

calcaneo-valgus there should be no further trouble. I have often found that children treated in this way learn to walk earlier than their normal brothers.

OPERATIONS

The correction of the deformity by moulding with the splint is only possible while the bones are so soft that they will yield before an amount of pressure that the skin can bear without sloughing. On cases which have passed this stage I have for some time been operating according to principles that go flatly against the usually accepted teaching. Sir Robert Jones, for instance, says that as much correction as possible should be gained by wrenching and plaster (that is to say, by stretching the soft parts) before touching the bones; and then that as little as possible should be removed. Now it seems to me that a foot that has been wrenched, or one in which the soft parts have been cut or shifted, is in a state of tension that tends towards relapse. Stretched fibrous tissue and, even more, scar tissue produced by cutting tendons and ligaments, when once left free contract with force and persistency, reproducing the original deformity in a more intractable form. But bone, when once its shape is changed, has no such elastic recoil. In consequence I have been acting on the principle that the soft parts should be left untouched and unstretched, while enough bone is removed to allow the foot to be brought into about the degree of calcaneo-valgus possible to the civilized adult. The situation of the bone removed depends on seeing the deformity as I have described it; it is in a quite different place from the ordinary wedge resection of the tarsus, which has such a deservedly bad name. A most important and usually overlooked part of the deformity is that the external malleolus is too far from the ground, and bone must be removed to let this down to its proper position as well as to allow the foot to be straightened. It might be called a "crescent resection" of the tarsus, the base of the wedge removed being of this shape.

The results I have obtained with this operation have modified my opinion, gained from experience of other methods, that the use of open operations in this condition was to repair the effects of other open operations. I am not as sure of its value as I am of that of the splint I have described, but I am inclined to think the principle sound. If anyone should wish to try it the main points to remember are to go up as high as possible in front of the ankle, and not to be afraid of overdoing the valgus by removing the outer part of the os calcis.

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N. Fastuline (*J. Medical (Ukraine)*, 1937, **7**, 1, p. 75) has investigated the bacterial flora of the air at different altitudes in the Caucasian Mountains. He used Mickel's tubes fitted with Janet's syringes. Each test was carried out with the filtrate of 200 litres of air. The mountain air was found to contain saprophytes and no bacteriae of faecal origin. Above 10,000 feet there was a predominance of mycobacteriae over bacteriae. Among the mycobacteriae the author found penicillium and mucor, among the pigmented cocci *Sarcina lutea*, *Micrococcus roseus*, *Micrococcus citreus*, and *Sarcina rosea*, and among the bacilli *Bacterium mycoides*, *Bacterium subtilis*, and *Bacterium mesentericus*.

MODERN METHODS OF TREATMENT
OF CLUB-FOOT*

BY

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In the past the treatment of congenital club-foot has undergone many changes, and in the future it will probably experience others. No generation is ever satisfied with what its forbears have done; this is a right and proper attitude to adopt, otherwise progress or improvement would cease.

Whatever our views as to the pathology or treatment of this deformity, and they are many and varied, it still remains a condition which, however satisfied the surgeon may be, is capable sooner or later of making him appreciate his own limitations; for the orthopaedic surgeon who has treated this deformity over any number of years must time and again have had patients to whose parents he has said, "This child's feet will not relapse," and yet perhaps one, two, or even several years afterwards the patient has been brought to him with the story that the feet began slowly to turn inwards again. You have already listened to an account of the deformity of congenital club-foot in all its aspects. I therefore propose to confine my remarks almost entirely to its treatment.

Some years ago I spent a considerable time upon an investigation of congenital club-foot, and I have not changed my views as to its pathology and aetiology, except that in regard to the former I have realized that the changes in shape of the individual bones of the foot are more marked than I thought at that time.

You probably all know my hypothesis that congenital club-foot is due to a congenital dislocation of the head of the astragalus, that this dislocation is due to an atresia of the socket into which the head of the astragalus normally fits, and that therefore the deformity results from an intrinsic and not an extrinsic cause. I believe this hypothesis is as good as or better than any other, and that it explains more satisfactorily the difficulty we experience in our treatment of the deformity. If the deformity were due entirely to the effects of outside pressure, as is still commonly believed, it should be a simple matter, by exerting a similar pressure in the reverse direction, to correct the deformity and hold it corrected until such time as it was possible for the child to maintain the corrected position by its own muscular power. This I think we must all admit is not in practice what does happen.

From the methods of treatment usually advocated there cannot be any question that in a great many cases the condition is not cured by simple means. We all get cases in which the feet respond to treatment, but we have plenty in which the results are unsatisfactory.

Treatment in the Infant

After a long experience of the method of treatment upon which I was brought up—namely, repeated forcible manipulation of the deformed foot and fixation of the foot in the corrected position with plaster strapping—I have come to the conclusion that it is a poor method in every way when compared with the one advocated by Mr. Denis Browne. It needs frequent repetition several

* Read in opening a discussion in the Section of Orthopaedics, including Treatment of Fractures, at the Annual Meeting of the British Medical Association, Belfast, 1937.

times a week ; it hurts and frightens the child ; it upsets the relations, who regard it as rather brutal, as in fact it is ; it frequently has to be interrupted because the skin of the foot becomes sore ; and, last and most important, the use of strapping to maintain position after manipulation is useless once the child becomes of any size, as the patient is able by the contraction of the muscles to pull the foot round in spite of the strapping.

For some time I have used the splint invented by Mr. Denis Browne, and I find it avoids nearly all these troubles. Perhaps, to begin with, several manipulations are necessary to enable the splint to be applied, but thereafter it can be reapplied without these forcible manipulations, which must and do inflict severe trauma to the tissues of the foot, causing swelling and a synovitis of the joints with ultimate stiffness of the foot as a whole. With this splint the child very soon realizes that it is not being hurt, as also does the mother, and instead of a screaming child one has an infant which gives no trouble. It is a splint by which it is easy to apply the correction gradually, and I think it illustrates one of the great principles of orthopaedic surgery which in the present day of operation and impatience to get results we are apt to lose sight of. I know it is unwise to generalize, but I have myself learnt that, speaking generally, haste in the correction of deformities does not pay, either from the view of the patient or from that of the surgeon. This I believe to be the very great merit of Mr. Browne's method of treatment in the infant. The older orthopaedic surgeons before the war were slow in their methods of treating congenital club-foot, but the testimony of some of the sisters who worked with them was that they, as a whole, got better results than do the present generation.

Mr. Browne on former occasions has deprecated the method of repeated forcible manipulations under an anaesthetic and of fixation in plaster of feet which have not responded to early treatment. With this I am in entire agreement. I have spent many hours manipulating such feet, with very indifferent results. His views are that the foot becomes stiffer each time it is manipulated, and that the muscles of the leg, as the results of long periods of fixation, become more and more wasted. This is certainly true, and once the muscles have become really wasted and hardened they never, in my experience, become supple again or properly developed. If, instead, the foot is manipulated once under an anaesthetic to get it plantigrade and this splint is then applied it is extraordinary how, at the end of a week or ten days, it appears to have softened out ; also the splint can be reapplied without any trouble, a little more correction being obtained by gradually rotating the foot outwards.

Not only do the adduction and the inversion, which are really one deformity, improve, but in addition that most troublesome feature of congenital club-foot, a small drawn-up heel, appears in many instances to descend without any trouble. The child probably, by pushing against the splint, gradually stretches the tendo Achillis.

I have not, I must confess, employed this method long enough to be able to express an opinion as to whether feet thus treated have less tendency to relapse, but it most certainly is the simplest method to employ in the infant and does not have the disadvantages of the others. I would certainly commend it to any who have not so far employed it.

Many surgeons still hold that when the adduction and inversion portion of the deformity in the infant has been corrected the equinus, if it persists, must be dealt with

by a division or elongation of the tendo Achillis. My own view in this respect is that division or elongation of this tendon, however done, does result in considerable muscular wasting, and my experience is that the position of the foot very often cannot be corrected afterwards and that its condition is worse than it was previously.

We have all held that the criterion of cure in a congenital club-foot is "a foot with no adduction or inversion ; the presence of a hollow upon the outer side of the foot in the position previously occupied by a bony mass, the head of the astragalus ; the ability of the child voluntarily to evert and also dorsiflex the foot well above the right angle." As I have said on a previous occasion, even if this criterion is fully obeyed it cannot be claimed that the deformity will not relapse. I still find this to be true. When a deformity does relapse I believe that the correction which had been obtained before must have been a spurious one, and that the deformity had in fact been hidden by a false correction of the fore part of the foot.

We then come to consider the treatment of those deformities which have not been cured by conservative means and require some form of open or bone operation.

Open Operation

The basis of the open operation which I devised depended upon my hypothesis that the socket for the head of the astragalus was too small to allow the head to enter and articulate with it properly ; that in order to enlarge the socket, which was contracted up, it was necessary first to elongate the muscles controlling the alteration in size and then to divide the calcaneo-scapoid capsule, which was also contracted, thus permitting the bony portions of the socket to take up their normal relation to the head of the astragalus and the other bones of the foot. In theory this seemed a rational operation and one which it would appear to be quite easy to carry out.

Actually in practice it is sometimes impossible to achieve what one has set out to do. I have realized more and more that by the time I have come to consider open operation the shape of the tarsal bones, especially the head of the astragalus, has altered more than I originally appreciated. Sometimes even if the position of the scaphoid and os calcis with relation to the head of the astragalus can be altered satisfactorily it will not remain thus, because it is impossible for bones which do not fit each other to articulate in anything like a normal manner.

I am not in a position to give you the late results regarding the patients upon whom I operated originally and upon whom I probably lavished more care and attention, but I can give you the results of the operations I have done since 1929 in the ordinary routine of hospital work. Some of these patients have quite good feet from a functional point of view, but, as is only reasonable, not so good as the ones treated by conservative methods only. There is a very real danger of the foot becoming valgus and boat-shaped if the open correction is easy. Once such a foot has been produced I know of no method short of an arthrodesis that will remedy it. It is impossible when a valgus foot has been brought about by an open operation to correct the condition subsequently by any forcible manipulation. Some such feet I have had to assist afterwards by means of valgus supports. In two cases I have been compelled to fix the foot in a better position by means of an arthrodesis of

the midtarsal and subastragaloid joints because the foot was in such a bad position.

A great many patients upon whom this open operation has been carried out have returned to me months or even three or four years afterwards with a relapsed and rigid foot. In some few instances one or more manipulations, followed by suitable boots and exercises, seem to have restored the position, but in many resort to a bone operation has been necessary to deal with the deformity.

Another thing noticed in the late results of this operation is that the foot very often is much thicker in the midtarsus, and also there is a tendency for a persistent equinus to remain. This does not seem to cause any disability, but it gives the foot a rather ugly appearance. On the whole I think some feet can be improved by this method, but it appears to be very difficult to be in any way certain which cases will be permanently successful.

What has been found at operation upon those feet that have relapsed subsequent to an open correction? The midtarsal and subastragaloid joints were full of fibrous tissue binding the opposing surfaces of the bones together. This fibrous tissue was so firm that it had to be dissected away before the articular surfaces could be identified. It was quite obvious that subsequent to an open correction there must have been little if any movement in the joints. And clinical examination of feet upon which this operation has been performed has demonstrated that there is scarcely any movement. They are always rather stiff feet.

Repeatedly I have found that the scaphoid and os calcis, which at the time of the open operation had been restored to a satisfactory position so far as one could see, had returned to their original relation with the astragalus—the scaphoid on the inner side of the head and the os calcis tilted beneath it.

Bone Operations

I still believe that when all other methods of treatment have failed an arthrodesis of the subastragaloid and midtarsal joints, removing at the same time sufficient bone at these joints to produce a correction, is the best and most lasting method of treatment. It is an operation which gives a very satisfactory foot in a talipes equino-varus the result of an infantile paralysis, and it is the rational operation to perform in the deformity we are considering. I would even go so far as to say that if there is any doubt about doing an open correction an arthrodesis is probably the better line of treatment. Astragalectomy and other piecemeal bone operations should still be condemned.

To conclude, with regard to the vexed question as to whether there is or is not any inward rotation of the tibia I still hold that the real fault is a failure to correct the deformity of the foot, and that osteotomy is simply the production of one deformity to hide the existence of another.

Issued as a special supplement to *The Countrywoman* of August, 1937, is a report prepared by the Associated Country Women of the World on midwifery services in rural areas throughout the world (30, Baker Street, London, W.1, price 3d.). In a brief discussion of the report Dr. Esther Carling compares the state of affairs in America, where in New York State, for example, only 2 per cent. of deliveries take place outside hospitals, with that in France and other European countries, where the avowed policy is to make it safe and possible to have all babies born in their own homes. A mass of information is compressed into relatively short space in this publication.

INSTINCT AND HYSTERIA*

BY

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The study of mental diseases is not only interesting in itself, as a means of helping the patient medically, but is also of scientific importance in that it opens up the most important avenue to a knowledge of the biology of the healthy man and to an understanding of the nexus between psychological and physical phenomena. Typical psychic mechanisms appear in psychopathology in exaggerated relief and can help in the solution of general biological problems. In the same way the thorough study of general biological laws assists in the more profound understanding of psychic symptoms. Thus, formerly we studied how far hypnoid conditions in hysteria might be compared to the phenomena of the so-called "animal hypnosis." In particular we have compared the motor patterns, of hysterical tremors, attacks, stupors, and paralyse to the mechanisms of instinct, the flight and defence reactions which in the animal we call violent motor reactions and the sham-death reflex.

Relation of Hysteria to Animal Instincts

The view that certain hysterical reaction types are in close relationship to animal instincts in general is especially confirmed by the large mass of those types of reaction which centre round the impulsive life. Hysteria originates especially from two main sources: (a) the instinct of self-preservation—in the form of fear and anxiety in relation to dangerous situations—and (b) from all the emotions and conflicts associated with the sexual life. Wishes, struggles, and disappointments of an erotic nature form the main group of experiences which produce hysteria in ordinary civil life, especially in women. The shock neuroses provide another very large group of hysterical reactions—not, however, in the sense that acute fright syndromes, for example, are merely identical with the hysterical neuroses which develop from the frightening experience or from chronic anxiety, but in the sense that both have a close relation to, and dissolve into, each other.

No agreement as yet has been fully reached on the question of the relation between hysteria and the fright neuroses. Even though the acute fright reactions have often been simply labelled as hysteria in consequence of their unmistakable resemblance thereto, nevertheless a sharp boundary line was drawn between them so long as the fright neuroses were only considered as acute, automatic, evanescent, and spontaneously resolved affective reactions; whereas hysteria, on the contrary, was only spoken of when such acute reactions became secondarily fixed through the purposeful intervention of a "will to sickness," a "gain from sickness." That these difficulties are not due to deficient observation on either one side or the other, but arise from the nature of the problem itself, will soon be apparent.

Reactions to Fright and Danger

What reactions do we observe as a direct result of situations which produce fright and danger? The subjects are shaken, tremulous, irritable, and confused; they

* One of three lectures given at the Tavistock Clinic in April.