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GENERAL SIR C. P. BEAUCHAMP-WALKER, K.C.B., Vice-President, in the Chair.

ATTACK FORMATION.

By Colonel G. UPTON PRIOR, late Commanding 2nd Battalion The Royal Scots.

PART I.

IN discussing the question of an attack formation, it is not possible to do so without introducing into the argument the formations in vogue at the present time, and this I venture to hope will be considered a good enough reason for the prominent way in which the attack formations laid down in the present Field Exercise are mentioned. Though it will be seen that the criticisms are not favourable to the formations themselves, they are to the excellent maxims laid down in the Field Exercise, on which those formations are based. These maxims will be found in the chapter on Tactics of the Field Exercise, Part 6. The formations are only introduced as being the latest extant, and as the most convenient way of approaching a subject which, though looking simple, is really difficult, justifying the remark of Clausewitz that "everything in war is simple, but what is simple is difficult."

As the Field Exercise is, I believe, having a few alterations made in it, and the attack formation may, I presume, be looked upon as virtually dead, it will be for the public good if we use them as a lesson for any future formation, and the present seems a favourable opportunity for any discussion on the subject. I would desire to say how much I am indebted to the "Letters" on Infantry, Artillery, and Cavalry, by H.S.H. Prince Kraft zu Hohenlobe-Ingelfingen, translated by Lieut.-Colonel Walford, Royal Artillery.

With these introductory remarks I will proceed with the argument.

The question of the formation most suitable for infantry to adopt when attacking has always been of vital importance to the success of an army. This formation has ever been a varying one, depending chiefly on the great factor of the "arms of the day"; there were dense masses in Continental armies and rigid lines in the English with un-rifled arms, and a gradual shaking out of such formations into finer ones when these arms improved. As the Field Exercise of 1890 justly remarks, "Normal tactical formations have a real absolute value, and when adapted to the configuration of the ground, and to the nature and condition of the troops, seldom fail to influence

favourably the issue of a contest." The Field Exercise also gives the conditions on which now-a-days all formations intended to be used by troops, attacking a disciplined and well-armed enemy should be based.

These conditions are :

(1.) Admit of the most efficacious fire at all times, and of its greatest development at the decisive moment.

(2.) Present a difficult target to the enemy's fire.

(3.) Allow of the best use of any cover that can be advantageously made use of.

(4.) Afford the greatest mobility at all times.

(5.) Admit readily of reinforcement.

(6.) Lend themselves to the maintenance of command.

Our first duty is to consider whether these conditions represent correctly and adequately the requirements of the present time.

Now evidently the main factor which has been kept in view in framing them has been that of the arms of the day; Nos. 1, 2, 3, 4, 5 conditions all point to this.

But so quickly do changes occur that, even since the above conditions were written, arms have improved, and other factors besides arms have arisen, which might necessitate fresh conditions. These are :

1st. The tendency to employ cavalry in masses, a subject on which we have had the advantage of a valuable lecture at Aldershot lately.

2nd. The invention of a smokeless and a possibly noiseless powder.

We must also recollect that in the English Army there is always the possibility of fighting badly armed fanatics. This, however, is not a new factor.

We may take it then that the two factors given above, with that of the Arms of the day, are the three great factors regulating the conditions of any attack formation; and a safe, and I trust not a tedious, way of considering the question would be to treat each of these factors separately, seeing first, if any of them require new conditions, besides the six laid down in the Field Exercise; secondly, to test the Field Exercise formation both with its own conditions and with any such new conditions if found; and, thirdly, to frame an attack formation suitable to them.

Taking the factor of arms of the day, these are rifled artillery and the magazine small-bore rifle. The artillery is pretty much the same as it has been for the last few years, and very powerful, indeed, are the field guns, the only practical limit to their range being the powers of vision. The small-bore magazine rifle is quite a new weapon, its speciality being a very flat trajectory with great powers of penetration.

Now, armed with a rifle like this, what sort of formation would it suit us to fire at? Evidently one with a good depth, in which there are a good many rows of troops behind one another, for then if a bad shot were made, it would matter little if the bullet went to the right or left of the man aimed at in the first row, and thus through

a gap in that row, because, if the elevation were good, it would go on and hit someone in a row behind; whilst if the shot were a good one, it would hit, not only the man aimed at in the first row, but, going through him, might hit someone in a row behind, as I am informed that the flat trajectory 303 bullet will go through six men or three horses. A story given by Prince Hohenlohe-Ingelfingen shows the power even of the rifle the Prussians had in 1870; he says that at St. Privat the glacis was in front of the village of Ste. Marie, which was rather advanced on the right flank; out of this village a flock of frightened sheep burst, crossing the front of the Prussians as they were about 600 yards off; the Prussians thought from the dust the sheep raised that they were cavalry, and shot every one of them. As regards artillery, though its effect is not so important in an attack formation as elsewhere, because the artillery of the defence is generally silenced early, it is a well-known fact that it is the density of the formation which is the greatest cause of loss to troops under its fire; the ground covered by the bursting of a shell being far greater in depth than in width. Both these weapons, then, which constitute the factor of arms of the day, would inflict frightful slaughter on troops drawn up in successive rows, and as such an eventuality does not seem to be sufficiently considered in the six conditions laid down in the Field Exercise, we must add this condition to them, viz.:—

When troops are under fire no two lines should advance together within 200 yards of each other.

Let us now consider the second factor of the tendency to employ cavalry in masses.

The massing of cavalry at peace manœuvres has been largely carried out of late by Continental nations, especially by Germany, Russia, France, Italy, and Austria all following in the same line, and even we ourselves have dared to spend 3,000*l.* on such manœuvres, and are thinking of having some more in three years' time, if we then have the money. Whether this change in the handling of cavalry has a strategic or a tactical object, it is difficult to say, probably the former chiefly. Now, as the German cavalry in 1870, departing from the custom of war in those days in like cases of sticking close to their infantry, suddenly developed the new rôle of boldly advancing miles in front, and spreading over a large area of country, thus securing to their own side the greatest strategical advantages, why should not the Germans, or any cavalry in the next great war, suddenly develop some trait hitherto looked upon as absurd, which might give to their side great tactical advantages?

The Germans commenced such tactical action on the 16th August, 1870, at the battle of Vionville-Mars-la-Tour, when, having only one Army Corps, their IIIrd, against three French Corps, the IIIrd, IVth, and VIth, they were obliged to use some 8,000 cavalry as second line to their infantry, until infantry reinforcements arrived; the cavalry acting as second line from 10 to 12 o'clock in the morning; and later on, the most of them, making with others a total of 78 squadrons, were moved to the Prussian left, to check the

advance of the IIIrd and IVth French Army Corps, who were making a flank movement against the Prussian left. Masses of cavalry were also used by the French three times, viz., at Wörth, Mars-la-Tour, and Sedan.

If it is found, then, that, despite the powers of rifled artillery and magazine small-bore rifles, a cavalry leader, making use of the ground and seizing on occasions when troops are exhausted, dispirited, or without ammunition, should hurl his masses against them, we should have a great tactical advantage for the side on which are such dashing cavalry. And it must be recollected that the cavalry of the defence have a much better opportunity of charging during an action than those of the attack, because they know the ground beforehand, can be placed ready waiting, and they have not so far to go to get to a flank.

The following examples show what cavalry have done formerly in action.

In days gone by, many more victories were won by cavalry masses than in later days; thus, the battle of Rossbach was won entirely by cavalry.

In 1866, at the battle of Custozza, two Austrian cavalry brigades, strength about 2,500 men, charged two Italian divisions, strength about 20,000 men, breaking through the skirmishing line and squares and creating such a panic that these divisions were useless for the whole day; at 5 P.M. they charged the same infantry again, and took 1,000 prisoners. And this was in a country more close than open, having many trees.

At the battle of Koeniggratz, a squadron of Prussian cavalry surprised a victorious Austrian battalion as it was advancing, and took the whole of them prisoners, some 600 men.

At the battle of Sedan, the divisional cavalry of the Germans continually charged in individual squadrons, and patrolled and reconnoitred during the fight.

On the 16th August, 1870, at the battle of Vionville-Mars-la-Tour, General von Alvensleben, wishing to gain time for the sixth division of the IIIrd Army Corps attacked by a very superior French force, ordered Bredow's brigade, consisting of six squadrons, some 800 men only, to charge, and they rode down the first line of the infantry of the whole corps, and then went on and cut down the teams and detachments of the artillery, checking the entire corps for the whole day, and virtually saving the day.

The subject is a deeply engrossing cavalry one, but in considering any attack formation we cannot enter further into it than to take it into our calculations as a possibility, and as such to make our plans beforehand against it. The great powers of the new rifle come to our assistance in this; we have both a rapidly-firing weapon and one which covers the first 500 yards of ground without any change of sights. And we must use these powers against this possibly new tactical action of cavalry. To take advantage of the rapid fire, we must have as large a front as possible for any close formation (we will call them here squares) against cavalry. Another advantage of having

large squares is that it brings the natural fears of the horse on our side; for horses are not machines beyond a certain point, and though they may be driven over infantry scattered in groups, or even over small sectional squares, yet they will not face any formation with a front big enough to show a good fringe of bayonets, because they can see that a long way off, even if they are going at a gallop; and they will then naturally open out, and go round the flanks, whilst the few who are driven into the square will be absorbed by it. Again, as cavalry never charge in a single line, but with a second and third on the flanks of the first, small squares, though they may resist the first cavalry line, would probably be broken by the flanking ones. Therefore, no square should be smaller than that of a company.

To take advantage of the power of the flat trajectory, and thus enable our men to fire at cavalry a long way off, we must have a clear field of fire; therefore, we must take care that our men are not in each other's way. This flat trajectory power disposes of the argument that large squares would suffer from artillery fire. A smart infantry should not do so now, for, with smokeless powder, cavalry would be seen a long way off; they cannot now pretend to charge, stopping three or four hundred yards short, directly they have got the infantry into squares; the infantry would now fire at them, and they would lose as many men from the infantry fire as the infantry would lose from the artillery. If the cavalry carry out the charge, their artillery must stop firing when the cavalry are within 400 yards of the square. A smart infantry need not then form square till the last moment; it can lie down when formed, and it can open out directly the cavalry commence to retire. It may be stated here that, in the campaign of 1870, the greatest number of cavalry charges against squares took place at Sedan, and were, as a rule, failures, though the French cavalry rode most gallantly. We therefore obtain from this factor that "no square, meaning any close formation, should be smaller than that of a company."

The third factor is smokeless powder, and its effect would seem to be as follows:—

(1.) The infantry of the defence, through being able to open fire without being themselves seen, could often inflict such sudden slaughter on the infantry of the attack as to render it liable to panic.

(2.) Both sides will not only be without the excitement caused by noise and smoke, but will be able to see and hear most clearly all the horrors of the battlefield. The nerves of both sides, and especially those of the attack, will be much more highly tried than they were in the old days. Fire discipline will be more likely to go to pieces; troops will not aim, but will fire anyhow, even without putting their rifles to their shoulders, or up into the air as if they were firing a *feu de joie*. Prince Hohenlohe-Ingelfingen remarks, "How difficult it is in the excitement of battle to teach infantry to attend to words of command and cautions, as to which target, with what sight, and with what description of fire they are to act; and, moreover, to accustom them to cease firing when they have expended the stated

number of rounds! It is asking very much of a man who is under the enemy's fire to expect him to cease fire in return for a certain space of time. A fire which has once commenced gets easily out of hand unless an 'iron discipline' prevails. It is so natural, so human, that the soldier should find comfort in the noise which his rattling rifle makes. The less a man is trained the more he is inclined to *shoot up his pluck*."

Consequently, one effect of smokeless powder will be to make the men lean more than ever on their Officers, or, in other words, discipline, and the strictest discipline, is more than ever necessary.

No. 6 condition of the Field Exercise partially provides for this, but we might add the following words to it:—"So as to ensure the strictest discipline being maintained."

Summarizing the results so far, we have the above addition to No. 6 condition of the Field Exercise, and two new conditions, viz. :—

From the factor of the arms of the day, "No two lines to advance together within 200 yards of each other under fire;" and—

From the factor of cavalry in masses, "No close formation to be formed against cavalry smaller than that of a company," if it can be avoided.

Let us now test the attack formation laid down in the Field Exercise by these conditions; and in doing so, let us assume that in considering any attack formation, the case of a battalion acting by itself be thought exceptional, and be treated as such; and the argument be based on the broader unit of a brigade, because no smaller force than a brigade could be detailed to act with any hope of success against a point chosen as an objective in a hostile position. Plate 37 of the Field Exercise, being seemingly a typical brigade formation of attack, is taken as the representative one, the battalion in its first line being distributed as laid down in Plate 36 of the Field Exercise; this formation is shown in the wall diagrams coloured red. There are two, one showing the attack at 1,000 yards from the position; the other at 450 yards. For the sake of comparison, Diagrams 1 and 2 are taken at the same distances; whilst Diagram 3, Plate 3, shows the attack at 50 yards from the position.

Proceeding to test this formation, and taking the conditions one by one, No. 1 condition we can see, by simply looking at the diagram, is fairly fulfilled.

No. 2 condition, "formations should present a difficult target to the enemy's fire," may be considered with condition No. 7, "no two lines to stand up together within 200 yards of one another under fire."

A mere look at the diagram shows that they are not fulfilled, as even at 1,000 yards the target offered to the enemy is a very easy one, whilst at 450 yards it is much more so, especially to aimed infantry fire, as the mass gets denser and denser the nearer they approach the position. Not only are there two lines of men behind one another, but probably half-a-dozen, because, besides the firing

line, the supports, and the reserve of the first line, we have a number of men continually running up between the supports and the firing line, and as the advance of these last men is at the will of many different leaders, it is likely to be very irregular.

No. 3 condition to "allow of the best use of any cover that can be advantageously made use of," is fairly fulfilled.

No. 4 condition, of "affording the greatest mobility at all times," is not fulfilled, if the term is applied, as it is presumed, to the mobility of formed bodies, for the men are so scattered in small sections and commands, that it would be very difficult to get them together for any combined action. And this point is particularly important in a field free of smoke, when not only the Captains and the Colonels can see, but even the General of the brigade, division, or army corps. The General may, at any minute, receive information, perhaps from a balloon in rear, enabling him to make determinations and decisions. For instance, in the case of a counter-attack, or of orders for the use of machine-guns, or in the case of his being obliged to use his infantry to help the artillery advance, or his artillery to help the infantry advance, or even of a retirement or reverse. The Colonels again, in the firing line, may have to give orders about an attack by cavalry, or to make certain companies lie down to let artillery fire over their heads. The Majors and Captains may have orders about the "Cone of fire," &c., &c. For any such special objects requiring the power of using commands quickly, the men must be well in hand.

No. 5 condition is to "admit readily of reinforcement." Now the plan adopted in the Field Exercise may be suitable for a battalion, but hardly seems so for a large body like a division or army corps, where there would be many battalions in a line, as it would interfere greatly with the regularity of the advance. Taking even the case of a brigade, it will be noticed that until the supports are absorbed in the firing line there are no less than sixteen points from which reinforcements keep on arriving in the firing line; and after this has occurred, there are eight points, viz., one from each company in the reserves. Now, everyone here will have often noticed how the arrival of one man, with a wrong interval in a skirmishing line, will make the whole line waver. A regular steady incline does not matter much, but it is when the waves are first one way and then the other that irregularity is caused. In the present case we have numbers of men continually arriving from sixteen points, which, with irregularity of ground and losses, must cause waves both ways. Of course this will be neutralized to a certain extent by each company advancing as it does by its centre, but not entirely. When the reserves commence reinforcing the firing line, we may have a half-company of one company and a section of another in support side by side.

No. 6 condition, that "formations should lend themselves to the maintenance of command, so as to ensure the strictest discipline being maintained," is a most important condition and worth going into.

The first words that come across our mind are those of paragraph 15,

section 7, of the Queen's Regulations, under the heading of "Chain of Responsibility," which reads as follows:—"Nothing more essentially tends to the maintenance of regularity and good order than that system or chain of responsibility, which should extend from the highest to the lowest grade." No words could more clearly convey the conditions necessary for the maintenance of discipline, and the experience of ages has proved their correctness. Is there a proper chain of responsibility amongst troops extended like these? Do the Officers who have commanded in peace, and whom the men are accustomed to obey, exercise that control in the fight during its whole stage that they ought to? Do they have their own men collected under their own command? Does the General command his brigade, the Colonel his battalion, and the Captain his company? Certainly not, for from the very moment the battalion breaks into attack formation, the commands are scattered, going from the hands of their natural leaders, the Colonel and the Captain, into those of the section leaders. The General would find it very hard to get his brigade to carry out any order quickly; the Colonel would be similarly situated; whilst the Captain has his company in three detachments with a front of 100 paces and a depth of 200. The chain of responsibility does not extend down; it is *broken*. Later on, when the battalion gets to within about 400 yards of the position, the supports, if one happens to reinforce more than another, might for some time consist of half companies of different companies. There is too much dispersion and mixing up even for peace, and the following examples show what it might be in war.

At the battle of Vionville-Mars-la-Tour, men were so mixed up that the only unit of command preserved at the end of the day was a regiment (*viz.*, a brigade with us). At the battle of Gravelotte and St. Privat, almost all the regiments were fighting side by side in compact masses; at the farm of St. Hubert alone, 43 companies belonging to eight different regiments were crowded together. Now as a German company numbers probably some 170 men after they have been in the field a few days, the number of English companies, under the same circumstances, probably about 60 men each, that this would make is open to calculation. Some writers quote the above example as an argument in favour of the loosest formation, but the fact seems more as if the Prussians had rushed from the extreme of a very close formation to the opposite extreme of too loose a one. It is seemingly a fair conclusion then that the dispersion of command in such a formation as that of the Field Exercise cannot be conducive to control over individual men in a moment of panic, or when nerves are unstrung, or to that "iron fire discipline" we have shown as being so necessary.

No. 8 condition is that "no square smaller than that of a company" is to be formed. This condition could not be fulfilled, as, owing to the distance of the firing line from the supports, company squares could not be formed quick enough. Looking at the red diagram, the formation is seemingly such as to tempt the most peacefully disposed cavalry leader to attack. Not only are the men, from their entry into

the first zone, scattered about in bodies too small to be plainly seen a good distance off by horses rapidly advancing, but they are so placed in each other's way and in the way of the bodies behind, that if any fired they would be as likely to shoot each other as the cavalry. Cavalry might safely charge into such a mass of small units without much danger to themselves, and with a very good chance of cutting up the small bodies and creating a panic.

Summarizing the results, the Field Exercise formation fulfils Nos. 1 and 3 conditions, partially fulfils No. 5, and does not fulfil Nos. 2, 4, 6, 7, and 8.

There is another point in the formation which would have a most important bearing during an action, and which has not been touched upon yet, and that is the plan laid down for the direction of the advance. Though there is a "company of direction" to regulate the pace, yet there is no one directing point; each company marches by its own centre on an objective point of its own; thus, without entering into the larger question of an Army Corps or Division, we find that in a brigade we have eight different lines of advance before the reserves have reinforced the supports, and when all the reserves are absorbed in the firing line we should have sixteen lines of advance, viz., one for each company. Taking eight lines even, it is not likely that these eight lines of advance have been exactly parallel originally, but supposing they were, and the ground like a billiard table, with well-marked objective points on which to march, the manoeuvre would not by any means be an easy one. But when the advance is to take place under fire, over ground probably undulating, in crossing which the files of direction and N.C.O.'s supervising them must occasionally lose sight of their objective points, to say nothing of the confusion caused by obstacles, as ditches, small spinneys, hedges, or perhaps foggy weather, and of the advance being continually interrupted by losses, and the arrival of reinforcements in the firing line, I think enough has been said to show that the chances of the eight lines of direction either crossing or going away from each other, with the consequent jamming or over-extending of men, is more than great, it is quite impracticable.

Another criticism of a practical nature, seeming worthy of notice, is that the present attack formation is too intricate for an army composed of such heterogeneous materials as ours. It must be recollected that it is the attack formation not only of the Regular Army but also of the Militia, the Volunteers, and of the Indian Army; and that the Reserve Forces have few chances of practising it, whilst in the Indian Army there are a very small number of British Officers present with the battalion. From the first moment when the companies move forward, and have to divide the front, "taking up such position as will enable them, when their two sections are extended to three paces interval, to cover the same front as the first line would occupy were it deployed into line," to the later periods of the attack, when the bringing up of reinforcements accurately into the gaps of the firing line, which with the least undulations, sprinkling of brushwood, or foggy weather, are most difficult to see, the leading

of the men requires Officers and N.C.O.'s of some experience. And this would be felt more in war, when any day the formation might have to be taken up *most quickly* on unexpectedly falling in with an enemy, as in 1870 at the battles of Spicheren and Wörth. A simpler formation, and one more approaching the Line with skirmishers in front, the formation so loved by British troops, in which they have performed such gallant deeds, and which we know suits their temperament, would I think be better could we get it.

PART II.

The formation submitted to the meeting attempts to carry out this idea, and at the same time to fulfil the conditions of the Field Exercise, and the new ones we have framed; it is not submitted in any way as being the best attack formation; the only part of it that has been tried practically is the "Advance by ranks," and a field test is after all the only real one. Seemingly any attack on these lines will keep the men more than under the control of the Officers, especially of the senior Officers, and will combine discipline, solidity, and mobility with individual action.

Before entering into the formation let the following be permitted:—

(1.) When under fire, let the proper position of every man be, as now, lying down; this is not to mean creeping or crawling about.

(2.) Let there be no *proper* front rank nor rear rank; let the term "front rank" mean the rank that happens at any time to be in front, and the term "rear rank" the one that happens to be in the rear. Thus the ranks may change at any minute by the rear rank going through gaps in the front, and the rear rank becomes the front rank, and so on.

(3.) *Advance without firing by ranks.*

When men are lying down under artillery fire, and are required to advance without firing, it will be conducted thus: The Company Commander, Major or Captain, will call him Captain, will blow his whistle, and, according to the nature of the fire, either double or run through both ranks, the men of the front rank turning over on their left sides on the sound of his whistle. The Captain will advance not more than forty yards, followed closely by the rear rank, who will each pass on the right of his front rank man. On the Captain throwing himself on the ground, the rank following him will pass him and throw themselves down about five yards in front of him, so as to allow room for the other ranks to lie down between them and the Captain. This will be the signal for the rank left lying down, and for the supernumerary rank, who will both be watching, to rise without orders, and, either doubling or rushing forward, to lie down behind the rank that has followed the Captain. Thus only one rank is under fire at the same time; and one bullet will not kill two men. The advance will be continued in this manner. If the fire permits it, the double will always be used and not the rush. If it is

thought preferable, the rear rank instead of lying down exactly behind the front rank can lie a little to one side behind the intervals.

Advance Firing.

(4.) When men lying down under fire are to advance firing, the then front rank *only* will fire, the then rear rank will not fire. The Captain will give the command for as many men to fire as he thinks necessary; the command will be given to the front rank by the section leaders in the ordinary way. Directly it is carried out the Captain will blow his whistle, run through both ranks followed by the rank which has not fired; and so on as in the advance by ranks without firing.

Thus the fire of the rank which fires covers the advance of the rank which has to rush to the front; and even if there is no smoke the bullets disturb the aim of an enemy just as the men advance. The reason of waiting for the ranks to get together before firing is that it gives the Captain about half a minute to consider his next order, it gives the rank which has just rushed a little time to get their wind before firing, and it brings up the supernumerary rank to command the next firing. Tactically, the advantage of an advance by ranks is that it keeps the men in two ranks, and thus enables the company to be kept well under the control of the Captain and section leaders during the whole advance. It also leaves no doubt as to which part of the company is to advance, as in each advance the whole rank has to go. When different portions are detailed at each advance, there is often confusion and doubt as to who is to move.

Form of Attack.

In drawing out a Form of Attack, the first point is to fix the positions of the four battalions composing the brigade. Let two battalions go into the First Line (see Plate 3, Diagram 1), one into the Second, and one into the Third. The front of the Brigade will be determined by the front of the Second Line in rank entire, because that is the front with which we mean to assault the position. Thus, in peace or war it will be ever varying, depending on the number of men actually in the ranks. In peace-time, when battalions are weak, it would be advisable to consider the Second and Third lines imaginary forces, and that the strength of the Second Line was equal to that of the battalion on parade; the front this last should attack would then be half the front of the Second Line in rank entire, because in a Brigade there are two battalions in the Firing Line. In the present problem, for war the battalion is 800 strong, but we must deduct losses in the advance, say 50 men, which makes 750 men, and a battalion of 750 men in rank entire covers 750 paces. As we wish to give the men plenty of room to use their bayonets in the charge, let us add 50 paces to this, which, together with the room obtained by casualties occurring in the charge, ought to be enough. The front of the Second Line is then 800 paces.

The Firing Line of the two battalions must then cover 800 paces. If each battalion sends $2\frac{1}{2}$ companies into the Firing Line, we shall have 5 companies in the Firing Line, which in file extended to 3 paces, gives a front of 750 paces. Let us make the battalion intervals 20 paces instead of the 12 laid down in the Field Exercise; adding this to 750 makes 770, which, with four company intervals of 6 paces, namely, 24 paces, makes 794 paces, quite near enough for practical purposes to 800. Each battalion will have half a company in support some 20 yards in rear of the outer flank, and one company on each flank between this half-company and the Reserve. The remainder form the Reserve.

Each battalion in the Firing Line, then, has its right half-battalion in the Firing Line and Supports, and its left half-battalion in Reserve.

At first sight, the weak part of this formation is the long front, 150 paces, given to each company in the Firing Line; but it must be borne in mind that, even with this front, the company ought to be in hand, as it is all in front of the Captain, who, in the centre of it, is only 75 paces from either flank. With good section leaders, and probably little smoke and noise, it ought to be well in control. But as a fact, these fronts are all calculated for the strength with which battalions take the field, and are all too big. It would be Utopian to expect that a Captain, starting on a campaign with 100 men in his company, would have that number in his ranks on going into action; if, after deducting casualties, he has 70 men, exclusive of non-commissioned officers, &c., he will be very lucky; the front of 70 men at 3 paces is 105 paces. Even this front is only the front of the company on first forming for attack, which must decrease regularly at each advance.

The third battalion forms the Second Line, and the fourth battalion the Third Line. We thus have the formation of the Brigade. Whilst passing through the first Zone, the Brigade may be marching in column of route; on debouching from this, probably about the commencement of the second Zone, the battalion commanders will receive orders from the Staff to "form for attack as a right battalion or left battalion." The Brigade-Major will show the Commanding Officers the objective point, and the Brigade will extend. Should, however, the Brigade pass through the first Zone in line, or in line of column at deploying intervals, the front of each battalion can be covered by skirmishers and supports in the ordinary way, each battalion sending out two companies to skirmish, each company detailing half a company to skirmish and half a company in support. In this case, on the brigade order to "Form for Attack" as a right or left battalion being given, the two companies sent out by each battalion will form its Firing Line, other companies being sent out by the battalion to complete the formation. The Brigade, in both cases supposed, would extend to 3 paces, and would advance by its centre, the left file of the right battalion; this file will not fire, but move steadily on the Objective Point, supervised by the sergeant-major of that battalion and the Brigade-Major.

The battalion in the Firing Line not directing will march by the Brigade file of direction, its sergeant-major supervising its file of

direction, under the occasional supervision of the Major commanding its firing line and support; it will be noticed that the order of the companies in the left half-battalion is reversed, so as to get them in regular rotation in the Firing Line.

The directing battalion will send two signallers to the Brigade point of direction, and by their means, and signallers between, the Brigade-Major will keep communication with the General of the Brigade. A signaller will go with each Captain and keep communication with the reserve; the bugler will distribute ammunition. Signallers must be able to signal lying down.

In the case of a sudden attack by cavalry the Firing Line and the half companies in Support on each flank, will close on their centres, and throwing back their flanks slightly, receive the cavalry in line. If there is time, however, the companies in the Firing Line belonging to No. 1 battalion will close on their right flank, and those of No. 2 battalion on their left flank. The two companies, one on each flank in Support, one of whose special duties is to watch for cavalry will fire volleys into the flanks of the cavalry should they attempt to take the firing line in flank; should these companies be themselves attacked, they will receive the cavalry in line or square as the Captain thinks best. Any machine-guns with the battalion would probably be pushed well to the flank, also ready to enfilade cavalry. The reserve will advance, and as they have a clear field of fire between the Firing Line and themselves, they can fire at the cavalry if they approach.

The brigade will advance thus by its centre, the Firing Line moving like ordinary skirmishers till about the middle of the second zone, when it will probably come under artillery fire. The advance will now be by ranks without firing. This will be continued till the Firing Line becomes exposed to aimed infantry fire, probably about 800 yards from the position, unless the enemy have thrown out troops in front of their position to hinder the advance of the artillery of the Attack, when it will be earlier. When the Major in command of the directing firing line thinks it necessary, he will give the order to "Advance by ranks Firing." The directing company will fire first, and when its own flank company gets in line with it the directing company will advance again, and so on. As casualties occur and men drop out, the files keep on closing in towards the file of direction, till they get the ordered interval of two paces, the supernumerary rank keeping the men in file towards the directing file, but men of different companies will not be mixed, the interval of six paces between companies being maintained, no matter how few men are left in the company. The supports will reinforce the outer flank of the firing line by files as room is made, these men moving straight to their front and touching in towards the file of direction. The Reserve, under the Colonels, would advance in such a way as to be always able to reinforce the outer flanks of the Firing Line, sending its outer company to replace the company in Support, as it advances to replace the half-company absorbed into the Firing Line. The Colonels would adopt any for-

mation they chose, so as to lose as few men as possible. They would receive reports by signal as to the nature of the ground from their Majors with the Firing Line.

As all the direction comes from the Brigade point of direction in the centre of the Firing Line, the advance, by means of the signallers, should be under the complete control of the General of the Brigade. He may wish to signal orders here, as about this time his artillery will probably have been able to advance within 2,000 yards of the enemy's position, and might assist in the attack. Should the General signal orders, they would easily be carried out, as the men would be well in hand of their Captains and Colonels.

The advance will be steadily kept up till the Firing Line gets within about 450 yards of the Position (see Diagram 2, Plate 3), when the artillery of the attack will probably have advanced again, and got to within 1,200 yards of the position, and the General of the Brigade may wish to give orders, for if the enemy's position is not now well shaken, it would be advisable to crush it by a further artillery fire before the infantry advance nearer. That such is the proper course was shown at the battle of St. Privat, where the Prussian *main loss* was at some 500 yards from St. Privat; and, again, the Prussian attack on the village of Le Bourget, on the 30th October, 1870, gives the same lesson. Should the artillery have to fire over the heads of the infantry, which they might have to do in the attack of an Army Corps, as such a mass of artillery covers a very large front, the infantry will lie down. Unless contrary orders are received, the infantry will advance, firing steadily, being reinforced if necessary.

In the attack by a Division or Army Corps, should the Firing Line in its advance, between 500 yards and 50 yards, meet with such resistance as to require reinforcements, the Colonel requiring it will report by signal to the Brigadier, who will order the third battalion, or part of it, to go up from the Second Line. The third battalion will be replaced by the fourth battalion from the Third Line. Provision for such a change of duties would have been previously made by the strength of the attack being originally stronger against those points where it is likely such resistance would be met. Resuming our Brigade attack when the Firing Line has got to within about 50 yards of the enemy's position (see Diagram 3), the Colonel of the directing battalion will halt his directing company, and form line and rank entire; the left battalion conforming. Both Colonels will now give the order for "Independent firing with fixed sights." All this time the Second and Third lines have been steadily advancing, as shown in Diagram 2, their Colonels taking every advantage of the ground; and about the time the Firing Line gets to within 50 yards of the Position, the Second Line ought to be within 100 yards of the Firing Line, and whilst the Firing Line is independent firing, the Second Line will form line and rank entire, lying down about 10 yards in rear of the Firing Line, fixing bayonets as they are lying down ready to charge, *vide* Diagram 3. Should the resistance of the enemy have been so weak as not to cause the whole of the Reserves to be absorbed into the Firing Line, the companies of the Reserves overlapping the Second Line will

closely follow the flanks of the Second Line in its charge. I think it is one of the advantages of an attack on these lines that it permits this to be done, and thus allows a drill in the Attack Formation to be carried out in peace-time, without necessitating the large number of casualties falling out, as in the Field Exercise attack.

Practising losses in moderation may be good, but I doubt the wisdom of the present plan of simulating such large losses, for what must pass in the mind of a young soldier as he lies on the ground, himself a casualty, and two or three hundred like cases round him? The scene must make an impression on his young mind, which could not be so favourable as that of hunting on the mind of Mr. Jorrocks, when he gave utterance to the celebrated remark that "Hunting was the image of war with only 5 per cent. of its danger." Young soldiers cannot be inspired with confidence by such a scene, and it must be much more calculated to make them what a sportsman would term a bit "gunshy."

The remainder of the attack would be conducted as laid down in the Field Exercise, except that, in re-forming, the companies will each consist of their own men, and be in the regular rotation.

The attack formation for a battalion is the same as that shown in this Brigade attack, the battalion acting either as a right or left battalion.

The Company.

A form for attack for a company could easily be given on the same principles as those of a Brigade or a battalion, but a company is too small a unit to attack by itself. Its practice for the attack formation should consist of being thoroughly trained in its principal requirements, viz., in skirmishing, the advance by ranks, reinforcing, and the advance by ranks firing.

The Army Corps or Division.

In the attack by an army corps or division there will probably be two or more objective points, against each of which a division or brigade would be detailed.

Should, however, the army corps or division have only one objective point, and the attack be a long, continuous one, it will be conducted in exactly the same way as that given for a brigade acting by itself.

There will be one Directing Point, army corps, or division, as the case may be. The battalions on the right of this Directing Point will form for attack as the right battalion of a brigade; the battalions on the left of it as the left battalion of a brigade. In such a case, the supports of all battalions, except those of the two extreme flank battalions, will follow behind the battalion interval next their outer flank companies.

The strength of the troops opposite points where resistance is likely to be met will be increased by taking troops away from those points where there will be little resistance.

Colonel SLADE: I propose, Sir, with your permission and that of the meeting, to say a very few words on the interesting lecture that we have heard, and that in no hostile spirit. In the opening sentence of the lecture, Colonel Prior stated that the present attack formation was "virtually dead." In that case it seems to me that it is rather like flogging a dead horse to go on attacking a formation which is virtually dead. Without going into details, the main point of his lecture was that he proposes a new attack formation. Now it seems to me very doubtful whether he is on the right tack in proposing a new attack formation. It may be that the present attack formation is virtually dead; whether it should be replaced by another is a very different point. The Germans, who are after all very practical soldiers and have the experience of a great European war to guide them, have not only refused in their latest drill regulations to lay down any normal order of attack, but have positively forbidden it. They say that in war circumstances are always varying, and that the letter kills the spirit, and that the responsibility thrown upon Officers only brings out their better qualities, and therefore they utterly refuse to lay down any normal order of attack. I should say it is very possible when our new Drill Book comes out you will find that "attack formation" has gone by the board and will not be replaced, but we shall act in the same spirit, and as the Germans say, we will not have any normal order of attack; we will trust the Officers to carry out the attack according to the nature of the ground, and the position of the enemy in the best way they can, and according as they have been trained in peace-time; and that I believe to be the true spirit of the attack. After all, in our own present Regulations, though there is a normal order of attack it is distinctly laid down that that is not to be the guide under all circumstances, but it is merely given as an example of how, perhaps, best to carry out an attack under certain conditions. With regard to details, I should very much doubt whether at 50 yards from the enemy's position any battalion could then be trusted to go through any sort of manœuvre like forming into single rank and forming into line. I fancy when you come to within that distance, or anything approaching it, a halt would be fatal; the sole object will be to push on. Some Continental Powers in their latest regulations have introduced an "attack fire," i.e., firing on the move. When they get within 300 yards the rifle is held at the hip and they go on and on firing, knowing perfectly well that at these short distances aiming and halting are all gone by the board; the only thing you can do is to push on and on, and I believe that will be the spirit of our new Regulations when they come out.

Captain H. L. PILKINGTON (21st Hussars): I should like to be allowed to say a word on the second factor which the lecturer lays down as necessary in considering an infantry attack formation. That factor is "the employment of cavalry in masses." I would rather substitute for that expression a wider one—"the employment of cavalry to check attacking infantry. The lecturer has admitted that the attack of cavalry on attacking infantry is a matter which must be considered; but, where he first deals with it, he appears to treat the matter rather lightly. "The subject," he says, "is a deeply engrossing cavalry one, but in considering any attack formation we cannot enter further into it than to take it into our calculations as a possibility, and as such to make our plans beforehand against it. I venture to think the experience of recent wars and the increase of cavalry which is now being made in most Continental armies justify the belief that the use of cavalry to check attacking infantry will be of pretty frequent occurrence in the wars of the future. And I fail to see why that attack should be limited to cavalry "in masses." If it is possible for large bodies of cavalry to break through the infantry-fighting line, I think it will be also possible for small bodies, at any rate under favourable conditions, to break through; for the real resistance to a body of cavalry attacking an infantry line is the amount of fire which can be brought to bear upon it, and that is practically regulated by the number of rifles in or close to its line of advance. And I would point out that the true rôle of cavalry, employed in the manner indicated, appears to begin after it has broken through the firing line, and is at liberty to play havoc with the vitals of the division or brigade it is attacking, the internal fractions of which would be paralysed, unable to fire, unable to use the most effective means they possess of resisting cavalry, on account of the danger of doing more damage to one another than to the enemy. It will therefore be, I think, in any

plan of attack necessary in future to provide against an onslaught of cavalry as a probability rather than as a possibility merely, and to regard it as of prime importance to prevent cavalry breaking through the firing line. Now, from a cavalry soldier's point of view, the old formation in groups of four infantry soldiers, into which the firing line is supposed to fall to resist cavalry, is certainly an easy one to attack—particularly easy if the object of the cavalry is considered to be getting through the firing line—passing through it rather than breaking through it, and getting to work upon the detached portions of the division or brigade which lie behind that line. It appears to me that the formation proposed by the lecturer would, from this point of view, be even more advantageous to attacking cavalry than the old one, for not only would the intervals between the company squares which he proposes to form be wider and admit larger bodies than the intervals between the old groups of four, but the formation of company squares would necessarily take a longer time than the formation of groups of four, and that time would be the few moments during which the cavalry is advancing under close fire, the few moments in fact in which the infantry might, if not entering into the new formation, make their fire tell with the greatest effect upon the attacking cavalry. Of course it is too much to expect of any infantry that they will receive cavalry in single rank with considerable intervals between the man and man; but I doubt if it is expecting more than is expected of cavalry ordered to attack them, and I believe any cavalry Officer leading a squadron or a line against infantry would consider the ordinary formation known as rank entire—each man remaining on his own ground and guarding a front of about two paces—a more difficult formation to attack other than either the old groups of four or the company squares now proposed by the lecturer. I would, therefore, submit that the proper formation for the firing line, when attacked by cavalry, is “rank entire,” reinforced, if necessary, from the supports.

Lieut.-Colonel M. J. KING-HARMAN: I must congratulate the lecturer upon having dealt in a very able manner with a very difficult subject. I am glad to hear from him that the present attack formation is now considered as dead; Colonel Slade has also told us the same thing. Colonel Prior has already dealt with the bad points of the system, so that there is no need to refer to it any more. I think with reference to an attack formation there are other points to be considered besides those that have been put forward. There is the nature of the ground over which we have to attack, and the people we have occupying those positions. For instance, to make an attack upon a disciplined enemy entrenched on level or undulating ground is a very different thing to attacking a force of undisciplined but warlike Asiatics strongly posted amongst rugged and steep hills, and so on: therefore, in following out one fixed plan we should very likely come to grief; especially if for the purpose of attacking an enemy on a hill we adopted the attack suited for level ground. I am strongly of opinion that it is very much better to practise a great many different forms of attack and to let every Commanding Officer go his own way to work. I think that is the plan now to be allowed on the Continent. I think the plan proposed by Colonel Prior has considerable advantages. It keeps the whole battalion together; it keeps the command of companies and the command of regiments more together than the present system, and therefore there is a good deal to commend, although as soon as the attack is launched, even in that formation, it is rather loose, the same as in the present one. The lecturer spoke of the *probability* of our having to attack uncivilized troops, but it seems to me that is what we are *always* doing, and we must adapt our formations to meet the varying circumstances which are inseparable from such kinds of warfare. With regard to the advance in the attack formation, a great deal is said about the “company of direction.” I think when you get within 450 yards of any place the “company of direction” will not be taken much notice of by anybody; it will just be a case of go as hard as ever you can. It does not then matter what formation you are in, whether you are going upon the present system, or upon this proposed system; as regards the pace of the company of direction, you go as hard as ever you can, and your fire will be as hard as you can fire, or not firing at all. If you are firing from the hip, the running fire the first speaker spoke of just now, it will be very much, I take it, what it used to be the case in the old days,

when we had smooth-bores firing from the hip; and I think if you attack in any formation you will find the same thing, that it would go by itself; certainly when once the attack is launched, the power of the Commanding Officer is gone. I should like to see certain formations of attack forbidden, rather than certain ones authorized: but those that are authorized should be suited to the characteristics of the troops employed, to the British troops and the native troops of the Indian Army working in the same line with English troops. You would find that you would get probably a system of advancing by ranks, or by groups, or by four-deep formations, or something of that sort, and they would lend themselves much more to the characteristics of our soldiers, and you would get a much better command by the Officers. Then, when an attack is ordered by a brigade or a division, as soon as the object of attack is pointed out, let every Commanding Officer put his regiment in whatever formation he pleases. There need be no fear of one regiment being behind another, the pace will be just as hot as ever they can all make it; and I think in the same way with inspections; that General Officers should point out positions to be attacked, and the Commanding Officer should take up any formation he pleases, and let him be reported on accordingly. If he adopts a good system and works his men accordingly, in a formation suitable to the ground, he should be well reported on; but you should not restrict him to one normal formation. I have seen men running about on the sands of the sea shore throwing themselves flat on their stomachs, and doing all sorts of things which could not possibly be done if they were opposed to an enemy, or if they were doing it on hilly ground, practising in peace what they could not do in war, which is foolish. If, as has been stated, it is very likely that the new Drill Book will do away with any normal formations to be used in the attack, I think it will be an exceedingly good thing. At the same time, I think Colonel Prior has done very good service in bringing forward his lecture to-day.¹

Captain O'CALLAGHAN: I rise to ask a question which has been suggested to me by what I have seen on the black-board with reference to noiseless powder, and I find also mentioned in the lecture a powder which should give little noise. Now, I have not as yet seen a particle of evidence to show that we have, or that we are likely to have, any means of propelling bullets without explosion, and any explosion without noise. Another point I noticed was that the lecturer said that in certain cases the men should open out so as to give them room to use their bayonets. But did he not consider that, the more room you give the men, the more bayonets they have opposed to them; for, if a man has a great deal of room to use his bayonet, he will have to use it against a great number of men if they are in close formation? With regard to firing from the hip, I may mention that I tried that very carefully at a rifle range, and the result of my practice, and that of several other men, on that occasion was this: I was the only one that hit the target at all. I fired at a target at 200 yards, but it was only after taking about two or three minutes each time to estimate the elevation of the rifle that I could hit it, and then I was often very far wrong in elevation, so that I am led to believe that firing from the hip, except at a few yards' distance, would be almost innocuous.

Major EDWARD PALLISER: There are two points that Colonel Prior has mentioned which I thought rather important: one was that the ranks should not be close together on account of the penetrating power of the new rifle bullets with smokeless powder, and the other was that he pointed out the advantage of lying down on account of the low trajectory of the projectiles. The penetrating power of the new rifle I have tried, and it is from 11 to 12 1-inch deal boards placed 12 inches apart. The bullet invariably, I may say, goes through 11 such boards, and sometimes it penetrates 12, that is, with smokeless powder. Hence, if the ranks are close, it would lead to several men being struck. The next point is that of lying down to avoid the effect of low trajectory. I was very interested in

¹ I am entirely opposed to the system of allowing the rank and file to get into the way of falling out so as to represent casualties; that kind of instruction should be confined to Officers and section commanders only, and no one else should ever be allowed to do such a thing.

reading a short time ago an article in the "United Service Magazine" for 1841. It was the account of an eye-witness, an Officer of the 1st Royals, which regiment was in Picton's Division. When the French brought forward their reserve artillery (12-pounders), at a distance of 400 yards, to batter Picton's division before the great assault of D'Erlon's Corps, the French Artillery Officers found that at that range, with their long 12-pounders, the trajectory was so flat that the shot passed over the British troops who were lying down. They accordingly abandoned the shot fire, and took to grape. These projectiles descended on the Division, killing and wounding a great many men. The escape of our troops on this occasion from round shot proves, as Colonel Prior pointed out, the necessity for soldiers to take every opportunity to avoid flat trajectory of projectiles by lying down when they can.

Lieut.-Colonel E. GUNTER: As no other Officer seems inclined to rise, I should like to say a few words. I think all Officers who take an interest in the tactics of the day are more or less united in opposing the normal attack formation. It is a bugbear. I think there is a general feeling that there should be no form for attack laid down in detail, but that certain fixed general principles should be laid down for its conduct. As, however, Colonel Prior thinks a normal attack should be established, and proposes an improved one, we must consider whether it has any great advantages over the established one. I think his point is that his attack is more suited to the characteristics of the British troops. I have not had time to look into the matter beforehand, so as to be able to criticize it in detail, but there are one or two points I should like to touch on. I may have misunderstood Colonel Prior, because it takes some little time to thoroughly grasp all the complicated business of such an attack formation; but, with regard to the conduct of the infantry of the first line when attacked by cavalry; this is a matter of principle. In common with a great many infantry Officers, I object to the idea that when cavalry attack infantry the latter must of necessity form squares, whether large or small. I think well-trained, courageous infantry can always receive the attack of cavalry in line, as we are taught, even when not exactly shoulder to shoulder. In the Franco-German War (I think it was at Sedan) the Prussian troops received and repulsed the gallant attacks of the French cavalry, not in squares but in line, or as they were. Why should not British troops do the same? If, as been ably pointed out by a cavalry Officer, the infantry are to be fussed about and got into squares, while the cavalry are closing on them, the cavalry will have a much better chance than if the infantry simply remain steady and receive them in whatever formation they happen to be. Supposing, however, these squares to have been formed. Colonel Prior says the cavalry charging through the gaps thus formed in the firing line would receive the fire of its reserves firing through this gap. All I can say is, I should not like to be in the firing line then. It is one thing to be shot by your enemies, You expect that, but it is very uncomfortable being shot by your own men. The proposed formation seems simple and symmetrical, and it might be carried out on even ground, but I should think it would be difficult when the ground is broken. As Colonel King-Harman has pointed out, I do not think it possible to make any change of formation under close fire, and lying down, fixing bayonets, &c., within 50 yards of the enemy, would, I think, be impossible. Colonel Prior has laid stress upon the fact that in future there will be no smoke, and that, therefore, his proposed attack can be easily carried out. We must, however, bear in mind that the German and other nations are making experiments with a view of creating smoke, and I think we shall find that the attackers will have to create smoke somehow before they can hope to push on their advance. With regard to firing from the hip, which Colonel Slade has mentioned as being re-introduced by the French, I hope we shall not follow their example. I am aware that there have been instances where on emergency such a plan has been adopted. In the Mutiny (I think at Lucknow) a few men, about to charge, fired a volley from the hip, and this was so unexpected that it had a great moral effect on the enemy, and the charge was successful, but, I trust the practice will not become general, for, as has been pointed out, the effect is almost always nil. Whether we have a normal attack formation, or whether it is abandoned, I trust we shall always endeavour to keep our men as cool as possible, remembering after all that it is fire, not formation, that

wins the battle. Accurate and efficient fire is the main point, and men cannot deliver that accurate and efficient fire unless they keep cool. Every effort should, therefore, I think, be made to attain this, and we ought not to abandon all hope of doing so until the last possible moment, until what may be called "the Donnybrook moment," arrives.

Lieut.-General J. H. DUNNE: What has been said by Colonel Gunter and others brings me on my legs. For the last twenty-five years I have had the privilege of commanding battalions, brigades, and divisions in those various and innumerable systems of attack which are being continually invented by different Officers. I am not going to enter into any question as to whether the lecturer's attack is better or worse, but I do hold that there must and ought to be some light sketchy mobile attack laid down, and kept up still in our Drill Book, for, from my comparatively long experience of the many Commanding Officers I have met, it is all very well to say "leave" it to every Commanding Officer to use his own discretion; but I believe that discretion very often would result in confusion. Each Commanding Officer, or many Commanding Officers, would insist upon introducing some peculiar faddish mode of their own. The consequence would be that in a large number of troops there would be no unity of action, even in manœuvring in times of peace, and I very much doubt whether there would be in actual war unless there was a certain amount of principle laid down for making an attack, bringing up the reserves, and opening fire. I am not going for one moment to confine people to exact ways. In everything else except this point I entirely agree with Colonel Slade, with whom I have had the honour of serving in a great many attacks, but I venture still to maintain that some sketchy normal system should always continue to be laid down for those attacks. Colonel Gunter said he did not believe it was ever necessary for attacking infantry in line of skirmishing attack to form into either groups or squares to meet the attacks of cavalry, in many of our little wars, in Aldershot and the Curragh, and various places. All I can say is I have myself been in command on one occasion of a troop of the 3rd Dragoon Guards when three companies of infantry were put out of action at once by Sir Arthur Herbert, as Umpire. I had the troop of the 3rd Dragoon Guards hidden behind a lime-kiln, where nobody could see them, and they were launched so suddenly and at such a pace on the flank of the infantry that that infantry must have been entirely swept down the whole length of its line, if they had not got, at all events, into some sort of square. Only a few moments elapsed before the cavalry were upon them, and how in the world can infantry form line against cavalry attacking on the flank in that manner? It would be impossible; if the cavalry were quick they must smash them up. Only two years ago, on the Fox Hills, I was out with the 10th Hussars. It was a time attack; if my opponents did not get up to my position and were not able to drive me from that position by a certain time, I won the day. I had squadrons and troops, even of the 10th, hidden where there was undulating ground, on the flanks of the attack of infantry, and by so doing, I over and over again, and by my hussar leaders charging in a self-sacrificing spirit, forced the infantry to stop, and form either squares or groups, and then peppered them with horse artillery. By that means I continually delayed the attack, so that at last the General gave it in my favour.

Colonel PRIOR, in reply: I thank you all very much for your kindness in coming here to-day, when I do not know how many things are going on, and I am much obliged to you for your presence. Colonel Slade remarked on my having said that the formations were "virtually dead." Well, the difficulty of a lecturer is that he must have something to hang his hat on. He must have some foundation to go upon, and, as the Field Exercise formations are being altered, I say they are virtually dead, because I hear very often in the clubs the question asked, "What will happen as to the Field Exercise formation?" and the answer is that it will right itself in war. What does that mean? It will right itself at the expense of thousands of men. Colonel Slade said that, if I thought the formation dead, what was the use of my flogging a dead horse? Well, I think in a case of that sort, if a horse is dead, and you think him a bad one, the best thing you can do is to dissect him, and find out his bad points, and that is what I have humbly tried to do. I hear a great many abuses of the old exercise formations, and I have tried to test them like a

chemical analysis by tests laid down in the Field Exercise. My object has been to try and get any little good that we can out of a formation; even, if it be dead, to try and make use of it. Another Officer spoke as to forming line at 50 yards. It is about 50 yards; but of course you cannot lay it down as such, and, as has been said, it would be perfectly absurd to attempt to form line at 50 yards, if you had a well-formed enemy in that position ready to meet you. In such a case what would be the use of falling in line 50 yards? I very much depend upon the use of artillery in the attack, and I especially said that, at 450 yards from the enemy's formation, it is especially necessary for the General to notice if the enemy are sufficiently crushed in that position to allow his infantry to advance, and I think any General would be very foolish to attempt to get near a position of that sort, unless he had thoroughly well crushed them by fire. When that is done, and he has ordered his advance, I think the plan submitted here of getting closer is better than the one laid down in the Field Exercise, in which it says, "When the second line"—that is the assaulting line—"gets to 400 yards from the position"—I assume they go along at a pretty good pace—"the firing line will proceed and describe Section 22, No. 11." Section 22, No. 11, says, "On arriving at, say, 150 yards from the position, the Captain will give the caution for independent firing." Therefore, by the Drill Book, the independent firing commences at 150 yards from the position. "At the time the assaulting line commences firing independently, the second line will move forward at a steady double." At 150 yards those men are to double with fixed bayonets under fire, and at the end of that they are supposed to use their bayonets. I should think, in such a case, they would be very much blown. If you want men to assault a position you must get them much closer than 150 yards, if they are to be of any good to use their bayonets. Another Officer said the employment of cavalry would be much more frequent in future wars than had been the case formerly. If that is so, I think we have all the more reason for taking steps to guard against that danger, and I think, if you have men well under the command of their Captains, they have much more chance of resisting a cavalry attack. I have shown in the first diagram, representing an attack at a distance of 1,000 yards from the position, the front company as 100 yards long, 200 yards deep, and in three different lines—the firing line and two supports. In the formation submitted on Diagram 4 on the wall the line is 100 yards. Now, which company could assemble quickest to resist cavalry? Then firing from the hip has been mentioned. I have quoted Prince Kraft, a man who has seen more actual service than anyone else. I have read out to you his remarks on the difficulty of stopping infantry firing, even when it is a steady fire well under command. He says the men like to hear the rattle of their rifles, and that is perfectly true. Now, when it is so difficult to stop firing, as Prince Kraft says, when the company is well under control, how much more difficult will it be when you have men running along with their rifles firing at the double? You will never stop them at all. Noiseless powder has also been referred to; of course I do not know whether there is to be noiseless powder, but everybody seems to think so. There is to be a smokeless powder, and, probably, a noiseless one; they all think so, but, at all events, so far as the argument goes, it would be much more difficult for troops in the Field Exercise formation to attack where there was smoke than without, because in that formation each company advanced by its centre, and you really have sixteen lines of advance. If there is smoke, how can the non-commissioned officer behind the centre of each company direct the advance? How are they all to advance, going to the same point? They would be all over the place. The danger of ranks firing at one another is, I think, proved by Major Palliser, when he says that it has been found, by trial, that the new bullet will go through twelve deal boards, each an inch thick, and at some distance from each other. It is quite possible with men 100 yards apart from one another, for a bullet, if it does not hit a bone, to go through two or three men. This shows the danger of having troops behind one another. As to the argument of having no normal formation, I think that has been disposed of by General Dunne, and I need not go into it. I think he has so plainly shown the advantage of having some sort of formation, that nothing more is necessary. When you have large bodies of men together you must have fixed rules, and those rules must have fixed points. I say you must have some normal attack, not a fixed point; but let us have independent

attack on small points. One Officer remarked that, with troops in this formation, he should be very sorry to be in the firing line, while the reserves were shooting through the gaps. I am afraid I did not quite explain the circumstances of that case. I said it was only when the firing line collected on its flank. The idea was that, if the cavalry attacked this body on its right, and that body on its left, the whole front is 800 paces, and there is no gap, because each of the battalions covers 400 paces. The front of the two companies shown in the diagram would be 100 files, 100 paces on each flank. Therefore, you would have 600 paces of open space, through which the reserves would fire at the cavalry advancing, and with smokeless powder and a smokeless field, I do not see why the firing line could not concentrate on each flank, so that, as some of the speakers have said, the cavalry should be received in line. The whole essence of this attack is that they should be received in line. The infantry concentrate on their centres. I have nothing further to add, but I am very much obliged to you for your kind attention.

The CHAIRMAN: At this late hour of the evening, particularly as this is a matter very much out of my experience at present, I do not intend to detain the meeting. I think that the very fact of Colonel Prior's having taken exception to what is established, and having proposed something in the place of it, is deserving of praise, because I find the tendency of the present day is to take exception to everything and never to propose anything to replace it. Certainly I think great credit and praise is due to any Officer who will do as Colonel Prior has done, and I wish there were more who came forward here and laid down their views with something like precision. There are two points which I may advert to, and those are the great charges of the French cavalry that he spoke of, first at Wörth and afterwards at Sedan. Sedan I saw with my own eyes, Wörth I did not, because they all took place at a very considerable distance from where I was on the field, and the one of which I saw the after traces round the corner of a hill. On the next day I rode past the village of Morsbronn, a small hamlet near which it took place, and I suppose a wilder and more insane attack was never made in this world. There were two regiments of cuirassiers, and two squadrons of lancers. They attacked through vineyards, about the most difficult place that cavalry could pass through, and they attacked troops who were posted in houses and behind garden walls, in fact in as secure a position as infantry could well be in, and their fate was simple destruction; a more terrible sight I never witnessed than that which I rode through the next day. Though the men had been mostly removed, the dead horses, and arms and saddlery were all lying about, showing what the effect of the infantry fire had been. The attack at Sedan reminded me of an old story connected with the battle of Talavera. The attack at Sedan took place over most unfavourable ground. The men were most gallantly led, magnificently led; it took place twice: I am not sure if it was not three times. There was a dip almost amounting to a small ravine in the ground, into which the cavalry fell, and as they emerged on the other side of it they were shot down by the troops, the companies chiefly in support of the artillery. It was much the same at Talavera, where in a charge that took place one of our regiments came to very severe grief. Old Arentschild, who commanded a German regiment in support, on being told to charge over the ground said, "I will not kill my young mans," and he entirely declined to charge. In that case there was also a ravine, into which the regiment, I do not remember which it was, fell on charging. I think we ought to be very much obliged to Colonel Prior, more especially as he has not a great deal of time on his hands. He leaves us to-morrow for a post in which I hope he will pass I do not know how many years, before he will rank out of it, but pass as happy years as I passed there fifty years ago. I think it is the best of quarters: certainly it used to be in my time—dear old Gibraltar—and I call upon you unanimously to wish him health and happiness in his new sphere of action.