X-RAY WORK WITH THE MEDITERRANEAN EXPEDITIONARY FORCE.

By Lieut. Harold Mowat, M.D.

Royal Army Medical Corps.

As a great deal has been written in the medical journals concerning the X-ray appearances of wounds received in France, it will probably be of interest to the profession to have placed on record some facts regarding the injuries which have been inflicted in the Dardanelles. It will be all the more so when it is remembered that in France the fighting has been largely on the defensive, while in the East, at any rate in the early stages, a great offensive movement was carried out, with a corresponding difference in the type and situation of the wounds received.

The X-ray department of this hospital was ready when the first batch of wounded was admitted, and on May 1 the examinations commenced.

During the month of May 410 radiographic examinations were made, and 265 radiograms taken; 273 examinations were for the location of foreign bodies, and 131 for fracture. If we conclude that in the first fortnight nearly every case examined was for wounds received when landing and during the offensive movement, and in the second fortnight for wounds received after the positions captured had been made good, and entrenching had commenced, we shall not be very far wrong, and it will be possible to compare the character and location of the injuries of these two periods.

The first thing that was noticed during the X-ray examinations was that in the first stage a large number of patients were suffering from the effects of rifle fire, and many rifle bullets were located and removed, while in the second stage shrapnel wounds were more common.

Further, in the first stage the chest and shoulders were the parts chiefly affected, and in the second stage the lower limbs suffered to a greater degree.

Of the 410 cases examined here during May, 54 were for bullets in the head and neck, 94 for bullets in the thorax and shoulder, and 152 for lesions at or below the hip-joint.

In the first fortnight there were 55 examinations of the thorax and shoulder, and in the second fortnight only 39, while of the hip
and downwards 93 examinations were made in the second period, against 59 in the first.

Another feature which was very noticeable was the great amount of comminution caused by missiles when discharged from a short distance, in contrast to the absence of any fracture in many instances, when the fire was directed from afar, as, for example, the immensity of bone from spent bullets which reached the reserve lines. Figs. 1, 2, and 3, demonstrate this point. Fig. 1 is one example of many, showing a rifle bullet in the soft parts, with uninjured osseous structures. One patient had four shrapnel bullets round this region, but all the bones were intact. Contrast with this the severe comminution in the neighbourhood of the elbow in fig. 2, and both radius and ulna in fig. 3.

In certain wounds the bullet casing alone was found, sometimes whole or in fragments, and sometimes flattened out (fig. 4). Taking the individual parts of the body, the X-ray examinations were able to frequently show depressed fragments of bone in the region of the skull. In fig. 5 this appearance is seen, and in addition apparently two shrapnel bullets in the vault, which proved to be a split single bullet. Fig. 6 shows a hole in the skull through which a bullet, pieces of which are seen below, has passed.

Several foreign bodies were located in the eye, and in the region of the lower jaw severe comminuted fractures were found. In the thorax pneumothorax had resulted in more than one instance, while fractures of the pelvis and the vertebral column were not rare. Fig. 7 is a print from a stereoscopic negative and shows a rifle bullet, which has entered the fourth dorsal vertebra, causing paraplegia, which was cured by its removal.

In the region of the wrist-joint many fractures of the carpal bones were present, as seen in fig. 8, where both the os magnum and unciform are broken.

Regarding the question of the localization of bullets, nearly all methods have been used here. In the limbs two marks have been made on the skin when viewed in two planes, or four marks with a ring localizer, and in other cases plates at right-angled planes have been taken.

In the skull postero-anterior and lateral views have generally sufficed, while in the abdomen the parallax method has been employed with success.

In all difficult examinations of the hip- and shoulder-joint, of the thorax, and in cases when a bullet has lodged in the vertebral column stereoscopic plates have been exposed. From these the
To illustrate "X-ray Work with the Mediterranean Expeditionary Force," by Lieutenant Harold Mowat, M.D., R.A.M.C.
To illustrate "X-ray Work with the Mediterranean Expeditionary Force," by Lieutenant H. MOWAT, M.D., R.A.M.C.
To illustrate "X-ray Work with the Mediterranean Expeditionary Force," by Lieutenant Harold Mowat, M.D., R.A.M.C.
To illustrate "X-ray Work with the Mediterranean Expeditionary Force," by Lieutenant HAROLD MOWAT, M.D., R.A.M.C.
relations of the surrounding structures have been obtained and the relative position of the foreign body determined, and further by measurement of the shadow movement the calculation of the depth by the McKenzie Davidson method has been made.

The War Office evidently believe in the importance of these examinations, as with the equipment brought out from England was a McKenzie Davidson cross-thread localizer of the very latest pattern, by means of which the calculations can be made in less than half a minute, a detachable plate holder with cross wires and an excellent stereoscope which folds up into a small space.

Hampson’s scale and the calculation of the depth from the amount of movement of the shadow on the screen have not been much employed, owing to the fact that as the main supply consists of six boxes of six-volt accumulators, only half of which can be used at a time, as the remainder must be charged by a small engine and dynamo, a very strong illumination is not possible and consequently for examination of deep structures other methods have been found more reliable.

Various materials have been employed for marking on the skin the position of bullets, the most successful being ink, which is applied after the skin has been rubbed over with ether in order to remove the fatty material from the pores.

In the case of rifle bullets, the axis has been indicated by drawing the outline of the foreign body upon the skin surface.

In conclusion, it may be stated that the extreme heat has made X-ray work at times very trying, and has further affected the gelatine on the plates so that it has been necessary to harden them with alum or formalin.