

"arm cases" and more convalescent cases have been sent to King George V Hospital, which is staffed by orderlies, and is about a mile from the baths.

(3) *Fresh Air and Sunshine*.—The extra wards at the Sanatorium are broad verandahs facing the sun, and screened from wind and rain by canvas blinds. At the King George V Hospital, which was built with this special end in view, there are two main octagonal wards and a large dining-hall, whose walls are open, and only closed by canvas screens in bad weather. The administrative block alone has permanent walls. In addition there are eleven cubicles for officers, facing due north, and opening direct on to verandahs.

(4) *Recreation and Occupation*.—As an antidote to "staleness," which is apt to creep in wherever prolonged treatment has to be undergone, there is in summer a fishing-camp on the shores of the lake, to which men can be sent for a short spell, and there is a special launch provided by patriotic funds. Men have also the run of the tennis, bowls, croquet, and golf grounds, so that time should not hang too heavily on the hands of those able to use their limbs even partially.

AMBULATORY TREATMENT.

It was early borne in on me that if wounded men were to get the maximum benefit from their treatment, and to be speeded up in their return to normal life, they must be encouraged to get about on their own legs, and discard as speedily as possible such cumbersome aids to progression as crutches. The use of crutches over a long period has a psychic as well as a physical depressing action. I found that in a very large proportion of crutch cases the most crippling lesion was paralysis, partial or complete, of the *extensor* muscles. Those most at fault were the quadriceps of the thigh and the extensors of the leg (ankle flexors), and to these were frequently joined the peronei. A man with any one of these lesions could only walk with the aid of a more or less immobilized support, which yet further hampered his weakened movements.

To overcome this difficulty I devised a simple method of replacing or supplementing the affected muscle by the use of elastic bands. Thus the whole of the extensor muscles of the thigh and leg can be to a great extent replaced by an elastic band, attached above to a waist-band and shoulder-strap, and inserted below into the welt of the sole of the boot by a bifurcated strap (see illustration). In cases of peroneal paralysis the strap may be inserted into

the outer side of the sole only, or greater support may be obtained by adjusting the outer bifurcation. Patients thus fitted can at once walk without the aid of a crutch, and generally without the aid of a stick.

In cases in which greater lateral support of the ankle is required the strap may be attached to an ordinary calliper splint, or the two may be combined.

In several of my cases paralysis of the quadriceps was due to over-stretching from faulty posture. Thus one man, having paralysis of the extensors below the knee, was admitted on crutches, with his knee carried flexed and the flexed leg slung by a bandage supported from the neck. As a consequence he had complete secondary quadriceps paralysis. A fortnight after being fitted with an elastic extensor band, and being treated by massage and electricity, he broke the metal part of his splint playing golf—to the indignation of the splint-maker, who had not anticipated the possibility of such rough usage. In fact, the principles that guide us in treating infantile paralysis apply absolutely to the treatment of muscles paralysed by wounds—the affected muscle must never be allowed to stretch.

In the early part of the year I found that, while cases of ulnar and median paralysis responded readily to treatment, cases of musculo-spiral paralysis emphatically did not. This I found was due to neglect of the elementary precaution that a paralysed muscle must not be allowed to stretch, even for a minute. The splint would be taken off during treatment and for washing the hands, temporary wrist-drop of the incautious hand would occur, the extensors would be stretched, and the work of weeks undone. In ulnar and median nerve paralysis there is no similar postural risk.

To encourage the use of a hand paralysed by wrist-drop, and at the same time to avoid stretching the extensors, I devised an elastic extensor strap. This had several faults, and I was glad to supersede it by the Souttar glove, described in the *British Medical Journal* (see illustration). This glove has proved most satisfactory in suitable cases—that is, those in which the flexor power of the fingers is unimpaired.

To sum up the advantages of elastic supports: (1) They enable a partly paralysed patient at once to get about and use his limbs; (2) they thereby encourage voluntary muscular effort, and voluntary muscular effort greatly increases the efficacy of massage and electrical treatment; (3) they prevent stretching of a paralysed muscle; (4) they are light, and can

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