Molteno. He was removed to the train at 2.30 P.M., but the train did not leave till 5 P.M. I accompanied him to Queenstown, where we arrived at 12 P.M. He was taken to the frontier hospital, and placed under the care of Drs. Berry and Tannahill, as I had to return to the field hospital.

He made a rapid recovery. He suffered first from retention of urine, and a catheter had to be passed for four days. He experienced also some pain, chiefly in the right hepatic region, extending up to the point of the right shoulder. There was no cough or hæmoptysis. He was up in two weeks' time, and now—a month after the date of the injury—he is practically well, except for a little dyspnœa on exertion and slight pain on taking a deep inspiration. He is said to have suffered some years ago from pericarditis and has always suffered from some dyspnœa ever since on exertion.

The case is a remarkable one. If an imaginary line be drawn between the wounds of entrance and exit, it will be seen that both lungs must have been traversed by the bullet, but as to the exact course it took and how the large structures in front of the vertebral column escaped it is difficult to explain. More careful measurements show that the wound of entry is 9 inches from the median plane in front and on the horizontal plane of the right nipple, about midway between the anterior and posterior axillary lines in the sixth and seventh intercostal space. The wound of exit is on a level with the ninth dorsal spinous process and 2¼ inches to the left of that point. The wound of exit is about 1 inch below the level of the wound of entry. The bullet passed between the ribs on both sides.

The sensations he felt—as if his limbs were paralysed, which, though only temporary, was followed by retention of urine—would suggest that the bullet grazed the body of a vertebra, and by means of shock caused these symptoms. Pain felt at the point of the right shoulder, from which he suffered considerably at first, is generally associated with lesions occurring in some portion of the liver.

Queenstown, South Africa, January 10th.

REPORT ON THREE CASES OF GUNSHOT WOUND.

BY MAJOR A. P. BLENKINSOP, M.R.C.S., L.R.C.P.,
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THE following three cases of self-inflicted gunshot wounds have many points of resemblance, and are perhaps worthy of record, as they demonstrate the effects of small calibre bullets and cordite ammunition. These effects are markedly different from those produced by the older forms of rifle, and open up interesting questions both from a surgical and medico-legal point of view.

I am indebted to the records of the Royal Infirmary, Dublin, for the account of Case I, which is taken from the reports of Major G. B. Russell, R.A.M.C., and my thanks are due to Major E. O. Milward, R.A.M.C., for the notes of Case III.

CASE I.

J. S., a non-commissioned officer, was found lying in his sitting-room in Linenhall Barracks, Dublin, at 9 A.M. on July 20th, 1897, with a discharged Lee-Metford rifle underneath him. He was much collapsed, and bleeding from an extensive wound on the left side of the face. He is supposed to have put the muzzle of the rifle into his mouth, and to have pulled the trigger with his toe.

Nature of Injury and Progress.—On examination the greater part of the left malar bone appeared to have been blown through the cheek. The tissues were much lacerated, but there was little loss of substance. The hæmorrhage was not great, and only one small artery had to be tied. The wounds were cleared of loose fragments of bone, and the edges, which were fairly clean cut, brought together with sutures. The man was then conveyed to the Royal Infirmary in an ambulance. On arrival at the hospital his position was found to be very critical. There was severe shock, and the extremities were cold and pulseless. The man was semiconscious, and frequently called for water, which he drank eagerly. His face was greatly swollen, but there was no blackening of the divided tissues. Two hours after admission, in spite of free stimulation, he collapsed completely, and died at 1 P.M. on the same day.

Post-mortem Examination.—The left side of the face and head showed much disfigurement. The skin from the upper lip to the middle of the temple was divided and lacerated by the explosion. The point of exit of the bullet was a narrow slit about half an inch long by one-eighth of an inch wide in the middle of the left temporal region. On turning back the integuments the track of the bullet could be traced through the temporal muscle to its point of exit. The upper jaw and malar bone on the left side were found to have disappeared almost completely. The base of the skull was intact. There was some congestion of the meninges, but the brain was uninjured. All other organs appeared healthy.

CASE II.

J. W. was admitted to the Royal Infirmary, Dublin, on May 2nd, 1898. At about 9.30 A.M. on that date I was called to the Marlborough Barracks, and found him in his store suffering from a very severe gunshot wound of the left side of his face. He was in a prone position, resting on his extended arms, and a Lee-Metford carbine was lying on the ground about a yard from his right side, with the muzzle directed towards his head. There had been extensive hæmorrhage, but this had almost entirely ceased, and, though there was considerable general oozing, no special artery was seen to be spouting. After the lacerated flaps of tissue had, as far as possible, been brought into position, the wounded side of the face was wrapped in lint soaked in 1 in 40 carbolic lotion, which was fixed in position with a triangular bandage. The patient was then placed on a stretcher and carried to the Royal Infirmary, a distance of about a quarter of a mile.

Nature of Injuries.—When more careful examination could be made at the hospital, the man was found to have sustained the following injuries. The bullet had entered the submaxillary region to the left of the middle line, making a transverse lacerated wound about 2½ inches long. In the middle of this wound was a small punched-out area corresponding to the size of the bullet. The skin, and deeper tissues of the chin and lower lip were completely divided. The lower jaw, from the canine tooth to the last molar tooth, was destroyed, and several loose pieces of bone were found embedded in the surrounding tissues. The fragments of the jaw were widely separated, and the tongue fell forward in the interval between them. The left side of the tongue was slightly torn. The bullet had passed through the hard palate internal to the alveolar process. The cheek was split from the angle of the mouth nearly to the angle of the jaw. There was a curved wound extending from the angle of the mouth to above the ala of the nose, and which laid bare the bone throughout its course. Separated from this by a narrow bridge of sound skin, and corresponding in position to the left orbit, was a large irregular cavity, in which the remains of the globe of the eye could be made out with some difficulty. The lower eyelid was nearly entirely destroyed, and the upper much lacerated. From this cavity a clean-cut wound ran upwards through the centre of the eyebrow for a distance of 2½ inches, exposing the frontal bone below, but becoming gradually more superficial at its upper extremity. The superior maxilla was extensively fractured, and the antrum was freely opened in front. The inferior orbital plate was perforated, and the malar bone comminuted. The nasal bones were fractured, and the whole nose considerably displaced to the right side of the face. There was no blackening or charring of the wound, which looked perfectly clean. On admission the patient was suffering from severe shock. His extremities were cold, and his pulse feeble and running in character. He was, however, not perfectly unconscious, and made several efforts to speak.

Treatment.—While preparations were being made for the dressing the patient was put into bed with hot-water bottles, and brandy was given by the mouth. A hypodermic injection of 2½ minims of morphine was also administered. The man was then put under the influence of chloroform, and several fragments of loose bone having been removed, the lacerated tissues were brought together by means of hare-lip pins, which were passed as deeply as possible, so as to bring the deeper parts of the wounds into apposition. The skin was afterwards united by silk sutures. The torn edges of the eyelids were trimmed, and the anterior two-thirds of the globe of the eye removed. A drainage tube was passed from the lower wound, along the track of the bullet, into the mouth. The orbit was packed with iodoform gauze, and the other wounds were dusted with iodoform and dressed with sal-alembroth wool. It was not necessary to take up any arteries during the dressing, but the hare-lip pins were passed as far as possible in the position of vessels, so as to guard against the occurrence of secondary hæmorrhage. At the conclusion of the dressing 1 ounce of brandy was given by the rectum.

Progress of Case.—The patient was given nourishment by the rectum for the first twelve hours, but after that managed to swallow liquid food in small quantities, and the nutrient enemata were subsequently entirely discontinued. On the morning following the injury the dressing was soaked with blood-stained serum, and was therefore changed. The drainage tube was then removed, but at a later dressing it was found necessary to plug the track of the bullet into the floor of the mouth with iodoform gauze, as food made its way into it and delayed healing. The face was afterwards dressed daily and the mouth cleaned and insufflated with iodoform at frequent intervals. On May 8th the hare-lip pins and sutures were removed. The wounds were firmly united by first intention wherever the edges could be brought into apposition. On May 11th a light perforated metal splint was applied to the lower jaw. The patient became extremely morose and depressed, and his convalescence was delayed by an ulcerated sore throat. The large wound left by the partial destruction of the contents of the orbit healed slowly, cicatrisation being retarded by the formation of a lachrymal fistula. When the patient was apparently quite convalescent a small abscess made its appearance in connection with the wound in the left cheek, and this was opened on June 27th, and healed rapidly.

Condition on Discharge.—The man left the hospital on August 19th. He was then in robust health. A small lachrymal fistula at the inner side of the orbital cicatrix persisted. The movements of the lower jaw were limited, but the patient could chew soft food and was eating chicken diet. Beyond the destruction of the eye and a slight irregularity at the angle of the mouth, there was remarkably little deformity, and the linear cicatrices formed by the healing of the wounds were concealed by the growth of a beard. The left descending ramus of the jaw was somewhat displaced towards the middle line, and new bone appeared to have replaced the piece of the jaw which had been carried away at the time of the injury.

CASE III.

Private G. H. S. shot himself in his barrack room with a Lee-Metford rifle and cordite ball cartridge at about 8.15 P.M. on June 24th, 1898. He tied one end of a boot lace to the trigger of his rifle and twisted the other

end round his hand. He then apparently leant forward over the muzzle of the weapon, which he discharged by pressing on the loop of the boot lace with his foot. The other men in the barrack room saw none of the preparations for the deed, but, on hearing the report and turning in the direction from whence the sound came, saw Private S. fall forward. Death must have been instantaneous.

Post-mortem Examination.—At the *post-mortem* examination the bullet was found to have entered about an inch behind the symphysis menti and slightly to the right of the middle line. The wound of entrance, from which there had been considerable hæmorrhage, was irregularly triangular in shape, each side measuring about an inch in length. Immediately above it was a lacerated cavity 2 inches in depth. The skin was torn up in ragged flaps, but there was very little loss of substance. There was no blackening or charring of the tissues. The wound of exit was in the middle line, about half an inch above the bregma. It was a clean-cut, circular opening, the diameter of which corresponded to that of the bullet. There was no protrusion of brain substance, and only enough hæmorrhage to stain the hair immediately around the aperture. On tracing the course of the projectile, the lower jaw was found to be much comminuted for a considerable distance on either side of the symphysis. The bullet passed upwards and backwards through the floor of the mouth and root of the tongue, and behind the soft palate to the base of the skull. The basilar process of the occipital bone and the body of the sphenoid were broken up, and the upper half of the medulla oblongata destroyed. There was a narrow track leading upwards and backwards through the median lobe of the cerebellum. The tentorium was perforated, and the occipital lobes of the cerebrum torn on either side of the great longitudinal fissure. The skull round the aperture of exit showed a series of fissured fractures radiating in every direction and shattering the vault of the cranium. The sutures were burst asunder, and there were several fractures of the frontal and other bones altogether unconnected with those described round the opening through which the projectile left the skull.

The chief interest in these cases from a medico-legal point of view rests in the fact that there was no scorching or tattooing of the tissues, although in each case the rifle must have been very close to the skin, if not actually touching it. It would appear that in gunshot wounds where the new cordite ammunition is employed it is no longer possible to judge by the presence or absence of these features at what distance from the surface of the body the muzzle of a rifle may have been at the time of its discharge. This is a matter of considerable importance, as conclusions based on the appearance of the wound of entrance have more than once influenced the decision as to whether an injury was homicidal or suicidal.

In Case II it will be noticed that 2½ minims of hypodermic solution of morphine were injected on the arrival of the patient at the hospital. No bad effects were found to follow its administration; on the contrary, it appeared to be distinctly beneficial, as, after it was given, the man became less restless and there was marked improvement in his general condition. It is also of interest in this case that the whole of the lower wound, except where the tissues were carried away by the passage of the bullet, healed by first intention.

Case III is remarkable from the absence of the extensive pulping of the brain, which is so frequently described as resulting from a Lee-Metford bullet being fired into the skull of a cadaver at a short range. Possibly the comparatively small amount of injury may be accounted for by the bullet having taken a course through the great longitudinal fissure; but, even so, one would have expected to have found more extensive destruction of the cerebellum, which was completely traversed by the projectile. It is also noted that no brain substance protruded at the wound of exit.

When it is proposed to transfer a case of gunshot wound involving much shock to hospital for further treatment, it is probably advisable to do as little as possible to the wound beyond arresting hæmorrhage until the patient arrives at his destination. Any extensive surgical interference would only intensify the shock, which would be further aggravated and prolonged by the journey.

PENETRATING WOUND OF THE BLADDER AND RECTUM FROM THE BUTTOCK: RECOVERY.

BY MAJOR J. R. DODD, F.R.C.S., R.A.M.C.

[Communicated by the DIRECTOR-GENERAL, Army Medical Department.]

R. D., a workman in the Royal gun factory, Woolwich Arsenal, was admitted to the Arsenal Hospital on April 10th, 1899, bleeding profusely from a punctured and lacerated wound in the right buttock, also from the urethra. He had been hauling on a rope with another, raising some heavy weight, when the rope broke, and he fell, with the other man upon him (both being heavy men), upon the end of a bar of iron, about seven-eighths of an inch in diameter, and several feet in length, which was lying on the ground, the last few inches of the bar, which was used for opening the doors of furnaces, being bent at right angles to the remainder, and sticking up perpendicularly from the ground. On examination the finger passed into the wound in the buttock, entered the rectum about 2 inches above the anus, then passing through the anterior wall of the rectum, it entered the substance of the prostate gland, impinging directly upon a large silver catheter which had been passed into the bladder, and had evacuated nothing but pure blood. A foreign body was felt in the rectum, which on removal proved to be four small pieces of cloth rolled up together, being, in fact, pieces of the patient's trousers, drawers, shirt, and underflannel, which the bar of iron had carried in before it.

The wound of the buttock was opened up into the rectum as in the operation for fistula; the catheter was tied into the bladder, and the usual measures for checking hæmorrhage were taken such as torsion of spouting arteries, hypodermics of ergotin, application of ice and mixtures of gallic and sulphuric acid, opium, turpentine, etc. It was, however, several days before the bleeding entirely stopped. The urine speedily became very offensive, fæces and flatus being mixed with it, and the tying in of the catheter had to be discontinued three days after the accident owing to its causing so much irritation. After that most of the urine came through the anus on voluntary efforts at micturition, which were discouraged as much as possible, the catheter being passed three times a day, and after the urine had been evacuated the bladder was first washed out with boracic lotion, and then injected with iodoform in sterilised mucilage. With the exception of a severe attack of epididymitis in the left testicle, the patient made an uninterrupted recovery.

On April 20th the sphincter ani was so far healed that the escape of fæces involuntarily ceased. On April 28th the urine was clear, acid, and free from smell, and the patient was able to pass a soft catheter for himself. On May 2nd the rectum wound was healed externally, and urine had almost ceased to pass *per anum*, while no flatus came through the catheter with the urine. On May 16th he left hospital on sick leave.

On June 28th I examined him and found his wound soundly healed; there was no bladder or rectum trouble, and a full-sized silver catheter passed without difficulty. On July 25th I again saw him; his urine was normal, and a No. 12 silver catheter passed easily. He believed, however, that he had passed a small piece of cloth with his urine a few days before.

ABSTRACTS OF

THE ARRIS AND GALE LECTURES

ON

THE ANATOMY AND PATHOLOGY OF THE RARER FORMS OF HERNIA.

Delivered before the Royal College of Surgeons of England.

BY B. G. A. MOYNIHAN, M.S.LOND., F.R.C.S.ENG.,

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LECTURE I.

BILOCULAR HERNIA, INCLUDING INGUINO-PROPERITONEAL AND CRURO-PROPERITONEAL HERNIA, AND INTERSTITIAL HERNIA.

MR. PRESIDENT AND GENTLEMEN,—I propose to deal, in the lectures which I have the honour of delivering, with some of the rarer forms of hernia. In my first lecture I shall consider that form which is commonly called pro-peritoneal. My second lecture is concerned with the variety first described by