

THE INFLUENCE OF CORSETS AND HIGH-
HEELED SHOES ON THE SYMPTOMS
OF PELVIC AND STATIC
DISORDERS.¹

ABSTRACT REPORT OF INVESTIGATIONS NOW BEING
CARRIED ON IN RELATION TO THESE FACTORS.

PART I. FROM THE GYNECOLOGICAL SIDE.

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PART II. FROM THE ORTHOPEDIC SIDE.

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I

THE portion of our subject which we have to present to you today consists of two quite separate points. First, the briefest possible *resume* of a purely physiological research. Second, the application of that research to certain problems in clinical gynecology.

From the purely scientific standpoint we believe our work to be possessed of interest for the following reasons: Physiological literature teems with numerous and lengthy articles and monographs devoted to the determination of the centre of gravity of the living body as the starting point in the

¹ The following paper is only an abstract report of work in progress, and the authors contemplate the publication of a complete review of their results later.

study of the mechanism of the erect posture, and while the earlier of these works indulged in much assumption of its position, the later and more scientific all conclude that the exact determination of the centre of gravity in the erect posture is impossible in the living subject, and that it can be obtained only by deduction from the ascertained centres of gravity of the separated members and trunk of a cadaver, and the construction of an ideal standing figure therefrom. In the elaboration of a method which shows automatically the centre of gravity of any individual erect living subject at all times and in all attitudes, we believe ourselves to have broken new ground and opened new fields for study which are of admitted importance among physiologists.

If our belief that the abdominal ptoses are frequently the result of static conditions is in any sense correct, it is evident from the standpoint of clinical gynecology that if one of the operations for the correction of a retroversion or other ptosis is undertaken in the face of general static conditions which constantly urge the uterus backward, it is pretty sure to be either an anatomical or a symptomatic failure. Again, if some innocuous uterine peculiarity is attacked in order to cure a backache which is dependent upon an overstrain of the sacro-iliac synchondroses, for example, its results are not likely to be gratifying to the patient, or to add much to the reputation of the surgeon who performs it; so, too, the orthopedic surgeon, who devotes months of effort with apparatus and gymnastics for the relief of a back strain caused by the faulty posture originated by inflamed pelvic organs, is likely also to score a failure.

The orthopedic surgeons have been the first to awake to these conditions. Comparatively few gynecologists have as yet given the subject the serious attention which its frequency and importance justifies.

I regret that I am obliged, by the very limited time at our disposal, to illustrate this point by a brief outline of two

typical borderland cases rather than by a properly elaborated discussion of the conditions involved, but for the spoken presentation this seems necessary.

CASE I.—Single. Aged fifty-three years. Was sent to me by a very prominent orthopedic surgeon for backache and sense of weight in the abdomen, which, in spite of evident static faults, had been uncorrected by his treatment, and which he was acute enough to believe must be traceable to some pelvic condition. On examination it was evident that her forward posture was due to an unconscious attempt to lessen pressure upon a fibroid which nearly filled the true pelvis, and that the orthopedic apparatus had been ineffective in correcting the attitude or in relieving symptoms because it had been applied in the face of the determining cause, the fibroid. The patient made a prompt convalescence from a hysterectomy, but on arising from bed was extremely discouraged to find that the backache, which had led her to seek treatment, was, if anything, worse than before. On returning to the gentleman who sent her to me, he found that the same apparatus which had before been ineffective now gave prompt relief, and after a few months was able to drop it gradually, and is now entirely well without treatment.

CASE II.—Married. Aged thirty-five years. Three major operations and prolonged local treatment, without relief, at the hands of three very prominent members of this society. Chief symptoms, renal pain and severe headache. Operations, nephrorrhaphy, anatomical success, therapeutic failure. Two suspensions, both anatomical and therapeutic failures. Prolonged trials of pessaries by two of the gynecologists, always ineffective, always increasing pain and backache. Patient profoundly dissatisfied with the medical profession and very skeptical of obtaining any relief. Evident static faults too complicated for me to treat. I referred her to the orthopedic surgeon of her choice after she had positively declined to allow me to replace the uterus and insert a pessary

on the ground of her previous experience. After considerable orthopedic treatment she was relieved of all her symptoms except sacral backache, which continued distressing. She then allowed me to insert a pessary, which, for the first time in her history, she wore not only without pain, but with immediate relief of the backache, and after wearing it for several months became able to maintain a forward position of the uterus without the pessary. She is still under orthopedic treatment, and may of course need a pessary again, but is relieved of her symptoms and intensely grateful. Orthopedic treatment should have preceded an operation.¹

These are but two from a large number of such borderland cases which have come under my observation in the last few years, and which have made me confident that a knowledge of the phenomena of static backaches is of much clinical importance to the gynecologist.

At the outset of our report of our observations it is necessary to define both the conditions and the modifying influences which have been studied, namely, the symptom complex which we will call static backache, and the forms of corsets and shoes which have so far been subjected to analysis.

What we have ventured to call static backaches have not been extensively noticed in literature or, so far as we know, studied in any way from an accurate standpoint. By this term we mean backaches which are the product of the mechanical strains due to faulty attitudes.

These faulty attitudes may be due originally to static imperfections, and may then by alteration of the intra-abdominal pressures cause ptosis, or they may be originally due to an unconscious attempt to protect abnormal abdominal organs from undue pressure by alteration of attitude, and these faulty attitudes may then become so fixed by habit as to demand specialized treatment for the relief of symptoms

¹ Names of attendants omitted for obvious reasons.

even after the relief of the original abdominal cause. The faulty attitudes due to muscular relaxation are less often seen by the gynecologist.

A faulty attitude may, on the other hand, have been originally acquired by an unconscious action of the voluntary muscles in the effort to lessen pain.

Method. The subject, having been previously weighed, stands upon the balance plane shown in the illustration and the figure indicated on the dial is noted down. The distance of the more important joints from the measurement plane formed by the sliding arm is measured with a two-foot rule and the ventral and dorsal outlines of the trunk are taken by the instrument which the hand of the nurse is seen holding. All these are transformed to paper and form the graphic records, some of which we have to show you. Those which are here exhibited have been selected as representative types from among the records of somewhere between 150 and 200 observations which we have taken from these points. The accuracy of the method has been shown by many months' work with specially devised checking methods, including photographs. Lack of time prevents its further discussion here.¹

II

We have found by many experiments that to produce any very decided effect corsets must be specially made for the individual figure, ready-made corsets, unless extensively altered, being almost invariably neutral. The effect of any individual corset is almost wholly dependent upon the direction in which its seams run and the places at which they are tightened or loosened, but the corset bones must be so placed

¹ Method of Determining the Position of the Centre of Gravity in its Relation to Certain Bony Landmarks in the Erect Position. *Amer. Jour. of Physiology*, May 1, 1909, vol. xxiv, No. 2.

as not to neutralize the tensions so produced in the cloth. The spots at which the tensions must usually be increased, to increase the characteristic effect, lie between the red marks placed upon some of the seams in each form of corset. The good corset here shown is that which is most commonly found clinically to relieve static backache. The other is the most common form of those which increase it.

Before beginning our exact observations we had supposed from clinical observation that the good corset threw the shoulders back and the buttocks, if anything, forward, while the bad corset threw the shoulders and upper part of the trunk far forward, such being the effect invariably produced to the eye. Many successive graphic representations show that they really exert a quite different effect.

On account of the great importance of the fatigue curve, and of the considerable persistence of a post-corset attitude, it has been a necessary precaution that the normal should always be taken immediately before the corset observation. We have also found that it is ordinarily possible to take only two accurate observations on the same day, and that they are best separated by an interval of complete rest. The points subjected to measurement are the malleolus, the fibula, the trochanter, and the spinal processes of the fifth lumbar and seventh cervical vertebræ. In the records representing the effect of good corsets it will be observed that the centre of gravity is always thrown backward, the trunk moving backward as a whole, but the buttocks, as a rule, somewhat more than the shoulders, the amount of this excess varying considerably with the type of figure of the individual model, as does also the position of the knee.

The bad corset usually moves the centre of gravity backward, but it does this to a comparatively slight degree, and even this comparatively small amount is effected by its throwing the buttocks excessively far back, while the shoulders are but slightly back, or, in extreme instances, even forward

of the normal. The strain thus imposed upon the sacro-lumbar spine is easily appreciated. I shall leave the effect of shoes and of the combined use of corsets and shoes for Dr. Lovett, whose knowledge of them is far greater than mine.

For the experimental study it has been convenient to use professional models sent to us by one of the art schools, but it has been possible to make a partial employment of the method in some instances in our clinical work, and the last few records are selected from among a number of such cases, as records of patients who were suffering from backaches, with the corsets which relieved them.

Among my records is one of a patient who was sent to me for sacral backache, due, in the opinion of her attendant, to a lacerated cervix. I believe that this backache was originally due to that cause, but upon examination it was evident that it had been produced through the mechanism of a probably secondary alteration of static attitude. I do not think that it will be permanently relieved until the cervix has been operated upon, which I shall do later, but family circumstances made it exceedingly inconvenient for her to have an operation at that time, and a properly made corset has meantime relieved her backache. It has taken about a week after the relief had been obtained. It is evident, from examination, that her centre of gravity was moved somewhat backward by the corset, but I was unable to obtain this measurement in her case.

Another record is that of a nurse in my private hospital who was so intelligent and valuable that she was employed there for nearly a year in spite of the fact that she was seldom able to do more than a few weeks of consecutive work without an interval of rest. For obvious reasons I never inquired into the nature of her disabilities, but after she had been with us for nearly six months of her second year I noticed that she had been continuously at work all that time and asked my matron why her health was so much improved.

The reply was, "Why, Dr. Reynolds, I have corseted her, and she is no longer subject to backache." I then asked the matron, who was familiar with the instrument, to obtain at least a partial record, which will be presented later in my full report. She did not take the centre of gravity, but it is quite evident that it had moved backward. In fact, in our clinical work, we have noticed that all our cases of sacral backache have carried their centres of gravity unusually far forward.

The stable types of figure are but little altered in attitude by corsets. Their centres of gravity are thrown back by high-heeled shoes, but in practice women rarely wear high-heeled shoes unless they are also wearing an effective corset, and in practice women who are wearing a bad type of corset always instinctively associate with it a high-heeled shoe. The models have always expressed themselves as more comfortable in either form of effective corset (*i. e.*, less uncomfortable in the bad corset) after they have also put on high-heeled shoes.

In practice what we have for the moment designated as the stable type of figures usually wear neutral corsets, and state that it makes very little difference to them what forms of corsets they wear. In practice these women usually wear low-heeled shoes.

In practice the unstable types usually crave the support of corsets and are usually wearing more or less high-heeled shoes when they come into the office. These are the women who are most liable to backaches and who are most relieved by corsets. I am inclined to think that they are also the women who are most liable to ptoses.

The main characteristic of all the stable types is that their figures run upward in a straight line above the base of support. The curves of their figures are not excessive, and any slight curve in one direction is promptly compensated by a similar reverse curve just above it. The common char-

acteristic of all the unstable types is that they have very pronounced curves and that the outlines of their figures tend to make wide excursions to one side and the other of the base of support. In the worst types excessive curvatures in one direction are not fully compensated by the succeeding reverse curves.

The condition designated in this report as static backache has received but scant attention even from orthopedic surgeons. Many of these cases are called hysterical spine, functional spine, neurasthenic spine, relaxation of the sacro-iliac joints, weak back, lumbago, etc., and all varieties are treated, when they are treated at all, empirically by braces or corsets, belts, springs, or pads, massage, electricity, heat, gymnastics, etc. We know no more of the mechanical working of our therapeutic measures than we do of the real cause of the pain. Sometimes we cure the cases, sometimes we fail; sometimes after we have failed we send them to the gynecologist. Now, all this is an unsatisfactory state of affairs to both patient and surgeon. My effort in this discussion is simply to present to you what I understand to be the state of affairs today from the point of view of an orthopedic surgeon, and what, in our research, we have found out of interest to gynecologists.

You are probably aware that certain cases of flat foot or weakened feet are accompanied by backache on standing, and that this backache is sometimes permanently relieved by the use of a proper support to the instep. We have as yet made no observations on this point, and I only mention it as perhaps the instance most likely to be familiar to you of the relief of back strain by doing something to the base of support. An analogous instance is to be found in the backache found in those cases of contraction of the gastrocnemius muscle, which necessarily causes faulty attitude because the patient is unable to get the foot to a right angle or get the heels squarely on the ground. In these cases relief follows in many cases the stretching of the gastrocnemius as described

by Shaffer, or raising the height of the heels. These two instances, from my especial field, will indicate to you that one is not going too far astray to discuss shoes in connection with static backache. What we have found out with regard to shoes, from our research, is as follows:

1. High-heeled shoes tip the body back as a whole, with lumbar curve unchanged in most cases; in one case out of ten observed a model tipped forward. This model had never worn corsets, and her usual centre of gravity was abnormally far back, which may explain the exceptional result. Otherwise the results were uniform. Apparently the higher the heel and the narrower the toe the more marked the effect. A high heel which did not reach forward nearly to the middle of the foot, as all high heels do, would apparently, from observations made early in the series, tip the model forward; such shoes are never seen.

So far as our study goes, the effect of high heels in the standing position is not undesirable, so far as the body balance is concerned; there is no evidence, from watching the record of the lumbar curve, that they change seriously the inclination of the pelvis nor alter noticeably the curves of the back. With regard to their effect in walking we know nothing, and of course they are bad for the normal foot, but we must attribute to them no harm that they do not do.

In general, our observations on patients, which are as yet very few, show in all cases of backache a centre of gravity too far forward. A very striking instance was the following: A well-developed young woman, a professional teacher of gymnastics, at the end of a hard year developed severe sacral backache. She wore a small girdle. A corset was applied which afforded immediate relief. An observation in this apparatus showed the centre of gravity moved back one and one-half inches by the corsets. The observation was so striking that it was repeated a week later with similar results.

In a case of backache due to arthritis deformans of the spine, corsets gave relief, but made no noticeable change in balance. Here the relief was apparently due to fixation.

I would further call your attention to a point of some interest in the persistence of attitudes assumed. To make this plain, if a bad corset is worn for ten minutes for purposes of observation, the position induced by that corset persists for some ten minutes at least. We have frequently had to abandon a second observation in models of delicate balance because they did not return to normal in the time at our disposal for observation.

Apparently high-heeled shoes modify the effect of corsets, and the models were, in all cases, more comfortable standing in shoes and corsets than in corsets alone. This was particularly noticeable with bad corsets where the effect of high-heeled shoes was most agreeable.

In considering the location of static backache I would call your attention to the following anatomical considerations. In considering what would be the probable character and location of pain in static backache the following considerations are of importance. The entire weight of the body above their level is of course transmitted to the ground through the sacro-iliac articulations. (These articulations permit but little motion, and, compared to the supporting structures above and below them, are relatively inelastic. In a given change of position in the standing attitude necessitating a change of relation throughout the body in the antero-posterior plane, adjustment above this level is easy by the free motion between the vertebræ in this plane, and below this level the hips, knees, and ankles permit easy adjustment, both moving only within their normal limits.) The sacro-iliac joints, however, are not easily adjustable, and will be more likely than joints above or below to show the effects of strain on account of their inability to accommodate themselves to it in their normal range of motion.

The sacro-iliac joints are relatively less protected by muscular support than any other joints in the body. Above them the spine forms a long lever, meeting the long lever of the legs. The leg muscles all terminate above at the pelvis, the lower spinal muscles have their origin on the iliac crest, but at about the horizontal level of the sacro-iliac joints. No important muscles pass over the level of the sacro-iliac joints to be inserted at enough distance above or below to contribute to them any efficient muscular support. So far as the lower two-thirds of the spine is concerned, the lumbar region is the flexible part, and adjustments to disturbing causes are therefore chiefly made in this region. Static backache, therefore, on theoretical considerations, would be most evident in the lumbar regions and sacro-iliac articulations.

In conclusion, we have found no evidence that a proper corset induces malposition of the normal body; on the contrary, we have found that it tended to induce a more normal position when abnormal position of the type described exists. We have found evidence that high-heeled shoes work in much the same way as good corsets, and tend to modify desirably the malposition induced by bad corsets.

We have found that static backache is usually relieved by proper corsets, and this effect we attribute partly to the splinting of overstrained and irritable muscles and partly to the tipping back of the whole body. So far as our observations have gone, we are inclined to believe that the most frequent cause of static backache is to be found in a centre of gravity too far forward, thus inducing excessive muscular effort in the lower back to maintain equilibrium, and the relief of such backache by proper corsets and occasionally by high-heeled shoes is explained by their influence on the position of the centre of gravity.

No one can appreciate more than we do how incomplete all this must seem, but we offer it as a contribution to be

accepted at its face value and as an effort to add to our knowledge of backache of mechanical origin, which is bound to become constantly more frequent as the demands of our civilization on our women increase.

DISCUSSION.

DR. WILLIAM M. POLK.—I have been very much impressed with this scientific working out of a problem which has faced us for many years. I am quite sure we all realize our failures in the treatment of many of these cases of backache. I, for one, feel particularly grateful to the essayists because their work shows that some of my own efforts in this direction have not been misdirected. When backache continued, frequently in the absence of any adequate uterine or ovarian difficulty, I began to seek in the sacro-iliac joints some cause for the difficulty. With the assistance of my orthopedic friends in this city, I was able about a year ago to convince myself of the truth of the general principles laid down in these two papers. They have been worked out so accurately, and the matter has been reduced to such scientific precision, that it will be much easier for us in the future to deal with these cases than it has been in the past. In common with every member of the Society, I have been trying to cope with these cases, and in one instance there was a rather sad ending, for the reason that there was a strong difference of opinion between the orthopedist and myself, on one side, and a gentleman who had found in the case evidences of appendicitis, on the other. The opinion of the latter individual prevailed, and the consequence was a very disastrous, incomplete operation, and all that kind of thing, for the disease was connected with the sacro-iliac joint. It was not a case of necrosis or actual disease of the joint, but there was too much mobility in a rather stout woman.

So far as the effect of the corset in controlling this condition is concerned, I am convinced that the directions laid down by the authors of the papers are the best and only ones necessary for the conditions we have before us at present.

So far as the shoe is concerned, there again I am already a convert, and have been converted for some little time. I presume all of us have had a prejudice against our warm old friend, the Louis Quinze shoe heel. We all felt that this heel was a monstrosity, and that, in addition to the trippings of the individual, there was nothing more than a sort of esthetic backing for it. But the point brought out by the essayist shows clearly that while such may be the case with the normal foot, it is far from being the case with the abnormal foot. In the city of New York we have to offer a great many opportunities for pleasure, and possibly also for pain. You will not infrequently associate one with the other. From the standpoint of feet, we are preëminently successful in the production of a certain foot, so that I understand flatfoot has been denominated the New York foot. All I know is this: We are beginning to see a far greater number of cases in which the suffering is directly attributable to the fault in the arch of the foot than seemed to be common fifteen years ago. I send these cases now to the orthopedist, and within the last year or two they have come back to me with these high-heeled shoes, set well forward, to hold up the depressed scaphoid, and the end-result has been that these women get relief. They get relief not only from their foot pains, but they get relief from this kind of backache which we now understand from the doctor's description is due to an effort to maintain the proper centre of gravity under abnormal conditions of the feet. I think we are under many obligations to Drs. Reynolds and Lovett for presenting these papers.

DR. FRANKLIN H. MARTIN.—This is a subject in which I have been much interested, but one too large to adequately discuss in the few moments at my disposal.

There are three explanations, it seems to me, for a woman assuming the position of the defective figure shown in Dr. Reynolds' paper. First, the fact that the peritoneal blending does not occur until after the fifth month in the embryo, and the mesenteries are, therefore, left extremely long. We speak of these women as belonging to the congenital type. They have the straight back and perpendicular pelvis.

Another type is the one of acquired defect where the mesentery is too short, in women in which the spreading of the abdominal muscles has occurred, thereby increasing the

capacity of the abdomen. This gives rise to a mesentery pull.

The other class is the type where there has been unusual fat absorption from the interior of the abdomen from the peritoneal supports, and from the mesenteries. One has here two conditions precipitated, a long attenuated mesentery and an enlarged abdominal cavity. I believe backache in all these cases is due, at least in part, to a strong pull upon the mesenteries.

In the congenital type, the hog back, perpendicular pelvis, and non-blended peritoneum, I have for five years examined during laparotomy as carefully as I could where there were no contra-indications, every woman of this type whose abdomen I have opened, with reference to the peritoneal blending and the length of the mesenteries.

For instance, the particular points where the blending of the mesentery has failed to occur, as shown by my examination, are behind the ascending colon, behind the descending colon, and fixation at the hepatic and splenic flexure. These things are observed almost invariably in the type of women represented by the congenital type. In those cases, the congenital defective type, we have the low cannon-ball projecting abdomen, the straight spine, and invariably enteroptosis.

The preliminary treatment for these three varieties is the same, viz., that which has been recommended so forcibly by the essayist this morning, *i. e.*, supporting the lower abdomen, which in the first type I mentioned supports the intestines which are not supported by the unblended peritoneal supports and mesentery.

In the second type, by bringing the abdominal wall against the intestines which possess the short mesentery.

In the third type, where the mesenteries are short and the abdomen large from fat absorption, by holding the abdominal wall snug and lessening the abdomen's capacity. The treatment, otherwise, consists of exercise and orthopedics.

DR. ROBERT L. DICKINSON.—If we are to broaden the scope of our work as medical men, we must work in teams, and we have here a brilliant example of specialists working together.

There are no more puzzling problems than some of these obstinate backaches of women. I have had the good fortune

to work with an associate, Dr. Truslow, who is an orthopedist, over these problems, but without reaching the scientific limit of accuracy which our essayists have reached. I brought along some tracings today, but do not dare show them to suffer comparison with the charts we have seen.

Sometimes where there is a clash between the common practice of the public and the teaching of the profession, and it comes to the scientific study of the question, the public has the right of it. You may drum it into people all you like that beans are a cheap proteid, but you will surely start a revolt in any regiment by feeding beans more than once a week. It is now known that there is a poison in the bean. The soldier discovered it years ago, and the physiological chemist now detects it. So it is with the nutritiousness of white versus brown bread. And so it is with some of the dress questions. The corset is one of these questions. I have led various onslaughts against this cuirass, and from imperfect knowledge may have made unwarranted sweeping statements. I agree with Dr. Reynolds that there is a great big reason, that there is something besides fashion, something besides looks, in the longing for the corset, and I am glad to hear that the same thing obtains with the high-heeled shoe. It will unload our consciences, and we will be able to feel that we do not need to damn wholesale, but simply lead in the right direction the general demand for the use of these body splints.

I was a little disturbed by the complexity of apparatus which is needed for tracings. With simpler plans I have traced backs and fronts for twenty-one years, some of which have been published and widely copied. Elaborateness of apparatus may discourage the spread of this study and its application. We throw up our hands at complicated formulas.

You will find, as Dr. Reynolds has said, that if your attention has once been directed to this matter, you can soon determine a great deal by your simple inspection of the back and the attitude of a woman with her corset on and with it off. One of the things you ask your intelligent office nurse at the first examination of the patient is, "What are the corset and dress conditions of this patient?" And her hints are valuable. We have to work so fast that we cannot make

full studies of any but troublesome cases. We need to make a more complete investigation of the worst backaches complained of by these patients, but we need not be discouraged because of a lack of apparatus with which to do this work, because if we keep in mind persistently the questions of attitudes and lumbar curves, we can accomplish a good deal.

DR. MATTHEW D. MANN.—I have been much interested in this subject for some time, but have not had the opportunity of making investigations, such as those that have been given to us. I have looked up the matter considerably and I can speak from a little different point of view. I thought, as Dr. Dickinson has expressed himself, that the corset was an evil; that there was nothing good in it; but I have changed my mind on that point, and I believe there are corsets and corsets, and some of them may do good and some of them will do harm. What we want to do is to understand what the proper corset is and what an improper one is, so that we can regulate the matter for our patients. We should determine the effect of the corset upon the waist line and upon respiration, and compare the results with those obtained from women who have never worn corsets, such as the South Sea Islanders, Turks, or some of the Japanese women. These women do not confine their figure at the waist line. The respiration of a girl at twelve or fourteen is like that of a boy; it is abdominal, the increase in size during respiration being nearly in the centre of the abdomen. That has been proved by the observations of people who do not wear corsets. A badly fitting corset which constricts the waist line and expends its force at that point can hardly fail to do harm, in that it interferes with normal respiration; it gives the woman thoracic respiration, and the dynamics of the lower abdomen are much changed. What I mean is this: If we take a piece of string and put it around the waist of a young woman with a corset on, the difference during inspiration and expiration will not be as great as it is in man. A man can make three or four inches of difference between inspiration and expiration in his abdomen. If you try that on a woman with an ordinary corset which goes around the waist and touches the abdomen probably in the waist line, she will be unable to move her waist line but the fraction of an inch. I have tried it time and again, and have found they cannot expand one-

eighth of an inch. Such a state of affairs is entirely abnormal and cannot fail to exert a decidedly bad influence upon the abdominal organs.

Now, a corset such as the doctor described to us obviates that difficulty. It touches the lower abdomen. It supports the abdomen, and when it comes up to the middle line it is loose. Such a corset, while it supports, does not constrict the body at the waist line, and from the appearance of the picture a woman with such a corset can make a difference in her waist line between inspiration and expiration. Kellogg, I believe, put corsets on dogs, and invented an instrument which showed the effect of the corset, and the same thing occurred in the dog with a corset on, in that the respiration was changed from the normal abdominal type to thoracic respiration, and the effect of the corset was manifest in the animal as it is in the woman.

I hope the gentlemen who have this subject in hand will take up that branch and let us know their findings. But we must broaden out and consider the subject from all points of view.

DR. RICHARD R. SMITH.—I regard this communication of Dr. Reynolds as a very important one, for the reason that his investigations give promise of definite practical results.

I became interested in the subject of enteroptosis three or four years ago, and since that time have made something like 400 examinations of the body form of such women as have presented themselves suffering from symptoms suggestive of abdominal or pelvic trouble. These examinations consisted of certain simple measurements of the body, an observation of the form of the thorax and back, and the attitude in which the woman habitually stood. With this external examination we endeavored to learn the position of the viscera and noted the symptoms from which the woman was suffering.

Roughly speaking, we may divide the changes in the body form that we see into two general classes. The first of these we may perhaps designate as primary, since they may be traced to childhood and are difficult of correction. The best example of this is the partial collapse of the thorax. Those changes which we may call secondary, since they come on later in life and are easier of correction, are perhaps best exemplified by the form of the back. The principal ones

are a diminished lumbar lordosis and oftentimes a rounding of the shoulders. Such changes are not peculiar to enteroptotic women, but are more commonly found with them than with more vigorous women. These changes in the spine are due to fatigue and pain, principally the former. The enteroptotic woman is more subject to fatigue than others. The pains commonly associated with enteroptosis rarely develop until the woman becomes fatigued, or, to put it in another way, the enteroptotic woman, or other women who are not fatigued, do not suffer these pains. We see about us, all the while, decidedly enteroptotic women doing their work and without distressing symptoms. Such women, however, give way more readily than vigorous women to the influences of an unwholesome life.

In this fact, I think, dwells a most important therapeutic hint; the first indication is rest, the second is to improve their nutrition and to develop their muscles. Thirdly, we may give temporary relief by certain mechanical supports, but I believe that the first two indications are of greater importance.

Another point: we have commonly ascribed the pain from which enteroptotic women suffer to the prolapse of the viscera. I believe it to be far more commonly due to fatigued muscles and, secondarily, to the habitual assumption of a faulty attitude. Dr. Reynolds has been coming to some of the same conclusions in this matter that I have, but in a different way.

DR. REYNOLDS (closing).—What Dr. Martin has said of the evolutionary types is a thing we must consider from the beginning, and without wasting time on that phase of the subject, I will say it lies at the very foundation.

What Dr. Martin and Dr. Smith have said of ptoses and the influence of long and short mesenteries must receive consideration from us on account of their great authority, and their remarks are especially interesting in connection with a subject which is, at least, of clinical importance, but which for lack of time I was not able to touch on. These backaches are almost invariably associated with spasms of one or both uterosacrals, even stimulating infiltration, sometimes disappearing under anesthesia, sometimes partially persistent under anesthesia, but disappearing with the correction of the

static uterus. The so-called Porter's sign, which has been mentioned of late, which is a tender condition of one of the sacro-iliac synchondroses, on pressure from the rectum in women, is frequently, if not always, due to making pressure on the irritable uterosacral ligaments so-called.

In the application of these principles to practice the use of the machine is not necessary. This is a physiological machine for the purposes of study. You can, however, use it to get the centre of gravity as the patient stands with clothes on. You can see what the corset will and will not do in disturbing the centre of gravity without greatly disturbing the clothing. This is a useful thing.

I have been asked by a great many gentlemen about a practical corset. There is no corset ready made which is a therapeutic corset, and most of them are so boned that they cannot be made therapeutic corsets. Even when properly boned, the remodelling of the ready-made corset results in an ill-fitting and usually in an uncomfortable contrivance. A corset must be made for the individual patient. A fashionable corsetière will make a therapeutic corset when the fashion points that way; at other times she will not. I have been forced to find from year to year some corsetière whose business is not yet large, who realizes there is a good deal of business for the corsetière in this field, and will adapt her ideas to mine; then by and by I have to get a new one. The corsetière makes a corset for the customer an inch or two larger than the woman, then takes up the seams and pins them in adaptation to the woman.

There is much in placing the corset properly. A well-fitted corset will not relieve backache. It must be brought comfortably snug to the waist, lacing in three parts, laced tightly below, and then moderately at the waist, and very lightly at the top.

Personally, I do not send all patients with backache to an orthopedist. When I see any obvious static faults that cannot be corrected by a properly fitting corset; when, for instance, I see static faults in the legs or feet or dorsal region, I turn such patients over to an orthopedist with the request that he correct those faults before he sends her back to me.

We have not fully illustrated waist constriction. It must be absent in order to avoid undue pressure in the pelvis.