

We present our readers with the substance of a lecture, delivered by Lieutenant Colonel C. B. BRACKENBURY, R. A., before the Royal United Service Institution on 28th April, on the "Tactical form of Modern Artillery."

We have to thank T. D. SULLIVAN, Esq., Librarian of the Institution, for a proof copy of this interesting lecture.

After a few prefatory remarks Lieutenant Colonel Brackenbury said—I do not propose to inflict on you even a sketch of the history of field artillery, but it is necessary for the understanding of our subject that we should bear in mind how modern anything like a manœuvring field battery is. As late as 1779 the artillery train dispatched with the expedition to the Low Countries had to be improvised for the occasion. The guns, attached in pairs to battalions, were drawn by heavy horses driven by Dutch wagoners who walked beside their teams with long whips. Though Napoleon the First improved his artillery so that he and his generals won great battles by its daring employment in masses, the English entered on the Peninsular war with our field artillery in a very poor condition. Shortly after the commencement of the Peninsular war, Wellington wrote: "I shall be obliged to leave Spenser's guns behind for want of means of moving them, and I should have been obliged to leave my own if it were not for the horses of the Irish commissariat." A little later, before the battle of Vimiera (1808) he said: "Our artillery horses are not what we ought to have; they have great merit in their way as cart horses of dragoons and Irish cart horses, bought for £12 each! but are not fit for an army that, to be successful and carry things with a high hand, ought to be able to move." The carriages were in no better condition. Napier says that the pursuit of the enemy after Vimiera had to be stopped because "the artillery carriages were so shaken as to be scarcely fit for service." Even so late as the battle of the Alma the guns sent over the river at a critical period had to be worked partly by officers because the gunners toiling on foot could not keep pace with them. In the present day even field batteries can move for short distances at a gallop, carrying the gunners requisite for the service of the pieces, while the fire of the guns has increased to an extent which would then have been considered impossible. Therefore, in trying to estimate the modern place of field battery, we need not study old wars, but may confine ourselves to examples taken from the last war with France and Germany. The battles round Metz are especially interesting both because the Germans there met the flower of the French army, and because a German artillery officer, Captain Hoffbauer, has given us a most careful and instructive account of the work of his own arm in those engagements.

The lecturer then proceeded to describe, in detail, so far as the action of artillery was concerned, the battles of Borny, Mars la Tour (Vionville), Gravelotte, and Sedan, and then gathering together the main lessons to be learned from these battles, observed:—

The artillery was, as a rule, pushed forward in advance of the infantry, with the object of gaining time and establishing a superiority of fire early in the battle, so that the infantry should suffer as few losses as possible, and not be delayed longer than necessary before attacking. This was done in every case, whether the enemy were superior or inferior in strength. We find the artillery always able to hold its ground when attacked by infantry in front in any formation, even as skirmishers, but suffering terribly, and

sometimes obliged to retreat from infantry lying down behind cover, or in folds of the ground. In such cases there was always felt the want of some troops fitted to dislodge the annoying skirmishers. Good work was done at both very long and very short ranges from 4,000 paces (about 3,200 yards), down to 300 or 400 paces. Whenever it was possible, the batteries closed to 1,000 or 1,500 yards, but frequently the nature of the ground, or their position on the flanks of long lines, prevented anything like near approach to the enemy. The shortest ranges for offensive purposes varied between 1,200 and 800 paces. The artillery on several occasions broke off from the fight in which it was immediately engaged and made flank marches in presence of the enemy. But here we must remember that the French artillery was decidedly inferior. Whenever it could be done, the batteries were massed in long lines, under the fire of which nothing could continue to exist in formation, and this habit became more fixed as the Germans gained experience. The losses were almost entirely in men and horses; the batteries continued in action at the same place after extremely heavy losses, and if too hard pressed, succeeded in carrying off their guns. Guns sometimes held their ground when infantry had to retire. We shall come to the reason of this hereafter. There are no means of ascertaining the actual losses of the enemy by artillery fire. If we could know them, they would be found trifling compared with what they will be in the next war, for the Prussians had no shrapnel, only common shells, and no range finders. Their guns were not so powerful as ours, or as theirs are now. Since the war of 1870, artillery has made certain definite advances. We shall see the effect of them the next two great nations take up arms. Meanwhile, for want of actual war, we must get what light we can from the experimental practice carried out from time to time. We have gained some valuable facts from the practice at Okehampton. We need not spend much time over these experiments, but we shall never understand each other unless we agree, or nearly so, as to the amount of practical decisions we have the right to deduce from such trials. And first we must clearly separate the work on Dartmoor from that usually carried out at the Shoeburyness experiments, about which we sometimes read in the papers. The experiments I am speaking of at Shoeburyness are undertaken to try the actual power of a gun or a projectile under certain definite conditions. They are purely scientific, and as the astronomer must have his instruments marked and moved with the extreme accuracy, as the chemist must weigh his simple or compound materials to the thousandth part of a grain, so must the scientific gunner spend much time and trouble in obtaining accurate results on which to base his calculations. At Okehampton, on the contrary, every endeavour was made to bring the conditions as nearly as possible like those of war, always remembering that the fire of the enemy cannot be imitated. The ranges were not measured by any other means than those which will, I am glad to say, soon be in the possession of every battery. The fire was sometimes rapid, sometimes slow and deliberate, as it would be in war. The ground was very rough, the batteries came into position at all sorts of paces, and sometimes the targets were so placed as to be all but invisible; or, what is worse, they stood out against the sky line in such positions that shells passing over them burst at unknown distances. The batteries were not selected nor especially trained for the purpose. Do not imagine that there was any desire to

make the best of the occasion for magnifying the power of artillery. Such an attempt would have been as unworthy as it would have been futile under the experienced eyes of many critics. And in the details I am about to bring before you trifling hits are not counted as disabling men. We will only take a few examples to illustrate the power of guns at different ranges. To compare them mentally with the ranges of the German guns in actual battle, we need hardly remember that the length of paces to yards is about as 4 to 5, so that 4,000 yards and 5,000 paces are nearly equal. I take the 16 pounders in all cases, because the 9 pounders of the Horse Artillery were new guns which had not yet received their proper tangent scales. At 4000 yards against a small cavalry column (represented by targets) 53 yards deep, using percussion shells in all cases: 6 water shells fired as a salvo gave 48 hits; 6 shrapnel, 14; 12 water shells fired independently, 165; 12 shrapnel, 189. total 36 rounds and 542 hits. At 3000 yards, against a body of infantry, about 400 men, supposed to be in reserve, and represented by the famous dummies, 18 shrapnel with time fuzes disabled 109 men. So far the dummies were standing, now for crucial test. At about 2000 yards (1950), the dummies being so placed as to represent a half battalion of infantry in two lines, the first line kneeling and making every use of cover, some of the men hidden by rocks, the second line lying down 50 yards behind the first. 36 shrapnel with time fuzes disabled 44 out of 103 in the first line, and 6 of the second line lying down. At 2000 yards, against targets representing 288 mounted cavalry soldiers in column of squadrons, the frontage being 36 yards and the depth 53—in nine minutes 36 water shells gave 3802 hits, and in five minutes 36 shrapnel gave 1574 hits, disabling in the first case 186, and in the second 131 men. Many of the hits were not deadly; but, on the other hand, many of the men were killed over and over again by different shells. Each of the squadrons were severely hit, and at all heights from the ground, so that a column of infantry would have suffered equally. I need not trouble you with the effect of the ranges generally supposed to be the best for artillery—namely, between 2000 and 1000 yards—but come at once to short distances. A battery under some cover was supposed to be attacked by infantry advancing from 1000 yards to 100. A 1000 yards only the first line of 100 men in open order and supports about the same number, came under the fire of the battery, and were allowed four minutes to advance 400 yards. They could not have moved faster, for, in the four minutes, the range being always 1000 yards, the projectiles shrapnel with time fuzes:—71 men out of a 1000 were disabled in first line, 24 men out of a hundred were disabled in second line. It may be said that men moving would have been more difficult to hit. But this is not the case, because shrapnel at short ranges covers with its shower of bullets a large depth—400 or 500 yards, so that to have the true range is of very minor importance so long as it is not taken too long. The infantry were then supposed to be at 500 yards, and in two lines, about 150 to 100 in each line, always with open files, rank entire, and the artillery detachments were reduced by three men each to represent losses—a liberal reduction. Shrapnel was again fired:—In two minutes 98 were disabled in 1st line, and 36 were disabled in second line. Again the range was shortened to 400 yards, and there was a further reduction of two gunners per detachment. Shrapnel was fired:—In two minutes 117 men were disabled in first