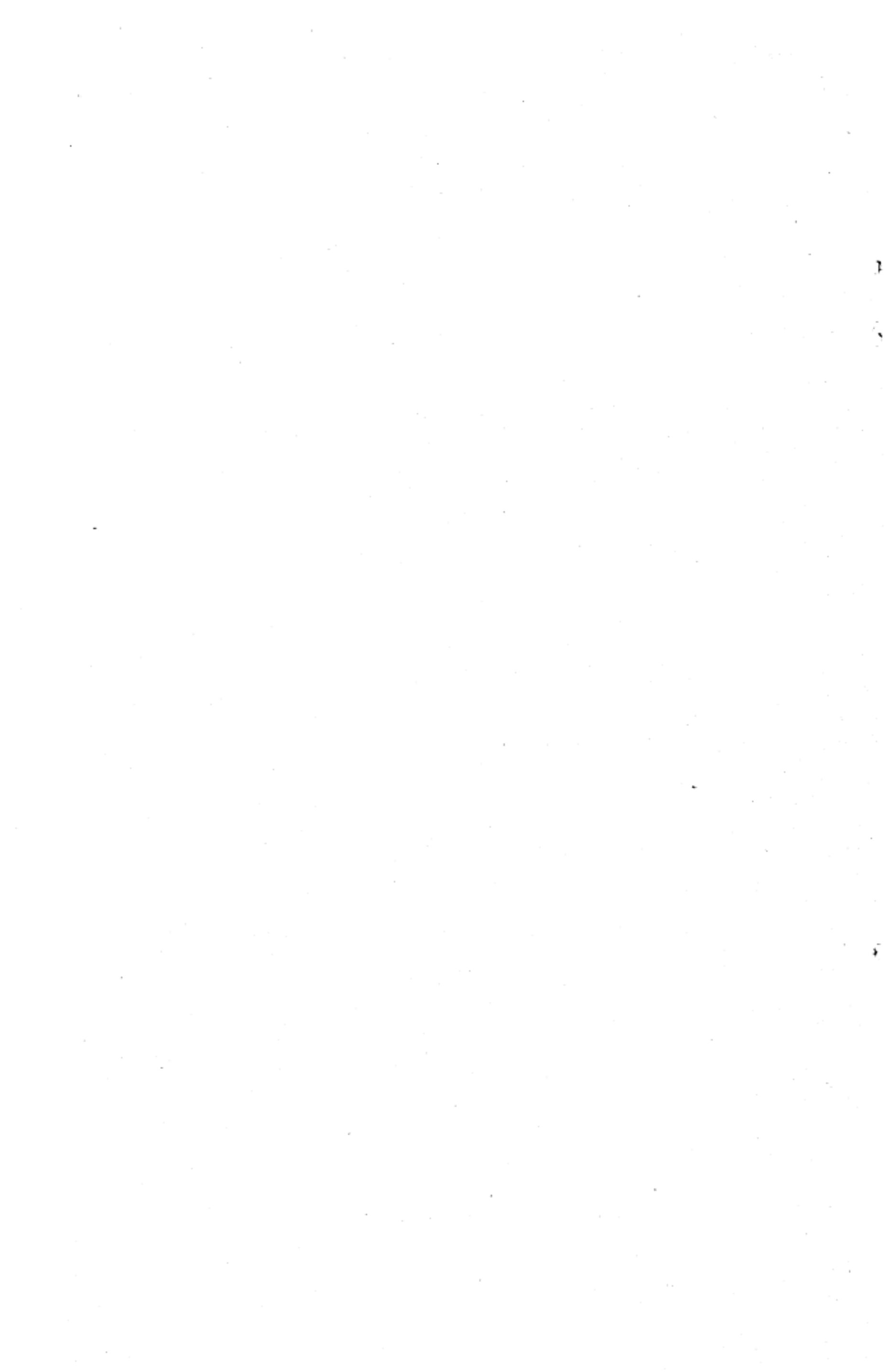


## INTRODUCTION

The following series of articles appeared in the Journal of Osteopathy during the latter part of 1913 and the early part of 1914. No claim is made that the final word is said therein upon osteopathic technique; indeed we firmly believe that, provided a practitioner has a thorough grasp of the principles upon which manipulations are built and provided further the exact osteopathic condition present is clearly understood, the mechanical skill of the individual operator will in the end determine the actual procedures employed. All therefore that is undertaken in the following pages is to state clearly the anatomical principles upon which osteopathic manipulations are founded, and to suggest methods of applying these principles. More than this we believe it is unwise even to attempt to do. We trust that these words will be sufficient justification for the appearance of the following articles in book form. We are indebted to Dr. M. A. Boyes, the Editor of the Journal of Osteopathy, for his helpful co-operation, both while these articles were being prepared for the Journal, and later when they were collected together for publication in the present form.

A. S. HOLLIS.



# **The Principles of Osteopathic Technique**

By A. S. HOLLIS, A. B., D. O.  
Professor of Principles of Osteopathy at A. S. O., 1912-1914

A. M. S. Publishing Co.—Kirksville

CONRAD LIB.

RZ

341

.H637



# The Basic Principles of Osteopathic Practice

In presenting the following discussion of certain fundamentals of osteopathic practice we shall attempt to make clear and definite a few main thoughts that lie at the very foundation of our Science. Unfortunately Osteopathy has frequently been judged by its opponents on the ground of several misrepresented fundamentals and the claims of the Science have been disregarded, because some of those fundamentals were often apparently at variance with known anatomical facts. In every new Science a difficulty, such as this one, is found, and it is only when the basic ideas are stated with extreme accuracy and exactness that any claim to scientific precision can be made for them. We shall attempt herein to state our ideas with as much clearness as possible, so that whether or not our readers agree with the contentions put forward they cannot but grasp the thoughts and follow the lines of reasoning.

## The Lesion.

The first conception that we wish to determine clearly is the "lesion." What is the lesion? How widely are we justified in applying that term from the osteopathic viewpoint? Do the commonly accepted ideas of the lesion clash with the Anatomy of the spine as we know it? In answer to these and similar questions we would say that an OSTEOPATHIC LESION is a condition which is found in the spine associated with disease and serving as a causative factor of it. It is an abnormal condition of the ligamentous and other articular structures of such a nature that the movements between the vertebrae become perverted.

## 8 THE PRINCIPLES OF OSTEOPATHIC TECHNIQUE

This definition is designed to emphasize the essential nature of the condition which is under discussion, and this is that some PERVERSION of MOVEMENT is the MANIFESTING FACTOR in a lesion. This perversion may be in the nature of an excessive amount of movement, though this is rare, or it may be in the nature of a deficient amount, and this is very commonly the case. Such a condition, namely a deficient amount of movement between the vertebrae, is called RIGIDITY. Hence, RIGIDITY is the essential feature of most osteopathic lesions. Now rigidity between articular surfaces means that the ligaments and the synovial membranes, etc., of the articulation in question have become thickened and perverted in their nature to the extent that THEY limit the normal movement. Hence the essential pathology of an osteopathic lesion is to be looked for mainly in the articular structures themselves, though also we may look for it in the ligaments that elsewhere bind the vertebrae together, such as the common and the supraspinous ligaments. We need do scarcely more than merely mention the fact after what has been already said, that any "bony" lesion will be manifested by limitation of movement WITHIN THE RANGE OF THE NORMAL MOVEMENT OF THE VERTEBRAE AFFECTED. We mention this to combat the thought of the "dislocated" vertebra, that is to say, the thought of a vertebra wrenched beyond its normal range of movement; for as soon as such a "lesion" is found it is analogous to a dislocated ankle and should be treated in a manner similar to such a condition.

A question naturally arises as to the causative factors underlying the production of lesions, and on careful analysis we find that we may accurately speak of two main types. These we might name: (a) primary, (b) secondary. By a **primary** lesion we mean either one that is developed spontaneously owing to a certain architectural weakness that seems inherently to cling to man's spine, and this is due largely, in all probability, to his upright position; or one that can be traced to some trauma. A **secondary** lesion refers to a contracture of the musculo-ligamentous structures of the back, owing to a toxic congestion that occurs concurrently with acute troubles in the body. In a somewhat different sense, the term "secondary" is often applied to lesions that occur in the neck and back as a result of and to compensate for lesions lower down. Lesions of such a nature—and they are common—will themselves remain corrected only if their primary lesions be thoroughly worked upon and ad-

justed. This is a strong argument for working from below upwards when giving a treatment, which indeed should always be done. By working this way these "secondary" lesions will often adjust themselves to a great extent. The main point we would emphasize here is that an osteopathic lesion will be manifested by a lessened degree of movement in the majority of cases; these will always be SOME PERVERSION OF MOVEMENT and generally also some tenderness will be found on attempted motion.

### Adjustment.

A thought that demands a word of explanation at this point is: granted that such be the case, what does the Science of Osteopathy suggest as a curative procedure? The answer is that osteopathic practice aims to RE-NORMALIZE ABNORMAL TISSUES. We may use to advantage in this connection the expression "adjustment," as being a fitting term to express what Osteopathy aims to accomplish. What is meant by this is that a certain normal standard is regarded as existent for every individual spine, and that if there are found present variations from that standard it is the work of the osteopathic physician to NORMALIZE those structures and thus to give free play to Nature and to Nature's processes. It is well to remember that Osteopathy was founded on the premiss that Nature is striving for each one of her children to be well; health is normal, and if not present there is but one reason, namely that somehow Nature's attempted efforts are being thwarted or are not being afforded free play.

The striking feature of osteopathic practice is of course the manipulative procedures employed, but if we associate the term "adjustment" with Osteopathy, we must see that any methods which will harmonize with Nature's efforts to produce normal conditions are strictly to be included under the heading of the osteopathic principle. We must aim not only to adjust the individual parts of the organism in order that harmony may result within and without, but also we must adjust the organism to its environment.

In correcting abnormalities in the organism the attempt is made to drive away congestion, to dissipate and absorb excess tissue that may have proliferated around the articulations of the vertebrae, to stretch and otherwise normalize the capsules surrounding the articulations of the vertebrae, and to re-establish generally a normal condition of the vertebral tissues.

In other words, to the extent that we "adjust" the tissues of the vertebral column to the normal, are we employing the essential feature of osteopathic practice. Many times in using manipulations a "pop" is heard between the articular surfaces. This is due to the separation of those surfaces and is not of supreme importance in itself. In fact, the more strictly normal an articulation is the more readily, frequently, it can be "popped." In other words, if a pop can not readily be obtained between almost all the vertebrae, there are generally but two explanations possible. One is that the line of force used was not properly applied, and the other is that the tissues were so congested and the ligaments etc., so thickened that the force applied was insufficient to cause a separation of the articular surfaces. At this point we would simply mention the fact that too frequent popping of vertebral articulations (and especially of those in the neck) undoubtedly causes irritation and is itself productive of considerable harm; also in some people there is present so lax a condition of the connecting tissues that the vertebrae pop at the slightest provocation. Many osteopathic movements do not produce a "pop," and in these cases the force is applied directly in the line of the plane of the articulation and the principle employed is analogous to that employed in breaking up adhesions in one of the larger joints of the body.

The exact mechanism whereby the osteopathic lesion produces its effects upon the nervous system is hard to determine precisely. Concerning two facts we may probably feel fully assured, and they are: (a) that any trouble that may result from or be associated with osteopathic lesions, is produced by some vascular changes occurring around NERVE CELLS; these cells being either in the cord itself or in the sympathetic ganglia; (b) that direct pressure upon the nerve trunk or upon the blood vessels in the intervertebral foramina is a negligible factor in the production of disease. We are not in this latter connection denying the possibility that the vessels may become contracted in size in the intervertebral foramina; they may conceivably do so, but if they do, that condition is produced by an irritation of their vaso-motor cells, and not by direct pressure.

### **Classification of Lesions.**

We are now ready to discuss somewhat more fully a point that we have touched upon above, viz: The types of lesion that may be



found. Under this heading we have suggested the following classification: Lesions may be (a) primary; (b) secondary. Primary lesions may themselves be (1) traumatic, or due to extraneous force; (2) idiopathic, or self-originating. Secondary lesions are reflex from toxic conditions or inflammatory processes elsewhere in the body. This latter type of lesion we will consider more fully when discussing the relation of the lesion to acute diseases. About primary lesions we may to advantage say a little right here. The term traumatic is self-explanatory, though the lesions to which this term may be applied are comparatively rare. However we see examples of this lesion especially in the Innominate articulation. Indeed perhaps the majority of Innominate lesions are traumatic in origin, that is, the symptoms arising from them date from some injury that was directly felt by that joint. The idiopathic lesions form probably the large majority of lesions met with in clinical practice. They develop in the spine because of its peculiar structure, and because of a certain inherent architectural weakness existent in the spine of man in his upright position. They are important because of the proximity of the spine to the nervous system and by their presence oftentimes is produced an irritation of the nervous system which may manifest itself as a disease of some organ or part.

We would here again call attention to the necessity of distinguishing between the initiating primary lesion and any that may be present as compensatory to it. These latter will never respond to treatment until the former are thoroughly adjusted.

OSTEOPATHY IS NATURE'S METHOD OF CURING DISEASE, and we find therefore that the logical scope of Osteopathy includes all diseases rationally curable by Nature's own processes. The osteopathic physician is entitled to use, in addition to his manipulations, common sense aids, such as the enema, dietetics, antidotes, hot and cold water, etc., but these do not constitute any essential feature of his especial curative methods. The surgeon realizes the value of anaesthetics and employs them, but an anaesthetic is not any special possession of the surgeon. An osteopathic physician who refuses to give or advise an enema occasionally is as foolish as a surgeon would be to refuse to allow a patient to take an anaesthetic because this latter was not strictly along the line of his individual work.

The scope of Osteopathy is very broad and it is easily seen by following the line of thought suggested that acute diseases rationally

fall into the field of osteopathic practice, for it is universally recognized that normally an acute disease is self-limited and the up-to-date physician trusts to this fact almost exclusively while employing ordinary hygienic procedures. Those procedures we are as entitled to use as is the medical man and hence even if our peculiarly specific work, the osteopathic manipulations, was of no avail, we should at least be as well equipped as is the medical practitioner. That the osteopathic manipulations are of GREAT and STRIKING value we will attempt to prove a little later in this article. Except in a very few acute diseases the pathology in the early stages is such as readily to be dissipated by natural means, and to the extent that this can be done, excellent results will follow.

### **Pathology and Prognosis.**

The next thought that we would suggest for consideration is the relationship that the pathology of a disease bears to the prognosis of that disease, and in this connection we wish to quote from an article by the writer in the Bulletin of the Atlas and Axis Clubs for October, 1912. We reproduce the following excerpts:

"It has been well said that Pathology determines the Prognosis of Disease, and that the limits of every therapy are set with absolute precision by the Pathology of Disease. By this we mean that in diseases causing structural changes in the organism, the possibility of cure is determined by the extent of those changes and by the degree to which Nature can compensate for them. Underlying this thought is one that is of great importance; indeed upon its validity the very rationale of therapy depends. We refer to the apparent EXTRAVAGANCE AND PRODIGALITY with which in most cases Nature has provided the various tissues of our bodies.

"Surgically and experimentally it has frequently been demonstrated that the human body can maintain an unimpaired functional integrity with one kidney extirpated, with one ovary or one testicle removed, or with a portion of the stomach or a section of the intestine taken out. We know that in a healed tubercular process of the lung, the cure is brought about by the complete obliteration of the involved portion of the lung, with its transformation into solid non-functioning connective tissue. If it was not for the compensating mechanism within our bodies, which is dependent entirely upon this apparent prodigality of Nature, no cure of an organically involved

structure would be possible. In a word, it is the fact that Nature has provided in most parts of the human body tissue in excess of that needed for bare functional necessities that enables that body to react to organic disease at all.

"In many diseases that are 'cured' by some therapy we find on close investigation that the functional integrity of the part that was involved has been restored, though the anatomical relations are perverted and permanently disturbed. Indeed this is found in the majority of diseases in which structural changes have been wrought. It is this phase of the curative process that is dependent upon the prodigality of Nature mentioned above. Nature thereby is able to draw on the excess functional tissue and thus to re-establish a physiological integrity.

"The diseases that are OSTEOPATHICALLY CURABLE we believe are coextensive with the limits of Nature's ability to react to a pathological process, which means that this class includes every disease in which the pathological process has not advanced to such a stage as to be beyond Nature's own reactive power. In other words we believe that this class includes all diseases in which Nature has not been perverted beyond her limits of compensation. What is curable from Nature's standpoint is curable from the standpoint of Osteopathy, for we look upon them as synonymous.

"From this standpoint it might be asked why Osteopathy is powerful in combatting disease. We know, from clinical experience, that there is developed around the articulations of the vertebrae a tissue-perversion either antecedent to or concomitant with disease of the organism elsewhere. This tissue perversion is manifested by impaired mobility of the spine, and the restoration of a normal degree of movement between the articulations means that the tissues have been normalized in this region. NATURE WANTS US TO BE WELL and she is able to function perfectly, provided she is not taxed beyond her capacity for reaction. By restoring normal movement in the spine we give Nature, in very many cases of disease, the necessary assistance to enable her to combat the condition successfully."

The line of thought that we have been following naturally leads us to the determination of the relation that must exist between the osteopathic lesion and acute and chronic diseases. We would also discuss briefly the relationship that Osteopathy bears to Surgery.

**Osteopathy and Acute Diseases.**

There are many factors that co-operate in the production of disease in its acute stages; for example, if we take a concrete instance of Typhoid Fever, it is well known that there are several such causative factors at work. The age of the patient, the season of the year, the dietary habits, previous mental or physical strain, the typhoid bacillus, etc., all are important as factors to be taken note of. It is true that an idiopathic lesion is very frequently present as a cause of the run-down nervous system, but it need not necessarily be so.

The disease itself is manifested by a series of effects. Indeed every disease presents a fairly typical picture, upon which the average practitioner bases his diagnosis. The "effects" are looked upon as "symptoms" of the disease, though to what extent they are really so will be seen in a moment. Suffice it for the present to say that an abundance of toxin is produced by the infection and that the majority of symptoms are symptoms of toxic poisoning.

What then is the relationship that exists between Osteopathy and an acute infection? It is this: Many of the symptoms that are commonly regarded as symptoms of the disease are in reality symptoms of a secondary osteopathic condition which arises owing to the toxic infection and which by its persistence maintains that infection by preventing a free elimination of the toxin. This secondary condition is placed mid-way between the "cause" and the "effect," and it is this factor that the osteopathic physician works upon. A "good treatment" will relieve very materially many of the symptoms of the disease, because many of the symptoms are really effects of the secondary osteopathic condition. Thus the aching will be eased, fever will be mitigated, the bowels will be regulated, etc.

Thus the osteopathic physician is able to handle acute diseases better than a medical physician because not only can he employ the same hygienic methods that this latter physician employs, such as the enema, the bath, dietary restrictions, rest, etc., but also he has it in his power to combat an extremely important secondary causative factor that the medical man is ignorant of. If we glance at the "circle of causes" as represented in the accompanying diagram we may ask which of them a medical man can attack? Can he effect the age of the patient, the season of the year, the previous



dietary habits, the mentally or physically run-down condition present, or the typhoid bacilli? The answer is obvious, and indeed his inability to combat the majority of these factors has driven him to attempt to overcome the last mentioned. The failure of attempted "sera" is too well known to need comment in this connection. The osteopathic physician, then, is from every standpoint as well equipped to handle acute infections as is the medical man, and from the standpoint of his own specialty he has a lever that raises him into a class entirely by himself. We wish it to be clearly understood that Osteopathy does not claim that typhoid fever is caused by a displaced vertebra or by a slipped rib, but it claims that such a factor oftentimes causes sufficient irritation to the nervous system to produce a run-down condition, which is well-known to be a necessary fore-runner to such disease, and it further asserts that as a result of the accumulation of toxins in the organism a secondary reflex contraction of the spinal muscles occurs; it is this latter factor which the osteopathic physician attempts to combat, because he realizes that many of the apparent symptoms of the "fever" or "infection" are in reality symptoms of the secondary osteopathic lesion. Moreover, if there was present a deep-seated lesion at the outset of the infection, the continued treatments during the siege of the fever will generally remove it by the time the patient is about again.

### **Osteopathy and Chronic Diseases.**

With some slight adaptations we can apply a line of thought similar to that used in the case of the acute diseases, when we consider the relation that exists between Osteopathy and chronic diseases. In this latter discussion, however, we shall find that the primary traumatic or primary idiopathic lesion in many cases plays a far more striking part than it played in connection with the acute diseases. In some chronic conditions practically the only causative factor is the osteopathic one; in this class we would include most cases of sciatica, many cases of headache and neuralgia, etc. In these instances the symptoms are the direct results of the osteopathic cause. In other chronic diseases there is a more complex "circle of causes," and it is these diseases we will consider for a moment. The accompanying cut represents these different relations diagrammatically.

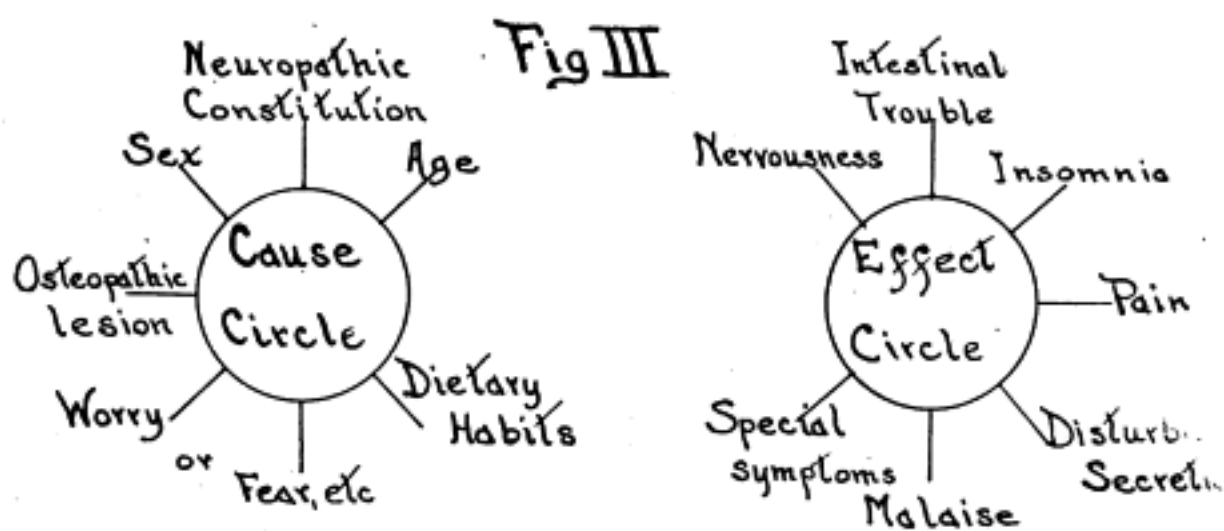
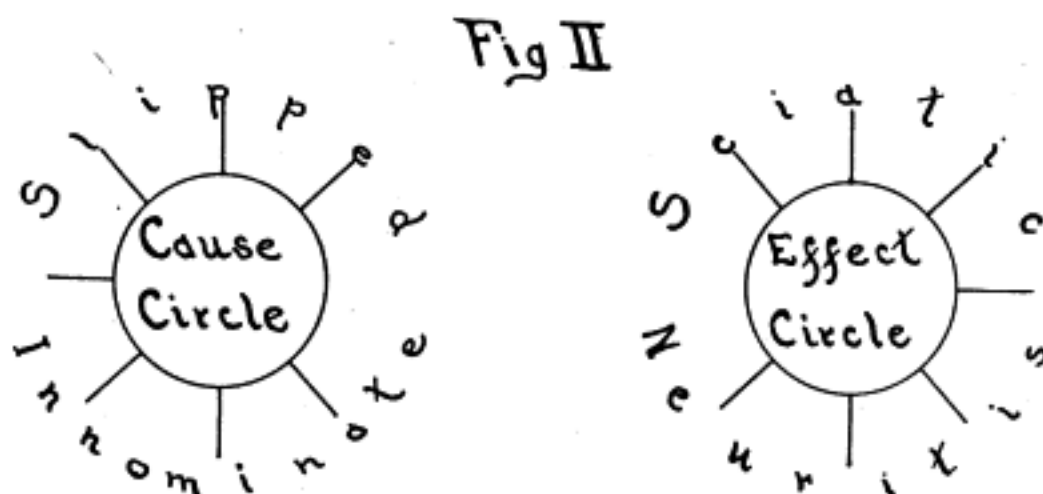
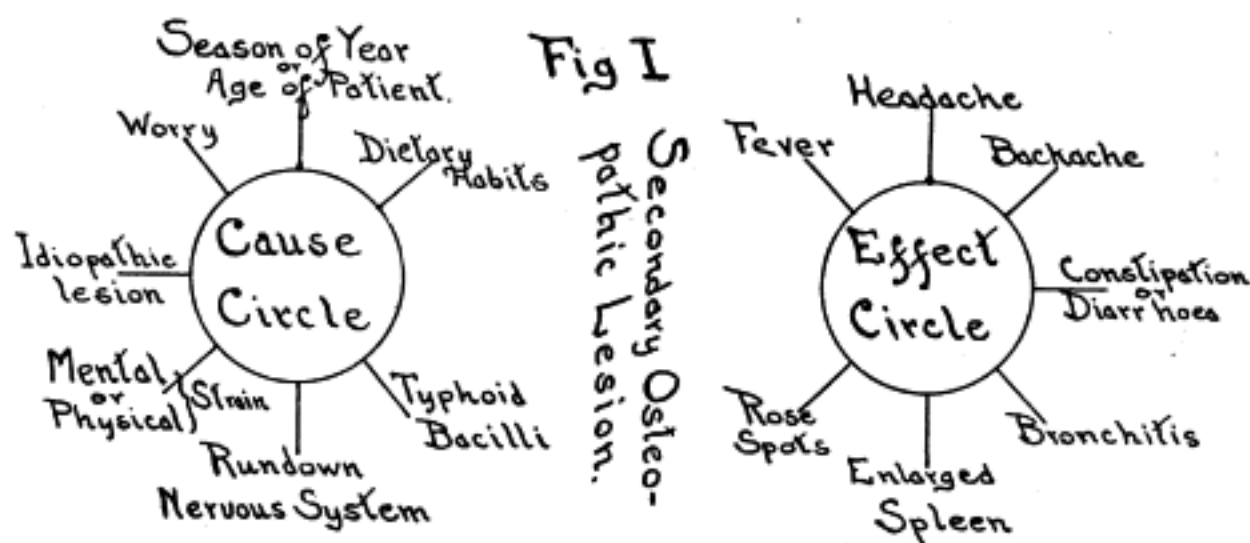


Diagram showing the relation of the osteopathic lesion to diseases  
 Fig. I. The relation in an acute disease, e. g. Typhoid Fever;  
 Fig. II. The relation in a simple chronic disease;  
 Fig. III. The relation in a more complex chronic disease.

Why then is Osteopathy powerful in combatting any such disease when there are so many causes operative? For this reason: Anything that will BREAK INTO the "circle of causes" will tend to give Nature the necessary boost for her curative and reactive processes. There is no factor known today in the medical world that is so POWERFUL TO BREAK INTO THIS CIRCLE AS THE REMOVAL OF THE OSTEOPATHIC LESION. Remember always the osteopathic physician does not cure any disease, he REMOVES OBSTRUCTIONS to Nature's operations. NATURE IS THE GREAT PHYSICIAN. This last fact explains why it is that in some few cases methods other than osteopathic seem to accomplished good results: in those cases the factor utilized was stronger than the osteopathic factor in breaking into the "circle of causes." However the strength of Osteopathy lies in the fact that IN THE MAJORITY OF DISEASES THE MOST POWERFUL LEVER THAT IS KNOWN FOR BREAKING INTO THE "CIRCLE OF CAUSES" IS THE REMOVAL OF THE OSTEOPATHIC LESION. In this last statement lies the secret of the success of Osteopathy.

### **Osteopathy and Surgery.**

Some osteopathic physicians seem to regard Surgery as almost a criminal procedure, and this attitude has somewhat biassed the medical profession against Osteopathy, because the value of Surgery in selected cases is known positively and to assert dogmatically that all Surgery is butchery can do nothing but expose the ignorance of the person making the statement. In considering the relation of Osteopathy to Surgery we would call attention to the fact that Surgery embraces both a constructive and a destructive phase. For example, no one will deny that a surgeon is in his rightful sphere when he sets a broken arm or a dislocated wrist; indeed the principle underlying such work is the same as the principle underlying Osteopathy, namely the restoration to normal of abnormally affected structures. Now there are many surgical operations that aim to correct conditions exactly similar in principle to the broken arm, as when a surgeon repairs a hernia or suspends a uterus. The principle underlying such operations is the principle underlying osteopathic mechanics and as such must be given due credit by the osteopathic physician. The other side of surgical practice is the phase of "destructive" Surgery, and here again we will find no difficulty in bringing about a reconciliation between its principle

and the principle of Osteopathy. "Destructive" Surgery aims to remove some structure that, either by its advanced pathology, or by its complete collapse has proved itself to be beyond the power of Nature to combat unless some radical assistance be forthcoming. There are some processes which can advance so far as to become analogous almost to a condition of poisoning, that is to say something drastic has to be done to combat the process. Under the first heading mentioned above we would include such conditions as virulent cancers, under the second a prolapsus uteri warranting complete hysterectomy. Surely no one would cavil at conservative surgery of this type, for whether constructive or destructive, the principle it is built upon is essentially osteopathic.

### Conclusion.

Briefly recapitulating we would say that the osteopathic lesion is essentially a tissue-perversion involving the musculo-ligamentous structures around the articulations of the spine, and manifesting by an abnormal mobility, which is generally in the line of a lessening of the movement; that lesions are primary or secondary and if primary they may be traumatic or idiopathic, whereas if secondary they are reflex from toxic irritation; and that Osteopathy attempts to correct "lesions" by a gradual restoration to normal of abnormal conditions. We would also urge that a "popping" of an articulation is no indication of the setting of a lesion and that the only sign that a lesion has been set is that a normal condition has replaced an abnormal one. It is also important to remember that the limits of the osteopathic therapy are determined by the pathology of the disease under consideration, and that no pathological condition that Nature cannot handle can be handled by Osteopathy or by any other therapy, save perhaps by Surgery. In acute diseases by our treatments we improve elimination and thus enable Nature to combat the toxin of the infection more readily; in chronic diseases the removal of the osteopathic lesion presents the MOST IMPORTANT lever that is known today to break into the "circle of causes" and thus to combat the symptoms or effects and enable a remedy to be obtained. Finally, Osteopathy has no quarrel with conservative Surgery, whether it be constructive or destructive in nature, for at the last analysis the principle underlying such Surgery is essentially the osteopathic dictum of "adjustment."

## Principles of Osteopathic Technique

To undertake to outline the principles of osteopathic technique may seem a somewhat ambitious task. Therefore we would preface the few suggestions we may offer with a statement clearly delimiting our position in this matter. We do not believe that it is at all advisable to attempt to "standardize" technique in the sense that the term "standardize" is very frequently employed. The element of individuality plays too large a part in osteopathic mechanics. However in a sense somewhat different from that usually accorded to it, we do believe in a "standard" technique, in so far as the principles underlying osteopathic manipulations can be absolutely determined, because they are built upon the bed-rock foundation of anatomical facts. We shall attempt therefore to describe the most striking diagnostic points in the determination of osteopathic lesions, and also we shall endeavor by explanation and by diagrams to suggest the lines of force that must be employed in the correction of lesions after diagnosis. We shall also show methods whereby the principles are put into actual practice, but we would urge the consideration of the fact that it is towards this department of our task that most criticism can be directed, as methods that may appeal to one may not do so to another, and vice versa. THE PRINCIPLES UNDERLYING MANIPULATIONS ARE ABSOLUTE, THE METHODS OF APPLYING THOSE PRINCIPLES ARE LEGION. Our task therefore will be TO SHOW CLEARLY THE PRINCIPLES and TENTATIVELY TO SUGGEST METHODS OF APPLICATION. It is however in this latter phase of the subject that we can do little more than offer suggestions, as in the end the individual mechanical skill of the operator will prove to be the main point of importance in correcting lesioned conditions of the spine.



We shall follow our line of thought in as orderly a manner as possible, from the anatomical standpoint, and to accomplish this result shall work from above downwards. We shall discuss therefore, first of all, the neck, back and front, and the temporo-maxillary articulations, then, the dorsal region and the scapulae, then, the lumbar region, innominates, and the coccyx, and finally, the thorax (ribs) and the clavicles.

### **GENERAL PRINCIPLES UNDERLYING MANIPULATIONS.**

Before stating specifically any manipulations or diagnostic principles we would say by way of preface that to be scientific any manipulations employed must be anatomical. We must, that is to say, know the planes of the articulations before we can intelligently apply force to normalize perversions. We shall therefore illustrate as clearly as possible the various planes in the different regions of the spine. Also we must remember that if a full degree of normal movement is restored between vertebrae that are "in lesion" the condition will be corrected, or as we say the "lesion will be set." The great aim therefore is to establish a full degree of free movement in regions, or in special locations, of the spine, at which that movement is abnormally limited. This end-result is obtained by the utilization of three procedures: (1) muscular relaxation, (2) separation of the articulations in the region involved, (3) direct attempts at movement. As we have urged elsewhere the separation of articulations gives a "pop," which in itself is of little significance, unless it is produced in a region where there is considerable rigidity, in which case the reaction to the separation causes an additional flow of blood around the part involved, which results in a condition slightly more near the normal than was present before. Repetition of such a procedure at intervals, in the end completely "adjusts" the abnormality to its normal condition. This is called "setting a lesion." We would here just touch on the fact that some patients seem to have a very lax condition of the vertebral tissues, which in itself is a lesion of importance. Such a lesion is best treated against resistance, the force employed in this way gradually toning up the tissues at fault.

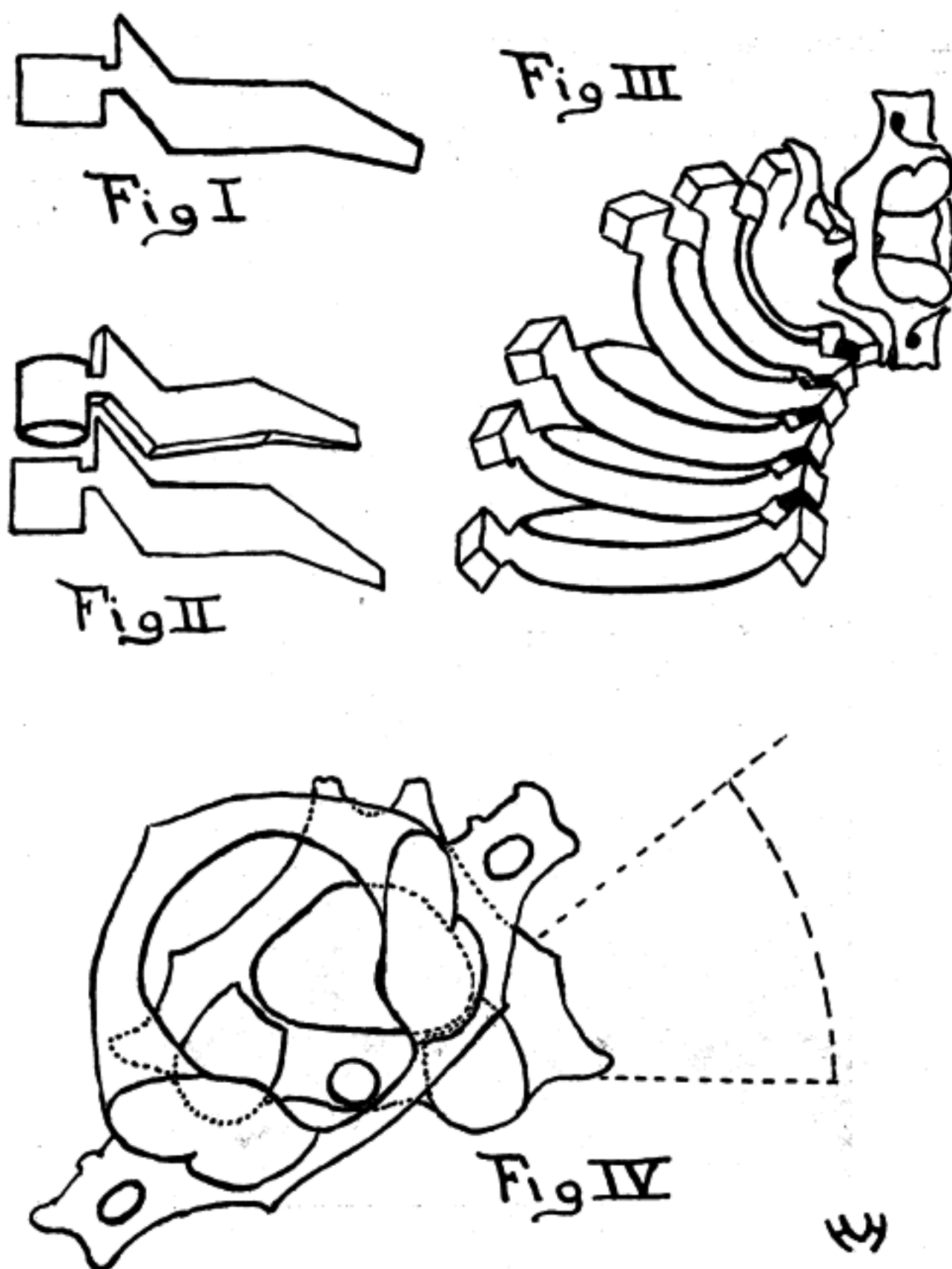


Fig. I. Diagram showing the direction of the articular facets of the typical cervical vertebrae.

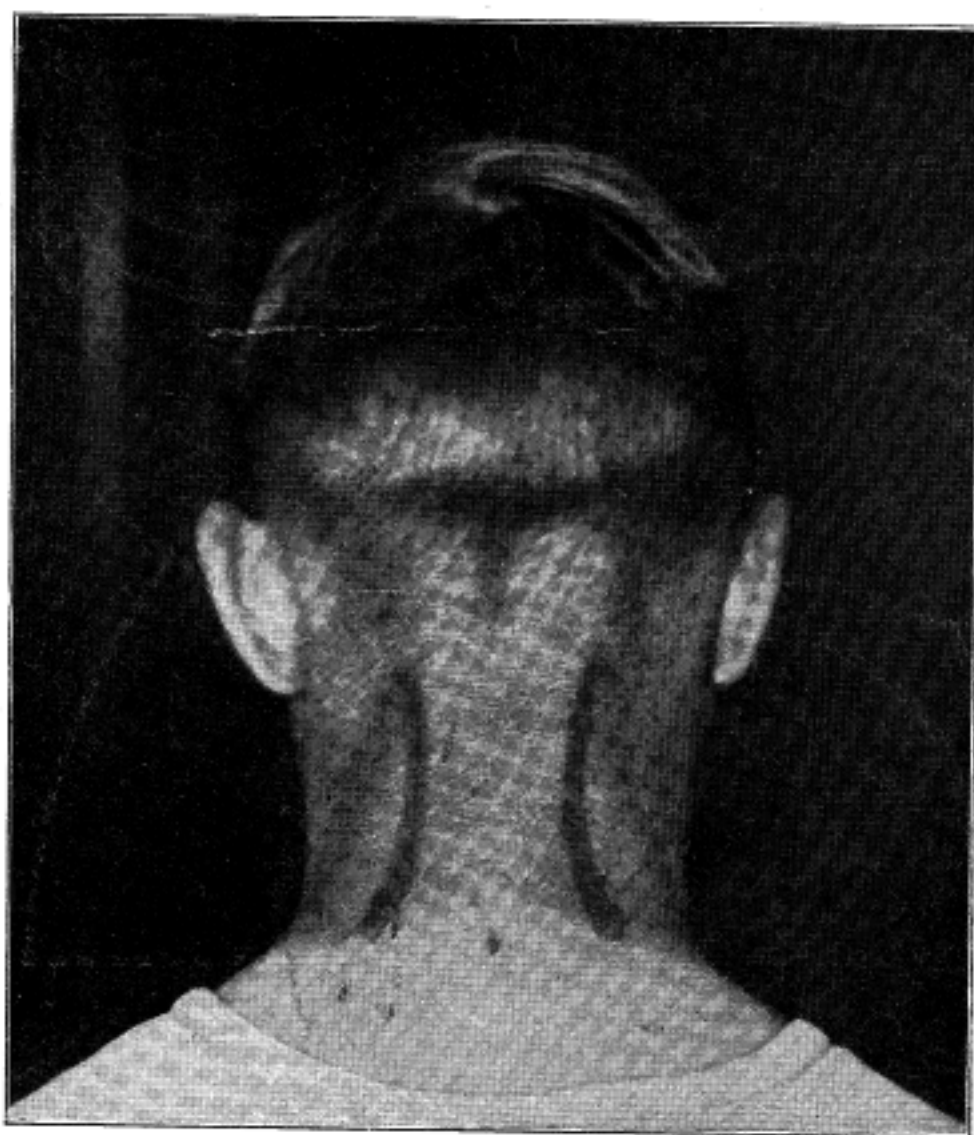
Fig. II. Diagram showing the separation of the cervical articulations, viewed from the side.

Fig. III. Diagram showing same as Fig. II., viewed from the front.

Fig. IV. Diagram showing movement between the Atlas and the Axis.

**THE NECK—BACK.****1. The Typical Cervical Vertebrae.**

The superior articulations of the typical cervical vertebrae, that is of the third, fourth, fifth, and sixth, face approximately back and up. The superior facets of the third usually have also a slight inward inclination, though this is not of material importance mechanically. Also the facets of the sixth approach the direction of the upper dorsal facets, which is back and out. However for

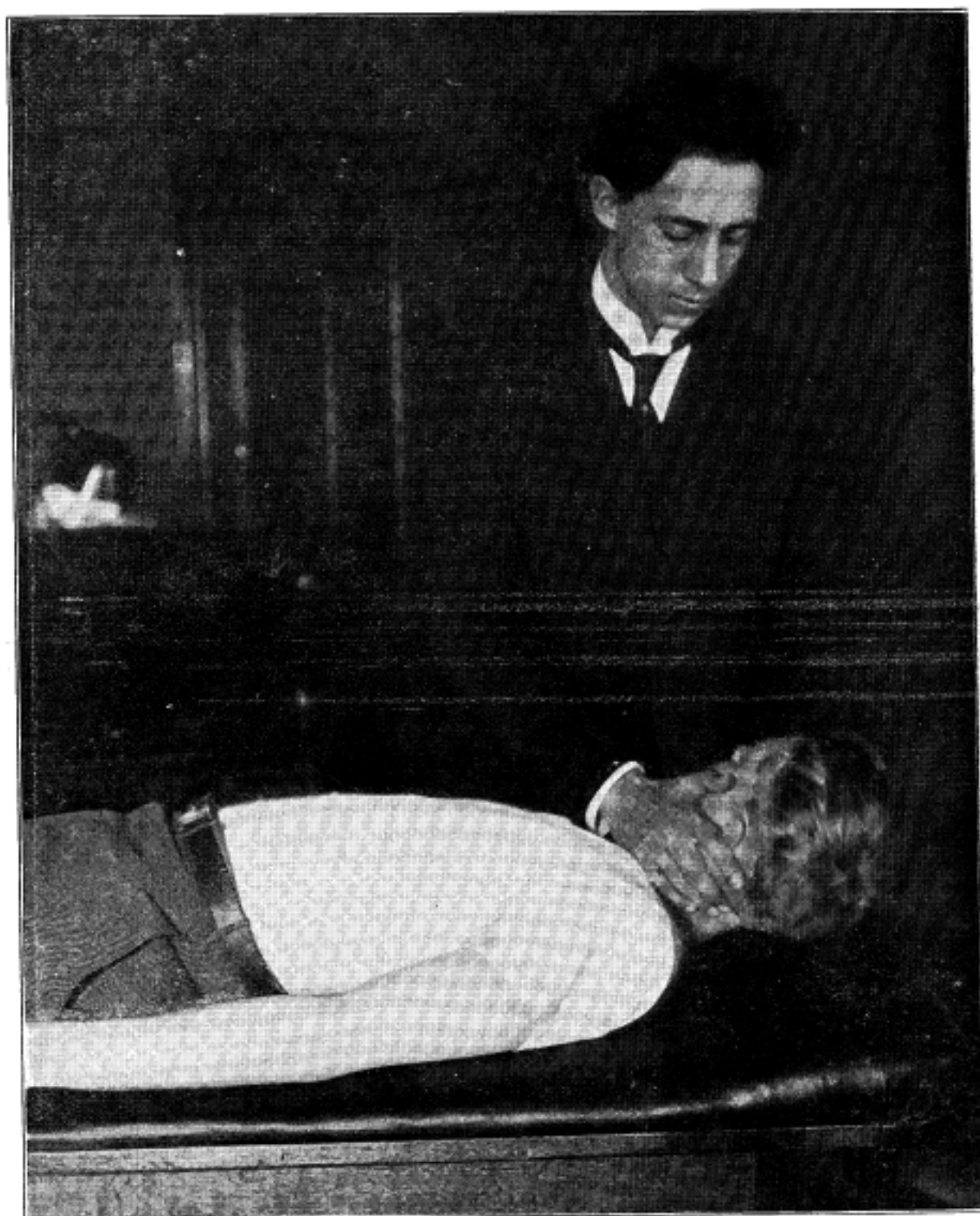


Cut showing the position on the neck of the articular processes in the cervical region.

practical purposes the direction of the superior facets of the typical cervical vertebrae is back and up (see Fig. I). The movement provided for in this region is lateral flexion with some slight degree of spiral rotation. In order to obtain separation in this region the neck must be carried to its limit of movement in this direction and then, while still on tension, carried slightly beyond. An attempt



to show this diagrammatically is made in Figures II. and III. Manipulations employing this principle must be used with care and understanding, as unless the parts are well supported and the line of force is exactly right, a marked strain may be produced. It is



Cut showing method of obtaining a localized separation in the cervical region, patient lying down. Lesion is on same side as operator.

also very important not to relax the tension just previous to the final separation, as by so doing the jerk may do considerable harm. "Neck-popping" should be used advisedly and with the tissues fully supported. The well-known osteopathic physician, Dr.

## 24 THE PRINCIPLES OF OSTEOPATHIC TECHNIQUE

Charles C. Teall in an article in the April 1912, Journal stated:

"The man who invented the neck twisting treatment, which snaps each of the articulations first right then left, has much to answer for in the retarding of the growth of Osteopathy. It is



Cut showing method of obtaining a localized separation in the cervical region, patient on stool. Lesion is below fourth finger of operator.

absolutely futile as a corrective measure and it permanently stretches ligaments and impairs the integrity of the cervical column. It often causes the patient the greatest distress, and the fear of it has driven more patients away from Osteopathy than the combined

efforts of all its enemies. This is a strong statement but in my experience there is nothing which so frightens a patient as to have his 'neck broken' as the perpetrators so graphically put it. Hundreds have taken their first and last treatment as a result of it. When the knack is once acquired there is an irresistible impulse for one to give it to every patient, no matter what the case. At rare intervals it may be indicated but surely not every time."

In another place in the same article Dr. Teall says:

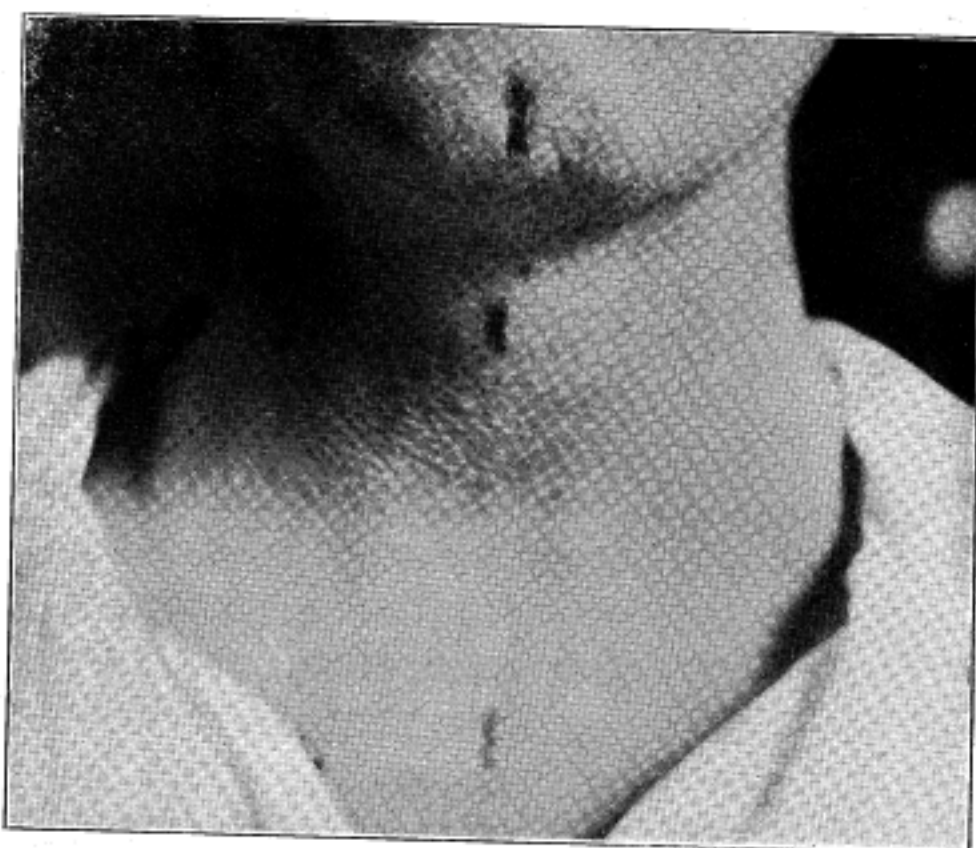
"I have used the term 'coaxed into position' meaning the employment of gentle methods where the strenuous ones have failed, and it is a well applied phrase. BY TRYING OVER AND OVER AGAIN WITH MODERATE EFFORT AND COMPLETE CONTROL OF THE PARTS INVOLVED THE MOST OBSTINATE LESIONS CAN BE REDUCED. Suppose the methods are not moderate, but are of the ultra-strenuous type, what happens in cases of coerced reduction? First, there is tearing of structures involved, straining of adjacent tissues and often severe shock. Force takes the place of judgment and it is an almost absolute certainty that the work will have to be done over again because conditions were not right for permanency. Shock at such times is often considerable and a quantity to be taken seriously."

Though Dr. Teall is speaking in this last paragraph in general terms, what he says has special weight in connection with neck manipulations, as in this region it is extremely easy to underestimate the force employed, and this may result in considerable harm to the patient, as the parts are but poorly supported by Nature. Two cuts are here given which show methods of localizing the force as herein suggested.

The diagnosis of a neck lesion depends on: (a) palpable thickened tissue (see cut); (b) limitation of movement. Tenderness is also generally associated with the thickening of the tissue mentioned. The limitation of movement will be diagnostic only to a certain extent, as muscular contractures alone may produce such a condition. Moreover the limitation of movement is generally on the opposite side from the lesion. It is well to remember in this connection also that it is advisable sometimes to stretch the Trapezius and the Ligamentum Nuchae to overcome muscular contractures.

Besides the movements suggested any manipulations employing simply lateral flexion of the anteriorly flexed spine are valuable

in order to restore a slightly perverted articulation to normal, and will result in the gradual re-establishment of and approximation to the original condition, or in a "setting of the lesion." Remember, most of osteopathic work represents a slow growth; the sudden and miraculous cures met with once in a while serve but as "exceptions that prove the rule." In utilizing methods of lateral flexion care must be taken to obtain movement at every articulation, as carelessness in this respect may result in an involved articulation being untouched and in all the normal articulations being abundantly worked upon, of course to no purpose.



Cut showing the tilt of the chin in an Occipito-Atlantal Lesion. This condition is very rare.

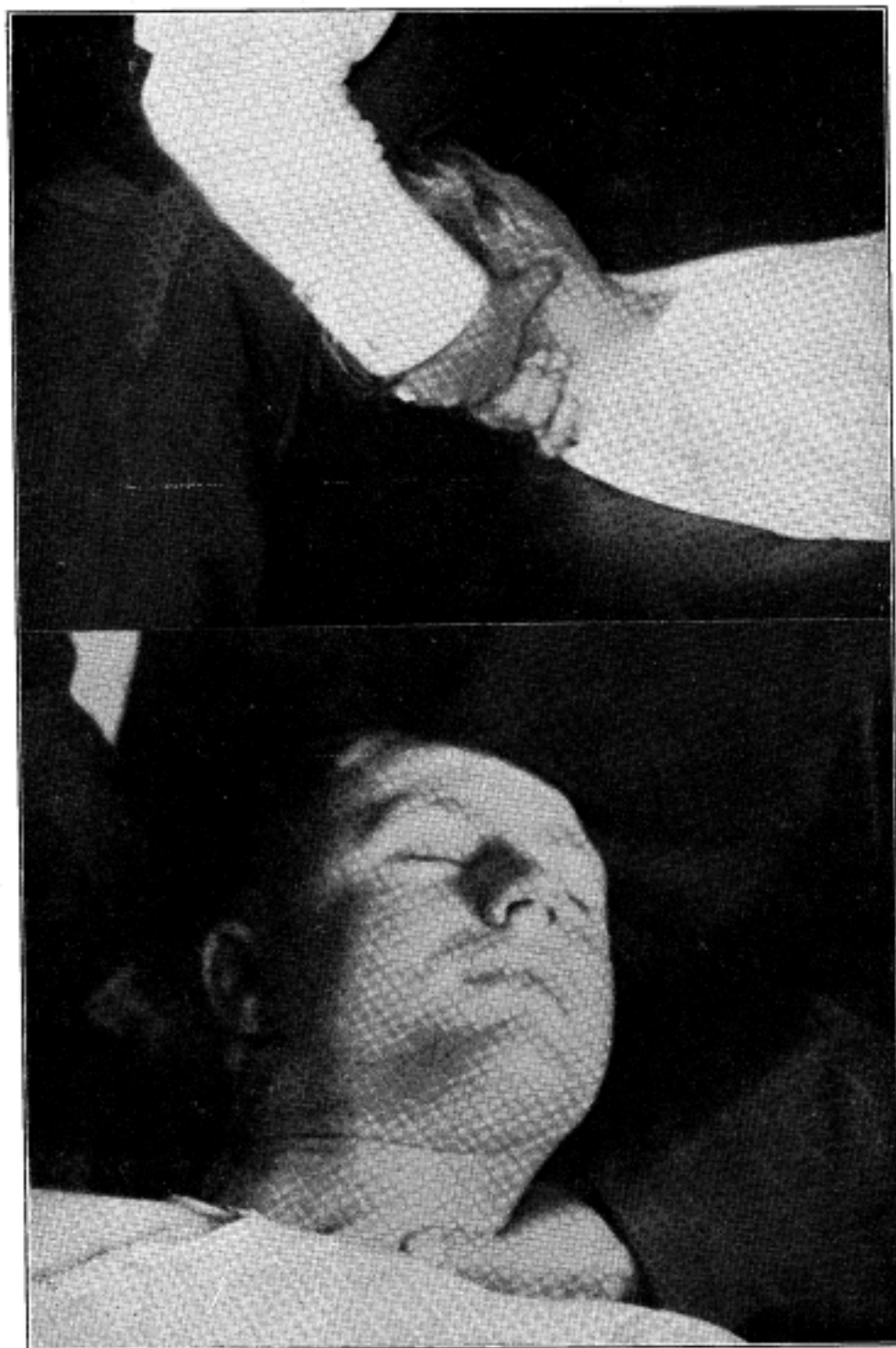
## 2. The Atypical Cervical Vertebrae.

(a) The movement between the OCCIPUT AND THE ATLAS is of a nodding type, and normally is free and easy. A lesion here is very rare, and when present is hard to correct. It is not by any means a trustworthy point of diagnosis to test the locations of the transverse processes of the Atlas, as asymmetry is often found here. A lesion in this location will frequently produce a tilt of the chin away from the middle line. We reproduce a cut showing such a tilt. When this lesion is present attempts should be made to re-



establish the normal movement to its full extent. ANY LESION IN THIS LOCATION IS RARE.

(b) Perhaps the most commonly involved articulation in the body, from the osteopathic viewpoint, is the ATLAS-AXIS. Tenderness and palpable thickened tissue on a level with the angle of the



Cuts showing method of obtaining a Localized Movement between the Atlas and the Axis.

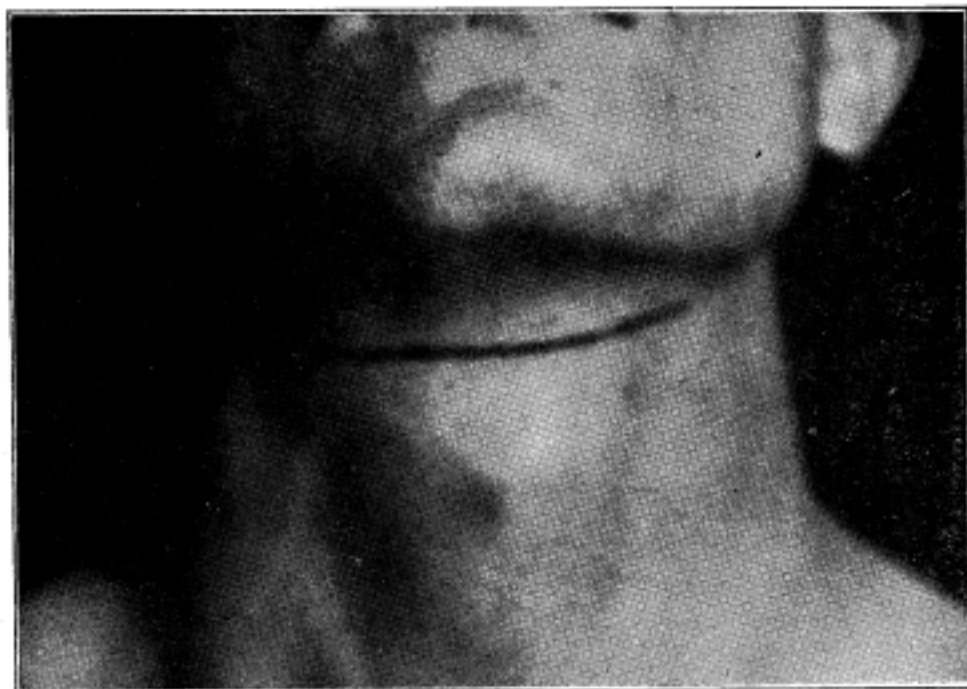
jaw are invariably noted, and by careful testing the movement on the side of the lesion will be found to be limited. In a normal case the range of movement is about 90 degrees—the chin travelling between the mid-point of each clavicle. In a lesioned articulation

the movement is sometimes limited by one-half. It is necessary when testing for the movement between these articulations to make sure that the rotation obtained is solely between the Atlas and the Axis and that none of it is from lower down. This can be ensured by grasping the back of the neck firmly with one hand and the Occiput with the other and twisting simply at the Atlas-Axis articulation. A little practice enables such a test to be carried out quite accurately and successfully. For some reason there is a prevailing idea that a great amount of force is necessary to obtain movement in the spine. It is well to remember that, although the amount of movement is small, the actual provisions for movement are in no wise different in the spine from elsewhere, and if an articulation is normal, movement should be as freely obtainable in the spine as at the wrist or elbow, etc. Oftentimes a directly applied twisting motion is very valuable in correcting trouble between the Atlas and the Axis, provided the movement is exclusively localised at this articulation. This is a manipulation that we have tested out with very pleasing results in a large number of cases. See Fig. IV. and cuts.

(c) The SIXTH-SEVENTH CERVICAL and the SEVENTH CERVICAL-FIRST DORSAL articulations may be considered practically as in the upper dorsal region and movements applying there may be used in the former articulations.

We would call attention in this region finally to a condition that we have touched upon above, namely the contraction of the "Ligamentum Nuchae." In some cases this is very marked, and considerable results may be traced to it. An effective movement to correct such a condition is to rest the head of the patient upon the crossed arms of the operator whose hands are placed on the patient's shoulders. From this position the patient's head can be elevated to put the Ligamentum Nuchae upon almost any degree of tension desired.

In passing we would call attention to the acute neck strains met with occasionally. Such conditions can sometimes be helped at the very outset by a long, very gentle treatment. More commonly however rest and heat are advisable until the extreme tenderness passes off. In cases such as these there is undoubtedly a rupture of the capsular ligaments and time is needed for the mending of the torn tissues. After the extreme tenderness has left, osteopathic work is of great value and unless employed there is a danger of per-



Cut showing a tilted Hyoid Bone.



Cut showing one method of correcting a tilted Hyoid Bone. The second finger of operator's right hand is pressing bone from below.

manent stiffness resulting. A lesion of this nature will have been produced by some sudden rather abrupt movement. It should be distinguished from a "muscular spasm" which sometimes is met with. In this latter condition, as the name suggests, a painful contracture of some muscle fibres occurs; this condition also generally follows a strain. Considerable pain is produced in this way, but the condition is not so serious as the strain mentioned above.

### THE NECK—FRONT.

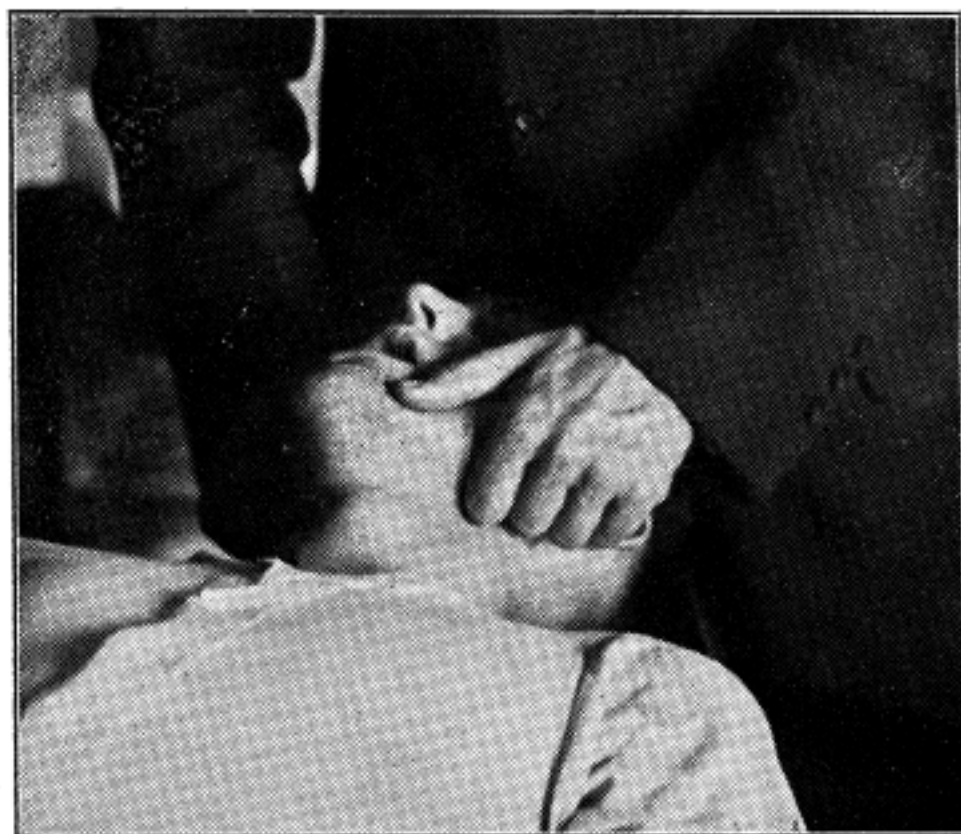
1. The STERNO-CLEIDO-MASTOID muscle is important osteopathically. It often becomes congested, especially in its upper part, and will be found thickened and very tender. Such a lesion is the almost invariable accompaniment of a bad cold and acute catarrhal congestion of the throat and nasal passages, etc. When this condition is found, it should be worked upon until some relief is obtained. The congestion mentioned is generally associated with congestion and tightening of the other tissues of the throat. See below.

2. The HYOID REGION is frequently a seat of osteopathic lesion. When this is the case the hyoid bone is often tilted (see cut), or if the tissues are contracted on both sides this bone may be held tightly up on both sides correspondingly. The tension of the tissues is the best guide to the trouble. The hyoid bone itself varies considerably in its position in normal cases, and in rare instances may apparently be absent. A reliable guide to this bone is the following: Place the palmar surfaces of the tips of the thumb and index finger on the "Adam's apple"; from this position separate these tips so that the thumb and finger will grasp the sides of the thyroid cartilage; then advance upwards towards the superior border of the cartilage; above this border a sagging will be felt, which is the thyro-hyoid membrane, and above this membrane the hyoid bone may be palpated. Treatment to normalize the thickened supra-hyoid tissues and thus to restore the hyoid bone to its natural position produces remarkable results in many cases of throat trouble, such as tonsillitis, pharyngitis, etc. Often several minutes is required for such treatment but, provided the tissues do not become irritated thereby, one's efforts should not be relaxed until definite results have been obtained. It is well worth while to pay considerable attention to this region in many cases.



**THE TEMPORO-MAXILLARY ARTICULATION.**

A lesion of the temporo-maxillary articulation is by no means uncommon. It is found in many cases of neuralgia and kindred troubles of the face and mouth and often very remarkable cures can be obtained by correcting the perversion of tissue around this joint and by adjusting the lesion. A diagnosis of lesion of this articulation can generally be made by noting whether or not the jaw opens



Cut showing a method of "springing" the temporo-maxillary articulation.

straight or with a "kink," as it were; also the feel of the tissues around an involved articulation is very characteristic and shows a certain tension that is quite marked. There are many methods of correcting trouble in this region and most of them depend for their results on getting a good spring and abundant free movement in the joint.

A good method is the following. With the patient lying prone, tell him to protude the jaw to its limit; often if there is a lesion of the articulation this can only be accomplished with considerable difficulty and frequently the jaw will protrude more on one side than on the other. Now place the fingers behind the posterior borders of the jaw and hold it firmly forward. Next tell the patient to open and close the protruded jaw several times.

This will often cause considerable pain and judgment must be used to prevent overdoing the strain. Frequently it takes a number of treatments to correct a badly lesioned temporo-maxillary articulation. There are of course many other good manipulations designed to normalize this articulation when it is involved. Care however must be taken that no manipulation used should unduly strain the joint for it is very easy to spring it with considerable vigor. Another good method is to wrap a handkerchief around the thumb and grasp the jaw on the side involved with the thumb on the molar teeth and the fingers holding the body of the jaw. With this grip it is easy to manipulate the articulation freely.

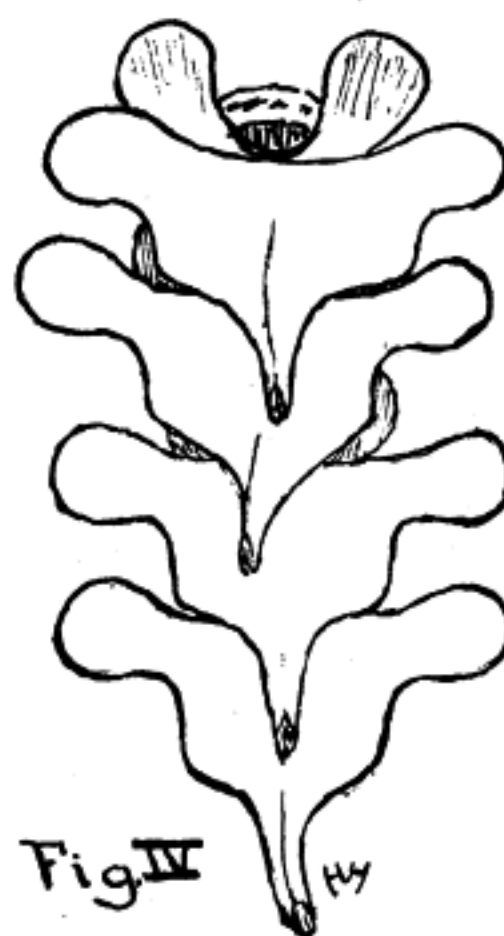
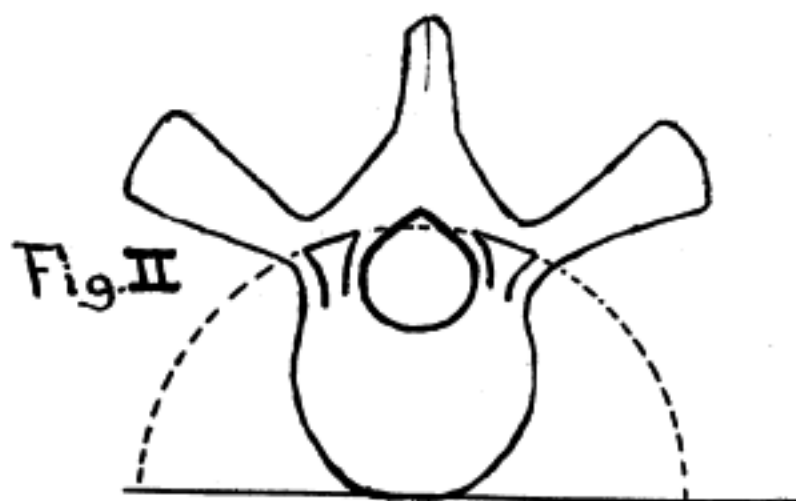
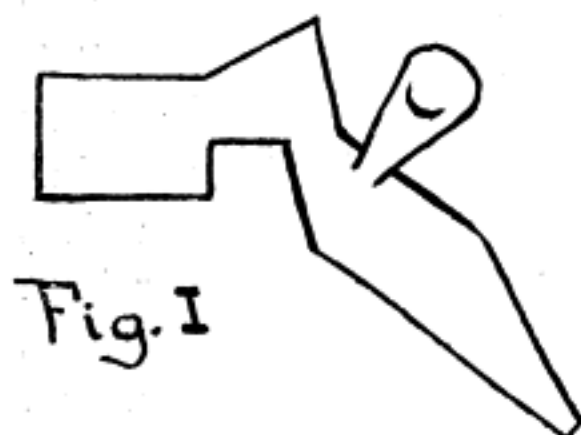
We reproduce a cut showing the first method suggested. Remember a lesion manifests itself by some perversion of movement and this is generally in the nature of a lessening of the range of motion in the articulation in question. If the full range of movement be restored, the articulation will as a result be normalized and the lesion will be set.

## **THE DORSAL REGION.**

### **1. The Upper Dorsal Vertebrae.**

The articular facets of the Dorsal vertebrae face back and out. (See Fig. I.) That is to say, the facets are located on the arc of a circle whose center is in the center of the front of the vertebral body. (See Fig. II.) The provision therefore by Nature for movement in this region is rotary in type and this is on two planes, lateral and supero-inferior. In other words flexion and very slight extension are provided as well as lateral rotation. A lesion therefore, may be found involving either or both of these planes of movement. It is easily seen that the direction of the spinous processes is such as absolutely to contraindicate much extension of the dorsal spine, as the result of so extending the spine will be to lock these processes and thus render any degree of lateral movement impossible.

We devote considerable space to the principle underlying the diagnosis of upper dorsal lesion, as we wish to make sure that our readers grasp fully the method we are endeavoring to suggest. Also if we make quite clear the principle at this time we can apply it in our discussions on the rest of the spine, merely making such



- Fig. I. Diagram showing schematically an upper dorsal vertebra.  
 Fig. II. Diagram showing the backward and outward direction of the superior articular facets of the typical dorsal vertebrae.  
 Fig. III. Diagram showing the supero-inferior approximation of two dorsal vertebrae.  
 Fig. IV. Diagram showing: (i) a slight lateral tilt of a dorsal vertebra; (ii) a twisted spinous process.

changes in technique as the anatomy would suggest, and as will be described in the appropriate sections. We would emphasize here a point which perhaps has not been explicitly stated in the previous discussions, namely, that many lesions in the neck and dorsal region are in a sense compensatory to lesions in the sacro-iliac and lumbar regions, and must be regarded as such. Because of this fact it is generally wise to treat from below upwards, as these compensatory lesions will only respond to treatment provided their initiating lesions are corrected, and oftentimes they will correct themselves provided this is done. The reason that these articles are written in the order that they are, is simply that it is customary so to do, and anatomically it seems more natural to start at the top and work down.

### Diagnosis.

As an introductory thought at this point, we would say that perhaps in no other region of the spine are lesions more frequently found than in the upper dorsal region, and oftentimes in no other region are they harder to correct. In attempting to find trouble between the upper dorsal vertebrae it is well first to note: (a) the tension of the supraspinous ligaments; (b) the position of the spinous processes. These two points are to a certain extent associated though there are several thoughts to bear in mind when utilising them as diagnostic factors.

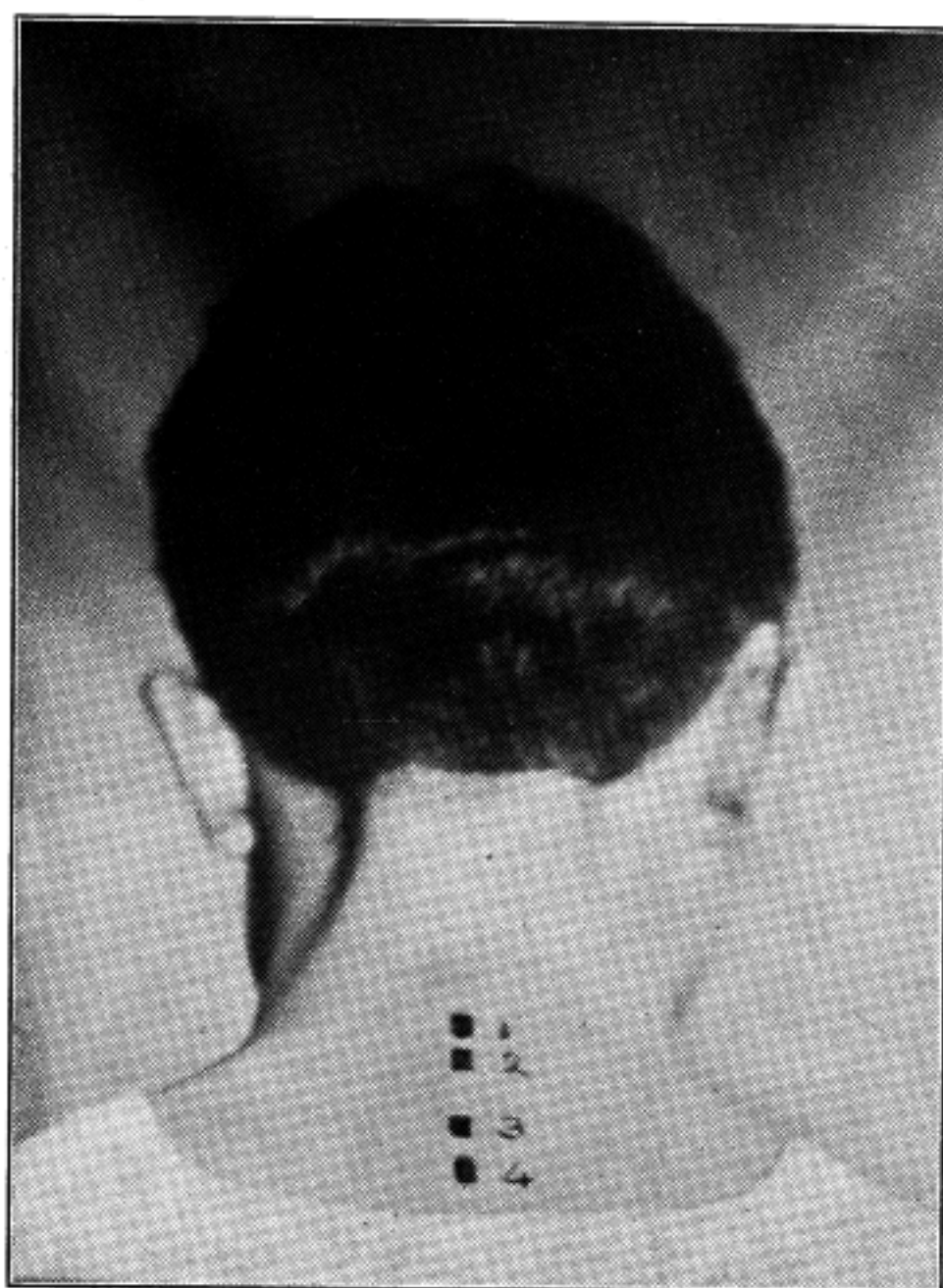
Normally the feel of the supraspinous ligaments in this region presents a certain resilience to the touch: in many cases of lesion this resiliency is lessened or entirely lost. This is important to note. Moreover, often associated with such a condition it will be found that two of the spinous processes are approximated, leaving a gap between one of these and the one either above or below it. (See Fig. III. and Cut.) Occasionally there is a slight lateral tilt to one of the spinous processes, though this is not so common as the supero-inferior approximation of two spines. When there is apparently such a lateral tilt it is never safe to diagnose a lesion until the movement has been tested between this vertebra and the one above it and the one below, as just such a condition is frequently simulated by the presence of a bent spinous process. (See Fig. IV.) The importance of remembering this last fact is emphasized when

it is noted, on the examination of a large number of skeletons, how frequently such bent processes are present in normal spines. Having noted then the tension of the supraspinous ligaments and the relation of the spinous processes to one another it is well to note any thickening of tissue over the articular processes and transverse processes. It must be remembered in this relation that a transverse process in this region is about two inches up and one inch out from the tip of the spinous process corresponding to it and that the inferior articular process lies about half way between the spinous and the transverse processes.

We have still to suggest the most important and reliable guide to the presence of a lesion between the vertebrae we are here considering and this is THE TESTING FOR THE MOVEMENT BETWEEN THE INDIVIDUAL VERTEBRAE. There are no doubt other methods of arriving at the same conclusions as are arrived at in his way; the procedure outlined however is absolutely trustworthy and possibly it may suggest a new thought to some who are perusing these articles. We would say however that if satisfactory results be not obtained at the first few trials from this method we would urge that it be not discarded as unworthy or of little significance, as undoubtedly the principle it exemplifies, that of INDIVIDUAL VERTEBRAL MOVEMENT, is a most important osteopathic fundamental. We would suggest then the following plan of testing for osteopathic lesions in the upper dorsal region as absolutely trustworthy and we can guarantee that after some little practice a considerable degree of skill can be obtained in interpreting what is felt in this manner. The patient is seated on a stool, with the head well flexed; the operator stands at the patient's side and grasps the flexed head in the crotch of his arm so that patient's forehead rests on operator's biceps, and the side of patient's head rests against operator's chest, while the hand of operator falls on to and over the upper dorsal spines. Operator then places fingers of other hand on patient's further shoulder so that his thumb falls between any two spinous processes. In this position it is very important for operator to remember not to rotate the patient's head which should simply be well flexed and firmly grasped by operator's arm and chest. The operator is now in a position to TEST FOR THE MOVEMENT BETWEEN THE INDIVIDUAL VERTEBRAE IN THE UPPER DORSAL REGION, and the



method seems very simple as one states it, and is very simple as soon as some little skill has been obtained; it is however quite difficult for many at the start. From the position we have just described THE OPERATOR MUST LIGHTLY TEETER THE HEAD IN A ROTARY MANNER, and if this is done properly, every movement so made will be felt by the thumb of operator placed between the spinous processes as



Cut showing a quite common finding in the upper dorsal region, namely: an approximation of two of the spinous processes.

suggested above. There is no need for any exercise of the imagination in the slightest degree in testing this way, as the movement can be very distinctly felt if the procedure is exactly carried out.

Remember, SCARCELY ANY FORCE IS NECESSARY AS WE ARE HERE SIMPLY TESTING FOR THE PRESENCE OF LESIONS; the question of correc-

tion will be dealt with a little later. It will often be found that but little tenderness will be complained of by patient when a lesion is first discovered, but as soon as attempts are made to correct it sometimes considerable tenderness manifests itself; this is generally a good sign, as it shows that one's efforts are dissipating congestion,



Cut showing one method of testing for the degree of movement in the upper dorsal region. This manipulation can readily be adapted for use for corrective purposes.

stretching tensed ligaments, etc. We again emphasize the fact that PRIMARILY IT IS RIGIDITY THAT IS THE CONDITION TO BE COMBATED, The lesion is essentially a perversion of movement between two or more vertebrae and the term "correction of lesion" means the restoration of a normal degree of mobility where that movement was



Showing the application of the principle of movement in the correction of upper dorsal lesion upon a mechanical table. It will be noticed that the spine can here easily be well flexed and then rotated.



impaired. In other words it is a fact that as a spine is limbered up lesions disappear; that this is true however should be no excuse for laziness in diagnosing and attempting to correct specifically osteopathic lesions, for to the extent that we do this, do we prove ourselves "anatomical engineers" and not mere "engine-wipers," and the results obtained will be correspondingly the more gratifying and scientific.

### Correction.

There are many good manipulations for correcting lesions in this region. The first one we would suggest is the amplification of the one we have described as a method of testing for lesions. That is to say, instead of lightly teetering the head as there stated, considerable power can be used in the attempt to force movement, wherever that movement is limited. It is a good plan for the operator to hold patient's near shoulder firmly against his own body and to grasp the further shoulder with the fingers of the hand whose thumb is against the spinous processes. It is remarkable what a strong grip can be obtained in this manner and how powerful a lever can be used.

In association with this treatment it is well to stretch the supraspinous ligaments thoroughly, especially if the lesion has produced an approximation of two spinous processes as shown in Fig. III. and in the Cut. This can be accomplished by placing the palm of one hand firmly on the spinous processes below the contracted ligament and with the other hand or with the body bearing down strongly on the top of the head so as to arch the region markedly. In this way the force can fairly well be localized to any given point. A thorough spring with popping of the articulation can also be obtained in several ways, the principle underlying them being that the back is well arched and then with the tissues thoroughly tensed the arch is exaggerated segment by segment. The well known manipulation in which the patient's hands are clasped behind his neck and his wrists are held by the operator whose arms thus pass under patient's axillae exemplifies this principle well. It is best in this manipulation to have patient keep his elbows well in and not flaring; also operator must make a fixed point about the middle dorsal with his chest. Oftentimes too it is wise to work against

a slight degree of resistance on the patient's part as this voluntary tension in some cases seems to help in obtaining the separation aimed at. Some operators use the knees in the back quite a good deal in work in this region as well as lower; this is good provided the operator exercises his judgment constantly. In certain cases manipulations employing the knees in this way, when used without judgment, are capable of causing quite serious harm. We reproduce several cuts to make more clear the thought we have been outlining. These aim to show: (1) an approximation of the first and second dorsal spines with consequently an increased space between the second and third; (2) the method suggested for testing and correcting lesions in this region; and (3) an excellent movement for obtaining the results aimed at on the McManis table. REMEMBER HERE AS ELSEWHERE PROVIDED GOOD MOVEMENT IS OBTAINED IN 'TIESLI AO ERVO EXVL TTM NOISEI EHL NOILVINOILRV DEATOANI EHL IN SO FAR AS IT IS RIGIDITY THAT IS THE ESSENTIAL FACTOR TO BE COMBATED OSTEOPATHICALLY. Get full free movement in the joint and you set the lesion automatically.

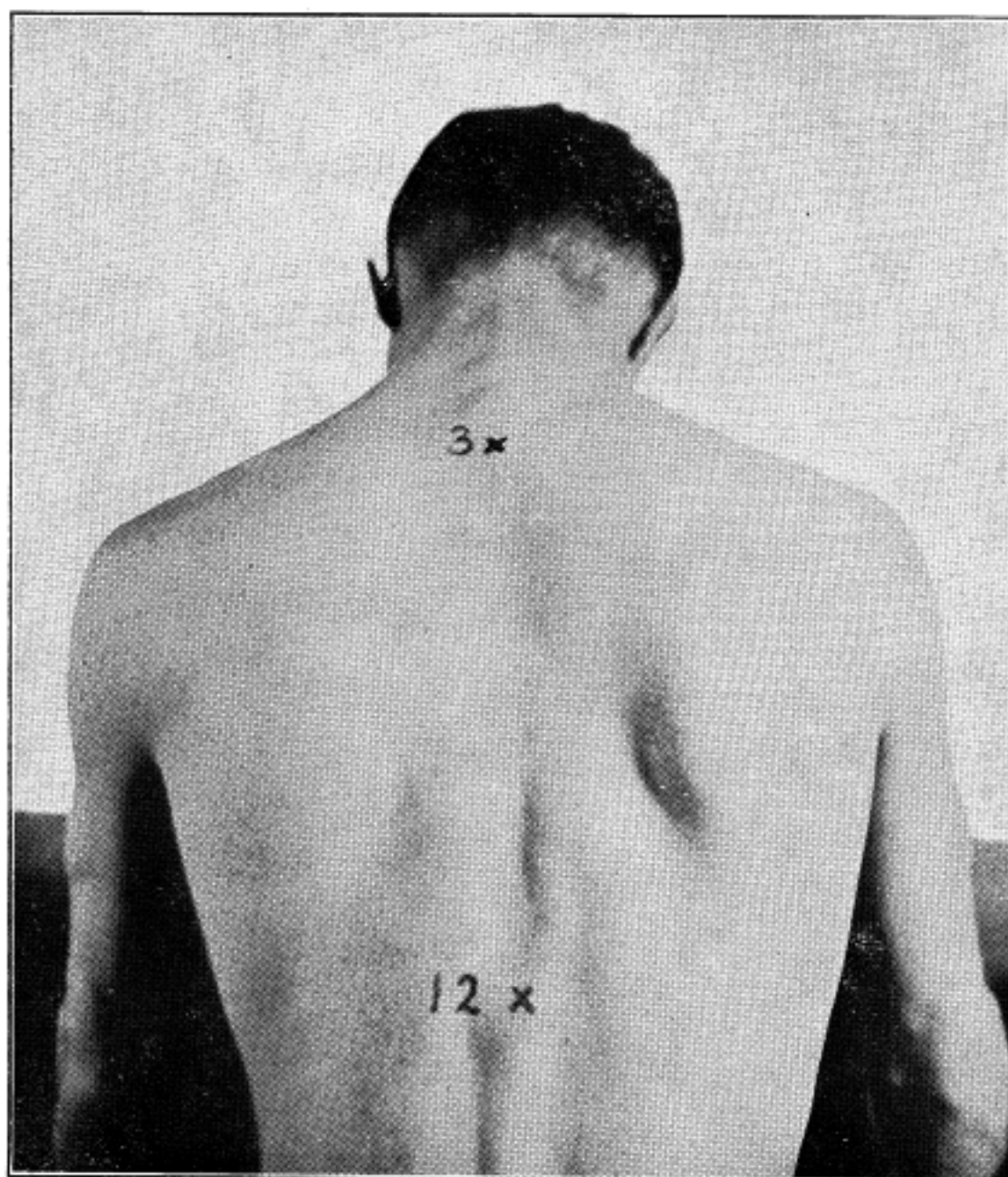
## 2. The Middle and Lower Dorsal Vertebrae.

### Diagnosis.

In this region as in the upper dorsal region the most trustworthy diagnosis is obtained by testing for the movement between the vertebrae, both collectively and individually. From the collective standpoint a very interesting and instructive point may be noted when several vertebrae are affected on one side, and from its extreme obviousness it may be of value to persuade a patient or a patient's friend that the spinal method of treatment at least has a basis in actual fact. Let the patient be seated on the table in a relaxed manner with folded arms and with back to operator. Let operator place hands on patient's shoulders and lightly turn him in a rotary manner from side to side, noting carefully the amount of force required to twist him in this way. Quite frequently it will be found that, using the same amount of force on either side, patient will rotate considerably further on one side than on the other. This difference is visibly noticeable and shows clearly that OSTEOPATHIC LESIONS MANIFEST THEMSELVES AS PERVERSIONS OF MOVEMENT; that is to say, their pathology is such as

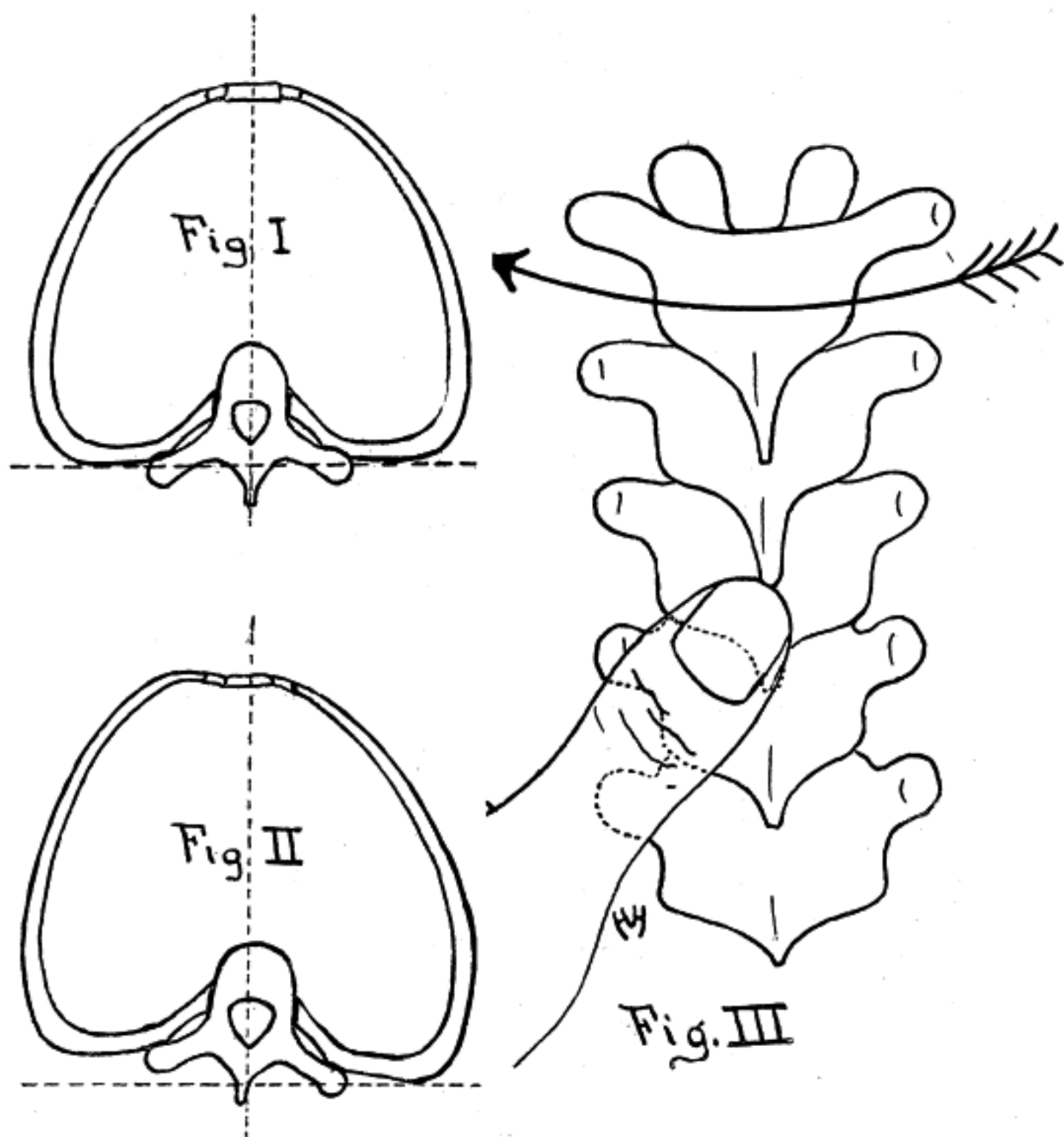
TO LIMIT THE NORMAL RANGE OF MOTION in the region involved.

Again from this same standpoint of collective involvement, several vertebrae may be "anterior," that is to say, the spine may be straighter than is normal—the ordinary dorsal curve being partially obliterated—, or again several vertebrae may be slightly twisted. We will therefore consider the diagnosis of each of these conditions. When a spine is anterior, the condition is very easily



Cut showing a bad "anterior dorsal" spine. In this case the convexity of the dorsal region is almost entirely obliterated, the spine being quite straight from the third to the twelfth dorsal vertebrae.

palpable, as the dorsal convexity is largely absent and the spinous processes are more closely approximated than is usual, even for this region; also when patient bends head forward, the convexity is but very slightly improved as the spine is essentially more or less straight. Often only three or four vertebrae seem to be affected

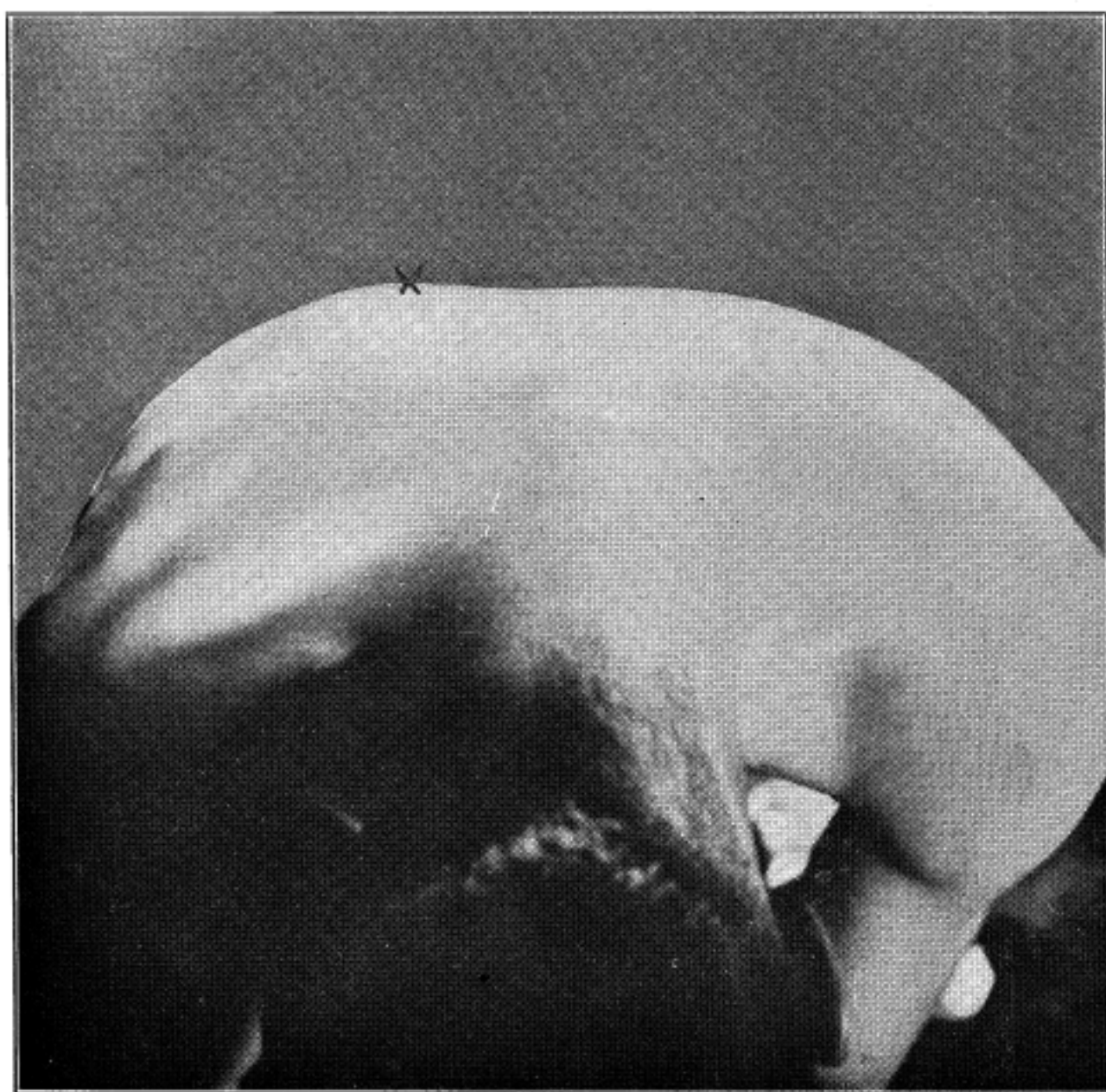


- Fig. I. Diagram showing a normal dorsal vertebra with attached ribs.
- Fig. II. Diagram showing the prominence of the ribs produced by the rotary twist of the vertebrae.
- Fig. III. Diagram showing the principle used in testing for the movement between individual vertebrae, and also in directly establishing such movement.



in this way and this condition is spoken of as an "anterior upper dorsal, or an "anterior middle dorsal," etc; sometimes the entire dorsal region is affected. See cut.

The rotary twist of the vertebrae is best diagnosed by noting the prominence of the angles of the ribs on one side or the other. Thus patient is seated on stool, with arms hanging between knees and with head and back well flexed; operator now stands in front



Cut showing a slight bulging of the ribs at the cross. It is very difficult to obtain a good picture of this condition though it is frequently present. It will be noticed that the one side is fuller than the other, however.

of patient and looks down his back. In this way even the slightest prominence of the ribs is markedly exaggerated and very frequently the ribs on one side will be considerably elevated above the ribs on the other. Such a condition can of course only be caused by a twisting of the vertebrae around a vertical axis. See Figs. I. and II.



It is possible for an anterior dorsal to be produced in association with the collective rotary twist that we have described. That is to say, as the vertebrae twist in the manner suggested they may sink in slightly as a consequence. When, therefore, an anterior



Cut showing method of testing for the movement between individual vertebrae in the middle and lower dorsal regions. This type of manipulation is of great value also in treating in these regions.

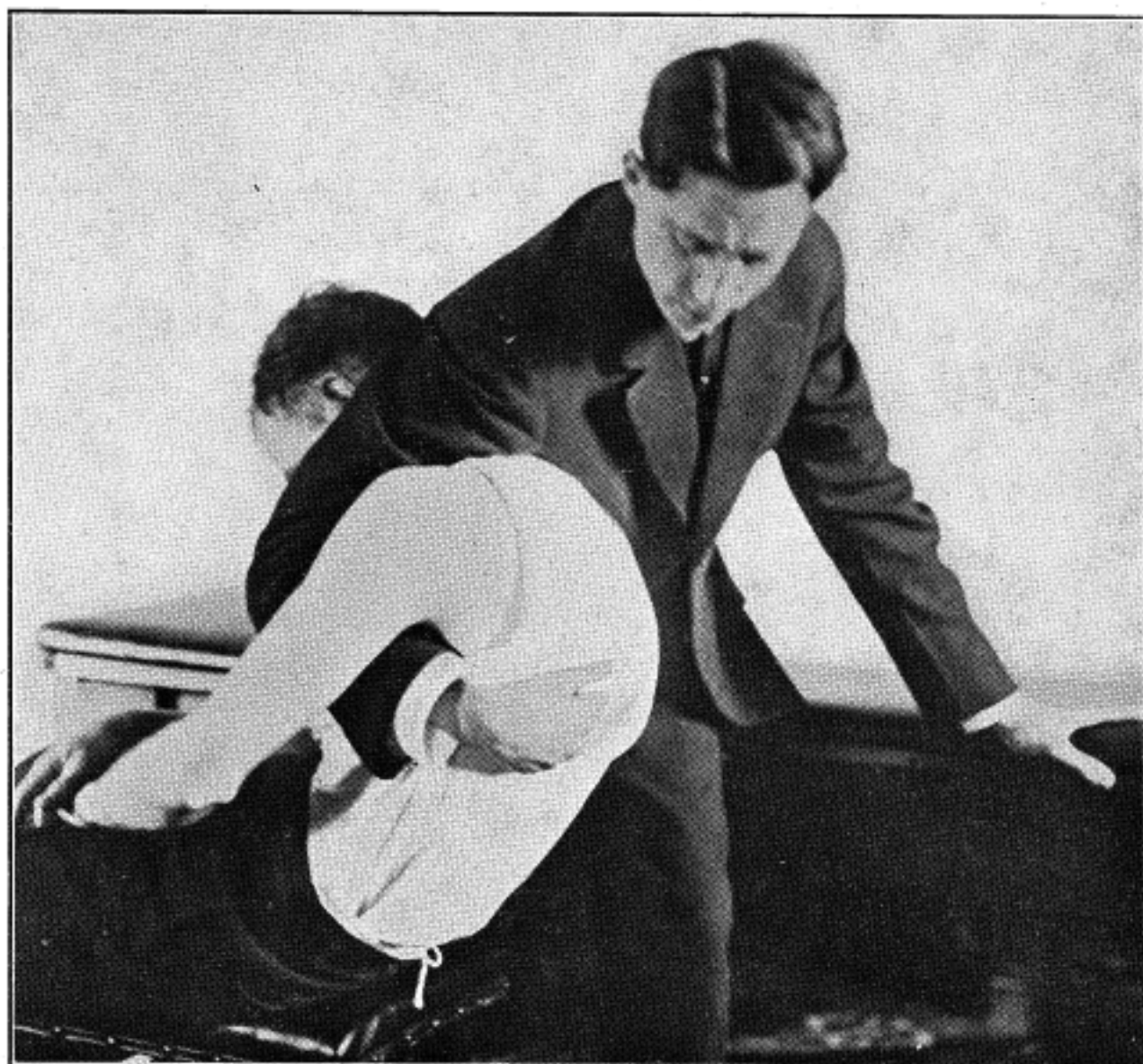
dorsal is to be corrected it is well to note carefully whether or not there is any prominence of the ribs on one side, because if there is, the rotary twist thus demonstrated is partly responsible for the an-

terior condition of the vertebrae in question. We suggest this simply as a point worthy, in certain cases, of consideration.

As to lesions between individual vertebrae, these should always be carefully tested for. They are often secondary to the collective involvements such as we have already noted, or again they may be compensatory to lesions below. They are, however, also frequently present as primary conditions, needing individual attention. Lesions in this region can be determined as exactly as in the upper dorsal region and by a similar type of manipulation. A variety of methods can be used to obtain a suitable leverage, and the following is simply suggested as a good one. Patient sits with arms across chest and hands on shoulders; operator, standing behind patient, grasps his further arm or shoulder. Operator then places thumb of other hand between spinous processes and lightly teeters the body. If this is done correctly no great force is required and the movement between individual vertebrae can be easily felt for diagnostic purpose. The principle involved herein is illustrated in Fig. III. A little practice is all that is required. Remember, individual lesions in the dorsal region—whether slight rotations or merely rigid approximations—can all be thought of from the standpoint of the essential principle underlying them. As we have urged before THIS PRINCIPLE IS, THAT THE PATHOLOGY OF A LESION IS OF SUCH A NATURE THAT THE LESION MANIFESTS ITSELF IN A LESSENERED DEGREE OF MOVEMENT WITHIN THE FULL RANGE OF MOTION OF THE ARTICULATION, AND THE CORRECTION OF THE LESION IS OBTAINED WHEN AND ONLY WHEN THE FULL DEGREE OF NORMAL MOVEMENT IS RESTORED THEREIN. We might here mention one more point that is of importance from the standpoint of both diagnosis and, as we shall see later, of treatment; it is, that often when there is a slight rotary twist of several vertebrae, compensated for by a twist below of several other vertebrae in the opposite direction, an obstinate "individual" lesion will apparently be present at the point of juncture of the two twists. It is obvious that, unless the collective rotary twists be recognized, neither specific nor general work, directed to "set" this individual lesion, will be successful, as the lesion itself is, as it were, secondary entirely to the two rotary twists and the lesion will persist until the rotary twists be recognised and corrected.

Summing up the lesions to be looked for in the dorsal region we would suggest the following classification. Such lesion may be:

(a) collective; (b) individual. If collective we find: (1) the normal convexity more or less obliterated; (2) a rotary twist of several vertebrae, frequently associated with a compensatory twist in the opposite direction either above or below. If individual we find rigidity manifesting in very slight rotations or in supero-inferior approximations, etc; further, individual lesions are frequently secondary to the rotary twists above mentioned or even to other lesions of the innominates or lumbar vertebrae.



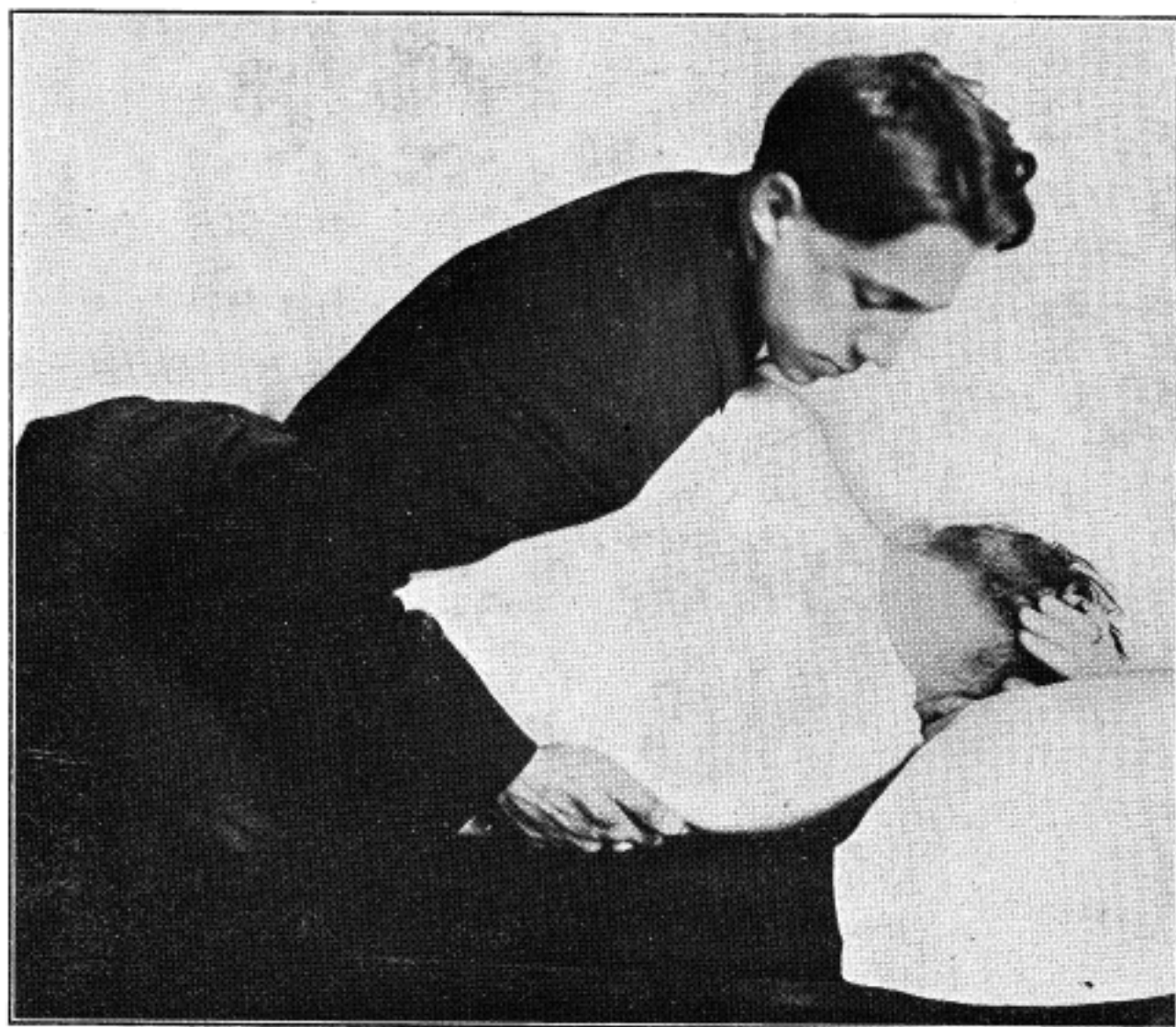
Cut showing an excellent method of re-establishing the normal dorsal convexity in an "anterior dorsal" spine.

### Treatment

Before describing methods of treating lesions in the lower and middle dorsal regions we wish again to impress upon our readers the fact that we are not attempting in these articles to describe dogmatically the only methods of "setting lesions," or in other



words, of normalizing the spine. We urge again that the PRINCIPLES underlying spinal therapy are ABSOLUTE, being built upon anatomical and physiological facts, and in these articles we are attempting to show along what lines involvements of the vertebrae may be found—no matter by what names such involvements are called—and also to show the principles utilised in the correction of spinal abnormalities. In any discussion, therefore, dealing with the correction of



Cut showing a second method of treating an "anterior dorsal" spine. Operator's hands are clasped beneath ribs and while patient takes full breath pressure is applied by operator's chest above. The principle of above manipulation can readily be understood.

trouble in the region we are here considering, the best we can do is to suggest the lines that may be used in obtaining results osteopathically and then to trust that the individual mechanical skill of the operator may enable him to apply more specifically in actual cases the principles thus suggested.

**A. Correction of an Anterior Dorsal Region.**

Under this heading we would suggest two methods, as follows: Place the stool about 12 inches from side of table and let patient sit upon it with his side to edge of table; let operator, standing between patient and table and facing opposite way to patient, place his axilla over the base of patient's neck so that his forearm will



Cut showing a method of taking out a rotary twist from several vertebrae by employing the lever of the prominent ribs. It is well to follow such a manipulation by a traction of the entire spine.

pass under patient's axilla while his hand will more or less support patient's back. Operator can now take a step forward so as to throw patient back and off his balance. It is well for operator to balance himself with his other hand on treating table. From this



position operator can exert a steady pressure upon the dorsal spine so as to bow it to any extent desired. It is well always to use this manipulation on both sides of patient, as otherwise there is a possibility of straining the back somewhat unduly on one side.

The other method we would suggest is as follows: Let patient lie on side on table with head well flexed so as to put some tension on the supra-spinous ligaments. Let operator sit on table in front of patient's body with his hands clasped under patient's ribs. Now let him put his chest on near ribs and instruct patient to fill up his lungs fairly full. As patient does this, operator compresses patient's chest laterally and rocks him slightly back and forth. This pressure should not be continued during expiration of patient and, as in the previous manipulation, the operator should work from both sides, that is to say, with patient first on one side and then on the other, to avoid any possibility of straining one side more than the other. The pressure can be employed to advantage five or six times on each side. The manipulation we have just suggested is of great value for the condition specified and in many cases also of poor nutrition it will be found very helpful.

#### **B. Correction of a Rotary Twist.**

A rotary twist is best taken out of the spine by first utilising the long lever presented in the prominent ribs, and by then employing traction in some way upon the spine as a whole. The accompanying diagram (Fig. II.) well shows the principle employed in this first step suggested. For the second step a mechanical table offers the most easy method of getting good traction with but little effort on the operator's part. We would here simply mention the fact that those lateral curvatures that are amenable to osteopathic treatments will respond to the application of the principle we have outlined above, namely, a pulling forward on the prominent ribs, with perhaps some little pressure on the spinous processes TOWARDS the prominent ribs, to be followed by a traction of the entire spine. Also, when a rotary twist is compensated for by a second one as is often the case, best results are obtained by working first upon the primary twist, then upon the secondary, and finally again upon the primary one. In this way the maximum degree of "untwisting" can be procured, and the result obtained at each treatment will be found to be more or less permanent.

The lesion, whose correction we have described above, is one that is very frequently present though it is also quite often overlooked. We would urge therefore the importance of examining for prominent ribs with the patient seated upon a stool and flexed well forward. Remember such a prominence—when found—can only be caused by a rotary twist such as we have described. Remember too, that when found in association with an anterior dorsal, this latter condition is possibly secondary to the rotary twist, in which case it will respond satisfactorily only when treated from this standpoint, in association with other methods. Also remember that "individual" lesions are frequently present at the juncture of two such rotary twists and will be found persistently to resist treatment until the primary conditions producing them are corrected.

### C. Correction of Individual Lesions.

In association with the special methods we have suggested it is generally necessary to employ methods designed to free up the individual articulations. Separation of the articulations is of value in many cases. A series of pops is thereby produced and every osteopathic physician knows manipulations that will produce this desired result in this region. Such a manipulation is best followed by one designed to obtain actual movement—along the plane of the articulation between the involved vertebrae. There are many well known manipulations that obtain separation, as for example when the patient lies prone and the operator places one hand on either side of the spinous processes, takes out the "slack" from the spring of the spine, and then delivers a "thrust" towards the table. This is of value if used with care and not too roughly. Other operators place the knees in the back with the patient sitting on stool and clasp their hands in front of patient's chest. Indeed every operator has his own method of obtaining separation in this location.

The best method of obtaining movement in the dorsal spine is by an amplification of the principle suggested for the diagnosis of lesions, and we would outline the following technique as being of value. We specify 'left' and 'right' for clearness only, and the manipulation is of as great power exactly reversed, and should of course be used on both sides. Let patient sit on table with arms crossed over chest, as before suggested, and with hands placed on lateral base of neck. Let operator grasp patient's left elbow or

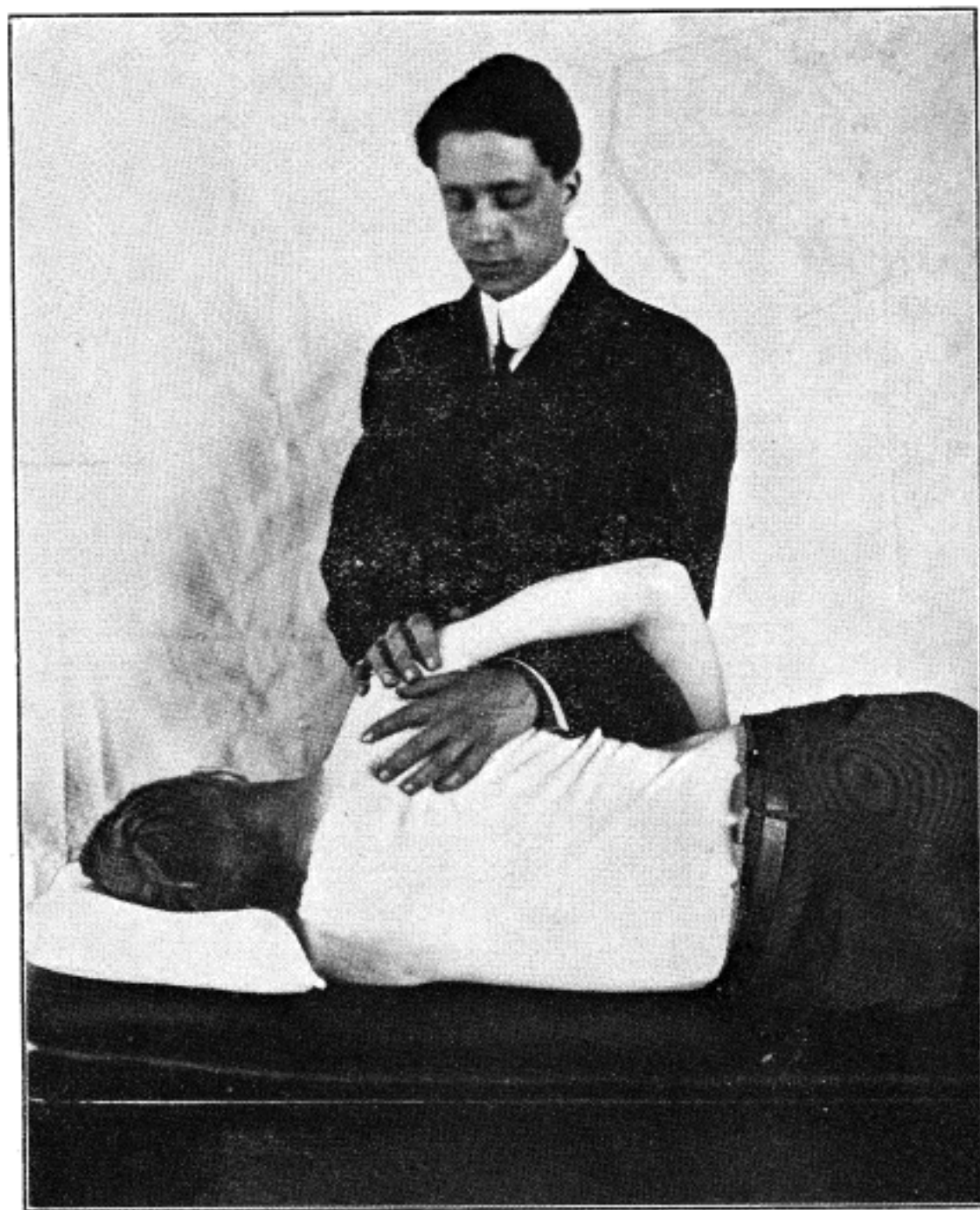
left shoulder with his right hand and rotate the spine from the lever thus obtained, at the same time opposing the rotation, segment by segment, by his left thumb placed between spinous processes on the left side. Fig. I will make clear the principle utilised and the cut reproduced on Page 44 will show the manipulation in actual use. This is a very powerful movement, though, no doubt, there are levers that in other operator's hands are as powerful as the one suggested or even more so.

Remember if not mechanically inclined an osteopath will never be more than a mere imitator, slavishly copying some one else's moves, and if mechanically inclined, provided the principle be thoroughly grasped, the method will suggest itself. It is our endeavor in these articles to write for the mechanically inclined osteopath and we are therefore attempting above everything else to state clearly WHAT IS TO BE LOOKED FOR and we trust that the operator himself will have sufficient ingenuity to correct trouble if he understands exactly of what nature that trouble partakes.

### THE SCAPULAE

The scapula is an important bone from the osteopathic viewpoint. This is because it is attached to a large number of muscles, any of which may become unduly contracted and thus prevent it from moving freely throughout its full range. There are no less than six important muscles attaching the scapula to the vertebrae or to the ribs. (See diagram). These are the Serratus Magnus, the Trapezius, the Levator Anguli Scapulae, the two Rhomboidei, major and minor, and the Latissimus Dorsi. The first of these muscles is inserted along the full length of the underside of the vertebral border of the scapula, taking its origin from the upper 8 or 9 ribs and is the great sling muscle of the body. In quadrupeds the two Serrati muscles serve as a hammock-like structure whereby the thorax is suspended from the shoulder-blades. The Trapezius may be considered for our present purpose as a muscle running from the ligamentum nuchae and the superior curved line of the occiput to the upper border of the spine of the scapula. The Levator Anguli Scapulae with the Rhomboideus Major and the Rhomboideus Minor are inserted into the vertebral border of the scapula. Of these the Levator takes its origin from the transverse processes of the Atlas

and the two or three upper cervical vertebrae, while the Rhomboidei take their origin from the spinous processes of about the seventh cervical and the upper five dorsal vertebrae. The Latissimus Dorsi has a very extensive origin below and inserts into the bicipital groove of the humerus. Between the main origin and the insertion



Cut showing a good hold on the scapula for the purpose of normalizing the tissues all around it.

a slip is given off from the underside of the muscle as it passes over the inferior angle of the scapula and thus this angle is held firmly under the muscle and it is quite impossible for the scapula to slip out on top of the Latissimus. We mention this expressly to combat an idea at one time prevalent that a scapula could "jump"



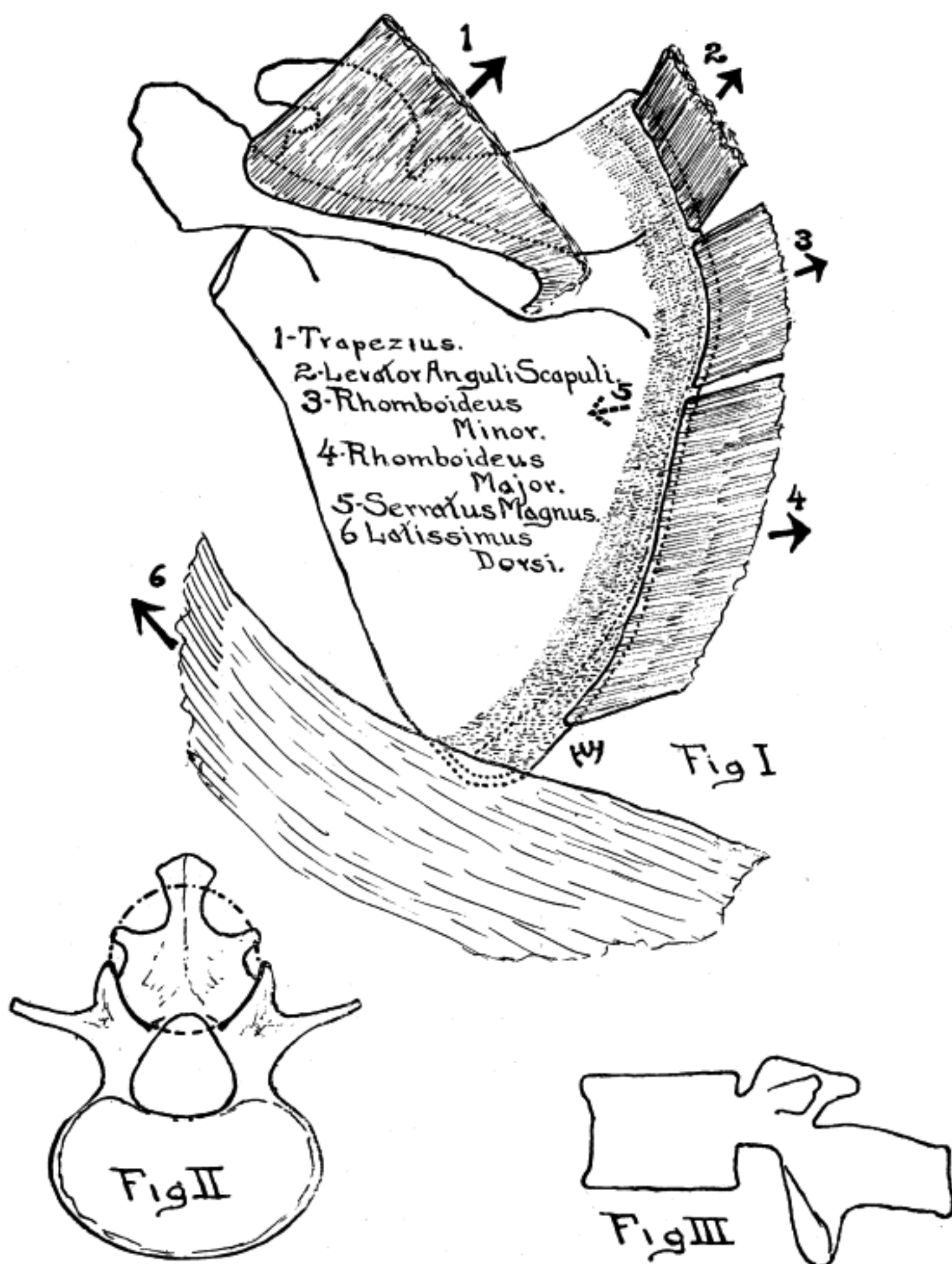


Fig. I. Diagram of the scapula showing the six muscles which attach it to the vertebrae and ribs.

Fig. II. Diagram showing the direction of the facets of a lumbar vertebra.

Fig. III. Diagram showing the relation of the spine to the body of a typical lumbar vertebra.



a Latissimus, that is, could slip from under it. This possibility from the anatomical facts present is out of the question. The actual condition when a scapula is prominent in such a manner as to lead to this belief is practically always a paralysis or a certain degree of lost tone in the Serratus Magnus muscle, which causes the scapula to protrude unduly. The insertion of these muscles with the directions of their pulls is shown in Fig. I.

As suggested above, it is extremely important to make sure that the scapulae are neither bound down tightly to the ribs, nor prevented from moving normally through a quite large range, and frequently we find one or the other of these conditions present. A number of movements are employed to free up the scapulae and the following is but outlined as an example. As patient lies on right side, operator places patient's left arm over his own right forearm at the same time grasping the vertebral border of the scapula with his right hand and placing his left hand on the patient's shoulder. From this hold a rotary movement of the scapula can be established, and it can readily be determined whether or not there are contractions preventing the scapula from moving as freely as it should. Considerable tenderness can often be found associated with such an abnormal condition as is herein suggested. We refrain from describing other methods for obtaining the results desired as manipulations will readily suggest themselves. However we do not wish to dismiss this region without emphasizing the fact that it is very important to make sure that a perfectly normal condition is established in these tissues. There is an abundant blood supply around the scapula and the venous drainage undoubtedly is disturbed when a condition of abnormality is present in this region. We might almost say: Make sure that the scapulae are normal and a great deal will take care of itself. Sometimes a lot of treatment is required to obtain the condition aimed at, but results will amply justify the expenditure of time and energy.

### THE LUMBAR REGION.

The lumbar spine is frequently involved in lesion. As stated earlier in these articles lesions in the upper part of the back are very often secondary to lesions in the lumbar region or between the innominates and the sacrum. Therefore it is well to spend time thoroughly to examine and treat these regions, as otherwise efforts



Cut showing a method of treating a posterior lumbar spine on a mechanical table.

directed to the correction of the upper spine may not get the results expected, the lesions worked on being secondary to trouble lower down. This is not necessarily always true; the fact however that it is fairly frequently so is worth while remembering, as therein may lie the solution of certain somewhat obstinate cases, which might otherwise not respond to treatment.

### **The Lumbar Vertebrae.**

There are a few points of considerable interest in connection with the anatomical formation of the lumbar vertebrae. The bodies are very large, and kidney-shaped, and the intervertebral disks are the largest that are found in any part of the spine. The spinal foramen of the lower lumbar vertebrae does not contain any of the cord, as the 'Conus Medullaris' or terminal portion of the cord is found at the first or second lumbar vertebra. Instead, it contains the 'Filum Terminale' and the 'Cauda Equina,' accompanied by veins and arteries. The 'Filum Terminale' is the anchoring ligament which holds the cord down, being itself attached to the coccyx, and the 'Cauda Equina' consists of a bundle of nerves which leave pair by pair through the lumbar and sacral foramina. The articular processes project markedly, and are placed in such a way that the inferior facets are grasped by the superior of the vertebra below. The plane of the articular facets is on the arc of a circle whose center is in the spinous process. We may describe this direction as being back and in. See Fig. II. It is obvious from but a cursory glance at the manner in which the inferior facets are clasped by the superior that direct rotation of the individual vertebrae is impossible in the lumbar region, for as soon as it is attempted the articular facets will clash. The spinous processes are club-shaped and project almost directly backwards so that a lumbar body and a lumbar spinous process are on the same plane. See Fig. III. This is strikingly different from the relationship existing between body and spinous process in the dorsal region. The transverse processes are long and slender being in reality lumbar ribs and occasionally it will be found that these processes on the first lumbar vertebra are not fused to the rest of the vertebra. The other processes are of little moment.



Cut showing an effective method of treating a very stiff lumbar spine  
on a mechanical table.



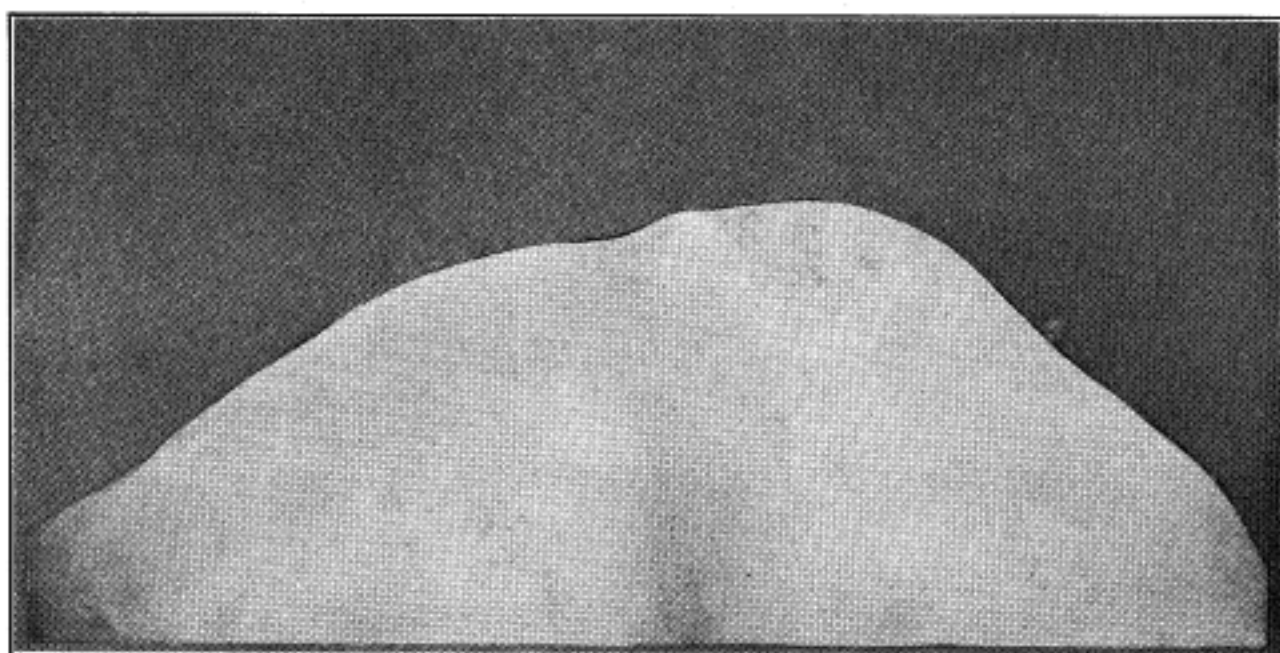
### Diagnosis.

In the lumbar region as elsewhere, the most prominent and noteworthy feature of a lesion is the fact that in some way there is a disturbance of movement between the vertebrae, either individually or collectively. From this standpoint it is very interesting to note the manner in which gross involvement manifests itself. A patient, for example, will move stiffly and complain that he cannot bend as easily as he used to, thinking that the reason of this lies in his muscles. As a matter of fact, much of the trouble is in the lumbar spine, stiffness and rigidity in which is preventing a normal amount of flexion from taking place. A simple experiment shows this point very readily, and it also gives an insight into many of the results that are obtained by physical culture methods. For example, if the attempt is made to touch the floor with the hands without bending the knees this perhaps is accomplished with difficulty; after some practice, however, it can be done readily. What has happened is this: The tightened ligaments and the thickened capsules and the congested muscles of the lumbar spine have been more or less normalized by a definite stretching along the plane of their natural movement, and by the time the patient has managed to accomplish his end aimed at he has automatically "set" some of the osteopathic lesions which were manifesting in rigidity. We believe that quite a number of the cures obtained under physical culture systems are due, not to the strengthening of the muscles of the trunk and extremities, as the patient believes, but to the limbering up of the spine which has gone along with this latter, owing to the fact that the patient employed twisting, stretching, bending, etc., in his physical culture movements. Herein is a line of thought that can be amplified to an almost unlimited degree, and undoubtedly a few simple exercises practised by patients daily and consisting of bendings and twistings of the various regions of the spine will often accelerate results obtained under osteopathic care. ALWAYS REMEMBER THE GOAL AIMED AT IS THE COMPLETE NORMALIZATION OF THE SPINE, that is to say, the restoration of a normal degree of mobility and the re-establishment of the natural curves. In principle it matters very little what methods are actually employed, provided the end-result is obtained, and the various systems of spinal therapy that have sprung up since Osteopathy was instituted



are all, more or less, crude attempts to bring about this ideal in one way or another, by a "thrust" or a "jarring" of the spine, trusting that Nature will produce a normal condition as a result of the recoil.

It should first be noted whether or not the lumbar spine is much posterior, because sometimes the entire spine appears almost straight, as mentioned earlier, the dorsal curve being obliterated and the lumbar spine unduly prominent. Also there may be a rotary twist of the lumbar vertebrae, of a similar nature to the twist spoken of in the dorsal region. We reproduce a cut showing a quite extreme example of such a rotary twist. In a case of this nature the twist of the vertebrae makes the long transverse processes very prominent and also carries the whole body of the musculature backwards on the side of the twist. Such a condition can be noticed by



Cut showing a bad rotary twist of the lumbar vertebrae with consequent prominence of the musculature. This picture is taken looking down a well flexed back.

looking down the back of the patient from above and in front, having flexed it strongly so as to put the entire back on tension.

In testing for "individual" lesions tenderness over the transverse and articular processes can often be found, and undue separation or approximation of the spinous processes should be looked for. That is to say, flexion and extension being normal movements in this region, the individual vertebrae may be held at the limit of their motion along these lines. Whenever such a condition is found, on testing for the movement between the vertebrae under consideration, as suggested below, a lessened amount will be noted. An

impacted condition of the whole lumbar spine is sometimes met with, in which there is a stiffness throughout the whole region, every articulation being involved.

A good method for testing the movement between the individual vertebrae is the following: Place the patient upon the side with legs raised to a right angle with the body. Support patient's knees in the abdominal wall and place both hands on the lumbar spinous



Cut showing a good method of diagnosing and treating lesions in lumbar region.

processes. From this position operator should flex and extend patient's legs by movement of his own body. See cut. Every such movement of his body will be felt by the hands on the spinous processes and it is simply a matter of practice before considerable skill can be gained in making a correct interpretation of what is felt by the hands. We would emphasize the fact that a great amount of movement is not required when testing in this manner. Just a

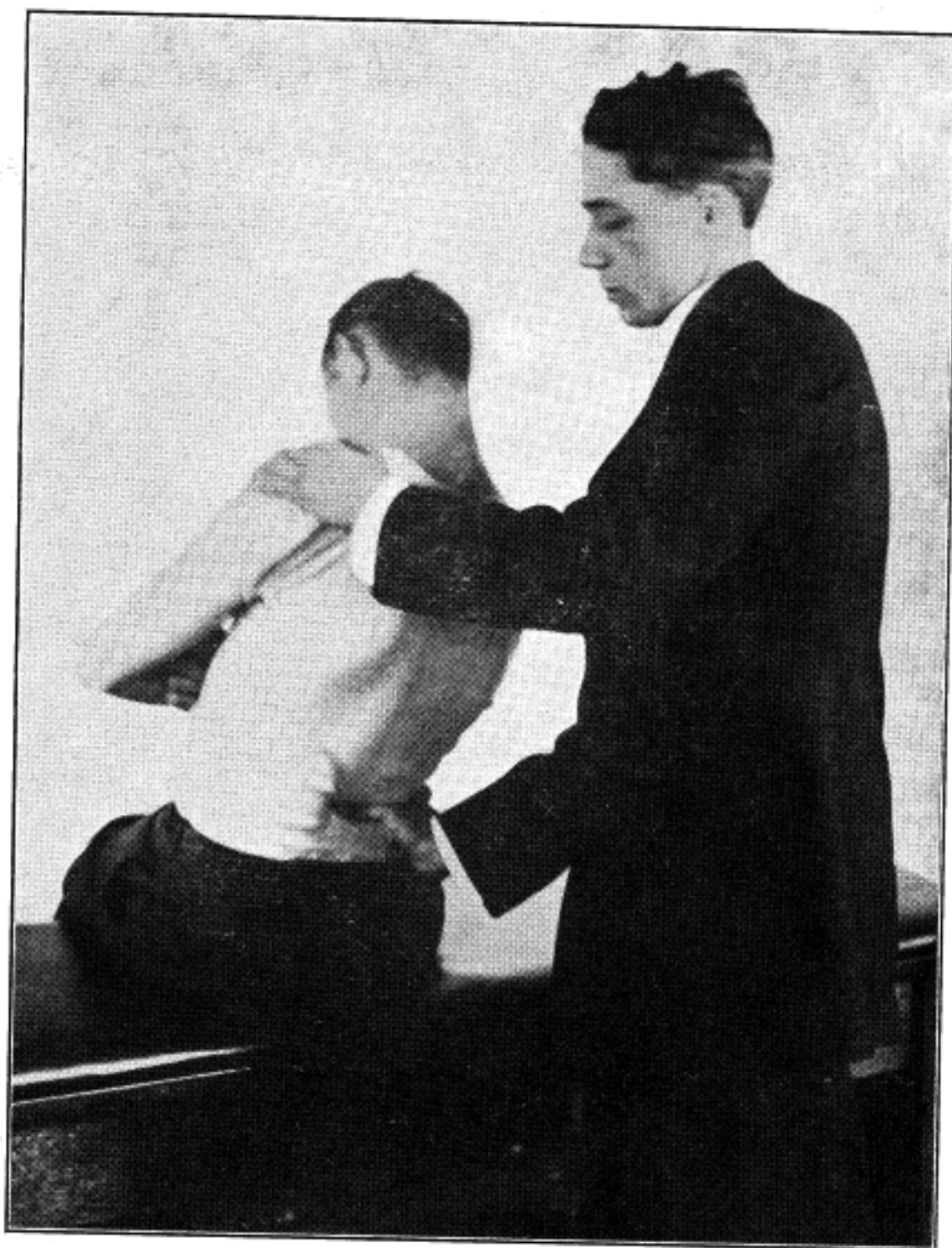
little lateral motion of the body, and the ability to interpret what is quite readily felt in this way, are the two necessary requisites. Some method similar to the one just explained will be found very valuable and quite trustworthy in the majority of cases. On a mechanical table, the principle we have outlined can be applied with less effort to the operator. This is especially true when the same principle is employed for corrective purposes as we will suggest later, the greatest drawback to the manipulation in that instance being that it is somewhat of a strain on the operator's own back.

### Correction.

The manipulations that are in common use for the lumbar region are many and varied. Some of them obtain separation between the vertebrae while some of them are designed simply to force movement along the plane of the normal movement of the region involved. We will outline a few of each kind, again urging our readers to remember that it is the principle and not the exact technique that we would especially emphasize. Most osteopathic physicians to a large extent adapt their movements both to the patient, and to the condition present, and in the end the success of attempts made to do this depends upon the mechanical instincts of the individual operator. For this reason the very best instruction that can be written down appears crude when read by an experienced operator and of course it is needless to say that no one can become skillful by merely reading such suggestions as may be offered in these pages. The great difficulty in compiling articles such as we are attempting in this series is that it is extremely hard to write in concrete terms instructions that shall be neither altogether too dogmatic to allow play for the individual application of skill nor too general to be of any real practical value. In this region perhaps more than in any other it is often permissible to give a general "breaking up," as the vertebrae are very firmly held to one another by the massive muscles and strong ligaments, and provided in general a full degree of free movement is obtained Nature will tend to restore normality where abnormality exists. As regards a general posterior lumbar spine, we would say that correction is a matter of growth and training of the vertebrae. Any movements that will tend to restore the normal contour are valuable, as, for example, when patient is seated on stool while operator sits on table and works with his



knees in the lumbar region, trying to force the spine gradually to take up a more anterior position. Or again, with patient on face, the raising of the limbs from the table with one arm while with the other hand pressure is brought to bear upon the lumbar spine, is of value. Some operators are in the habit of raising the limbs in

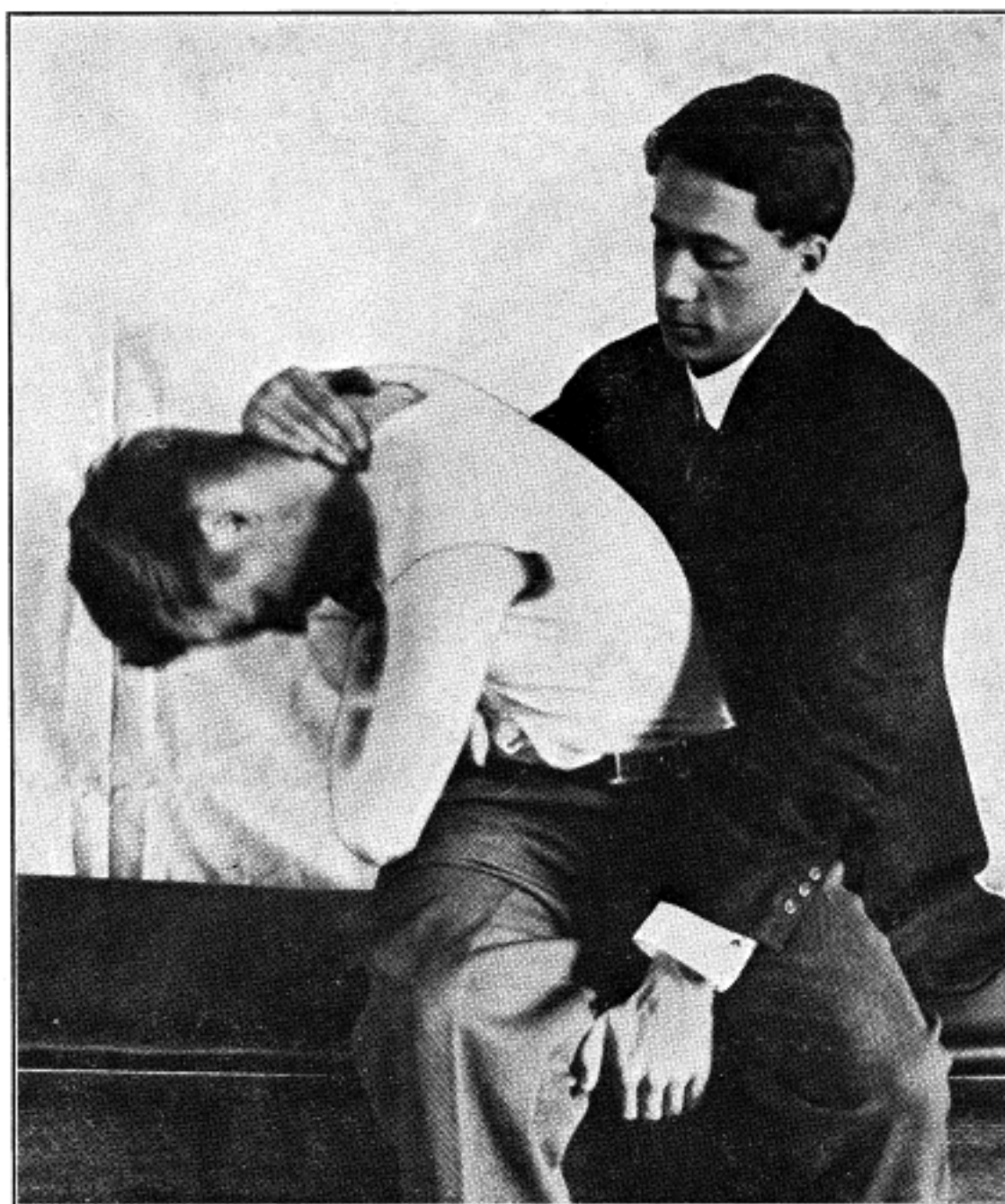


Cut showing an easy method of getting movement in the lumbar region.

this way and while they are thus elevated, moving them from side to side. This is unwise and may do harm as the spinous processes can very easily be bruised by this procedure and the tissues damaged. The side to side movement is excellent provided the limbs are not



unduly elevated, and on a mechanical table especially, where the manipulation is not such a great effort to the operator, and where even some traction can be applied in addition, very good results may be obtained. We reproduce two cuts showing the exact application of this principle on a mechanical table and it will be readily seen that the movement thus easily obtained could not be obtained ordinarily without great strain and effort to the operator. For the



Cut showing an effective method of "breaking up" a stiff lumbar spine.

general restoration of movement in the spine an excellent method is to have patient seated on table and to grasp one shoulder while with the thumb of the other hand fixed points are made between the lumbar spinous processes as patient's body is thrown back and rotated from the lever of the shoulder. We reproduce a cut show-

ing this method which will be found a valuable one. It is well for operator to support his elbow upon the anterior superior iliac spine. At first this method tires the thumb badly but soon this is not noticed.

A good general "breaking up" manipulation for the lower dorsal and the lumbar regions is the following: With patient seated on table, operator passes right arm under patient's right axilla and



Cut showing a method of correcting a rotary twist in the lumbar region. In this picture operator's right hand is pulling round and forward while his left hand is pressing the spines of the vertebrae toward the prominent side.

clasps patient's neck with his hand. Operator then sits beside patient on his left side, and with his left hand grasps the front of the table, holding down patient's left leg strongly and with his body firmly supporting patient's sacrum on left side. This technique may seem very cumbersome at the start; however it soon becomes

easy and can be done without effort. From the position so far described patient can be thrown forward and rotated from the lever of the neck. It will be found that the further forward patient is thrown before being swung round the lower the force will be felt on the spine. The manipulation should be tried from both sides.

The amplification of the method suggested for diagnostic purposes will be found of great value as a manipulation designed to produce movement between the vertebrae. That is to say, with patient on side with his legs flexed and supported by operator, (see cut) increased flexion of the legs will produce movement in the lumbar spine while the two hands can be used to localise the movement in the particular segment desired. In utilizing this principle as suggested above a mechanical table can be used to great advantage.

When a rotary twist exists in the lumbar region, either as a similar one elsewhere, a method somewhat like the one suggested for the dorsal region may be employed, though it is harder in this region to get a good lever. It is well to place the ball of one hand on the spinous processes and while the other hand is pulling forward and round on the prominent side to attempt to push the spinous processes towards the prominent side. This will help to "untwist" the vertebrae, if we may use that expression. We reproduce a cut showing this principle in practice. As emphasized elsewhere some traction applied to the spine will often prove of value if judgment is employed in its use.

Some of the manipulations described in this article will produce a popping of the articulation, and some of them will not. It is by no means a safe guide to work for pops. If a manipulation produces a separation of the articular surfaces a pop will result unless there is considerable degree of rigidity present, when it will require sometimes weeks and months of treatment to normalize the spine sufficiently for the separation to occur. WORK TO NORMALIZE THE SPINE, and if the articular surfaces make a popping sound this is simply a point in passing, and not one to be taken a great amount of notice of. The Old Doctor in his "Osteopathy, Research and Practice" says:

"One asks, 'how must we pull a bone to replace it?' I reply, pull it to its proper place and leave it there. One man advises you to pull all bones you attempt to set until they 'pop.' That 'popping' is no criterion to go by. Bones do not always 'pop' when

they go back to their proper places nor does it mean they are properly adjusted when they do 'pop.' If you pull you finger you will hear a sudden noise. The sudden and forceable separation of the ends of the bones that form the joint causes a vacuum and the air entering from about the joint to fill the vacuum causes the explosive noise. That is all there is to the 'popping' which is fraught with such significance to the patient who considers the attempts at adjustment have proven effectual. The osteopath should not encourage this idea in his patient as showing something accomplished."

### **The Innominate Articulations.**

Osteopathically there is probably no articulation that is more commonly involved in lesion than is the Sacro-Iliac joint. This is due to two reasons: first, the articular surfaces are large and there is but comparatively little movement provided therein, while secondly all of the strains, etc., to which the lower part of the body is subjected are very liable to be felt most especially at this particular joint because of its unique position. It is needless to say that it is important to make sure that those basic articulations are normal seeing that they serve as a foundation to the rest of the spine.

### **The anatomical points involved.**

The two bones which form the Sacro-Iliac joint are the Sacrum and the Innominate, and the surface upon each that articulates is called the auricular surface because it is shaped somewhat like an ear. Upon the Sacrum the surface extends down to about the third segment of the bone, and upon the Innominate it covers an area just above the great sciatic notch. The main ligaments are so arranged that the Sacrum is suspended in a hammock-like fashion between the two Innominates, the posterior sacro-iliac ligaments serving as the supporting ropes. See Fig. I. The joint is now universally recognized as an amphiarthrodial articulation despite the statements made by the older anatomists to the contrary. That is to say, there is undoubtedly, in this region, a certain amount of movement which is normal to the part, and as we will show later, if such be not found, this is indicative of a lesion of the articulation. The two ligaments that give most support to the joint and form a large part of the capsule around it are named the posterior and anterior sacro-iliac ligaments, and are very important osteopathically. Of these the



posterior are the ones upon which the greatest amount of strain is most frequently brought to bear. There are also two sacro-sciatic ligaments which run from the front and the back of the Sacrum on to the spine and the tuberosity of the Ischium respectively. These latter ligaments serve to check the range of motion of the articulation, and are so placed that they anchor the Innominate and prevent it from moving around too freely. The posterior sacro-iliac ligaments are especially strong and form a very powerful support to the back of the articulation. One can readily locate the region of the articulation by palpating the posterior spine of the Ilium and working up and out from this point. It is well to remember that the back of the Sacrum and the posterior portion of the crest of the Ilium are regions from which a large number of important muscles take part of their origins. We find for example that the Latissimus Dorsi, the Erector Spinae mass, and the Multifidus Spinae muscles are all of them firmly attached to these places.

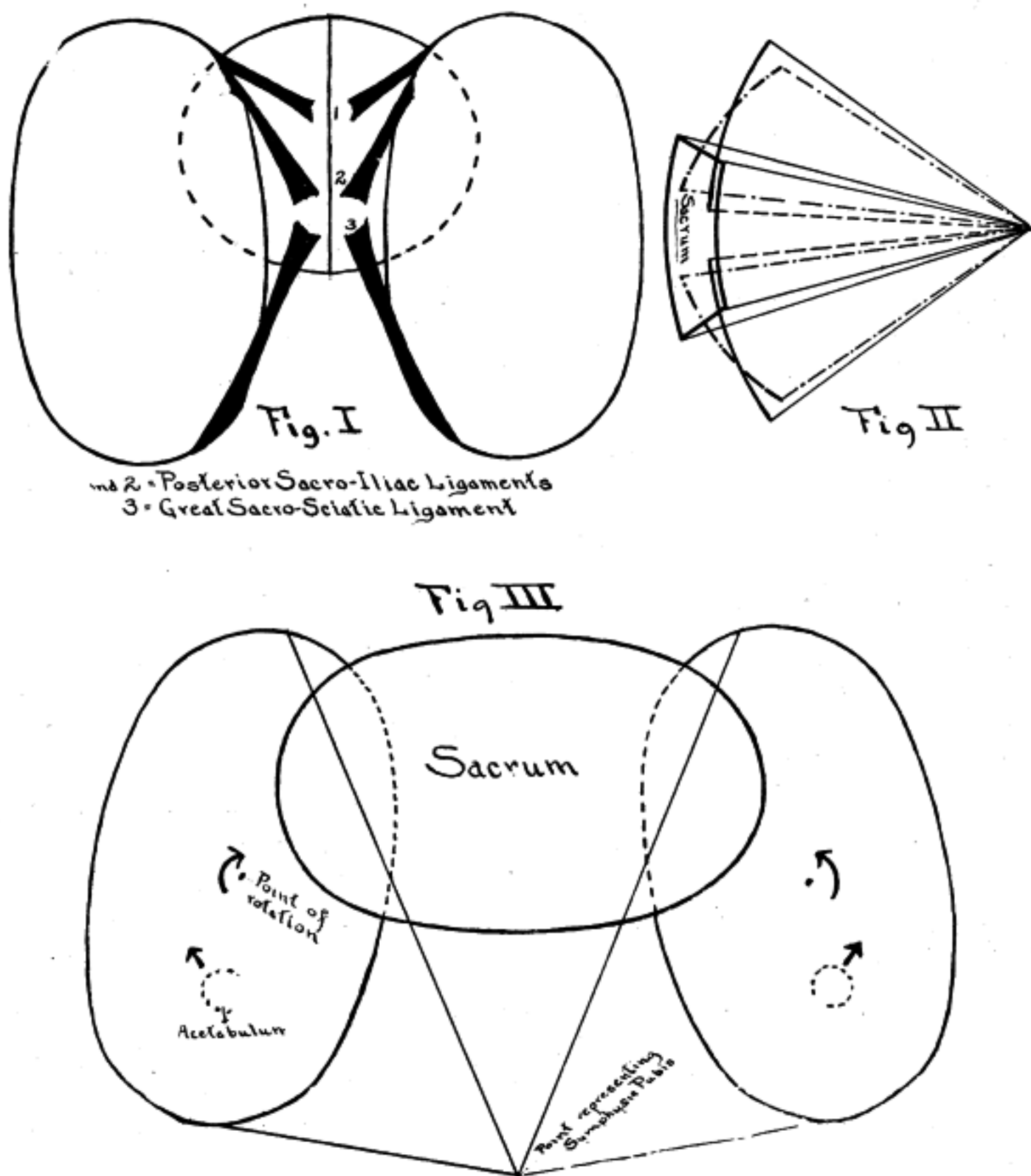
#### **The Lesioned Innominate:**

At the outset of any discussion of a lesioned Innominate, it is well to make sure that there is no misunderstanding regarding the possible conditions in this region. Thus we would say at the very start that we perfectly realize that lesions will be found resulting from some violent trauma that may seem to differ in their pathology from the conditions that we will describe as typical ones, in so far as certain violent strains of the articulation may result in conditions that will be found extremely hard to handle owing to the great straining and even tearing of the ligaments. A few suggestions that may be valuable in such cases of hypermobility will be made later in this article. On the other hand, there are cases that will be met with in this region as elsewhere in which a lesion, even though of several years standing, will respond to one or two treatments. Such cases are not the type however that will be met with most frequently in a general practice, for in such instances we have examples of the exception rather than the rule. In this latter class of cases we shall find that a single sharp drive in the direction of the perversion will be all that will be necessary to correct the condition. We mention these possibilities to avoid conveying any wrong impressions as to our not recognizing them, but we do not bring them forward as conditions that are the ones most frequently to be met with, for they

are not; indeed the pathology that we suggest as the general pathology of the ordinarily perverted articulation is the pathology that must be borne in mind as what is commonly found.

It is especially important that a clear conception be obtained of the exact condition that is present when the somewhat careless statement is made that the Innominate was found to be "slipped" and undoubtedly the frequently employed term "a slipped Innominate" is responsible for a great deal of misconception as to the real nature of the pathology in the majority of the lesions at this articulation. The term "setting" an Innominate is used so frequently that many think of this lesion as they do of a dislocated shoulder and imagine that the work that is done on the articulation by the osteopathic manipulations is really of the same type as that done when a true dislocation of the shoulder is set by a surgeon. That this is in general a wrong conception is obvious if we take into consideration the anatomy of the region and of the joint itself. Many osteopaths carry the point of diagnosis and treatment to such an extreme in this joint as to assert that a so-called anterior Innominate is an entirely different condition from a posterior Innominate. We do not believe that this is a justifiable position to take up, and we would impress right here that a lesion of this articulation is essentially the same whether we call it an anterior slip of the bone or a posterior slip, in so far as the idea that underlies the two conceptions is the same. We mean by this that in each there is present some perversion of movement resulting from a thickening of the ligaments and a proliferation of the connective tissues around the joint. It is important to dissipate once and for all if possible the thought of the ordinary lesion being like a dislocation of some one of the larger articulations of the body. The condition is entirely different and a careless use of terms is responsible for the fact that such an idea ever gained ground.

We reproduce three diagrams in the attempt to make clear a possible explanation of the actual mechanism of an Innominate lesion. Figure I. diagrammatically represents the hammock-like suspension of the Sacrum between the two Innominates. In this figure the central circle represents the Sacrum and the other two represent the Innominates. It will readily be seen that ligaments 1 and 2 will hold the Sacrum swinging, as it were, between the Innominates while ligament 3 will prevent the Innominate moving beyond a cer-



- Fig. I. Diagram representing the hammock-like method of suspension of the Sacrum between the two Innominates.
- Fig. II. Diagram representing the full range of movement occurring between the Sacrum and the Innominates.
- Fig. III. Diagram representing the mechanism of the movement in the sacro-iliac joint looking at it from in front.

tain definite limit. Fig. II. is an attempt to represent the full range of movement of the Innominate upon the Sacrum, the symphysis remaining fixed. Fig. III. represents the mechanism of the movement in this joint looking from in front. From this figure it may be seen readily why it is that in many cases of Innominate lesions there is a difference in the lengths of the legs.

The commonest lesion of this articulation is what is generally called a posterior Innominate, and by this term is meant a condition in which the Innominate is either held at its posterior limit of movement or held so that all the movement in this joint is limited around this posterior part of the motion. There are a number of quite easily recognized diagnostic points that may be noted when such a condition is present, and these we will consider later.

Occasionally there is found a lesion in which the Innominate is held at or towards the anterior limit of its normal motion and we speak of such a condition as an anterior Innominate. There is a third possibility of lesion that is not often spoken about, though undoubtedly it is responsible for a great deal of trouble in and around the articulation, and this lesion is one in which there is simply present a condition of tightness or rigidity in the articulation, without the Innominate being held at or towards the anterior or posterior limits of movement. In this latter condition the joint in lesion might be spoken of as a "mid-line" Innominate, as the rigidity is in reality holding the bone in its mid position, and there is inadequate movement either anteriorly or posteriorly.

### **Diagnosis of Innominate lesions.**

There are a number of points that are interesting in connection with the so-called slipped Innominate, and they are all points that can readily be reasoned out from a direct knowledge of the exact condition present. That is to say, if we have a proper understanding of a lesion and do not think of it as a dislocated bone but rather as a condition of congestion in and thickening of the tissues with in many cases a proliferation of the fibrous material around the articulation, we shall readily see that the most essential point to test and the most important fact to determine is whether or not the amount of movement in the articulation is normal. In principle it matters little whether the Innominate is held at its posterior limit



of motion, or whether it is held at its anterior limit, or whether it is held in the midline of its motion, seeing that there is an essential feature common to the three lesions and this is that in each the movement is limited. Other diagnostic points, though interesting, are therefore by no means so important as the knowledge of some method whereby the actual amount of movement may be tested, and an understanding obtained of the degree of limitation with to a certain extent a knowledge of the direction of that limitation. Indeed we regard as a point of the utmost importance the employment of some method whereby such an idea may be obtained, for unless this is done, a diagnosis can never be much more than guess-work, and a wrong conception of the lesion is very liable to be obtained. We shall describe a number of such diagnostic points besides discussing a method whereby the actual amount of motion in the joint can be determined; we regard these various diagnostic points, however, as subsidiary to the main thought that we are suggesting.

As a method therefore whereby we may obtain a knowledge of the amount of movement in the sacro-iliac articulation we would suggest the following:

With patient on side, let operator flex the upper of the two legs of the patient and support the knee in his abdominal wall. Then grasping the Innominate directly with both hands—the one on the tuberosity of the Ischium and the other on the crest of the Ilium—a little rocking movement of the body will enable the operator to determine whether or not there is movement in the articulation. The accompanying cut shows this diagnostic manipulation in use, and a few more points may be suggested. It is well for the hand that is upon the crest of the Ilium to grasp this portion of the bone in such a way that the tips of two or three fingers come over the posterior spine of the Ilium onto the sacral tissues. In this way the Innominate can easily be felt as it moves over the Sacrum. It is important that operator be careful not to attempt to obtain a large amount of movement as the normal amount is not a great deal; care must also be taken to obtain the movement in the innominate articulation and not between the Femur and the Innominate or in the lumbar region. If such a movement has not been attempted before, it often requires some little practice before a skill that can be relied upon can be gained; it is however simply a matter of practice, as the motion obtained is the motion that is normal to the

## 72 THE PRINCIPLES OF OSTEOPATHIC TECHNIQUE

articulation, and should be as readily felt as is the movement upon one's own body. This latter can very easily be felt by placing the two hands on the crests of the Innominates with thumbs pointing backwards and over the posterior spines of the Ilium; from this position a little rocking motion of the body can readily be felt as



Cut showing a good hold whereby the amount of movement in the sacro-iliac articulation can be determined. This same hold can be used to establish movement in a rigid articulation.

a movement of the posterior spines in the tissues under the thumbs.

As to other points of diagnosis we would suggest the following: tenderness around the posterior spine of the Ilium and also over the articulation itself; tenderness over the pubic spines; a difference

in level in the two posterior iliac spines; and a difference in the lengths of the two legs.

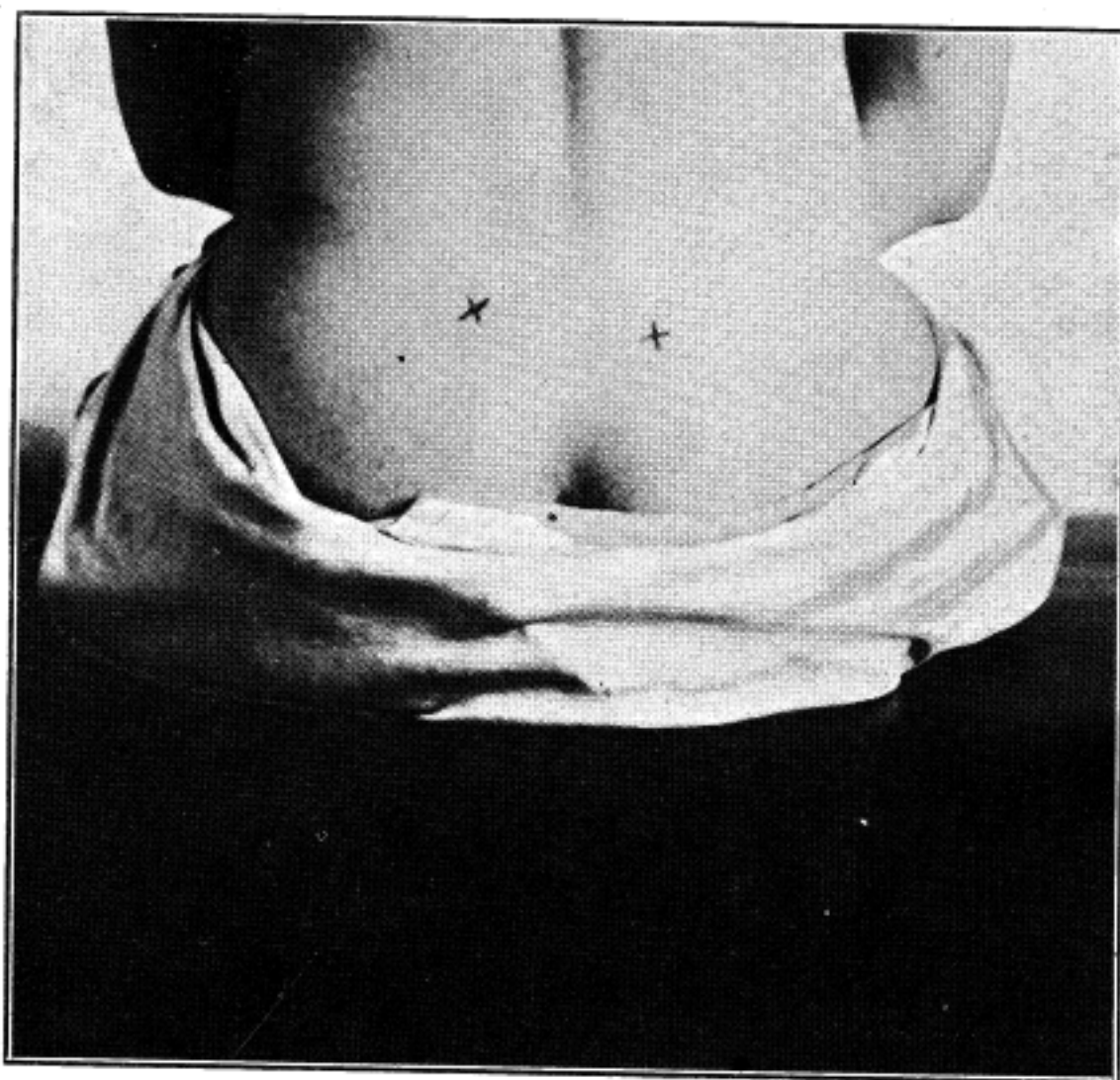
Some osteopathic physicians make their diagnoses on the degree of out-turning of the two legs from the middle line when the patient is lying upon the back, but we do not believe that this method is sufficiently trustworthy in many cases to be relied upon as a universal procedure. We will say a few words about the various points we have suggested indicating the importance of each.

First of all as to the tenderness that is manifested over the articulation of the Innominate and around the posterior spine of the Ilium. This is very important and in the large majority of cases will be found quite noticeable as soon as the operator attempts to manipulate around the articulation; there is also very frequently a certain lack of resilience in the tissues when there is a lesion of the articulation. As to the point of the difference of level in the posterior spines this is quite frequently of value as a method of diagnosis, and as a general thing it may be said that when the two spines are not level the lower of the two in the one that is in lesion, because a posterior Innominate is far more common than is an anterior one and a posterior lesion will of course ensure in the majority of cases a lowering of the spine. It is probably best to place the sides of the thumbs in the notches under the actual spines as this will give a more sure landmark to measure from. The tenderness on the pubic spines is not of extremely great value in most cases. In the matter of the length of leg, we are presented with a problem that is of more interest than actual value in so far as this diagnostic point has undoubtedly been exaggerated in its importance. It is quite easy for a patient by a slight twist of the pelvis while lying on the table to disturb the lengths of the legs when there is no actual lesion present, and many true lesions of these articulations do not present any differences in the lengths of the legs.

In a large number of cases, however, a lesioned Innominate will be found associated with such a difference and when this is noted, it is an additional point of interest, and often will persuade a patient that there is at least some anatomic basis for the claims of Osteopathy. From this viewpoint it is well often to note whether or not the two internal malleoli are on a level. The limitations of this procedure must be well realized, however, or untrustworthy diagnoses will be made in some cases.

**Correction of an Innominate Lesion.**

In the majority of instances the correction of an Innominate lesion is not a difficult task, though certain cases may resist the very best efforts. This is unusual, however, and to one case that will prove intractable, a large number will give way without much trouble, provided a fairly accurate technique be employed. It is important to bear in mind the general pathology of an Innominate lesion when attempting to correct it, as carelessness in diagnosis often results in a wrongly applied force to the articulation. There are



Cut showing a difference in the level of the two posterior superior spines of the Illium on a patient with an Innominate in lesion.

again, in this region as elsewhere, two general principles that underlie the manipulations that are employed to normalize a sacro-iliac articulation. These principles are: direct movement along the plane of the individual articulation, and separation of the articular surfaces involved. Remember as a general thing in the majority of cases, the lesion is set when the movement between the articular sur-



faces in question is completely normalized. We do not want however to be understood as asserting that a sudden and swift drive will not in some cases apparently completely normalize the articulation in one treatment. We do however believe that such a drive in any particular case in which it may have proved valuable had the



Cut showing method of stretching the hamstring muscles preparatory to springing the sacro-iliac articulation.

effect of jarring the articulation so that as a result a more free blood flow was established around the joint and in consequence a completely normal condition was obtained—there being in that particular instance considerable congestion, perhaps, with but little thickening of tissue, etc., relatively to the immobilization present. In the majority of cases however, a normal condition of the articulation results only from a course of treatment, which means that restoration of the normal condition of the articulation, or a setting of the lesion, is a gradual process.

As we said above the osteopathic manipulations chiefly in use employ either a forcible separation of the articular surfaces or else are of such a nature as to procure forcibly direct movement in the articulation. There are a number of excellent manipulations that may be employed to "set" an Innominate lesion, though the majority of osteopathic physicians do actually employ just three or four



Cut showing a good method of springing the sacro-iliac joint to set an Innominate.

moves which they learn to utilize with considerable judgment and skill. And right here we would say that in order to obtain consistently good results on this region a great deal of judgment is needed; more indeed perhaps than in setting lesions in any other region. We mention this because it is so easy to "miss out" in ad-

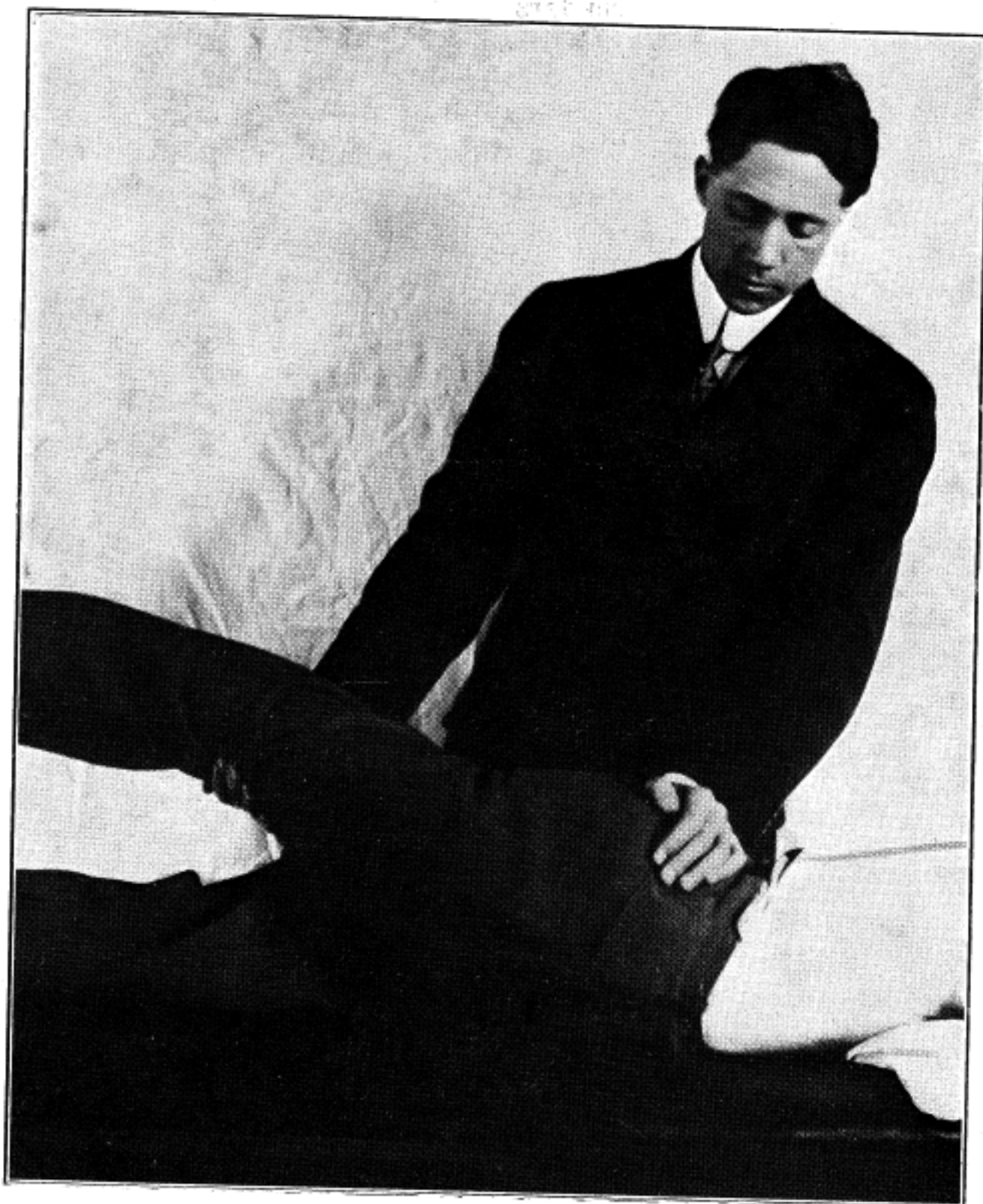
justing lesions of this articulation to the extent of not getting complete results, although apparently the joint may respond temporarily. We also again urge our readers to remember that any technical procedures we may suggest are not described as the only methods possible of working upon this articulation; they do represent, however, certain methods of applying the main ideas of osteopathic therapy which have been found to be practical. Other osteopathic physicians may and undoubtedly do use similar procedures with slightly different holds, perhaps, and the sole essential point is that the mechanics of the articulation be thoroughly understood, as then it will simply be a matter of applying such well recognized osteopathic principles as we have elsewhere described.

A manipulation that "springs" the articulation very successfully can be performed as follows: With the patient on his back, the leg is first flexed well on to the patient's chest; this cannot always be performed with ease at first as there is often considerable contraction of the hamstring muscles etc., and these muscles have to be stretched thoroughly before complete flexion can be obtained. Having flexed the leg fully in this way, the tension may be let up for a moment and the leg—flexed now to a right angle with the body—abducted firmly.

The abducted knee may now be held in the physician's abdominal wall or iliac fossa while one hand presses down on the opposite anterior superior spine and the other hand grasps the ankle of the abducted leg and carries the leg to full extension. Generally in this way a jar of the articulation results with sometimes a slight popping of the joint, and the effect of such a procedure continued over some time is to normalize any abnormality that may have been present in the region. Such a procedure as this is very frequently of great value, though it is fully as important to know how to use the technique described as it is to know the actual technique. That is to say, just as a carpenter must not only understand the theoretical use of his tools, which understanding can of course be obtained from a book, but must also know in himself just how to apply that understanding, so an osteopathic physician must not only thoroughly appreciate the abstract side of the technique but must also in every case apply that technique in a way that only an experienced judgment can give him the power to do. We again urge our readers to remember that Osteopathy cannot be learn-



ed from a book because the real essence of the whole practice is founded upon a mature judgment which gives to the operator the power to apply correctly a technique that without it is necessarily a hap-hazard understanding and that with it transforms a crude



Cut showing one method of employing a driving force on to the sacro-iliac joint to set an Innominate in lesion.  
imitator into a skilled physician worthy of any man's trust and complete confidence.

Another manipulation that is of considerable value if properly used is as follows. With the patient on his face, the operator stands



on the side of the table away from the Innominate that is involved in lesion and supports the further leg just above the knee in his one hand. At the same time he should place that portion of his other hand between the thenar and hypothenar eminences on the posterior spine of the Ilium that is in lesion. He should then raise the knee from the table drawing the leg slightly towards and over the middle line of the body, while at the same time he presses firmly on the posterior spine and when all the tissues are on tension delivers a fairly strong drive toward the table with this latter hand. This is a manipulation that above all others needs to be used with the greatest judgment as it is the easiest thing in the world to strain a joint unduly and thereby to cause a lot of trouble to follow the attempted correction of a lesion. We have seen several cases where this manipulation in inexperienced hands or used without due consideration of the force employed and the long lever utilized has strained an articulation markedly and produced a condition that has taken a lot of careful treatment to overcome. The fact that this is the case however means no more than it would mean for a carpenter to say that his tools were sharp and that if they were used without due appreciation of this fact either the person so using them or others around might very easily be hurt. In experienced hands this manipulation is one that will give a very good result in many cases.

A method that is perhaps the safest of all and that will give many very excellent results is an amplification of the manipulation that we described for the diagnosis of an innominate lesion. That is to say, if the operator has the patient lying on the well side and draws up the leg that is involved in lesion to a right angle so that he may support it in his own abdominal wall, and if he then grasps the crest of the Ilium with one of his hands and the tuberosity of the Ischium with the other, he may employ considerable force along the plane of the articulation and thus directly re-establish movement where that movement is lacking. We have found this manipulation of great value in a number of cases.

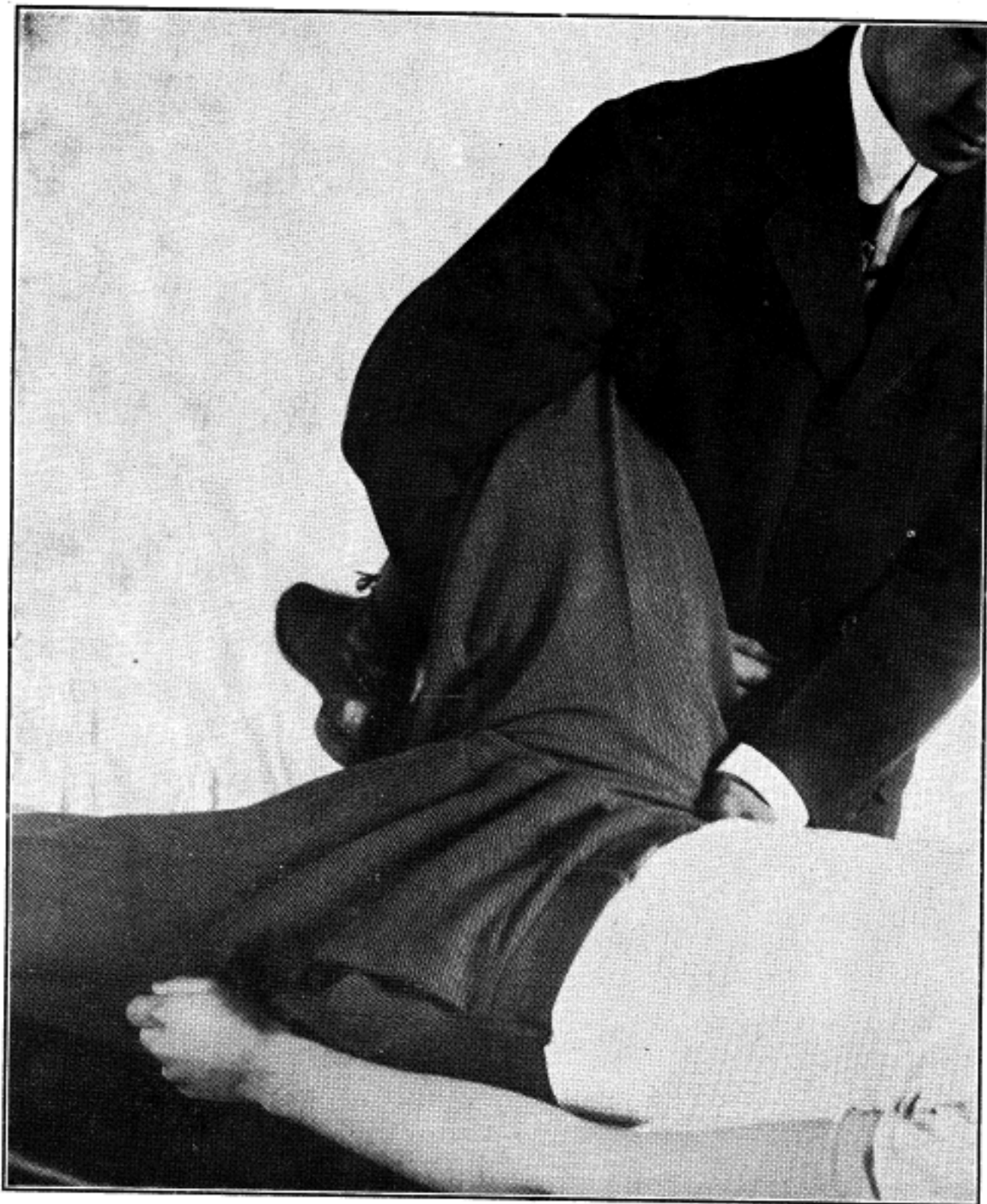
Another procedure that we will suggest is designed to drive the Innominate back along the plane of its movement and is often of special value in an anterior Innominate; it can be described somewhat as follows: With the patient lying on his back, the operator may flex the involved leg to a right angle and proceed to stretch the

muscles thoroughly as we before described; he may then place one hand on the anterior superior spine while he links the other arm around the upper leg in such a way that he may get a firm pull on the hamstring muscles. From this position operator may take a step forward thus getting a strong pull on the hamstrings and at the same time he may drive down on the anterior spine. In this way sometimes the articulation may be normalized when other methods have failed, for it is a well-recognized fact that people respond differently to treatments and that what will obtain results on one patient will not do so on another.

It is important always to bear in mind the thought that any results obtained come from the reaction to the treatment more than they do from the treatment itself; we mention this as some seem inclined to attribute to their own positive efforts any cures obtained, forgetting a fact, which the "Old Doctor" has so often emphasized, that if the structure of the body be restored to normal then health returns as the natural result. Moreover, health is to be expected in such a case not as a consequence of the stimulative efforts of the operator upon the patient but as a result of the restoration of those conditions in the patient that make for health and not disease. This is a very important consideration.

Another method whereby an Innominate can often be restored to a normal condition is simply by driving down on the knee of the flexed leg. This has the effect of opening up the articulation forcibly from the back, and will often assist in obtaining a normal condition in the articulation. Again judgment is needed to get the best results by this manipulation.

We wish here to say a few words upon the subject of hypermobility in an Innominate articulation, because some cases, as suggested above, may present a great deal too much movement, and every effort must then be directed to "tightening up" the articulation. In some cases it is well to have the patient remain in bed for a considerable time, while applying heat to the joint. In certain instances we have found it of value to produce a little irritation in the articulation by working right over the region of the joint itself. This is sometimes followed by considerable pain for several hours or a day, which will however let up after that time. Then occasionally we have found it of value to bind the whole pelvis with adhesive tape, so as to give the articulation a temporary support.



Cut showing a method of driving down upon the sacro-iliac articulation with patient on back. Operator's one hand drives down on the anterior superior spine, and the other arm locked around patient's leg, pull strongly up.

When using his method, the greatest care and judgment must be exercised to prevent any undue irritation of the skin, and this is sometimes excessive. It will be found that the Oil of Wintergreen is the least irritating agent that can be used for the removal of the tape and Lanolin is an excellent preparation to dispel any feeling of discomfort in the skin after the tape has been removed. We have found that two inch adhesive tape is the best for use in this way. It is often wise to keep the tape on for only a few hours at the start, and later the skin will become hardened and be able to stand it on for a couple of days or so. The total length of time that the tape must be used varies in every instance. We have been enabled to obtain results in some cases of hypermobility of this articulation in this manner after all other methods have failed.

It is also well just to mention the fact that hot sitz baths are of extreme value in certain cases of lesions at this location. These may be employed sometimes as a preparatory measure to the treatments, sometimes in association with the treatments, and sometimes after treatments have failed to give relief—say in a sciatica—though the lesion itself may have been corrected.

To conclude these thoughts upon this region we would just mention the possibility of a lesion at the pubic end of the Innominate, or as we might put it at the symphysis pubis. This is very rarely found, but undoubtedly it is present occasionally after some trauma, such as a fall which has strained the articulation in the front, etc. In such a case there will be a slight difference in the level of the two pubic spines with marked tenderness over this point. In certain cases of bladder irritability this lesion will be noted, following some strain as mentioned above. The normalization of this condition means the application of simple mechanical principles to the separation and movement of the pubic symphysis, and when this lesion is found, which will however be only very rarely, it will generally be corrected readily.

As we said at the beginning of this article on the Innominate, there is probably no articulation in the body that is more commonly involved osteopathically than this one. The resultants of such an involvement may generally be looked for either in the direction of some pelvic trouble or in the direction of some irritation of the leg, say in the form of a sciatica or a contraction of muscles, etc. This is an articulation that must be looked to very carefully by the



osteopathic physician who hopes to get the best possible results, and who wishes to establish a reputation for conscientious work and thoroughness of practice. The "Old Doctor" has written in his "Research and Practice" as follows:

"We have relieved constipation, uterine hemorrhage, and bladder trouble by adjusting the Innominates and the Sacrum. \*\*\*\*\*

\*\*\*\* We as anatomists and physiologists should record the truths learned from our experience, for the reading and consideration of the future generations. I want the osteopaths to raise the flag of reason and fight for victory over such diseases as are named above. I want the osteopath to be a hunter and to find his game, otherwise his work will be unsatisfactory."

### **The Coccyx.**

The coccyx, with the tissues attached to the bones forming it, is sometimes found in lesion. By this we mean that there may be congestion of these tissues of such a nature that the coccyx presents a considerable amount of tenderness and may seem to be tilted out of its normal relationship with the rest of the spine. As a general thing it may be said that in the majority of cases in which this trouble is noted there will either be quite a lot of pain in and around the region of the coccyx producing a condition somewhat neuralgic in nature or there may be some functional disturbance, such as hemorrhoids or a spasmodic contraction of the external sphincter muscle causing constipation. This latter condition often requires a direct stretching of the muscle by a rectal dilator for its complete correction, but in some cases the irritation that is produced by the lesioned coccyx is almost directly responsible for the abnormal contraction of the muscle.

### **Anatomical points of interest.**

The coccyx is formed anatomically of five bones, though in most cases two or three of these ankylose as an individual grows older. The coccyx, considered as a unit, is united to the sacrum by anterior, posterior, and lateral ligaments, which hold it fairly firmly in position. Also there is a disk of fibro-cartilage interposed between the sacrum and the first piece of the coccyx which is somewhat analogous to the intervertebral disks between the other vertebrae. On

to the back surface of the coccyx there are fastened the gluteus maximus and the external sphincter ani muscles, while on to the anterior surface are fastened the coccygeus and the levator ani muscles. The front surface of the bones is covered by the pelvic fascia, which is separated from the coccygeus muscle by a little areolar tissue. On the front of the coccyx also the terminal ganglion of the sympathetic system, the so-called ganglion impar is located, and this fact should be borne in mind when treating locally per rectum.

#### **A lesion of the coccyx.**

When the coccyx is involved in lesion, there will often be found considerable tenderness on the outside on the tissues over the union of the sacrum with the coccyx, and the coccyx will seem to be tilted away from its normal position in the middle line. Symptoms referable to the condition should be looked for.

Many times trouble in this region can be corrected by external manipulations designed to spring the coccyx and to re-establish a normal blood supply in the tissues involved. A method whereby this may be accomplished is the following: Place patient on side, with flexed legs; work well in the tissues of the ischio-rectal fossa and at the sides of the coccyx and around the ischial spines endeavoring to drain these regions and to drive out any congested blood that may be in them. Sometimes great tenderness will be found and considerable care has to be used to get the results aimed at. It is well also to try to spring the coccyx out to some extent by using the lever of the gluteus maximus muscle that runs out and down to the femur from its attachment on the segments of the coccyx. This manipulation can in certain cases be used to greater advantage by having the patient lie over the end of the table, with the feet on the floor. Work in the manner suggested in the regions named will frequently accomplish excellent results when there is a congested condition of the tissues preventing a normal drainage from these parts.

If the external treatment as suggested is unsuccessful, recourse may be had to rectal treatment, though this in the majority of cases should not be employed more than once a week. Let the patient lie on his side with his legs flexed as before, and let the operator, standing at the back of the patient, carefully insert his index finger, well vaselined, into the rectum. In doing this it is important to

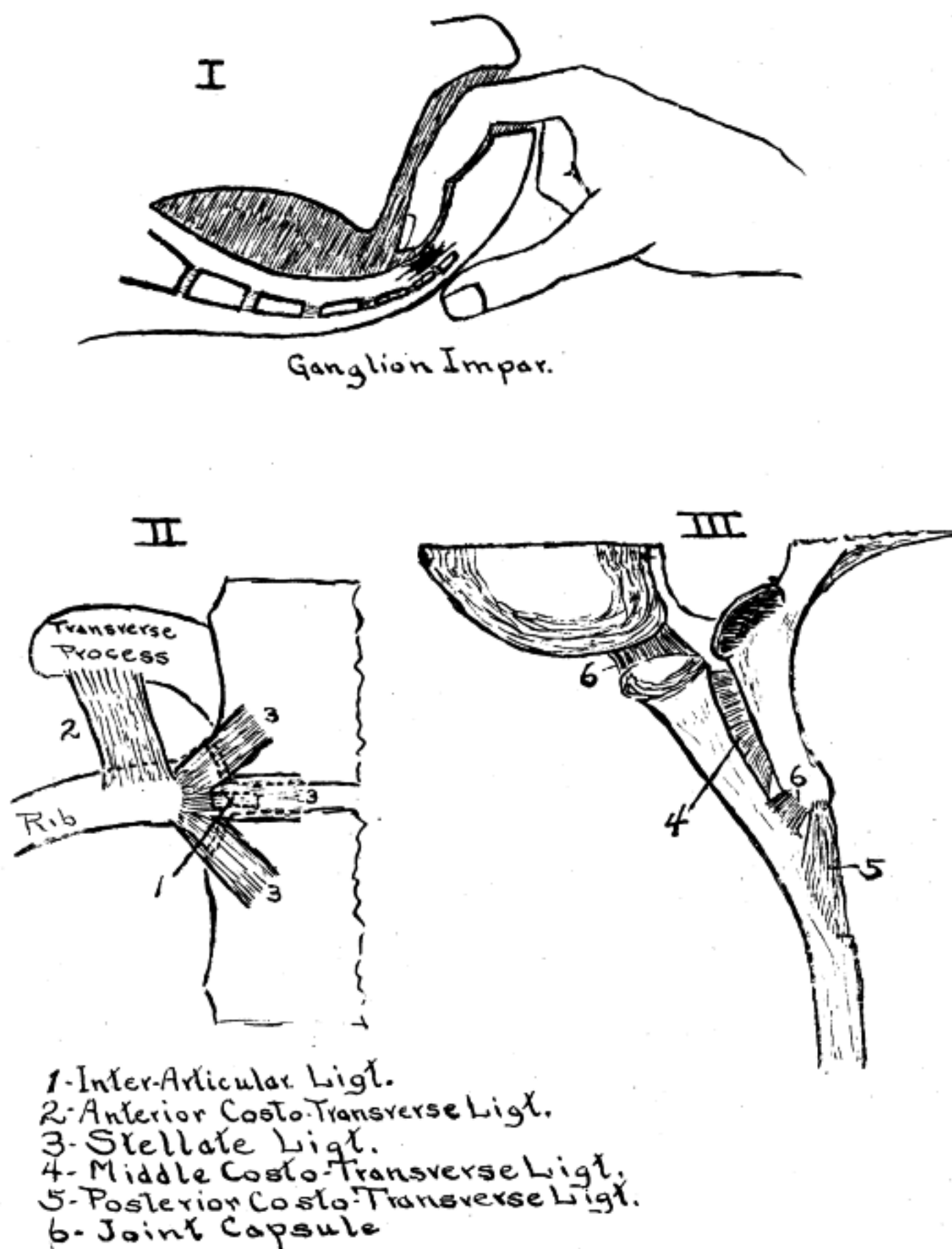


Fig. I. Diagram showing how the coccyx can be grasped between the thumb and finger, and thus manipulated.  
 Fig. II } Diagrams showing the ligaments whereby a rib is attached to the  
 Fig. III } vertebrae with which it articulates.

remember that the direction of the last inch or so of the rectum is in a line from the orifice to the umbilicus. In some cases it may be necessary to go very slowly as the external sphincter may involuntarily contract at the attempted entrance. Having inserted the index finger to its full length the coccyx may be grasped between the thumb and the index finger in the rectum. Normally there is about as much movement in this region as there is between the second and third phalanges of the fingers. The finger in the rectum should straighten out the folds of the mucosa of the rectum and attempt to secure some movement of the coccyx itself. The terminal bone of the coccyx also should be smoothed out, as it were, and straightened if need be. If this procedure is successfully accomplished, it will help to establish a normal drainage to the tissues and to restore a good tone to the parts. Once in a while very remarkable results may be obtained by normalizing this region, as prolapses of the rectal mucosa and conditions of that nature may sometimes be corrected thereby.

#### **Stretching the external sphincter ani muscle.**

In certain patients complaining of obstinate constipation it will be found that in addition to the correction of lesions of the spine something has to be done directly to the external sphincter ani muscle. This is necessary because the external sphincter may have become so tightened that it is necessary to force it to give way by somewhat drastic measures. It is hardly within the sphere of these articles to do more than simply state this fact, though as we do so we would urge that in the suggestion put forward there is a great field of important thought for the osteopathic physician.

#### **The Thorax.**

Besides the vertebral lesions, such as we have described, and also in many cases in association with them there may be what are commonly called rib-lesions. This is important to remember, though it is equally important to bear in mind the fact that a chronic rib lesion is but rarely found without an associated chronic vertebral lesion. That is to say, it is always wise to look for a vertebral lesion whenever there is apparently a chronic rib lesion that is giving trouble.



**The attachments of the ribs to the vertebrae.**

It should be remembered that each of the typical ribs articulates with two vertebral bodies and with one transverse process. The two bodies that are used for this articulation are the one of the same number as the rib and the one above that number; that is to say, the fourth rib will articulate with the third and the fourth vertebral bodies. The transverse process that is used is the one of the same number as the rib, that is, the fourth rib articulates with the fourth process.

In considering rib lesions it is essential that the anatomy of the parts be borne in mind. We reproduce two diagrams showing the ligaments that attach the typical ribs to the vertebrae, and will say a few words of explanation at this place. There is of course a well formed capsule at both the regions of attachment, that is both where the rib attaches to the body and where it attaches to the transverse process. In addition to these capsules there are other ligaments, as follows: At the body attachment there is a strong thickening called the radiate or stellate ligament which is generally formed of three parts, the one attached to the vertebral body above, the second running on to the intervertebral disk, and the third fastened onto the body below; while in addition there is an inter-articular ligament that stretches from the ridge on the head of the rib across to the intervertebral disk and that divides the cavity into two distinct parts, each of which has a complete synovial membrane. This last ligament is absent in the case of the first, tenth, eleventh, and twelfth ribs, and in these cases therefore there is but a single synovial cavity. The attachment of the rib to the transverse process is just as complete as it is to the body. We find that besides the capsule, surrounding the articulation and definitely limiting the range of movement, here also there are some additional ligaments present to strengthen it. There are in other words several so-called costo-transverse ligaments, which stretch between the rib and the adjacent transverse processes. Various names are applied to these ligaments and the following description is adequate for our present purposes. There is one ligament from the roughened surface of the back of the neck of the rib to the front of the transverse process; this is called the middle costo-transverse ligament, or sometimes the ligament of the neck of the rib. There is another that is fastened to the apex of the transverse process and which runs from this apex to

the tubercle of the rib; this is called the posterior costo-transverse ligament, or the ligament of the tubercle of the rib. A third important ligament is to be found attaching the upper border of the neck of the rib to the lower border of the transverse process immediately above it; this is called the anterior costo-transverse ligament, or sometimes the superior. We would also call attention to the attachments of the serratus magnus muscle, which is fastened to the upper eight or nine ribs, and of the levatores costarum muscles which run from the transverse processes to the ribs immediately below. The external and internal intercostal muscles which connect the ribs together for almost their entire lengths should also be remembered as it is only by keeping in mind the gross anatomy of these parts that a proper conception of the lesioned conditions that may be found involving the ribs can ever be obtained.

#### **The movements of the ribs on the vertebrae.**

We do not believe that we can do better, in discussing the movements that are possible between the ribs and the vertebrae, than to quote what is given in the English Edition of Gray's Anatomy upon this point. We read on page 399 of this text as follows:

"The heads of the ribs are so closely connected to the bodies of the vertebrae by the radiate and the interarticular ligaments that only slight gliding movements of the articular surfaces on one another can take place. Similarly, the strong ligaments binding the necks and tubercles of the ribs to the transverse processes limit the movements of the costo-transverse joints to slight gliding, the nature of which is determined by the shape and direction of the articular surfaces. In the upper six ribs the articular surfaces on the tubercles are oval in shape and convex from above downward; they fit into corresponding concavities on the anterior surfaces of the transverse processes, so that upward and downward movements of the tubercles are associated with rotation of the rib neck on its long axis. In the seventh, eighth, ninth, and tenth ribs the articular surfaces on the tubercles are flat, and are directed obliquely downward, medialward, and backward. The surfaces with which they articulate are placed on the upper margins of the transverse processes; when, therefore, the tubercles are drawn up they are at the same time carried backward and medialward. The two joints, costo-central and costo-transverse, move as if on a single joint, of

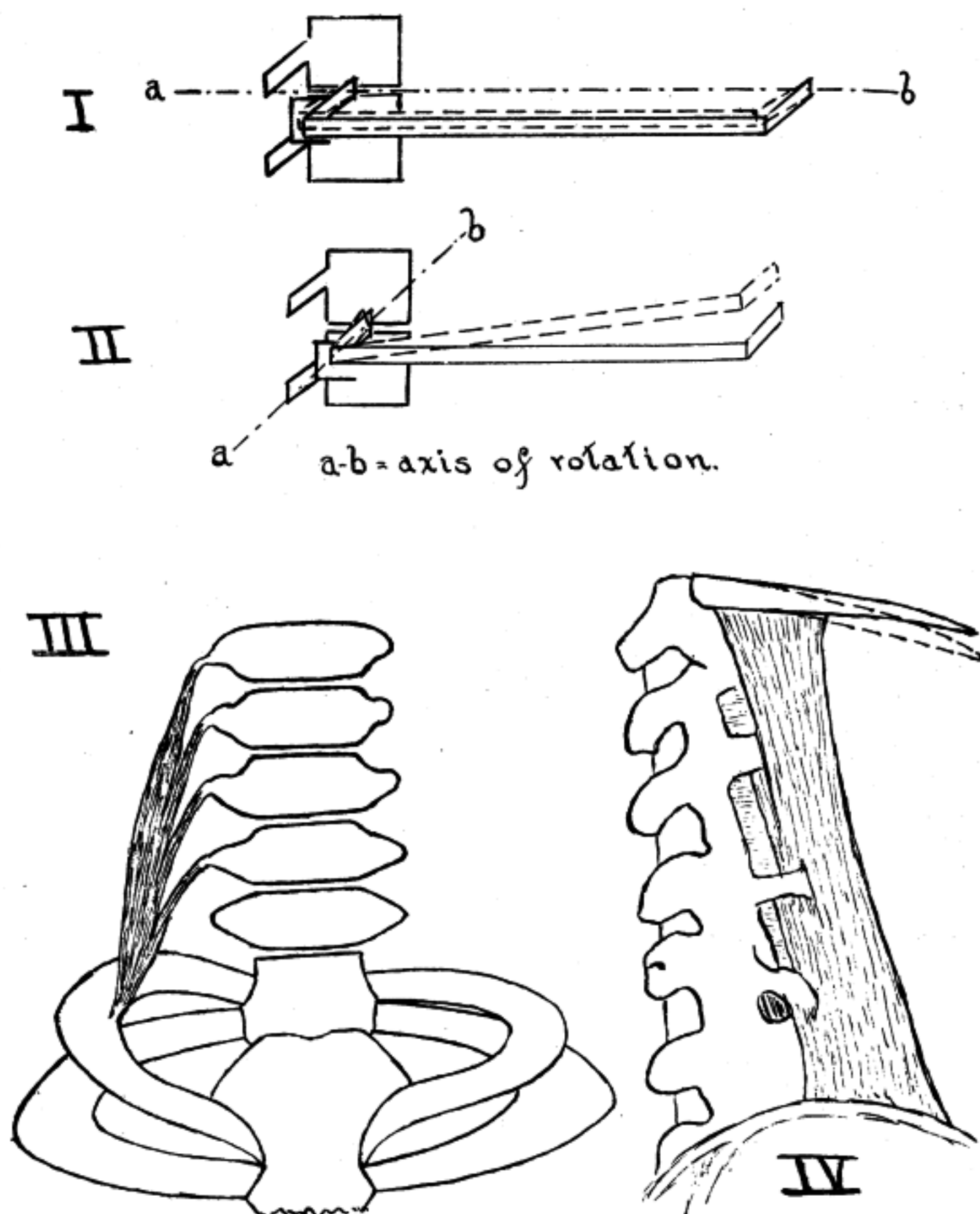


Fig. I. } Diagrams showing the axes of movement of a rib.  
 Fig. II. }  
 Fig. III. Diagram showing mechanism of a lesion of the first rib.  
 Fig. IV. Diagram showing mechanism of a lesion of the twelfth rib.

which the costo-central and costo-transverse articulation form the ends. In the upper six ribs the neck of the rib moves but slightly upward and downward; its chief movement is one of rotation around its own long axis, rotation backward being associated with depression, and rotation forward with elevation. In the seventh, eighth, ninth, and tenth ribs the neck of the rib moves upward, backward, and medialward, or downward, forward, and lateralward; very slight rotation accompanies these movements." Physiologically the movements are often described as taking place along two axes, the one being drawn through the anterior extremity of the rib and the costo-central articulation and the other being drawn through the two articulations of the rib with the vertebra, namely, at the transverse process and at the body. We reproduce two figures showing these movements from a diagrammatic standpoint.

### **Lesions of the ribs.**

We will consider lesioned conditions of the ribs in as orderly a manner as possible, suggesting the main points that may be of value in connection therewith. Before doing so however, we would again urge that the frequent association of a vertebral lesion with a rib lesion be not forgotten. Practically, in most chronic lesions the real trouble is in the vertebrae that are associated with the rib and the lesion of the rib will give way only when the vertebral lesion that is really causing it is found and corrected.

#### **A. The first and second ribs.**

In order to understand the possible lesions of the first and second ribs it is important that the main anatomical points connected with them be thoroughly grasped. The first rib especially is peculiar in its attachments. It must be remembered that these ribs are placed more or less flatly, that is to say so that they may serve as a roof to the thorax. This statement especially applies to the first rib. Then too, there are three important muscles which are fastened to these ribs; they are the three scaleni. These muscles take their origins from the transverse processes of the cervical vertebrae, and are inserted on to the upper and outer surfaces, whichever they may be considered, of these two ribs. The normal range of these two ribs and especially of the first is chiefly in the upward



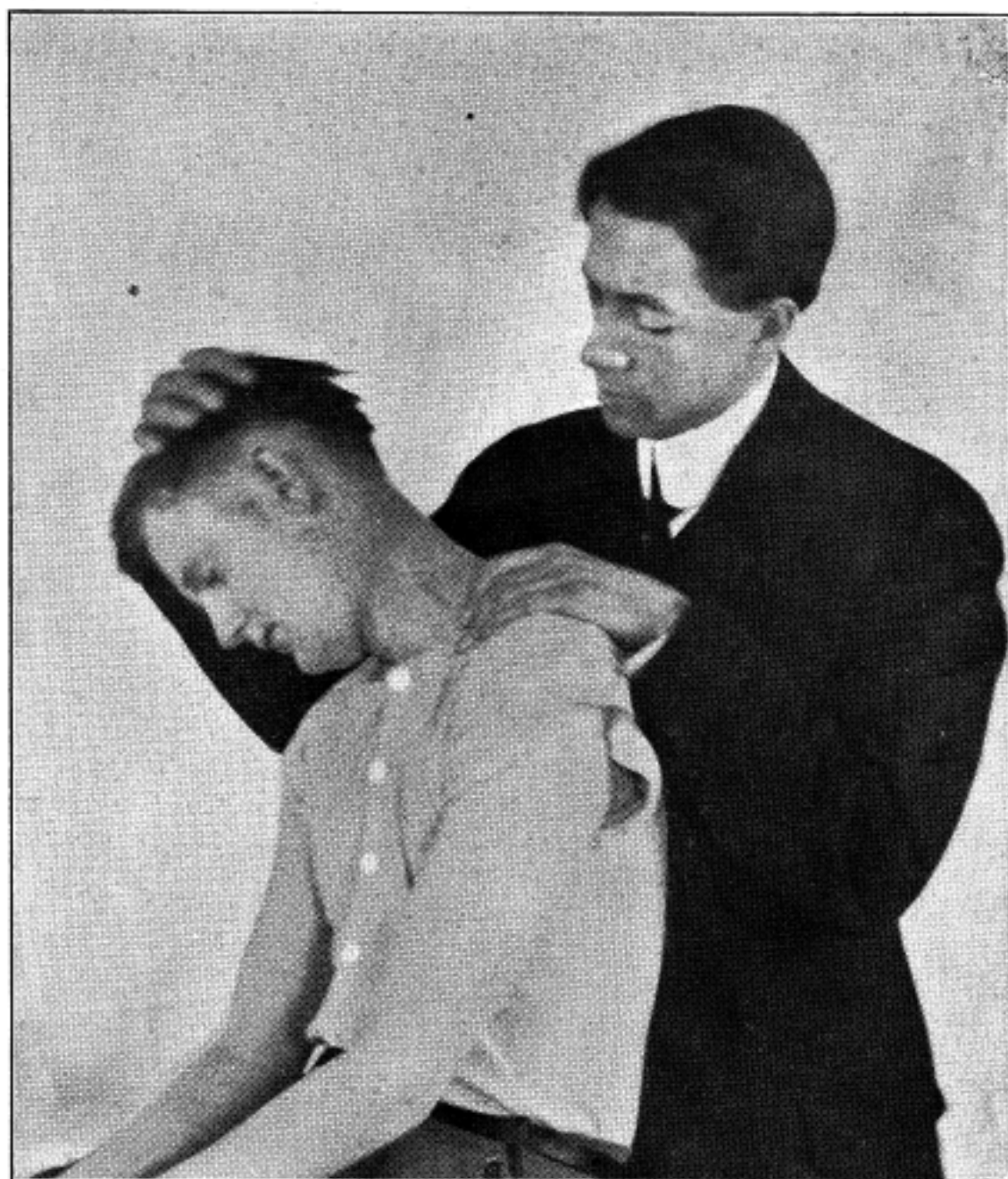
directions, there being of course a well defined range through which they should be able to pass freely.

It is possible to "raise" either first rib temporarily by inclining the head laterally toward the opposite shoulder. This will put the scalene muscles and other tissues on a full stretch and will cause the rib to be drawn up. To a slight extent this may sometimes be shown in the case of the second rib also, but in this latter instance the movement is not so well defined. It is often possible to correct lesioned second ribs by adapting slightly manipulations that work essentially upon the first rib, and we will here consider especially the first rib, simply suggesting a few points of interest regarding the second after we have discussed the first.

### **Diagnosis and correction.**

To diagnose a lesioned first rib, a good method is to place the hands on the patient's shoulders so that the third fingers will lie along the clavicles; then the second fingers will fall naturally on to the first ribs. When making a diagnosis of trouble connected with this rib, it is essential that both hands be used together, in order to test by comparison, as otherwise a mistake is very liable to be made. It must be remembered that the region thus palpated is always somewhat tender, and if the palpation is done carelessly tenderness will be found whether or not there is a lesion present. In connection also with this region we would say that often a lesion of the first rib is associated with lesions of the upper dorsal or of the middle cervical vertebrae or in both these regions, and these latter lesions will have to be corrected before any permanent results can be obtained with the lesioned rib. Essentially then, the cause of a lesioned first rib is the pull of the tissues upon it which are dragging it toward its uppermost limit of movement and then holding it there. Some manipulation then which will stretch these tissues must be the manipulation that will be of greatest value in correcting the actual condition and then manipulations designed to prevent the contracting of the tissues a second time should be employed. An excellent method which may be utilized to obtain the first of these two results and which is based upon the simplest application of mechanics and anatomical knowledge, is the following: Bend the patient's head over towards the side of involvement, say the right side, and place the right hand firmly onto the most prominent part of the first rib;

then by placing the left hand on the patient's head it can be lightly rotated, and the weight of the head itself may be utilized largely to accomplish the result aimed at. While the head is being rotated in this way, the operator should keep a considerable amount of force applied all the time on the involved rib; in this way the anterior



Cut showing method whereby the tissues attached to the first rib may be thoroughly stretched. Head is just bent over towards the rib and then while considerable force is being applied on the rib, head is carried forward and to the opposite side. A very powerful stretch can be obtained in this way.

tissues can be stretched thoroughly. It is remarkable what a great amount of power can be obtained by this simple manipulation and very successful results will be gained in many cases. Associated with such a manipulation as the above it is important to work also

on the neck and upper back, so as to make sure that the tissues involved shall receive their normal blood and nerve supply; in this way any further contraction of the muscles can be obviated. There are many other manipulations that are used and that obtain the same result as the one we are suggesting but the principle that must underlie the successful "setting" of a first rib is the complete nor-



Cut showing method whereby a good spring can be given to the upper dorsal and the upper ribs. When tissues are on tension a sharp drive will tend to correct any lesioned condition of the tissues and articulations.

malization of the tissues that are responsible for the condition as it exists.

Right here we would simply mention a condition which is met with occasionally, and which, when thus encountered may cause some

confusion unless the possibility of its presence be understood and recognized. This is what is called technically a "cervical rib" and is actually an enlarged anterior tubercle of the transverse process of the seventh cervical vertebra. If this is not recognized when present a mis-diagnosis is liable to be made as the condition may be thought to be a displaced first rib. If this abnormality be remembered there is but little danger of such a mistake being made, as it is from a lack of knowledge of the existence of the condition that the possibility of error arises.

A good manipulation that will spring the upper ribs and the region of the upper dorsal generally is the following: With the patient sitting on the stool, let the operator place his hand on the upper ribs with the thumb near the articulation with the transverse processes; then let him place his other hand on the patient's head and carrying it around towards the side of the lesioned rib, when every tissue is on tension drive downward with both hands. See Cut. A similar result can be obtained by standing behind the patient, who is seated on the table, and carrying one arm across the chest so that the hand comes on to the root of the neck from the front; then the other hand can be placed on the head and the patient having been thrown off his balance by the operator taking a step toward the side a drive downward may be given as before.

The correction of a lesioned second rib can often be accomplished by applying the principles that we have outlined for the first rib. In some cases however the adaptation of the principles we will suggest for the lower ribs will be found to get better results. We would especially emphasize the association of upper dorsal lesions with lesions of these upper ribs.

## **B. The middle section of the ribs.**

A lesion of one of the typical ribs, that is one of the middle section, is usually a slight upward rotation of the rib. That is to say the rib is held to a slight extent in the position that it would normally assume if the whole section of the ribs should be raised as in breathing. There is in other words a tension of the surrounding tissues that is preventing the rib from taking up its more normal relations with the other ribs and which is holding it slightly twisted all of the time. In a typical rib lesion there will be found to be a prominence of the rib in the mid-axillary line and often at the angle



also; there will generally too, be found considerable tenderness over the region of articulation of the rib with the transverse process, and in the majority of cases there will be symptoms that may be directly referred to the rib lesion, such as a neuralgic condition of the



Cut showing method whereby an individual rib can be adjusted in its articulation with the vertebrae. In cut operator's right hand is on rib involved, and his left hand is close against the spinous processes on the near side.

intercostal nerve, etc. In some cases also tenderness will be found at the chondral ends of the ribs, that is at the ends that articulate with the costal cartilages.

**Correction.**

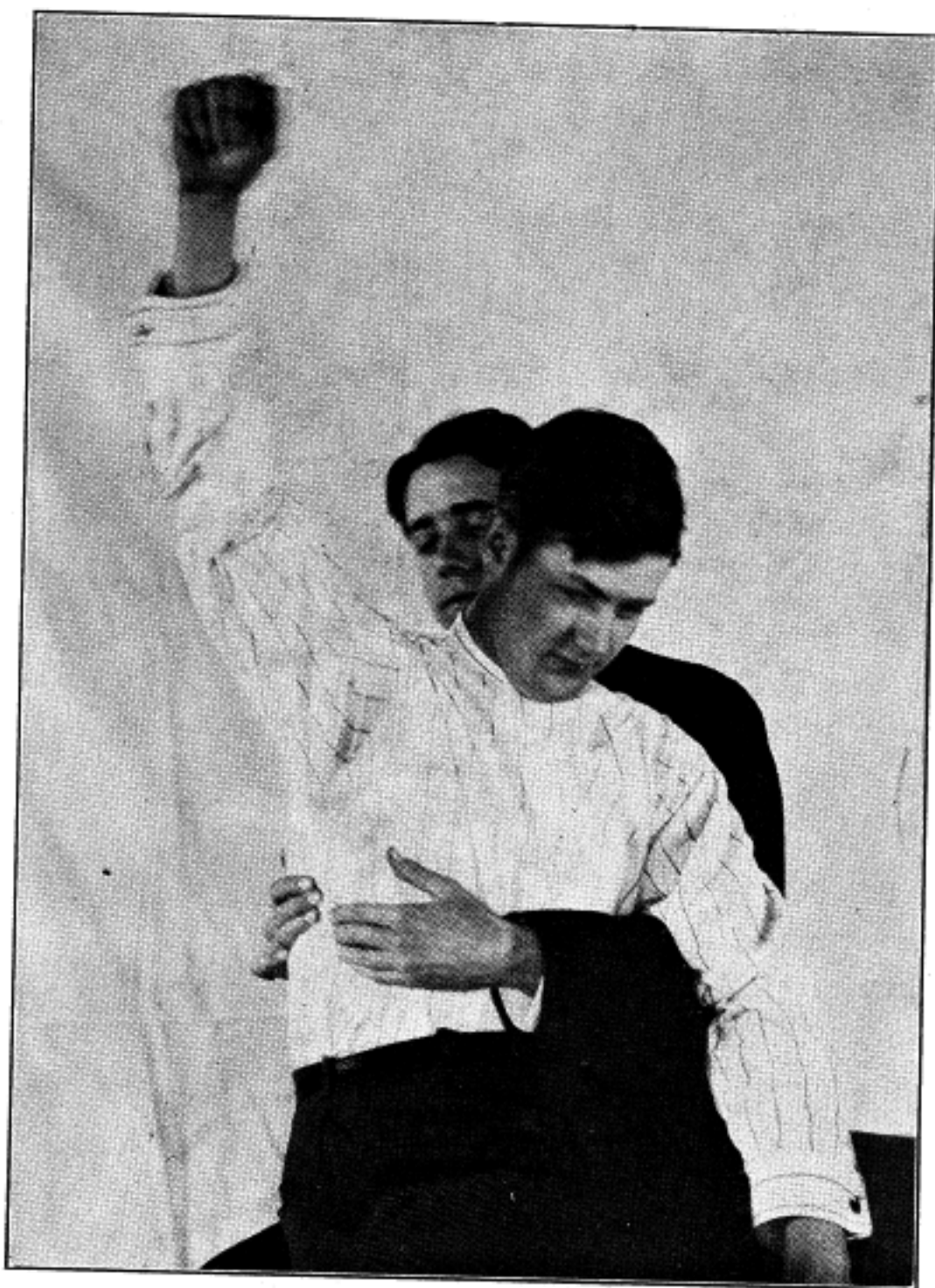
As a general thing, the correction of a rib lesion, unless it is simply acute in nature, is dependent largely upon the correction of the vertebral trouble that will be found associated with it. However in many cases it is necessary to do some definite work upon the ribs themselves, and in these cases results will be accomplished either



Cut showing a method whereby the ribs may be sprung in their articulations with the vertebrae.

by springing the articulation of the rib with the transverse process, or by forcing the rib to go through its full range of movement. We will suggest methods that will accomplish both of these effects. In either case the end-result obtained is the complete normalization of the rib involved and the tissues that are associated with it.

To spring a rib articulation thoroughly one method is to have patient lying on face and to employ a drive downward on the rib in question. The operator should stand on the side of the patient away from the involved rib and place the hypothenar eminence of one hand close to the spinous processes a little below the level of



Cut showing method of putting the tissues associated with a rib lesion on full tension. Operator holds down on rib below the one involved and patient takes a full breath while carrying his arm up and around.

the vertebra that articulates with the rib in question. Then he should place his other hand firmly on the rib involved so that the ball of the hand be on the angle. See Cut. When working in this way it is best to use the left hand on the rib when it is the right rib

that is in trouble, and to use the right hand when it is the left rib that is involved. From this position every tissue should be put on tension, which will mean that the hand near the spinous processes will be carried up until it is upon the transverse process of the vertebra which is at fault or which has the rib adjoining it at fault, and that the other hand will have the rib tissues on thorough tension. When every tissue is on good tension then a fairly strong drive should be given with both hands and often the rib will be felt to slip slightly under the hand that is upon it.

Another method that is very satisfactory is the following: With the patient on the back let operator, standing on the side opposite from the one involved, insert one hand between the ribs in lesion and the table. The hand should be clenched somewhat that the ribs may have a firm place upon which they may be supported. Then the patient's elbow of that side should be supported against the operator's chest and held in the other hand of the operator; from this position a strong drive when all the tissues are on tension will again often accomplish a good springing of the rib, in its articulation with the transverse process. See Cut.

To secure a full range of free movement between the rib and its articulations there are also a large number of possible manipulations that can be employed. A good one is the following: Let the patient be seated on the table, with his back to the operator. Then let the operator sit by the side of the patient as in the cut. Next let operator encircle the thorax of patient and grip the rib below the one which is in lesion. Then let him instruct the patient to take a deep breath and at the same time to carry his arm through a full circle of movement up and back. While the patient is doing this, the operator should endeavor to hold down the entire lower segment of the ribs, a task which will often be found quite difficult. This should be repeated several times, and will be found to be a very powerful movement to restore the full range of motion to the rib.

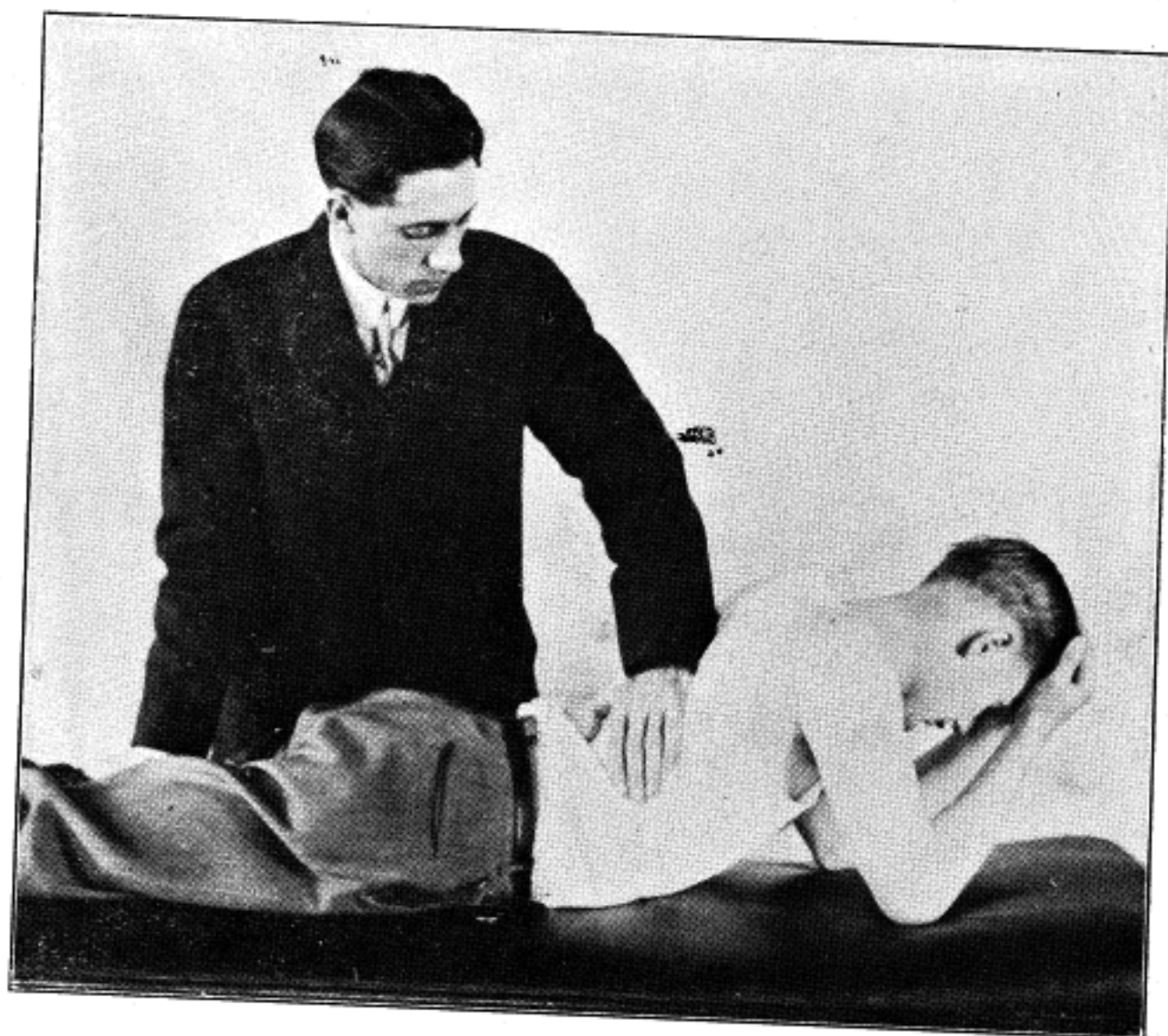
Another method that is of value and that is frequently employed may be described as follows: Let the patient be seated and let the operator stand back of him. Then let the operator place one hand on the shoulder of the patient on the side opposite from the rib that is in lesion. This hand should be so placed on the shoulder that the thumb will pass down and over the spinous processes and on to that part of the lesioned rib that is just outside the transverse process. Holding this hand firmly in this position operator may



carry the arm on the side of the lesion up and round and finally back. The manipulations may be completed by a jarring upward of the arm that has been carried around. Often the rib may be felt to slip under the thumb that is pressing upon it.

There are many other manipulations that are of value but it is impractical to do more than simply to suggest the general principles of the correction of the abnormal conditions that may be found and then it is best to leave the actual working out of the details to the operator who is attempting to make a correction in an individual case.

A good manipulation for the lower middle ribs is the following; it should however be used with considerable care as a very power-



Cut showing method of springing the lower ribs in their articulations with the vertebrae.

ful spring is thereby obtained. Have the patient lying on his face and instruct him to raise up on his elbows so as to bow the lower part of his back. See Cut. Then standing on the side of the pa-

tient, opposite from the side on which the lesion of the rib is, let operator place his hand on the lower segment of the ribs below the inferior angle of the scapula, and let him place the other hand on the nearer of the patient's two knees. See cut. Next after raising himself on his toes let him sway two or three times from side to side and then deliver a drive towards the table with the hand that is on the ribs. Very frequently this manipulation will produce a separation of the articulations and if there was any trouble in the rib it can often be corrected by this move.

### C. The lower ribs.

The condition that is most frequently found in the lower two ribs is a depression of their extremities so that they point more towards the crest of the ilium than they should do. Sometimes the condition is met with in which these ribs are held upward, though this is not so common as the downward lesion just mentioned. In either case it is well to remember the essential anatomical points that are involved. These ribs are embedded in the abdominal musculature quite firmly and are united to one another by the intercostal muscles as are the other ribs. The twelfth rib has attaching to it the quadratus lumborum muscle which is also attached to the lumbar transverse processes, and which takes its origin from the crest of the ilium. Any lesion of these ribs then must be associated with congestion and contraction of the muscles that are attached to them as otherwise the ribs could not be in any way out of position. In point of diagnosis the most noteworthy feature of a lesioned condition is the extreme tenderness that is to be found on the tips of the ribs involved in lesion and the tense condition of the muscles attached; there is also very often associated with a lesion of these ribs a deep pain and congestion in the region of the iliac fossa.

The best way to handle lesions of these ribs is to use the pull of the muscles that are attached to them. We will describe one method that may be found valuable in a depressed condition of the ribs and a very little adaptation or figuring will be all that is necessary to correct any other types of lesions that may be met with. Let the patient lie on his back, with his legs flexed; let the operator hook one arm under the crotch of the flexed knee and raise the legs up from the table so as to form them into a pump-handle lever with the body. Then let him carry them round and at the same time work

deeply in the tissues immediately below the rib and between it and the crest of the ilium. Work of this kind and also direct stretching applied to the tissues below the rib will in time do a great deal of good in conditions of lesion of these parts. In cases in which there is a greater contraction of the intercostals than of the quadratus lumborum the pull must be directed to a restoration of a normal condi-



Cut showing method of working on the tissues associated with a twelfth rib lesion.

tion of tone to these muscles and the pull must be upon the ribs themselves directly.

Besides the considerations that we have suggested for the individual ribs it is often helpful to elevate the entire set of ribs on one or both sides. This is frequently spoken of as "raising"



the ribs. One method that is of value is the following: Let the patient lie on his side, say the right side, and let the operator pass his own left arm under the patient's left arm, while with the other he exercises some pull directly upon the ribs themselves. Then from this position he may pull upon the entire set of the ribs by using the patient's arm as a lever.



Cut showing method of raising the entire set of ribs on one side.

This movement is one that can very frequently be employed to the greatest advantage in a general over-hauling of a patient, such as it is well to give in certain cases.



**Abdominal work.**

Before making any suggestions with reference to abdominal treatment given osteopathically, we wish to say a few words in introduction. The idea of working upon the abdominal musculature is not an osteopathic innovation, as is the idea of adjusting the spine. Indeed the value of massage of the abdomen has been recognized for some time and has been employed to advantage in certain cases, such as constipation. The manipulations used by an osteopathic physician however upon the abdomen are not of quite the same type as are the manipulations such as a masseur employs, in so far as the work that the former does is conducted as an attempt to overcome a sagging of the intestines, and to produce a normal arterial flow to the viscera. The fact that working the abdominal viscera is of value cannot be gainsaid and any who would not include this phase of manipulation in their osteopathic technique are either unduly narrow or else ignorant of the good that can be obtained in selected cases by its use. Possibly the most important locations that should be worked are the two iliac fossae and the general course of the colon may to advantage be followed. It is extremely important to observe that the fingers be not dug into the abdominal tissues in such a way as to damage any organ or bruise the intestines in any way. If any tender places be found or hard impacted regions be noted then the treatment should be designed to overcome them and to restore a normal condition to the tissues that are thus abnormal. In this context we would just mention the great value that the enema is to the osteopathic physician who understands its limitations and who is wise enough to use it realizing that therein as in other similar procedures is a tool that is very valuable if properly employed and dangerous if its employment be abused. As regards the abdominal manipulations it is essential that the patient's legs be flexed and sometimes better results can be obtained by lifting the patient's flexed legs well on to the abdomen by one arm passed under the flexed knees and by thus relaxing the tissues still more effectively, while with the other hand deep work be done upon the abdominal viscera. The knee chest position may also be frequently employed to advantage.

In this connection we would also mention the lesion of a very lax abdominal wall that will be found in certain patients. This is due to a complete loss of tone in the muscles themselves and even in

some cases to an atrophy of the actual muscle tissue. Such a condition constitutes an important osteopathic lesion and in some patients results will not be obtained by the spinal manipulations until the tone be restored to the muscles of the abdominal wall. The restoration of this tone lies largely with the patient as it is just as important for the patient to exercise these muscles and thus to restore the normal tone gradually to the region as it is for the osteopathic physician to work on the spine and to correct the lesions that will of course be found in such cases. ANY FINAL AND COMPLETE CORRECTION MEANS THE GRADUAL RESTORATION OF A NORMAL CONDITION TO TISSUES THAT AT THE OUTSET WERE ABNORMAL. Right here too we might mention the extreme importance of working upon a misplaced uterus, when such be found, and stretching its ligaments locally, in the attempt to correct the misplacement. This often requires a number of treatments, but is frequently successful in the end. In cases too, presenting a stenosis of the cervix of the uterus, its very gradual dilation and especially the dilation of the internal os stimulates growth and is of considerable value in helping to overcome the trouble. Pressure over the pubic spines with the palm of the hand on the locations of the round ligaments is often of value in checking the pain of a dysmenorrhea, and abdominal pressure can often be used to check gastric and intestinal cramping.

### **The clavicles.**

The only region of great osteopathic import that is left for consideration is the clavicle. This bone may be the seat of lesions both at its sterno-clavicular articulation and also at its acromio-clavicular end. The commonest lesion that is found involving the clavicle is what is termed a depressed clavicle, the lesion being at the sterno-clavicular articulation. Operator can make a diagnosis of this lesion by having the patient lie on his back and, while standing at the head of the table, after making sure that patient is lying quite straight running the two thumbs along the two clavicles until they reach the sternal ends. If these two ends are not in line, then one or the other must be in lesion, and it is generally the one that is down that is at fault. It is important to remember however that the opposite condition is found occasionally and the general condition of the tissues together with associated tenderness and other points that will suggest themselves will determine which is the side involved.

A lesion of the acromio-clavicular articulation is also met, and is generally associated with a history of a slight strain or injury to the region; for example, such a condition may follow the strain of carrying a heavy weight or may be found in a base-ball pitcher who has in some way over-taxed the arm, etc. We will find that when such a lesion is present there will be considerable tenderness



Cut showing method of adjusting the clavicle by putting every tissue on tension and carrying the arm well up, back and round.

over the actual articulation and at the same time there will be symptoms that will seem to be in the tissues of the arm itself, such as quite acute pain in the biceps muscle, or a feeling akin to rheumatism in the shoulder joint, and so on. Sometimes the pain from such a

lesion will radiate up the trapezius muscle toward the neck and the occipital region. It is important to remember that lesions of this articulation are often associated with lesioned conditions of the upper dorsal region and frequently the trouble associated with the lesion of the clavicle will not clear up until the upper dorsal condition has been corrected.

### **Correction of lesions of the clavicle.**

#### **A. The sternal end.**

Several methods can be employed to set a lesion of the sternal end of the clavicle. The commonest lesion as has been suggested is the depressed condition of the bone, due to a contraction of the tissues that attach it at this end to the first rib, and we will suggest two methods that may be used to advantage in the correction of this trouble. First, however, we would simply say that if there is a lesion here, resulting in an elevation of this end, the condition can best be corrected by attacking the real causative factor which is the sterno-cleido-mastoid muscle; this muscle, in such a condition, should be thoroughly stretched and the nerve supply completely normalized in order, if possible, to restore a condition to the articulation of perfectly adjusted surroundings. As a result of such work the clavicle will be restored to its normal relations with the surrounding tissues. The more common condition however is the depression of this end of the clavicle, and some manipulations must be used which will draw the clavicle up and away from the sternum. We will describe a couple of such manipulations that are of value in the correction of the condition that we are describing. One that is good is as follows: With the patient on his back, clasp the wrist on the side of the lesion and placing the side of the thigh in the patient's axilla, carry the whole shoulder girdle up to its fullest range of movement, at the same time bearing up well with the fingers that are behind the clavicle. We reproduce a cut showing this manipulation in use. This move gets so much leverage upon the clavicle and especially upon the sternal end of it that it will accomplish very good results. Another manipulation that may be used to advantage in contracted conditions around the sternal end of this bone is as follows: With the patient upon his back support the elbow of the affected arm in the iliac fossa, and with one hand support the entire shoulder girdle. First establish good motion in the sternal



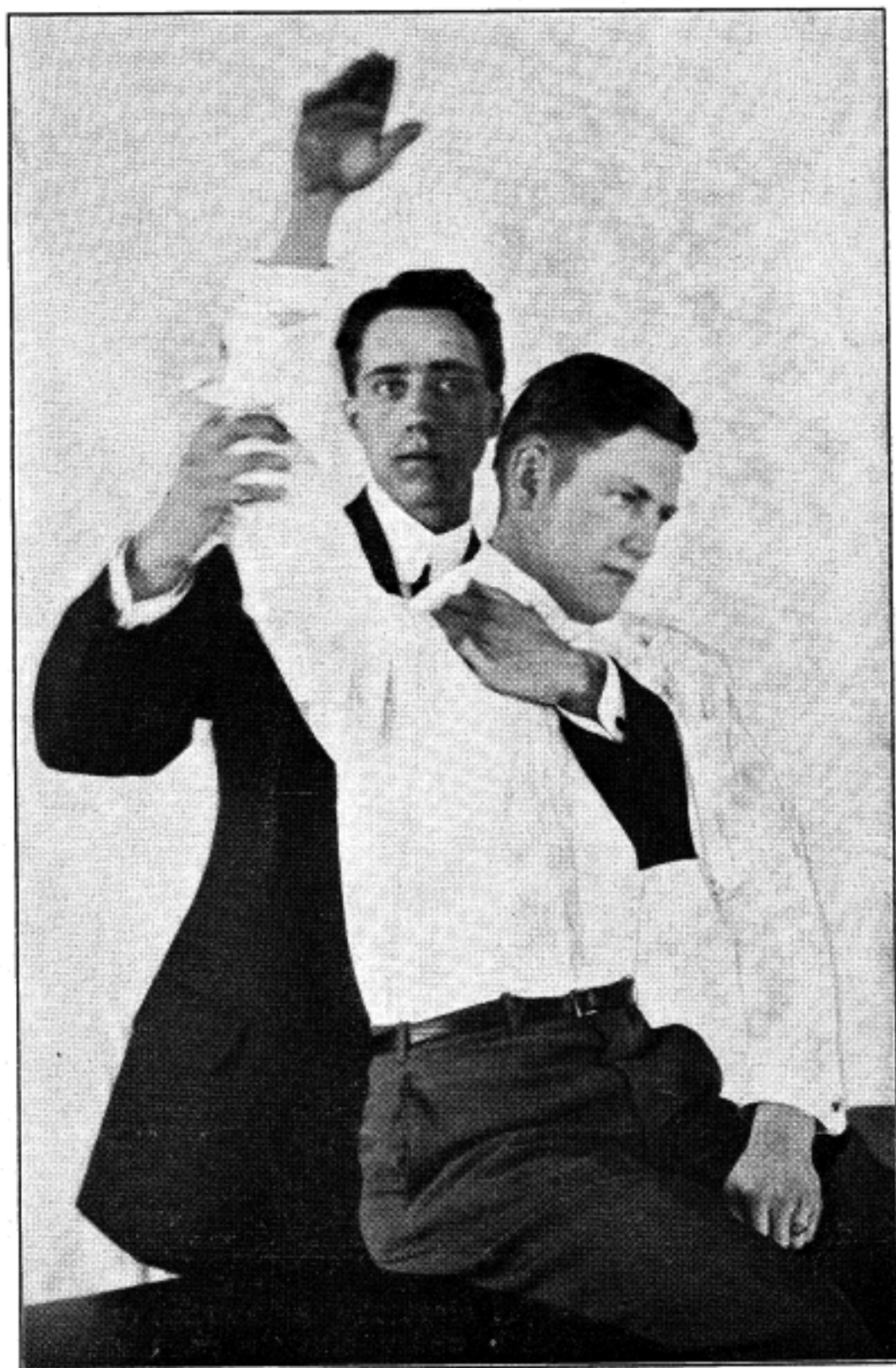
articulation by moving the arm up and down several times towards and from the patient's head. Then place the thumb of the other hand under the clavicle and about an inch from the sternal end, and continue the movement of the shoulder girdle up and down as before. See Cut The amount of force employed may be regulated by the force exerted by the thumb under the clavicle. Either or



Cut showing one method of elevating the sternal end of a clavicle. Operator's thumb under clavicle, near sternum serves as a fulcrum.

both of these manipulations may be used to advantage in trouble at the sternal end of the clavicle. A lesion at the acromial end will sometimes respond to the first of the above described manipulations, though it is frequently necessary to employ also some special separation at the articulation. The following manipulation will be

found useful: With the patient sitting on the table, operator stands behind him, and clasps the elbow of the affected arm in his own hand of the same side; that is, he clasps the left elbow in his own left



Cut showing method of obtaining separation of the acromio-clavicular articulation in cases of lesion at this location.

hand. Then as he carries the arm around he can either press the clavicle forward with the fingers of his other hand or inserting his other arm under the patient's axilla he may pull forward on this

clavicle. Generally if this is done several times a grinding of the articulation will be both felt and heard, and often simply the one treatment will be all that is necessary; frequently however several treatments must be given, and some cases will be found to resist treatment most obstinately. In many cases involvement of the upper dorsal will be found associated with the acromio-clavicular trouble, and unless the former region be corrected the latter will not respond.

---

## SUPPLEMENT TO OSTEOPATHIC TECHNIQUE.

### The use of the Internal Bath.

The enema is so valuable an asset to osteopathic practice that it may be expedient to describe briefly the main principles that should guide the practitioner in its use and to suggest the few pitfalls that should be guarded against. First of all, it is extremely important that the thought be borne in mind that a patient who is using the internal bath is very liable to contract a habit of enema taking. We say this because there is perhaps no habit that the practitioner, who is trying to cure a case of constipation, will find harder to combat than the enema habit when it has once taken a good hold on a patient. The result of taking enemas day after day for a long period is a paralysis of the bowel, and this condition is almost impossible to handle in many instances. Indeed in such cases after all ordinary procedures have been resorted to without results, the operation of "short circuiting" the bowel probably offers about the only good chance of relief that can be offered. We state this in preface to our suggestions because it is very easy for a person to fall into the habit of enema-taking and disastrous resultants undoubtedly follow. Many of the most intractable cases of constipation are the direct result of the continued use of the enema. The "Internal Baths" so widely advertised in the various Physical Culture Magazines, although in certain cases they do much good, in many cases will be found to do a great deal of harm because in the end the patient is liable to find himself dependent upon them to an extent that far exceeds any dependence upon such drugs as their use may have supplanted.

**Equipment and Technique.**

It has been abundantly proved that in very many sick people there is an accumulation of fecal matter in the large intestines; this in some cases becomes so hardened that it adheres to the walls of the bowel and the feces that are excreted daily or so often are passed through a hole tunnelled in this impacted material. Thus many patients who assert that they are not constipated are in reality suffering from the worst type of constipation and their condition should be thus diagnosed by the physician. We have found the following suggestions to be especially valuable: Use an ordinary two-quart syringe, such as can be purchased in any drug store, and procure a soft rubber catheter, of a size that will fit snugly onto the hard rubber nozzle that will be provided with the fountain syringe purchased. This will be found to be about size "15 English" though the best criterion will be that the catheter should fit snugly onto the nozzle. A catheter of this character will serve ordinary purposes better than the regular colon-tube.

For ordinary cleansing purposes, that is to say, unless there is great accumulation of hardened and packed feces in the bowel, warm soapy water with a couple of table-spoonfuls of glycerine will be found as good a mixture as any that can be employed. The water should be about the body temperature, and should have plenty of soapy-suds in it. Any pure soap, such as Ivory or Castile may be used, and sometimes a good laundry soap will give the very best results. Before inserting the tube, it is important that the clamp be loosened for a moment, so that the air may be driven out of the catheter as otherwise some unnecessary inconvenience may be experienced. The end of the catheter should be vaselined, and the bag suspended at not too great a height above the level of the patient as otherwise the water will flow so rapidly that the best results will not be obtained. As a general statement we may say that the least quantity that will get the results aimed at, will be the best and that under no circumstances should more than two quarts be used. Also, the more slowly the flow is allowed to enter the bowel, the less discomfort will be experienced by the patient. The patient should be placed on his right\* side, so that if any water gets into the descending col-

---

\*Many advise the back or the left side in preference. The operator's own experience should guide him.



on, gravity will tend to enable it to flow down the transverse colon. The catheter should be inserted slowly for three or four inches before the clamp is opened, and it is essential that the operator remember the direction of the last few inches of the lower bowel. This direction is toward the umbilicus, and the catheter should be gently inserted through the anal orifice pointing in this direction. If this fact is not borne in mind much inconvenience and pain will be caused the patient. As soon as the catheter has been inserted about four inches the water should be turned on; probably the patient will complain almost immediately that he is unable to stand the discomfort of the flow and that he feels as though he must expel the tube and water. If he does complain in this way, the discomfort can generally be obviated by temporarily stopping the flow until the impulse for expulsion has passed off. Should this impulse not pass off however, the catheter may be removed and the patient may be allowed to expel the water that has passed into the bowel; the attempt should then be made again. It will not often be necessary to resort to this expedient however. While the water is flowing into the bowel the rest of the catheter should be inserted until twelve or fifteen inches have been passed in. After a quart and a half or so has entered the bowel the catheter may be removed and the patient should turn for a moment into the knee-chest position, that is to say he should raise himself onto his knees while his chest is kept close to the ground. Then he may rise and expel the water from the bowel; sometimes it is necessary to repeat the entire procedure, but every effort should be made to obtain the best possible results from each single injection, as the use of several injections, one after the other, is depleting to the patient. It is a good plan to pass a little cold water into the bowel after the other has been expelled as this tends to tone up the bowel wall. This of course should be expelled at once. Some most surprising findings will be obtained in certain instances from a thorough cleansing of the bowel such as may be obtained in this manner.

To soften impacted masses the injection of half a pint of warm oil is often of great value. This may be followed by the injection of some soapy water as described above. The enema bag if used for oil must be cleansed at once after the oil has been run through it, as otherwise the rubber may be destroyed. A good plan is to use a glass syringe whose nozzle will fit onto the rubber catheter and to inject the oil thus directly into the rectum through the catheter. The addition of turpentine to water is sometimes advised but it should be

employed carefully and understandingly, and never without the advice of a physician, as it may do considerable harm to the kidneys. Also it tends to gripe the patient badly. The addition of the glycerine that we recommended above will be found of especial benefit, as it will tend to soften hardened masses, while it is also soothing to the bowel wall, and overcomes the temporary tendency to constipation for the day or so following the use of the enema. Although it is exceedingly foul-smelling an enema of one pint of milk of asafetida is of the greatest value to combat gas in many cases.

There is more in the few suggestions that we have offered concerning the enema than appears at first sight; indeed the intelligent use of these valuable adjuncts to osteopathic practice can only be appreciated after they have been used successfully in a large variety of conditions. It is always important, however, to bear in mind the possibility of doing harm by continued use of these baths, and all the way through the gamut of osteopathic practice we must remember that the manipulation that may be used to the greatest advantage is probably the one that can do the greatest amount of harm if it is not understood and if be wrongly employed.