commonly used; carbolised oiled lint, iodoform, and tenax, combined or otherwise; the three made an excellent dressing. The iodoform was sprinkled on the wound; then a small strip of lint, covered by the tenax, was bound on by a gauze-bandage, rendering it completely antiseptic. Although flies abounded, they only gave trouble in two or three cases; the following powder, used sparingly outside the bandages, I found very useful in warding them off. *B. Iodoform 5j; zinci oxidi 3ij; pulv. McDougall ad 3ij.* Most wounds in Europeans (from the Mediterranean) and Asiatics did well when not complicated by ague or dysentery. The most obstinate cases were those amongst Africans from the Somali coast. Their wounds healed very slowly, and often resulted in unhealthy looking ulcers, which were aggravated by a native treatment in which they have unbounded faith, and which consists in pressing a copper coin firmly over the wound, a larger one being substituted when the ulcer appears beyond its margins.

GUNSHOT-WOUNDS OF THE HEAD IN CIVIL LIFE.

Read before the Yorkshire Branch.

By EDWARD ATKINSON, M.R.C.S. Eng.,

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THIS class of wounds is not very common nowadays in England, since the days of duelling are past, and, when seen, are generally self-inflicted with a suicidal intention. They have, however, several points of interest when compared with similar injuries received in warfare. It has been my lot to meet with four such cases within the last fifteen years, and hence I am induced to bring them before you (one of the four, of which I have very full notes, being of peculiar interest), and to offer one or two reflections upon them. I will first read the cases.

CASE I.—In 1870, I was sent for to a young gentleman, E. T., aged 13, who had been accidentally shot in the back of the head with a small saloon-pistol. His brother and he were amusing themselves by shooting at swallows in the stable-yard. One knelt behind the other, and rested his pistol-hand on his brother's shoulder. Just at the moment of discharge, the boy in front jumped up, and received the bullet in his occiput. On arrival, I found an unmistakable penetrating wound on the right side, midway between the occipital tuberosity and the mastoid process. The hair was matted with blood, and undoubted portions of brain-substance; but there was no wound of exit. Symptoms, beyond those of concussion, there were very few. The pupils were unaffected; there was no stertor, no paralysis, either at the time or afterwards. The wound healed in the ordinary course, and no ill effects followed. The bullet is still in his head; and, though no longer resident in this neighbourhood, I believe he is now, at the age of 28, an useful member of society.

CASE II.—W. B., aged 20, in July, 1882, after firing two barrels of a revolver at his master, turned the weapon towards his own head, and discharged it within an inch or two of his forehead. Upon my seeing him, he was already recovered from the slight degree of concussion which followed the shot. The forehead was blackened and scorched with powder, and in exactly the centre was a small aperture in the integuments, through which a probe touched metal. This I enlarged by a small crucial incision, and found the bullet flattened to about the size of a sixpence against the external table overlying the frontal sinus, his ignorance having happily directed him to the thickest point of his skull. He made a good recovery, without any complications.

CASE III.—J. F., aged 16, printer, was accidentally shot on May 13th, 1885, under the following circumstances. Three boys playing in the street had an ordinary muzzle-loading pistol, which they all believed to be unloaded. One of them laughingly pointed it at another, who said, "Fire away." He fired, and the victim immediately dropped. When brought to the Infirmary a few minutes later, he was insensible, with symptoms of compression. Breathing was irregular and stertorous, and at times sighing. The left pupil was contracted; the right moderately dilated. There was some vomiting once. Mr. Jessop was sent for, who enlarged the wound, and removed four or five small pieces of bone; the internal table was found (as usual with a spherical bullet) more splintered than the outer. Half an hour afterwards, he was in the same condition. About one hour later, the pulse, which had been slow (52) from admission till then, suddenly rose to 150. The respirations were not more than ten or twelve. In another half hour, the pulse became imperceptible, and breathing took place by gasps. He died two and a half hours after the accident.

Post Mortem Examination.—On removing the skull-cap, the path of

the bullet was found to be as follows. After piercing the dura mater, it had entered the first frontal convolution about one and a half inches from the anterior extremity, passed obliquely through this, across the longitudinal fissure, and into the right hemisphere, two and a half inches from the anterior end of the brain, and one inch from the upper surface. Continuing its course in a direction outwards and downwards and backwards, it passed through the frontal and part of the parietal lobes, reaching the surface of the brain just in the Sylvian fissure, about one inch from its termination. On the interior surface of the parietal bone, one and a quarter inches behind the coronal suture, was the mark of the bullet, three-quarters of an inch behind the anterior branch of the middle meningeal artery, and just on the mark of the posterior branch. From this point the path of the bullet was deflected, again traversing the brain-substance at nearly a right angle to its former course, and lodging in the posterior extremity of the gyrus fornicatus, lying half imbedded in that body, and half projecting into the longitudinal fissure, immediately above the posterior part of the corpus callosum. There was much blood under the dura mater; none between that membrane and the bone.

CASE IV.—J. P., aged 42, brewer's drayman, a large powerful man, attempted suicide on February 27th, 1885, by discharging a revolver into his mouth.

On admission into hospital soon afterwards, a ragged wound was found just internal to the last right upper molar tooth. The little finger could be easily passed into the wound; the course of the bullet was apparently upwards, and slightly backwards. He bled profusely while being brought to the Infirmary, and vomited a large quantity of blood afterwards; he was quite sensible, though very irritable and excited. There was no counter-opening, though the bullet, judging by one found in an undischarged chamber of the pistol, was conical. There was no paralysis; the pupils were equal and slightly contracted; there was no effusion under the conjunctiva. With some difficulty the right posterior naris was plugged, and the wound was plugged also with dry lint; this controlled the hemorrhage. As he became collapsed, a little brandy and warm milk was given, hot bottles, etc., applied. He soon rallied, and passed a quiet night.

February 28th. He said the right eye was slightly dim. The ocular movements were not quite so free as those of the left eye. The right pupil was smaller than the left; both reacted to light. There was no paralysis of limbs, nor loss of mental functions.

March 1st. There was now some ptosis of the right eye; the external rectus was partly paralysed; the right pupil was more contracted. He complained of numbness in the left arm, also of some loss of power, but not complete paralysis; there was no facial paralysis or difficulty in swallowing. He had pain in the head, especially in the right temporal and frontal regions. Temperature, 100°; pulse moderately slow and soft. His mind seemed clear, though he said he did not remember shooting himself.

March 2nd. There was complete ptosis, with paralysis of all the ocular movements of the right eye, and the sight of that eye was very dim. There was no facial paralysis; he was completely deaf on the right side. He had pain over the frontal and temporal regions, most severe just below the right temporal ridge; the pain was of a stabbing character. Sensation was impaired all over the body and limbs, almost totally absent from below the middle of the arms and thighs. Voluntary movements were feeble, but there was no complete paralysis; the movements of the left arm were weakest; tendon-reflexes were almost absent; superficial reflexes were much increased, especially in the thighs and legs. Breathing was rather slow and laboured (17); pulse 70, deliberate, soft, and compressible. He swallowed without difficulty, but said it hurt him; his speech was thick; temperature, 100° at night. There was some exophthalmos; no marked change in the optic disc.

March 5th. Sensation was improved, but there was no increase of power. The right eye was just the same; the exophthalmos had increased. Some conjunctival ecchymosis appeared on the lower half of the eyeball. The left hand and arm were weaker.

March 8th. Numbness was still present all over. He could hear a watch tick when in contact with the right ear. The pain in the right temporal region was severe, and slightly paroxysmal. His mental faculties were quite clear.

March 10th. The exophthalmos was not so marked; the ecchymosis was disappearing. The sight of the left eye was now clear, and he could see slightly with the right.

March 12th. Last night he had very severe pain in the head, relieved by one-eighth of a grain of morphine. He had good sleep. He still discharged rather fetid pus from the wound in the palate.

March 15th. The paralysis of the left arm was much improved; sensation all over was still rather deadened, but mending.

For the next few days his condition was nearly unaltered. All the paralyses remained, but the numbness gave place to a feeling of "pins and needles," especially in the feet and left hand.

April 2nd. The pain in the head was less persistent. He had a feeble grip of the left hand. There was very slight discharge from the wound. He was giddy when sitting up in bed. The wound was nearly healed.

April 5th. The sight of the right eye was now fairly good, when he could get an object in the direct line of vision; he could also hear a watch at a distance of one inch from the right ear.

From this date he began to improve steadily, the various paralyses gradually diminishing, and, for the most part, in the inverse order to that in which they had appeared.

On April 15th, he was up a little, but was rather unsteady on his legs. The grip of the left hand was much stronger. Hyperæsthesia in the frontal and temporal regions was still well marked.

April 27th. The sight was now good; he could see the second-hand of a watch at 12 or 15 inches' distance. The hearing of the right ear was almost perfect. The ocular muscles were still completely paralysed.

May 2nd. He had slight power of movement of the right eyeball, in all directions except outwards. He could raise the upper lid slightly.

May 7th. He walked the length of the ward (100 feet) in a straight line without a stick. He was discharged from hospital.

June 20th. He was seen at Armley Gaol, and was in excellent health. The grip of the left hand was natural. Ptosis was almost gone. He could read minion type at 18 inches. The ocular movements were all right, except the external rectus, which was still completely paralysed. He yet complained of slight pain in the head at a single point near the middle of the right half of the coronal suture, but said it caused him little inconvenience.

REMARKS.—1. What was the path of the bullet? and where is it now lodged? I think it must evidently have traversed the whole thickness of the anterior lobe, in a nearly vertical direction, probably invading the fissure of Sylvius also, and be now lying encysted beneath the bone at the point indicated by the pain. 2. What caused the various paralyses—laceration of the brain, or hæmorrhage? It appears to me that, had the former been the cause, the paralyses would have appeared at first and simultaneously; whereas twenty-four hours elapsed before the first symptom appeared, then one nerve after another became involved, and finally all gradually recovered in the inverse order. That these events are not explainable by encephalitis, seems to me plainly indicated by the fact that the temperature remained normal throughout during the daytime, though twice or thrice rising to 100° at night. I therefore conclude that a blood-clot gradually formed at the base of the brain, involved successively and pressed upon the second, third, fourth, sixth, and the portio mollis of the seventh, nerves; and that, as this clot was gradually absorbed, the several nerves regained their functions.

In the next place, I would observe that, in all four cases, though the shots were fired point-blank and at close quarters, the ball penetrated the skull in only three, and perforated in none. This illustrates the fact that a ball does not attain its full velocity until it has travelled some distance from the weapon.

Lastly, I would remark on the extreme rarity (according to Guthrie and Longmore) of a penetrating wound of the head with laceration of brain and lodgment of the ball resulting in recovery; whereas this happy result followed in two out of four (Nos. I and IV) of the above cases.

Knowing how great is the influence of mental condition on the progress of gunshot-wounds, one would suppose that, in warfare, where the lesion is one more or less expected and sustained in the discharge of duty, the patient would stand a better chance, than where it was the effect of a pure accident, or of a vicious or criminal act. The statistics of military practice, however, do not seem to support this theory.

PHTHISIS AMONG SOLDIERS.—At a recent meeting of the Paris Academy of Medicine, M. Lagneau, among other interesting facts, stated that phthisis is developed among soldiers housed in barracks, and disappears when the men are encamped. The same facts have been observed with regard to typhoid fever. The long military service which every Frenchman is obliged to undergo has a bad influence on both these diseases. There is a higher rate of mortality among the inferior officers who leave the army at the age of 32 or 35 than among other men of their own age. Mortality is greater among married men under 23 years of age than among single men, but after that age a higher rate of mortality is observed among bachelors.

PERFORATING GUNSHOT-WOUND OF ABDOMEN IMPLICATING KIDNEY: PROFUSE SECONDARY HÆMATURIA: RECOVERY.

By AYLMER HAYES, L.R.C.P. Ed., M.R.C.S. Eng.,
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PRIVATE H., 2nd Battalion (Queen's) West Surrey Regiment, was shot by a comrade at 10.15 P.M., in the affray of the night of July 8th, 1884, at Sabathu. The ball entered a little to the right of the umbilicus, and, passing backwards and slightly downwards, found its exit at a site corresponding to the position of the right kidney. The hæmorrhage immediately following the injury was not very profuse; but collapse was intense, and pain apparently excruciating. A grain of opium was given every hour until he was relieved of the intense pain. That night, he slept very little; he passed urine unconsciously. As he had been constipated for some days, a small enema of castor-oil was administered. Brandy and beef-tea were ordered to be given every hour to counteract collapse, but to be cautiously employed for fear of circulatory excitement and recurrence of hæmorrhage. Low milk-diet was ordered.

July 10th. He was much better; less collapsed. Severe abdominal pain occurred in paroxysms, but, in the interim, little was felt. There was no hæmorrhage. He passed—without catheterism—smoky dark-coloured urine. There was no emphysema of the wound or its neighbourhood, indicating that the intestinal canal had not been traversed by the ball. There was very little tenderness upon pressure of the abdomen. Pain was referred principally to the wound of exit and its neighbourhood. The tongue was a little coated with white fur. The opium was ordered to be continued as required.

July 11th. He was slightly jaundiced. There was no hæmorrhage nor spasmodic pain. The bowels had not been moved (except after the injection) since his admission. Pulse improved. He was ordered to have a sinapism over the liver. The brandy and beef-tea were continued, according to the state of the pulse.

July 12th. He had very little pain. There was no discharge from the wound. The urine was rather more darkly coloured, but contained neither pus nor mucus. He was more deeply jaundiced. He was ordered to take nitro-muriatic acid and taraxacum. The bowels were still confined.

July 13th. He appeared better. The urine was as before. There was very little pain, and no discharge. He was ordered to have an eight-ounce enema of castor-oil and water.

July 14th. He had less jaundice. The urine was less bloody. The enema did not act. An enema of sulphate of magnesia was ordered.

July 16th. He passed a copious solid stool. The urine was quite clear. He slept well.

July 17th. At about 5.30 P.M., he suddenly expressed a desire to micturate, and passed a large quantity of bright arterial blood *per urethram*. This recurred, and was followed by intense collapse. Brandy and beef-tea were ordered; and twenty minims of fluid extract of ergot, with fifteen grains of tannic acid suspended in mucilage, were ordered to be given every two hours until the hæmaturia should be controlled.

July 18th. This morning he was much better. Hæmaturia was very slight. He slept well. The ergot and tannic acid mixture was continued three times daily.

July 19th. His urine was chocolate-coloured; but there was no fresh hæmorrhage. The sediment in the urine was purulent. The bladder was washed out with tepid water. The aperture of entrance was almost closed. A drainage-tube was inserted from behind, through which about a drachm of healthy pus escaped. The wound was washed out with carbolic lotion (1 in 80). His pulse and general condition were so good that stimulants were withheld, and the ergot and tannic acid mixture was stopped.

July 21st. He had passed a good many clots *per urethram*. The bladder had been washed out daily with tepid water, but, as the clots passed to-day were fetid, carbolic water was employed. An opium-suppository was ordered to be used each night, to relieve pain and spasm after catheterism. The wound was healthy; temperature sub-normal. He asked for "something to eat."

July 22nd. The temperature rose to 104° Fahr. last evening, preceded by shivering. This was judged to be malarial, and the opinion was borne out by the fact that the temperature was normal again this morning. The urine was perfectly clear and transparent. He passed a copious costive stool. Six drachms of castor-oil were given. The washing out of the bladder, and medicines, were discontinued.

July 23rd. The temperature rose to 100.4° Fahr. last evening. He