the abdomen, which is heard with a whirring, rasping sound, pretty much like the saw, or a planing machine. This gives rise to pain and œdema of the leg; retraction in order to favor it; and to incapacity; but not necessarily, or rapidly, to destruction of life. If these cases can be reached early, they may be cured, frequently, by compression; and that is the most judicious form of treatment to apply. If they are small and very accessible, they may be laid open, and the artery and vein thoroughly tied.

Original Articles.

THE TREATMENT OF HALLUX VALGUS.¹

BY JOEL E. GOLDTHWAIT, M.D., OF BOSTON.

It seems hardly necessary for me to offer an apology for presenting a paper upon this subject, when it is considered, that comparatively few persons go through life without suffering to a greater or less degree from this affection, or from conditions which are directly the result of it; and when, furthermore, it is considered that while the deformity itself, as well as the resulting conditions are truly surgical affections, with definite modes of treatment for their control, still the large majority of the cases seek relief from their troubles at the hands of chiropodists, men of very little, if any, medical or surgical training.

While the title of the paper deals only with the treatment of Hallux Valgus, nevertheless, as the etiology has a decided bearing upon the treatment, a certain amount of time must be given to its consideration.

While the disease is essentially a disease of adult life, nevertheless, clinically, a congenital form is recognized, as with Hallux Varus, although it is of much less frequent occurrence. The deformity in these cases may be due to muscular contraction, or to an abnormal development of the bones, so that one articular facet is longer than the other.

Flat-foot is undoubtedly responsible for a certain number of cases; the reasons being purely mechanical ones. Instead of the step being completed with the weight of the body squarely upon the ball of the great toe, it is thrown upon the inner side, thus stretching the internal lateral ligaments, and pressing the toe forcibly against the others. Aston Key² describes the same condition by attributing it to excessive weight received upon a weak tarsus and metatarsus from overstanding, the great toe being gradually forced outwards by the oblique bearing of the foot, on the inner plantar surface, when the arch of the foot has given way.

In the large majority of cases, however, the condition is directly attributable to the wearing of improper shoes; either too short, too narrow, too pointed, or some form that does not give as much room for lateral spreading of the toes as is possible at the metatarsophalangeal articulations. Hueter³ mentions the shoes and the shoemaker as the sole cause of the deformity; as do also Bradford and Lovett.⁴ With either of these the resulting deformity is the same; the toes are crowded together and the great toe pressed against or drawn over or under the others. The deformity is

necessarily increased in walking or standing, as there is distinct widening across the ball of the foot. To quote from Bradford and Lovett: "The foot is not stretched at its extreme end, and it inevitably becomes in a degree conical in shape on this account, being broader across the ball of the foot than at the tip end. In the act of walking the foot necessarily slips inside of the boot to a certain extent, and if the shoe slips backwards and the foot forwards, a certain amount of pressure will come upon the inner side of the end of the great toe."

In the treatment of this condition it is rarely the deformity itself which causes the patient to seek advice, but, rather, some of the conditions which are the direct result. As the toes are crowded together, the folds of skin at the sides of the toe are pressed against the edges of the nail. These become irritated and sensitive, then hypertrophy as the result of the constant irritation, and later on, ulceration; and the painful "ingrowing nail" results. In the treatment of this the correction of the Hallux Valgus is necessary.

As the deformity develops and the toe is drawn more and more to the side, the head of the metatarsal bone is more and more uncovered, and there is constantly increasing pressure against this point, which normally should be protected. As a result, the skin thickens and becomes calloused; and the exposed end of the bone from the constant irritation becomes enlarged. This, at first, is chiefly due to periosteal thickening; but, later on, bony deposits replace and increase the enlargement, particularly at the age when the deposits common in chronic rheumatoid arthritis are seen.

While these changes are taking place upon the exposed side of the bone, on the inner side the articular surfaces of the phalanx and the metatarsal bone are crowded together. This produces atrophy of the articular cartilages, and, if continued, the bone becomes exposed and true caries may result.

On the exposed side of the foot, as the thickening at the head of the metatarsal goes on and the skin over it becomes harder, a bursa forms between the two, which may or may not communicate with the joint. Under the continued irritation of walking this bursa enlarges, and later on becomes inflamed,—the so-called "Bunion."

Preventative treatment is, of course, the best for this condition, and consists in keeping the feet in the natural position from infancy; the arch of the foot should be maintained, especially in persons who are obliged to stand a great deal, and above all, proper shoes should be worn. After the deformity has occurred, the first part of the treatment consists in the removal of the cause; nothing like a tight shoe should be thought of, a wide and easy one being worn, and in connection with this stockings of good length should be worn. Key suggests having shoes made with a separate compartment for the great toe.

For the correction of the deformity various methods are in use. One of the simplest consists in wearing a piece of felt or roll of cotton between the first and second toes. This presses the great toe into place; but it has the disadvantage of leaving a considerable space between the two toes, so that when the pad is removed it is easy for the deformity to recur.

A method suggested by Sayre⁵ consists in using a

¹ Read before the Boston Society for Medical Improvement, October 9, 1893.

² Guy's Hospital Reports, 1836.

³ Gelenk-Krankheiten, p. 342.

⁴ Orthopedic Surgery, p. 753.

⁵ Orthopedic Surgery, p. 754.

⁶ Ibid., p. 141.

linen or buckskin cot made to fit the toe, to which is attached a few inches of elastic webbing, and to this, again, is attached a piece of adhesive plaster to go around the heel. This is retained in place by two other strips of plaster which encircle the foot. This makes a comfortable appliance for use, especially in the acute cases.

Various appliances have been suggested, which would exert more force for correction than the Sayre device, such as hard-rubber, gutta-percha, or pasteboard splints, to which the toe is bound, so as to pull it back into place. In this class is the Bigg's apparatus which consists of a piece of steel with an opening cut so as to avoid pressure on the bunion, which is fastened to the inside of the foot and the toe pulled up to it. The difficulty with all of these has been to adjust them in such a way that they could be worn without great discomfort.

FIG. 1.

FIG. 2.

FIG. 3.

In order to get something that could be tolerated in walking, and at the same time be efficient in correcting the deformity, I have been experimenting during the summer, and after personal use, offer the two forms of apparatus that are shown in Figures 1, 2 and 3. Both can be worn inside an ordinary shoe, and at the same time exert pressure enough to hold the toe in the correct position. This pressure can be increased from time to time, if it seems necessary, by simply rebanding the splint. The appliance is so fitted that no weight comes upon it in walking, the ball of the toe and ball of the foot both being free. The band which extends up on to the dorsum of the foot should be carried back far enough so that the painful joint is

avoided, and should then be curved forward nearly to the base of the toes, so that flexion of the foot is not restricted. The long arm which follows the side of the foot in the splint (Figs. 1 and 2) makes it possible to exert more force for correcting the deformity, and also serves to more perfectly immobilize the splint than is possible with the appliance Fig. 3. Both splints are made of light spring steel, and should be carefully fitted before being tempered. Leather straps encircling the foot hold the appliances in position.

At times there is so much bony change that splints are not sufficient and some bone operation becomes necessary. If there is comparatively little inflammation about the joint and the bone is not very much changed in shape, a wedge-shaped piece may be removed from the head of the metatarsal bone as near the joint as possible and the toe drawn into place and secured by splints and a fixed bandage until the wound has healed. The bursa should be removed at the same time.

FIG. 4.

I wish here to show the casts of the foot of a patient upon whom I operated, in this way, about two months ago at the Carney Hospital. The patient was a woman about thirty-five years of age, with the marked deformity (Fig. 4, *a*) of the great toe which had existed for many years. A wedge-shaped piece of bone was removed from the head of the metatarsal, and the position corrected, as is shown by (Fig. 4, *b*), which was taken a few days ago.

At times, the change which has taken place in the head of the metatarsal bone is so extensive, and the bone is in such an unhealthy condition that the wound does not heal after the osteotomy, and a troublesome sinus remains. In other cases the thickening is so great that it is readily apparent, that even though an osteotomy were performed, the prominence at the joint would remain and cause trouble. For these cases the operation described by Hueter,⁷ which consists of complete excision of the head of the metatarsal bone, is to be performed. The base of the phalanx, with its muscular attachments, is not disturbed. After the removal of the piece of bone the toe is drawn into place and the wound loosely closed, or is allowed to granulate. The bursa should be removed at the time of the operation, as with osteotomy. The results after this operation have been very satisfactory, leaving a straight toe and a very useful foot.

Tenotomy is suggested as a form of treatment, but the cases must be very rare that can be corrected wholly by this method.

Painful inflammation of the bursa may result from the constant irritation, and this may go on to suppura-

⁷ Gelenk-Krankheiten, p. 345.

tion, and from this a more or less extensive cellulitis may develop. With this there is apt to be marked sensitiveness of the joint, rendering motion very painful, and for this condition rest and poultices or cold compresses are necessary, with possibly incision later on. The joint should be protected by bunion plasters or rings of saddler's felt, and a large soft shoe (or one made after the pattern of the Chinese shoe) should be worn.

Whatever be the operation or whatever the treatment, the importance of wearing proper shoes should not be lost sight of. The sole should be wide, so that the foot may have abundant room to spread out in walking or standing, and there should be plenty of room for the toes to be extended in the line with the metatarsal bones.

APPENDICITIS.¹

BY A. WORCESTER, A.M., M.D.

(Concluded from No. 21, page 509.)

LET us now consider the treatment, and the reasons for the continued disgraceful diversity of opinions regarding the question.

Many writers upon the subject have apparently never seen a case of appendicitis. Having recognized its sequelæ at either ante-mortem or post-mortem examination of the abdomen, they imagine that they have recognized the disease itself. No other evidence of this general ignorance need be mentioned than the custom in medical journals as well as in the lay press of reporting deaths from appendicitis. Now nobody ever did die of appendicitis nor ever will. For the appendix being a perfectly useless organ, even its annihilation cannot injure the body except indirectly. But, just as the most harmless fellow citizen, who never would be missed, after his death, if his corpse be not decently removed, may endanger the life of the community, so our innocent little appendix after its death is apt to become an offensive source of trouble in our midst. And to treat with salts a patient in whose abdomen lies a putrefying appendix (as was lately recommended by a distinguished surgeon who maintained that once dead the appendix had done all the harm that it could do) is as reasonable treatment as it would be to depend upon flushing with sea-water the leaking sewers of a house where a cholera corpse was left lying in state.

There is, however, nowadays, excepting perhaps in the State of Maine, no theoretical opposition to the prompt removal of a gangrenous appendix. The question is as to the propriety of removing the inflamed appendix before the gangrenous stage is reached, or rather before the existence of gangrene shall have been confirmed by the inception of peritonitis or of a localized abscess. There could not be two sides to this question, were it not for the unfortunate fact that some still think themselves able to discriminate in cases of appendicitis which ones will eventuate in gangrene; or think themselves at least able to determine just when in any given case the inflammation assumes a gangrenous character. To this conceit should be ascribed the continued terrible mortality from the sequelæ of appendicitis. For, even admitting that a few experts have this extraordinary ability, which I deny, there is even

so no safety in the ordinary practitioner's fooling himself with either his own or his consultant's guesswork. The physician who undertakes to treat his cases medically until gangrene occurs, and then to shift all responsibility upon the surgeon, will often find that he calls in the surgeon either a day too soon, to his own mortification, or, if a day too late, to his patient's.

If those who believe that they themselves have acquired the skill to distinguish at the onset of the disease the mild from the fulminant variety would only remember by what experience such supposed skill has been acquired, it does not seem possible that they would advise the inexperienced to follow in their footsteps. Yet this is one effect of their teaching, and the only other logical deduction is the necessity resting upon all more modest practitioners of putting their patients to the expense of sending at once for the assistance of these would-be specialists.

Feeble attempts have been made, it is true, to inform the profession how to differentiate the sure-to-dowell from the sure-to-do-badly cases. But in these attempts no two authorities agree, and, indeed, no authority of this year agrees with his own last year's deliverances. Apparently, the present position of these would-be diagnosticians is that one must be guided not by intelligible rules, but by impressions, which may be acquired only by long experience in watching cases go well, or from bad to worse, as fate may decide. Such experience apparently leads to the specialty of knowing nothing about appendicitis, however great proficiency may thus be acquired in dealing with the after-effects of the disease.

It is, however, not only that no one has as yet been able to formulate any serviceable method for making this very desirable diagnosis of the varieties of appendicitis without abdominal section, but it is also to be borne in mind that in the very nature of the problem no such method need be expected. For there are many conditions frequently attending even the apparently mildest forms of appendix inflammation, all of which are unrecognizable from the outside, yet any one of which being present makes it certain that in that particular case either a perforation or a gangrenous sloughing off of the organ will occur. Thus who can reasonably hope for ability ever to tell with what kind of micrococci an inflamed appendicitis is loaded; or how thin its walls have become, and at what hour the perforation will occur; or in what position the appendix lies, and the direction in which its foul contents will then be shot?

If we are only to stand by with salts and sympathy and close observation in these cases, all of these awkward questions must be satisfactorily answered, or there will be more funerals; and, until such questions can be satisfactorily determined, it is the plain, unavoidable duty of the medical attendant in every case of appendicitis, and as soon as the diagnosis is made, to put his patient under surgical treatment. An hour's unnecessary delay in so doing is inexcusable, if not criminal, negligence.

This, I am well aware, is not yet generally acceptable doctrine to the profession.

It is easier to understand the position of the physician than it is that of the average surgeon as regards this duty of immediate surgical treatment. The physician sees more than half of the cases, which perhaps, may be of appendicitis, do well under medical treatment; and where death or other grave disaster ensues

¹ Read by invitation before the Essex South District Medical Society, September 19, 1893.