



## Horse Artillery.—Lecture 2

Captain W. J. Robertson R.H.A.

To cite this article: Captain W. J. Robertson R.H.A. (1889) Horse Artillery.—Lecture 2, Royal United Services Institution. Journal, 33:149, 721-749, DOI: [10.1080/03071848909418080](https://doi.org/10.1080/03071848909418080)

To link to this article: <http://dx.doi.org/10.1080/03071848909418080>



Published online: 11 Sep 2009.



Submit your article to this journal [↗](#)



Article views: 2



View related articles [↗](#)

Friday, May 3, 1889.

LIEUTENANT-GENERAL C. C. FRASER, *U.C.*, C.B., M.P., in the Chair.

---

## HORSE ARTILLERY.—LECTURE 2.

By Captain W. J. ROBERTSON, R.H.A.

### CONTENTS.

PART 1.—Introduction. The coming War. Future rôle of Cavalry. What will be required from Horse Artillery: *a.* Mobility; *b.* Fire Effect; *c.* Supply of Ammunition. Strength of Horse Artillery needed for Cavalry Division. Mounted Infantry. Dismounted Cavalry.

PART 2.—Secondary use of Horse Artillery.

PART 3.—Strength in British Army. Expense.

---

It was my privilege on the 4th May last year to give in this theatre a lecture on "Horse Artillery,"<sup>1</sup> a step that caused me many hours of anxious foreboding and thought, much friendly counsel to abstain, and very many hours of pleasant research. I undertook my self-imposed task because I was thoroughly imbued with the idea that, of all parts of the Service, the Royal Horse Artillery stands most in need of augmentation.

Let me commence by saying that not for one moment will I allow that I am at all forgetful of the great use of the artillery itself, but I find friends of the arm standing up and defending it, in every direction; with the horse artillery in the British Army it is different, and the allusions made to it in papers on artillery are usually summed up in a few sentences. In my last lecture I thought it wise to confine my remarks largely to the past. I gave a short historical account of how the arm had been created and used in the olden days. Then I gave further examples of its primary use with a cavalry Division, its secondary use with the Corps Artillery, principally taken from the war of 1870, and in the last part, treated of the impossibility of any other arm performing its rôle.

The lecture met with little hostile criticism; several cavalry soldiers spoke strongly of the absolute need of horse artillery in the various phases I had indicated, and all present deplored that we possessed so little of it. The only real criticism I met with proceeded from an attack on the veracity of one of my tables, viz., the strength of horse artillery in various armies—a point that I will allude to later.

I come before you again this year from believing the fact that, as an

<sup>1</sup> See Journal, vol. xxxii, page 609, *et seq.*

army, I do not think we believe, in horse artillery. I fear no contradiction in saying that the British Army places a lower value on the effect produced by artillery fire than either the German, French, or Russian; and if this be true of artillery fire in general, it is still more true of horse artillery fire in particular. And the reason for this state of affairs is easy to seek. The British soldier, unlike his European *confrère*, has never stood under a heavy artillery fire from modern guns. A glance at our foes in the last twenty years, numerous as they have been, will at once prove this. Maories, Zulus, Affghans, Boers, Egyptians, Soudanese, all have been deficient in a properly trained and mobile artillery. But if we ask the French for instance, we find Napoleon III excusing himself at Sedan not on account of the Prussian numbers but on account of the fire of the German artillery. If we ask the Germans, we have the greatest master of artillery commencing his famous letters with the sentence, "You quietly, my dear friend, put to me a very grave question, when you ask me—'What is the reason that our artillery, which in the campaign of 1870-71 did such excellent service, failed altogether four years before?'" And if we ask the Russians, we have that truly remarkable man, General Skobelev, when sent to Central Asia, insisting that he should have plenty of artillery. But if this be at any rate with us admitted by a few outside the Royal Regiment of Artillery, hardly any remember that it applies equally to the fire of guns when cavalry are acting independently.

The honest fact is, that in peace-mancœuvres horse artillery is simply in the way. A necessary evil perhaps, but an evil still, it may hamper the cavalry Division or brigade, it certainly cannot hasten its progress. It may be the cause of blame, it cannot be a matter of praise; hence, as a rule, when employed in this way, we horse artillery exist simply on the sufferance and goodwill of the principal arm, and on the customary traditions of the past.

Looked at in the light of military history, the next war between two Great Powers will have consequences perhaps greater than any that have gone before; this will be due more to the great and rapid changes in material than to the years that have passed since the last conflicts. 1870 was thus nearer to the wars preceding it than 1870 and 1878 are to 1869.

In the present age of patents and discoveries war becomes far more a problematical game than at any period of the world's history.

Among the many theories waiting to be proved and tested by rough experience are two specially bearing on the subject of horse artillery, namely, the cavalry screen and the use of shrapnel; and let no one say that it is useless speculating on such subjects, victory will rest with that Power that has adapted its forces and trained them for the work to be performed in the coming fight.

The War of 1870 taught four great lessons:—

1. The power a well-defined mobilization of a nation's forces on war strength gives in the initial phases of the struggle.
2. The impossibility of troops moving in close columns to withstand infantry fire.

3. The great use that artillery can prove if brought early into action, properly massed for the artillery duel, and moved up to close ranges, in the infantry attack.
4. The new use of cavalry when thrown well to the front, to hide one's own movements, and to discover those of the enemy.

The whole of these four lessons were well learnt at the time. The first two are still remembered, and are never likely to be forgotten, all nations have more or less profited by them, as shown by their armies at the present time. The third was obscured by the war of 1877, and few perhaps, except artillerymen, recognized that it was to the bad shooting made by the combatants, inferior armament, and radically unsound principles on which it was used, that the want of effect of artillery is to be ascribed.<sup>1</sup> In this light the coming war may prove (certainly if the Prussians are engaged) the glorification of the "mighty shrapnel," as Prince Kraft terms it. The fourth was well digested at the time, the Prussian Uhlan was a terror to the French, the pride of the German, and an example to the rest of Europe; but none the less gradually and quietly forgotten. The reason for this is not far to seek. Horses are expensive, hence nations like to keep as few cavalry soldiers as possible during times of peace. To counteract this, constant and frequent notice of the great use of the cavalry should be perpetually made, but as the use of the pen is chiefly made by Generals and Staff Officers who have often had little experience of the branch, this is not done, and the cavalry soldier is quietly shelved.

This is particularly the case with us as a nation, who are perpetually engaged in small conflicts with savage nations where infantry chiefly is needed.

We find that it was not till the earliest phase of the war of 1870 had passed that the discovery of the use of the Uhlan was made. But gradually the power of the Prussian cavalry was felt, and from the time they crossed the Moselle, they were pushed far ahead into the very heart of the enemy's theatre of action, paralysing his forces, terrifying the country people, and allowing the German leaders to deliver their blows when and where they liked.

When the campaign of 1870 is looked back upon, it is the use of the cavalry that stands out pre-eminently as unique.

But it must be remembered that the French did not use their cavalry in the same manner, it was kept back in the old traditional way for use on the battle-field; thus it never happened during the whole war, that a French cavalry Division met a German one in advance of the main body. Had the same use been made of the arm on both sides, great masses of cavalry would have been sent to the front, which would have fought obstinately for the ground, and whichever side conquered, would have reaped the overwhelming benefits which were secured by the Prussian cavalry with scarcely a blow.

<sup>1</sup> There were a few exceptions, witness Aladja-Dagh, where the effect of the shrapnel fire of the Russians is described by all as truly remarkable.

It was this absence of struggling that somewhat obscured the use of horse artillery in the cavalry screen.

But the importance of quickly getting the upper hand in this preliminary conflict has not been lost sight of by some of the European Powers, for it conveys the advantages of hitting a blind man with your own eyes open; and as cavalry aided by horse artillery must push back cavalry without guns, it is to the horse artillery that we have to look for this great and stupendous advantage. In such a position another battery of horse artillery may be worth its weight in gold; six guns one way or the other may turn the scale. I purpose, therefore, going rather further into the uses of horse artillery with the cavalry screen than I did last year. Napoleon had stated in a despatch to Paris after the initial reverses of the war, that he intended falling back "on our impregnable positions on the Moselle." Prince Kraft observes on this, that he has not yet seen in any military work any observation on the importance of the rapidity of the German cavalry's movements which had on the 13th August reached this river, thus forestalling the French in their intention of occupying this formidable line of defence, although in possession of a line of railway. If the enemy had been given more time to destroy the bridges of the Moselle between Metz and Nancy, fortifying its more dangerous passages, the events of the fateful days that followed might have been very different. But the fact was that all through the campaign the French quietly acquiesced in having their eyes thus blinded by the German screen.

The services rendered by the German cavalry from the 6th to the 13th August were great in the extreme to the invaders, but it was after the Moselle had been crossed, that their importance was still more fully shown.

The 5th Cavalry Division with the Guard Cavalry Division, about sixty squadrons in all, was pushed forward, after crossing the river at Dieulouard and Pont-à-Mousson, to Jarny and Rezonville, on the line of retreat of an enormous and as yet only partially defeated enemy, bivouacking 9 miles in advance of the only infantry Division that had yet crossed the Moselle.

It was on the following morning that the well-known surprise of the French camps at Rezonville and Vionville by the artillery fire of the 5th and 6th Cavalry Divisions took place.

On the 17th a brigade of the Cavalry of the Guard advanced as far as St. Mihiel on the Meuse, and reconnoitred the ground further west, thus giving two good days' notice of any attack that might have been in contemplation on the main body, and allowing the whole of the German forces between the Moselle and the Meuse to change their direction if necessary to the west or north with perfect safety. But as yet the cavalry of the attacking and invading army was only learning to use their wings. On the 24th August, when the German scouts had ascertained that the camp at Chalons had been abandoned, the cavalry Divisions that furnished these leading patrols were actually upwards of 40 and 45 miles from their corps. But as the cavalry columns drew nearer to Paris, where resistance might be looked for,

they had somewhat diminished this distance, and were only 27 to 30 miles ahead.

In the next European war, we are likely to see the commencement made with large masses of cavalry thrown forward on either side struggling for the mastery, and the victor driving the vanquished back till the former is from two to three days' marches ahead of his own forces; thus keeping the enemy in ignorance of his movements, while enabling his own attacks to be made when and where he likes, affording security and restful nights to his own infantry and artillery, and harassing, on the other hand, those of the enemy. Let us just remember in passing what this entails in the way of mobility, ammunition, and independence on the part of the batteries of the horse artillery employed with the screen on this duty.

But we must also bear in mind the cavalry raids that are likely to be attempted, and perhaps successfully carried out in the war of the future. The War of 1870 and 1871 gives us no example of this, from the fact that it can rarely if ever be attempted in an enemy's country. But the French, if they had had cavalry Divisions to use for this purpose, might have wrought irrevocable damage upon the invading hosts if the raids had been boldly carried out. The Prince, in his "Letters on Cavalry," says in his own inimitable style:—

"Imagine a raid by a French cavalry Division from Dijon by Langres, Bar-le-due, St. Menchould, and Rethel to the northern fortresses. Favoured everywhere by the inhabitants, and warned in time of any threatening danger, hidden for many nights in the forests of Argonne, attacking and annoying our line of communications at such spots only as they knew from the people to be occupied by few or none of our troops, such a cavalry Division would have done us infinite harm; it would have disturbed our communications, destroyed the railways, cut off our supplies, burnt advancing provision columns, &c. . . . Such a raid, assisted as it would be in every village and in every town by its sympathizers, might produce extraordinary results; it might even, suddenly appearing in districts at a great distance from each other, serve as a nucleus around which those sympathizers might flock together, and thus 'call armies out of the earth by a stamp of the foot.'"

Such raids as this may yet play a great part in our defence of India, should our hold there ever be really menaced by foreign armies on its soil. But we have not to look to imagination alone for such an attack. Deficient in ability and skill as the Russian cavalry proved themselves in the War of 1877 and 1878, especially in securing knowledge of the enemy's intention and of harassing their retreat, as for example in the withdrawal from Tashkessen, yet they give us one grand example when properly led of a true cavalry raid.

General Gourko, in his admirably conducted movement on the Schipka Pass, had in less than a month gained possession of one of the principal passes over the Balkans from which they were never afterwards driven, while it was used in January for the crossing of a large portion of their army. But, besides this most material advantage, he had created almost a panic throughout the whole of Turkey

in Europe, subsisting on the country, and spreading destruction and disorder in all directions, uprooting telegraphs and railways, and collecting valuable information from all sides.

It is true that in this raid a large body of infantry (the force was composed of 8,000 infantry, 4,000 cavalry, and 32 guns) were used, but it is doubtful whether their presence conduced much to the success of the expedition after the pass was secured; their part was to hold open the door of the orchard while the cavalry secured the fruit, and in many cases it is conceivable that the cavalry Division will be able to play this part of the game also.

But, alas! this is the only use in a positive sense we can make of the Turco-Russian War of the use of cavalry, though we have abundant instances of its negative value.

Thus, with reference to advance guard work, Major G. S. Clarke informs us that though General Skobelev with a flying detachment seized the bridge over the Sereth at Barboschi on the 24th April—the Cossack cavalry having started at 3 A.M., and reaching the bridge at 9 P.M., after a ride of nearly 65 miles—yet Plevna, only 35 miles from Sistova on the Danube, was not touched by cavalry patrols till three weeks after the crossing of the Danube! What a difference is this to the work of the Prussian Uhlán, yet the failure was not due, as we see, from want of mobility—65 miles in eighteen hours will require no bad battery of horse artillery to keep up.

Again, had the Turks after the first battle of Plevna possessed a sufficient cavalry force of the stamp they used to possess, the disaster to the Russian arms might have been complete. The pontoon bridge at Sistova was only 35 miles distant, and might easily have been seized for ought that the Russians could have done to prevent it. While the defeat after the second battle was such that a panic did occur there, notwithstanding the absence of any pursuit, and General Richter had even to bar the bridge by force of arms before he at last succeeded in allaying the alarm.

Had a single Prussian cavalry Division been present that day, for instance, the 5th under General von Rheinbaben, with its four horse artillery batteries, as on the morning of the 16th August, 1870, what a different ending the war might have had! What a hurrying and haste would have been seen among the already discomfited Russians; with the bridge firmly held, all the troops on that side the Danube would have fallen a prey to their hitherto despised enemy, and the great river might not have been so easily crossed again.<sup>1</sup>

Nor were the Russians themselves better qualified to take advantage of a pursuit. Usually their cavalry never attempted to follow up a success, and though at times they did reap some advantage from thus pushing their successes, as for instance at Lovtcha, where the Caucasian brigade, with its Cossack horse artillery battery, claimed to have destroyed some 3,000 of the enemy by shrapnel fire, yet it never encouraged them to do more in the future, and time after time they

<sup>1</sup> Major Clarke estimates the Turks at 35,000, and the Russians at 22,000, at this time at Plevna.

allowed the Turks, who were almost absolutely deficient in the arm, to slip away from their fingers.

Valentine Baker writes from his own experience as follows: "The Russians had the great advantage of immense superiority in cavalry, acting in a country which was admirably favourable for its development, but they failed to derive the slightest benefit from this superiority. During the retreat of the Turkish forces, which terminated the campaign, endless opportunities were constantly occurring for the effective use of the Russian cavalry. When the Turkish armies fell back from the Balkans in a slow but almost uninterrupted retreat to the Ægean, almost destitute of this branch of the service, their movements might have been utterly hampered by active cavalry operations on the part of the enemy. As a rule, the outposts of the two armies were in actual contact, the main forces being separated by a comparatively small distance, yet on no single occasion did the Russian cavalry ever seriously press the retreat of the Turks."

The absence of this pursuit on the part of the invader is the more unfortunate, from a military history point of view, from the fact that it has prevented the weakness of the Turks in this branch of the service being much commented on. If there is one phase of action in which a properly provided cavalry force is useful, it is in the rôle of covering a retreat. This was the one duty that the German cavalry in 1870 never fulfilled. If the Russian cavalry had risen to the occasion, had, for instance, Skobelev been charged with this duty, we should have heard more of the fatal want of cavalry stiffened with horse artillery on the part of the Turks.

In outpost duties, again, the Russians were lamentably wanting. General Valentine Baker, after his gallant and plucky defence of Tachkessen, was allowed to slip away with an ease that is simply incredible. Captain Greene, in his work, sums up this in one line:—

"On the next morning, January 1st, the Turks could not be found."

Once more let me bring to notice the utter failure of the Russian cavalry in preventing supplies from entering Plevna and in carrying out the investment on the western side. General Kriloff had as much as 56 squadrons and 30 horse artillery guns under his command from the 19th September till the 7th October, yet about all that he accomplished was delaying a force of 10,000 men for two days. Major G. S. Clarke remarks in his wonderfully interesting account:—

"The task of preventing the provisioning of Plevna could only be accomplished in two ways—either taking up a defensive position on the Plevna-Orchanie line and waiting to be attacked, or by rapid movements and vigorous offensive tactics. The latter course was the most natural rôle for a cavalry force. The country was favourable for the employment of the arm, the distance from Orchanie to Plevna considerable, and, except the *chaussées*, few if any lateral routes appear to have existed by which heavy transport was practicable, while a long train, extending over more than 7 miles of road, was not very easy to defend against a strong cavalry and horse artillery force. . . . Of the two tasks allotted to General Kriloff, the cutting of the Plevna communications and the sparing of his



troops, he had only succeeded in fulfilling the latter. After the great losses of the 11th and 12th September, it was natural for the Russians to wish to avoid further sacrifices, but fully admitting this, and also the difficulty of cavalry operations against modern infantry, it seems nevertheless that a *grand* opportunity for a brilliant and dashing cavalry General existed, and that it was lost."

I have given here more prominence to this failure from the fact that it would seem as if here too a new and important work is likely to be given to the cavalry Divisions, namely, the investing large sectors of fortresses in the future. Major G. S. Clarke himself quotes—and he is no mean authority on such a subject—a passage by Captain von Widdern, that—

"In future wars armies will often find themselves in front of fortresses which, on account of the extent of their works, cannot be completely invested. This observation applies especially to France as a theatre of war, where . . . the task of observing much of their fronts and of intercepting their communications will be left to that mobile force *par excellence*, the cavalry."

For instance, a second siege of Paris will have to be very differently conducted to the last. The extent of the surrounding forts, now reaching to 104 miles, makes the necessity of leaving the investment of a large sector of the cordon to the cavalry an absolute necessity, and should an attempt to get in or out be suddenly made, to the guns of the horse artillery will have to be entrusted the detaining the disturber till other and extraneous aid appears. The cavalry Division will thus have, by constant and rapid changes of position, to deceive the enemy as to their strength and locality.

These are some of the ways in which cavalry Divisions are likely to be employed in the future when on detached service. Let us, therefore, now look a little into the duties required from the horse artillery attached to them; and it must be remembered that though only a proportion of the batteries may be thus employed, yet every horse artillery battery must be so fitted as to take its place when wanted in the cavalry Division.

Three things, then, are specially needed: 1st, the power of keeping up with the cavalry at all times and places under every circumstance of bad roads and wet weather; 2ndly, its ability to hit when asked to do so; 3rdly, its supply of ammunition in action.

With reference to the first condition, we have already had one instance of what General Skobelev demanded and obtained from his cavalry on a special occasion, 60 miles in eighteen hours. Prince Kraft, in his letters on cavalry, states:—

"1st. A squadron must be able to get over  $4\frac{1}{2}$  miles at a rapid pace (trot or gallop), and must then have sufficient power left to make a charge and carry it through.

"2nd. Certain picked horses must be able to march great distances, say from 50 to 60 miles in a day, and thus it must be possible to carry out extended patrolling.

"3rd. The larger masses of cavalry must be in a condition to make long daily marches, and should certainly, to give figures, be able to

advance for three days at the rate of from 28 to 30 miles per diem. If these marches are to be continued for more than three days, the daily amount should be diminished, and if on any day the cavalry are asked to do more than usual, then the next day must be either one of rest or only a short march must be made on it.

"These exertions, whether of a single squadron or of a cavalry Division, must have *no influence* on the tactical efficiency of the force making them.

"This is not too much to ask. The cavalry can do it, have done it, and will do it, whenever they are asked, if only they are allowed the means to do it."

I would specially draw your attention to the words "*no influence on the tactical efficiency of the force.*"

If Prussian cavalry can do it, and will do it, we may take it, I presume, that we must be able at least to do as much, even if we are contented not to do more, but it means a good deal, viz.:—Taking a horse artillery division with all their spare carriages and line of wagons 90 miles in three days and then having enough sound horses not to impair one's tactical efficiency. It means the guns being asked to do an occasional 80 miles a day, and some of the Officers and men sometimes riding close on 90 miles in the twenty-four hours.

One is proud of being able to say, like the Prince, "they have done it." Last year I alluded to Captain Rodber's march of 95 miles in thirty hours, and his tactical efficiency was so little impaired, that he fought a battle at the end of it; and I have lately had my attention drawn to another battery in India that sent three of its guns, in September, 1857, from Meerut to Gogaiva, a distance of 70 miles, in one march of sixteen hours, to save the Treasury there. The battery was then known as the 3rd Troop 2nd Brigade, Bengal Horse Artillery, lately L | B, R.H.A., one of the batteries recently reduced.<sup>1</sup> While, I believe, G | B this winter marched 166 miles from Neemuch to Mhow in 10½ hours, without injury to horse or man. I allude again to the subject this year, as the mobility of horse artillery must never be lost sight of.

Having got the guns into the right place, the next thing is for them to be of use—they must hit; and this introduces what I have alluded to above—"The mighty shrapnel."

The subject of accurate and well-directed shooting from field-guns is one that some cavalry soldiers are inclined to pass by as one concerning the artillery alone. This is surely a mistake. First it concerns them much as a partridge is concerned with the shooting powers of fowling-pieces; secondly, as one is personally interested in one's friend's ability to hit when after tiger with him. If two cavalry Divisions of equal strength are engaged together, and the artillery of one hits nothing and the other shoots really well, victory is likely to be assured to the latter, while it will be cold comfort to the horse artillery of the former to know that it did nothing effectual because it was assigned an impossible task by its cavalry General. Not that it is

<sup>1</sup> From the records compiled by the present Inspector-General of Artillery in India, Brigadier-General Nairne, C.B.

necessary for a cavalry leader to know technical details connected with artillery, but it is absolutely essential for him to know when and where he can rely on his guns, in order that he may use them as a weapon for attack and defence. Let us then briefly consider the three kinds of projectiles with reference to a cavalry engagement.

Each case-shot contains about 314 bullets. There are six rounds (two with gun and four with limber) present with the gun. Owing to their proximity and the absence of any required preparation, the whole thirty-six rounds could be fired while cavalry are advancing on the battery during their last 500 yards, for four rounds per gun can be fired in a minute. After leaving the gun the case-shot bursts, the bullets form a cone and strike the ground in the shape of an oval. The harder and smoother the ground, the more effective will be the result of the fire, as the balls will ricochet. The lateral spread can be roughly given as—

Range 100 yards.....	17 yards. <sup>1</sup>
„ 200 „ .....	24 „
„ 300 „ .....	42 „
„ 400 „ .....	53 „

As the guns stand at about 20 yards interval their fire thoroughly sweeps the whole front, and consequently a front attack either from cavalry or infantry can never be successful if the gunners are prepared for it. Before dismissing case one may remark that it is a similar projectile to the old canister. For its effects, therefore, we can turn to history.

Not so, however, with shrapnel, our next projectile to discuss. Here, owing to rapid modern improvements, we have nothing to guide us but that fallacious test—the practice ground.

In the war of 1870 and 1871 little shrapnel was used, so little as to be useless. Thus on the 16th August out of 6,259 rounds fired by the German horse artillery only six were shrapnel, and on the 18th August out of 8,538 only nineteen were shrapnel. In the Turco-Russian War more shrapnel were used, but the fuzes were bad, the way the guns were employed worse, thus little reliable data are to be found.

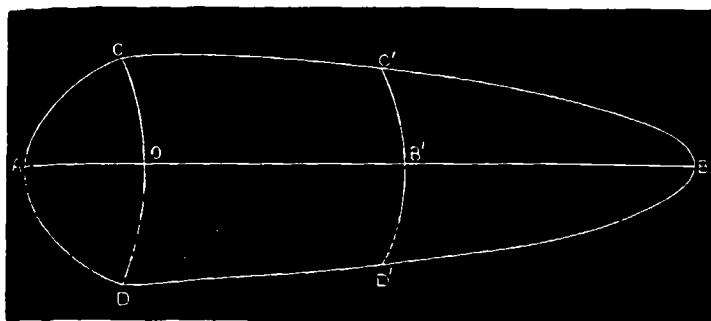
I shall allude directly to the enormously destructive power of common shell, as evinced in the Franco-German War, but must here state that the destructive power of shrapnel on men and horses over common shell is (we gunners affirm) something like as 5 to 2, when used in conjunction with a good time fuze, and we now pride ourselves on having the best in Europe—the T. and P. short.

The following figure shows the ground covered by the bullets (177, weighing about 5 lbs.) after they have hit the ground and before they have ricocheted.

Half the bullets will fall on either side of COD. The effective beaten surface is that comprised between ACC' B'D'D, and is all that

<sup>1</sup> See Major Eden Baker's "Notes on Tactics."

should be taken into account. As the range increases the frontage covered by the effective bullets (CD) increases, while the depth covered



(AB') decreases; a similar effect is produced by increasing the length of the burst. This is shown by the two following tables.

#### 50 Yards Short Burst.

Range.	CD.	AO.	AB'.
500 yards .....	12 yards.	45 yards.	400 yards.
1,000 " .....	17 " "	42 " "	377 " "
1,500 " .....	21 " "	37 " "	344 " "
2,000 " .....	25 " "	35 " "	337 " "
3,000 " .....	29 " "	29 " "	291 " "
3,500 " .....	27 " "	27 " "	200 " "

#### 100 Yards Short Burst.

Range.	CD.	AO.	AB'.
500 yards .....	14 yards.	90 yards.	410 yards.
1,000 " .....	22 " "	83 " "	356 " "
1,500 " .....	30 " "	74 " "	319 " "
2,000 " .....	37 " "	69 " "	296 " "
3,000 " .....	42 " "	59 " "	270 " "
3,500 " .....	42 " "	55 " "	256 " "

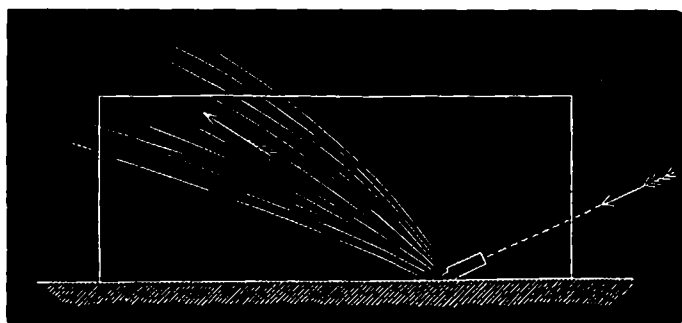
The practical effect of this is shown by the large amount of ground covered by the bullets of a shell. Thus a squadron of cavalry in squadron column advancing on a gun would at 1,000 yards distant be within the effective zone for 377 to 356 yards, according as the shell was burst short or long. This shows how very difficult it would be for the gunner to miss doing some damage, especially when it is remembered that it is always easy to hit the right direction, the difficulty has been to ascertain the range.<sup>1</sup> When it is further considered that on hardish ground all the bullets which fall in ACOD will

<sup>1</sup> I have taken these tables from Major Eden Baker's valuable work on "Preliminary Tactics." Till my attention was drawn to it I had a much hazier idea of the action of shrapnel.

ricochet so as to supplement the bullets already fallen in the greater space CC'D'D; while those already there will ricochet further yet, the ground covered by each discharge of the battery (six rounds) will be very considerable, as can be seen in Fig. D (Plato). The leading regiment is here shown in line; in line of squadron columns it will be far more exposed.

Besides being burst in the air with a time fuze, shrapnel can be made to burst immediately after impact with a percussion fuze. This entails less preliminary preparation, which is, however, of little consequence, for when an enemy is advancing on the battery, shrapnel can be brought up and laid handy with their time fuzes set for ranges differing by hundreds of yards.

Effect is here taken alone of the bullets ricocheting, as in the diagram. It is very much more effective at the shorter range, both



from the greater striking velocity and smaller angle of descent. With percussion shrapnel the cone of dispersion of the bullets, unlike that of time shrapnel, acts upwards; the result being that many of the bullets fly too high to be effective, and when they descend again are practically useless from having lost too much velocity. The worst feature, however, regarding the use of percussion shrapnel is that when the range is not very accurately known, the result produced will probably be *nil*. By some, great reliance is placed on percussion shrapnel; I own myself to being prejudiced against its use with a cavalry brigade, owing to the quality it possesses with time shrapnel of all absence of noise. It used to be said that artillery fire was principally felt in its moral effect; since the late Franco-German War, however, this can no longer be alleged, while shrapnel has even since then enormously increased its man-killing properties, but unfortunately in moral power some of its increased effect has been counterbalanced in two ways: first, the terrible wounds inflicted by round shot, that used to shake men's nerves, no longer occur; secondly, the loud reports of the shell bursting have been exchanged for slight puffs. A good instance of the former is given in Mercer's "Journal of Waterloo," where a single horse struck by a round shot seems to have produced a more sickening effect than the large number of men killed and wounded

later. In time of peace, probably few are aware of the loud noise made by a common shell bursting. At one station I was in there was a large and substantial splinter-proof shelter for a range party. One day when on range I placed the target just behind the splinter-proof where we were, and observed that when shrapnel was fired I had some difficulty in preventing the other members of the party from putting their heads out to see what was going on, but when common shell was fired there was no necessity for saying a word, nobody wanted to move. A horse that stood fire perfectly I also took into the butt, and when common shell was fired and burst near, we had some trouble in preventing him from breaking loose.

I own, then, when firing at cavalry to have a fancy for common shell owing to the disturbing effect it is likely to have on the horses.

Nor am I alone in this. Von Schell (Chief of the Staff to the Inspector-General of the Prussian Artillery), says: "Against rapidly moving objects, such as we encounter in a cavalry action, shrapnel is too difficult to manipulate, in addition it is no easy matter to follow the enemy's movements with it, while the comparatively long time required to load with this projectile does not conduce to rapid shooting."

The small puff of the shrapnel, too, horses will not notice, but the loud report of the common shell, bursting with unexpected and lightning-like rapidity, will startle many of them, rendering them most unmanageable. It is unfortunate, however, that the 12-pr. steel common shell may only break up into three or four pieces. On the other hand, if shrapnel is so destructive in killing men it may have a ten-fold effect on horseflesh at times. For instance, at Vionville, the artillery lost in killed 29 Officers and men, 228 horses, nearly seven times as many; at Gravelotte, 26 Officers and men, 324 horses, over twelve times as many. Now, if this was the proportion where the horses are often under cover and the men usually, if not invariably exposed, in the cavalry we may expect great losses in horses from artillery fire.

A good instance of the destructive effect of common shell against horses is mentioned by Prince Kraft; he says:—

"At one moment something was seen moving to the right in the forest of the Ardennes. By the help of field-glasses this was made out to be some cavalry marching in two ranks towards the north, and passing through a clearing in the forest on the hill. The batteries endeavoured to find the range. With elevation for a little more than 4,000 yards we appeared to hit. I considered that the range was too great for the fire to have any effect, and I was about to order it to cease, when an evident disturbance in the ranks of the enemy proved that our projectiles had reached him. We continued then to fire slowly at this moving target, as long as it remained visible. On the following day, Lieutenant v. Kaas, while doing duty as aide-de-camp, passed by this point, and found on a narrow crest which ran between very steep ravines an entire French battery which had been abandoned there. The team of the leading gun had been blown to pieces by our shells, and the other guns could not pass it; thus the whole battery fell into our hands a trophy of the accuracy of our fire."

Yet this gun could not be compared with our new 12-pr. B.L. in range, shooting power, or accuracy.

In Fig. C (Plate) I have taken an illustration of two cavalry brigades advancing directly on one another, one of which has a horse artillery battery. I have presumed that the battery gallops straight to its front, coming into action at a distance of 1,300 yards from the enemy, who, up to this, would be only pressing forward at the trot, now changed to a slow gallop of 12 miles an hour.

When he is at 400 yards from the guns, they cease firing on the leading line, having been able during the 2' 40" of its advance to fire 18 rounds of shrapnel or 24 of common. If the former a total of 2,180 bullets. Its own cavalry then are in position to charge themselves on this advancing line shattered more or less by fire, with gaps in its ranks, and horses unsteady; the battery is then able to turn its attention to the 2nd or 3rd line according as its fire is less masked by its own troops. These would be still 650 and 1,000 yards off. Thus, there would be ample time for it to deliver an effective fire before its own 2nd and 3rd lines became engaged. The best thing that could happen would be for one of the lines to attempt to charge home, thus rendering it liable to a heavy loss from case, and being attacked in its turn by cavalry when its ranks were more or less opened out to avoid the guns' fire. Fig. D shows the same attack when near with the effective zone of a round of shrapnel marked against it.

In Fig. E, I show the same encounter, only the battery's cavalry are at first masked by a fold of the ground, hence, after the battery has galloped forward and begun to fire, its opponent finds that he has to change direction to his right, in order to meet the opposing cavalry on his right flank. Here the horse artillery would have an even better opportunity, and would be able to continue its fire almost up to the very moment of encounter.

#### *Explanatory Footnote to Diagram.*

The distance from the battery to the first position is taken as 1,300 yards, when firing begins, it is continued to the second position, 400 yards off. The time taken to advance this 900 yards is  $5' \times 900 \div 1,760$ , i.e., 2' 37". If we allow 1' for the first rounds, and 45" for the rest, this will give 3 rounds per gun, or 18 rounds in all; a total of over 2,180 bullets.

I have assumed that at 400 yards firing ceases at the first line to allow its own cavalry to charge. The second line is still 650 yards off, and the third nearly 1,000. There would therefore be abundant time before the latter could charge the battery to fire at it 3 rounds of shell and 1 of case, if not 2, per gun; a total of 18 shrapnel and 6 or 12 case. If it attempted to gain a flank it would offer even a better chance of being cut up, as it would have to wheel by troops and deploy again under fire, while the battery would change front in less than a minute.

I have purposely shown here no opposing battery, as by so doing one sees better the invaluable use guns may be in cavalry combats.

Where both sides have artillery, success is likely to result to that side which uses its artillery to most effect. In this term I include tactical advantages and good shooting. It will, as a rule, be best for the battery even to endure a heavy fire from the enemy, rather than give up firing at the cavalry, for final success must be decided by the

2<sup>nd</sup> POSITION.

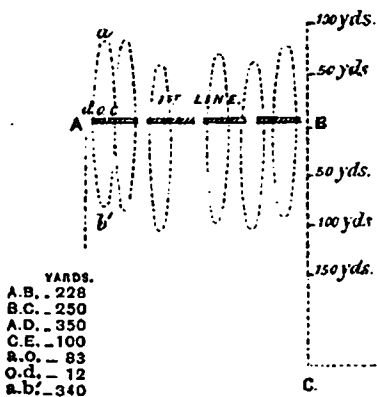
100

100

FIG. E.

FIG. D.—CAVALRY BRIGADE ADVANCING TO ATTACK.

**BATTERY FIRING SHRAPNEL AT 1,000 YARDS RANGE.**



Number of bullets in the six (n.c.o.d.) is 530.

**300 LINE.**



*arme blanche*, thus, no efforts should be spared to break the ranks of the enemy before the charge takes place. In many books on tactics one sees diagrams in which the horse artillery are shown in different places for action. A cavalry encounter takes place so quickly and ends so rapidly, that till one side is defeated, I believe the artillery will usually not change its ground after its first position has been taken up, and that if this should be a bad one, nothing can hereafter atone for it. If there is more than one battery present, they must not be separated, as by so doing, their fire-effect is less, and their risk of capture greater.

I much wish the authorities could see their way to occasionally allowing such examples as this to be worked out in practice at targets with a cavalry brigade on rough ground, when the cavalry could see for themselves the effect of our fire, and we could learn how far we could gallop ahead with the best advantage, and the best position to take up.

With reference to the third point, the supply of ammunition, there are many, I am afraid, like the German Officer who said, "As soon as you begin to talk of lines of wagons, I begin to feel ill." But yet it is a theme that cannot be confined to the artillery alone. The Divisional General must at least recognize the difficulty in carrying out the renewal of ammunition in action, and the remainder of the command must be forbearing in allowing the wagons to pass.

General Sir David Wood, G.C.B., who has seen much horse artillery work in all its phases, recently remarked to me: "You have no idea how quickly 36 rounds a gun go in action." And though cavalry actions are proverbially soon over, yet, allowing an interval of 6" per round, in less than  $3\frac{1}{2}$  minutes the whole of your limber boxes will be empty. Thus, it will be necessary, even when the horse artillery brigade are on detached duties with cavalry, for the first line of wagons to be kept close to the guns. This alone, when a battery is detached, will give many a *mauvais quart d'heure* to the battery commander, as he will often be unable to spare an Officer to be with them. On the other hand, the second line of wagons need not be kept so close to the front, as there will never be occasions likely to arise when the ammunition is needed in less than an hour; while on account of the roads being fairly free, in that time they will be able to come 5 or 6 miles. When acting as corps artillery however, the second line will have to keep much nearer, both on account of the greater likelihood of being wanted, and the far more crowded state of the roads.<sup>1</sup>

Having thus considered a few of the multifarious duties of a cavalry Division when acting alone, together with some of the requirements it entails on the horse artillery, we get to the important question as to the number of such guns needed.

To arrive at a satisfactory and fair solution of this, we can hardly

<sup>1</sup> In speaking of the 1st and 2nd lines of wagons, I am not alluding to the Divisional Reserve Ammunition Column, but to the battery wagons divided into two lines, as is now ordered by the New Drill Book.

do better than see what qualified experts advise. Perhaps the best we can call upon as evidence is the great master of modern artillery, Prince Kraft of Hohenlohe, of whom Colonel C. B. Brackenbury writes: "Prince Kraft is far from being a mere artilleryman. When I had the honour of being introduced to him at Berlin, he was described as the deepest student of general tactics in the whole army."

This witness is the more valuable, from the fact that, while a gunner, he is by no means too prepossessed in favour of his own arm. In his letters on cavalry, in the first nineteen there are only, I think, six allusions (each short as a rule) to horse artillery, and of these six, two are allusions to past history, and three are introduced only to prove the evil that wheeled carriages must prove to a cavalry force. While the twentieth letter, treating on the use of horse artillery with cavalry, is only five short pages, and is headed with an apology for mentioning the subject at all, which he says he does, only because he is asked. This unbiassed witness, therefore, briefly says that in the days gone by, the old theory was to attach three or four guns to each 1,000 troopers, while the German Regulations leave the question open.

The Prince declares that such a practice is founded on no solid basis, that a cavalry Division is often split up when acting independently into two or three brigades, and that as it is absolutely necessary, if a brigade has to occupy and hold its ground, for it to be accompanied with artillery, and while each of the three brigades may be thus at times so employed, in his opinion to avoid the terribly fatal error of breaking up batteries, there should be as many batteries as there are brigades. This is looking upon it from the cavalry standpoint. Turning to that of the artillery, he maintains that it is fatal to the efficiency of a battery to take its Commander away from his own battery work, to follow the General of the Division through a whole campaign; and that as one battery may frequently have to be detached from the main body for separate work for short intervals, the horse artillery Commander should never be given a less command than three batteries.

But these two double rules the Prince supplements by a third, that as far as I know, is not sufficiently considered:—

"I may sum up my opinion with regard to the posting of horse artillery to the cavalry Divisions by saying that I think that a complete brigade of horse artillery ought to be attached to every independent cavalry Division which is intended to work under the direct orders of the Commander of the army, and to be released from all control of any Corps Commander; and that this brigade should be formed exactly as it is at the mobilization, that is to say, in our case of three batteries, no matter whether the cavalry Division consists of 20, 24, or 36 squadrons, or whether it is divided into 2 or 3 brigades."

It is to this rule that I wish to call especial attention, that a weak cavalry Division should have as strong a force of guns as a strong one.

In the now famous "Letters on Artillery," the Prince is again sparing of his notices on horse artillery, though it is true that in the historical

parts in which he alludes to the services of the German artillery in 1870 and 1871, he has, for once, to be prodigal in his allusions to them.

But in the last letter, the eighteenth, published after the rest of the series, the Prince alludes to criticism on this very point that he has enunciated above, and which I have specially drawn your attention to. He says:—

“To the last letter which I wrote, you sent me the answer that if a whole brigade were attached to a cavalry Division, the latter would become too clumsy, as the brigade would be like a leaden weight hung on to it. This is quite true in theory, but in practice it is by no means the case. Three pounds are certainly heavier than two, and therefore three batteries must certainly be heavier than two. But this is not altogether correct, for three batteries can trot as fast as two. A cavalry Division fully equipped for detached duties has many other leaden weights to draw after it, all of which fetter its flight, as, for example, field hospitals and provision columns. On the other hand, the addition of one battery creates no new impediment. If only the mounted detachments be kept well closed up, if the brigade be employed as a principle only in mass, then it makes no difference as far as regards the mobility of the Division, whether there be two or three batteries. But it makes a great deal of difference as regards the fighting strength of the Division.

“In war, no Division would find three batteries too many, rather it would possibly find them too few. Did not General von Voigts-Rhetz at once increase the horse artillery of the 5th Cavalry Division to four batteries? With these Major v. Korber, at Vionville, surprised the French camps. They will only be found to be too many in peace, when no one knows exactly what to do with them.”

But if the Prince is in favour of “richly endowing” the cavalry Division with guns, he is by no means in favour of doing the same to it with rifles. He considers the number of men that can thus be sent to the front too few to have any permanent bearing on the action of large masses of cavalry: and useful as mounted infantry may prove in small wars and engagements, it would seem as if there was a large preponderance of opinion opposed to their use as summed up as follows:—

1st. They might sometimes lead to a muddle as regards the command of the force engaged. The Cavalry Commander is not accustomed to leading or using infantry: he will seldom have had experience in it, and might at times, while in action, be superseded by a senior infantry Officer with brevet rank, when a new procedure might occur, ending with the cavalry being improperly handled.

2nd. The number that can be brought into action thus is small, owing to the necessity of horse-holders. This is a difficulty that has hardly been fairly grasped. The horses must be kept under cover, hence often away from the men in action; while if artillery fire plays on them, serious trouble will result by

- horses breaking loose. The difficulty, too, of forage is increased.
- 3rd. The number of horses for a campaign is limited, thus it must be proved that this is the best way of using them.
  - 4th. The men will not be seasoned to ride: they will be soft and gall easily, their horses are likely to suffer from insufficient care and attention. In no way are they likely to fulfil the requisites for mobility given before.
  - 5th. The best marksmen are not the best riders; while hard riding is not conducive to good shooting.

Thus it is likely to be found after a few weeks' campaigning, that the General of the cavalry Division will be wanting to take their horses from them and to give them to the cavalry, looking to his guns for defensive action.

Whether it might not be wise to consider more carefully the stamp of transport horse, so that when a necessity arises, infantry can be pushed forward in transport vehicles, is another point. Colonel v. Lübell, in his annual review on war changes, says: "A general agreement has further been arrived at on the Continent in regard to mounted infantry, which, as an organization for European warfare, does not find favour; and even Russia has modified the views previously held in regard to it. The advantages to be gained from its employment out of Europe, in Colonial wars, &c., are generally on the other hand acknowledged."

As, however, we are not likely to be beaten in any of our small wars, we can pay the less attention to this, and prepare for graver struggles.

The somewhat kindred subject of dismounted cavalry in action may be shortly considered. In large operations it must be out of place, but occasionally it may be necessary to make a feint of holding a position when the joint action of guns and carbines may have a good deceiving effect. Thus a good instance of the use that can be made of dismounted cavalry is supplied by an incident in the operations on the Upper Lom. In the Turkish advance from their position behind the Kara Lom on Biela, Colonel Valentine Baker had ridden forward to reconnoitre, and observed a large body of Russian cavalry on the point of occupying a wooded knoll that was the key to the whole position. To prevent them, not a moment could be lost, for if the Russians occupied the ridge of the wood, they would be able to see the road that ran through the valley from Sarnasufflar, and could judge of the strength of the advancing column. A young Circassian who had previously ridden forward assured him that the approaching force consisted of 3 squadrons of Cossacks, 4 battalions of infantry, and a battery of guns. The only Turkish troops near were 6 weak squadrons. Colonel Baker directed 2 squadrons to move up rapidly and occupy a small hill on the right of the wooded ridge, 2 squadrons to occupy the ridge itself, and the remaining 2 he took with him forward along the road. The Cossacks had already reached the skirts of the wood as the party arrived, but the Turkish cavalry

galloped so boldly forward that they fell back on their supports, about 400 yards in rear. Another party of Russians had also taken position on the hill on the right, but the Turks, dashing up at a gallop, threw them back, too, into the village.

All at once, at 1,000 yards distant, appeared a line of infantry skirmishers stretching right across the valley. Three battalions of infantry in column could be seen behind them, and a battery of artillery was taking up its position in rear, and at once opened fire. It was impossible for the six weak Turkish squadrons to hold at bay such a force for long if seriously attacked, but if time could only be gained, reinforcements might be hurried up. Colonel Baker therefore fell back from the open ground in front till *within* the shelter of the wood; here he dismounted some of his men, with the direction to hold the edge as long as possible, while he set about trying to obtain some support. The ruse answered admirably: the Russian columns halted and made preparations for a regular attack upon the ridge and wood. Soon a strong Turkish infantry battalion came in sight, and it was not long before they re-took the ground in front of the wood, driving the Russians hastily to the rear, pursued by the very thin line of skirmishers and the six squadrons of Turkish cavalry. Evening was rapidly approaching, and the main body of the Turkish forces being near, the position was saved.

In thus taking farewell of the horse artillery in its primary use, viz., with a cavalry Division, I have of course by no means exhausted all the ways in which it is likely to be used in the future. I have studied to represent some of its more striking features only.

## PART II.

There is less need to speak of the secondary use of horse artillery, not that it is one whit less important than in what I have termed its primary use, but because the subject of corps artillery is one that is oftener spoken of in connection with artillery subjects.

But it must not be forgotten that these horse artillery batteries of the corps artillery, while called upon to perform equal work with their slower moving brethren of the field artillery, must never allow their mobility to be decreased by too heavy an armament. Not only must they be capable of being rapidly pushed into action at the call of the Corps Commander, but at any moment they must be ready to hasten on with any body of cavalry to which they may be attached. The great value now placed on the fire of artillery is thus evinced by the fact that no batteries will ever in future be allowed to stand idly by, doing nothing, whether they form an integral part of a cavalry Division or not.

So important is this *rôle* of horse artillery that I would like to draw attention to the action of General Freiherr von der Beeke at Vionville, on the 16th August, 1870, who, we are told on the authority of Captain Hoffbauer, refused to allow Major Korber's two horse artillery batteries to rejoin their cavalry Division, even when summoned to do so by a special orderly Officer in the afternoon, though he had

then under his command seven other batteries, while the cavalry Division had been purposely increased to four batteries that very day, and it had been seen how useful they could be that morning when they surprised the French camps. If it be true that horse artillery is expensive to maintain, in war it is ever in use, in advance, pursuit, outpost duty, or in a heavy engagement. There are, however, some features of this secondary use I wish to mention. One is the subject of shields.

In the July number of the "Nineteenth Century," of 1878, appeared an excellent article on "Ironclad Artillery," advocating shields for field artillery. The writer, Colonel C. B. Brackenbury, founds his article, which is worthy of a far more lasting position than the pages of a monthly magazine, on the enormous effect produced in the war of 1870 by the German artillery at short ranges by guns of very inferior power, firing only common shell, but massed in large groups of 100 guns and boldly used. The effect of shrapnel by such a gun as our present 12-pr. will be far and away more destructive, provided it be possible to continue in action without losing all one's men. The writer alludes to the almost total immunity enjoyed by the matériel of loss or damage. This is shown in Appendices III and IV of my last lecture, where, on the 16th August, 1870, the German horse artillery lost 358 horses and 179 men, but had only a limber-box and a gun-wheel damaged, and on the 18th August, with 524 horses and 238 men killed and wounded, the only damage was three wheels, a pole, a breech-piece, and an axle-tree seat. Colonel Brackenbury finally recommends shields of wrought iron, soft enough to allow shells to pass through, but strong enough to give protection to the detachment from bullets and shrapnel. For field artillery such cover would often be simply invaluable, allowing the "action numbers" to remain at their guns when exposed to an infantry advancing upon them with almost total immunity to loss, at the very shortest ranges.

The only question that can arise, is to the disadvantage of carrying an extra weight. Two plans suggest themselves, one to have the shields attached permanently to the gun-carriage, so that they would lift up on hinges, to cover a man's head and shoulder—for instance, the top of the axle-tree seat could thus lift up towards the muzzle; or the shields could be made removable and carried on a separate cart or wagon. I am not now speaking of field artillery, but have introduced the subject because I believe that it will eventually come into universal operation, and if so, it is clear that if horse artillery batteries are to take their place in line with field batteries it will be necessary to give them the same protection. As the shields would seldom be used when in action with cavalry, I would not venture to impair the guns' mobility by making them permanently attached to the gun-carriages. I would rather see them carried on another carriage, and not brought up into the first line of wagons except when the battery is being used as Corps Artillery. Should the battery when thus employed have to be detached again to join the cavalry, it could leave the shields on the ground.<sup>1</sup>

<sup>1</sup> Major. Elles in his Silver Prize Medal of 1879 advocates a light steel shield

While on this subject I may add that I should like to see the tugs of the shaft horses no longer of the present pattern, but open, like the patent tugs of private harness, thus much facilitating hooking in; a great advantage in the case of a wheeler being shot or hooking in fresh horses under fire.

Now for armament. The one great point to settle is, whether it is necessary to have a lighter gun than the field artillery gun.

It is quite certain that the present 12-pr. is not too heavy for them, while, mounted as it is, it is certainly too heavy for us, weighing, without the two limber gunners, 39 cwt. 11 lbs.

The question is, could this weight be so decreased as to send it into the field with only some 35 cwt. (including everything behind the splinter-bar). I think it might. Perhaps the weight of the carriage might be slightly decreased.

Stores, amounting to 184 lbs., now carried on the gun-carriage, might be carried elsewhere. Lastly, if necessary one or both of the limber gunners might be mounted, as in the Prussian horse artillery.

In addition, the weight on the horses' backs might be sensibly decreased. Principal V. S. Fleming lately stated in a lecture at Aldershot that the weight carried by the near wheeler of a horse artillery gun was, with a 12-stone man, as much as 22 stone; and though I do not make it quite so much, yet undoubtedly it could be much decreased, thus affording sensible relief.

Whatever gun is finally settled on, its term of service is likely to be short; invention, with rival companies treading on each other's heels, follows speedily; quick-firing guns only await a smokeless powder, and there is a possibility that field howitzers may yet have a place on the field of battle.

### PART III.

In a recent number of the *Institution Journal* there is a short paper entitled "Horse Artillery in Various Armies," by Captain Callwell, of the Intelligence Department, and as my name is linked to this communication in a footnote by Colonel Hale, and the whole communication is a critique on Appendix VII of my first lecture on "Horse Artillery," I can hardly be considered guilty of temerity in alluding to it. I propose first accepting, as we have a right to, that the figures given from such authority are correct, and examining the deductions drawn from them. Three tables are given: Table I, "Peace Establishment;" Table II, "War Establishment;" Table III, "Field Artillery."

As nations, unlike individuals, do not unfortunately fight like pugilists sometimes with gloves, sometimes without, it is, I think, useless to discuss the first, "peace" establishment; no nation is ever

$\frac{3}{16}$  inch thick, weighing only 7 lbs. 10 oz. per square foot. This gives a total weight of 167 lbs. with the gun, and 78 lbs. for the limber, a total for the spare cart to carry of 13 cwt. and 14 lb. This would be somewhat decreased by the weight of spades and shovels now strapped to the gun, for if shields be used, gun-pits will seldomer than ever be dug. Everything points to the infantry using the spade more, the gunner less.

likely to challenge us to a more or less friendly contest with our troops at present serving with the colours. War is far too serious a business to be conducted like that. It will be more than a matter of life and death of individuals, it will be a struggle for existence for the nation itself, and the amount of troops we have on our peace establishment is as much our own private affair as the amount of capital at the disposal of a private bank is of the proprietors. Even if our means and ways of mobilizing were the same, for instance, as other Continental Powers, it would be at the best a most fallacious test.

As regards war establishments, the number of guns, horse artillery, given as per 1,000 cavalry are as follows:—England, 2·3; England and India, 2·2; Germany, 3·3; Russia, 2·0; France, 3·4; Austria, 1·5.

It is difficult to see in the light of these figures how Captain Callwell can maintain that we are not weaker than our Continental neighbours in horse artillery. Germany here comes into the field not with three horse artillery guns to each of our two (she has, owing to her total strength, nearly six guns to our two), but with equal bodies of cavalry she can allow three guns where we allow two; in other words, with a cavalry Division of 3,000 sabres she could allow 9·9 guns where we should have only 6·6, while France could even allow a fraction more, viz., 10·2 to our 6·6. What is Captain Callwell's explanation of this table? He says:—

"In Table II, where the proportions of horse artillery guns to 1,000 cavalry are less than in Germany, the cavalry include yeomanry, which can only serve in the United Kingdom; excluding yeomanry, the war establishments of cavalry are very slightly larger than the peace establishments." And elsewhere he says, "That no horse artillery exists in this country for service with the yeomanry is in accordance with the general practice abroad." The yeomanry are either of use or they are not; if the latter, the sooner they are disbanded the better; if, however, their utility is admitted, and I for one claim them as a most valuable adjunct in war, both in case of home invasion, and in a serious struggle abroad as volunteers for the ranks of our far too few cavalry; then why, in the name of common sense, refuse them the advantage of artillery? But even admitting, for the sake of argument, that it is wise to deprive the yeomanry of horse artillery—and I will admit it on this one ground—then the peace figures alluded to above do not much help matters, only raising the percentage to 2·6 for England and India.

In the third table, entitled "Field Artillery," India is unfortunately omitted. This robs the figures given of much of their value, as it is only by calculating India that we arrive at anything like a true state of affairs.

But does any one soberly suppose that if we go to war we can confine our operations to two army corps of the strength given? If we are to we shall indeed do badly. Supposing war between two Continental Powers, in which we get drawn in, no such improbable event, will either of the combatants be satisfied with us as an ally if we can coolly talk of supplementing their 18 or 19 army corps with only two more? Of adding one weak cavalry Division to their



9 or 10 strong ones? Are our Indian Princes' irregular cavalry to be unused altogether because we happen to have made no arrangements in peace for them? And above all, are the remaining cavalry, infantry, and field batteries, &c., in the United Kingdom, amounting to the difference between the two army corps and 80,000, not to be utilized in any way? But are Captain Callwell's figures correct?

In Table II he says: "Depôt horses and field batteries, &c., have been counted, since in the case of invasion, the depôts would certainly be used as service batteries." Is Captain Callwell aware that the actual needs of the horse artillery batteries in India this winter season amounted to upwards of 350 men? Many of the batteries needed over 40 men sent out to them.<sup>1</sup> Even supposing the horse artillery depôt had been strong enough to supply these needs, only recruits almost utterly ignorant of the higher needs of their duties could have been supplied, men some of whom had never yet galloped with a gun into action, none had ever seen a single shot fired. Had war been proclaimed, as far as India was concerned, none of these men would have been fit for their posts in English horse artillery. Thus out of the 11 batteries in India only 9 could have been sent on service. But alas! the depôt was too weak to supply this call, and on an average 10 men had to be taken from each of the service batteries to help the Indian batteries, thus seriously crippling some of those at home. Hence, instead of the depôt being of use as two fresh batteries, they were depleted of men, and yet were too weak to fulfil their own duty. Oh! but the reserve? The following table shows how far we can rely on this:—

Wanted to complete 5 batteries on the higher establishment up to war strength.....	85 men,	370 horses
Wanted to complete 4 batteries on lower establishment.....	212 "	401 "
Wanted for men supplied to India to complete their normal needs .....	93 "	
Under strength, say 6 per battery and 10 per cent. unfit for campaigning ..	170 "	85 "
Total required about .....	560 men,	856 horses

Against this we have, I suspect, between 600 and 700 men of the First Class Army Reserve, who would have to supply not only these 560 men but complete the batteries in India.

H.R.H. the Commander-in-Chief has himself said, "The artillery is a very delicate arm, and I certainly should not have confidence in a horse artilleryman after he has been away a year." In face of this may one not wonder how these 560 men are to be supplied?

But to return to our depôts. How about the horses? The depôt horses, fit as they are for their present work, are quite unfitted for

<sup>1</sup> 40 men going and another 40 coming considerably upsets a battery's efficiency.

active operations; probably not 10 per cent. would stand a campaign of seven days' duration.

But the guns, equipment, &c., are of use? Yes, the old 9-pr. M.L. may be if ammunition could be found for it in the Arsenal and wagons provided.

Thus, instead of placing our horse artillery guns at home as sixty-six in number, I aver that with so much to arrange and equip them for service, it is far truer to place them at forty-six as I did in my last year's paper.

But it is with Table III that Captain Callwell scores heaviest, bringing up his number of horse artillery guns per 1,000 cavalry to 7, and to 100 field-guns to 36. Now this table is a misleading one. It is headed "Field Artillery," which I am now told is a misprint for "Field Army," but having no notes or comments it was difficult to guess what it was. The number of horse artillery guns have risen 2 from the peace establishment, but the field guns have diminished from 200 to 132.

It is apparently a table showing the number of cavalry and horse artillery in the two army corps. I do not care to dispute this proportion.

I maintain that having sent off these two weak corps, you have left in the country, either against possible invasion or further operations on the Continent, a large force of infantry, cavalry, and field-guns with only six horse artillery guns. Instead of forming or trying to form new batteries then, I recommend by the comparison of former wars that it should be done now, even at the expense of other things.

Another point where I maintain we have shown short-sightedness in not maintaining a much larger force of horse artillery, is that we cannot but rely in our next European war largely on mercenaries, and these from the very nature of the case cannot be anything else than infantry and cavalry. Once war is proclaimed England will enter the market for soldiers. Cavalry will only be obtainable in the East. Our own native cavalry regiments will prove invaluable, but will not alone be able to supply the whole need for that arm, far from it. It is to the great native Princes that we shall turn for assistance, and will readily get it, but for artillery and horse artillery in particular they have none and never will have any to supply. Roughly speaking, 300,000 troops are thus at present in the pay of the native States of India, and two-thirds of this number are concentrated under the rules of ten Princes. Since the last Indian scare some attention has been paid to these troops as a line of defence, and every year is likely to see more and more heed and care paid to them by the English Raj. Their cavalry even now is probably by no means inferior to that of many of the Cossack sotnias; with English supervision it will quickly improve: are these troops then to be launched against the Cossack brigades, armed with a proper force of Cossack horse artillery? Or if they are to be combined with our own cavalry, thus more than doubling its numbers, are the auxiliary horse artillery to be left at

<sup>1</sup> Should have been Field Army.—Ed.

its low strength of eleven batteries at peace establishment? The very fact that such irregular cavalry is likely to prove for all but reconnaissance work inferior to the mounted troops of European Powers, is an argument for giving them an extra large proportion of guns, rather than none at all.

In conclusion, I should like to say a few words about the cost of horse artillery, as many people look upon it as out of all proportion to its usefulness, others, though admitting its utility, would maintain it on as low a scale as possible for reason of this expense.

The principal items of expenditure over a field battery are as far as I can gather as follows, though it is possible I may have overlooked some items:—

	Higher establishment.	Lower establishment.
Difference in pay between a H.A. battery and a field battery, as set forth in the Army Estimates for the current year.....	£ 558	£ 924
Extra rations for men (viz., 151 men instead of 150, and 115 instead of 100) at 10 <i>l.</i> .....	10	150
Difference in money between the clothing of a H.A. battery and a field battery .....	99	84
Forage for 29 and 38 horses calculated at 29 <i>l.</i> per horse per annum .....	841	1,102
Total annual charge, .....	1,508	2,260
Add for depreciation of stores and extra horses: 29 horses minus 11 officers' horses at 3 <i>l.</i> per annum, and 38 minus 11, i.e., 18 and 27 horses One seventh of the cost of the extra saddlery....	54 18	81 26
Making a total per annum per battery of .....	1,580	2,367

But it must be observed that even this comparatively small extra cost is, in reality, less than it appears, for I have taken the lowest establishment of a field battery, when the amounts include respectively one man and fifteen men extra, hardly a fair item to enter into the comparison.

Was it for sake of this sum that four good old batteries were lately reduced? Surely it would be wise to raise them again, if I am right in the figures I have brought forward, and which merit a short explanation.

The first item includes the Officers' pay: thus, in it is included the 2*s.* 6*d.* a-day horse artillery pay the Major receives, or 45*l.* a-year; out of this he has to pay 1*l.* for income tax and 4*l.* 10*s.* for shoeing his horses. The remainder, 39*l.* odd, is supposed to provide for maintaining him in saddlery, stable necessaries, and horses. It is doubtful if the State would gain in relieving him of this. The main

part of the third item is made up by providing the dismounted men of the field battery with a mounted kit; the extra charge to the State of a rank and file horse artilleryman over that of a field battery mounted man is but 6s. 11d. annually. To speak of the expensive horse gunner is therefore a mistake, his dress actually costs 4s. 3d. less than that of a hussar, and 1s. 2d. less than a foot guardsman.

And yet it was not long since that we were told "the pomp of horse artillery, with its smartness and rapidity of pace on parade, cannot but cause regret at seeing its numbers reduced, but an undue proportion of it is an extravagance from every point of view that cannot reasonably be defended; and, if by the economy effected by the conversion of three horse artillery batteries into field batteries we can add to the fighting value of our Army as a military machine, we ought not to hesitate to do so."

I humbly maintain if we had hesitated longer we should never have taken the step.

The CHAIRMAN: I feel I shall express the wish of everyone present when I tender, in your name and in my name, our best thanks to Captain Robertson for the lecture so ably carried through, worked up with such care, and showing, as he has done before, such deep interest in his profession. We must all feel that this is a subject of vital importance to the efficiency of the Army, and therefore of the deepest interest to every intelligent man in the kingdom. I now beg to invite, according to custom, any gentlemen to make remarks in discussion upon this subject.

Major BARRINGTON FOOTE, R.A.: Rather from the point of question than of discussion I would ask to say a few words. There are several instances of rapidity of movement and the mobility of artillery generally quoted, and these usually come from India. The instances here are somewhat old, and I should like to quote an instance which took place about a year and a half ago, when Major George Turnbull's battery, out in India, covered in a certain march 47 miles in 10 hours and 10 minutes, which is even more rapid than many of the instances given here. I should be very glad to know whether there is any record of the mobility of artillery in England, or whether any record shows that mobility is recognized as one of the main points in the practical part of artillery training. Of course I am aware that a gallop of from 200 to 300 yards sometimes takes place at such places as Woolwich Common and elsewhere, but are there any records of more real training kept as to its being a *custom*, or any as to the tactical efficiency of batteries after long and rapid movement? These short manœuvres may cause enthusiasm amongst the spectators but they can scarcely be considered *la guerre*. The only other question I would ask for information is with reference to the reduction of horse artillery which took place some time ago, and it occurred to me it would be possible to meet the question of expense by maintaining the original number of batteries, but with reduced detachments. In my humble opinion, though I am perfectly sure I stand in a minority in what I am about to say, in time of peace it would be well perhaps to have considered this reduction of detachments. A horse artillery gunner need not be a brilliant horseman. The accomplishments of the riding school and the intricacies of the *manège* are, to my mind, quite beyond the necessity for a horse gunner.<sup>1</sup> The gunners of any field battery would in a short time be able to sit on

<sup>1</sup> The horse gunner works as one of the detachment in a battery, rarely is he required to act independently. The whole battery is one machine; never less than two guns with all that belongs to them would be alone. The cavalry soldier requires far more skill and higher class horsemanship. He constantly has to move and act independently. And, further, one of his chief duties is to be able to fight on his horse.—F. O. B. F.

a horse sufficiently well for all practical purposes. The horse artilleryman's horse is not a means for him to fight on, it is simply a means of locomotion, to fight when he gets off it to serve his gun, very much on the principle that horses or camels or carts are used for mobile infantry, simply that that arm may be carried rapidly to any required spot, their actual fighting power only coming into play when they arrive there.

Major DAVIDSON, R.A. : There was one thing in reading over this paper which struck me as being rather startling, and as Captain Robertson repeated it in his lecture I think it requires a little explanation. He says : "And though cavalry actions are proverbially soon over, yet, allowing an interval of 6 seconds per round, in less than 3½ minutes the whole of your limber boxes will be empty." Does that allude to the whole of the battery limber boxes or does each gun fire a round a-piece in 6 seconds, because the lecturer also says with reference to a battery charged by cavalry, "When he is 400 yards from the guns they cease firing on the leading line, having been able during the 2 minutes 40 seconds of its advance to fire 18 rounds of shrapnel or 2½ of common," that is, only 50 seconds less than 3½ minutes. Surely it must allude to only 36 rounds for the whole battery, and therefore there would be 180 rounds still left. It is rather alarming if the whole of the limber boxes would be emptied in 3½ minutes, and I cannot help thinking it must be a mistake. With regard to Major Barrington Foote's remarks about mounting the field artillery gunners without riding lessons, there are many Officers present more qualified to give an opinion on this subject than myself; but I think we have all seen gunners in positions where horsemanship was very requisite indeed; in fact, if the field artillery gunners started on the animal with a view to locomotion only, it would be quite possible that the animal and he might differ so much as to the direction the locomotion should be in, as to prevent any combined result.

Captain ROBERTSON : With respect to Major Barrington Foote's remark, I can only answer for myself, that I have taken the illustrations rather largely from India because I have not found them at home. I have carried out a long march myself in India but it did not meet with approval. I certainly would not like to try one at home. With regard with Major Davidson's remarks, what I meant was this, that in the case of cavalry advancing against artillery I was not supposing you are going to lose your head and fire as many rounds as hard as you can. I was simply stating what I thought was a fair rate of deliberate firing for preventing them approaching. In the other case I wanted to illustrate that if you did lose your head and your men lost their heads and there was no fire discipline, the very shortest amount of space that you could fire away the whole 36 rounds from your six guns, every gun firing away as hard as it could. I was not at all advocating such a thing; I very greatly deprecate it; but men do lose their heads, and I wished to point out if such things may occur it is all the more necessary to have your wagons fairly near.

The CHAIRMAN : I would ask permission to say a few words. I can only venture to address you as a cavalry soldier, which I have been all my life, but all my life I have had a strong opinion that horse artillery and cavalry should go hand-in-hand. One without the other is of but little value. I have tried in India, at the Curragh Camp, and elsewhere, whenever I have had the chance, to practise the exercises of these branches of the Service. Unfortunately for us, we have very few fields for this purpose, except the grand field of India, and the opportunities are very rare. Even the Long Valley at Aldershot is too small for a small brigade of artillery and cavalry. So it is, and we must not lose sight of it. It is serious to know, and many of us have seen it, that often good commanders in the field are at a loss what to do with their cavalry and horse artillery merely for want of practice. Looking to the future, we are all very earnest in the hope that the horse artillery will be re-established, and to the best of my small ability I have tried for the last two years in the House of Commons to support this idea. I have done this without reference at all to politics, and I merely mention it to show that I am a friend to the horse artillery through the cavalry interest, and I shall work for this end in the future as staunchly as I have worked in the past. I, to-day, came to England on purpose to be present, and to have the honour of presiding at this lecture, and this morning, with other things to do, I did take a few notes, and if you will permit

me I will explain them. I will not trespass on your time by expatiating on the splendid work the horse artillery has performed in the old days; we all know it, the country knows it well. In these days of what they call progress, but some of us think them changes, modern instances only are supposed to have effect. Fortunately, we have modern instances proclaimed conspicuously by that great commander who has been so highly spoken of to-day, and whose letters find such favour in all soldiers' hearts—Prince Kraft zu Hohenlohe. His writings have fortunately been translated into English, and I trust that the translation will be a text-book to every soldier in every rank in every branch of our profession. I will not go into the stories of long marches, of the splendid mobility and of the power of concentrating masses of artillery to pour fire into an enemy and of its grand effect; but I should like to refer to what he tells us so continuously of the splendid power of horse artillery in pushing to the front as compared with field artillery. We give all honour to field artillery, but it is impossible that they can do the same work as horse artillery. Their groundwork is of a different character. We have this recognized in Lord Wolseley's "Pocket Book," and I have written down his very words; he says: "It must be remembered that batteries of field artillery are not supposed to move faster than a walk as the gunners march on foot." Therefore, how is it possible that field artillery can get forward in the way that Prince Kraft has claimed for horse artillery? We all claim that batteries, whether in India or at home, do push to the front. I have always thought—"every man to his last"—our field artillery are splendid, our infantry are splendid, our cavalry, we believe, are splendid, but let us give credit to those who deserve it and who have the power of pushing forward. In parentheses I might say in answer to Major Barrington Foote's remark, that we did put it forward at the time of the first reduction of horse artillery, and we had excellent advice about it before we put it forward, with regard to making certain reductions in the horse artillery batteries, so as to save the battery cadres. That went before those who certainly seemed to be opponents to horse artillery and it was not accepted. We tried that two years ago, but it would not do at all. Our gallant lecturer speaks of the *rôle* of cavalry, covering the front, that is what we have been brought up to. We have seen it very conspicuously carried out in the late wars and we certainly shall have it in the future. I remember some very hot work we had in the House of Commons, perhaps not very strongly reported, as the reporters do not take as deep interest in the horse artillery as we wish they did; but I remember a member of the Irish Nationalist Party, as it is called, spoke to the point very much: he said he had served in the French Army during the war with Prussia, and on account of the horse artillery and cavalry the infantry never had a moment's rest, they were always hurried. And so it must be, and how can we possibly cover the front with cavalry unless we have horse artillery to help us? I need hardly touch on the question of proportion. Field-Marshal Lord Napier of Magdala in the House of Lords two years back entered into the question and held a strong position with regard to it. We have heard to-day no word of challenge as to the proportion of horse artillery to our Army. A certain paper came out a few weeks ago, and one or two who knew the work well and one or two who did not know it entered into it and they could not agree. I am sorry it is not challenged here to-day. I will only remark it occurs to me that there is much that is ignored. I will leave it to the future and I trust that this will be cleared up. I do not think anything can clear it up except an open discussion about it, and I do consider that our splendid cavalry in India, regiments of which I have had the honour of commanding in brigade with the native regiments in Her Majesty's Service (we always put two of them to one of our regiments), surely they are to be taken account of in the proportion of cavalry requiring horse artillery! If not, why keep them, with all their splendid services? I would say only a word or two in conclusion. I have touched much on the evidence of Officers in the highest position in foreign armies who have had opportunities of really going into great campaigns, but I would not for a moment ignore the evidence of those that we have served under and that we believe in. I have in my hand a packet of most interesting letters from Officers of the highest rank in the Service and from most distinguished Commanders, all deprecating deeply the reduction of horse artillery. I will not trouble you with more; but I do trust that we shall work with all our energy and with all our zeal, so that the

words of His Royal Highness the Commander-in-Chief shall be carried out when he said: "I consider that it should be restored to its former strength." He was speaking of the Royal Horse Artillery before Lord Randolph Churchill's Committee. These letters in my hand speak of the past—of the great work that the horse artillery has done, and how it has turned the tide of battle. These letters also clearly prophesy, by men who know no panic and who have every belief in the English Army; still they prophesy that if we go out to campaigns as our Army often has done before, we shall most certainly suffer unless we have our proper strength of horse artillery and means of supply. His Royal Highness has told us that he does not believe in reserve men after a year, and the Secretary of State for War, in answer to a question of mine lately, admitted that he had been obliged to send men from the 1st Army Corps to supply the common necessities of horse artillery for the year in India. Unless we have a proper supply always ready to go with a proper force in proportion to the Army (not in proportion to the cadres of cavalry regiments) of well trained artillerymen and horses (if you take from Leicestershire the finest horsemen and the finest horses, you will not train them to work in a horse artillery gun in time for any campaign), I say unless we have them beforehand these letters foretell clearly that we must expect to meet with a disaster that no strategy can retrieve, no sacrifice can save, and no courage can avert.