

tion on the part of the physician, but I have usually found that a nurse could handle the tube satisfactorily after a little experience and with careful directions.

(To be continued.)

## HALLUX VALGUS.

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IN the past three years there have appeared two\* papers on this subject by American authors. One of these discussed the subject thoroughly; the other dealt chiefly with the operative treatment. Perhaps there is nothing more to say now that is worth while in this connection—at least not before some new method of treatment has demonstrated its superiority over those already existing. However, it seems to me that there are two features, not sufficiently considered by those who have discussed the subject, that deserve recognition. One of these refers to the etiology of the trouble and the other concerns the most serious objection to that method of operative treatment which the majority of surgeons regard as highly satisfactory. If the following observations upon etiology are accepted, there can be no ground for the employment of certain of the methods of operative treatment advocated. When one regards the long list of surgical procedures that have been proposed, but little reflection is needed to see that there are more methods suggested than there are possible variations in the lesions of hallux valgus. At the most, this condition is merely a deviation of the great toe away from the median line, which deviation is accompanied by the formation of a bursa in a goodly proportion of cases, and certain other static disturbances in the foot, incident to it, all of which are painful and may be more or less disabling.

To meet this simple condition Metcalf has cited 15 different operations†. It would seem that there should be a single, simple method capable of meeting the surgical condition, applicable to all cases needing operative treatment. Such a procedure should be based upon a recognition of the etiological factors in the cases, as well as upon the physical conditions to be met by the operation.

Let us look for a moment at the anatomical conditions present in a hallux valgus. In the first place, it is not uncommonly the manifestation of an hereditary tendency. The type of foot which lends itself to the development, under the right sort of stress, of this deformity is probably what is inherited—not the deformity itself. One rarely sees a hallux valgus in a patient who has not the evidences of a "broken"

anterior arch, meaning by this a broad foot at the level of the metatarsal heads, a foot that is capable of considerable compression when the anterior arch is squeezed together behind the heads of the first and fifth metatarsals. There is often a flattening behind the metatarsal heads instead of a slight convexity. Usually the foot is arched in both directions at this point. There is often a great deal of callus formation beneath the anterior arch of the foot. There is frequently to be noted a tendency for the proximal ends of the phalanges to be depressed into the sole of the shoe, the angle which they make with the metatarsals being nearly a right angle. The great toe is apt to rotate to such an extent that the weight is borne on the side of this member rather than upon its plantar surface. Most conspicuous of all is the tendency to redness and bursal thickening over the inner aspect of the great toe and occasionally over the head of the fifth metatarsal. Occasionally these become infected and the bursa suppurates. The great toe may overlies the two adjoining toes in extreme cases.

Associated with these static disturbances in the great toe are to be noted corns and callosities on other toes which in themselves are painful and seriously impede locomotion.

In many cases the patient has observed that the anterior arches of the feet have spread, necessitating the purchase of wider shoes, and associated with this spreading has been the development of hallux valgus. The common explanation of this deformity is that it is caused by short shoes. That it is a shoe deformity I think there can be but little doubt; whether a short shoe is an adequate explanation or not is a matter of some doubt.

Most shoes, particularly women's shoes—and it is among women that this deformity is most common—narrow from a point about opposite the first metatarso-phalangeal articulation forward to the tip of the great toe. A similar curve is observed on the outer side of the foot from the fifth metatarso-phalangeal joint forward. There is a good deal of variation in the relative lengths of the phalanges, the metatarsals and even of the other tarsal bones. On the other hand, for a given length and width of foot a ready made shoe varies not at all in a given style in the distances from the points where the shoe begins to narrow toward the toes. If, therefore, the foot, from the point of view of the shoe-dealer, calls for an 8-D size, for example, it may well be that a person with abnormally long metatarsals may have the metatarso-phalangeal joint carried from a quarter to a half inch further forward in the shoe than the point where the shoe begins to narrow and yet the shorter phalanges may not carry the tip of the toe any further forward than is consistent with a well-fitting shoe, so far as length of foot and length of shoe are concerned.

Add to this the fact that the anterior arches

\* Metcalf: BOSTON MED. AND SURG. JOUR., AUG. 29, 1912.

Henderson: JOUR. A. M. A., OCT. 16, 1915.

† Metcalf, *loc. cit.*

in these individuals spread laterally and the thrust of the foot as one rises on the toes tends to crowd the "fore" foot toward the front of the shoe, where it is narrowest; you have factors operating which combine to produce this deformity and its accompanying static disturbances.

Now let us notice what one finds in the examination of these cases of hallux valgus and what one observes to be the pathological changes in the head of the bone when it is removed at operation. Also one needs to study the gross

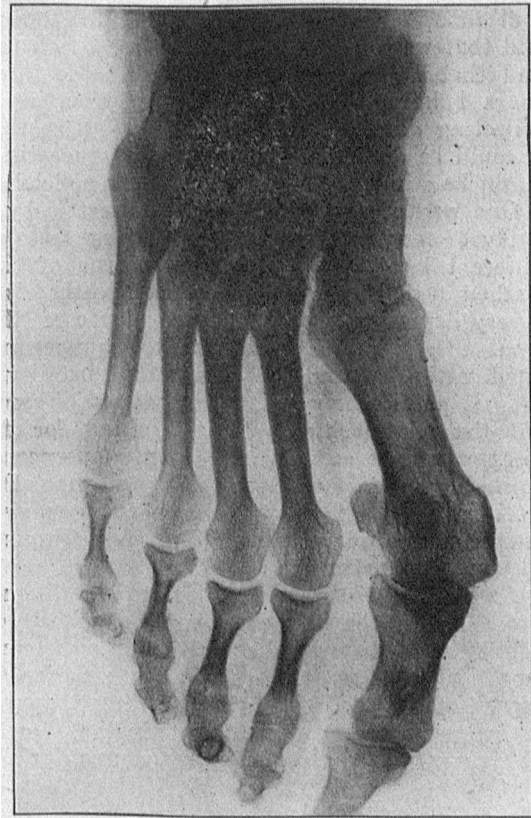


FIG. 1. Note the position of the phalanx in reference to the metatarsal, as well as the dislocation of the sesamoids. There is no trace of hypertrophy of the metatarsal head. A considerable portion of the articulating surface of the metatarsal head is never in contact with the phalanx.

anatomy of these cases both in the beginning and well-advanced types. To palpation and inspection there does not seem to be any gross osseous thickening over the head of the fifth metatarsal even in cases where there is marked deformity.

The x-ray examination does not reveal any appreciable thickening of the metatarsal or phalanges. Except where there have been some osteo-arthritic changes in the bone due to a diathesis, I have seldom observed any enlargement of the metatarsal heads. The conspicuous change which one notes in these specimens is an atrophy and oftentimes an erosion of the inner articulating surface of the metatarsal. It is this surface that is not apposed to the corresponding

articular surface on the phalanx and this lack of apposition results in the alterations of the bearing surfaces above mentioned. Figure 1 illustrates this very well, for the proximal end of the phalanx has slipped well off to the outer side of the distal end of the metatarsal and there is no enlargement of the end of the metatarsal. In some of the most pronounced cases that I have observed, when capacity for correction by forcible adduction of the great toe is still present, there is no undue prominence of the metatarsal head when the deformity has been corrected.

These facts, I think, pretty conclusively show that hallux valgus is not an exostosis of the metatarsal head or its articulating phalanx. If it is not this then it is merely a lateral deviation of the great toe at the outset, accompanied by stretching of the inner capsular attachments and later on by structural alterations of the articulating surfaces no longer in use, dependent upon lack of function.

If these premises are correct as to etiology, and anatomico-pathologic changes are as they have been stated and their cause is properly interpreted, their treatment should divide itself into two phases: First, where the deformity can be manually overcome, an attempt should be made to correct it by mechanical means, employing night splints to adduct the toe and a toe post in the shoe for day use. Manual stretching and proper shoes are also needed. One of the most extreme cases of this deformity kept the toe wholly correctible by daily forcible stretching. When the deformity was overcome there was not the slightest excrescence on the inner aspect of the metatarsal head.

The second phase requires operative treatment. If there is no exostosis then none of the operations contemplating the shaving off of a lateral sliver of bone from the metatarsal and phalanx are logical surgical procedures. The presence of an intermetatarsium is so rare that its removal as a cause of hallux valgus needs to be remembered only as an occasional necessity. Tendon transplantation is scarcely more worthy of serious consideration.

The operation that makes the strongest bid for first place is the old Hüter operation. The removal of the head of the metatarsal and preservation of the phalanx satisfies the demands of the probable anatomic cause referred to above when discussing the etiology, viz. the fact that the metatarsal may be too long. This operation shortens it and permits conformity to the ready-made last. It equalizes pressure in the metatarso-phalangeal joints by squaring up the unapposed articulating surfaces.

This procedure, when accompanied by resection of the bursa, when enlarged, meets all the anatomic and pathologic conditions presented by the situation and has only one objection raised against it: viz. that the chief buttress of the anterior arch is weakened by the

operation and occasionally this may be true, though in the majority of instances the functional results obtained after this operation are excellent.

To those who have had experience with the method of Hüter, the tendency of the phalanx to ride up after the removal of the metatarsal head is familiar. This results in leaving the toe out of contact with the floor when the patient stands. This may be avoided in most cases by using a metal splint after the operation, so designed that the proximal end of the phalanx is prevented from riding up by an arm that exerts pressure on it from above at the same time that a flange makes pressure against the outer side of the first phalanx of the great toe in such a direction as to keep the toe in a straight line with the long axis of the shaft of the metatarsal. This is made of German silver, can be sterilized and put on at the time of the operation and worn through the two weeks that weight bearing is not permitted, and longer if necessary. It is unreasonable to suppose that one can remove from the joint a piece of bone three-eighths to one-half inch in length without its being missed from the cavity of the articulation. Time must be allowed for the capsule to shrink down to fit the new situation and some restraint must be enforced upon the bones entering into the makeup of the joint so that cicatrization and contraction of the capsule may go on symmetrically and uninterruptedly.

After about four weeks' convalescence a patient with the Hüter operation can generally walk with a fair degree of comfort and will be permanently relieved.

There seems to be no flaw in the chain of evidence which places upon etiology and pathology the responsibility for the justification of surgical treatment by means of the simple procedure of Hüter. It is, in my opinion, unnecessary to complicate this operation by turning in the bursa between the end of the metatarsal and the adjoining phalanx. For the reason that the cause is frequently, if not always, an anomalous development of the tarsus and metatarsus it seems irrational to resort to wedge-shaped excisions of portions of the metatarsal which do not result in shortening the bone at all. The disturbance of the support of the anterior arch by a bone operation upon the first metatarsal head, which has constituted the one serious objection to Hüter's method and has led to the suggestion of some other procedures, may be obviated by the employment of a post-operative splint.

There is probably no surgical procedure practised which brings more comfort than that which relieves one who has suffered for long years from the discomforts of a hallux valgus.

## THE CHOICE OF A CLIMATE IN CASES OF BRIGHT'S DISEASE AND NEPHRITIS.\*

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THE questions are frequently asked: "What climate is best for a person with Bright's disease or nephritis?" and "In what way, for better or worse, does climate affect the kidneys?"

In a general way the impression seems to be that damp and cold climates are unfavorable and that warm and dry climates are beneficial; and that is probable true. For the last ten years I have been more or less interested in collecting data bearing on this subject so that it could be definitely shown just what localities might be advised and why they are beneficial.

One way of approaching this subject is by a study of mortality records, comparing those of different localities. The first criticism of this method is that "the registration of deaths gives a very imperfect view of the prevalence of disease. . . . It is fallacious to assume any fixed ratio between sickness and mortality." This is particularly true of infectious diseases, but the relationship is a little closer for the diseases we are considering. In the absence of morbidity records we have to rely on mortality statistics, and, of course, choose those coming from communities where there is some adequate system of registration.

And right here we meet with various difficulties. One of the first concerns the estimate of population. It is well known that in some communities there is an overwhelming desire to overestimate population; this, of course, apparently lowers the death-rate, and in the absence of an accurate census it leads to irregularities in the ratios, independent of other factors in the case. In rapidly growing communities where the boom spirit prevails, this should not be lost sight of. Then, again, the nature of the population makes a great difference. The more settled communities have a larger proportion of people over 50 years of age; but where migration is a factor in adding to the population, it averages younger and chronic degenerative diseases are not so prevalent.

The occurrence of kidney disease doubtless has to do with personal habits, such as the use of alcohol, and with occupations such as mining, etc., with worry, hurried eating, especially of meats, and lack of exercise.

Without much intention to make a choice, excepting that the localities should be well distributed, I noted on three different years the combined mortality from Bright's disease and nephritis from statistics of twenty-five cities and obtained the following results, for which I am

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