affection is, both macroscopically and histologically, a cicatrix. A probable factor in the prolonging of the irritations and inflammations set up by wounds and bruises at this point (which I have never seen mentioned by any writer on the subject) is the chigger, *S. penetrans*, which seems to have a predilection for this particular spot, especially if, as is so often the case, the skin be cut or torn. As to the fatty and atrophic changes in the amputated toe I use the words of McFarland, that their "true cause is not determined; it may be trophic or it may depend on local cicatricial formations."

TUBERCULOSIS AND PATENT MEDICINES.

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Since the beginning of the present campaign against tuberculosis a vast amount of literature bearing on the subject of preventive measures and cure in regard to the disease has been distributed among the laity. Besides what has been distributed by those desiring to educate the public, numerous articles have appeared in magazines. Almost every writer dwells on the point that there is no medical cure for tuberculosis and everything is laid aside for the so-called outdoor treatment, which all admit is the most important part of the treatment for tuberculosis when properly administered.

In our anxiety to educate the public on the subject we overlook the result of our therapeutic nihilistic statements, which often leaves the poor victim of tuberculosis convinced that a physician can give him no aid, as it has been acknowledged that there is no cure for consumption. In his fight for life and health he naturally turns to those who "promise" him relief. He eagerly reads every advertisement that comes his way, and tries one "remedy" after another, for, with the consumptive, while there is life there is hope. We do not have to go far to see the results. When one shark has got all the money he can out of the victim another is ready to pounce on to him with a "new cure." In this way a great percentage of the vast army of tuberculous patients becomes a revenue to the "patent-medicine" shark and the advertising quack, with his "sure-cure" and fake testimonials. That percentage is increasing every day through our means of false education, and the advice of the attending physician is set at naught, because patients have been pre-educated and taught the false doctrine that outdoor life is all that is required and "the doctor can do nothing to help cure consumption."

During a conversation recently with a prominent pharmacist he made the statement that sales in patent medicines had fallen off 50 per cent. in the last three months, and incidentally remarked that he seldom sold certain preparations except to consumptives. "They will drink any old thing so long as it is advertised to cure consumption." Now, on the one hand, we are endeavoring to educate the public in regard to the dangers of patent medicines and their uselessness, while, on the other, in trying to educate the masses as to the dangers of spreading infection and the best means to cure a certain disease, we are driving a certain class of individuals into the folds of the "patent-medicine" vendor and the advertising quack.

To be sure, we have no specific remedy for tuberculosis to the exclusion of every other remedy or measure. Nor have we for any other disease. What would be the

result in a case of tetanus were we to rely on a few injections of tetanus antitoxin without a knowledge of its action and how to use it in the different stages of the disease or in suspected tetanus infection? What would be the mortality in diphtheria were we to simply administer a dose of diphtheria antitoxin and then leave the patient to do as he deemed proper? Antitoxin has a specific action in diphtheria, but notice the anxiety of the attending physician and the special care he takes of his patient for several days, watching for the various complications which may occur; ready to check them if they appear.

Other acute diseases, such as pneumonia and typhoid fever, are caused by micro-organisms, and we have no specific remedy for them, but we do not preach broadcast over the land that there is no medical aid that can be given to patients suffering from such diseases. That these individuals require the care and advice of skilled physicians is a fact that none will dispute.

Tuberculosis is a slow disease, often requiring years to destroy its victims. It is also a disease with a tendency to recovery, if recognized early and properly handled, and during its long course the patient needs the advice and care of the skilled physician until the disease is arrested, and then supervision is required for some time after.

What does a layman suffering from tuberculosis know about recurrences, aspiration pneumonia, pleurisy with effusion, empyema, etc.? He does know that when certain of these conditions occur in the course of his disease, that he feels worse, and, if he be one who has lost faith in his physician through our newer education, he straight way goes and "fills up" on some dope containing opium or alcohol, perhaps both. We all know the results.

Climatic resorts to which consumptives flock seeking a return to health are a bonanza for the advertising quack and "patent-medicine" vendor. The stock argument of these sharks is that members of the medical profession have no cure for tuberculosis, and that physicians acknowledge this, while each of these "quacks" claims to have some "great" secret remedy discovered by some "eminent" man and that it is a "sure cure." The poor consumptive is only too ready to grasp at any help that may be offered him, and in the present condition of things these are the only men who "offer" anything, so far as a great many of the public see.

The high percentage of "cures" or arrested cases in sanatoria does not depend on the patient getting better air or nourishment than can be had elsewhere, but on the constant supervision of the patients by skilled physicians and the proper administration of therapeutic measures suited to the requirements of the individual patient.

Up to the present time only a small percentage of those suffering from tuberculosis have been treated in sanatoria in this country, and the balance are scattered over our broad land in all conditions and stages of the disease, numbers of them vainly hunting for some one to hold out a hope of relief. Is it any great wonder that the uneducated or falsely educated easily fall a prey to the advertising quack?

It would be well for the community at large if some of our therapeutic nihilists would turn their talents in some other direction, and, if they wish to write for the education of the laity, write on some subject which the laity may understand and be benefited thereby.

The medical profession, as a whole, is an educated body and will eventually work out the therapeutics of tuberculosis, as it has in other diseases. In the mean-

time individual physicians will use the knowledge and skill they possess, as they have always done, for the welfare of their tuberculous patients and the community at large, teaching hygiene and prophylaxis and guiding their patients to renewed health.

SURGICAL REPAIR OF INJURED NERVES.*

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The principles of nerve suture are so intimately connected with degeneration and regeneration of peripheral nerves that a brief review of the histologic process involved may not be inappropriate. The method of regeneration of a mixed nerve has been the subject of much discussion, and even now there is no view that receives the general sanction of neurologists. The Wallerian or continuous theory, which claims that regeneration of the axis cylinder occurs from the central stump only, is being somewhat discredited. Recent researches tend to confirm the discontinuous theory or some of its modifications. Huber and Howell, in 1892, and later Bethe of Strassburg, have shown quite definitely by numerous experiments that in young animals regeneration of an injured nerve may be practically complete without any connection with the central end. In older animals regeneration without connection with the central stump also occurs, but is imperfect. Schütte,¹ after an exhaustive review of the literature, corroborates this and maintains that degeneration always occurs after division of a nerve, no matter how accurate the approximation or clean the wound, though degeneration and regeneration may proceed simultaneously. As would be expected, the destructive effect of suppuration increases degeneration in the central end. While Schütte concludes that central connection is not necessary to regeneration in a peripheral nerve, it is true that such connection with the so-called trophic center must sooner or later be made in order to preserve the nerve in a healthy condition. Of course, there can be no physiologic function without this, no matter how perfect the anatomic repair may be. It is also true that regeneration is more prompt and more nearly perfect when the peripheral and the central ends are united than when they are separate.

It has been shown by a number of investigators that if a severed regenerated nerve is again cut, degeneration will take place in the distal segment, but the segment between the first and second cuts will not degenerate to any marked extent, though it has been entirely separated both from the cord and the peripheral segment. There seems to be no satisfactory explanation of this phenomenon, but its occurrence shows that neither the ganglionic cells of the spinal cord nor the peripheral nerve endings are essential to regeneration—a fact that might prove valuable where there had been multiple injuries along the course of a nerve.

In view of the constant degeneration of the peripheral segment of a divided nerve, it is somewhat difficult to explain the early return of function in many cases. Thus, Victor Horsley² mentions a case of suture of the ulnar nerve followed in twenty-four hours by return of

sensation in the little finger. Peterson³ reports a case in which the sciatic nerves of a dog were used to bridge a defect in the ulnar and median nerves in man with return of sensation the day after the operation. Two weeks after the operation, sensation was almost complete and the natural color of the hand was restored. There are many other reported cases following a somewhat similar course. Victor Horsley says they may be explained as follows: If a nerve is cut and the freshly divided ends are united, two excitable masses of nerve protoplasm are brought into contact, and one may conduct stimulating impulses from the other just as when two freshly divided pieces of muscle are fixed together excitement of one piece will produce contraction of the second by transmission of the electric energy which caused contraction of the first piece. For a few days after suture of a nerve the excitability of the nerve protoplasm remains active, then it gradually disappears as a rule, though occasionally it is permanent.

SYMPTOMS.

The symptoms of an injured nerve depend to some extent on the character of the injury. Complete aseptic division of a mixed nerve results in abolition of motion and sensation in the area supplied by this nerve and in simple atrophy, but no trophic disturbance, such as glossy skin or blebs, results. If, however, the lesion is an irritating one, trophic symptoms may appear, though the destruction of the nerve is only partial. Such disturbances occur after suppuration involving a nerve, or the gradual encroachment of a tumor or callus, or after constant pressure from a dense cicatrix. Pain is not present if the destruction of the nerve is complete and of a non-irritating nature. When the whole nerve is not severed, or if the lesion is of an irritating nature, pain may be severe and is due to the abundant supply of sensory nerves to the nerve sheath, which are not only excited by the injury, but stretched by the resulting vasomotor paralysis along the nerve. Electrical reactions, either galvanic or faradic, depend on the ability of the nerve to functionate to some extent. A nerve that has completely degenerated can no more convey electrical stimulation than could a fibrous cord, yet the fact that such stimulation fails to produce a contraction does not necessarily mean the complete absence of all nerve fibers, for some may exist, yet be so few in number and so feeble in conducting power as to produce no appreciable reaction.

TIME OF OPERATION.

The time which should elapse after traumatic paralysis of a nerve before operation for its relief is a question of much importance. B. Sachs⁴ says three and a half months after facial palsy is too soon to consider operation. Dr. Hammond mentioned the case of a boy who developed facial palsy after a mastoid operation, and, without any attempt at nerve suturing, motion in the affected muscle was first noticed 15 months later. Henriksen⁵ thinks it unwise to wait over a month if there is no improvement. Others advise waiting as long as 18 months before operating. Much depends on the character of the injury. If the nerve has been divided by a clean cut, as after a stab wound, and primary union has resulted, the surgeon would be justified in waiting 12 or 18 months for the normal functions to return; but if the injury was a crush, or if suppuration resulted,

* Read before the Southern Surgical and Gynecological Association, Louisville, Ky.

1. *Cent. f. allgemeine Pathologie*, vol. xv, p. 917.

2. *Practitioner*, August, 1899.

3. *American Jour. Med. Sciences*, April, 1899.

4. *THE JOURNAL A. M. A.*, vol. xlv, p. 1142.

5. *Lancet*, April 18, 1903.