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

probably slightly pronated and under him. The thumb hit the ground, as a contused abrasion over metacarpal showed. The arm at first glance had the appearance of Colles's fracture.

On examination the radial and ulnar processes were in the normal plane. The carpus projected upwards and backwards but not to any great extent, as is shown by the photograph. Reduction could be effected easily by fixing the forearm, grasping the hand and making forcible extension. A slight grating was felt. That no radial fracture existed was proved by the natural position being sustained when the patient moved the joint, and also by the satisfactory rotation of the radius without crepitus or displacement. The arm was put up in back and front splints, bandages, and a sling until May 4th, when a short gutta-percha splint was secured on the palmar aspect of the joint. There was some swelling about the wrist, but good movement. On May 13th a simple bandage applied.

Although the position of limbs in persons falling cannot always be exactly ascertained, it may be assumed that in this case the injured arm was not placed anywhere voluntarily, and that the principal weight borne by the thumb side of the hand conducted to jerking the carpus backward, perhaps irrespective of any muscular action which so often influences fractures and dislocations.

MEMORANDA:

MEDICAL, SURGICAL, OBSTETRICAL, THERAPEUTICAL, PATHOLOGICAL, Etc.

A CURIOUS FRACTURE OF THE FOREARM.

THE accompanying sketch will serve to illustrate a somewhat unusual fracture of both bones of the forearm in a boy who lately came under my treatment in Mandalay.

Moung Po Nee, a well-nourished, healthy-looking Burman boy, aged 12 years, was brought to the hospital on March 14th, 1895, with his left forearm in the condition shown in the

sketch. Both bones of the left forearm were incompletely fractured or bent at the junction of the lower and middle third, so that the lower third formed an obtuse angle with the rest of the forearm. On comparing the two sides no dissimilarity could be detected in measurements, neither was there any deformity other than that caused by the bending of the two bones. The history was as follows. While at play the patient fell. He put forward his left hand to break the fall, and a fellow playmate fell across the back of the forearm. The result was that the arm gave way, and assumed the position seen in the diagram.

The patient was anaesthetised, and the injured arm was slowly bent into its normal position without difficulty. In doing this a soft crepitus was felt. The arm was put up in splints in the ordinary way. On April 12th the splints were removed, and a week later the boy left the hospital well.

Is it not remarkable for a fracture of this nature (incomplete) to occur in a healthy child aged 12 years?

W. G. PRIDMORE,

2nd Burmah Battalion, Mandalay.

Surgeon-Captain, I.M.S.

A CASE OF TETANUS NEONATORUM.

On January 1st, 1895, I was called to see an infant on account of some difficulty it experienced in sucking. The infant was 10 days old: it seemed perfectly healthy; was full grown and plump, presenting no congenital peculiarities. The mother, who had been attended in her confinement by a midwife, stated that for the two previous days the child had been unable to suck; she noticed that it did not yawn or gape, and that there was resistance to moving the jaws. On examination it was at once evident that there was hardening of the masseters on both sides; the lower jaw was quite fixed, the moderate force used not overcoming the spasm. All the other joints were quite normal, the muscular system was natural, and the knee-jerks were present. The umbilical stump was normal; it showed no signs of suppurative; it had received the familiar treatment, and had been dressed with fuller's earth powder.

With some difficulty the child could be fed with a spoon, and was thus able to swallow a little milk. It did not seem to be in pain. Pulse and temperature were normal. On January 3rd the jaws were immovably fixed; it was absolutely unable to suck, and could hardly get any nourishment with the spoon. Convulsions now appeared on the left side of the body; in the intervals of the clonic spasms the joints were becoming gradually rigid. On January 7th the infant was in a pitiable condition; no food had been taken at all for several days. The jaws were firmly clenched; there was occasional foaming at the mouth, and all the joints were perfectly rigid; the vertebral column also being stiff. The convulsive seizures were frequent. The left lower limb was in a state of adduction and inward rotation and quite immovable. Death appeared so imminent at any moment that all active measures for the sustenance of life were suspended. On January 10th, that is, on the twelfth day of the disease, when the infant was twenty days old, it was horribly emaciated, pinched and wrinkled, the tonic spasms were more intense, the hands and feet were crossed and rigid, the spine was unyielding. Not a particle of nourishment had been taken for a whole week. Death occurred three days later at noon of January 13th.

REMARKS.—The frequency of this disease among the newborn is subject to considerable variation, ranging from severe epidemics to sporadic cases of extreme rarity. A severe epidemic occurred early in the century in the island of Heimacy, off the coast of Iceland; it has occurred epidemically also in Ireland; but the home of tetanus neonatorum is undoubtedly in the warm climates, especially in the West Indies and the equatorial regions of South America. The causes assigned to the disease, such as uncleanness, impure air, exposure to cold and wet, are merely predisposing. The one etiological factor is the bacillus tetani, which gains an entrance through the umbilical cord. An unhealthy condition of the cord has often been noticed in these cases; it may be in a state of inflammation, suppurative, or even gangrene, and it has also been observed that greater cleanliness exercised in dressing the cord has been followed by a diminution of the disease.

The suggestion may occur that in the case recorded above