

WHAT ARE THEY GOOD FOR?

SPECULATION AS TO THE VALUE OF SMALL-CALIBRE PIECES.

COMPARISONS BETWEEN THE WORK THAT THEY DO AND THAT DONE BY PIECES OF LARGER BORE—THEY HAVE NOT BEEN TRIED IN BATTLE.

Since the introduction of small-calibre rifles into the various European armies there has been no opportunity in actual battle to test the destructive powers of the new weapons. It should be understood that the small-calibre rifles have given higher velocities, with corresponding low trajectories, and have not only assured greater accuracy, but increased the danger space.

Within the last three years the French have experimented with corpses subjected to Lebel rifle fire. The experiments were conducted by members of the French Academy of Medicine of Paris, and resulted in showing that the small-calibre ball could be depended upon to do effective work up to 2,500 yards.

Twenty corpses were placed standing at ranges of 218, 434, 656, 1,093, 1,531, 1,749, and 2,187 yards. It is reported that at less than 328 yards the bullet made very large flesh wounds, and produced typical lesions on the bones similar to those caused by the .433 Gras bullet, but fractures were not frequent. It is claimed for the Lebel bullet that it passes through the bone when it strikes full, and produces fracture only when the impact is tangential. It is also asserted that the bullet does not flatten entirely, and that the lead forms in small points on the surface, and these points remain in the wound, rendering its treatment more complicated. The actual results of the French tests cannot be given, and the foregoing claims are, in consequence, unsubstantiated.

For direct and positive knowledge recourse must be had to recent British information, for within the last twenty months the British medical staff has had brought forcibly home to it, as the result of accidental shooting affairs, the question of the destructiveness of the new Lee-Netford rifle. This rifle is of the small-calibre pattern, calibre .303, and as a result of the several cases British surgeons are not altogether agreed that the long range and increased accuracy of the small-calibre rifle outbalance the more destructive effects of the larger calibre ball over shorter ranges.

Captain Surgeon T. A. Perry Marsh of the British Army Medical Staff in the Royal United Service Institution recently had two cases of small-calibre gunshot wounds under his notice. The first case occurred on the 19th of February, 1890. Concerning it the doctor says:

"A laboring man, aged thirty-six, was at work loading a cart with gravel in rear of the rifle ranges at Aldershot, when he was shot through the right thigh by a bullet from the .303 magazine rifle. The missile which struck him had traveled about 1 mile and 800 yards, and had ricocheted from the surface of some water close to him, as well as probably also from the edge of the target or something near it.

"He was not knocked down immediately on being struck. I saw him one hour after receipt of the injury, and found him comfortably lying down in his cottage and not suffering in the least from shock or from any urgent symptom, the normal character of the pulse, respiration, and temperature being undisturbed. There was no hemorrhage from the wound, and it caused him only slight pain. He said that when struck it merely felt as if he had been pricked through the skin with a penknife. The entrance wound was situated over the front of the middle of the thigh. It was slightly oval in shape, three-eighths of an inch one way and two-eighths of an inch the other, and looked like a clean, punched-out bit of skin.

"Bruising extended from one-eighth to one-quarter of an inch round it. The direction of the track was upward and backward, and apparently in a direct line for the bone, the periosteum of which must either have been grazed or was within a fraction of an inch of being so. The bone, however, was not injured. There was so little destruction of tissue in the track that a probe would only pass into it for one inch and a quarter. Exit wound was situated at the back of the middle of the thigh, just one-half an inch below the fold of the buttock. It was merely a clean cut, transverse slit in the skin, without any loss of substance round it. Length, five-eighths of an inch. It looked as if a sharp, thin-bladed knife had been thrust into the flesh, and it was so unlike any bullet wound I had ever seen before that at first I could hardly credit its being one.

"The wounds were treated antiseptically, and they rapidly healed. The man progressed very well, and made an uninterrupted and rapid recovery. The whole track and aperture of exit united immediately by first intention. The punched-out bit of skin at the entrance wound rapidly filled in, (without supuration,) and was cicatrized over by the fourteenth day. Twenty-four days after the injury the man could walk well again and was discharged from hospital. There was no wasting of the limb, only slight stiffness on walking being felt."

The second case given was that of a Woolwich Arsenal operative, aged fifty-one, who was struck by a .303 rifle ball, fired at a distance of about 100 yards from him, while he was stooping down mending the bottom of a target. The ball passed completely through the upper end of the left thigh, entering posteriorly on the inner side immediately below the fold of the nates, and making its exit in the anterior aspect of thigh, very close indeed to inner side of the femoral artery. The wounds of entrance and exit were of comparatively small size. They were both slightly ragged; some contusion extended around them, but the amount of tissue absolutely destroyed was almost nil. The man was not knocked down when struck. No hemorrhage or shock resulted from the injury, and there were no urgent symptoms. The wounds were brought under immediate antiseptic treatment, and they rapidly healed without pus formation or any complication. The man was discharged to his duty thirty-two days after the receipt of the injury.

In commenting on the above case, Captain Surgeon Marsh says:

"The most peculiar feature lay in the fact that in both instances the wounds healed rapidly by immediate union. Up to the introduction of the present form of missile this event was of such an extremely rare occurrence in the history of gunshot wounds that one of the most experienced authorities, Sir Thomas Longmore, doubts if it really ever occurred. If these two men had been in service, Case No. 1, would have returned to his place in the ranks in twenty-four days, and Case No. 2 in thirty-two days. Had the ball been of the size of the Minié or the later Martini, only a small fraction of an inch greater in transverse diameter, in Case No. 1 the femur would have inevitably been fractured, and in Case No. 2 the femoral artery opened. In both cases the small, hard, cohesive missile traversed the tissues of the body, going in and out again, without expanding or splintering, causing no lodgment of foreign body, and with little or no destruction of the parts in its track."

In further comment, Captain Surgeon Marsh points out that, inasmuch as the resisting surface offered to the face of a small-calibre bullet has been thus reduced, the ball penetrates and expends much of its energy in their destruction. Its track is so narrow that there is practically no destruction of substance in its path. Such a ball might pass through a large joint without touching the bones, or between the two bones of the forearm or leg without injuring them in the slightest, thus producing nothing more than a simple flesh wound, not grave enough to place the wounded man hors de combat.

A larger calibre ball, say of the Martini type, .45 calibre, striking in similar situations, would inevitably shock the system and shatter the bones to such an extent as totally to disable the soldier for many months, if not for life. In adopting a lighter and smaller calibre ball there is sacrificed to a great extent the stopping power and shock possessed by the larger missiles. Impart shock produced by the magazine bullet is also further mitigated by the fineness or sharpness of this missile's point. Then, too, passage through the tissues of the body is further facilitated by the rapid rotary movement around its long axis which is the property of all moving rifle bullets. This rotation aids in screwing the point onward and facilitates the penetration of a moderately resisting substance.

In consequence of the great penetrating power of the small-calibre ball, the belief is ventured that in many instances the belief is likely to prove a useless surplus, purchased at the expense of a decreased destructive power. As to the ability claimed for the small-calibre bullet of being able to pass in succession through the bodies of men three and even four feet deep, little value, it is thought, comes from this fact, owing to the open formations employed in field tactics of the present day. As a result of the use of the high-powered small-calibre rifle, military surgeons will doubtless find, in working over wounded men, (1) diminished shock; (2) wounds clean-cut, much decreased in size, and with very little destruction of parts; (3) wounds uncomplicated by the lodgment of the ball, or by splinters of lead, or any other foreign body; (4) union of wounds by "first intention," and rapid recovery.

So far as wounds of the skull are concerned, the small-calibre ball will undoubtedly be as destructive as the ball of heavier calibre, but it is a curious fact that statistics seldom show over 12 per cent skull wounds of all wounds received in recent wars in European battles.

According to Captain Surgeon Marsh, there is every reason to believe that in consequence of the small-calibre ball future engagements will be marked by resulting large numbers of wounded, of which the majority will be only slightly wounded and capable of returning to the ranks if skillfully treated in the course of a few weeks. Whether this fact is advantageous or not is a question for military men to consider.

There is at least the benefit of hampering an enemy with crowded hospital trains, but if this same enemy can from time to time be reinforced by large numbers of recovered men, soldiers of experience, the effect will be one not heretofore counted upon.

During the Napoleonic wars but a comparatively small proportion of wounded men were again serviceable. So many men were killed in battle or rendered permanently disabled that France became drained of fighting material.