the erect posture, and that racial and climatic influences are not potent. Coast fishermen and labourers standing barefooted in water or mud are usual victims. Their posture, liability to skin inflammation from changes of temperature and checked secretions, and spanemic state from lowly nitrogenised food and malaria, afford all the conditions favourable to lymph production, stasis, and blockage. Elephantiasis is more frequent in Ireland than in England, and with us factors like those just named exist. The evidence seems complete that this hypertrophy of every tissue arises from over-supply of lymph, over-produced or stayed in its flow. Pathological changes in some other lymph-abounding parts are somewhat analogous—for example, recurrent tonsillitis leaving much enlargement and macro-glossia. Phlegmasia dolens again presents some likeness, differing however in its acuteness, non-recurrency, and the entire resorption of the effused lymph.

If posture has, as contended, much to do with the production of elephantiasis, elevation, friction upwards, and compression with elastic bandages, should be hopeful measures during the stage of inflammatory oedema.

Since the above was written, Mr. Hutchinson's last fasciculus has been published. That profound pathologist states: "As favouring the production of elephantoid conditions, it is almost essential that the part affected should be pendulous, or, as in the case of the lower extremity, at a hydrostatic disadvantage in reference to its circulation."

OPERATIONS UPON THE FOOT VIEWED FROM A MECHANICAL STANDPOINT.

By BRIGADE-SURGEON C. H. Y. GODWIN,
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ONE of the advances of modern surgery is illustrated by the manner in which useful portions of the foot may be saved both after injuries and in disease; and so much attention has been given to this conservative treatment of the foot, that the operations performed by surgeons have come to be various in their nature, but all dominated by one thought—namely, "the least possible sacrifice of parts," or, in the language of Mr. Bryant, "that no more of the body should be removed than the necessities of the individual case require." With such principles to guide us, I was somewhat startled by reading in a work called "*Artificial Limbs and Amputations*," the following statements.

"It is better to remove the entire foot than to perform any such operation as Hey's, Lisfranc's, or Chopart's, for in all these the heel is left, but in front of the heel remains a portion of the foot of greater or less length which is absolutely useless, and is very much in the way of any mechanism which may be devised with the purpose of restoring artificially the tread that is so necessary for natural walking. These operations through different parts of the foot should, therefore, become obsolete from a mechanical standpoint."

"The foot is," the author says, "a lever with its trio of essentials, of which the ankle-joint is the fulcrum, the tendo Achillis is the representative of power, and the tread the recipient of the weight. If the tread is lost or incapable of action, then the trio is dissolved, and the lever no longer exists; the foot ceases to be of further service, is an impediment, and is best removed."

"The tread of the foot depends upon the great toe as a whole, not only on the ball of the great toe, but also on its continued phalanges. As a rule, therefore, removal of the great toe, whether with or without its metatarsal bone, ruins the tread of the foot. If all the toes are removed, the tread of the foot is lost, and experience has shown that it is better therefore to remove the whole foot."

"Whenever the natural foot cannot be preserved in such intactness as to act perfectly as a lever of which the tread, ankle-joint, and tendo Achillis are respectively representatives of weight, fulcrum, and power, it is better to excise it, and replace it by an artificial lever, with correct representations of these parts."

"The best stumps for the application of an artificial limb are afforded by Syme's or Pirogoff's method."

The principle involved in these remarks is that in the case of injuries and of disease of parts of the foot, instead of merely removing the injured or diseased part, the surgeon should remove the whole foot if it is a case where the natural tread would be spoilt, cases involving the fourth and fifth toes with their metatarsal bones not being here considered.

This seems to be an extreme measure, involving a practice and a principle difficult for surgeons to accept; it is one,

also, in which I should think the patient should be consulted. For example, in crushes of the fore part of the foot, including, perhaps, all five toes; or, again, in cases of disease necessitating, for instance, the excision of the first metatarsal bone, could it be right to remove the whole foot because no complete mechanical appliance can be fitted to the remaining stump? In a case that occurred last year, I removed the great toe for necrosis, and afterwards the metatarsal and internal cuneiform bones of the same foot for caries, the patient recovered, the foot was not greatly deformed, yet he had lost the natural spring of the proper tread of the foot, though he could get about with facility. Now this man was content, I think, with his deformed foot, as he could walk upon it without any expense attending any artificial contrivance. But supposing his social status to have been different, and his private means ample, would the removal of his foot have been in any sense proper without his own concurrence?

It would seem that operations done to suit mechanical apparatus and not surgical necessity must always be operations more or less of convenience, and the case would then formulate itself something in this way. An operation is necessary; it can be done by removing a part only of the foot, but it will leave the patient with an odd-shaped and deformed extremity, upon which he will, doubtless, be able to walk, but to which no perfect artificial aid can be fitted; on the other hand, if he have the whole foot removed, a more or less perfect substitute can be fitted which will, both in progression and in appearance, be like a natural foot. A difficulty here at once presents itself in cases of severe injury. Say, for example, that of an officer shot through the foot. A calm review of the case by the patient is impossible, and he gives himself up to the surgeon in all confidence that the best will be done for him. A Hey's or a Chopart's operation would meet the case, but the surgeon knows that if this is done the mechanician will subsequently tell the officer that he cannot give him an artificial foot, but that if the surgeon had only performed a Pirogoff or a Syme, then he could give him a more or less perfect substitute; yet I apprehend if such operation had been done, it might have been considered a very extreme method, and certainly would have been a course directly opposed to the axiom of "the least possible sacrifice of parts."

In the poorer classes of society, to remove the whole foot by performing a Pirogoff or Syme when a Hey or a Chopart would suffice would, I think, be culpable on the part of the surgeon, as all artificial mechanical apparatus is expensive to buy in the first instance, and expensive to both repair and replace, and patients can usually get about very fairly upon the stumps formed after partial operations upon the foot. For the more perfect apparatus the more extensive operation may be necessary, but I would submit that it should not be done, even in the case of the wealthy, without the full consent of the patient, given after a proper explanation.

NOTES ON STROPHANTHUS.

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SINCE Professor Fraser introduced strophanthus as a valuable cardiac remedy, it has been much taken up by clinical observers, and various results have been from time to time recorded. In connection with clinical observations, notes of experimental work may prove interesting and useful. The following is a summary of the chief results of a series of experiments carried out by me at the Berlin Pharmacological Institute, with Dr. Langgaard's co-operation. A full account, with interpretations of the results, will be given later on. For simplicity, the drug's action may be considered in relation with the various systems separately, beginning with the heart and circulation.

In frogs, large doses send the heart into a tetanic spasm, preceded by an initial vigorous action. Smaller but toxic doses strengthen the contractions at first, and produce an irregularity in rhythm before the beats are reduced in number by one-sixth. The ventricle contracts firmly at each systole, and has an increasing tendency to disallow a full relaxation, so that the heart fills less and less at each diastole. In cardiac tracings one sees a steady rise of the foot of the curve from the base line. The sinus presents an increasingly gorged appearance. There is no gradual slowing of the pulse, but soon the ventricle shows a peristalsis, as if a cramp was passing over the cardiac muscle, and the moving of blood in the ventricle seems very much like the writhing of worms. At last the ventricle stops in systole, and is quite small beside the gorged sinus. Once the spasm of the ventricle begins, there is complete closure of the apex, and this firm contraction travels