prevent the straps from pinching the opposite axilla, but it is quite easy to secure the straps from c and d by crossing them under the opposite axilla and over the shoulder.

If a number of splints are to be made, it is well worth while making a templet arm consisting of 18 in. of 4 in. round pole, into which a piece of inch plank to represent the forearm is mortised. By making the mortise 7 in. deep the templet can be adjusted to suit any stature from 5 ft. 3 in. to 6 ft. 2 in.

AN ADJUSTABLE AND STANDARDIZED SPLINT FOR THE TREATMENT OF FRACTURES.

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CURRENT literature, and the large variety of apparatus exhibited at the recent exhibition at the Royal Society of Medicine, impress on one the need for improvement in the methods of overcoming the difficulties encountered in war in the treatment of compound fractures of the limbs. These difficulties have taxed the ingenuity of surgeons.

Three things have to be considered in the circumstances—the immediate treatment at the seat of war; the transport to the base hospitals, and the treatment at these hospitals.

The greatest difficulties seem to have been in connexion with the treatment of compound fractures of the lower limbs. Several essentials are required for a splint for this purpose. Simplicity and efficiency are the first requisites. The perfect splint must be capable of maintaining the limb in a fixed extension and immobilization, and it must be a skeleton splint, to facilitate dressings without disturbing the position of the splint. If to the above requirements are added adjustability, adaptability, and standardization, and the quality of being rapidly fixed, all the needs of an ideal splint are satisfied.

The Thomas splint, as advised by Mr. Robert Jones, is the simplest and most efficient that has yet been thought of, but the more elaborate and complicated the modifications of this splint, the more they are removed from simplicity and efficiency. Observation of Mr. Jones's hospital practice impresses two things on one—first, the remarkably successful results attained, and secondly, the great simplicity of the appliances used by him for that end, all elaborate and complicated apparatus being conspicuous by their absence.

I have found that the splint which I am about to describe fulfils all the requirements of a complete splint. Its ready applicability to any particular case by a simple adjustment gives it a special value under all conditions. It is practically the Thomas splint, which is made completely adaptable. It is adjustable to any size limb and can be adapted to either the right or the left side. Being made from one pattern and in one size, it is therefore standardizable. The ease of application of the splint, which takes a few minutes, is a most important matter for the consideration of the hard-worked surgeon who is obliged to cope with a rush of work. The wounded can be transported with the greatest possible comfort and safety under the circumstances. A great difficulty in the immediate treatment, and transport, of these cases is overcome by the application of this splint.

The illustrations of the splint explain its construction, and no elaborate description is needed.

The truss ring is made of malleable iron, open in front, so that by bringing the open ends together, or separating them, it can be adjusted to the required size. Two tubes are attached to the ring with sufficient play so that the ring can be altered to any angle required to suit the right

or the left side. The lower portion of the splint consists of bent rod iron; the arms of the bent iron are inserted into the corresponding tubes, and by simple telescoping can be fixed by a screw in any position required to suit the

length of the limb. Attached to the lower end of the splint there is a rest, which when turned down raises the limb to any angle required; it will be an advantage in transport, and when not required may be folded up, for it has the shape of the limb and does not interfere with the dressing.

The splint which I have attempted to describe in this short article has been examined by Mr. Robert Jones, who has been good enough to allow me to mention the fact that he personally approves of it.

A NOTE ON THE ELECTRICAL TREATMENT OF DISABILITIES DUE TO WOUNDS.

BY
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It is a truism to say that electricity has a very distinct and useful place in the treatment of those disabilities which follow wounds involving joints, muscles, tendons, and nerves, but it is not sufficiently recognized that the correct application of the kind of current best suited to the condition to be treated is of essential importance. It cannot, of course, be expected that surgeons, in addition to the mastery of their highly technical work, should have all the details of so rapidly advancing an art as electrotherapeutics at their finger-tips, but if the aim of electrical treatment in these injuries be kept in view, it will not be difficult to indicate to the patient the nature of the treatment he requires.

I am moved to write this owing to the considerable number of patients I have seen who have been given electric baths for local injuries to the limbs. How the passage of the constant current or the uninterrupted sinusoidal through a patient could influence such conditions for good or ill I am at a loss to imagine. Such currents often have a good general effect on metabolism. That is all. Some local effect on the molecules traversed by the current there may be; indeed, so far as the galvanic current is concerned, there is undoubtedly some effect, but while we see the results in some cases—for example, of neuralgia—we cannot say to what they are due.

When we come to consider the interrupted currents we are on much surer ground, and there is no difficulty whatever in seeing how their effects are produced.

Whether the injury has affected joints, muscles, ligaments, nerves, or all together, as is perhaps most frequently the case, the object sought is to increase the blood supply to the part, and having done that, or whilst doing it, to contract the muscles of the part so as to drive this increased supply through all the tissues. If this object be thoroughly attained, pain and stiffness will decrease, muscles which have partially lost their function will regain it, torn tendons and ligaments will heal, and the best result obtainable will be achieved in the minimum of time.

To attain these ends we have a considerable number of means at our disposal. We can bake the limb in an electric or gas oven, first wrapping it carefully in towelling to absorb the sweat which would quickly scald the skin if allowed to remain on it, or we can use the high candle-power lamp, or diathermy. As a matter of convenience I use as a rule a 3,000 candle-power lamp, giving an

exposure of twenty minutes or so. In the treatment of joints, however, I prefer diathermy. It seems on the whole to do a little better, and as the greatest heat is developed midway between the electrodes, it should theoretically be more efficient. After twenty minutes, then, of either radiant heat or diathermy a rhythmically interrupted electric current is applied. Of the rhythmically interrupted currents we have—

The faradic as used in the Bergonié apparatus.

The sinusoidal, interrupted by such a device as the Lewis Jones interrupter.

The static wave current.

The static induced current.

The Bergonié apparatus produces very efficient muscular contractions. It is a little troublesome to adjust. The interrupted sinusoidal is a very useful and efficient current. The static induced current penetrates very deeply and gives rise to strong contractions. Any static machine will give them of sufficient penetration for the purpose. The static wave current requires a machine of high efficiency. As a rule, ten minutes of the static induced or twenty minutes of any of the other currents is given at a sitting.

Usually there is very definite and early improvement; my experience is that during the first week of daily treatment the patient is able to detect it, and the increased confidence inspired doubtless helps to increase the effects. I append notes of a few cases:

CASE I.

A man wounded in the shoulder in April last. On July 13th the wound was healed, but he could not use the arm owing to pain and stiffness. There was wasting of shoulder muscles chiefly, but extending also to the arm and in less degree to the forearm. The static wave current was applied to the muscles of the shoulder for ten minutes and to the biceps for other ten. He had fifteen treatments. Improvement was marked from the first. He discontinued treatment to enter a munitions factory, having then complete, but of course not perfect, use of his arm.

CASE II.

An officer, wounded in the right foot in September, 1914, had treatment by massage and electric baths without improvement. The condition on April 19th, 1915, was as follows: Wasting of right calf, $\frac{1}{2}$ in. less as compared with left. Pain in instep and great toe on walking with two sticks. Bad limp. On walking, great toe dorsally flexed and patient cannot then bend it. The treatment was light to the foot for twenty minutes; static wave to the sole of the foot for fifteen minutes; and static sparks to the joint and muscles of leg. He had twenty treatments, and discontinued to rejoin his regiment; he walked much better without a stick, but still limped. There was no pain, but the limb was weak. The great toe behaved normally.

CASE III.

A private, wounded at the back of the arm, at the junction of the lower and middle thirds. He was operated on, but afterwards could not extend the third, fourth, or fifth digits, nor flex them when extended. There was wasting of the interossei and hypothenar eminences. When the hand was forcibly opened there was a dragging sensation along the ulnar flexors. He had been treated by electricity (a portable faradic coil?). The treatment instituted was static wave current to the scar, and static vacuum tube discharge to the muscles. After eleven treatments there was marked improvement, and the patient returned home.

CASE IV.

A bombardier wounded on September 27th, 1914, two inches above the elbow-joint, through the soft parts anterior to the humerus. When seen on February 16th, 1915, he could not bend the index and middle fingers beyond a right angle with the palm, and there was numbness of thumb palmar surface and the first and second digits, and loss of tactile sensation. Treatment was by static wave current over the wound, and static vacuum tube discharge to muscles and skin. After eight treatments he was very much better, could flex the fingers fully, and had increased power in the hand, but sensation was not improved.

These cases are samples of a moderate number treated. Some fail quite unaccountably to benefit, but they are the exception.

An officer was wounded on the outside of the thigh. There was loss of sensation on the outside of the leg and foot, most on the dorsum of the foot. When seen he had deep-seated pain in the front and the outer side of the thigh and leg. Pressure on the scar caused local pain. I expected that this case would do well, but failed to afford any permanent relief.

TYPHUS IN SERBIA.

BY

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As a sequel to Dr. Maitland's notes on the epidemic in Uskub, reported in the *BRITISH MEDICAL JOURNAL* of August 21st, the following observations, gleaned from a much more limited experience of the disease at Vrnjatchka Banja, may be of interest.

Admission of Patients.

It was found essential that the hair of the head and pubic region should be cut short (and in some cases shaved) and then treated with paraffin oil or unguentum hydrargyri. Even then fresh broods of lice made their appearance. The patients were washed in bed, being in various stages of collapse. At the time I was in Vrnjatchka Banja the typhus barracks had no bath-room accommodation.

The Disease.

The majority of patients were Austrians, and, as Professor Morrison pointed out recently, the mortality amongst them was noticeably greater than among the Serbs, owing probably to their being prisoners, of poor physique, and not accustomed, like the Serbians, to live on "pork and beans."

I thought on the whole that the more intense the rash the graver the prognosis—generally the malignant type of case. I noticed also that the rash appeared fairly commonly on the palms of the hands—a fact not often alluded to in the textbooks—generally in the form of faint discrete macules. It seemed to bear no relation to the gravity of the disease.

As a rule the fever fell by lysis, as Dr. Maitland remarked, with, occasionally, "kicks" on the temperature chart; this is contrary to the usual teaching. Some of us thought that the pulse was slowed out of proportion to the temperature. Although I noticed this from time to time it did not seem to be a general rule.

The initial symptoms may be like influenza, as in the case of two of our nurses who contracted the disease; they had aches and pains all over, frontal headache, and pain behind the eyes. The drunken look about the eyes is very characteristic; hence the diagnosis could often be fairly safely made before the appearance of the rash.

When we first took over the fever *Barraques* pulmonary complications were common, several of the cases dying of a rapid form of bronchopneumonia. Later, as the difficulties in nursing were surmounted, the infections of the lung and parotid gland became less and less frequent. It seemed to me at one time as if the typhus-pneumonia were contagious, as I had side by side, not in the same stage of the fever, three cases in whom the lungs were simultaneously affected.

Deafness was frequently present, and one nurse suffered from it for a long time after she returned to work.

I had only one case of melanuria, in a nurse well over 40; this occurred about the twelfth day, and caused some anxiety, especially as the liver was much enlarged. She rallied, however, and about the sixteenth day it had completely disappeared, and the temperature and pulse were normal.

I saw one case of hemiplegia in the sister of a Serbian general; it came on suddenly during the disease, and lasted some days. The patient recovered from the typhus and from the hemiplegia.

Treatment.

This varied in detail only; in general it was, of course, stimulating. As Dr. Maitland states, the Serbians were not in favour of alcohol; we, on the other hand, used it a good deal in $\frac{1}{2}$ oz. doses, increasing it steadily as the pulse got weaker, especially about the eighth to twelfth day. The most critical period was during and after the lysis.

Digitalis was given by the mouth and hypodermically—we had no digitalin—by the mouth in 20 to 40 minim doses every four hours; subcutaneously in 10 to 20 minim doses. Strychnine also was given hypodermically. I sometimes