ordinary cases could be duplicated in the "military" form of the disease; but, so far as our experience has gone, this treatment appears beneficial.

It is to be specially noted that the patients in Cases 2 and 3 continued to do a certain amount of duty. That the third patient should be practically cured and the second very much improved in two months under such circumstances may, we think, be considered encouraging; but it is probable that rest is even more desirable in military cases than in those occurring in private practice.

The treatment of irritable heart in soldiers has hitherto been decidedly of an "expectant" nature, and it would at least seem reasonable that in all cases where there is a suspicion of hyperthyroidism X rays should be tried, other suitable measures, of course, not being neglected. We are of opinion that investigation and treatment on the lines above suggested will alter for the better the prognosis in the type of case known at present as "irritable heart of soldiers."

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

CASE OF SHRAPNEL INJURY TO RIGHT PARIETAL CORTEX,

SHOWING PARESIS OF LEFT LOWER EXTREMITY, TOGETHER WITH CORTICAL SENSORY LOSS AND THALAMIC OVER-RESPONSE.

By H. M. ANDERSON, M.B., CH.B. EDIN.,
CAPTAIN, R.A.M.C.;

AND

H. L. C. NOEL, M.R.C.S., L.R.C.P. LOND.,
LIEUTENANT, R.A.M.C.

We consider that the following case is of sufficient interest to publish as it shows a comparatively rare combination. There are two definite sensory changes to be distinguished. First, there is the sensory loss due to functional disturbance probably of a circulatory nature arising from local pressure on the post-Rolandic cortex. This accounts for the loss of posture, the inability to distinguish compass points, the persistence of deep touch, and possibly for the blunting of cotton-wool touch over hairless areas. On the other hand, we have to consider the over-reaction to stimuli of an affective nature such as heavy prick and stroking. This is of thalamic origin, and is explained by the throwing out of action of the cortex which normally exerts an inhibitory influence over the thalamus. The reason why thalamic over-response is seldom a well-marked feature of the cortical sensory lesions seen in this war it is difficult to say; in this case the amount of brain damage was small and the consequent shock slight—a possible explanation. The area determined by the line of change is interesting in that it approximates more closely to a "mind" or hysterical loss than any other area due to an organic lesion. On the motor side the involuntary movements are undoubtedly of reflex origin, and probably represent the efferent expression of the thalamic level. In support of this hypothesis we have their relation to affective stimuli, especially when arising from the mucous

membrane of the glans penis. As such they are comparable to the well-known involuntary movements which accompany certain emotional states, such as shyness.

Private — was admitted to a general hospital on July 31st, 1915, suffering from a wound of the head received on the 26th. He gave a history that after being hit by shrapnel he was unconscious for about 10 minutes. He was carried to a dressing station, being unable to walk on account of weakness and numbness of the left leg. Since then he had complained of numbness of the left leg and headache. On admission there was a small perforating wound at $8\frac{1}{2}/14\frac{1}{2}$ " $1\frac{1}{4}$ " to the right of the middle line. There was no cedema of the scalp or tenderness of underlying bone. The X ray showed two pieces of metal in the outer table of the skull in the posterior parietal region with a depressed fracture below. Examination of the nervous system revealed no abnormal changes in the eye movements, the pupils, or the visual fields; the face and tongue were straight, there was no weakness or ataxia of either upper extremity. The right lower extremity reacted normally to all tests. In the left lower extremity all movements were possible, but there was definite weakness of the toes, and the extensor longus digitorum was observed to act more strongly when the patient dorsi-flexed the ankle than when he attempted to extend the toes. On the left side the knee-jerk was exaggerated, ankle clonus was just obtained; the plantar reflex was extensor and the abdominal was abolished.

Over the dotted area shown in the chart there was marked over-reaction to pin-prick, and passing from above downwards the line of change was quite definite; over the whole limb moderate prick was less "sharp," and heavy prick more painful than on the right side. Over the hairless areas of the leg and foot there was blunting to cotton-wool touch; cotton-wool over hairs was well appreciated, but felt different from the right side. Temperature sense, vibration on bone and on pinched up skin were normal. There was considerable persistence of deep touch from the sole, and compass points could not be distinguished at 6 cm. along the inner border of the foot. The position of the hip and knee was impaired, and there was complete loss of position of toes. Localisation was accurate. Spontaneous movements of an irregular and jerky character affecting the whole limb occurred from time to time or could be elicited by any painful stimulus applied to the leg or by gently stroking the limb with cotton-wool; these movements were, however, most marked on tickling the sole of the foot or on gently pricking the left side of the glans penis, the latter causing great discomfort to the patient. Stimulation of the sole gave a feeling like an electric current passing through the leg.

On August 2nd an operation was performed. A penetrating wound of the outer table was found with depression of the inner table; a blood clot occupied the interval between the two tables. The depressed portion of bone measured $\frac{7}{8}$ inch by $\frac{3}{4}$ inch, and was driven down on to the dura to the extent of about a quarter of an inch. The dura was intact. After operation the sensory changes began to clear up rapidly. On the patient's discharge to England on August 13th he reacted normally to gross tests.