indistinguishable from specimens of *S. pyogenes* recovered from sources other than scarlatinal. This view is now untenable. The possibility, therefore, must be realized that the streptococcus in question may ultimately be established as the essential cause of scarlet fever. Its exact significance, and also its practical application as regards the diagnosis and specific treatment of scarlet fever have still to be decided. As the problem is one of considerable practical interest and importance, it is hoped that the present communication may be of use to others who may have the opportunity and inclination to investigate the matter.

In conclusion, I wish gratefully to acknowledge the help received from my colleagues at St. Bartholomew's and from Dr. Caiger in obtaining material for this investigation, and also to record the valuable assistance of Mr. J. Heagerty, my laboratory assistant, in applying the absorption test to the relatively large number of haemolytic streptococci that it has been necessary to examine.

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Remarks

ON

POSTURAL OR SO-CALLED STATIC DEFORMITIES.

BY

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(Concluded from page 590.)

II.

In the first part of this paper¹ I gave a brief account of the physiology of posture, based on the work of Sherrington, who has shown that the upright attitude or posture of the body is maintained by continuous tonic reflex muscular activity. It was seen that this "postural activity" is of a special kind, quite different from the muscular contraction which gives rise to movement; that it is capable of being maintained for long periods without fatigue; and that it is controlled by a special nervous mechanism of its own. Attention was directed to the profound influence which the higher parts of the central nervous system exert upon postural activity, both in health and disease, and I endeavoured to show the practical bearing of these observations on the etiology and treatment of curvatures of the spine. Postural deformities are due to deficient postural activity, and the following pages deal with the application of this principle to flat-foot and other deformities hitherto described as "static."

FLAT-FOOT.

There are still some people who believe that the arch of the foot is supported by ligaments, and that the muscles merely serve to move the foot in obedience to the will. This view is utterly opposed to our conception of the function of ligaments and of the physiology of posture.

The natural form of the foot as a whole is determined by the shape of the individual bones, whose articular surfaces are adapted to one another in what may be called the neutral position of the foot.

The ligaments keep the several bones in normal apposition, resisting gross displacements, and helping to restore the bones to their normal resting positions after the slight displacements which continually occur during ordinary use of the foot. To this extent, and to this extent only, the form of the foot is maintained by ligaments.

It is not the function of ligaments to withstand continuous strain; this is a function of muscles. The correct attitude of the feet in standing is a part of the postural reflex which maintains the body as a whole in the upright position. The mechanical force of gravity in the upright position tends to abduct and evert the feet, and this actually happens in a child learning to walk before the postural reflex is established. The postural reflex, in so far as it concerns the feet, consists of adduction and inversion—which does not mean that the feet are visibly held in that position, but that the tendency to passive abduction and eversion by the body weight is continuously resisted. Incidentally, the inner border of the foot is drawn upwards to a greater or less extent, so as to form an arch, and the body weight is taken up by the postural muscles and distributed to the outer border of the foot, the heads of the metatarsal bones and the heel.

From this time onwards the normal attitude of the foot, including the arch, is maintained by continuous reflex muscular activity. This postural activity, as we have seen, is of a special kind, capable of being maintained continuously for long periods without fatigue, and controlled by a special nervous mechanism of its own.

Flat-foot is either caused by, or accompanied by, deficient postural activity. Some of the conditions which may modify or inhibit the postural reflex have been considered in connexion with scoliosis. Mental fatigue or inertia, temperament, occupation (apart from prolonged standing), anaemia, constipation, adenoids, etc., all have a place in the etiology of flat-foot as in that of scoliosis. The deficiency of postural activity may be manifested generally or locally. Some patients develop postural scoliosis or kyphosis, others postural flat-foot, while in many cases scoliosis and flat-foot are associated in the same individual as parts of a general loss of tone. Not infrequently there are accompanying vasomotor disturbances—for example, flushing, profuse sweating, susceptibility to chilblains, oedema, etc., significant of the functional (perhaps sympathetic) origin of the deformity.

But, although postural activity is capable of being maintained for a long time without fatigue, there is a limit to the amount of strain that even a postural muscle can stand, and under modern conditions of civilization the strain thrown on the feet is often far in excess of anything that Nature intended. The result is that in many cases simply by continuous standing the postural reflex is at last tired out, and the body weight, overcoming the resistance of the muscles, passively abducts and everts the feet. Prolonged standing is thus one of the commonest causes of flat-foot in adults. It is hardly necessary to point out that conditions which give rise to a primary deficiency of postural activity may be, and frequently are, combined with occupations which entail long hours of standing, so that both causes may operate together, and no sharp dividing line can be drawn between these two groups of cases.

There is a third class of case in which the postural reflex is inhibited by some local condition. Pain in the foot inhibits the local postural reflex. Flat-foot, therefore, commonly follows sprains, fractures, or other injuries of the foot (traumatic flat-foot) and painful inflammatory conditions, such as gout, rheumatism, gonorrhoea, etc. (inflammatory flat-foot). With regard to the last named affection, it may be said that reflex inhibition from pain has far more to do with the causation of gonorrhoeal flat-foot than has any inflammatory softening of the ligaments, as commonly described in the textbooks.

Cases of flat-foot, therefore, fall roughly into three groups:

1. Those in which the immediate cause is deficient postural activity;
2. Those which are due to continuous strain by which the postural reflex is exhausted; and
3. Those in which the local postural reflex is inhibited by some painful condition of the foot itself.

Pain in the foot not only inhibits the local postural reflex, but it frequently induces an abduction-eversion spasm, which is a fixation of the flexion reflex commonly evoked by painful stimulation of the foot. Spasm, therefore, is

¹ BRITISH MEDICAL JOURNAL, April 23rd, 1921, p. 587.

usually present in cases of traumatic and inflammatory flat-foot, and it occurs also in a certain proportion of cases which are due to standing. It never occurs in the cases due to a primary postural deficiency.

It is common knowledge that a very considerable distortion of a joint may be brought about slowly and gradually in the course of time without provoking pain or spasm. But rapid distortion of a joint is painful, and quickly resented by spasm of the muscles acting on the joint. Thus it happens that, when flat-foot develops slowly and gradually, as it usually does, it is unaccompanied by spasm, but when the deformity develops rapidly, it is likely to be accompanied by spasm. Spasmodic flat-foot is rapid and painful flat-foot. Spasm does not occur in the cases primarily due to deficient postural activity, because in them the deformity develops gradually, and is practically unresisted. It occurs in some of the cases which result from prolonged standing, because in them there is no primary loss of tone, the foot is in fact crushed down against resistance, so that the whole foot is strained, and the rapid distortion which results sets up a reflex protective spasm.

The arch of the foot is, perhaps, the least important thing about this badly named deformity. Some people have naturally high arches, and some have low ones. A very considerable amount of distortion and pain in the foot may occur before there is any apparent sinking of the arch, and some of the severest symptoms of flat-foot are met with in feet which are not flat. On the other hand, the arch may be low or even flat without any other symptom of flat-foot, and it does not follow that such a condition is pathological. Many barefooted savages have absolutely flat feet, yet they are perfectly normal. Their feet are strong and supple, they grip the ground as they walk, and they adapt themselves perfectly to every call that is made upon them.

The only thing that matters is whether the postural muscles take up the strain of the body weight, as they should, and distribute it to the best advantage to the natural points of support of the foot, or whether they are inefficient and allow the body weight to fall continuously unrelieved upon the joints and ligaments of the foot, so as to strain them and distort them and give rise to symptoms.

TREATMENT OF FLAT-FOOT.

The treatment of flat-foot is (1) to restore the natural form of the foot, if necessary; (2) to relieve the postural muscles from strain, or in other words, to keep the foot in the correct position during the period of recovery; and (3) to re-establish the postural reflex.

1.

If the foot is rigid or fixed by spasm, its natural form cannot be restored until it is made supple. Such feet, therefore, may require forcible correction and immobilization as a preliminary measure. I have, however, come to believe that spasmodic flat-feet can be made to yield to the corrective influence of a properly shaped boot, and I very rarely employ forcible correction and plaster now.

2.

Forcible abduction and eversion of the foot by the body weight throws a tremendous strain on the postural adductors, and these muscles cannot recover their function unless they are relieved from strain. It is necessary, therefore, before postural activity can be restored, to keep the foot constantly in a correct position, so that the muscles are relieved from strain. It is true that when the foot is supple this position can be voluntarily assumed. But voluntary muscular action is quite different from postural activity, and it cannot be sustained on account of fatigue. It is necessary, therefore, to employ some artificial means of securing the correct position during the period of recovery.

I have never been able to persuade myself that it is a rational or a scientific procedure to put a rigid support (foot-plate, arch support) under the arch of the foot. In the normal foot the inner border or arch is raised off the ground; there is an empty space beneath it, and obviously it was never meant to rest upon anything. It is also rather a tender part of the foot, and direct pressure upon it is not, as a rule, well borne. A rigid moulded arch support creates quite an artificial condition; it converts the elastic foot

into a rigid system, and I cannot but believe that it prevents that muscular re-education which is essential to true recovery.

Of course, if one starts from the point of view that flat-foot is incurable, it may seem rational to establish an artificial condition in which the arch is mechanically supported from below, as upon a crutch. But, as a routine procedure, this seems to me to shirk the real treatment of flat-foot, just as the indiscriminate use of spinal supports in scoliosis is a confession of failure. Our experience is that comparatively few patients can tolerate rigid foot-plates, and that those who do can hardly ever dispense with them.

In the absence of normal muscular control the correct position of the foot is a question of balance rather than of support. The human foot has no true stability of its own. There is a mid-position, on one side of which the body weight thrusts downwards and inwards, causing abduction and eversion of the foot, and on the other side of which the body weight flows downwards and outwards, the foot being adducted and inverted. There is no mean resting place, no point of stability in the mid-position. It follows, therefore, that the foot must be kept adducted and inverted to just beyond this mid-position in order that the postural muscles may be relieved from strain. This result can be obtained by giving the foot a tilt in the boot sufficient to throw the body weight definitely over to the outer side of the middle point. Nothing short of this degree of tilt will suffice; anything over it is enough.

To apply this principle in practice the foot must be held in a boot that fits well enough to make the foot follow its movements. It is then common practice to give the whole boot a tilt by raising its inner side. This is the principle of the so-called valgus wedge. A valgus wedge that is not sufficient is as useless as no wedge at all. One frequently sees boots with valgus wedges on patients who nevertheless crush down their arches, because the body weight still falls inwards. It is entirely irrational to prolong the heel in such a case, so as to support the waist of the boot from below. If the waist is crushed down the tilt is insufficient. If the tilt is sufficient the waist of the boot is not crushed down, and a prolonged heel is superfluous.

In my experience the simple valgus wedge commonly fails because the insole of the boot, although tilted, is still a plane surface. Upon an inclined plane surface the foot cannot find its natural points of support, but it slips bodily towards the lower or outer side, where it comes to rest against the "upper" of the boot. The natural points of support of the correctly placed foot are the heads of the metatarsal bones, especially the first, the outer border, and the heel. These parts of the insole must be depressed or "bedded," so that the foot may drop into them, and, if this is correctly done, the foot will adapt itself to the insole and assume its correct position. I have come to regard the moulded insole as the best of the artificial means of controlling the supple flat-foot, and I have found that at least some cases of rigid and spasmodic flat-foot will yield in time to this device.

3.

The only real cure of flat-foot is restoration of the local postural reflex. In cases of primary postural deficiency the treatment of the patient is of first importance. The general treatment of postural deficiency and of the conditions which give rise to it is indicated in postural flat-foot, just as in cases of postural scoliosis.

When the postural deficiency is local and merely incidental to the deformity, the treatment of the foot comes first. If the foot is supple, the patient can voluntarily invert it and stand on its outer border. This action is the same as that of the postural reflex, with this difference—that it is voluntary and phasic and therefore cannot be maintained, whereas the postural reflex is subconscious and tonic and capable of being continued for long periods without fatigue. The postural reflex can, however, be re-educated by voluntary action constantly repeated until it becomes habitual—or in other words, by exercises.

There is only one exercise which need be done for flat-foot, and that is the movement of inversion—getting on to the outer borders of the feet. The patient should be told not to make a set "exercise" of it, but to do it always, everywhere, whenever he is standing about, to make a

hedge of it, until it becomes a habit and the attitude which it induces becomes habitual.

Set exercises *t.d.s.* do not make habits. A complicated series of exercises, if ordered, will be done only at certain fixed times, and the patient will not make of them a habit, as he will of a single simple movement which can be done at all times, anywhere, without preparation, and with hardly a thought. As a matter of fact, the majority of exercises are conceived with the totally erroneous idea of strengthening or developing certain muscles. Postural deformities are not due to weak muscles, but to deficient reflex activity. The object of exercises is to re-educate a reflex, and this is done by voluntary effort constantly repeated until the action becomes habitual or reflex.

There is only one person who can cure a flat-foot, and that is the person who has got it. The patient should be made to realize this, and his active co-operation should be secured. I have been accustomed to say that within limits the cure of flat-foot depends more on the patient's head—that is, his intelligence and co-operation—than on the state of his feet.

It is futile to order massage in an ordinary case of flat-foot or scoliosis. The patient who is having massage, and especially the patient who is paying for it, expects to be cured, and gets no further than that.

COXA VARA: GENU VALGUM.

There are certain other deformities which I cannot help thinking will eventually come to be included among postural deformities. They are particularly the coxa vara and the genu valgum of adolescents, hitherto described as constitutional, idiopathic, non-rachitic, non-traumatic—in other words, their pathology is unknown.

I quite agree that the more carefully one goes into the history of cases of coxa vara, the more often will one obtain a history of some preceding injury. But there still remains a group of cases in which injury can be definitely excluded, and I do not think that anyone claims a traumatic origin for adolescent genu valgum.

We have, then, a condition in which a bone or part of a bone which is normally subjected to great stress and strain from weight-bearing in the upright position, for some reason or other fails to resist that stress and strain, and becomes slowly deformed in consequence. All these cases show also flat-foot or other signs of deficient postural activity.

Now, every functional use of a tissue is in a sense an injury, or at least a stress and strain, to which the tissue reacts by calling to itself an increased blood supply. This is a local vascular reflex evoked through the sympathetic, and it is the normal mechanism whereby increased nutrition is secured to every functioning tissue, including bone. It is the explanation of the increased growth and development of a part which results from use, and conversely, the absence of this reflex is the explanation of the atrophy which results from disuse and still more so from paralysis. It may be taken as the physiological basis of Wolff's law, which briefly states that form and structure are determined by function. There is no evidence of the existence of any specific trophic nerves to the tissues of the body.

Now, if we rid ourselves of the idea of the older anatomists and pathologists that bone is a rigid unalterable structure, and if we regard bone as a living plastic material constantly undergoing changes of absorption, new formation and rearrangement, a structure which meets stresses and strains not by merely sitting under them, but by actively responding to them, calling to itself by reflex action increased nutrition, so that it may strengthen itself against them—in short, if we form a physiological and dynamic conception of bone rather than an anatomical and static one—we shall be able to view these deformities in a different light from that which has hitherto been usual.

We can picture to ourselves a bone suffering from the stress and strain of normal weight-bearing, and calling for that increased blood supply and nutrition which is so necessary but does not come, because for some reason or other the vascular reflex is in abeyance. In such circumstances, instead of strengthening itself to meet the stress and strain the bone simply becomes weaker, because function without physiological adjustment of blood supply, that is, nutrition, is pure destruction.

Thus we begin to see how a functional nervous condition might conceivably bring about such a surprising thing as actual structural alteration and deformity of a bone. For structure is the outcome of function; function is inseparable from nutrition; nutrition in functioning tissues is entirely a question of a co-ordinated blood supply, and the normal mechanism for co-ordinating the blood supply to any part is by means of reflex action through the sympathetic nervous system.

This activity of bone may indeed be described as postural. For, just as a postural muscle is called into activity by impulses arising within itself in response to the stimulus of gravity, so is the bone called into a state of physiological activity by impulses arising within it in response to the stimulus of weight-bearing.

A peculiar interest, therefore, attaches to the evidence which has been brought forward as to the sympathetic innervation of skeletal muscle, and to Sherrington's observation that the activity of the muscular walls of the blood vessels (which, of course, are supplied by the sympathetic) is also postural, that is, it exhibits the same features of plastic tonus—adaptability without change of tension, the lengthening and shortening reactions, etc.—as posturally acting skeletal muscle. These observations go to show that there is a close relation between postural activity of skeletal muscle and the weight-bearing capacity of bone, both being under control of the same nervous mechanism, and therefore liable to be affected by the same disturbances, whether functional or organic.

There is also an anatomical relationship between postural activity and weight-bearing. The internal structure of cancellous bone has been described as a "crystallization of lines of force"—that is, the lamellae are arranged in lines corresponding to the principal stresses and strains falling on the bone. In the trunk and lower extremities, at any rate, these lines are determined by the habitual positions of the bones in relation to the force of gravity in the upright position. These habitual positions are determined by postural activity, and any deficiency of the normal postural activity will therefore cause the lamellae of the bones concerned to come out of alignment with the force of gravity.

Anatomists describe certain mechanisms—for example, the Y-shaped ligament of Bigelow at the hip-joint and the locking mechanism of the knee-joint in full extension—whereby it is claimed that the upright position can be maintained without the necessity for continuous muscular action at these joints. But, as a matter of fact, the upright position is maintained by continuous muscular action, and these mechanisms do not come into action in the natural attitude of standing. It is true that when the muscles of the hip and knee are paralysed, stability may be secured by hyper-extending these joints until the checking action of the ligaments comes into action; but this is quite abnormal. In ordinary standing both the hip and knee are slightly flexed, and they can at any moment be extended or hyper-extended by an effort, but the attitude thus assumed is unnatural, irksome and fatiguing.

Deficiency of postural activity brings the lamellar structure of bone out of alignment with the force of gravity. The natural reaction of the bone is to bring about a rearrangement of the lamellae in accordance with the altered direction of the stress and strain. But this is a slow process involving absorption and new formation of the lamellae, and meanwhile the bone is at a great disadvantage as regards its weight-bearing capacity.

I would put forward the view that lack of resistance, that is, inability to withstand the strain of weight-bearing, in parts of the bony skeleton may equally well be a result of deficient postural activity, as is the corresponding default of the postural skeletal muscles.

Thus, to deficient postural activity of central origin, as already described, we may assign some of the cases of coxa vara, genu valgum, and I may now add the osseous deformity of postural scoliosis, all coming on slowly at about the age of adolescence, and all associated with deficient postural activity of muscle.

CONCLUSIONS.

Postural deformities are due to default of the normal mechanism for maintaining the body in the upright attitude.

This mechanism is a nervous one, for it has been shown by Sherrington that the upright attitude or posture of the

body is maintained by tonic reflex muscular activity (postural activity).

Postural activity is of a special kind, capable of being maintained for long periods without fatigue, and controlled by a special nervous mechanism of its own. It is quite distinct from phasic or voluntary muscular contraction.

There is evidence that the sympathetic nervous system may be directly concerned with the postural activity of skeletal muscle.

The higher parts of the central nervous system—the labyrinth, the cerebellum and the cerebral cortex—have a profound influence on postural activity.

It is suggested that in many cases postural deformity originates as a functional nervous disorder, and that the cause is to be sought in the mental rather than the physical condition of the patient. Attention is drawn to the frequent association of postural deformity with neurasthenia and with a neuropathic family history.

There is a close relationship between the postural activity of skeletal muscle and the vascular reflexes which determine the blood supply, and therefore the nutrition of all functioning tissues, and it is suggested that herein may lie the explanation of the bony changes which occur in postural deformities.

Among postural deformities are included cases of scoliosis, kyphosis, flat-foot, coxa vara, genu valgum, and possibly others—all arising from the same common etiological factor: deficient postural activity in the upright position.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

DIFFERENTIAL STAINING OF CARCINOMATA.

WRITING subject to correction, I have not hitherto noted any record of a histological staining method which enables one to pick out scattered carcinoma cells in sections illustrating very early secondary glandular invasion. It is obviously of first importance to be able to identify early carcinoma histologically, whether primary or secondary, and it is often extremely difficult to ascertain early glandular invasion where there are only discrete or scattered groups of two or three carcinoma cells in the section. The ordinary methods, such as haematoxylin and eosin, fail signally in such cases, the cancer cells being usually indistinguishable from the closely packed leucocytes in such sections. If, however, the section (not thicker than 0.08 mm.) is stained for ten minutes at 37° C. with Mayer's haemalum (British Drug Houses), washed in several changes of tap water and counterstained with Van Gieson's stain (Strangeways's formula) for fifteen seconds, and then dehydrated, cleared and mounted in balsam, it is quite easy to pick out the carcinoma cells individually or grouped in early glandular invasion, for they stain characteristically. The cytoplasm stains a dirty light brown colour and the nucleus a much lighter violet than that of the nuclei of the gland cells proper. The contour of the cell is typical and the eccentricity of the nucleus also aids one, but the point I wish to emphasize as so characteristic is the colour and prominence of the cytoplasm, especially with natural illumination.

If a gland with advanced invasion be cut it will be seen that the cells I have described partake of the same features as those of the growth masses. A little practice enables one to pick out carcinoma cells with ease and comfort. It is hardly necessary to add that the method is of as great or greater value in very early primary growths.

I have found this method invaluable since I first used it, some two years ago, and I surmise that this record will be of interest to fellow workers.

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AN OPERATION FOR RETROFLEXION OF THE UTERUS.

It seems to me that the varied operations on the round ligament which have for their object the cure of persistent retroflexion of the uterus are all open to question with regard to their efficiency. With this idea I have devised

the following method, which, so far as I am aware, has not been described before:

The abdomen is opened just above the pubes a little on either side of the mid-line. At a point on the external surface of the abdominal wall, about two inches from the edge of the wound and a little above the pubes, a ligature carrier of forceps pattern armed with stout silk is made to penetrate. When through the wall the blades are separated a little to widen slightly the aperture made; the carrier is then passed around the round ligament about an inch and a quarter from the uterus. Both ends of the silk are now grasped by the carrier and withdrawn through the aperture at which they entered, taking the silk, which being pulled upon brings out a loop of round ligament. This manoeuvre is repeated on the other side. The uterus will now be found to occupy the normal position. The next step is to dissect up a strip of the aponeurosis parallel with its fibres and at the edge of the aperture made; this strip should be about a quarter of an inch wide and of sufficient length to be passed easily under the loop of round ligament and stitched back in its bed with interrupted sutures. The round ligament is not stripped of its peritoneal covering, which will now line a new canal for the ligament to play in with the movements of the body. The abdomen is closed in the usual way.

With this method the entire length of the ligament is still of use if ever the uterus becomes pregnant. There is no chance of its giving way, and, owing to its proximity to the uterus, its support is permanently maintained. I visited to-day a multipara upon whom I performed this operation in the Gisborne Hospital six months ago, and without any prompting she said: "I have never been so well for years; I do not know myself; I am never irritable." Dr. Bowie, of this town, has since told me that he has performed this operation on four cases with complete success.

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DISLOCATION OF THE RADIUS FORWARDS AT THE INFERIOR RADIO-ULNAR JOINT.

ANTERIOR dislocation of the radius at this joint is perhaps of sufficiently rare occurrence to warrant description of a case, particularly as the lesion was produced as a result of a "back fire" when "cranking up" a car, and therefore constitutes one of the many so-called chauffeur's injuries.

The patient, aged 39, complained of pain in the right wrist from having previously received a blow from the starting handle of his car. When seen there was much swelling round the wrist-joint, tenderness on palpation, and pain on movement. In addition to some ligamentous tearing being present, a fractured carpal bone was suspected, and a skiagram was obtained which revealed a forward dislocation of the radius at its ulnar articulation. No evidence of any fracture in the carpus was apparent, and the wrist was carried forwards on the radius. The triangular fibro-cartilage had obviously been loosened and probably some of the lower fibres of the interosseous membrane were torn, in addition to the anterior and posterior inferior radio-ulnar ligaments. Reduction was not difficult, and full pronation was maintained with the wrist dorsiflexed.

It is now six weeks since the accident occurred, and there is full movement at the wrist-joint, with no undue laxity of the inferior radio-ulnar articulation.

I am indebted to Mr. John Murray for giving an opinion on this case.

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PREVENTION OF INTESTINAL OBSTRUCTION AFTER VENTROFIXATION.

MR. ALEXANDER DON, of Aberdeen, in his article on the prevention of intestinal obstruction after ventrofixation (April 16th, 1921, p. 563), recommends stitching the bladder and peritoneum above to the anterior surface of the uterus after reflexion of a corresponding peritoneal covering of the uterus, thus obliterating the space between uterus and bladder below the fixation stitches.

For years I have simply used a continuous suture to unite the two peritoneal surfaces, uterus and bladder, beginning at the reflexion between uterus and bladder and stitching up to the fixation stitches. The peritoneum is in this position fairly loose, and at the reflexion easily picked up by a pair of forceps. This completely obliterates the space. A number of pregnancies which have followed have been quite normal, as have also the labours, the last woman being delivered before either the nurse or the doctor arrived. There has never been any obstruction, to my knowledge, in any of the cases.

Nelson, Lancs.

R. STEWART, L.R.C.P. and S., D.P.H.