

adopting the Martini breech mechanism, the Committee do not fail to state the many excellencies of the Henry, which has only been slightly surpassed. Both are superior to the Snider, and to any other existing foreign arm.

The breechloading question being settled, the selection of the best barrel became imperative. Mr. Westley Richards requested to have a barrel on his system tried with his own breech action, in addition to the one which he sent in to be fitted to the Henry breech, and a 5 inch Enfield barrel was tried with the Snider breech action. With these exceptions all barrels were fitted with the same loading mechanism. Trials were made under different conditions. The result was that the Henry barrel was found to be the best when used with his hardened bullets and details of cartridge. So, not only will the new arm be a compound of two systems, but the ammunition also. The weapon will be called the "Martini-Henry," the cartridge the "Boxer Henry." The Committee recommend that Mr. Martini should receive a reward for his breech mechanism and Mr. Henry for his barrel and ammunition. Experiments were made with repeating rifles and compressed gunpowder cartridges, but the repeaters were all found unsuitable for military service in their present form. We cannot but think that the Committee hardly gave prominence enough to the fact that the speed of firing 20 rounds matters little compared with the power of discharging half a dozen very rapidly when close to the enemy. We have no wish to quarrel with the present decision, but we believe that a magazine arm of some sort, short and light, with a sword instead of a bayonet, only to be fixed or very special and unusual emergencies, is the arm of the future. A shorter barrel would shoot as well as the adopted one, the man's aim would probably be better, and the weight thus saved might enable the soldier to carry more ammunition. We cannot express our opinion too strongly that modern improvements demand the substitution of fine and rapid shooting for stabbing and bludgeon work in war. It is impossible to imagine a case where you could stab a man and could not shoot him with a magazine arm, provided there is no lack of ammunition. If both sides have lost their supply of cartridges, they may take to bayonet or sword play. If one side only is without ammunition, it had better run away. The extreme power of breechloaders in war has yet to be completely understood by military men generally. The compressed powder was found to be not adapted for arms of .45-inch bore.

The barrel and breech action having been separately selected, it only remained to make sure that the two would work well together, though there could be little doubt of it. Accordingly, new arms were constructed, embodying both systems, together with all improvements suggested during the experiments. Nothing could be more satisfactory than the weapon produced, as cannot but be acknowledged by all who read what we now have to say of its powers.

First, as to accuracy. The mean deviation—that is to say, the mean distance of a large number of bullets from the centre of the group of marks made on a target—is at 300 yards little more than 6 inches, at 500 yards less than a foot, at 600 yards about a foot and a half, at 1,000 yards less than a foot and three-quarters, and at 12,000 yards just under three feet and a half. Secondly, lowness of trajectory. The use of sights by soldiers in actual battle is likely to be very restricted. If the men can be made to shoot straight at the enemy with any sight their

instructors may consider themselves very successful. All projectiles move in a curve, and the nearer this curve approaches a straight line the less fear there is of misses, because bullets fired directly at an object will not fail to strike the mark, though the distance be not accurately ascertained. At 300 yards a bullet from the new rifle only rises 2ft. 7in. above the point aimed at; at 500 yards, just over 8ft. So, then, if the man aims straight at the middle of his enemy with the ordinary sight, which represents a range of 300 yards, he is sure not to shoot over his head, though the range may be much short of the 300 yards. If the good old order "Shoot low, men," be obeyed, the bullet will never rise higher than the stature of a foot soldier anywhere within a range of 400 yards, or of a dragoon within 500 yards. The possible rapidity of firing is very great. We have seen the Martini-Henry rifle fired 20 times from the shoulder in 48 seconds—about 2½ seconds for each round. The speed of cavalry advancing to the charge from a distance of 1,000 yards is generally taken to be as follows:—For the first 400 yards, at a fast walk, 4½ minutes will be required; the next 400 will be passed over at a trot in about two minutes; the last 200 yards at a gallop in 30 seconds. If an infantry regiment reserve their fire till the cavalry are within 500 yards, and aim always low, or if without raising the 500 yards sight, they fire at the breasts of their enemy, they may pour in a storm of bullets numbering at least 30 per man. If the foe be advancing infantry the opportunity for firing many rounds will, of course, be far greater. It really seems as if we should have to take to armour and shields again; but what armour? These new weapons shoot not only straight, but strongly. Fourteen half-inch elm planks will not stop the bullets hardened as they are with tin, nor iron more than a quarter of an inch thick at a range under 300 yards. Two plates, each an eighth of an inch thick, placed an inch and a half apart, were perforated like paper at 500 yards, and at 350 yards a rope mantle three inches thick was shot through. Gabions filled with earth, sand bags, sap rollers, all the ordinary devices for protecting a slowly approaching enemy, each in its turn was perforated at longer or shorter distances. Only a gabion invented long ago by Quarter-master Jones, R. E., for which he was never properly rewarded, was proof against all attacks.

The opponents of small bores often urge that wounds inflicted by them will be trifling and so cured. They even say that men and horses will be stopped in their career, and base their opinion on the weakness of revolvers, forgetting that the pistol has not only a very small and light bullet, but also a very small powder charge. Hence its total striking force, and the consequent shock to the living creature, is sometimes so slight as to be disregarded for a time. Men who know what battle is might answer that, however brave a soldier may be, he is seldom found to go on fighting after being wounded. No doubt, individual instances occur, but the excuse of a flesh wound is generally made the most of. There are always severely wounded comrades to be carried to the rear, and the temptation to return under fire is not so strong as to overcome the natural love of life. The loss of blood may not be very great, but it is apparent and very cooling to the martial ardour with which soldiers' brains are supposed to burn. But the Martini-Henry shoots straight, hard and savagely withal. Its action upon the living body is such as must satisfy the most ardent lover of cruel wounds. A horse

whose term of life had nearly expired was brought before the Committee and killed mercifully by one shot. Then those six English gentlemen of the Committee who, being English gentlemen, were men of tender hearts, set themselves to riddle the warm carcass with bullets of various sorts and from various guns. The Boxer-Henry cartridges tore through flesh, "leaving a large wound on exit," splintered bones, and on the whole did their work as cruelly as could be desired. Certainly the lookers on felt little inclination to expose their bodies to such missiles. War is getting day by day to be more and more unpleasant. When the English infantry have been armed with the new rifle, a regiment might lie behind a bank, and there exists nothing in the shape of an enemy that could advance against it without being swept away. Only the bank, if not there by nature, must be made by art, for the enemy also will be armed by strong and far shooting weapons. It must be some comfort to the British public to know that all those improvements in arms tend to strengthen the defence rather than the attack, *provided the defenders intrench themselves*. At any rate, the hammer and tongs system of fighting is receiving blow after blow from the hands of science, and must before long yield to more educated and artful methods.

At the eleventh hour certain objections were raised to both barrel and breech mechanism. Colonel Boxer said that the chamber was not large enough to admit of the possible though accidental increase in the size of a few cartridges among the many millions that are manufactured. This was a severe blow to the Committee. With heavy hearts they ordered the chamber to be enlarged, and the relief was great when it was found that the shooting of the barrel was in no way spoilt. Then it was objected that some parts of the breech mechanism had to bear too much strain, and the whole action would be stopped if these failed. Patiently accessible to all ideas, the Committee substituted lead for iron or steel in the parts mentioned. Strange to say the apparatus worked without fail. Nothing could be a clearer proof of the mechanical accuracy of the Martini breech. It is almost impossible to imagine any test to which these rifles have not been subjected, except that final one, the manufacture by machinery in large quantities. We have no wish to hamper Mr. Cardwell in his difficult and unaccustomed task, but we cannot fail to see that he is committing a grave error in ordering new Sniders to be made, instead of trying that last experiment, the machine manufacture of the Martini Henry. All that needs to be done is to make a few slight alterations in the Enfield machinery, at a comparatively trifling cost. There is not the slightest reason to expect that the arms will not be manufactured with great care and certainty. We ask, "What tests remain that the Committee have not tried and that soldiers can try?" If it were merely the conversion of old Enfields into Sniders little need be said; but we are informed that new Sniders are to be made. Surely this must be an error? We cannot believe that the Minister who descanted so eloquently the other day on the necessity for keeping few military stores because they are apt to become obsolete, can actually intend to manufacture arms which are already obsolete. We can readily understand that the authorities at Enfield are loth to stop work for a time and alter their machinery, but the one chance of superiority must not be let slip by the British army. It cannot be lost, numerically; but it can always be