capsular ligament. Remember that often it is a slight rotary movement or twist given that aids the most in executing rule second. No matter to what position a vertebra is rotated or side-bent the principles applied are the same in each case.

Be very careful when flexing, extending or rotating the neck that too much strain is not brought to bear upon the ligaments. Some osteopaths seem to take delight in rotating and flexing the neck to a great degree. It is a dangerous procedure and moreover does not accomplish anything in particular. It should be kept in mind that osteopathic treatment is scientific and not a number of general movements of various regions of the body. Locate the lesions exactly and then a specific treatment can be given in every instance. To illustrate the treatment according to the preceding rules we will assume that a certain cervical vertebra is anterior, say the fourth cervical. This means that there is an interosseous lesion between the fourth and fifth. The inferior articular processes and facets of the fourth have slipped upward and forward on

the opposing facets of the fifth. First, hyper-extend the head in such a manner that the fulcrum comes exactly over the displaced articulating planes, thus throwing the fourth vertebra still more anterior, or in other words, exaggerating the lesion or increasing the space anteriorly between the fourth and fifth cervicals, so that when the head is flexed forward and pressure is exerted upon the anterior part of the vertebra (body or transverse process) the vertebra will have room and release enough to occupy its normal position. Second, when the head is hyper-extended place a finger anterior to the transverse process of the dislocated vertebra and with the other hand around the head, that is producing the hyper-extension, throw the head forward with slight traction and rotation and at the same time push posteriorly quite strongly upon the dislocated vertebra. Follow out the same principles in all cases, no matter in which way the vertebræ are deranged.

There are several methods of applying the underlying principles of adjustment. Relaxation and leverages may be secured in various ways. Preciseness, expeditiousness and skillfulness can be attained only by considerable personal experience.

In cases where the lesion is between the skull and atlas have the patient sit on a stool with the back part of his head against your chest, and reach around the head with one hand under the chin; then with the other hand around the transverse processes of three or four upper cervical vertebræ pull the spinal column toward the median line, while at the same time lifting up on the skull with the other hand and throwing the skull toward the median line. The object of lifting up on the skull is to relax and disengage the articulations, by inhibition, traction and rotation, between the occipital bone and atlas. This is one method applicable to the various lesions of the occiput, which are of frequent occurrence.

In treating the **pharynx**, **tonsils** and **larynx**, outside of correcting spinal lesions, an anterior treatment to these organs is very effective. Examine the deep muscles beneath the angle of the jaw when the pharynx and tonsils are involved; and when the larynx is affected note the condition of the muscles on either side of the larynx. After locating deeply seated contracted muscles in the region of the angle of the inferior maxilla place the fingers over the contracted tissues, and then by a downward, inward sweeping motion toward the median line the muscles may be readily relaxed. When treating the larynx relax the tissues on both sides by an upward, inward movement. These treatments are very effectual when applied directly to the disordered tissues.

Attention should also be given to the lymphatics. In simple infections treat the glands very lightly but attempt to break down the surrounding edematous barrier. Release all the tissues down to and including clavicles, first ribs and pectoral and axillary regions.

To treat slight lesions of the **inferior maxillary** articulation, stand at the head of the patient when he is lying down and hook the fingers about the jaw just in front of the angles, and with the thumbs over the bridge of the nose have the patient open the mouth while considerable force is exerted against his effort. This reduces any slight dislocation of the inferior maxilla. When the jaw is completely dislocated place a piece of wood or hard substance between the molars and exert pressure upward and backward on the chin. If the dislocation is bilateral work on one side at a time.

The object of treatment to the **face** is to stimulate or inhibit points of the fifth nerve that come near the surface (see neuralgia of fifth nerve). While the patient is lying flat upon the back carefully stimulate these various points, especially the supra-orbital and nasal, with a downward and outward movement, or inhibit as indicated.

In treating the **scalp** relax the muscles over the scalp thoroughly. This is secondary treatment to correcting the innervation to the scalp at the upper four or five cervical vertebræ.

In cases of pharyngitis, tonsillitis, croup, hay fever, etc., an effective local treatment may be given through the **mouth** upon the soft and hard palate. Introducing a finger into the mouth clear back upon the roof of the soft palate, and with a downward and backward sweeping movement from the median line on either side toward the tonsils, considerable relief can be given the patient. This treatment relaxes the tissues, relieves the congestion, and gives a stimulating treatment to the local nerves. A treatment of the same nature may be given over the hard palate to affect the palatine nerves, especially in hay fever, when the itching of the palate and sneezing are extreme. In cases of young children it is best to protect the finger by wrapping a piece of cloth around it.

An osteopath should never give a manipulation or movement unless he understands why. Just as soon as one gives general imitating movements, from that moment his work is not that of a scientific osteopath, but of a Swedish movement curist and masseur and a poor one at that. The osteopath's work is to locate the anatomical derangement and correct it, as a mechanic would adjust any disordered mechanism. General treatment amounts largely to naught, although in some few instances it is of benefit.

To give a detailed description of the treatment of all lesions that may be found in the cervical vertebræ would be impossible in this sketch; only a general survey of the work can be given. Each case calls for special treatment, but the same general principles are applicable in each case. If there is any one thing that should be eliminated from osteopathic treatment it is those mechanical routine movements of rotating, flexing, extending, and various Swedish-movement-massage-like manipulations that certain osteopaths give in each and every case. It shows that they are imitators and do not have a correct conception of osteopathic therapeutics. True it is, that routine movements will have stimulating and other effects upon the system. But does the body require such treatment? Is it lack of exercise on the part of the patient? If it is, then let the patient exercise himself. You do not want to lower yourself to be a mere "engine wiper," or an exerciser. If it is not the lack of exercise and the system is in need of certain treatment, then seek the cause and apply a specific treatment. Do not hide behind generalities.

The Ribs.—In correcting dislocated ribs many methods may be employed, but all are subject to the same principles as given under the treatment of the neck and head.

One of the best methods to correct typical ribs is to have the patient upon the side with the side of the affected ribs upward. Find out exactly the nature of the dislocation, i. e., what is the relation of the dislocated rib to the other tissues. Note whether the rib is upward, downward, inward or forward, locate exactly the dislocated rib. Then, while standing back of the patient, place your fingers upon both ends of the rib. Place your fingers in such a manner that when the proper time in the procedure arrives, all that will be necessary will be to push the ends of the rib into their articulations. For instance, if the rib is raised anteriorly and lowered posteriorly, you will place the fingers on the sternal end, above the affected rib and the fingers on the vertebral end, below the rib, so that when the rib has been released from its abnormal position it may be slipped into normal position. After having placed the fingers in the exact position necessary, have an assistant take the arm and draw it obliquely across the face, while at the same time the patient takes a forced inhalation. The object of drawing the arm across the face and the deep inhalation is to exaggerate the lesion—to draw the ribs out of their locked position—so that the fingers upon either end of the rib may push the rib into normal position. Drawing upon the arm raises all the upper ribs as well as the dislocated typical rib, principally by the use of the serratus magnus; also inhalation has an effect to throw the rib out-

ward and upward and thus away from its articulation. Thus after the lesion has been increased sufficiently to loosen the rib from its abnormal position, the arm is relaxed, the patient exhales, and the fingers upon the ends of the rib correct the dislocation. This treatment is used to the greatest advantage when there is a dislocation of a typical rib; it can be given while the patient is lying down or sitting up, although the former position is preferable.

An excellent method, when the **sternal end** of the rib is dislocated is to have the patient sit upon a stool with his back toward the physician; then by placing the knee in the back (while standing up, or easier still for the physician to sit upon an operating table back of the patient) over the vertebral end of the rib so that the rib may be held rigid posteriorly, reach around with one hand over the dislocated end of the rib and place the fingers upon the rib in the direction dislocated; so that when the rib is sufficiently released from its abnormal position it can be readily pushed into place; then with the other hand under the axilla of the arm on the affected side, pull up and back on the shoulder, so that the rib may be pulled away from its sternal articulation; and at the same time have the patient take a deep inhalation so as to aid in throwing the rib outward, upward and away from its sternal attachment; then when the end of the rib has been released sufficiently, relax the hold underneath the axilla, have the patient exhale, and slip the rib into its normal position by the fingers over the end of the rib. This is an excellent method. It is easy to give and does the work admirably.

Practically the same procedure may be gone through when the **vertebral end** is dislocated, by changing your position to the front of the patient, but there is danger of the knee slipping off from the sternum during the operation and injuring the ribs. Several other treatments may be given to correct dislocations of the vertebral ends of the ribs. For example, while the patient remains sitting the osteopath stands in front of the patient and reaches around both sides upon the angle of the ribs; then with an outward and upward movement of the fingers upon the angle of the ribs, they are pulled away from their locked position and allowed to slip into normal articulation. This treatment is applicable only when the ribs are dislocated downward, but it is one of the best treatments for such cases.

Another method oftentimes employed in correcting dislocations of the vertebral end of the ribs is to have the patient lie flat upon the side with the affected side upward; then by flexing the arm on the forearm and placing the elbow against the chest or abdomen reach over the pa-

tient upon the angle of the dislocated rib and pull it away from the vertebra; when it is pulled away from the spinal column sufficiently, push upward or downward on the angle of the ribs, as the case may demand. The elbow placed against you gives complete control of the patient and aids, by your weight, in throwing the rib upward or downward.

A treatment somewhat like the preceding one which is commonly employed, is to reach underneath the patient's upper arm, when he is lying upon his side, with the arm extended upward across the face; then by placing the fingers of the hand underneath the patient's arm over the angles of the affected rib or ribs and reinforcing the hand by the fingers of the other hand an upward, outward and rotary movement can be given the ribs, which pulls them out of their abnormal position and allows them to return to their normal articulations.

An effectual treatment to spread and raise the upper ribs is to have the patient flat upon the back, and with the fingers of one hand underneath the angles of the ribs and the other hand upon the elbow of the patient's arm of the same side throw the patient's arm across the chest transversely and bear down upon the elbow, at the same time spring upward and outward on the angles of the ribs with the other hand. By throwing the arm across the chest and bearing down upon the elbow a strong leverage can be obtained upon the upper ribs, especially those between the scapulæ. This treatment is very efficacious in certain lung and heart diseases.

Still another method of adjusting ribs is to have the patient flat on his face upon an operating table with the arms hanging down on both sides of the table and a small pillow or folded blanket beneath the upper part of the chest; then standing beside the table, or better still, with one foot upon a low stool and the knee of the other limb upon the table in such a manner that one is directly over the patient's dorsal region one is then in a position to have full control of the vertebral end of the ribs. If the ends of the ribs are displaced downward, placing the thumbs over the angles of the ribs and pushing upward and outward on the angles, the ribs can be very readily crowded into position. If the ribs, especially between the scapulæ, are dislocated in any direction, they may be quite readily corrected by placing the hand over the shoulder posteriorly and throwing it outward and upward and away from the spinal column in such a manner that the ribs are pulled away from the abnormal position; then upon relaxing the hold upon the shoulder with the one hand, the fingers of the unemployed hand may push upward or downward, as the occasion requires, on the angles of the affected side so that the ribs may be slipped into place.

Many times one is obliged to treat the ribs of one side as a whole. In such instances the ribs are almost invariably thrown downward except on one side of scoliosis of the dorsal region. Several methods may be employed to raise the ribs. Probably the best method is to have the patient upon the side and with one hand upon the angles of the ribs and the other hand holding the wrist of the upper arm of the patient, an upward lifting movement is given both upon the angles of the ribs and upon the arm of the patient while the patient inhales. The work upon the angles of the ribs is to raise the ribs directly; the work upon the arm is to raise the ribs indirectly, principally by the use of the serratus magnus. Another effective treatment is to have the patient upon the back and with one hand over the anterior ends of the ribs and the other hand over the angles of the ribs an upward movement is given them by springing the ends of the ribs toward each other and by strong inhalation on the part of the patient. This treatment is most effective where the false ribs are at fault and especially in case of hemiplegia. While the patient is upon the back an assistant may take hold of the arm and draw it upward over the head of the patient, producing considerable additional upward tendency of the ribs, and the physician giving the same treatment of the ends of the ribs as before; or the physician may take an arm in one hand and raise it above the head of the patient and with his other hand around the angles of the ribs, and the patient inhaling deeply, the ribs may be raised.

A treatment used a great deal in raising the ribs as a whole is to have the patient sit upon a stool, and reaching around the patient from the front, place the fingers upon the angles of the ribs and raise them upward on both sides at the same time. This treatment can also be given by standing behind the patient and reaching around upon the anterior ends of the ribs and lifting upward while the patient aids you by deep inhalation. Remember that many times the ribs are drawn downward by contraction of the muscles, due to atmospherical changes and slumped postures. One should begin at the upper ribs in all treatments where the ribs are to be raised, as a whole, and work downward.

To correct the **first** and the **floating ribs** a different treatment has to be given than the foregoing.

An **upward displacement** is the most common lesion of the **first rib**. To correct such a dislocation, have the patient sit upon a stool and with one hand pull the head to the opposite side in order that the lesion may be exaggerated by traction of the lateral muscles of the neck (principally the scaleni) upon the rib; this disengages the rib from its

abnormal position; then with the fingers of the other hand upon a point midway of the ends of the rib, exert a downward pressure at the moment the extended head is relaxed describing a short arc. But don't relax head until readjusting pressure is exerted upon rib. If the patient is unable to sit up, and it is not best to give the foregoing treatment, have the patient flat upon the back, with one hand take hold of the arm on the affected side and pull down and out upon the shoulder so that the rib may be somewhat drawn away from its articulation and released from its position; then with the fingers of the other hand upon the center of the rib, or its highest point, press downward when the hold upon the arm is being relaxed. Correction of an upper displacement of the first rib is an every day occurrence. **Downward dislocation of the first rib**, is rare. To reduce this dislocation, place the thumb beneath the vertebral end of the rib, and with the other hand lift up strongly on the shoulder from beneath the axilla, at the same time exerting pressure upward with the thumb on the end of the rib.

The **floating ribs** may be dislocated obliquely downward, or the free end of the rib may be caught underneath the end of the rib above. In either case, in order to correct the displacement, place the patient upon the back with the thigh on the affected side flexed upon the abdomen so that the tissues about the field of operation are relaxed; then bear down carefully but firmly over the free end of the rib with the fingers until one finger can be hooked underneath the end of the rib; then with the other hand over the vertebral end of the rib, have the patient take a deep breath, at the same time springing the ends of the rib toward each other, thus relaxing the rib from its locked position; then have the patient exhale quickly and at the same time spring the rib into its normal position. It oftentimes requires repeated trials, especially in stout persons, and quite often the operation is painful to the patient. It is necessary that one should understand this operation thoroughly, as it is one of the most common treatments in osteopathic practice. The floating ribs are very liable to dislocations and may be the cause of many pains in the side, disturbances of the vessels as they pass through the diaphragm and inflammation in the iliac region. A palliative treatment may be given the floating ribs by having the patient lie flat either on the back or on the side; then place the hand near the vertebral end of the ribs and raise them upward while the patient takes a deep breath.

Treatment of lesions between the **manubrium** and **gladiolus** are best given by placing the patient with the face downward upon the operating table, and having the articulation of the manubrium and

gladiolus just over the edge of the table. An assistant should hold the patient firmly upon the table while hyper-extension or flexion, as the case may require, with traction, is exerted upon the head, neck and shoulders, and manipulation of the articular points is given to reduce the dislocation. The same principles are employed here as in correcting lesions elsewhere.

Correction of the **cartilages along the sternum** is very easily accomplished by having the patient sit upon a stool and the osteopath standing behind the patient places a knee in the back; then reaching around with one hand over the cartilages and the other hand underneath the axilla, execute the same movement as given in correcting dislocations of the sternal ends of the ribs.

A treatment sometimes used to release a depressed condition of the **cartilages** of the **false ribs** is to stand behind the patient while he sits upon a stool and reach around him with fingers underneath the cartilages and raise them upward as he inhales. By having the patient take a deep breath and then exhale quickly while the fingers are over the cartilages a much better grasp of them can be obtained. This treatment should be carefully given, as there is danger of tearing the cartilages loose from the ribs.

The Dorsal and Lumbar Spinal Regions.—Here, as in other regions of the body, before an attempt is made to correct the vertebrae the muscles should be thoroughly relaxed. One of the easiest methods to relax the muscles is to have the patient lie upon the side, and then by standing in front of the patient and reaching over him with the fingers upon the contracted muscles an upward and outward rotary manipulation is given; or the patient may sit upon a stool while the physician stands in front with the arms around the patient and the fingers over the contracted muscles manipulating them upward and outward. Another very easy method is to stand behind the patient while he sits upon a stool and place a thumb over the contracted fibres, with the other hand underneath the axilla lifting the shoulder upward and backward so as to favor a relaxation of the muscles, while the thumb manipulates them.

In relaxing the **muscles** of the **lumbar region** have the patient on the side upon the table; then flex the thighs upon the abdomen with your weight against the knees so as to control all movements of the patient; reach over the patient with the fingers upon the contracted tissues and manipulate them outward and upward on either side until they are relaxed. A method sometimes employed to relax the muscles of the dorsal, lumbar and sacral regions is to place the patient flat on his face

upon the table; then by pushing up on the muscles from above downward with the flat of the hand they are easily relaxed. This treatment should be especially given when the patient's muscles are contracted by atmospheric changes and from standing in one position for a long time. When the muscles of the back are contracting they draw downward and many times draw the ribs with them, as well as tensing the tissues over the sacral foramina and obstructing or irritating the sacral nerves. By using the modern table longitudinally relaxing, or stretching, the lumbar and dorsal musculature saves considerable strength and effort of the physician.

To correct **vertebral lesions** of the **dorsal region** the same rules should be followed as in treating lesions of the cervical vertebræ. Treatments may be given with almost equal ease whether the patient is lying on the side or sitting up.

To illustrate the treatment of the dorsal region when the patient is lying down, assume that there exists a lateral lesion, combined rotation and sidebending, between two vertebræ; if the lesion is below the seventh dorsal use the legs as a lever, and if the lesion is above the seventh dorsal use the head and neck as the lever. Have the patient lie upon the side toward which the lesion is pronounced, either reach under the neck or around the limbs with one hand, and with the other hand upon the lesion bend the head and neck or the thighs in such a manner that the angle of the flexion is directly over the break in the spinal column; this is to exaggerate the lesion; then by lightly lifting up on the neck or limbs and with a slight rotation of this lever the flexed parts should be extended, at the same time exerting pressure with the hand over the lesion in such a manner that the vertebra is pushed forward toward its normal position.

Practically, the same treatment is given when a patient is sitting up, with the exception, of course, that the limbs cannot be used as levers. Lesions of the dorsal region or even the lumbar region can be corrected while the patient is sitting up. By this method considerable lifting is done away with. In fact, the weight of the patient can be used to great advantage by substituting it for one's strength. No matter in what direction the lesion is, the physician reaches around the patient's shoulders so that he just holds the weight of the patient from falling to one side or the other; thus with one hand manipulating the lesion the other arm is around the patient guiding the weight of the body in flexion, rotation and extension. It is not always necessary to lift up on the patient but just let the weight of the patient act as strength applied to the power arm. Always make it a point when working upon dislocated vertebræ

in any region that just as soon as one has obtained a slight movement in the lesion **do not attempt** to correct it any more for the time being. A slight movement toward the right direction may be all that is necessary to relieve the ill effects of the lesion. In fact it might be impossible to get the lesion anatomically correct as the shape of the vertebra may have conformed in a greater or less extent to its abnormal position.

An excellent method to correct the various combinations of rotation and sidebending of the third to ninth dorsals is to have the patient sit up with the physician either sitting or standing, depending upon height of seat, back of the patient. Have the patient lean back until head is supported upon shoulder of physician, and the anterior and posterior musculature of torso, abdomen and pelvis are thoroughly relaxed. Reach around the patient's chest with one arm, the hand of which is placed beneath the axilla. The thenar eminence of the other hand is placed upon the posteriorly prominent transverse process of the lesioned segment. Then with careful hyperextension, traction, and rotation and sidebending of the torso, the anchorage is released, care being taken that localization is exact; this moment of coordination is accompanied with a thrust of the thenar eminence upon the transverse process. Relaxation, leverages and thrust must be precise and thoroughly coordinated.

To reduce vertebræ that are **deviated anteriorly** in the dorsal region, especially between the scapulæ, is often a hard matter. A satisfactory method is to stand behind the patient, while he is sitting upon a stool, and reach around both sides of him upon the sternal ends of the ribs corresponding to the anterior vertebræ; then have the patient relax with the head upon the chest, and at the same time take a full inhalation while pressure is exerted posteriorly upon the sternal ends of the ribs. The object of this method is to pull back the rigid ribs (the lungs being filled with air) which are attached to the anterior surfaces of the transverse processes of the vertebræ, and thus upon the anterior vertebræ pushing them posteriorly; all of the muscles of the body being quite passive and the head relaxed on the body, a separation of the vertebræ is accomplished, thus favoring a crowding posteriorly of the sub-located vertebræ.

To correct **vertebræ** of the **lumbar region** is on the whole much easier than in the dorsal region. Here the legs can be used as levers to great advantage. By the same method of flexion, rotation, and extension, as employed in the dorsal region when the patient is lying on the side, the result can generally be obtained.

Sidebending is the most common single lesion of the lumbar vertebræ, though there may be some rotation at the lumbo-sacral juncture. Occasionally malformation is found at the fifth. To correct the lumbar lesions the following method is often used: place the patient upon the side of the rotation or sidebending with knees flexed, buttocks well back and entire spinal column straight. Next bring torso and head, with spine straight, well forward to edge of table. Then with hand upon ilium tilt it slightly forward, and with other hand upon shoulder rotate entire spine, including head, so that spine is locked and the point of localization exactly corresponds to the lesions. This brings the spine back to nearly a straight position. Next, after a moment or two of tension-relaxation, either thrust back upon the shoulder or forward upon the ilium. Again exactly coordinating localization, relaxation and leverages is the key of the method.

The Abdomen.—Direct treatment of the abdomen is given in many diseases of its organs. The patient should lie flat upon the back, the legs flexed upon the thighs and the thighs flexed upon the abdomen, so that the abdominal muscles will be thoroughly relaxed; and then the various organs of the abdomen can usually be manipulated with ease. Remember that in many diseases of the abdominal viscera the treatment of the splanchnics and vagi will be the primary treatment rather than direct abdominal treatments.

In treating the **liver** directly, the ribs over the liver should be raised and separated, and the lower border of the liver manipulated directly, as considerable therapeutic results can be obtained, particularly when the liver is congested and enlarged. Manipulation of the **bile ducts** is very essential in many liver diseases. The treatment relieves congestion of the ducts and removes any collections of mucus in the ducts due to the congestion, as well as freeing obstructed flow of bile. The manipulation should be a deep, downward one, directly over the path of the ducts (from about the cartilage of the ninth rib to the duodenal orifice of the biliary tract, the latter being about one and one-half inches diagonally downward and to the right of the umbilicus). Be very careful when first manipulating, and bear down lightly over the duct so that the structures superficial to it may be relaxed as the duct is deep below the surface of the abdomen. Usually the gall-bladder can be emptied by light pressure over the skin above the cartilages of the eighth, ninth and tenth ribs. The light manipulation acts, probably, by way of the spinal segment, as a stimulus to the dilators of the sphincters of the gall-bladder. Very likely through reciprocal innervation relaxing the sphincter of the bile duct will contract fibres of the gall bladder.

Manipulation of the **stomach** has considerable effect in strengthening its circular fibres and toning up the coats in general. In cases of gas formation, the gas in some instances may by manipulating over the stomach, be forced through the cardiac or pyloric orifices.

Direct treatment over the **spleen** by raising the eighth, ninth, tenth and eleventh ribs of the left side is effectual in congestion and enlargement of the organ.

In thin subjects the **kidneys** can be treated directly by pressing down carefully but deeply over the kidneys, and lightly crowding them upward and outward. This treatment also has some effect in relieving contracted tissues about the renal vessels and kidneys.

Treatment to the **intestines** through the abdomen is an effective treatment. In the various obstructions to the intestines, constipation, etc., the direct work is essential. Treatment of the intestines is to correct any abnormal position that they may have assumed, to relieve constrictions of the gut caused by contracted tissues, to relieve impactions and adhesions, to increase peristalsis and to tone up the intestinal coats in general. The treatment consists in a manipulation of the intestines, especially in the right and left iliac fossæ, and the pelvic colon, ascending colon and duodenum, as impactions and prolapses of the gut are more liable to occur at these points than in any other locality. In manipulating the intestines, work for a definite purpose and not give a general kneading treatment unless the walls of the abdomen and the coats of the intestines are weakened; in the latter case the spinal treatment is the primary one. In treating over the iliac region, draw upward and inward on the folds of the gut. It is claimed by some authorities that nerves pass from the cutaneous surface of the abdomen directly to the intestine by way of the peritoneum; if such is the case, manipulation of the abdominal walls would have direct effect upon these nerve fibres. The abdomen may be treated when the patient is sitting up, but the treatment is not satisfactory. (See Prolapsed Organs).

The Pelvis.—The treatment of the pelvis is easy, but the difficult work is in making a diagnosis of the position of the pelvic bones. The pelvis is especially apt to become deranged by jars and falls. Some of the most successful osteopathic results have been obtained in correcting the pelvic region.

To relax the muscles over the pelvis, the patient should be on the side or upon the face; then relax the muscles by manipulating them upward, chiefly those over the sacral foramina. It is a good rule to adjust the lumbar first owing to release secured to the nerves supplying pelvic

muscles and also to the fact that many pelvic distortions are secondary or compensatory to lumbar lesions. The easiest method to correct the innominata is to have the patient lie upon his side; then by standing in front of the patient slip one hand between the thighs and grasp around the tuberosity of the ischium, and with the other hand upon the crest of the ilium, the innominatum can be moved upward or downward and forward or backward (wheel and axle principle). Simply pulling or pushing upon these two points in whatever direction necessary is all that is required providing the soft tissues are thoroughly relaxed. By having the patient flat upon the back practically the same treatment can be given, but not to so great an advantage. In cases where the ilium is posterior and the ischium anterior, the physician may stand back of the patient, while he is lying upon his side, and place one knee against the sacrum and with one hand upon the ilium, with the other take hold of the ankle of the affected side (the involved side being uppermost in all cases where the patient is lying upon his side); pressure can be exerted upon the ilium and the limb pulled backward, thus correcting the derangement. This treatment should be avoided as much as possible, as there is considerable danger of pulling back too severely and injuring the patient; the lever is long and the amount of force exerted upon it cannot be judged precisely.

Another method is, with the patient on the back, flex and evert the knee to the side so the side of the foot lies flat on the table. Grasp the ankle with one hand and with the other on the crest of the ilium of the opposite side then, by pushing down firmly on the knee the articulation is gaped and at the same time the operator pushes with his body against the knee with a sharp thrust. This may have to be repeated a few times before the articulation is released and if one is keen he will easily detect the slight concussion carried down the femur as the adjustment takes place. This will correct a forward and downward innominate. For an upward and backward one, place the patient in exactly the same position and go through the same motions except that the knee is pulled toward the operator. If the desired "chug" is not felt and adjustment is not definite, the leg may be pulled down rather smartly by the ankle to a parallel with the other. This is a technique that is easy, both for the patient and operator, and will correct any but the most stubborn.

In the case of a greatly relaxed and atonic condition of the ligaments of the pelvis much trouble is experienced, often, in making the adjustment permanent. Many suggestions have been made and most of them useless but, probably the use of a belt of non-elastic webbing about two

inches in width buckled tightly around the pelvis just below the anterior spines will do as much as anything and is a procedure well to follow in all such cases. Where there is a pendulous abdomen a support in the shape of a simple belt which should be so fitted as to act as a sling will transfer the weight of the abdominal viscera from the muscles, already stretched and atonic, to the belt and put the burden over the sacrum. This prevents the pulling of the innominatum in lesion again. Overcorrection is suggested as a means on the ground that it sets up irritation and induces fibrous ankylosis and for the same reason W. W. Howard places his patient prone and with thumb works the ligaments associated with the joint until they are thoroughly inflamed. The patient is then put in bed a few days and after the inflammation has cleared up the ligaments will be found to have shortened.

To correct a rotary lesion between the pelvis and fifth lumbar the patient should be placed upon the side, and with the body held firmly, the pelvis can be forced backward or forward as the occasion demands. (See Coccyx).

The Legs.—The origin of many symptoms manifested in the legs, as in the arms, are due to spinal lesions corresponding to the region of innervation to the affected tissues. The derangements of the pelvic bones are a frequent source of symptoms that are referred to the legs and feet. The osteopath finds that a slight dislocation of the hip may occur which is especially likely to affect the knee. This partial dislocation is apt to be an upward-posterior one; the head of the femur resting in the upper and posterior part of the acetabulum. Many diseases of the legs and feet are due to local displacement of the bones. The method of treatment is the same as given in surgical works. (See Sprains).

A general treatment of the legs and thighs is oftentimes necessary; it consists of flexing the thighs quite firmly upon the abdomen, and executing thorough external and internal rotary movements of the thighs and legs. In a few cases both limbs are flexed strongly at the same time upon the abdomen. After giving these movements manipulation over the saphenous opening and beneath the popliteal space is performed. This general treatment tends to increase the circulation of the entire limb and to relax thoroughly all contracted fibres.

The Arms.—In treating the arms, care has to be taken that the affection is not due to spinal derangements; otherwise the arms are manipulated according to the disorder. Complete dislocations of the shoulder comes under the province of surgery. Many times the osteopath locates slight or incomplete dislocations of the shoulder. Partial dislocations of the shoulder are generally anterior. (See Sprains).

In cases where pain exists in the shoulder or arm, outside of locating the cause in the shoulder joint, the affection may be due to fibres contracting over the coracoid process, or a dislocation of the second or third rib, and in some instances the clavicle is deranged. Special care should be given to a possible bursitis and tendo-synovitis. Occasionally muscular fibres may slip out of the bicipital groove. Dislocations of the bones of the arm are treated according to surgical methods. The pains and various troublesome symptoms that may be manifested in the fingers or the hands are oftentimes caused by slight dislocations of the elbow, shoulder, ribs, or vertebræ, as low as the sixth to eighth dorsals.

The coccyx.—The coccyx, owing to its exposed position and rather unstable attachment, is subject to many injuries; more indeed than come to notice. Its injury results in many local and general disturbances owing to its close relation to the sympathetics. Successful treatment of deviations often bring startling results. They may be divided into **fractures** and **displacements**.

In **complete** or **partial** fracture of the coccyx, as well as in dislocation, if the patient can be seen with reasonable promptness after the accident much can be done for relief of the pain and the prognosis is good for complete recovery.

Examination should be made externally and internally and after the condition is diagnosed about the same procedure is indicated for any of the conditions. With the patient on the left side introduce the right index finger, well lubricated, into the rectum and carefully relax all tissue within reach of the tip. If there are spasms of the coccygeal muscles, inhibition of the anterior nerves will quiet them. When this has been done place the left index finger externally along the body of the coccyx and holding it firmly both within and without release it longitudinally and then adjust. After this has been done it is well to hold it there until all danger of returning spasm, which might displace it again, is over, when the finger can be withdrawn.

The pain following will depend on the severity of the injury, but will keep up more or less constantly for several days. When severe, relief is often given by introducing the finger and relaxing contracted tissue which is pulling it from its position. Hot water bags placed next to the part will be of benefit. The bowels should be kept confined for forty-eight hours if possible in cases of fracture. Watch carefully the progress of union that the bones are *in situ* so there will not be deformity.

In diagnosing the first injury be sure that there is no splitting of the

first segment or splinters which may require surgical interference. In old cases of fracture where there is complete bony ankylosis it is not justifiable to attempt any change, but where there is motion and a fibrous union, after preparatory treatments about one week apart, it can usually be replaced. Look well to any muscular contractions which might interfere with it. Force must never be used nor any attempt to replace until it has been first released from its articular attachment. In the various forms of **displacement** the same technique applies as in fractures, or the finger and thumb of one hand may be used, the tip of the finger internally at the sacro-coccygeal articulation and the thumb externally at the same point. Complete control of the part is secured in this manner. Great care must always be used in treatment of any displacement of the coccyx. Contractions of its muscular attachments will often cause deviations in contour. Removal of the irritation and relaxation will allow it to assume its normal position.

The sacrum.—Adjustments of the sacrum as distinguished from the ilium in strictly innominate lesions are not many. When posterior with the patient on a stool the knee of the osteopath covered by a pillow and placed against the sacrum and both hands grasping the anterior borders of the ilia, strong traction will move it into position. In a downward displacement with the aid of an assistant from behind holding the crests of the ilia firmly as the patient sits on the table, the osteopath in front clasping both arms about the patient and with a rocking motion from side disengages the sacrum and at the same time lifts it into position.

For anterior displacements use the technique described in replacing upward and backward innominate dislocation first right side and then left, which will result in correcting the lesion.

The preceding osteopathic technique includes a few of the treatments given by the osteopath. Although many osteopaths use methods not given here, those outlined are sufficient for illustrative purposes. A point which cannot be too thoroughly impressed upon the student is that osteopathic treatment is in reality **constructive** work, that is, readjustive, not only in detail, but in viewing the body structure as a whole. Detailed readjustment is an essential, still do not lose sight of the relation of the part to the whole. In our distinctive work anatomical construction is the basis of physiological function, although physiological stimulus is essential to anatomical development.

How often to treat.—How often to treat a case depends entirely upon the nature of the disease from which the patient is suffering. Just

as in giving drugs the frequency of treatment is entirely dependent upon the seat of the disease and its severity. Acute cases require a thorough^s treatment at least once daily, and many times in severe cases the treatment has to be repeated several times daily. In subacute and chronic cases, as a rule, treatment should not be given as often as in acute cases; possibly once a day, but usually alternate days is better. In office practice cases are commonly treated two or three times weekly. Still it is better not to treat some cases oftener than once a week.

There is more danger in treating too often and too long than in not treating often enough. The distinctive work of an osteopath is to correct disordered anatomical structures; and when a certain derangement has been corrected the tissues should have rest and plenty of time for repair. When treatments are given often, it simply keeps the tissues in an irritated state and nature does not have time to heal the diseased tissues. Always make it a point at each treatment to correct some definite lesion, and when the work is accomplished let the parts alone until the tissues have recovered as much as possible from the effects of the previous treatment before another treatment is attempted. The reason why some cases do not get cured under osteopathic treatment is simply because the osteopath keeps the diseased tissues in an aggravated state by the constant treatment so that they do not have the least chance to heal; the physician is thus adding irritation to the disease.

It is only by experience that one can tell how often to treat. Each case is a special study; what would be quite sufficient for a certain individual with a given disease would not be at all suitable for a second individual with the same disease. As in drugs what is suitable for one person would not be adapted to another, because the make-up of each individual is entirely different; but here the parallelism diverges, for in drugs there is a foreign agent introduced into the system, while in osteopathic treatment the curative agent is entirely harmonious with the idiosyncrasies of the individual. It is for this reason that experience in practice is so essential.

Most cases should not be treated, as a rule, after a meal unless the patient is suffering from some digestive disturbance; for treating other regions of the body outside of the digestive tract causes more or less stimulation of the parts treated and thereby draws blood away from the organs of digestion. Cases of disordered brain circulation, where the patient is unable to rest or sleep at night, should be treated at about their retiring time so that the circulation of the body may be equalized, thus giving the patient undisturbed rest.

To show in a practical way the methods of experienced osteopaths *in this matter G. J. Helmer¹ is quoted: "I submit the following table to illustrate the frequency of treatment in one hundred cases taken from my practice: one case three times per week, sixty-three cases two times per week, twenty-two cases one time per week, nine cases once every two weeks, five cases once every four weeks. Comparing the present with the past, I find I am lengthening the time between treatments with much better results."

Another very practical side of the question and one which will be greatly appreciated by the patient, is the lessened cost for the same result in the less frequent treatments, as well as the saving in time. With the loss in going to the office, rest after treatment, not to mention possible wait while there, three times weekly represents more time than the average person can well spare and not infrequently will deter him from continuing. More especially is this true of those coming from a distance.

Length of Treatment and Overtreatment.—Naturally the length of treatment depends upon the case at issue and nothing more. There is no reason why any two cases should be treated for the same length of time unless they present identical lesions and then the personal equation of the two might present such a wide difference of aspect as to forbid such a proceeding.

The question of time has no place in the matter, save that it must not exceed physiological limits and be sufficient for the needs of the case. The patient should understand at once that it is to accomplish a specific purpose that the treatment is given, just as definite as a surgical or dental operation, and when the work is done it is time to stop. He would hardly be attracted to the dentist who guaranteed to use forty-five minutes in extracting a tooth. Good judgment is required in this as in all matters pertaining to osteopathy. There is a generally expressed opinion among the older osteopaths, based on experience, that: first, a short specific treatment is productive of best results and, second, treatments given under high tension when quick work is necessary are most satisfactory. Long treatments are debilitating and over stimulation amounts to inhibition. Further, in a long treatment it is necessary to go over the whole body, thus dispersing the vital forces (which have been stimulated for healing and upbuilding the pathological area) to parts not involved, thus defeating the very purposes intended. Dr. Still always advocated and gave the short, specific treatment.

1. Journal of the American Osteopathic Association, Dec., 1903.

The point always to be considered is the individual characteristics of the patient, and effects of the first treatment should be carefully observed. After a patient has been under treatment for any considerable time it is well to give him a vacation from treatment, and it is remarkable what improvement will be shown at times by such a measure and how seldom he will lose ground. Dr. Still presented this subject vividly as follows: "To treat the spine more than once or twice a week and thereby irritate the spinal cord, will cause the vital assimilation to be perverted and become death producing by effecting an absorption of the living molecules of life before they are fully matured and while they are in the cellular system, lying immediately under the lymphatics. If you will allow yourself to think for a moment of the possible irritation of the spinal cord and what effect it will have on the uterus, for example, you will realize that I have told you a truth. Many of your patients are well six months before they are discharged. They continue treatment because they are weak, and they are weak because you keep them so by irritating the spinal cord." It is not a rare experience for a patient to leave apparently with little or no improvement only to report a complete recovery a little later.

Misapplied Treatment.—Probably in spinal treatment more risks are taken than in any other region of the body. To us as a school it is by far the most important and interesting area we have to treat, consequently it is not surprising that various general treatments and methods have been devised with the idea of getting quicker and easier results. Herein lies the danger outside of mistaken diagnosis, for short cut treatments can never take the place of time and skill. Technically speaking, if one thoroughly understands the philosophy of osteopathy and is conversant with the underlying principles of its therapeutics, there is absolutely no danger of even the slightest injury. It is the one who takes chances by not properly diagnosing and by not being cautious enough with delicate persons when applying his treatments that is apt to overstrain some tissue or organ and otherwise do bodily harm. Of the treatments considered dangerous not one of them is without merit if judiciously applied, but unfortunately in many cases they are in general and indiscriminate use. It is well to remember that we are moving structures which have never been moved before and that time enough has not elapsed to observe what the ultimate result may be. Again, in adjusting a subluxation of the spine do not forget that the force necessary for that adjustment, if misapplied, is sufficient to produce a lesion, and there is no doubt that this has happened. Your patient's interests are

above everything and must never be sacrificed for any reason whatever, so if at any time there is uncertainty always give the patient the benefit of the doubt. On the other hand the osteopath must have the courage of his convictions and fortunately when these are coupled with good judgment the results are all that could be desired. The following should be used with great caution if used at all:

First, **Indiscriminate stretching** of the spinal column with the aid of an assistant. It is not good osteopathy although there are some cases where it may be beneficial. While not specially dangerous, generally, in delicate patients, elderly people, arterio-sclerotic conditions, and in some stages of Pott's disease it is absolutely contra-indicated. Moreover in most spinal cases except impacted vertebræ and symmetrical curvatures the stretching of the vertebral ligaments locks the lesion firmer.

Second, **Extreme rotating** of the cervical region. This cannot be considered good treatment in any case with the exception of the muscle stretching. On the contrary it is dangerous; first, it is not osteopathy for it is not specific; second, the nervous shock is severe, an important consideration in delicate people; third, the cervical ligaments become stretched and the vertebræ are easily displaced, while damage to a diseased vertebra, an aneurism or in arterio-sclerosis would be irreparable. No other region of the body should have greater care in treatment than the neck.

Third, **Hyper-extension** of the spine with the patient on his face. This treatment is rarely indicated. In fact, it is barbarous and a relic of an early day. Possibly more cases have been injured by this treatment than all others combined.

Fourth, **Rough separating** of the vertebræ and ribs while the patient is on his face. This is a most excellent treatment in many cases, but great judgment is necessary. Delicate patients, heart disease, and necrosed vertebræ and ribs should be carefully excluded.

Fifth, **Innominate adjustments** such as placing the patient on the side and putting the knee against the sacrum while grasping the leg at the knee. Or, the placing of the patient face down with one hand on the sacrum and the other holding the knee. In both these there is a tremendous leverage and in the latter the strain is at the lumbar rather than where needed. There are other unnecessarily risky methods for this operation, while it is easy to perform in most cases and without danger.

Sixth, **Abdominal treatment** gives wonderful results when intelligently applied, but it may be productive of great harm in conditions of tumors, malignancy, and pus formations.

Misapplied treatment is always dangerous, no matter to what part of the body given, and it is proof of wrong diagnosis when given. As a rule treatment is given without proper diagnosis in such cases, so a misapplied treatment has two interpretations—first, ignorance; second, laziness. In the former lies the greater danger for ignorance coupled with force and lack of skill is an appalling combination.

Cases are frequently reported where tumors have passed from the vagina, rectum, nose, etc., the osteopath thinking it was the result of good treatment, without considering that it was simply the breaking of a long pedicle with great danger from hemorrhage. The greatest care should be exercised in treating cases where aneurism, osteomalacia, and arterio-sclerosis are present, also in the leg treatment of tabes dorsalis and in the weak, thin ribs of elderly people and those with a gouty or rheumatic diathesis. Imagine treating an abscess directly, yet it has been done, as have varicose veins with the terrible danger of rupture and embolism. Aneurisms have been ruptured in the same way.

One could go on indefinitely with this subject, but to sum up: if the osteopath is not familiar with the feel of the living anatomy in its giving and resisting under treatment both in health and disease and does not know his osteopathy, nothing can prevent him doing harm. A successful practitioner means an understanding of pathology, then experience plus common sense.

OSTEOPATHIC CENTERS

"Osteopathic spinal centers" was a term commonly used in the early period of osteopathic development. From the facts, first, that a few centers have been actually determined in the cord, viz., genito-urinary, vaso-motor, etc.; second, that the innervation from the spinal segment to various thoracic, abdominal and pelvic viscera correspond with a considerable degree of accuracy to certain vertebral sections, and third, displacements of tissues of the spinal column affect viscus integrity, depending upon the locality of the structural perversion as to the organ involved and is a clinical observation of great import, arose the misnomer "osteopathic centers." For one to ask what "centers" should be "treated" in this or that disease shows a lack of the conception of osteopathy as if he asked what "movements" to give when "treating" a certain disorder. It is as unosteopathic, as it is unscientific, broadly speaking, to suppose osteopathic technique implies the application of movements to certain nerve centers.

Osteopathic Stimulation

"Osteopathic stimulation" is another term loosely used without extensive clinical experience to support it. Mechanical stimulation is frequently utilized in the physiological laboratory. But to employ it extensively and comprehensively in the treating room or at the bedside the therapeutic potency of it will be found wanting; that is, to employ it to the exclusion of that most important basic treatment, readjustment, is a great mistake.

Clinically, the pathologically slowed heart may be stimulated by a stimulus to the cervical sympathies, the gall-bladder emptied by a stimulus near the costal cartilages of the ninth and tenth ribs (this is probably via the spinal segments), etc. Normally, these organs and others may be temporarily stimulated. Experimentally, Burns¹ of Los Angeles and Pearce² of San Francisco have shown the potency of osteopathic mechanical stimulation. For example, stimulation (mechanical) in the middle and lower dorsal regions irritates and increases peristaltic action and vaso-constriction in the stomach and intestines.

1. Burns—Partial Report of Experiments upon Visceral Reflexes. The Osteopathic World, Aug., 1905.

2. Pearce—Some Laboratory Demonstrations of Osteopathic Principles. The Osteopathic Physician, Nov., 1905.

Osteopathic Inhibition

Likewise the term "osteopathic inhibition" has not always been scientifically employed. Mechanical inhibition is probably used less frequently than stimulation but still it is of more importance. Probably the true interpretation of considerable of so-termed stimulatory and inhibitory efforts, is simply one of normalization of tissues, physiologic equilibrium resulting from such changes.

Clinically, to relax contracted muscles by inhibition, to relieve neuralgia by impinging nerve courses, to relax the cardiac orifice of the stomach by pressure at the ninth or tenth dorsal vertebra on the left side, etc., are excellent examples of the therapeutic value of inhibition. Experimentally Pearce and Burns produced the opposite results to that of stimulation. Inhibition in the middle and lower dorsal region caused relaxation of the muscles of both the stomach and intestines, decreased peristalsis, and caused dilatation of the blood vessels.

The employment of stimulation and inhibition rounds out to a certain extent our therapeutics, that is, makes it more practical and specific. We should not, however, over-rate the relative value of stimulatory and inhibitory treatment as compared with the readjustive treatment. Not but what the former is of considerable practical importance, but the point to be emphasized is that it gives a scientific demonstration of how pathological effects result, if long continued, from the various osteopathic lesions. In a word, it shows the physiological process from cause to effect, or rather a step in the beginning pathological (perverted physiological) in many disturbances.

Therapeutically, all will agree with Cherry¹ that "stimulation and inhibition should be employed in all forms of acute disease as palliative measures until such time as the primary lesion may be removed."

As a preparation for adjustment of any bony lesion there is no question but that simple inhibition for a brief time in the area will bring about relaxation of soft tissues in a much more satisfactory manner than the usual massage like method. McPherson, Montreal, has developed a technique of sacral pressure which he uses exclusively in his practice. Without going into the merits of his theory there is no doubt that inhibition at the second and third sacral will bring about relaxation of the muscles of the lower trunk in a most gratifying manner. Another thing, if there is difficulty in introducing the finger in making either

1. Stimulation—Leslie E. Cherry, *Journal of the American Osteopathic Association*, Feb., 1905.

a vaginal or rectal examination, a minute's pressure at these points will, in most cases, cause the sphincter to relax so as to cause no discomfort to the patient. This pressure will, also, have a great effect on the hypogastric plexus and the pelvic organs.

Osteopathic Readjustment

Readjustment or adjustment is many times particularly emphasized in this work as the key to osteopathic therapeutics.

If the theory of readjustment can not stand the most searching tests of science osteopathy will have to be relegated to a most subservient place, on a par with massage, Swedish movements, and various medical gymnastics. Consequently the readjustment theory is again referred to, and especially so when the subjects of osteopathic centers, stimulation and inhibition are outlined.

No doubt many stimulatory (so-called) and general treatments exert their greatest influence by inadvertently readjusting tissues. Then how much more effective would the readjustment treatment be if applied intelligently. In certain acute disorders, e. g., "colds," immediate relief is often obtained by relaxing muscles through either stimulation or inhibition; in reality the final result, as far as the muscle is concerned, is one of readjustment. Likewise in stretching and rotation of tissues and sections of the body the effect may either be stimulatory or inhibitory, and still it may be, also, readjustive.

After all has been said the ultimate physiological effect of any of these treatments, if of any therapeutic value, must be one of stimulation to a part or to the body generally. But there is a vast difference between physiological stimulation and the one method of obtaining the same termed mechanical stimulation. It is not the purpose here to enter into anything like an exhaustive survey of stimulation and inhibition but simply to outline a few practical hints on the relative values. Everyone is aware that over-stimulation is equal to inhibition, and even applying it to very delicate subjects the therapeutic end we may wish to obtain may be lost and as a consequence the patient exhausted; whereas at the same time readjustment possibly could have been employed and real permanent effects secured.

So we should whenever possible utilize the basic principle of our therapeutics, readjustment, for this represents in the majority of cases, first, permanent results; second, a saving of much time, and third, less exhaustion on the part of both patient and physician.

McConnell¹ has shown in his series of laboratory experiments on animals the reality and potency of the readjustment fundamental. The effect of malaligned vertebræ and ribs upon contiguous vascular channels and nervous tissues, not only affects immediate skeletal muscles by simple contractions but even produces interstitial myositis. Through narrowing of the intervertebral foramina and tension upon the fibrous tissue anchoring the spinal nerve in its exit, and through pressure and strain on the sympathetics in contact with the heads of the ribs, which are secured there by the parietal layer of the pleura, organs in corresponding cavities become diseased. Some of the diseases produced in the series of experiments were catarrhal and parenchymatous changes in the stomach and intestines, congestion of the liver and spleen, acute nephritis, goitre, inflammation of the lymphatics, edema of the cornea, and degenerations of nervous tissues. Still too much emphasis should not be placed upon the narrowing of the foramen for certain pathologic changes are shown to be due to other conditions than Wallerian.

The osteopath, as stated, may inadvertently correct osteopathic lesions. *Vis medicatrix naturæ* undoubtedly corrects many osteopathic lesions; this is evident from the fact that many bodily strains, sprains, and injuries are overcome naturally or involuntarily, that is, without any voluntary assistance from an osteopath. On the other hand all osteopathic lesions are not due to outside influences or forces, e. g., in pneumonia the severely contracted dorsal muscles often partially dislocate the vertebral ends of the ribs and thus increase the seriousness of the disease; and this is true in many acute conditions wherein visceral changes will reflexly contract spinal muscles and also through these contractions produce osseous lesions. Here is where osteopathic treatment in acute diseases will not only correct the primary lesion but also these secondary ones and thus abort, or shorten, or lessen severity, or prevent complications of the disease. But it should always be borne in mind that when certain disease processes occur it will take a definite time at best for curative changes to predominate. In other words pathological changes are just as real and potent as physiological facts or anatomical data and the character of the same should always be considered.

Consequently in readjustment work a distinctive etiology and pathology has to be taken into account. The color, contour (whether the lesion is simply a local one or there is a composite or group lesion), con-

1. McConnell—The Osteopathic Lesion,—Journal of the American Osteopathic Association.

dition (irritation, debility, contractions, and tenderness), and movement of the several regions, and the spine as a whole should be noted. And the student should always keep in mind that the osseous vertebral lesion may be, (a) a twist between two vertebræ (this generally means a rotation of one section of the spine on another section), (b) malalignment of several vertebræ (the composite or group lesion), or (c) the impacted or strained lesion, (this is a lesion that Clark attaches considerable significance to, wherein there is injury to the articular surfaces and ligaments without osseous derangement, followed by exudation and other inflammatory products, limited motion, etc.).

Vaso- Motor Nerves

It is extremely important that the osteopath should be thoroughly conversant with the regions where he may affect the vaso-motor nerves to various tissues and organs. Many anatomical derangements undoubtedly involve the vaso-motor nerves, and it is therefore necessary to know where they may be affected. The following table is taken mostly from the physiology of Landois and Stirling, but many of the statements have been noted at various times; it is, therefore, impossible to give full credit.¹

The vaso-motor center is in the medulla, consequently the osteopath gives cervical treatment to influence this center. Treatment of the upper cervical region has undoubtedly a marked effect in tending to equalize the vascular system of the body, when it is disturbed.

Head.—The cervical sympathetic for the same side of the face, eye, ear, salivary glands, tongue, etc., and possibly the brain. Lesions are found in all the tissues about the cervical region, but usually in the vertebræ, which influence these nerves. Deep contracted muscles oftentimes involve them. The spinal vaso-constrictors for the vessels of the head are from the first five or six thoracics. Many lesions are located in the upper five or six dorsal vertebræ, or corresponding ribs, that have apparently a direct influence upon the vessels of the head. Not only congestive headache and congestion of the brain tissues are influenced by lesions in this region, but disease of the eye, ear and face occasionally arise from such derangements. It is always best when the head, neck or even the arms are involved, to examine carefully this region. Vaso-dilator fibres for the face and mouth are found from the second to the fifth dorsals; these fibres unite almost entirely with the trigeminus, and pass from the superior cervical ganglion of the sympa-

1. See also Gaskell, *The Involuntary Nervous System*; Pattenger, *Symptoms of Visceral Disease*; Mackenzie, *Symptoms and Their Interpretation*.

thetic, to the ganglion of Gasser. This fact is of great importance to the osteopath, for oftentimes when inflammation of the face and mouth occurs, lesions may be located along the upper dorsal vertebræ or ribs, or in the deeply contracted muscles of this region. Observation revealed in several cases of erysipelas that the causative lesion was located in the upper dorsal region; and the cases were cured by correcting these lesions, thus showing that probably the vasomotor nerves were the seat of the trouble. Other dilator fibres arise apparently in the trigeminus, for stimulation of this nerve between the brain and Gasser's ganglion causes dilatation of the vessels of the face. The lingual and glosso-pharyngeal nerves are the dilators of the lingual vessels. The sympathetic and hypo glossal are the constrictors; these arise in the sympathetic and reach the nerves by way of the superior cervical ganglion. Stimulation of the cervical sympathetic causes constriction of the retinal vessels. This point is extremely interesting to the osteopath, because diseases of the retina and optic nerve are oftentimes due to subluxated cervical vertebræ, usually the atlas or third cervical. The retinal fibres leave the sympathetic at the superior cervical ganglion and pass along the communicating ramus to the ganglion of Gasser, from whence they reach the eye through the ophthalmic branch of the fifth nerve, the gray root of the ophthalmic, the ganglion and the ciliary nerves. Almost all the fibres to the anterior part of the eye are found in the fifth nerve; this, also, is another important point for the osteopath's consideration. Cases of conjunctivitis, keratitis, corneal astigmatism and diseases about the eyelids and tear ducts are usually caused by lesions to the fifth nerve, due to a deranged atlas or third cervical. The vaso-dilators for the anterior part of the eye, and also dilating fibres to the iris may be affected at the first and second dorsals. This point is also taken advantage of by the osteopath, for lesions of these fibres occur oftentimes at the upper dorsal. It is claimed that important fibres that aid in the control of the metabolism of the retina, may be affected at the fourth and fifth dorsals.

Lungs.—Reflex constriction by stimulation of the intercostals, central end of the sciatic, abdominal pneumogastric and abdominal sympathetic. There is not a rich vasomotor supply.¹ The essential feature to the osteopath is that the vaso-constrictors to the lungs and bronchial tubes are very likely to be interfered with by rib and vertebral dislocations, from the second to the seventh dorsals, inclusive, but chiefly at the third, fourth and fifth. The heaviest innervation being from the

1. MacLeod, *Physiology and Biochemistry in Modern Medicine*.

third, fourth and fifth spaces, probably explains why asthma is often due to a dislocation of the third, fourth or fifth rib.

Heart.—First to fifth thoracic via ganglion stellatum and inferior cervical ganglion. Vaso-motor fibres to the coronary arteries are found in the vagi.

Intestines.—Sympathetic, chiefly through the splanchnic nerves. Vaso-constrictors of the jejunum from the fifth dorsal down, for the ileum slightly lower and for the colon still lower. There are none below the second lumbar. Dilators are present in the same sheath, but more abundant in the last three dorsals and the upper two lumbars; all probably end in the solar and renal plexuses.

Receptaculum Chyli.—Stimulation of the splanchnics causes dilatation.

Liver.—The splanchnics chiefly on the right side. The vagus contains vaso-dilators. There are also fibres from the inferior cervical ganglia of the sympathetic.

Kidneys.—Vaso-motor nerves from the sixth dorsal to the second lumbar, but principally from the ninth to twelfth dorsals, inclusive. In the large majority of kidney diseases, lesions are found from the tenth to the twelfth dorsals. Stimulation of the sciatic centers causes contraction. There are also fibres from the superior cervical ganglion.

Spleen.—Vaso-motor fibres are in the splanchnics, third dorsal to third lumbar, principally, on the left side. There are some fibres direct from the brain. Stimulation of the vagi contracts the spleen.

Portal System.—Fifth to ninth dorsal.

Generative Organs.—For Fallopian tubes, uterus, vagina, vas deferens and seminal vesicles, vaso-motor fibres are found in the lower dorsal, and the second, third, fourth and fifth lumbar nerves, principally.

Coccyx and Immediate Region.—Third lumbar down.

Back Muscles.—Dorsal Posterior branches of the lumbar nerves and intercostal nerves. These nerves arise from the gray ramus of the corresponding sympathetic ganglia.

Arm.—From the brachial plexus, the sympathetic, inferior cervical ganglion and first thoracic ganglion, and sometimes lower.

Leg.—Second dorsal down, the sciatic and crural nerves, and the abdominal sympathetics.

Sensory Nerves

Inhibition of various regions along the spinal column is frequently given by the osteopath to lessen pain. It is only a temporary or palliative treatment, but many times gives great relief. One should inhibit

usually over tender points and contracted muscles. These (tender points and contracted muscles) are signs to the osteopath that disturbances exist at these points. The following table is taken from Quain, which is Head's classification:

Heart.—First, second and third dorsals.

Lungs.—First, second, third, fourth and fifth dorsals.

Stomach.—Sixth, seventh, eighth and ninth dorsals. Cardiac end from sixth and seventh. Pyloric end from ninth.

Intestines.—(a) Down to upper part of rectum, ninth, tenth, eleventh and twelfth dorsals. (b) Rectum, second, third and fourth sacrals.

Liver and Gall-bladder.—Sixth, seventh, eighth, ninth and tenth dorsals.

Kidney and Ureter.—Tenth, eleventh and twelfth dorsals. Upper part of ureter, tenth dorsal. At lower end of ureter, first lumbar tends to appear.

Bladder.—(a) Mucous membrane and neck of bladder; (first) second, third and fourth sacrals; (b) over distension and ineffectual contraction, eleventh and twelfth dorsals, and first lumbar.

Prostate.—Tenth, eleventh (twelfth) dorsals. First, second and third sacrals, and fifth lumbar.

Epididymis.—Eleventh and twelfth dorsals and first lumbar.

Testis.—Tenth dorsal.

Ovary.—Tenth dorsal.

Appendages, etc.—Eleventh and twelfth dorsals, first lumbar.

Uterus.—(a) In contraction, tenth, eleventh and twelfth dorsals, and first lumbar. (b) Os uteri; (first) second, third and fourth sacrals (fifth lumbar very rarely).

Other points are used by the osteopath to relieve pain of certain regions, for such the reader is referred to the article on neuralgia; besides many tender points are found along the spine by the osteopath, where inhibition gives relief to the patient, provided such points have a connection with the case in question.

Hot fomentations if properly applied, through reciprocal relationship of the nervous system, are of value in relieving pain, releasing spastic musculature and normalizing visceral function. Frequently, in both acute and chronic cases, this is an excellent preparatory measure, to be followed by careful adjustment. It will be recalled that the functional test, movement of a vertebral lesion is of primary consideration.¹

1. See Luciani, Human Physiology, Vol. III; MacLeod, Physiology and Biochemistry in Modern Medicine.

PATHOLOGICAL SPINAL CURVATURES

SPINAL CURVATURES

Any deviation of two or more consecutive vertebrae from the normal curves of the spinal column is usually termed by the osteopath a pathological curvature. Of the common pathological curvatures of the spinal column there are found: (1) scoliosis or lateral curvature, (2) kyphosis, or excurvation, an antero-posterior curve with the convexity backward, and, (3) lordosis, or incurvation, an antero-posterior curve with the convexity forward.

Osteopathic Etiology.—Of primary importance in the causation of pathological curvatures of the spinal column, are injuries to the spine, such as strains, falls, blows, and various physical forces, acting directly or indirectly, as injuries to the chest, pelvis and limbs. The osteopath in his daily work finds more curvatures, as well as acute and chronic diseases, resulting from some simple injury to the spine, as a slip, strain or twist, than from any other cause. The dire effects of any violence to the spinal column cannot be overestimated.

Among **predisposing causes** may be mentioned, continued ill health, general weakness, rapid growth, rachitis, tuberculosis, etc. Any habitual one-sided position may result in a curvature. An injury to the chest, adhesions from pleuritis, chronic liver disease, obliquity of the pelvis producing unequal length of the legs, carrying heavy weights on one side, and various morbid growths of the chest and abdomen, may all produce curvatures. Many cases are found in school children who are growing rapidly, and whose muscular strength and development do not keep pace with their growth. Unilateral atrophy of the muscles, due to central changes or overuse, may be the cause of deviations of the spinal column. Sacro-iliac disease in some instances is a potent factor. Thus there may be a great variety of causes productive of the incipency, and the spine being strained or irritated at a single point and in a certain way gradually develops a curvature. Every spinal and innominate lesion should be considered as a potential cause for a curvature.

Scoliosis.—This is the most common spinal deformity and is characterized by lateral deviation from the median line. In most cases the curve is to the right in the upper dorsal region, with a compensatory curve in the opposite direction in the lumbar region. The curve being to the right in the majority of cases, is probably due to the fact that most people are right-handed.

Morbid Anatomy.—The vertebræ in the region involved are rotated so that their spinous processes point toward the concavity of the lateral curve. The bodies of the vertebræ on the side next to the concavity are thinner, due to absorption; the intervertebral discs are made thin on the same side by pressure and absorption. The ribs are considerably distorted, depressed on the concave side and prominent on the convex side. The ligaments on the concave side are contracted, and stretched on the convex side. The muscles on the concave side are more or less contracted, and on the convex side they are stretched, causing atrophy and fatty infiltration of their tissues.

Kyphosis.—This may be a slight posterior curve really amounting to nothing, or it may be a very grave pathological condition as in Pott's disease. Therefore it is very necessary that one should make a most careful diagnosis (see Pott's disease).

The most common **causes** of kyphosis are Pott's disease, rachitis, occupation, general weakness, rheumatism and old age.

In Pott's disease, the posterior curve is characterized by a sharp angle, and by the spine being very rigid. This, taken in conjunction with the history and other symptoms should be sufficient to enable one to make a diagnosis. Radiographic examination should be made.

The condition of round shoulders, which in time produces marked kyphosis, is rarely a habit as it is usually termed. In nearly every case it indicates either a weakness of the back muscles or, what is more apt to be the cause, a strained posterior condition of the dorsal vertebræ, commonly of the lower dorsal region.

Morbid Anatomy.—In mild cases there is simply a relaxation of the ligaments of the vertebræ and a separation of the laminæ and spinous processes. In severe forms there may be absorption of the anterior portion of the intervertebral discs and the bodies of the vertebræ (Pott's disease).

Lordosis.—This may be a congenital condition, especially when occurring in the lumbar region. Anterior curves of the spine are generally found in the lumbar or cervical regions, but occasionally occur in the dorsal region, causing the spinal column to be more or less straight, and thus weakening the individual. This curve is commonly compensatory to kyphosis, hip-joint disease and congenital dislocations of the hip.

Treatment of Spinal Curvatures.—The treatment of pathological curves of the spinal column, by osteopathic methods, has been highly satisfactory to both osteopath and patient. The success of the

osteopath in these cases has been due to his comprehensive and exact knowledge of each vertebra, and of the spinal column in general. He recognizes curvatures that the ordinary practitioner, and it is safe to say the orthopedic specialist, would not even notice or recognize. On account of the highly developed sense of touch of the osteopath, he is capable of detecting the slightest deviation of one vertebra from another, and of the spine in general from the normal. Thus by the uniqueness and peculiarity of his work he is capable, not only of discovering a curvature, but also of reducing a curve when found.

The work consists of, first, relaxing any muscles that may have become rigid over the seat of the curve. Then follows a treatment to each vertebra involved, by attempting to replace it, and treatment to the curve in general by springing it toward its normal position. At each treatment effort should be made to accomplish something toward correcting the spine; too many treatments are given in a "general" way, and being unspecialized amount to nothing. One must become familiar with the exact location of each vertebra involved, to attempt a correction of a curvature intelligently. Upon this one point it is impossible to speak too strongly, for a great many treatments have been wasted and improvement of cases retarded by not paying enough attention to the details of the diagnosis, either from pure slothfulness or from an imperfect conception of osteopathy. Corrective exercises are always of value in addition to treatment.

These remarks refer to incipient and certain moderate curvatures. In other cases radical measures (Abbott) should be employed if age and conditions permit. Remember, however, that the practitioner in his daily work of adjusting the many combinations of rotation and sidebending lesions corrects innumerable actual and impending curves.

Lateral curvature in the dorsal region is undoubtedly the hardest to correct on account of the ribs, which complicate the condition. A marked curve in the dorsal region is sure to be accompanied by a dislocation of the vertebral end of one or more ribs. Treat each distinct lesion separately, follow by general stretching, replacing and molding of the tissues. A good method to stretch tissues and adjust a moderate lateral curve is to utilize the swing, or in lieu of this have the patient stand just at arm's length from the wall with concave side toward the wall with straight arm at right angles and palm resting against the wall. Stand in front of patient whose feet are firmly on the floor and reach around with both hands upon the spine. As the patient sidebends toward the wall it tends to correct the deformity, so if the operator co-

ordinates his adjustment with that lateral movement of the patient, precise fulcra can be obtained and a certain, definite correction secured. The significance rests with the stretching of tissues and the definite fulcra obtained, thereby securing a maximum sidebending and rotation toward correction.

The **dislocation** of an **innominate** sometimes complicates matters, but is a simple point to remedy, and should not be overlooked.

The correction of a curvature presents a special study to the osteopath, whether it be scoliosis, kyphosis or lordosis, and special rules cannot be laid down for treatment. Cases of rare occurrence are what might be termed "symmetrical" curves; i. e., no vertebra presents separately a marked lesion, the column on the whole being simply bowed. Such cases can be treated by springing back the spinal column, and by the use of methodical exercises. Unfortunately most curvatures are characterized by various lesions between the vertebrae, and thus each lesion requires special work.

In simple curves the use of braces, jackets, and the various mechanical appliances are of very little use to the osteopath, in fact, more harmful on the whole, than beneficial. Naturally they would apply to a "symmetrical" curve, or where the patient is too weak to sit or walk, but they can be of very little use to the average patient, in place of correct osteopathic treatment. Mechanical appliances confine the movements of the patient, interfere with the development of the muscles, and impinge to a greater or less extent the spinal nerves. Due attention to hygienic surroundings and diet are certainly of aid. Proper exercises and occupation for the sufferer should be advised. Special care should be taken in examining (radiographic) for infectious lesions (arthritis).

Straight Spine is a term used particularly by osteopaths for a condition seldom recognized by orthopedic surgeons. The following is from H. W. Forbes¹: Straight spine is "a departure from the normal in the conformation of the chest; characterized anatomically by bilateral diminution in size, decrease in the antero-posterior diameter, relative increase in the transverse diameter and flattening of the anterior and posterior walls; characterized clinically by diminution of respiratory capacity, lowered lung and heart resistance, impaired general nutrition and predisposition to neurosis.

"Of the many possible manipulations that may be used to lift and overcome the morbid bend of the ribs I will attempt the description of but one.

1. Journal of the American Osteopathic Association.

"Relax the musculature of the back and chest. Rotate, flex and extend the dorsal spine. Examine all the ribs on each side and loosen any that do not move freely. Having done this, the patient is prepared for the specific treatment. Have the patient sit on a stool and lean forward on a table. Have him separate the elbows, flex the fore-arms, place one hand over the other and his forehead on the hands. Tell him to relax all the muscles of the shoulders and arms and to breathe deeply without using the muscles. After a few trials he is able to fully expand his chest without contracting the muscles connecting the upper extremity with the trunk. The physician then takes a position at side (either side) of the patient and places the weight of his trunk on the ribs of the side he is on, a little external to their angles. He passes his arms around the patient's body; the arms passing across the front of the chest are carried around far enough to allow the hand to be placed on the ribs just external to their angles. The other hand is placed on the top of this one. In this position the physician's body on one side, and his hands on the opposite, occupy similar positions. The patient is now told to inspire deeply and at the same time to relax the shoulder muscles, as before instructed. As the chest expands drop the weight of the trunk on one side and make pressure forward (forward meaning toward the anterior surface of patient's body) with the hands on the other side. This lifts the ribs to a greater extent than the patient unassisted could lift them. At the end of inspiration and during the first third of expiration the chest is compressed laterally. The compressing force, if applied correctly, will fix the ribs in a position of less obliquity and will also correct the increased lateral bending of them. The dorsal spine becomes more convex posteriorly at the moment of lateral compression of the thorax, if correctly made. Great force should not be used at the beginning. Repeat the manipulation five to twenty times each treatment. Give treatment three times a week. A similar movement may be given on the table.

"The greater number of flat chests in patients under thirty years of age may be corrected. If the patient is above thirty, although complete correction may not always be accomplished, the results are satisfactory. Two to six months treatment is required."

A "typhoid spine" comes as a sequel to typhoid fever. There is constant pain, tenderness along the lumbar region and rise of temperature. The pain is generally increased when the spine is moved forward or sidewise. Such a condition is clearly understood by the osteopath. There are always found distinct vertebral lesions along the region that is tender on pressure. In fact these very lesions may have been the pre-

disposing cause of the attack of typhoid fever. The treatment is rest and the indicated manipulation to correct the derangements. It is of great interest to note that where the typhoid patient is treated osteopathically the condition just described seldom results. Observations by C. M. T. Hulett confirm this statement.

The **Neurotic Spine** may be the result of injury but the subject is usually of a nervous, neurasthenic type. It occurs from the age of puberty to adult, much more often in females than males.

The patient has dull pain in the back of the neck or in the lumbar or sacral region, complains of a constant tired feeling and often of a sharp neuralgic pain in certain parts of the spine. Generally there is a drooping posture in the upper dorsal with shoulders thrown forward, which is a sign of weakness. There is extreme tenderness along the spine and usually the pain is confined to the sensitive places.

Treatment consists of a constitutional toning up, and increasing muscular strength through judicious exercise. The posterior curve may be pushed toward the median line by laying the patient on the face; also with the knee in the back and the flat of both hands on the sternal ends raise the ribs; or by the arms making use of the pectoral muscles accomplish the same result. Deep breathing is also effective. Relief can usually be given and a cure will depend upon the patient's general condition.

The **Hysterical Spine** is usually considered the same as the neurotic spine, but there are many cases which have the sensitive spine without being hysterical. There is more deformity usually present, particularly in the lumbar region. Probably there will be a history of some injury.

The treatment is to correct the curvature and build up the general health. These conditions are stubborn and progress is slow. In both the neurotic and hysterical spines the ligaments of certain areas will be found atonied and relaxed. This is especially noticed upon attempting to spring a group of vertebræ when all of a sudden the section relaxes. In either of these spines the lesions will irritate or obstruct nervous courses, produce venous stagnation or arterial starvation, and disturb lymph channels. H. F. Goetz has observed that in functional nervous diseases the dorsal spine is flat, while in visceral displacement the dorso-lumbar spine is posterior.

The **Spine of the Aged** wherein is found stooped shoulders and a rigid spinal structure, can be distinctly improved by slow, cautious traction. This tones weakened muscles, releases contractures, separates the compressed intervertebral discs, and definitely tones the viscera. Careful work is imperative.

POTT'S DISEASE

An article on Pott's disease does not really come within the province of a practice of medicine. Still it will be acceptable to the practitioners and students of osteopathy, as one of the objects of osteopathic work is to improve, not only medical and obstetrical practice, but also surgical practice, and besides the osteopath will have many cases of spondylitis to treat. "Pott's disease, or caries of vertebral bodies, was first described by Percival Pott in 1779. It consists of a destructive osteitis affecting the spongy tissue of one or more of the bodies of the vertebræ. The osteitis is tuberculous, and is similar in character to tubercular osteitis seen in the epiphyses of the long bones. Owing to the superincumbent weight of the head and shoulders pressing upon the carious vertebral bodies, the spine and trunk become peculiarly and characteristically distorted. The morbid process is limited, as a rule, to the bodies; the transverse, articular, and spinous processes are rarely primarily affected." (Park).

The first consideration in the **treatment** of Pott's disease is rest. If the disease is a progressive one, rest in bed in the recumbent position is necessary. Naturally, the object of the treatment is to secure resolution of the tubercular osteitis as soon as possible. To do this, careful manipulative treatment should be applied to the diseased vertebræ. The treatment must not be harsh, for there would be danger of greater irritation to the parts, and possibly infected particles from the destroyed tissue might gain entrance to the vascular system. The osteopath must be extremely careful how he manipulates the spinal column in Pott's disease. The object of the manipulation is not primarily to overcome the deformity, as some may think such an act possible, but to separate the vertebræ enough to allow a freedom of the circulation, and to remove impingements of the nerve tissue. It is impossible to overcome the deformity to any extent when part of the body of the vertebra is destroyed; but if one could treat the case at the incipency, most probably deformity would be prevented. There is another danger in treating cases too severely, and that is causing exhaustion of the patient. Treat the spinal column not only to separate each articulation slightly, but to carefully crowd the diseased vertebræ toward their normal position. When the disease is in the dorsal region, considerable attention has to be paid to the ribs, as they are invariably involved when the spinal curvature is great. Hence it is necessary to treat each rib separately,

and try to correct them at least, and remove any obstruction to nerve fibres or vessels that may be found. One of the strongest arguments against the indiscriminate use of braces, jackets and various mechanical appliances in spinal deformities, is that they tend to straighten the spine, by simply crowding the vertebræ and ribs as a whole into place, besides interfering with the cutaneous circulation. The osteopath should realize that each vertebra and rib has to receive special treatment, in order to correct the spinal column, and that mechanically exerting pressure upon all the vertebræ at one time tends to lock the vertebræ and ribs all the more securely. It is like trying to correct a certain subdislocation of the cervical vertebræ by pulling and twisting the neck instead of applying specific treatment—the lesion is all the more firmly fastened. Young, in his *Surgery*, makes this observation: "Like chronic abscess or chronic bone disease, this affection has its origin in the fact that the tissues of the anterior parts of the bodies of the vertebræ have been partly deprived of their nutrition because of luxated ribs or subluxated or twisted vertebræ."

After the tissue destruction has been limited, and the deformity corrected as much as can be, an ankylosis should be secured if possible. Promotion of ankylosis depends altogether upon the preceding treatment—rest and an improved nutrition of the parts. A truss or brace, if correctly applied, is often beneficial in such cases. The treatment of spinal abscesses is entirely in accordance with surgical treatment.

In all cases the general health of the patient has to be well taken care of. The osteopath must not be over zealous for quick results. It takes many months to perform a cure; however, there is always a tendency toward a cure. Treatment of the spinal muscles and of the limbs, and pure air, sunlight, massage and good food are very necessary.

SPRAINS AND FRACTURES

SPRAINS

The osteopath is often called upon to treat sprains of various sections of the body as well as to relieve after effects of fractures and restore function to the part. The osteopathic treatment is very effectual; therefore, an outline of the purpose and method is given.

Sprain is defined by Dorland as "the wrenching of a joint with partial rupture or other injury of its attachments, and without luxation of bones." From an osteopathic viewpoint the above definition is not fully explanatory, for there is in most cases a partial luxation of the bones. The most common cause of a sprain becoming chronic is the presence of partial bony displacements. Rupture of tissues may be the cause of a chronic state but is not nearly so frequent as the bony dislocation. In most sprains, the wrenching causes a displacement of the bony tissues, which may or may not return to normal position and relation. The function of the muscles is not primarily to hold the bones in place; this is left to the ligaments, so when a wrench of a joint is so severe as to cause rupture of muscles or tearing of ligaments, partial luxation of the bones is almost certain to follow; and even where such damage does not occur a change in the relation of the bones is a frequent occurrence.

Unless a sprain can be seen very early it may be difficult to detect just what has happened; whether it rests with a rupture of the areolar and connective tissues, a displaced cartilage, tendon, or bone, a torn ligament, or ruptured muscle. Hemorrhage and swelling take place so rapidly that no time should be lost in critically examining the joint. When in doubt as to the structural disturbances, particularly in acute cases if there is a possibility of a fracture, and in chronic cases any supposition that tubercular involvement is present, have a radiographic examination.

There is comparatively little to be found in medical literature relative to the **pathology** of sprains. Probably Moullin in his excellent monograph on Sprains has given as good an outline as can be found¹. He says that "generally speaking, the tissues on one side of a joint are overstretched and torn; those on the other compressed and crushed together; but there is always so much twisting, and such a difference in the strength and power of resistance of various structures, that unless the part is examined with the greatest care it is almost impossible to say

1. See also Jones' latest work, *Injuries to Joints*.

what actually has given way." Hemorrhage due to torn vessels is the cause of most of the swelling within the first few hours. Later on, there is considerable lymph mixed with the blood. There is not only extravasation of blood into the surrounding tissues but also into the synovial wall and cavity. This causes considerable irritation and pain owing to the roughening of the membrane, and the joint becomes inflexible. And if the joint or any strained tissue is kept too long at rest the mass becomes organized and is the cause of much discomfort and annoyance.

Similar changes may occur in the bursæ due to the extravasated blood. Strong ligaments may be torn across, but not frequently. The tear is usually a separation from the bone. Occasionally interosseous ligaments, as for instance in the knee, may be injured.

The muscles may be severely torn, but more often they are "hurt by their own sudden and spasmodic effort at recovery than by anything else." In a few cases the tendons and muscles will be found bruised, lacerated, and dislocated.

The veins occasionally rupture and thus results more or less effusion, so that rigidity and edema may persist for a long time. The bones are very frequently damaged. This may be a simple bruising of the tissue but more often, as osteopathic diagnosis shows, there is partial displacement of the bony structure.

A point of great importance that every experienced osteopath will agree to is the following from Moullin: "Diseases of the spine, hip, and other joints in children may be due, in great measure, to some constitutional taint, though it is open to question whether the influence of this is not overrated; but it is quite certain that the immediate starting-point in nine cases out of ten is some chance sprain, often so slight as scarcely to have been noticed at the time."

Before treating a sprain there are one or two points the osteopath should carefully note: first, that there is no complicative fracture; second, in children that there is not an epiphysial separation; and, third, note peculiarities of a constitutional character that would complicate matters. Whatever is done, always give the patient the benefit of the doubt.

If the patient can be seen early, before swelling has reached the maximum, many times a very quick cure can be secured. Do not at once put the part at rest and apply cold, but examine the sprain most carefully and thoroughly and readjust first of all any bony defects; then replace the softer tissues if displaced, and next relax contractions; follow this by light massage and passive movements to reduce and combat

hemorrhage and swelling. This treatment alone in a fair percentage of cases will be all that is necessary provided frequent subsequent treatments of massage and passive movements are continued to reduce and counteract inflammation and to prevent rigidity and stiffness of the softer tissues. Where the osteopathic treatment is distinctly indicated is in the readjustive manipulation. This is the reason why the treatment is so efficacious, and the patient is cured in a fraction of the usual time, and few sprains result in complications and become chronic. In sprains that have become chronic there will be found almost invariably some osseous tissue slightly displaced. After correcting this, apply careful and thorough manipulation and massage and movements to break up adhesions, to remove effusions and extravasations, to relax muscles, and to promote normal circulation. Care should be taken that there are no displaced cartilages, ligaments, tendons, or muscles.

It is well to keep in mind that the osteopathic readjustive manipulation is not an exercise or movement, but definite, specific correction of the tissues anatomically. Do not treat the displacement by any general "pommelling," but apply the mechanical principles indicated as in any dislocation. This will mean much to the patient in more ways than one, and especially so should the sprain be so severe and complicated as to demand anesthesia for correction.

There is no objection to the employment of cold and heat; in fact, both are beneficial. Cold to prevent extravasation and swelling, and heat to remove and relieve the same, is a sound and practical method. But do not apply a wet bandage. Pouring cold water over the sprain is the best method; even better than immersing the part. An ice bag is another good way to apply cold. When the skin begins to look blanched and dull the maximum amount of benefit has been secured. Heat at the very first may be employed instead of cold, for it has a tendency to prevent bleeding and inflammation, but the temperature of the application must be hot as can be borne or else the desired effect will not be obtained. Later on to relieve pain and rigidity, and to relax the muscles so that a better circulation will be secured, moderate heat will be beneficial. Then the application of heat and cold alternately will be of service, employed as a douche for a tonic effect, when the part is weak, inactive, and powerless after the elapse of several days. It should always be remembered that the employment of heat and cold is only of temporary benefit, so if used too long opposite effects to those desired will result.

Bandaging the sprain may be helpful, but not always. Great care should be taken as to how pressure is applied. Bandaging from periphery

toward the trunk, seeing that the bandage is smooth, and padding all depressions so that the bandage does not touch bony prominences only, are necessary. Unless the bandage is applied so that an even pressure is secured, the material used not too warm, and the bandage attended to each day, the effectiveness will amount to but little.

Next, do not make the mistake of resting the injured joint too much. The function of a joint is movement, and it has been observed that prolonged rest of a healthy joint may result in rigidity, stiffness, and distension of the soft part, and even serious organic changes in the ligaments, synovial membrane, and cartilages have occurred. Consequently continued passive movements should be kept up from the inception of the injury, although it must not be carried to extremes so that inflammation, hemorrhage, or laceration will be aggravated. Moullin says: "As a rule, passive movement may be commenced from the second day with the certainty of preventing adhesions, and without the least fear." Osteopathically, with due attention to readjustive manipulation, and care as to correct position and rest, passive motion will be allowable usually from the first day.

There is much corroborative evidence in current medical literature that bears in a general way upon part of the foregoing. The International Text Book of Surgery says: "Massage should begin early, in order to avoid, as far as possible, weakness of the muscles, and to ensure security to the position of the joints by the retention of a proper tone in them;" besides, early movement tends to reduce the effusion into the tendon-sheaths around the articulation, which in some cases, particularly the ankle and wrist, may be a very prominent feature. The Reference Hand Book of the Medical Sciences voices the same opinion; and Mumford is referred to as follows: "Immobilization for more than a few days, as under the older methods, is objectionable because adhesions are apt to form, thus causing impairment of function, and because when there is a **tubercular taint**, proper conditions for a localized tuberculosis are established." Among other statements Holder Sneve in the Journal of the American Medical Association of June 1, 1901, says: "Immobilization of muscles is not rest. On the contrary, in all sprains the muscles should have passive exercise the first few hours and days, and active exercise after that. In the majority of cases active exercise should be instituted from the beginning. The plaster cast should not be used at all, even in cases where we have a fracture, unless it be impossible to maintain a proper position of the joint."¹

1. See also Wharton Hood, Sprains and Fractures.

Again quotation is made from Moullin. These quotations are taken from the chapters on Manipulation and Massage. It will be observed he makes a distinction between the two methods. And the osteopath should carefully keep in mind not only the difference between the two, but beyond these the more fundamental treatment, readjustment. The characteristic feature of osteopathy is anatomical readjustment, and this in sprains should be supplemented by massage (superficial work), and also manipulation (deep and more or less forcible work) in order to remove stiffness, rigidity, and fibrous ankylosis.

The following is relative to forcible manipulation: "Manipulation is much more useful than division; it can be employed for such a variety of purposes. In the early stages it prevents the occurrence of stiffness or the formation of adhesions. Later, when the swelling and heat have disappeared, it is no less successful in restoring freedom and ease of movement, and afterward, when all mechanical obstructions have been cleared away by its use, it is one of the most effectual methods known for bringing back the circulation and nutrition of the part, and giving again to the muscles and nerves the energy which has so long been wanting.....

"To carry this out effectively two things are needed beyond all others. The one is a sense of touch so delicate that it can appreciate the least resistance or irregularity of movement; the other an accurate knowledge, not merely of the ordinary anatomy of the part, but of the different degrees of tension that fall on the ligaments in every position of the limb.

"Each joint requires a different kind of manipulation according to its construction.....

"There should be no jerking. The movements must be vigorous and forcible, but perfectly smooth; and they must be carried out thoroughly, the joint being moved to its full extent in all directions that are natural to it. Each kind of action should be combined successively with the rest, one by one, so that the tension may fall in turn upon all the different parts of the capsule.

"Movements which are especially restricted or painful, of course require most attention, but the others, though they may not be affected to the same extent, are not to be neglected. It sometimes happens if these are dealt with first, that a considerable proportion of the main obstruction is cleared away, as it were, by side attacks, so that when its turn comes it yields more readily than it otherwise would.

"Recent slight adhesions give away at once without a sound, though the sensation is generally conveyed to the hand. When they are older

the noise may be as loud and clear as when a bone is broken.....

"The after treatment of these cases (cases where there has been tearing and breaking of adhesions) should be in all respects the same as that of a recent sprain, only if passive motion at an early date is advisable to prevent the occurrence of stiffness in the one, it is absolutely necessary in the other."

The following pertains to massage of sprains: "Massage, in the strict sense of the term, is a great deal more efficacious, especially with older sprains. Its action is not limited to the skin and superficial structures. These undergo immense changes, it is true; they become softer and finer while under manipulation; their strength and elasticity increase, the extreme tenderness diminishes, and the natural appearance and texture return. The surface loses its dry, harsh character and becomes warm and moist again; the livid bluish color gives away to a brighter hue, and the deeper layers of fibrous tissue yield and stretch, so that the hide-bound, shrunken condition that is often present after long disuse gradually passes off. But the good effect is not by any means limited to, or even most conspicuously shown by, this. When properly carried out, massage exerts a simultaneous influence on muscles, nerves, and vessels; in fact, on all the tissues within its reach.

"The circulation is the first thing to feel its power. It has already been explained how, after prolonged rest, the blood, as it were, lies almost stagnant in the tissues, slowly circulating through them, and neither giving them sufficient for their nutrition, nor removing from them the waste products of their action. This is changed at once. The life of the part is quickened. The veins and absorbents are emptied first, and the fluid they contain driven out into the heart, which fills more rapidly, and contracts more vigorously and firmly. Then the pressure falls in the smaller vessels, and the tiny irregular spaces, full of lymph, which extend in all directions through the tissues. These, in their turn, are compressed and mechanically emptied, their contents being driven on into the empty vessels, from which any backward flow is prevented by the valves. The circulation becomes more rapid; nutrition is carried on with greater energy, and the actual amount of the blood in the tissues at any one time so much increased that they become full and soft to the touch and regain the even and rounded contour of active health.....

"It is most essential to commence as gradually and as gently as possible, working on the deeper tissues only after the more superficial ones have become thoroughly accustomed, and have been unloaded of their surplus fluid. The skin, the soft sub-cutaneous tissue, the muscles,

and the deeper layers, must all be worked in turn. Nor should the manipulation be confined to the injured part. In a sprain of any standing, the whole of the limb is affected more or less. It is usually better to devote attention first to the parts nearer the trunk than to deal with those around the injured area, and only afterward, when the circulation is thoroughly re-established, to manipulate the joint itself.

"The tendency is to make the sittings last too long. Deep manipulation itself rarely requires more than **five minutes**; but in dealing with a recent injury it may be advisable to spend a longer time than this over the friction and other preparatory measures, so that a quarter of an hour soon passes by. When the tenderness is very great, and the amount of swelling excessive, much longer than this may be necessary, but short, frequently repeated sittings are of greater benefit than one long one. A skillful operator, too, will often effect more in a few minutes than an ordinary rubber will in as many sittings."

A summary of the general treatments of sprains would be as follows:

1. Readjustment of parts and removal of obstructions. Osteopathy is especially adapted in these cases, for two of the primal therapeutic factors in all cases from an osteopathic viewpoint are to re-adjust the anatomical and to remove obstructions. One should constantly keep in mind, "a temporary displacement followed immediately by a return to place, constitutes a sprain." The osteopath often finds that a perfect returning does not take place, and even remote lesions may affect a joint.

2. Manipulation, and massage of soft tissues, to restore circulation and to prevent and remove debris from rupture of vessels and inflammatory products.

3. The employment of cold, heat and pressure, and a certain amount of rest.

4. Anatomical readjustment and manipulation in chronic cases to break up adhesions, remove exudates, overcome the organized products of inflammation, and cure synovitis.

5. Movements both passive and active to stimulate and exercise functions of the joint.

The Spinal Column.—The osteopath is especially cognizant of the fact that many sprains occur to the spinal column. These may affect a single joint, or more or less of a section may be involved. The bones, ligaments, tendons, muscles, or spinal cord may be found injured. Even distant organs, through involvement of the circulation to the cord, or through irritation or impingement of spinal nerves and sympathetics, are frequently disordered. It is not necessary to go into detailed de-

scription, for the points bearing upon this will be found under Osteopathic Diagnosis, Etiology, and Technique, and the general description will, also, apply. Readjustment, strapping, heat, massage, manipulation, ironing, stretching of muscles, fomentation, etc., have their place. There is no doubt that sprains, strains, and blows to the spinal column are the cause of many spinal disorders and consequent visceral disturbances.

The Ribs.—Sprains of the vertebral ends frequently occur, resulting in a partial luxation, stretching of ligaments, contraction of muscles, and exudative formation in the joint structures, which often is the cause of irritation to the sympathetic nerves. The costal cartilages are frequently strained, and may so irritate the intercostal nerve as to cause considerable pain both locally and reflexly. The treatment is essentially one of replacement, and relaxation of the softer tissues. Adhesive strips to limit movement due to respiration may be helpful.

The Innominata.—Sprains of the innominata are also commonly met with. Besides being a source of discomfort to the patient they are an important cause of pelvic disorders and leg affections. Partial displacements are the rule, the correction of which gives quick relief. Where there is considerable spasm of muscles, examine carefully the lumbar alignment. In chronic cases fibrosis of muscles and adhesions may complicate matters.

The Hip Joint.—Sprains involving the hip joint may be readily corrected, and again may be the exciting cause of serious involvement. Previous tubercular disease can be aggravated in this manner, or syphilitic changes in the joint disturbed. Care should be taken that there are no complicating displacements of the innominata or irritations to the spinal nerves. Possibly the hip may be so strained as to cause a twist of the femur in the socket and thus simulate a partial dislocation; this, in fact, would probably be termed a partial dislocation. Strain of one set of muscles about the hip joint is somewhat rare, and spinal lesions may disturb the innervation to one set of muscles. In cases of **intracapsular fracture** considerable can be done by careful massage and manipulation after union has taken place, to secure greater freedom of movement and strength of the limb. Likewise in **hip-joint disease**, after the disease is healed, massage and manipulation will be very beneficial. Care must be taken if the treatment causes spasticity of the muscles; this shows the treatment is irritative and should be stopped until the spasticity has ceased. Where the limb is shortened from either hip-joint disease or intracapsular fracture apparent lengthening may be secured by careful abductive and hyperextensive stretching.

The Knee.—The knee is the most complicated joint, and sprains are apt to be very serious. The usual treatment for sprains is employed. Occasionally the semilunar cartilages are displaced and may be a source of difficulty in diagnosis; likewise injuries to the patellar tendon and lateral ligaments. Another joint frequent overlooked is the innominate. In a number of knee cases that terminate in chronic synovitis there will be found a displacement of the innominate that is preventing recovery. A villous synovitis may arise in strains from faulty posture, especially in the obese. Injury to the hip-joint, also, may cause strain or irritation at the knee. Occasionally tender points about the knee, especially at the inner side, are due to irritation at the hip, or possibly from the spine. Referred pain of the knee joint is of frequent occurrence.

The Ankle and Foot.—The ankle is often sprained. One should examine carefully for a possible fracture of the malleolus, and for fracture of the tibia. There may be a dislocation of the fibula, also a separating of the tibia and fibula at the ankle. The common bony displacement takes place between the astragalus and os calcis. Then the cuboid is frequently displaced, and occasionally the navicular. The treatment should first of all be directed to correction of the osseous lesions. The arch of the instep may be weakened from the ligamentous strain and be an immediate step in the production of **flat foot**. Teall is of the opinion that lumbar and innominate displacement are common predisposing causes. Faulty position of the foot in walking may be an underlying factor.

Bunions result from a malposition of the joint. **Morton's disease** due to a pinching of the metatarsal nerve will often yield to osteopathic treatment alone. There is generally displacement of the metatarsal bone. A pad worn directly under the painful point will be of benefit. In many of the local neuralgias, some anatomical displacement will be found as the exciting cause. **Hammer-toe** if not complicated with gout, rheumatism, etc., will yield to treatment if kept at persistently, otherwise surgical interference will be necessary.

Likewise various deformities of the foot and resulting neuralgias may be traced to local sprains, ill-fitting shoes, or anatomical maladjustments higher up of such a character as to affect the pedal circulation.

Flat Foot

Flat foot or weak foot is one of the common disorders that the osteopath is constantly called upon to treat. In the first place the patient should be taught to walk correctly. The feet should be parallel in walk-

ing so that the weakened muscles may be developed and strengthened. This will be difficult at first, but recovery depends upon this important point. In addition to this, special exercises, like turning the toes under and tip toe exercises, should be persisted in for a few minutes two or three times daily. Upon the other hand, do not overdo the exercises but always carry them to a point of fatigue. These two features, walking correctly and exercising, are essential complementary measures to the adjusting treatment. In conjunction with the above, the Scotch douche at the end of the day will prove of considerable benefit.

In the technique work, first make certain that there are no innominate or spinal lesions that bear upon the circulation and innervation of the feet. Then frequently faulty walking is due to these lesions.

In recent cases, simply remolding the arches of the foot will be all that is necessary, providing correct walking and foot exercising is maintained. But in the more chronic cases considerable adjusting and remolding of the tissues, bones, ligaments, muscles and fascia, are demanded. Perfect apposition between the astragalus and navicular bones, the highest point of the longitudinal arch, should be first secured. Attention should also be given the other articulating structures down to the metatarsal bones. This re-establishes the arch and overcomes the everted tendency. Considerable repeated force is often demanded to release the fibrotic tissues, but it is the important part of this technique.

With the patient on the table, supine, place your thumb firmly at the articulation of the navicular and astragalus. Then with the other hand around the metatarsals to be used as a lever in extending, rotating and inverting the foot with the fulcrum at the thumb of the first hand, spring, thrust and adjust the arch. This requires considerable strength and exactness of application. The tissues must give freely before the result can be secured. This is often painful to the patient but should be continued and repeated to the furthest point of motion until recovery is complete. Treat as often as the condition permits. Substituting the crotch of the thumb and forefinger or the knee for the thumb will give added advantage. Follow this with thorough springing of the plantar tissues by thumb and fingers.

If this is kept up with suitable exercises and correct walking, and proper shoes (Munson last), excellent results will be obtained in the great majority of cases. Same pair of shoes should not be worn two days in succession.

Many times the anterior arch is involved, jointly or separately.

Persistent adjusting and remolding of the arch tissues will secure satisfactory results unless the bones are markedly deformed and the weight of the body is relatively too great. In this disorder, aside from paying special attention to the metatarsal articulations, the great toe requires a particular technique. For this grasp the toe firmly, exert traction until the tissue gives slightly and rotate it inward, toward the median line of the body, on its longitudinal axis. Have the patient frequently turn the toes under, or attempt to do it until the exercise can be easily accomplished.

Do not employ arch supporters except in hopeless cases. They simply splint the foot and thus further weaken the foot muscles. If the above methods are persistently followed to the point of actual adjustment, accompanied by releasing of fibrous tissue and actual strengthening of muscles through exercise, a very large percentage of cases will recover. In a few cases adhesive strips will be of benefit.

The Shoulder.—Exclusive of muscular and other strains there may be a partial dislocation. In these cases the acromial end of the clavicle is frequently dislocated, and owing to a general lack of muscular tone may be very hard to keep in place. The lower and inner part of the capsule is often affected, so that freedom of function is lacking and there is considerable pain. This is due to the thinness of the capsule and the large amount of soft tissue, so that when the arm hangs at the side the tissue is thrown into folds; and being very vascular is easily injured, so that the vascular lymph readily organizes and the part becomes stiff and unyielding. It requires patient, laborious treatment to break up and absorb this fibrous tissue. Then the long tendon of the biceps in some shoulder sprains is dislocated, but rarely. In shoulder injuries, examine also, the upper ribs.

The Elbow.—The elbow is another complicated joint. One should be careful that there is no fracture, and in children that there is not **epiphysial separation**. Extending, flexing, pronating and supinating the arm will aid much in the diagnosis. Examine well the rotation of the radius at the elbow joint, and be positive that the olecranon process drops normally into its fossa at the end of the humerus.

The Wrist and Hand.—The wrist is another joint commonly sprained. Here, also, care should be taken that a fracture does not exist. Colle's fracture is frequent. The bursal and tendon sheaths are usually markedly involved. The scaphoid and semilunar are apt to be displaced; also, the os magnum and the unciform.

Sprains of the **fingers** are often met with. Outside of strains to the

muscles, ligaments, and other tissues the joint is apt to be somewhat impacted. Traction will correct the latter. Care should be taken that a fracture is not present. **Dupuytren's contraction** occurs from sprains or injuries, as the result of contraction of the fascia. The ring and index fingers are members usually affected. In some cases the affection will be found in both hands (symmetrical), and a spinal lesion will be the predisposing factor. Treatment every day, by straightening the fingers and stretching the tissue will at least retard the deformity, but in a number of cases surgery will have to be resorted to.

A **ganglion** or "weeping sinew" is a swelling in connection with the tendon sheath. It presents a round, firm outline, usually upon the back of the wrist. There is generally found a displacement of one or more of the wrist bones. If treatment of the joint and tendon sheath does not remove the ganglion, surgery may be utilized. **Trigger-finger** is a rare disorder. There is usually a history of local strain, which probably resulted in some thickening of the tendon. Manipulation and passive motion if continued will generally give relief.

Fractures

Immobilization and rest have been the paramount points with most physicians in the treatment of fractures and sprains. They have claimed that a sprain should be manipulated but rarely, much less a fractured bone. Rest, quiet, and fixation of an injured joint or bone have been rules that should not be violated under any consideration. In cases of sprain the great cry has been to let the joint alone for fear of spreading a possible **tubercular infection**. It is well to recall Mumford's statement that if immobilization is too long continued, should there be a tubercular taint, proper conditions for a localized tuberculosis is established. And still a word of caution here, that an osteopath should not be over zealous and should carefully weigh all possible factors, both local and constitutional, may not be amiss. In previous tubercular, syphilitic, and other diseased states discretion should be employed.

Reducing rest and immobilization to a minimum means much to the patient, not only in the loss of valuable time but in annoying and serious after effects. Many cases of sprains and fractures come to the osteopath. In sprains that have become chronic through too much rest of the part and improper treatment, almost invariably there is found displacements of bone and adhesions that should never have existed; then has followed organized exudates and chronic synovitis. In fractures and even in complete dislocations the osteopath continually ob-

serves that too much rest has been given the part, resulting in unnecessary adhesions, contractions, atrophy of muscles, and impairment of function. Treatment almost always cures the condition, or at least materially relieves. How much better if the proper treatment had been first instituted and thus a large percentage of cases prevented from becoming chronic.

Of particular interest to the osteopath is the paper prepared by Eisendrath on "Early Massage and Movements in the Treatment of Fractures and Sprains," and the discussion that followed before the Chicago Medical Society. The Illinois Medical Journal, December, 1903, contains a report.

Eisendrath said in part: "The former routine of immobilizing all fractures and the adjacent joints for a period of four to six weeks must, I feel, be subject to slight modification in the light of recent experience, and it shall be the aim of this paper to show what these changes are. When we are called to a case of fracture, it should be one's first duty after its reduction to consider how can I best aid the patient in recovering the usefulness of his or her limbs? Can we shorten the long convalescence with its resultant loss of valuable time and earning capacity? How can we most rapidly restore to the limb its normal joint functions and prevent an atrophy of muscles and an ankylosis which will require many months to overcome?.....

"The use of massage and of active and passive movements in the treatment of fractures and of severe sprains has been gradually gaining in the number of its advocates through the writings of Lucas-Championniere of Paris. We owe him a great debt for calling the attention of the profession to the employment of these methods in order to prevent atrophy and ankylosis as well as to promote healing.....

"Before taking up my subject in detail permit me to recall a few salient points in the surgical pathology of fracture. Soon after the injury the blood clot around and between the ends of the fragments is absorbed and replaced by a jelly-like mass of young connective tissue cells called the callus. It corresponds to the solder which the plumber places over the ends of two pipes he desires to join. Bone begins to form at the periphery of the callus about the tenth day and advances toward the center rapidly, forming a ring of bone around the ends of the fragments so that by the end of the third week there is but slight abnormal motion at the point of fracture (exception to this is the femur). This entirely disappears by the end of the fourth week, especially in young people, and the union is firm. In the case of the femur it requires six or

eight weeks. The greater the displacement of the ends of the fragment, the larger the callus and the slower the healing of the fracture.

"During these changes (callus formation) the muscles which supply the immobilized joints atrophy and the circulation in the skin and neighboring tissues is sluggish, resulting in swelling, etc., of the limb. The enforced rest causes more or less fluid to accumulate in the tendon sheaths and joints. This becomes organized and results in fibrous ankylosis of the joints and great impediment to the free action of the tendons within their sheaths. It is this atrophy, fibrous ankylosis and tenovaginitis which interfere with the restoration of the normal functions of the limb.....

"Can we decrease the amount of wasting of muscles and control the stiffness of joints and tendons after fractures?

"It is the belief of the writer, based on a large experience, that the earlier use of massage, active and passive motions, will to a great extent eliminate the above conditions, which retard convalescence and in some cases cause permanent disability.

"Massage of an injured limb increases the amount of blood supplied to it, promotes the absorption of the swelling and prevents atrophy of muscles. In the case of a joint injury the exudate rapidly disappears and the articular surfaces can be again approximated so that movement is facilitated. By the cautious use of active and passive movements, either with or without the aid of apparatus, the normal functions of a joint can be rapidly restored.....

"The active and passive movements of the limbs can be carried out immediately after the massage, but should only be permitted for a period of **five minutes** at first and the time then gradually increased. When a severe sprain, say the elbow or ankle, is first massaged, the pain seems to be almost unbearable, but this discomfort as well as the swelling rapidly disappears, and it is surprising to those who have never applied this treatment how quickly the normal function of the joint reappears. The same applies to the synovitis which accompanies fractures in close proximity or even into joints."

The relief given these cases by massage, movements and manipulations by the osteopath is a daily experience, and results to him are not surprising. Then in addition to what the surgeon would do, the osteopath applies his principles of careful detail readjustment.

Eisendrath continues his paper by referring to the principal varieties of fractures and giving the treatment for each. He says that if correct treatment is carried out with proper massage and movements in fractures of one or both bones of the leg, the patient will be at work in six or seven

weeks instead of three or four months, that in Colle's fracture some surgeons do not employ a splint, and that in fractures of the olecranon, massage from the first week on is of the greatest use. This part is very interesting but space forbids giving it.

He then concludes his article with citation of several very interesting cases of fractures and severe sprains. These cases are exceptionally interesting to the osteopath, but still the same good treatment and results are duplicated every day in the osteopathic school.

The doctor's contraindications to the use of early massage in fractures or sprains are the following:

"1. Tendency to displacement of fragments in oblique fractures. Under such conditions it is best not to begin either massage or movements until the union is firm (fourth to fifth week).

"2. In compound fractures until the wound is healed.

"3. Whenever the condition of the skin is such as to permit of infection; for example, the presence of blebs, or extensive abrasions.

"4. The presence of fragments which project but do not penetrate the skin."

His conclusions are:

"1. Massage, active and passive motions prevent atrophy of muscles, tenovaginitis and ankylosis so frequently accompanying and following fractures, especially those close to the shoulder, elbow, wrist, knee and ankle joints.

"2. They give far better results than complete immobilization in the majority of fractures."

In the discussion that followed Henrotin said that for some time, "I have never put a restraining apparatus of any kind, nor have I used any lotions on any sprain, no matter how severe.

"It has taken many years to bring this subject before the profession. It is a method that is absolutely effective as regards sprains and some forms of fractures. I have treated several hundred such cases with the greatest success." He also said that, "In treating an inflamed joint it is improper to use a restraining apparatus of any kind. I consider that the plaster cast is the bane of all inflamed joints unless there is a **specific form of infection**, a traumatic condition." Neither does he believe that an inflamed joint should be put at rest. He says the patient is a good judge as to the amount of quiet the joint needs. He has treated Colle's fractures and fractured clavicles without bandages or apparatus.

To sum up, the osteopathic procedure in the treatment of fractures would be as follows:

1. Immobilization in those cases especially demanding it, from the character of the fracture, until formation assures solid and firm union.

2. Manipulation and massage and movements of parts at an early period, compatible with the above, to render soft tissues pliable, to remove stiffness and adhesions, to restore a normal circulation, and to exercise and function the parts.

3. In cases of laceration of soft tissues, abrasions, etc., great care should be taken so as not to infect the parts.

4. Great care should be taken where fracture is compound, and where fragments exist.

5. In all cases, both acute and chronic, critically examine for slight anatomical deviations locally and remotely.

In dislocations the fundamentals of the above are applicable. Do not let chronic stiffness, or rigidity, adhesions, or synovitis supervene if possible to prevent.

An important consideration in all cases of sprains, fractures, and dislocations that become chronic is the probable effect upon dependent tissues by way of nerve impairment and vascular obstruction; for examples, the sprained back may readily impair organic life, the fractured elbow prevent use of the arm, the injured leg predispose to flat-foot. (See J. B. Littlejohn—Osteopathic Surgery, including Treatment of Fractures, *Journal of the American Osteopathic Association*, Nov., 1905.)

POSTURAL DEFECTS

A postural defect is any abnormal position, congenital or acquired, of the body, assumed in sitting, standing or walking. This leads to a symmetrical development, causes structural changes, and as a sequel, disturbance of function and organic life results.

Defects in posture are of very common occurrence. A perfect posture, in fact, is somewhat rare. Considerable is being accomplished, especially of late years, by the laity through various physical methods and exercises to correct the many defects of position in sitting, standing and walking. The originators of the many so termed systems of exercises have gone so far as to even advertise to cure various diseases of the body as well as attempting to improve the normal tissues and structure.

Exercises, undoubtedly, have their place, particularly in the life of those of sedentary habits. Most of us do not exercise enough, neither do we as a rule get enough fresh air and pure water. But there are many defects of the anatomical that mere gymnastics can not adjust. And there are still other defects that gymnastics may decidedly aggravate. In these cases the mechanism of the body has become so deranged and disturbed that nothing short of actual readjustment can be effective.

In the consideration of postural defects there are a few points that should be particularly emphasized. First, these defects may not only be the result of laziness or carelessness, but of more frequent occurrence is some previous strain or injury to the spinal column or other parts of the body framework. Some defect of position or symmetry of the body may easily follow as a result. Here gymnastic work may reduce the defect to a minimum, but rarely can the compensatory forces of nature entirely obliterate the structural disorder, unless assisted by actual, specific readjustment. Second, in the examination and treatment of the patient due attention should be given the symmetry and figure of the body as a whole so that relation of the part to the whole and *vice versa* may be rightly proportioned. Remember that the spinal column is only one part of the body outline, thus one should consider the transverse section of the body in relation to the spinal column and not the spinal column alone. In a word, correction of postural defects implies both structural rearrangement and molding of the contour. Do not make the mistake, for example, when correcting a deformity that involves the chest, of paying attention to the spine alone, but take into consideration the thorax as a whole of which the spine is only a part.

Round Shoulders

Round Shoulders are a defective posture with which everyone is familiar. How many children have escaped the parents' criticism to sit, stand, and walk erect? And not a few of the afflicted have not succeeded after persistently doing their best.

Round shoulders or stoop shoulders are commonly attributed to indifference. Probably a few cases are due simply to laziness and indifference, and others may be carelessness, and usually when they arrive at an age where pride of their physical demeanor and powers enters as a life factor, the child soon overcomes the postural weakness. With still others the correct, persistent physical training, as exemplified in military schools, will readjust the defect. But there is a class, and by far the largest, where round shoulders are a very real and active weakness of the physical body. And the weakness is not primarily in the shoulders as nearly everyone thinks. The stoop is a result. The origin is in the lower dorsal spinal column. Here will be found a posterior curvature that involves nearly the entire dorsal and lumbar areas. This is the real, the original cause of the larger number of round shoulders.

This backward curve of the spinal column, instead of the forward curve as it should normally be at the waist, obliterates the brace or truss of the spinal column that is so essential in maintaining an erect posture of the shoulders. It allows the individual to "fall into his stomach," to drop the shoulders, and as a consequence the chest cavity is depressed. The spine is one continuous backward bow, and when he does try to sit straight, and it is always with a constant effort, the normal, the physiological curves of the spine are not apparent.

First, then, there is a spinal weakness in the region of the innervation to the digestive organs. Indigestion of various forms is a common accompaniment. Second, there is lessened lung and heart capacity. The ribs are depressed, interfering with perfect aeration and elimination on the part of the lungs and with normal activity and tone of the heart muscles. Phthisis is predisposed. Is it any wonder the child's blood is impoverished and anemia results from the insufficient aeration and poor digestion and assimilation? Costogenic anemia may also be a result. And, third, the shoulders are "round" from the spinal weakness and flattened chest, really an effect; but while the most noticeable, it is the least serious.

It is evident from careful observation and study of these cases that the treatment resolves itself into the treatment of a posterior spinal

curvature. Shoulder braces, steel braces and jackets, and casts have very little place, if any, although there may be diseased bone of such character and severity that a cast will be necessary; this, however, would refer to treatment of Pott's disease and similar conditions.

Hence, the **treatment** is, first to replace and readjust the mal-aligned vertebræ. There must be an actual physical manipulation in order to correct the vertebræ at fault. This is the essential, and by far the primal, treatment for the key to the truss or brace that holds and retains the body in an erect position is then replaced.

Second, raising the depressed ribs. Remember the depressed ribs are dependent upon the spinal condition. The thorax should be treated as a comprehensive whole, not the spinal column alone.

Third, exercises are a valuable aid. The individual's part is as necessary, in a way, as the physician's, for in order to accomplish the maximum there should be consistent and appreciative work on the part of the patient. Holding the shoulders back, the head erect and the chin in, drawing the abdomen in and up, all with deep breathing by the use of the chest muscles, the patient will be able to retain the correction obtained during treatments. "Setting up" exercises are helpful. Developing the muscles of forced expiration is excellent. Thus the patient must be conscious of the work required of him and act in concert with the physician. Minute instruction on the requirements of each case is demanded.

Good food, pure water, and fresh air are necessary, particularly in the anemic. Right living and correct environment are always in order.

Painful Shoulders

Under this heading may come a variety of conditions affecting one or both shoulders causing much distress and, at times, total disability. The conditions may be the result of direct injury to the joint, systemic, or from spinal lesions. Anatomically the shoulder offers frequent opportunity to injury as it has the greatest range of motion of any joint, is least secure in its articulation, and is most vulnerable from location. Once the shoulder has been dislocated it is rarely back to normal functioning again as this injury tears the capsular ligament and stretches the structures in relation. Many times there is only a **subluxation** in which the head of the humerus is driven upwards in the fossa, usually from a fall or blow on the point of the elbow. As a rule, after such an accident, the only thing done is to rest the joint and apply a liniment

and, after a time, begin the use of the arm. It is, however, painful and to save himself, the patient each time restricts movement until he reaches a point where he is unable to dress without assistance. It is then found that normal motion is reduced fully one half and even this will be accompanied by pain on movement and in bed. A radiograph will, usually, show the condition. Articular crepitus and fibrous adhesions are present while the adjoining structures have undergone changes so that a reduction is impossible without certain preparation. Very often a trivial cause will disable a joint; a sudden movement which finds the muscles about the shoulder unprepared and the resulting lesion is so slight as to, often, defy detection. At first there will be swelling and pain but, in time, it settles down to a limited motion with more or less distress.

Bursitis.—This is a condition in which the sub-deltoid bursa is involved or where there have been a number of bursæ formed from over-use of the joint. One authority reports as many as twenty-five in a shoulder. There may be, also, tenosynovitis primarily or from extension. These conditions may not be easily diagnosed at first.

Brachial neuritis (chronic) beginning with or without an acute attack is usually from a cervical lesion involving the brachial plexus but most frequently it is the 5th and 6th cervicals at the origin of the circumflex nerve. From this the deltoid is particularly affected and its contraction leads to pressure on the nerve and subsequent partial or complete paralysis. Brachial neuritis is found in an increasing number of osteopathic practitioners and is the result of overwork of the arms and to strain of the upper dorsals and lower cervicals. There are contractions of structures about the joint constantly limiting motion and pain when a strain is put on them.

Many methods for the treatment of the conditions described have been employed, all involving the same principle but none of them systematized. C. H. Spencer has worked out a technique which, while originally intended for bursitis, has been found well adapted to all conditions described. It gives a stretching of all structures and gradually breaks up adhesions, both in the joint and in the tendon sheaths, so there is no resulting irritation which could easily result if suddenly done. His technique is¹:

“First: The patient on the side, the affected shoulder up; operator facing the patient, places one hand on the top of the shoulder, does nothing more than fixing it; with the hand grasping the forearm above the

1. Journal American Osteopathic Association, Jan. 1916.

wrist, push the elbow backward, the arm parallel to and almost in contact with the body, then pull forward in the same plane. Second: Elevate the elbow with the hands of the operator in the same position as before, carry the elbow in as wide a circle as possible. Third: With the hands still in the same position, extend the forearm with traction; carry it as high in front of the patient as possible. The foregoing are designed to relieve the congestion about the shoulder, bring pressure to bear on the subdeltoid bursa and moderate traction on the supraspinatus, infraspinatus, subscapularis, teres minor and major, latissimus dorsi and the tendon of the biceps. These manipulations will be all that is possible in the more aggravated cases for some considerable period of time. As the tenderness subsides, the second group may be cautiously started, the hands in the same position as above noted, with the arm extended as nearly as possible at right angles with the body, carry the arm in as wide a circle as the pain will permit. Again, with the arm flexed at the elbow, one hand of the operator on the point of the shoulder and the forearm of the patient across the forearm of the operator, the other hand of the operator resting on the point of the patient's elbow, push down toward the middle line of the body and carry the elbow toward the head. Then flex the arm and place the back of the hand behind the patient, flexing the shoulder in front with one hand grasping the point of the elbow and pull forward. This group of movements accomplishes with greater force the same ends obtained in the previous, and the first in this group is the most effective in overcoming swelling of the sub-deltoid bursa. Direct manipulation of the muscle masses and this bursa is desirable from the first." It will be noticed in all these movements that the joint is protected by one hand of the operator while the other is grasping the arm of the patient. This is desirable as it makes the technique absolutely safe. An additional treatment will be found very effective, especially where the deltoid is involved. With the patient on the well side, facing the operator, locate the quadrilateral space which is bounded by the subscapularis above, the teres minor below and the long head of the biceps medially and the surgical neck of the humerus externally, and the circumflex nerve can be easily palpated along with the artery. If these structures are stretched and the deltoid lifted from the shoulder it will be found to free the action of both nerve and artery, one supplying the joint with nutrition and the other innervating it.

Certain conditions for which these movements are contra-indicated arise and the following differential points by H. Glasscock are well to

remember¹: **“Rheumatism:** Fever in the joint, with redness, swelling and other joints involved. **Tuberculosis:** Daily temperature and other tubercular foci. **Neuritis:** Pain in the neck and shoulder muscles, also near insertion of deltoid and in the forearm, particularly musculo spiral. Pain worse at night. No pain on movement. No swelling. **Bursitis:** No pain in neck. Pain in anterior and posterior part of joint and on motion. Pain near insertion of deltoid. Arm held close to the body, motionless. **Infection:** Chill, limited motion, severe pain with temperature. **Dislocation:** Deformity with preternatural mobility. **Dislocation of acromio-clavicular joint:** Tenderness over articulation. Arm cannot be raised beyond right angle with the body, but elbow may be brought across the chest with external rotation of arm and raised perpendicular with the body without pain.” The infected joint should never be manipulated and all conditions showing swelling, redness and pain on touch should be viewed with suspicion. Remember that all other conditions will almost invariably have vertebral lesions, primary or secondary and a permanent result will depend upon their correction.

The Prominent Hip

A hip that is prominent and larger than its fellow is of frequent occurrence. It may not be necessarily conducive to a defect in posture, but it often is. The female is more frequently afflicted with this anatomical irregularity than the male. In the first place, the female pelvis is not so stable and rugged as the male pelvis, i. e., a mechanical wrench or fall will more easily displace the relative position of the tissues in the female. Then, in the second place, the dress of the woman accentuates irregularities of the figure, so that possibly in some instances the defect, from a diseased or deformed point of view, is more apparent than real. But of still more importance is the fact that many cases of a prominent hip are due to a lateral curvature of the lumbar spinal column. Lumbar curvatures are of common occurrence in the woman; first, the spinal column is not so strong as in man, simply on account of the physique not being so robust; second, modern dress constricts the waist by the use of corsets and many waist bands, and the weight of heavy skirts upon the waist, hips and abdomen; and, third, severe strains from childbirth. Care should be taken that there is no congenital abnormalities of the lumbar spine, or that congenital asymmetry of one-half of body, or trunk or leg is not present.

1. Osteopathic Physician, Nov. 1919.

Thus the principal **cause** of a prominent hip is the lateral lumbar curvature. This, through compensatory action, renders the hip on the concave side prominent and high, while the hip on the convex side is depressed and less pronounced in appearance. Dressmakers and tailors are all too familiar with this feature of the irregularly outlined figure, and, consequently, have to resort to "padding" to round out the symmetry of the body. The mere irregularity of the figure, unfortunately, is by far the less serious part of the defect. Many ailments and diseases can be readily and directly traced to this. Not that the prominent hip itself necessarily always plays a leading part, but rather the lumbar curvature is the cause of very much suffering and misery. To enumerate the many disorders that arise from mal-aligned lumbar vertebræ may be unnecessary but a few will be given. A point to be emphasized is that the prominent hip often plays the role of a sign or symptom, or an effect, that an ailment or disease may be elsewhere.

In the female one of the most common causes, if not the most common cause by far, of disorders of menstruation, whether painful, profuse, or irregular, is irritation or obstruction of the lumbar spinal nerves due to lumbar curvatures. It is well known the lumbar spinal nerves control, to a large extent, the pelvic organs; consequently the osteopath pays particular attention to this area. Then certain intestinal disorders, such as appendicitis, typhoid fever, dysentery, rectal diseases, owe their origin to predisposing lesions here; also, bladder ailments, and sexual diseases of men, and many affections of the legs, as sciatica, varicose veins, etc.

In a number of instances the prominent hip will be due to a displaced innominatum. Then a lumbar curvature will result as a compensatory condition. This reverses the compensatory act as heretofore referred to; the prominent hip, in this instance, is the cause and not the effect. To diagnose which is cause and which is effect will frequently require considerable technical knowledge and experience. The slipped innominatum then produces symptoms and disorders directly from its changed anatomical relations; the points of diagnosis are given in the chapter on Diagnosis. The prominent hip can easily be detected when the subject sits down upon an even, firm surface, or stands up, and the one side is compared with the other. In some cases where the prominent hip is due to a lumbar curvature, and the prominence is a secondary feature, the legs will be found uneven in length, but not always, for the lumbar curvature may straighten out when the patient lies flat upon the back. To diagnose the cause from effect and to differentiate the maze

of signs and symptoms that may be present is not always easy even for the skilled practitioner.

The **correction** of a prominent hip is not ordinarily a difficult matter. In the cases where lumbar vertebræ are principally at fault, and these include the greater number, the problem is one of correcting the spinal curvature. Lumbar curvatures are the easiest of any of the curvatures to correct, for one is not hampered by the rib articulations, and the lumbar section presents an area where a leverage can readily be obtained. Where the innominatum is primarily at fault it is simply a matter of readjusting this, with probably some attention to the lumbar region. Care should be taken that the prominent hip is not caused by a tubercular sacro-iliac disease, by hip-joint disease, by a dislocated hip, or by an overlapping of thigh or leg bones from fracture.

Standing erect will, of course, be a valuable help, for standing with the weight on one foot will tend to make the hip on that side more prominent. But generally the reason why one favors a certain side is because the other side is weaker; a weak back, a slipped innominatum, or an injured leg are common causes. There are many cases where the skirts will have to be considerably altered after the hips have been made symmetrical.

Pendulous Abdomen

The **pendulous abdomen** is another defect that is all too common. A great many people have prominent abdomens because they do not stand properly, but a pendulous or prominent abdomen is not necessarily synonymous with a stout abdomen. They attempt to stand erect by drawing the shoulders back and extending the abdomen. If they would hold the head erect and the chin in, with the shoulders back and the chest forward, and draw the abdomen inward and upward, their figures and physiques would undergo shortly a wonderful transformation. These directions also apply to pregnant women. Drawing the abdomen upward and inward will at first require considerable effort. It certainly will not be an involuntary act for the first few days.

The sagging of the abdomen not only causes an unsightly appearance but results in great relaxation of the abdominal muscles, interferes with digestive functions, displaces the pelvic organs, and weakens the action of the lungs and heart.

The laxity of the abdominal muscles allows the abdominal organs—the intestines, stomach, kidneys, etc.—to displace downward. This tends to indigestion, constipation, inactivity of the liver, etc., and causes a score of reflex symptoms. The organs become simply weakened from

a lack of proper tone. This is a frequent cause of nervous prostration. Also it is one of the common causes of prolapsed and displaced pelvic organs, because the abdominal organs sag down upon them and the pelvic organs thus receive the brunt of the gravitative effect. Internal local treatment of the pelvic organs can only be a makeshift in these cases. The lungs and heart are weakened because the abdominal organs are dragging on the chest, the lungs can not aerate the blood freely owing to the abdominal weight and to the blood being obstructed in passing from the abdominal organs through the liver to the heart and lungs. The heart is handicapped in its work through lessened chest capacity and obstructed circulation. Just "suck" up the abdominal organs and see how much easier it is to expand the chest and to breathe.

There are other causes for a pendulous abdomen, such as a weakened spinal nerve supply to the abdominal muscles and organs. The weakened nerve supply may cause a loss of tone to the abdominal organs themselves, so that certain organs, as the stomach and intestines, become dilated and prolapsed; to the ligaments, and to the tissues and organs as a whole so that they become gravitated.

Through childbirth muscular fibres of the abdominal walls often rupture, leaving scars and a relaxed condition. Actual ruptures, hernia, of the abdominal muscles occur and cause a pendulous abdomen. Then there are cases of obesity where the pendulous abdomen is a symptom.

Much can be done with all of these conditions through osteopathic work; the patient must also help himself. The center of gravity of the body must be changed, and kept changed; correct posture and a constant effort will accomplish considerable. The "setting up" military exercises are excellent. Even in some cases of obesity the abdominal prominence can be markedly lessened by careful exercising and keeping the abdomen drawn in so that the abdominal muscles, the diaphragm, and the chest may be strengthened. For the relaxed, flabby abdomen, self manipulation of the weak muscles when lying on the back will materially aid.

Postural Curvatures of the Spinal Column

Undoubtedly, the great percentage of postural defects, or slumped states, are dependent, directly or indirectly, upon weaknesses in the spinal column. As was seen, round shoulders, the prominent hip, or the pendulous abdomen, are often initiated by spinal deviations and deformities, so naturally spinal column curvatures are a most fruitful source of direct defects of posture.

It is somewhat uncommon to find an anatomically true spinal column, although this does not preclude that one's posture is defective, for often through pride and effort one may consciously overcome a defective posture.

It is the purpose here to offer a few suggestions relative to the development of a greater symmetry of the body. Nearly every one is more or less interested in physical exercises and development. And especially to those of sedentary habits do means and methods of exercise appeal. Curiously enough, in a way, nearly every layman looks upon defects in posture, symmetry and stature as an effect arising from lack of, or improper, exercise. He seems to be imbued with the idea that the body in most instances is practically permanent in construction and when irregularities in figure occur certain exercises will correct the defect. Thus have individuals been prone to look upon osteopathy as a method of passive exercises. Osteopaths should believe most thoroughly in exercising, personal hygiene, etc., but the idea of osteopathic manipulation is primarily one of anatomical reconstruction, and not muscular development alone. The work of the osteopath is to re-adjust or to re-mold the body framework and the many tissues that clothe it so that normality of function may predominate. The manipulation is not routinism but mechanical rebuilding of the tissues so that perfect freedom of vital forces may be forthcoming.

The spinal column presents the most frequent as well as many extremely interesting phases for re-correcting work. The number of abnormalities as to contour to which it is subject are many and varied. Emphasis should be placed upon possible congenital abnormalities and developmental defects as sources of certain derangements. Any variation or combination of variations with the normal or physiological curves constitutes an abnormality or pathological curve. And as a consequence defective posture, unless thoroughly compensated, is readily initiated. Not only may the normal curves be exaggerated, lessened, eliminated or reversed, but lateral and rotary curvatures are of frequent occurrence.

Curvatures involving the cervical region to the extent of producing noticeable defects of posture are principally lateral deviations of several vertebræ. Wry-neck is probably the most noticeable disturbance. The head and neck being drawn and slightly twisted to one side is a defect that is both noticeable and painful. Another common source of postural affection is an exaggerated forward curving of the neck vertebræ. This produces a stooped appearance of the neck.

The dorsal vertebræ are often curved backward too far. This

produces roundness with too decided a fullness of the upper back and shoulders. The chest may be somewhat flattened as a secondary effect but not necessarily so. Neither are the shoulders what may be termed "round shoulders," still such a condition may occur, for "round shoulders" are more often caused by a backward swerve of the column at the waist line. There is often a shortning of the anterior structures which pull the point of the shoulders forward. Forcing them backward with aid in correcting the fault. The dorsal vertebræ may be forward what is termed a "straight" spine; this results in an exaggerated "braced" back position. Then lateral curvatures of the dorsal spine are common, which in time may develop into a rotary curvature; that is, the vertebræ are actually rotated on their axes. Lateral curvatures of the dorsal spine are slow and difficult to correct, for the ribs complicate matters very materially. Then, also, the vertebræ are apt to be deformed.

Curvatures of the lumbar spine, whether posterior, lateral or anterior, are common. Both dorsal and lumbar curvatures, as any one can readily see, are extremely common sources of postural defects. Erect positions of the body are maintained through the support of the dorsal and lumbar vertebræ. Stooped shoulders, one shoulder lower than its fellow, sitting humped over, sitting on the sacrum instead of squarely on the buttocks, the prominent hip, standing first on one foot and then on the other in order to rest the back, and the many allied variations of incorrect postures are largely dependent on the condition of the lumbar and dorsal spines.

It is not to be supposed that the above defects are the only ailments and disturbances that spinal curvatures cause, for, indeed, the defective posture may be by far a minor consideration. Disorders of body functions and affection of organic life itself are very often traced to the mal-aligned vertebræ.

The **causes** of spinal curvatures are many, but without question one of the most common causes is mechanical wrenching or twisting of the column from falls, jars, etc. Often the strain or sprain of the sections are readjusted through the inherent powers of the body, but there is a point where *vis medicatrix naturæ* requires extraneous help to correct the perversion; and, naturally, such aid, by virtue of the cause of the disturbance, should be physical force mechanically applied. Other causes of spinal curvatures are contractions of muscles on one side of the column or paralysis of the muscles on one side; in either instance, muscular action is greater on one side than the other, which easily results in a curvature. This imbalance of muscular tension, whether

due to the above or other sources such as overfatigue or various deleterious habits, is a prolific source of lesions. And among still other causes may be noted, bone diseases of the spinal column, compensatory deformities, and constitutional weakening and irritating diseases. Also, some occupations predispose to certain curvatures.

One can readily see that the **treatment** which is directed specifically to the cause of the vertebral deviation would be the most scientific. This is just what osteopathic work implies, direct readjustment of the sections at fault—not exercises, or routine stretching, or braces; although these latter methods may in some cases have their place as secondary aids. Of course exercises are usually physiological and may be employed, in many instances, as an auxiliary. Care should be taken to eradicate infectious foci when present.

Where curvatures are extreme, complicating and deforming the ribs, and absorbing the bodies of the vertebræ so they become wedge-shaped, and resulting from abscesses, no one can expect within reason to absolutely correct the posture. Some aggressive work can be accomplished, but a perfect symmetry will not be forthcoming. It may be well to emphasize again that where the ribs are involved the osteopath is not contending with the deformity of the spinal column alone, but in addition the entire transverse area of the body. (See also Spinal Curvatures).

Conclusion.—In concluding this rapid survey of a number of postural defects the principal lesson to be drawn is not one of developing the physique and thus perfecting a better posture, so much as curtailing and eliminating insidious beginnings of disease. These little ailments and deformities, of which postural defects may be the most noticeable, are so often the inception of more serious disorders. The anatomical structure being mal-adjusted, -aligned, or -positioned, easily and readily leads to consequences that require much time and patience to overcome.

Poise of body represents much to every one. Poise or correct posture coupled with careful and methodical exercise and correct breathing are material aids in constructive development, as well as in eliminating disease, for not alone may abdominal, pelvic and thoracic integrity be benefited, but the upper respiratory tract may be toned.

The most important goal that osteopathic science and art is striving for is that of a fully developed and rounded out prophylaxis or preventive treatment. When the public realizes that the proverbial ounce of prevention is an established medical reality then it can truly be said our science has reached its ultimate good. To those who are familiar with

osteopathic theory, facts, and development, it is an open secret that this school holds the key to successful preventive treatment. The time is rapidly approaching when the actual lessening of diseases will be an established fact. Then will be the universal practice of the layman going periodically to his osteopath to see if there are any small or insidious beginnings of disorder or disease.

Not only must the many deleterious habits and errors of the daily regimen be corrected, but after environmental, physiological and structural adjustment, in so far as possible, has been attained, a daily regimen to maintain the normal should be instituted.

PROLAPSED ORGANS

Prolapse of various organs or tissues are among the very common ailments that afflict all classes. Prolapse of the stomach, a kidney, the uterus, or the rectum is a familiar term to every one. But this condition may also rest with the intestines, the liver, an ovary, or even the heart.

Outside of injuries, congenital weaknesses, and so-termed surgical disorders, there are commonly two constant forces predisposing to prolapsed organs, viz: gravitation and weakened innervation; the one, of course, is a constant factor in either health or ill health, the other is dependent upon acquirement. Here the latter, or acquired nervous weakness, will especially demand our attention.

Where tissues are torn or lacerated, or congenital malformations are present, or tissues are weakened from ulceration and with a resultant scar tissue, or certain tumors are present, the disorder must be amenable largely to surgical measures if at all.

The perpendicular position of the body favors a decided gravitation of the abdominal and pelvic organs. This gravitative effect being a constant one, many methods, both surgical and mechanical, have been devised to hold in approximate and relative position certain organs and tissues that may be prolapsed. But it is well known that outside of a certain few instances where surgical measures are clearly indicated the prevalent use of braces, bandages, supports and the like are usually poor makeshifts.

The one great feature in these cases is that tonicity to organs and supporting muscles and tissues is more or less impaired. The tissue atony may vary from mere weakness to actual tearing and separating of the fibres. The indications in the cases about to be described are to stimulate a lowered nerve supply and to increase a lessened blood supply; if this can be accomplished, supporting muscles, ligaments and other tissues will be able to restore the prolapsed organs to normal positions, thus improving functions and eliminating disease symptoms.

In discussing the prolapse of the following organs, perhaps it should be noted here that all of the abdominal organs may be prolapsed as a whole. The intestines, stomach, liver, kidneys, etc., may actually prolapse together. This is more apt to occur in persons whose abdominal walls are thin and flabby. In women pregnancy is a common cause. When the abdominal organs have gravitated, the pelvic organs, also, are very likely to be disturbed and displaced; in fact, the pelvic organs are frequently disordered this way.

Prolapse and Dilatation of the Stomach

Dilatation of the stomach is a much more common and serious affection than prolapse of the stomach, although usually the two are associated. Prolapse, or ptosis, of the stomach means simply a downward displacement of the organ. This is apt to take place in those cases where all of the abdominal organs have gravitated. There is invariably some dilatation of the organ as well.

Weakness of the abdominal walls and of the supports of the stomach constitute the principal **causes** of the prolapse. Spinal deviations that impinge or obstruct the nerve strands (or obstruct the blood and lymph supply to these strands) to the supporting stomach tissues is the most frequent cause of the ailment. General debilitating diseases, as anemia, cancer, etc., are indirect causes of weakened organs with consequent displacements.

In dilatation of the stomach the condition may be either acute or chronic. The former is found where immense amounts of food or drink have been introduced.

One of the principal causes of chronic dilatation is some obstruction to the opening from the stomach into the intestine, so that the stomach contents do not pass readily into the bowel. This leads to chronic disturbances of the stomach walls, and the food remaining in the stomach somewhat indefinitely weights down and stretches the walls of the stomach. The obstruction may be a tumor, or some stricture or adhesion from scar tissue resulting from ulceration or inflammation. The treatment of these cases comes within the province of surgical interference rather than other methods.

The second important cause of chronic dilatation is muscular weakness of the walls from poor nerve supply. This is a common cause and osteopathy is very successful in curing these cases. The splanchnic nerves are below normal, usually from a slight lateral or posterior spinal curvature. The nerve force to the walls of the stomach not being normal causes atony of the muscles and dilatation results. This nervo-muscular atony, also, results from a chronic catarrh, or from a general nutritional disorder as tuberculosis or anemia. The treatment of the former would imply direct correction of nerve and blood supply with attention to diet; the latter can be cured only through relieving the nutritional disorder of which the stomach condition is a symptom.

Dilatation of the stomach is most common in people of middle age or older. The disease is usually easily diagnosed. The symptoms may

not be indicative of the trouble beyond showing that the stomach is disturbed. Indigestion, uneasiness, and nausea are common. Vomiting of large quantities of material from the stomach is likely to occur. The patient is generally emaciated, the skin is dry, the bowels constipated, and the urine scanty.

The **diagnosis**, as a rule, is not hard to make. Through the media of inspection, palpation and percussion, the careful osteopath will have little trouble to determine the size of the stomach. Kemp's¹ distinction between gastropotosia and dilatation of the stomach is as follows: "In dilatation the lesser curvature retains its relation to the diaphragm. The distance between the lesser and the greater curvature is increased, but the lesser curvature still maintains its relation to the diaphragm, with the exception that the pyloric end may extend farther over and somewhat farther down." Another instructive point relative to diagnosis the above authors make is the importance of the splashing sound. Owing to the fact that the stomach in health closes concentrically about its contents and thus adapts itself to the volume of ingesta, no splashing sound can be elicited. Three different degrees of relaxation are diagnosed as follows: "Splashing sound, which can be elicited only during the normal period of digestion, means simple atony; splashing sound produced after the legitimate time of digestion has expired means motor insufficiency; and splashing sound produced in the morning, after the night's fasting, before liquid or food has been introduced, may mean stagnation, dilatation of the stomach, as understood by most writers." (For a more complete outline see Dilatation of the Stomach. The object of this section is to present an outline of prolapsed organs as a whole, and to refer especially to the effectiveness of osteopathic treatment in this condition).

This is a disease where osteopathy has been particularly successful in not only relieving distressing symptoms, but in actually curing the disorder. This refers to the nervo-muscular atony type, for where there is obstruction due to stricture or tumor of the pylorus, resulting in stomach dilatation, the treatment, from the very nature of things, must be largely surgical. Stomachs that have been dilated and prolapsed several inches have been entirely restored to function and organic integrity. To **cure** these cases is a matter of stimulating nerve control and blood supply to the stomach tissues, and, often of greater importance, removing spinal impingements to the stomach nerve fibers, thus allowing nature to fully assert herself. In reality, outside of so-termed surgical

1. Rose and Kemp—Atonia Gastrica.

cases and other cases where the stomach dilatation is merely a symptom of general nutritional disorder, the primary treatment, by far, is the spinal one. Treatment over the stomach is a decidedly beneficial treatment; it aids materially in toning both abdominal and stomach muscles; still this is mostly a secondary treatment.

Dieting is essential. Careful dieting lessens the tendency to catarrhal inflammation and reduces the work of the stomach to a minimum. Still, nourishing food is necessary and the dieting can easily be carried to an extreme. Liquids should not be taken freely. Fatty and starchy foods should be eliminated. Give the patient food at short intervals. Various nutritious meats are excellent.

In dilatation, and also general abdominal relaxation, daily abdominal treatments may be indicated. If the relaxation is pronounced, keeping the patient in bed with thorough spinal treatment two or three times a week, daily abdominal treatment, having the patient exercise abdominal parietes by drawing the walls in and up, upper thoracic breathing, and frequent feeding will accomplish comparatively quick results. The progress of each case depends very materially upon the general health, the physical status of other tissues, constitution, inheritance, environment, age, etc. Some cases will yield in two or three months, others will require two or three years in order to obtain the greatest possible benefit.

The Prolapsed Kidney

A **prolapsed kidney** is often termed a floating kidney, or movable kidney, or dislocated kidney. It is of common occurrence, especially in thin persons. Some authorities state that one woman out of every four has a floating kidney. It is more common in women than in men, and among the working class than other classes.

The condition is usually an acquired one, following severe strains from lifting, falls, injuries, etc. It is claimed by some that a floating kidney arises from congenitally weakened and relaxed tissues about the kidney, that is, the tissues that keep the kidney normally at anchorage. Thus a congenital looseness of the kidney would easily be a predisposing cause whence mechanical violence, repeated pregnancies, an enlarged liver, or tight lacing would act as an exciting cause. Undoubtedly in some instances there is a congenital predisposition, the peritoneal fold attaching the kidney to the spine being loose and the capsule of fat retaining the kidney being scanty, but osteopathic experience has amply demonstrated that the tissues anchoring the kidney may in many case

become atonied and relaxed from lower dorsal spinal lesions. Rarely is a case presented to an osteopath that does not exhibit two apparently characteristic causative features, viz: spinal irregularity in the lower dorsal spine, and constriction of the zone about the waist, i. e., dropping and constricting of the floating ribs. Furthermore, correction of these lesions will almost invariably lessen the mobility of the palpable kidney.

The **symptoms** of a floating kidney are many and variable. The kidney may be slightly movable or it may be so loose that one can easily grasp it through the walls of the abdomen. Most of the symptoms are of a nervous reflex nature. Indigestion, which is likely to be very persistent, flatulency, heart palpitation, painful menstruation, irritable bladder, etc., are the most common symptoms. Still, blueness, depression and morbidness are frequently present. The most distressing direct disturbance is the feeling of weight in the abdomen, especially on standing, running or lifting. Sometimes the ureter becomes twisted and severe pain, colic and even collapse occurs. (Dietl's crisis.)

The **diagnosis** of a dislocated kidney is not a particularly difficult matter. A little experience coupled with a delicate sense of touch will usually readily detect abnormal mobility of the kidney. A point to always remember is that the kidney normally descends about one-half an inch with each inspiration. Care should be taken not to mistake a floating kidney for a movable spleen, although this is not likely, as the shape of the spleen is different.

The **treatment** of a movable kidney under osteopathic measures is usually successful. In the first place a number of cases require but little attention, simply toning up the general health, and especially directing attention to the abdominal walls and organs. There are a number of cases where the kidney prolapse is incidental to general abdominal laxness and weakness. In more severe cases, treating the spine, raising the floating ribs, carefully manipulating over the abdomen, keeping the bowels open, and lessening liver congestion should it arise, will suffice; in fact, will remedy a good percentage of the cases. With others, a well fitting, medium width, elastic bandage with pad underneath will be beneficial. In these cases the patient should be taught how to treat the abdominal organs, to manipulate the abdominal walls, and to replace the prolapsed kidney; particularly after going to bed this can be done successfully by the patient and will prove a decided help in obstinate cases.

Surgical measures for fixing the kidney should seldom be resorted to. If the patient will live a careful life, avoid unduly straining himself,

keep the bowels normal, and have the anatomical lesions corrected, he will come very near being entirely relieved, if not absolutely. Surgical measures are not always a success. Surgeons are not operating for this disorder so often as in past years. (See Movable Kidney—Diseases of the Kidney.)

Liver Prolapse

This is commonly termed a **floating liver**. There is prolapse of the organ as well as its being abnormally movable. It is not of frequent occurrence; women suffer from it much oftener than men.

Normally, the liver is partially held in place, in the concavity of the diaphragm, by a number of peritoneal folds. The attachment of these ligaments is to the spine and the diaphragm; their principal function is to prevent extended lateral movements. Of greater importance in supporting the liver in a normal position is the integrity of the abdominal walls, and the position of the stomach and intestines. If the abdominal walls are of normal tone the liver is very apt to be in correct position. And the rest of the abdominal organs, especially intestines and stomach, act as a cushion support. Often when the liver is displaced the remaining abdominal organs are, also, out of normal position and relation to each other; in fact, general prolapse of the abdominal viscera is a frequent cause of liver prolapse. An additional support of the liver is a certain cohesion of the liver and diaphragm, and the elastic traction of the lungs.

Foremost among the **causes** that predispose to inelastic and atonied abdominal walls are spinal irregularities, deviations, and curvatures, which impinge nerve force and obstruct blood supply. These same lesions weaken ligamentous supports of the liver and lessen tonicity of the other abdominal organs, so that local or general displacements are readily forthcoming. Strains, injuries, frequent pregnancies, etc., also act as causes that weaken the supports of abdominal tissues and organs. In a word it is very often the pendulous abdomen that is the immediate cause of a floating liver.

It is very rare to find the liver displaced to the lower region of the abdomen. The ptosis is usually somewhat slight. The organ generally rotates on descent, the right lobe being the lowest portion, owing to the attachment of a ligament, the ligamentum teres, to the umbilicus. Probably in some cases there is a congenital tendency to relaxation of the ligaments, and, thus violent exertions and atonic and flabby abdominal walls and diaphragm are secondary but important factors.

The principal **symptom** of a floating liver is a tumor in the right

side, which may be low down. Palpation will usually determine this. Then the abdominal walls are flabby. Pain and bearing down of the right side are common. There is apt to be considerable indigestion. Various reflex symptoms are often present. The floating liver will seem larger than normal, as the liver is below the costal arch and much of it can be felt. Percussion will be of value in determining the extent of the disorder.

Much can be accomplished by **treatment**, especially where the displacement is of a lesser degree. Correcting the spinal lesions, toning up the abdominal walls and diaphragm, and replacing the displaced organs will be extremely effectual. The abdominal bandage may be of service. Certainly abdominal exercises will be beneficial.

A point to remember is, stimulation over the abdomen beneath the right costal arch will cause the liver to contract and retract. This is of considerable osteopathic note. The liver will often recede at least a half an inch. This is a liver reflex (Abrams).

Prolapsed Intestines

Prolapse of the **bowels**, as a whole, or, more frequent still, of a part, is undoubtedly the most common form of organ prolapse. The intestines are so situated that they readily feel the effect of gravitative influences, of atonic and anemic states, and of weaknesses and disorders of other abdominal organs.

Spinal irregularities come first as potent **causes** of bowel prolapse. The spinal nerves to the supports of the intestines, to the muscular coats of the intestines, and to the abdominal walls, are obstructed in their normal activity, and consequently those tissues to which these nerves are distributed are affected. Wasting diseases, as anemia, consumption, cancer and the like predispose to intestinal atony.

The severe mechanical wrenches, strains, frequent pregnancies, tight lacing, heavy skirts, large abdominal tumors, obesity, cause more or less general or local weakness.

The pendulous abdomen, from wrong or careless posture, and exclusive of other causes, is a common source of general bowel displacement. This form of disorder, besides being unsightly, favors abdominal stoutness. There are a number of instances where simply voluntarily holding or "sucking" the abdomen into place, until it becomes strong enough to support itself, has reduced one's weight by five, ten or fifteen pounds. These were cases where most of the adipose tissue was about the abdomen. Thus exercising and toning the abdominal organs by

keeping them in normal position rectified a dormant blood and lymph circulation, which was followed by absorption of the abdominal stoutness.

Congenital weaknesses are to be considered in many cases. The muscular ligaments may not be developed, the mesenteric attachments may be too long, and various other abnormalities may result from congenital disturbances.

Of particular local interest to the osteopath, outside of the bowels dislocating as a whole, are: first, the hepatic flexure; second, the ileocecal region; third, the sigmoid flexure; fourth, the rectum; and fifth, hernias. Each of these sections are of separate interest and will be considered presently.

The **symptoms** are extremely variable. Constipation, a feeling of discomfort in the bowels, nervousness, depression, lassitude and anemia are frequent. Colicky pains in the intestines, indigestion, hysteria at times, are also among the symptoms. In reality a great variety of symptoms may be present. The patient is likely to be emaciated. In some cases exhaustion is marked.

Diagnosis, as a rule, is not a difficult matter. The various neurasthenic symptoms in a lean patient with constipation, indigestion, and stomach and intestinal distress would lead one to suspect intestinal displacement. The outline or contour of the abdomen will often reveal the character of the trouble. The atonic, thin and relaxed walls of the abdomen may readily give view of the displaced organs. Then careful examination by palpation and percussion will help very materially in the diagnosis. Radiographic examination is a decidedly helpful diagnostic method.

The **hepatic flexure** is frequently prolapsed. The bowel (colon) ascends from below upward to beneath the costal arch and then angles sharply into the transverse colon, which extends directly across the abdomen to the left side. The ligaments that support this flexure are apt to become weakened or stretched and allow a descent of this section of the bowel, which is followed by constipation, indigestion, etc. The ligament especially involved is the colo-hepatic ligament. The **duodenum** may require attention. This can be raised by getting beneath it where the organ descends alongside of the ascending colon. The effect of treatment is to release tension of the duodeno-hepatic ligament which is closely associated with the portal vein, hepatic artery and bile-duct.

The **ileo-cecal region** is an area that readily becomes congested and catarrhally inflamed, especially from constipation or impaction

at this point. The section often becomes atonic and prolapsed with resultant clogging of fecal matter. Owing to the close proximity of the vermiform appendix, appendicitis frequently results from the above condition. The osteopath can do much in these cases of appendicitis. Lesions are invariably found in the lumbar vertebræ or the floating ribs are depressed.

The **sigmoid flexure** is also frequently prolapsed. The fecal mass often becomes impacted here, owing to a settling or prolapse of this part. In some cases the prolapse is so marked that it extends to the rectum below and drags on the splenic flexure above.

Lumbar and innominate lesions are the usual causes, although, it seems in a number of instances, that relaxed walls of the abdomen cause a "contraction of the diaphragm resulting in kidney displacement and followed by intestinal prolapse." The vertebral lesions, probably, first weaken the muscular coat of the bowel, then, second, the bowel supports (other than its own inherent tonicity) and the abdominal walls.

Prolapse of the **rectum** is of such separate importance that it will be but partly outlined here. As stated above, a source of rectal displacement arises from the section of the bowel above settling downward and ultimately causing invagination of one or more coats of the rectum. Dislocation of the coccyx is a potent cause of rectal disorders. Lumbar lesions, especially twists between the fourth and fifth, and fifth and sacrum are common causes of rectal weaknesses. Slips of the innominata are other causes of prolapse.

Osteopathy has had marked success in these cases. Cures may result from a single treatment to readjust the coccygeal displacement or temporarily relieve excessive physiological activity by dilating the rectal sphincter, or the treatment may demand a number of months' work in correcting general abdominal prolapse. Raising the sigmoid is effectual.

A **hernia** is "the protrusion of a loop or knuckle of an organ or tissue through an abdominal opening." Two of the common hernias of the intestines are inguinal and femoral. These conditions are most often acquired from severe straining, so that a loop of the bowel protrudes through a weakened and stretched area of the abdominal walls, though there is reason to suspect that congenital defects are often predisposing factors.

Mention of the hernia is here made because, in a way, it is a form of bowel prolapse; that is, a limited form, and osteopathy contains certain possibilities for a successful treatment. Hernia has always been looked

upon as purely a surgical disorder; i. e., remediable by surgical measures only. Where a truss has failed to give relief surgery has been resorted to. This is true in most instances, but where the hernia is in the incipency careful abdominal exercises (this should be carried out with great care, for severe exercise may produce a hernia or increase one already existing), massage to the tissues about the hernia, attention to the bowels, and spinal stimulation corresponding to the weakened tissue, and avoidance of strains may strengthen the tissues materially about the hernia.

Occasionally a loop of the intestine will prolapse into the cul-de-sac back of the uterus. A heavy dragging pain low down in the center of the abdomen and constipation or complete obstruction are the pronounced symptoms. Careful lifting of the loop of bowel by pressure within the vagina and traction from above with a hand outside, with the patient, on her back, with buttocks elevated, gives speedy relief.

The **treatment** of the prolapsed bowels represents those measures that will replace and keep in position the displaced organs. Naturally, the spinal and abdominal treatment comes first; this strengthens intestinal ligaments, tones intestinal muscles, and contracts the abdominal parietes, and at the same time the bowels are regulated, digestion and nutrition improved, and the general health built up. In some cases abdominal supporters will be of value. In a number of instances attention to chest mobility and diaphragm tonicity will be of value. Right living, which is represented by proper diet, sufficient outdoor exercise and regular habits, is invaluable.

The really specific treatment is to correct spinal, rib and innominate deviations and abnormalities. But direct local work will be, in many instances, necessary. General abdominal manipulation is good, but this should be supplemented by careful local treatment. The hepatic flexure requires a direct stimulating and replacing treatment. The ileo-cecal section should be raised, stimulated and emptied of the fecal mass. Direct upward manipulation of the sigmoid flexure in the left iliac fossa and of the splenic flexure beneath the left costal arch is extremely efficacious. Care must be taken not to bruise the parts. Getting beneath the prolapsed area and gently and intelligently raising the bowel so that it is emptied, toned up, and vascular congestion relieved, are the indications. This requires careful work and the necessity of gentleness can not be emphasized too much. Still in all of this treatment we should never forget the absolutely essential spinal readjustment.

Rectal prolapse requires local internal treatment, external tissue correction, especially of the coccyx, an innominatum or the lumbar spine, and, of much importance, deep, careful and thorough work over the sigmoid section.

Cases of bowel prolapse are every day experiences with the osteopath. The osteopathic treatment is of great value in these and a successful issue is very often the result. Cases of pendulous abdomen, of obstinate constipation, of chronic indigestion, of many nutritional disorders, of feeling pain, weight or dragging, locally or generally, in the abdomen, are very apt to be in persons suffering from prolapsed intestines.

A number of cases of bowel prolapse are associated with general prolapse of abdominal organs; that is, displacement of the stomach, kidneys, liver, spleen, etc. This general condition is termed enteroptosis or Glenard's disease. It usually requires several months to treat it successfully. These patients are neurasthenic, mal-nourished, and often hysteriacs. The symptoms from which they suffer are innumerable. Mechanical weaknesses, lowered vitality, poor innervation and blood supply, and auto-intoxication are causative factors.

The Prolapsed Uterus

Prolapse of the **uterus** is of common occurrence. The prolapse may be incomplete or complete; the latter when the organ is presented to the external world. Of special interest are those affections exclusive of surgical cases. Ptosis of the abdominal organs upon the pelvic organs is a common cause of uterine prolapse. The abdominal prolapse crowds uterine space, congests the uterus, weakens the ligaments, and drives the uterus downward as a wedge.

Lumbar spinal curvatures are frequent causes of prolapse, as well as other displacements of the uterus. In this region vasomotor nerves to the pelvic organs make their exit, and, consequently congestions, inflammations, and weaknesses of supports are results. Also, slips of the innominata disturb the pelvic circulatory balance. Weakness of the uterine support from below, the vaginal walls and perineum, most often arises from lacerations at child-birth. Still, the vaginal walls may become relaxed through other causes. Tumors and extreme congestions are causes of prolapse. Heavy lifting is quite a frequent source of uterine displacements. Osteopathy is very successful in uterine prolapses; that is, any displacement of the uterus not of a surgical character. Correction of the external causes comes first. Then local treatment to replace, tone, and relieve congestion, and break up adhesions is necessary.

The external treatment is usually the primary treatment. Local work is not always necessary. Lacerations and other surgical indications, of course, require surgery.

Ovarian Displacements

The ovaries may be prolapsed, the left much oftener than the right. When prolapsed, it drops backward, downward and inward.

Ovarian congestion, tumor, retroverted or retroflexed uterus, tubal disease, and pregnancy are among the principal causes. Back of these congestions, tumors and uterine displacements, are the osteopathic causes, particularly spinal and rib lesions from the ninth dorsal downward. Specific lesions at the ninth and tenth dorsals and corresponding ribs, affecting directly ovarian tissues, and lumbar and innominate lesions and abdominal prolapse disturbing uterine and tubal tissues, are the most frequent osteopathic causes. A retroverted or retroflexed uterus is often found. Uterine displacements bear down upon the ovary and cause its descent, and also disturb ovarian circulation.

As has been stated, the left ovary is more apt to be displaced than the right. This is owing to the absence of a valve in the ovarian vein on the left side, and also, this vein opens at a right angle into the renal vein; this anatomical feature easily leads to passive congestion of the ovary, and thus to diseases of the organ. Then the rectum is on the left side and large fecal masses are apt to crowd against the ovary, which tends to its displacement.

Thus it is readily seen that osteopathic treatment is very applicable to ovarian displacement unless the indications are surgical. A more or less constant burning or sharp pain in the ovarian region, with probably some feeling of weight, profuse and painful menstruation, depression, irritability, etc., are **diagnostic**. However, a local examination will reveal the status of the ovarian position and congestion.

The same **treatment** as in other organ prolapse is indicated: toning weakened tissues, relieving congestions, replacing organ, with careful attention to the bowels and the general health. There are no tissue disorders of any part of the body wherein osteopathy is more thoroughly indicated and the results more generally satisfactory than in prolapse. And especially should it be remembered that in prolapse of various organs many vague intestinal and pelvic disorders and even ureteral and bladder disturbances may be traced to bowel dislocations and excessive kidney mobility in which osteopathic measures are often successful.

Conclusion.—The purpose of this section on Prolapsed Organs has been to supplement the various articles on Dilatation of the Stomach,