

"langblei" direct from the rifles the fractures of their arms ought to have been splintered, judging from the deformity of the projectiles; but the lighter nature of the injuries, and the circumstances under which they were inflicted, pointed to an indirect course. The horseman's ball had evidently rebounded from his own or his neighbour's steel breastplate when they were charging; the other had been struck *par ricochet* in a skirmish between stone walls.

Injuries of the soft parts effected by deformed or split projectiles hitting indirectly must be very numerous in modern warfare. The frequent fights in the French vineyards favoured them particularly, and caused many of the slighter wounds. Before Dijon I had made quite a collection of such Chassepôt balls, altered in their shape in the peculiar manner which gives them the appearance of a mushroom, with broad stem and an overlapping flat top; this latter representing the compressed forepart, the former the posterior unchanged end of the projectile. Several of them were cut out from close under the skin, which they had just penetrated; and though their power of percussion had been nearly expended, the opening in the skin appeared always like a simple slit, not as an irregular or crushed punch-hole. The ricochetting soft lead bullets of the Dreyse and the French *tabatière* rifles showed, as a rule, a much larger amount of deformity, their original shape being often altogether lost; their weight and size being at the same time greater than the Chassepôt (the latter weighing only 380 grains against 480 and 530 of the former), the width of their channels and the laceration of the soft tissues they caused were consequently larger. On the third day of Dijon a non-commissioned officer of the 21st Prussian Foot, who had been, as skirmisher, lying flat on the slope of a railway embankment, came to our ambulance (*Verbandplatz*) with a wound in the lower maxillary region into which I could introduce two fingers, finding a rather large bag between the larynx and lower jaw, partly filled with blood-clots and torn muscle, but no foreign bodies. The patient, an examined student of Catholic theology, who was not yet consecrated as a priest, told me that he had been aiming his own rifle when something struck the side of his throat. Whilst I was still probing the entrance channel one of my assistants had removed the man's shirt, and pointed to a swelling over his shoulder-blade. The large deformed Minié projectile which I cut out over the lower angle of the scapula had nowhere touched a bone, but must have been flattened, before entering the body, on some hard substance outside.

It was a remarkable fact that the tales of French explosive bullets became so much more frequent in the latter part of the war, when those *tabatière* rifles with their soft lead bullets came into play. They were, however, circulated even at the commencement, when only the hardened but with high initial velocity cast Chassepôts were in use. There is no doubt that these latter may also split on hard substances from their strength of impact (the power of percussion they show in the animal body or any other softer materials), which, as is well known, increases in an inverse ratio with the square of the distance from which the rifle is fired. The greater initial velocity of modern rifles, owing to improvements in workmanship, in the material of barrels, superior grooving and lubricating, the shape of the bullet and the strength of the powder, to the relatively smaller weight of the former and the greater charges of the latter, has been identical with a growing perforating force of their projectiles, as I sketched out before the outbreak of the last Continental war, in a paper entitled "*Zur Wundärztlichen Waffenkunde*," printed in the *Deutsche Klinik*, 1870, Nos. 4, 5, and 7. On the one part greater power to shatter bones is the consequence thereof, on the other an increased tendency to ricochet and hurt indirectly after deformation or breaking up into pieces. The corrective to this dangerous improvement of weapons must be found in the farther distances people keep from each other on the battlefield and skirmishing from behind coverings. The surgeon's aid in combating the more disastrous results of scientific arms must provide for careful examination of the wounds, prompt removal of foreign bodies, and the utmost conservative treatment on antiseptic principles.

The allegations which French surgeons made in the Crimean war—M. Scrive, for instance,—that the Russians had used explosive cylindro-conical bullets of copper, have never been proved; but the medical officers of the British

army—as Longmore and Macleod—saw frequently cases of injuries through pieces of conical balls which had split on the rocky soil. The Prussian "*Granatgewehr*," a heavy rifle which throws a shell of about four ounces' weight, has never been made use of during the late or any former war. Explosive bullets containing a smoke-producing charge—as, for instance, thrown by the long-range Metcalfe rifle—may be very useful for judging distances; it seems, however, doubtful if they will be, under present circumstances, introduced into so-called civilised warfare.

The new Gras rifle of the French, an improved Chassepôt, seems to be in several respects a superior weapon. Besides a metal cartridge, made of red copper (which is the most ductile material to close the breech effectually—much more so than yellow copper or brass, as in the Boxer and other cartridges), a better kind of powder, containing less sulphur and soiling less the barrel, is used for it. From a different construction of the breech-chamber the initial velocity of the bullet is higher, though its weight has slightly increased and the powder-charge diminished. The bullet, it seems, is made of compressed lead, instead of an alloy, to secure hardness. From the *Spectateur Militaire* I give the following statements:—

	Gras Rifle.	Old Chassepôt.
Weight of bullet ...	25 grammes ...	24.50 grammes.
Calibre of bullet at the bottom ...	10.9 mm. ...	11.8 mm.
Length of bullet ...	27.75 mm. ...	25.30 mm.
Powder charge ...	5.25 grammes	5.50 grammes.
Initial velocity ...	455 metres	410 metres.

A German military periodical gives the weight of the bullet for the Mauser rifle as 25 grammes, equal to that of the Gras; the powder-charge of the German arm as only 5 grm. The initial velocities of the regulation rifle bullets in the German and Russian armies are stated as follows:—

Mauser	430.0 metres per second.
Werder (Bavarian) ...	432.7 " "
Berdan (Russian) ...	449.0 " "

The Gras rifle appears, therefore, in this respect superior to them all. The absolute and relative number of rifle-ball wounds *par ricochet* depends, however, not only on the greater force of propulsion and percussion, but also on the quicker firing and greater number of bullets spent in modern warfare. In the report of the American Army Commission on modern rifles it was, some years ago, pointed out that the weapon of the future would be the repeating rifle, or magazine loader. Modern artillery is very destructive; but well-trained infantry will always remain the backbone of armies. The recent war proves that 90 per cent. of the killed and wounded were injured by rifle bullets; the infantry lost 17 per cent. of its men in killed and wounded, the other arms but 6 per cent.

EPIDEMIC OF HYSTERICAL EPILEPSY AND TETANUS.

By STAFF-SURG. JOHN HUDSON, R.N., L.R.C.P. LOND. &c.
LATE SUPERINTENDENT OF THE EMIGRANT SHIP, "EARL DALHOUSIE."

THE outbreak comprised eighteen cases—eight married and ten single women, ranging from seventeen to thirty-one years of age,—and varied in form and intensity from simple hysteria and fainting to strong convulsions and prolonged general spasms (complete opisthotonos). The varieties corresponded with the intellectual, moral, and physical characteristics of the patients.

The immediate exciting causes were—1st. The pre-existing case of Susan B—. 2nd. The first case (that of Mrs. S—) in the general outbreak of Dec. 28th, occurring at 2 P.M., in a violent and striking form, and arising from jealousy, in an excitable, epileptic subject; and seen or talked about by those that followed during the same evening. 3rd. The sympathetic influence affecting the community. 4th. The exciting effects of heat (82° to 85° in the shade) and climate in crossing the equator. 5th. Nymphomania, and the consequences of masturbation; this habit being no sooner ad-

mitted and the patient duly admonished than a total cessation of all the symptoms at once ensued.

The following is an abstract of a few typical cases.

CASE 1.—Susan B—, aged twenty-two, of spare habit, intelligent, and healthy-looking, was found in bed prostrate and unconscious on the 5th December, 1874, (the day after going to sea). It came out that she had been to sea, as a girl of ten years, with her father as a ship master; that she became a mother at fifteen, and afterwards the subject of parental harshness and of restraint in a workhouse asylum. She was the victim of nymphomania. The attacks were long, strong, frequent, and of persistent character, being excited by sudden shocks—as from noises or flashes of light—and often, when in bed at night, without apparent cause, until they finally ceased with the habit which had induced them, having lasted from 5th December to 7th February, with various remissions or intervals of calm, rational, and good behaviour, alternating with threats and feigned attempts to commit suicide; the patient now being peevish, quarrelsome, perverse, deceitful; then pulling her hair and malingering, in order to excite sympathy. When delirious or ecstatic, or under the first effects of chloral hydrate, &c., her mind would betray signs of good and evil training, such as bad language and pretty hymns.

The general symptoms were intolerance of light, with a sense of “fire in the head,” hyperæsthesia of left side of face, neuralgia, temporary paralysis and spasms of eyelids, face, neck, throat, &c., involving the muscles of expression, speech, deglutition, and voice, on one or both, but mostly the left side. During an attack or “fit” the convulsive action extended to the chest, the arms, and more or less to the whole body, lasting from a few minutes to half an hour, and merging into complete and general rigidity (opisthotonos), the body being arched backwards, so as to rest on the head and heels, but rarely inclined to the right side. This general spasm or tetanus usually lasted from ten minutes to several hours; in a few instances the patient remained stiff and unconscious, as in a state of catalepsy, for twenty-four to thirty-six hours.

This description of S. B—’s state of mind and of the nature of the attacks is applicable to the cases that follow, a few peculiarities only of each being subjoined.

CASE 2.—Mrs. S—, aged twenty-six, of spare habit, pale, epileptic aspect, and lively disposition. This case, which took place on Dec. 28th, was the first of the general outbreak, and had been subject to some complaint for several years in Sydney. Excited by jealousy, &c. The case was remarkable for the violence and duration of the attacks, also for the delusions and vagaries, followed by the feigning and deception which she practised. Symptoms as in the first case, with greater intelligence and *colonial acuteness*, great agitation, subsultus tendinum, &c.; strong convulsions, extreme rigidity of the body, and, while ecstatic, fancying herself about to be buried at sea, and asking to be “lowered gently.” Lastly, the stage of imposture having set in and being detected on Jan. 16th, 1875, she straightway recovered, and returned to her berth in the married compartment.

CASE 3.—Mrs. Anna M. G—, aged thirty-one; of seven years’ standing from trouble and uterine weakness (abortions, &c.); present attack severe, and brought on by sight of others in a weak and delicate woman.

CASE 4.—Harriet W—, aged twenty-five, stout and apparently listless and phlegmatic, was one of ten cases which immediately broke out after the preceding (night of Dec. 28th). She was conspicuous for her moral and intellectual attainments. The fit commenced with syncope and hysterical screaming, followed by singing and talking (soliloquy) for an hour or more after a dose of chloral, &c. While reclining on the poop she had calm and lucid intervals alternating with a state of abstraction, in which were disclosed evidences of a moral and cultivated mind. At one time she was singing, in fine musical and feeling tones, a favourite song in German, as if it had been the secret of her life; at another, she was instructing an imaginary class of children in the art of singing; and anon I was impressed by her minutely expounding the Epistle of St. Paul to Philemon, gently exhorting her little pupils to “speak up,” so that she might hear them. On Dec. 31st she was clear and calm, felt her mind active, and said “We don’t so readily get over broken hearts.” Strange as it may seem, all this was soon succeeded by disobedient and perverse conduct,

threatening us with “more trouble before she had done”; and ending with a becoming apology on the 1st February.

The cases of Amy L—, aged twenty, Annie M—, aged twenty-one, Eliza H—, aged nineteen, arose in stout, robust, headstrong young women, of neglected training and education, the attacks being strongly marked with a predominance of the animal spirits.

The nine remaining cases occurred in young married and single women from twenty to twenty-five years of age, of excitable, hysterical constitutions, and in forms varying from vague fears and hallucinations to unconsciousness, extreme convulsions, and stiffness of the whole body. The immediate cause of all was probably emotional, and the nature of each apparently a reflex action of the nervous centres.

Contrary to a prevalent opinion in such cases, in no instance were the uterine functions or the general health materially affected, except from weakness. All ultimately recovered, and, indeed, I have only known one extreme case of this affliction to terminate in death—viz., that of a young lady, aged twenty-seven, who for the last six months of her sufferings was unable to endure the least sound or ray of light.

The treatment consisted in the administration of chloral hydrate, potassium bromide, henbane, valerian, and aperients; of bleeding to twenty ounces in one instance; of cold to the head, and of placing the patients on their beds on the deck for safety, &c.

CASE OF IMPACTION OF AN IRON STAPLE IN THE ŒSOPHAGUS.

By W. WATSON DOVE,

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J. W—, aged thirty-nine, who has been an inmate of the Somerset County Lunatic Asylum since 1862, was noticed of late to have been getting very thin, and to suffer from loss of appetite. On inquiring what was the matter with him, he said that “he could not eat from pain and difficulty in swallowing, and thought he must have got something in his throat, but did not know what.”

On examining him nothing could be seen by looking down his throat, but on passing a probang down the œsophagus it was stopped about half-way by some foreign substance. Not knowing what it might be, I withdrew the probang and examined his throat externally. I could feel behind the trachea, just below the pomum Adami, a hard lump, but could not distinguish its shape. I therefore thought it best to let him alone, and trust to the substance, whatever it might be, coming away of itself. He was accordingly sent to the infirmary on the 21st of August, 1875, and lived for the most part on beef-tea and arrowroot, occasionally trying to take solid food. A few days after he had been in the infirmary he told the nurse that he had swallowed a staple, but when questioned further, said “he didn’t know what it was, but that he had swallowed something.” On the 29th September last, whilst trying to eat some meat, he very nearly choked. The nurse at once put her finger down his throat and withdrew the meat, and with it an iron staple weighing four drachms five grains. Its transverse measurement was $1\frac{1}{4}$ in., and its greatest length $2\frac{1}{8}$ in. It was much blackened and corroded.

The patient complained of a little pain the day after the staple came away, but was able to take solid food and apparently enjoy it.

On the 1st of October he told me that he had pulled it out of a wall in the airing-court, that he put it in his mouth convex end first, then turned it round and swallowed it points foremost. He is now doing well.

PRESENTATION.—Dr. Elliott, the house-surgeon of the Bristol General Hospital, was lately presented with a handsome walnut Davenport and silver plate, bearing the following inscription:—“Presented to Dr. Thomas Elliott, by the officers, students, nurses, and patients of the Bristol General Hospital, on his resignation of the house-surgeoncy. Sept. 1875”; also, a pocket instrument-case.