

Osteotomy generally : with special reference to tarsectomy in advanced and intractable cases of talipes equino-varus : read in the Section for Diseases of Children at the Annual Meeting of the British Medical Association held in Bournemouth, July, 1891 / by John Ewens.

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Osteotomy Generally:

WITH

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SPECIAL REFERENCE TO TARSECTOMY
IN ADVANCED AND INTRACTABLE CASES OF TALIPES
EQUINO-VARUS.

*Read in the Section for Diseases of Children at the
Annual Meeting of the British Medical Association held in
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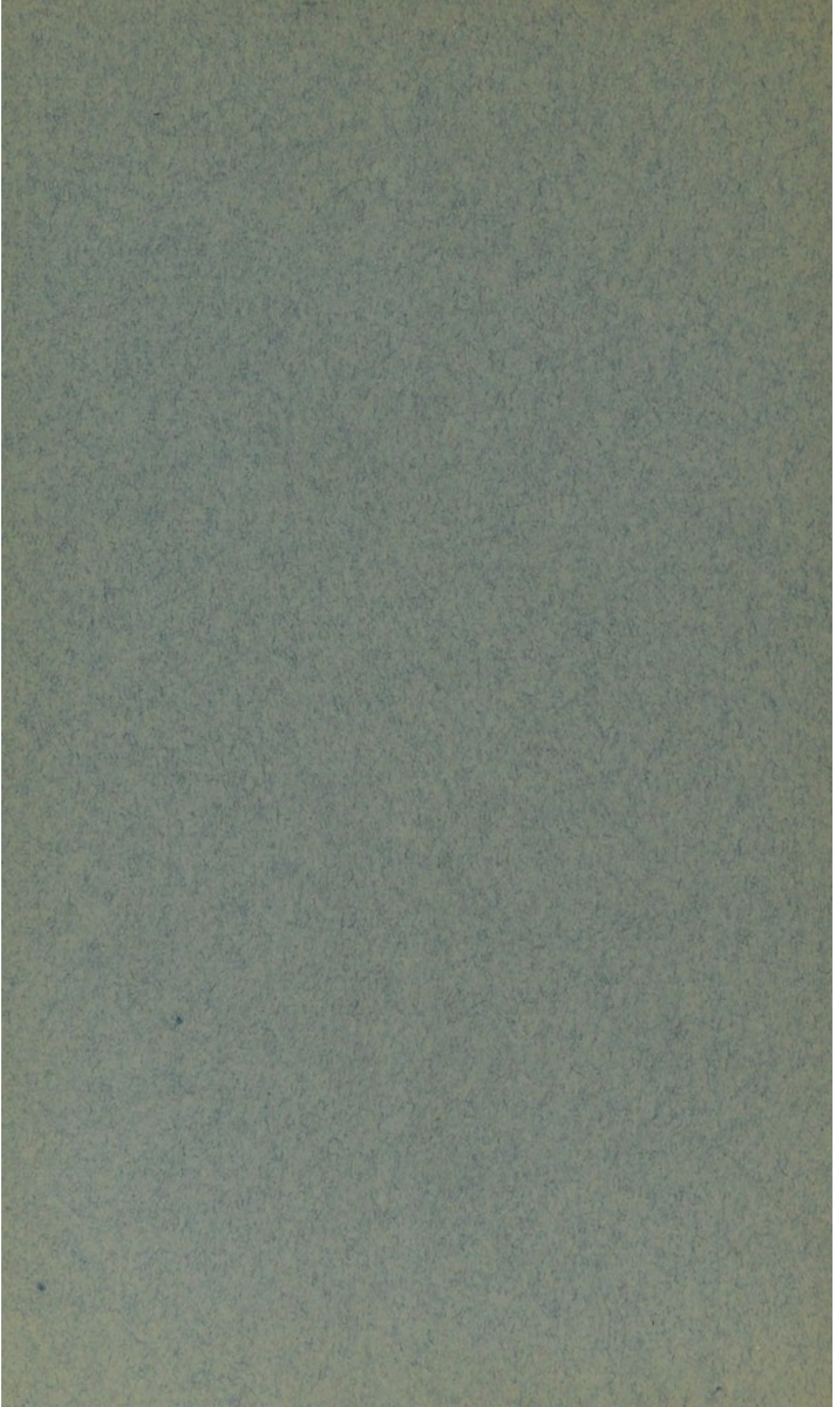
BY

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OSTEOTOMY GENERALLY ; WITH SPECIAL
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ONE of the most remarkable features of the progress of the surgical art in the present day is the rapid advance made in conservative surgery, due to the introduction of anæsthesia and the antiseptic treatment of wounds, whereby (1) prolonged operations can be performed without the dread of pain otherwise involved; and (2) the risks of dangers following operations are greatly diminished, and therefore they are readily submitted to by thousands of persons who would never under other circumstances have thought of doing so.

We are, therefore, as a profession deeply indebted to Morton and Simpson for the discovery of ether and chloroform. To the use of antiseptics in their present improved state we are mainly indebted to Sir Joseph Lister, and although there are now many surgeons who ignore their use, and claim as good results without, yet when we look back twenty-five or thirty years, and remember the dread which compound fractures and wounds of joints inspired, and consider the favourable results obtained by the comparatively rough-and-ready methods first introduced, and still more marked by the more elegant methods of dressing now adopted, one cannot but feel that antiseptics have left their mark upon modern surgery, and advanced conservative surgery especially to a position it would probably never have otherwise attained. Conservative operations are almost necessarily slow in performance, and therefore complete rest and quietude are all-important factors in their successful execution; and the risks of suppuration and pyæmia are absolutely *nil* if antiseptics are efficiently used.

The chief object of my paper is to bring before your consideration the advantages of early operations on congenital or acquired deformities in children, and to show with what comparative ease and safety they can be undertaken in young children, as opposed to, I fear, a rather prevalent opinion that these should be left to a more advanced period of childhood, or subjected for an indefinite time to treatment by surgical appliances of various kinds, meanwhile interfering with the healthy movements of the child at a period of life when vital energy is most active.

I will here quote the forcible language of Mr. Davy in his pamphlet, to which I shall again refer later on: "Let me give an outline of no imaginary case. A poor boy is born into the world club-footed; his infant struggles are more than usually miserable, due to the direction of the surgeon and the misdirection of the nurse. When springtide comes to this cripple is denied the activity of childhood; his apology for sport is but tame acting; he hobbles on, an eyesore to the proud, an object of pity to his neighbours, a distress to his parents, and a nuisance to himself. As time rolls on, the would-be merciful yet hamper him with useless but costly fetters. Our victim is confined by splints, or propped up on crutches, still doomed to lasting deformity, until this helpless child, unfit for work, unfit for play, by the stern exhaustion of persistent failure, is banished from home and relegated to the blank future of workhouse adoption."

To the relief of such cases, gentlemen, I now beg to call your earnest attention, whilst I endeavour, as briefly as possible, to set forth what I believe to be the scientific and logical treatment to be adopted."

The title of my paper includes a range of operations, some of which have long since become established as of necessity and without question, and have been undertaken very extensively by the best surgeons, the mode of operation being varied according to the experience of different operators. I allude particularly to cases of genu valgum and extreme cases of anterior curves of the tibia. In the former set of cases we have Ogston's, Macewen's, and Reeves's operations—all very excellent, and each possessing, in my opinion, advantages, and I might add corresponding risks. In the latter there is the operation of simply dividing the tibia and fibula, with removal of wedge in extreme cases. Occasionally we meet with cases of extreme anterior curves of the shaft of the femur, generally at the junction of the upper and middle third, in which it is necessary to perform osteotomy by a simple incision down on the front of the bone, and with a few cuts with a sharp chisel the bone is easily fractured. This I have done in four cases with the best and permanent results in children about five or six years of age. The best way of maintaining good position is to bring the child's nates down to a board placed perpendicularly at the foot of the bed, and, elevating the limb, make extension by a pulley and weight over the board.

GENU VALGUM.

Operations by Macewen's Method.—The age of patients ranged from 4 to 12 years. With few exceptions both limbs were about equally affected, the angle of flexion being generally about 33° to 40° , due for the most part to elongation of inner condyle of femur, with occasionally slight enlargement of inner side of the head of tibia.

I have frequently tried the method suggested by Mr. Owen of forcibly straightening the femur without success, and I have always had the fear of injuring the knee-joint before me. I need scarcely describe the operation as it is so well known, but in defence of my practice (as observed by Mr. Owen and others) of cutting down on the outside of the femur I wish to point out three advantages:—

1. The femur presents a larger and flatter surface on the outside, so that when it has been cut about two-thirds through it presents only a very small portion to be fractured.

2. The external lateral ligament being shorter than normal offers more resistance and steadies the outer condyle in the effort to fracture the bone, and there is less strain to the joint.

3. It is possible that some of the periosteum of the inner side of the bone may escape injury occasionally, and I have good reason for believing that it not infrequently happens thus, as in greenstick fracture.

It is important to cut through the bone as far as may be judged necessary without removing the chisel, and it is better to cut a little too freely than to strain the joint in useless efforts to fracture the bone, also to keep the chisel directed well forward so as to avoid the risk of wounding the popliteal vessels, and never use the chisel as a lever.

The wound must be dressed antiseptically and put up either on a Macewen's splint, or pads must be arranged to keep the leg well away from the long splint, so as to cause an apparent slight amount of bow knee whilst the thigh is kept well adjusted to the splint.

Upon five cases of genu valgum I have operated by Macewen's original method, namely, by cutting down on the tubercle for the attachment of the tendon of the adductor magnus, and taking out a wedge (apex downwards) from the inner condyle, and forcing it upwards. The operation is by no means easy, and although theoretically it would appear to be more scientific and accurate than the present operation known as Macewen's, as preserving the natural relation of the joint surfaces, and in my cases no ill results followed except temporary stiffness of the joint, yet I cannot say that the deformity was as completely remedied as by the later operation, and in one of these five cases I afterwards divided the femur above the condyles with the happiest effect, leaving the most shapely limb I have ever seen after operation, no projection of the inner condyle being left. These cases were the earliest on which I operated, but I am so well satisfied with the operation usually practised that I shall never perform any other except under very special circumstances.

OPERATIONS ON TIBIA AND FIBULA ALONE.

With two exceptions, I have never done osteotomy for a simple lateral curvature of tibia, having always succeeded with splints on the concave, which is generally the inner, side (bow leg), and bandaged firmly. But anterior curves cannot be thus rectified because of the impossibility of getting points of pressure without risking sloughing of the heel.

Operation.—I make a free longitudinal incision down to the tibia internal to the anterior border, retract the edges, cut through the periosteum circumferentially at the selected prominent point, and cut with a sharp chisel through the tibia at the upper edge of the proposed wedge. When nearly through the bone, fracture it, and then, everting the lower end of the bone, remove with a fine saw a wedge proportioned to the deformity. But this is not always necessary, and in one case—that of an operation on the second leg of a child whose other leg had been previously operated on and a wedge removed—owing to urgent symptoms due to chloroform, the latter stage of the operation had to be omitted, and the limb was afterwards found to be of an equally good shape. It is desirable in very bad cases to divide the tendo Achillis, and

as I have never yet succeeded in fracturing the fibula by manual effort, and it is an obstruction to the proper position of the tibia, I always commence the operation by partially dividing it with a narrow chisel, and then fracturing it with or after the tibia. The results in these cases are most satisfactory. The limb must be swung and treated as an ordinary compound fracture of tibia.

TALIPES EQUINO-VARUS.

The intrauterine development and subsequent history of this affection were so fully dealt with in the most interesting papers read in 1888 before the Glasgow meeting of this Society that any attempt on my part in a similar direction is simply unnecessary and quite foreign to my purpose at the present time, my object being chiefly to combat some objections which have been raised against tarsectomy on the ground of danger and insufficiency, and the argument that the operation is unnecessary under 10 or 12 years of age, and feet can be quite as easily rectified by plaster and instrumental appliances. To this last statement I readily assent up to a certain age, granted that expense and time are not of material consideration; but to the bulk of cases which come under the care of a country hospital surgeon both of these are very important factors in the consideration of the subject, all such being able at most to provide an ordinary steel support to maintain the position of the foot effected by the operation. Complicated machinery with screw and rack apparatus, and pads to guard against undue pressure, would be far too expensive, even supposing the attendants, parents, and others possessed the intelligence needed to regulate these things proportionately, and in country districts where no skilled mechanic can be obtained the thing would be practically useless. Here the quotation read just now from Mr. Davy's pamphlet applies with special force.

And when we consider the time occupied in treating such cases by plaster and the constant tendency to relapse, I think the preference must in every way be conceded to tarsectomy. If a case goes on uninterruptedly well, a plaster casing may be put on in the course of four or six weeks, and in another month light steel supports can be very well supplied. The cut surfaces of the bone after the wedge has been removed soon unite, and consolidation is efficiently established, thereby with ordinary care removing at least one of the conditions favourable to relapse—for example, excess of bony growth. I am informed by Mr. William Adams that the operation as originally designed by Dr. Little, though never performed by him, was first performed by the late Mr. Solly, of St. Thomas's Hospital, in 1854, and consisted in removal of the cuboid bone, and my first operations were commenced with that intention, but I always found it necessary to remove more bone so as to bring the parts into position.

Mr. Lund, at the Glasgow discussion, advocated removal of the astragalus, and he has courteously sent me his pamphlet, being a reprint of a paper read by him at the Birmingham meeting in 1872. His result appears to be very good.

I am indebted to the kindness of his son, Mr. Herbert Lund, for the privilege of showing some casts and photographs of cases recently operated on by himself, which I am sure we shall all admit are very satisfactory.

But in the eleven cases occurring in my own practice at the

Bristol Children's Hospital, as well as four under the care of my colleagues, it has not appeared that the astragalus has been the prominent feature of the deformity, but rather there has been a general overgrowth of bone of the dorsum of the foot, and it seems to me to be the more scientific and practical method to remove the superfluous bone wherever it presents, and I now always observe this rule.

The operation as I perform it is as follows: I first divide the tendo Achillis, after which an incision is commenced in a line with the lower edge of the os calcis, and directly below the external malleolus, and carried forward to the base of the fifth metatarsal bone, cutting through fascia, etc., down to the tendon of the peroneus longus. This must not be cut. A vertical incision from the most prominent point of the dorsum, generally the outer side of the head of the astragalus, meets the other incision about the middle. The flaps must then be dissected up, and latterly, at the suggestion of my colleague, Mr. Dacre, I have followed his plan of dissecting up with blade and handle of scalpel the extensor brevis digitorum, and all parts lying on the dorsum in the line of incision. This diminishes the risk of injury to the dorsal artery, etc. The tendon of the peroneus being then drawn down with a retractor, a wide chisel is applied to the outer surface and border of the os calcis below the outer malleolus, and carried boldly upwards and inwards to the point where I have made up my mind that the apex is to be. The process is then repeated at a sufficient distance forward to include a proper wedge. This generally, but not necessarily, includes a portion of the cuboid. I utterly disregard any fixed rules as to the position and extent of the wedge. It matters little as long as the most prominent point is selected. The chief difficulty in removing the wedge after it has been quite cut through lies in the plantar attachments, but a few well-directed cuts with flat blunt-pointed scissors soon sets it free. After the wound has been well syringed and all bits of loose bone, fascia, etc., have been removed, the Esmarch's band (which I always use) is taken off, and, as soon as bleeding has subsided, horsehair sutures are inserted and the wound closed and dressed with Listerian precautions. The limb is then put up on a back splint with footpiece and side splint, knee flexed and leg swung.

Since commencing my paper Mr. Richard Davy has kindly sent me a clinical lecture, delivered by him in 1883, in which he gives an analysis of twenty-two operations performed by him at ages varying from $1\frac{1}{2}$ to 20 years, all successful except one on a man aged 20 years, who died of septicæmia. Mr. Davy operated on the infant at the urgent desire of the mother. His next youngest case was aged $3\frac{1}{2}$ years, and I am glad to find my opinion in favour of early operation so entirely in accord with that of so eminent an authority. The operation as performed by Mr. Davy is the same as that I have described, except that he now uses a fine saw instead of a chisel. I have seen the saw used, but prefer a fine sharp chisel as less disturbing to the parts, and admitting of more accuracy of application. But I think it matters little which is used. Each operator must be guided by his own experience.

It is somewhat curious to notice the proportion of single and double talipes cases occurring in the practice of different surgeons. Mr. Davy met with only one double case out of twenty-one patients. Out of ten cases admitted into the

Bristol Children's Hospital five were double, making in all fifteen operations.

I have also been favoured with a pamphlet by Mr. W. Thomas, of Birmingham, advocating the same method of operation, and confirming my view as to excision of the cuboid not being sufficient to admit of good adjustment of



Fig 1.—As admitted.

the parts. He removes also the thickened skin and bursa, which undoubtedly may form a source of septic infection. He is also disappointed with the general results of syndesmotomy, on which I will now add a few words. I have tried it in three or four cases prior to the major operation, carefully putting the feet up in plaster within a few days of operation, but after several weeks we seemed no nearer success

than before, deformity remaining the same, and my colleague, Mr. Dacre, also tried it in a case with similar result. This operation is in itself by no means a trifling one (in one case extensive hæmorrhage from the plantar vessels occurred), and even if possible to restore the foot to a normal position, it is obvious that a triangular gap, proportioned to the



Fig. 2.—As discharged.

amount of deformity, must be left between the bones thus separated by the division of the ligaments. How is this filled up? Must not some amount of weakness and consequent "flat foot" result? I cannot say, but theoretically it would appear so. This result cannot occur by removal of wedge from dorsum, as fairly accurate adaptation can be obtained, presuming that the proper proportion of wedge—the

apex being well arranged for previous to operation—has been removed; and I must admit that I have made the mistake of not taking a sufficiently large wedge in one of my earliest cases, the left foot requiring a second operation. It is better to take away rather too much than too little bone, and let the wedge be complete and broken up as little as possible. As a rule, the parts removed will be found to be portions of calcis and cuboid, with the head of the astragalus and scaphoid. It has also been suggested to remedy the deformity by fracturing the tibia and fibula above the ankle; but this appears to be creating one deformity to remedy another, and must surely render the bones liable to fracture on very slight injury (Dr. Ogston, at Glasgow, 1888). I here append woodcuts of one of my recent cases before, and several weeks after, operation. The child was 6 years old. (See Figs. 1 and 2.)

Dangers of the Operation now to be Considered.—Of fifteen cases of tarsectomy by myself and colleagues, I am happy to say we have no fatal case to report. It would be too much to say that I have never met with any cases causing considerable anxiety, and in two or three instances suppuration has taken place; yet this has usually been traceable to some cause not necessarily due to the operation, and where doubtless some antiseptic precaution has been overlooked. These cases have all occurred in my own practice, and I do not expect such results in the future, having, I believe, detected the flaw. It is most important to remove hardened skin by means of glycerine and liq. potassæ, with constant soaking in carbolic wet lint.

Cases of talipes, as far as my observation goes, occur in children not naturally of a strumous constitution, and therefore the dangers which would ordinarily ensue in an operation involving suppuration amongst the tarsal bones are very much diminished, and I have never seen the patient's life threatened, either in this or any other osteotomy, which, however simple (for example, of the tibia), may occasionally suppurate.

And here I have much pleasure in stating that out of twenty-nine operations for genu valgum and curved tibiæ and femora, performed by myself and colleagues in the Bristol Children's Hospital within the last three and a-half years, and as large a proportionate number during the past ten years, not a fatal case, nor one causing special anxiety, has occurred.

Age at which the Operation should be Performed.—Some speakers at the Glasgow discussion went so far as to condemn the operation in any case under 12 years of age. This would practically remove it from the list of surgical operations on children, as I presume all children's hospitals limit the age of admission to 12 years; but I quite fail to see the *rationale* of allowing so unsightly a deformity to exist for twelve years if every other recognised method—tenotomy, plaster, apparatus, etc.—either have failed or are otherwise inadmissible, on the ground of time, expense, etc. I do not now deal with the question of tenotomy in early life. No educated surgeon of the present day would, I imagine, allow an infant to reach the age of 3 months without either tenotomising every contracted tendon, or putting on a suitable apparatus; but it becomes a serious question how far one would be justified in allowing a child to grow up beyond the age of 3 years, when it is evident that the bony deformity is so great as to defy

rectification by free tenotomy, etc. Surely the removal of superfluous bone so as to admit of proper position being obtained is preferable to long-continued and injurious pressure by plaster, or perhaps inefficient instrumental appliances. The longer the deformity exists the worse the habit of walking acquired by the patient, and the greater the difficulty of overcoming the bad acquired action of the adductor muscles of the thigh. It would seem to me as reasonable to postpone an operation for hare-lip to the age of 5 or 6, on the ground of the parts being more developed, and the operation easier of performance, or to leave a squint uncorrected for an indefinite time.

The consequences in adult life of neglect of these cases are most serious—atrophy of leg, degenerated muscles, shortening of limb, thickening of skin and enlarged bursæ on dorsum of foot, which, although Nature's effort to remedy the evil, is quite unequal to the emergency. The results are frequently cutaneous and bursal inflammation, followed by most intractable ulceration, producing lameness, and often total incapacity for work amongst the labouring classes of the population. Several such cases, as recorded by Mr. Adams in his classical work on *Club-foot* (p. 146), have resulted in the necessity for amputation as the only remedy for their constant troubles. But this is an extreme measure to which both patient and surgeon hesitate to submit or to urge, on account of the risks to life thereby involved. How much better that an operation should have been performed in early life! But a much more serious trouble often arises, to which I will refer in the graphic language of the writer just referred to (p. 147): "There can be no doubt that the existence of any physical deformity frequently exerts a most important influence on the moral condition and character of the individual afflicted, materially modifying the natural disposition and altering the habits of life. This is, perhaps, more conspicuous in the congenital deformities, and hence it is most frequently in connection with talipes varus that such results have been observed. It has been generally supposed that the existence of congenital talipes varus exerted an unfavourable influence upon the highly susceptible mind of Lord Byron. In more than one instance I have myself witnessed some of the worst of these moral effects in individuals who have, on account of their deformity, withdrawn themselves from the society in which, by birth and education, they were intended to move, and by their accomplishments they would have adorned."

This sad result, I presume, is mainly due to the fact that congenital deformities are always more or less associated with the neurotic temperament in the mother or father, and perhaps both parents, and participated in by the child, the deformity constantly reacting upon a preternaturally susceptible mind.

After the age of 10 or 12, I fear in a large number of cases it would be difficult to persuade the patient to submit to an operation, and I know of nothing more distressing to the eye of a surgeon than to see an otherwise healthy man walking about with a deformity which might easily have been remedied; and there are few surgeons of experience and observation who have not repeatedly met with cases of congenital talipes and other deformities in children whose mothers did not attribute the trouble to a shock received by them during

the early months of pregnancy. That such things do not often occur does not militate against the general argument.

I have a patient, mother of seven children, who has a very bad genu valgum, with accompanying, and no doubt consequent weak ankle. Most bitterly has she on more than one occasion regretted that she was not operated on in childhood, and it required my strongest assurance to prove to her that it was no fault of her mother, simply because in her childhood such operations were unheard of, and would have been unhesitatingly denounced by most surgeons of that day.

In conclusion, I would venture most emphatically to assert my opinion that curable deformities are a disgrace to humanity and an opprobrium to surgery, and most earnestly to express my hope and strong conviction that before the expiration of another ten years no child of 15 years of age will be met with suffering from talipes, genu valgum, or any of the deformities the treatment of which (however imperfectly) I have had the honour of bringing before the notice of this meeting.