GUNSHOT INJURIES PRODUCED BY THE LEE-METFORD RIFLE.

By H. KNAGGS, M.B., B.Ch.Dub.,
Surgeon-Captain Army Medical Staff.

LANCE-CORPORAL B. was admitted to hospital about midnight on April 1st, 1894, suffering from the effect of gunshot wound. On examination there was found a small circular wound, $\frac{1}{4}$ inch in diameter and somewhat depressed, at the left side, between the ninth and tenth ribs, at their junction with the cartilages. It was surrounded by a contused ring about $\frac{1}{8}$ inch deep, marking the wound of entrance. The wound of exit was situated on a level with the third lumbar vertebra, and 1 inch to the right of the spine; it was about the same diameter as the other wound, and presented three small triangular flaps which were everted: there was no contusion about it, and there was no external hæmorrhage.

The pulse was small and fast, and he was suffering from the general symptoms of shock. The abdomen was flat and resonant, even in the iliac fossa when the patient lay on his side, and the area of hepatic dulness was not diminished. He complained of great pain about the anal region, and it was discovered that complete paralysis of the left lower extremity existed. He was put under the influence of morphine, and rallied partially, the pulse becoming comparatively full and strong, but about 5 A.M. on April 2nd he became very restless, and gradually sank and died at 6.20 A.M.

The *post-mortem* examination was made twelve hours after death by the coroner's surgeon. The following notes were made at the time: The body was well nourished, and *rigor mortis* marked. The external wounds have already been described. The abdomen was flat. A large quantity of dark blood escaped on opening, and occupied also the abdominal cavity. The areolar tissue beneath the skin in the vicinity of the wound of entrance was much ecchymosed and pulpy. The spleen had been torn by the passage of the bullet at the lower margin. The wound was stellate, 2 inches in transverse and 1 inch in vertical measurement. The spleen substance was exposed, and protruding from the capsule. The areolar tissue around the left kidney was infiltrated with blood. The kidney was uninjured. The jejunum was injured in two places, about 6 inches apart, and close to the duodenum. Two elliptical pieces of bowel were destroyed, amounting to half the diameter of the gut. The edges of the wounds were contused, and blood was extravasated between the layers of the mesentery. The psoas muscle on the left side was perforated opposite the third lumbar vertebra; the opening in the muscle was about half an inch in diameter.

The bullet striking the lateral aspect of the body of the third lumbar vertebra, near its upper surface had destroyed

Fig. 1.—Showing injury to the postero-lateral aspect of body and destruction of left pedicle.

an irregular wedge-shaped piece of bone about half an inch in depth, immediately below the intervertebral disc. From

the lower angle of the cavity thus formed a fracture extended downwards and forwards to the inferior surface of the body, separating about one-third of its area.

The pedicle on the left side was destroyed. The bullet, passing across the spinal canal with a slight inclination downwards, had severed the lash of nerves going to form the sacral plexus on the left side, and, splitting the right lamina

Fig. 2.—Inferior surface of vertebra, showing fractures through body and anterior aspect of laminae; the right lamina is completely divided, the split in the left is made evident by the insertion of a pin.

from its junction with the spine to the inferior articular process, emerged close to the spine.

The left lamina was also fractured on its anterior aspect, but the fracture passed behind the inferior articular process into the spine, and was incomplete, no bone being actually detached.

REMARKS.—The rifle was discharged at a distance of about 10 yards, and the cartridge was loaded with black powder. The course of the bullet was inwards, backwards, and downwards. From recent experience one would expect that the discharge of a small bore projectile with high velocity and at such close proximity would produce effects much more severe and with greater comminution of hard parts than was found in this case. The wound in the spleen, though of small extent, was distinctly "explosive" in character, but the injury to the bone was limited and well defined. Though a considerable portion of the body of the vertebra was destroyed, the wound of exit was hardly larger than the wound of entrance, which is unusual in such cases, especially at short ranges, where the exit of a bullet is often marked by a wound of great extent. The case goes to demonstrate the fact pointed out lately by Professor Horsley, in a lecture given before the Royal Institution, that the destructive effects of bullets with high velocity vary directly as the viscosity of the body.

DISLOCATION OF CARPUS BACKWARDS.

By THOMAS H. MORTON, M.D. ABERD.,
Sheffield.

THE infrequency of dislocations at the wrist-joint justify recording any case coming under a surgeon's notice. Accidents which might produce a luxation of the carpus generally cause fracture of the radius either in the middle or lower third, or near the joint (Colles's), or a separation of the epiphysis. Persons when falling with outstretched arm, the palm striking the ground, receive the shock mostly on the end of radius. The radio-ulnar and other ligaments unite with tense tendons to protect the joint, securing the carpus *in situ*. The following case may throw a little light upon the position when falling which influenced dislocation.

J. A., aged 16, on April 25th, 1895, when playing during breakfast time in the yard of a steel works, running and kicking, fell between two rails, his left arm backwards, the hand