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HOW IS FIRE SUPERIORITY TO BE ATTAINED IN THE INFANTRY ATTACK?

By Lieut.-General von ROHNE.

[From the *Militär-Wochenblatt*, Berlin, No. 71 of 1899.]

Translated by F. H. A. BEX, Librarian, Prince Consort's Library,
Aldershot.

ALTHOUGH there still exists a great divergence of opinion as to the method of carrying out the infantry attack, all are in perfect agreement on one point, viz., the necessity of fire superiority for success. Personally I would go so far as to maintain that victory is virtually in the grasp of him who commands fire superiority, and that the question of the infantry attack practically narrows itself down to the query, "How is fire superiority to be attained?"

It admits of no doubt that, moral and material forces being equal, the attacker is placed in a position of far greater difficulty than the defender. The attacking line must necessarily, in order to reach its goal, momentarily suspend fire during the periods of successive moves. Only in the most favourable moments of the fire period does it offer a target of only the size of that presented by the defence, but whilst in movement undoubtedly a much larger one. Skilful use of ground may affect this latter factor slightly, but not to any appreciable extent.

Odds being evenly balanced, theory must perforce award fire superiority to the defender, and is logically bound to attach certain conditions to the mere possibility of a successful attack. Such conditions are superior armament and musketry training, the co-operation of artillery and last, but not least, numerical superiority. It is not intended to maintain that the latter is absolutely indispensable to attach victory to the standards of the attacker, but in its absence one may only under quite exceptional circumstances reckon on unqualified success. To quote an example, such specially favourable conditions did prevail during the second half of the campaign of 1870-71, when the Germans were fighting against totally undisciplined and untrained men. For such fortunate contingencies, for which one is truly thankful and which are promptly exploited, guiding rules need not be formulated, but science must start from the standpoint of the duel between opponents of equal mettle.

During the 1866 campaign in Bohemia, the Prussian infantry gained many brilliant victories, even against a numerically stronger opponent, although its path to victory had not been prepared by the co-operation of

artillery. Here superior armament was such an important factor that the infantry could afford to act without the assistance of artillery, and, relying on its own resources alone, was still certain of success. This advantage of superior armament consisted not so much in the faster rate of the Prussian infantry fire as in the facility for loading the needle-gun in any position—lying down, for instance—whilst the Austrian muzzle-loader could only be loaded standing ; and a man in that position offered a target twice as large as that presented by a man lying down.¹

In the Franco-German war the better weapon was in the hands of the French infantry, but the superiority—solely ballistic—was not nearly so significant as that of the needle-gun over the Austrian muzzle-loader, for to make matters equal the German artillery *matériel* was far superior to that of the French. The opposing batteries were, as a rule, driven from the field or silenced after a comparatively short engagement, when, unmolested by hostile fire, the German guns could be employed upon the task of preparing the point selected for the main attack. Wherever the German infantry knew how to wait for the effects of artillery fire, victory like a ripe fruit invariably dropped into their lap, in spite of the superior French rifle.

Since technical skill has been so successfully occupied in the improvement of weapons and the trade of the world has been opened to the sale of its products, the time when one could speculate on similar advantages of superior armament has passed irrevocably by. Hence science must take up the question of how infantry alone, unsupported by artillery, is to execute the attack, as artillery does not necessarily always form an adjunct to the smaller fighting bodies.

This leaves us only the consideration of superior musketry training and of overwhelming numbers. Great improvements in shooting have been made in all Armies, but this by itself dwindles in importance when considered in full light. A unit may show excellent results in individual practices, but when less zeal has been applied to judging distance, its performances in the field will certainly fall below those of another unit whose merit in *both* branches is only moderate. Examples without number prove this clearly in time of peace. Not once only, but repeatedly, have cavalry armed with the carbine—the inferior weapon—obtained a greater number of hits than well-trained infantry, distance and sighting being identical. Both made the same error in judging their distance, which caused results to be lowered in both cases, considerably in the case of good shooting troops, and in a less degree in that of the more indifferent shots. I guard myself specially against underrating the value of musketry training. Thorough musketry training is above all a factor in the soldier's education calculated to cultivate confidence in himself and in his weapon, and it imposes on him the conviction that good aiming and a steady pressure of the trigger alone suffice to ensure a hit. The fact of this not being true²

¹ Compare Supplement 11, *Militär Wochenblatt* of 1898, "Measurements by means of photography of the vulnerable surface exposed by the skirmisher," p. 518.

² When judging distance practice has been neglected.—TRANSLATOR.

matters little. A soldier so trained will never—at least, we fondly hope so—fire an entirely unaimed shot in battle.

Numerical superiority is still the main thing, quite as much as when, in the days of Napoleon, the God of Battles favoured the big battalions. It rests with the higher leaders to take steps to enable this superiority to be brought to bear when the decisive day is at hand, whereas the responsibility for its correct employment rests on the shoulders of the tactician, and ballistics may also be permitted to utter a weighty word of advice in this connection.

I have demonstrated in earlier writings¹ that the percentage of losses suffered by a target given breadth of front (the exposed individual surface being equal throughout) depends entirely upon the average number of hits per metre of front. Of two opposing lines of equal length, one of which is double the strength of the other—rate of firing and ability to hit being, of course, supposed to be equal—the weaker one will suffer exactly the same proportion of loss, *i.e.*, double the percentage of the stronger, because double the number of cartridges have been fired against it. Hence it follows that, other things being equal, the stronger side must undoubtedly establish superiority of fire,² and it is therefore in the interest of the defender when once he commences firing on the attacker to make his firing line at once as strong as circumstances will permit. He would otherwise be compelled to reinforce, to make good losses in the firing line, under the enemy's fire, and would thereby incur still greater loss, unless exceptional conditions of ground favoured the advance of reinforcements completely under cover. He would also surrender the advantage enjoyed over the attacker of offering only low targets. Whenever the defender acts in the manner suggested, it will be impossible for the attacker to make his superior numbers tell in any frontal attack. Supposing he wished to cover his front more densely than the defender's—one man to each pace of front—the men would only interfere with each other with consequent additional losses (taken literally), without raising the effect of their own fire. The defender will sometimes find it feasible to establish several lines in terrace fashion one above the other, as, for instance, in the occupation of villages or of abruptly sloping heights, whereas the attacker never has a similar

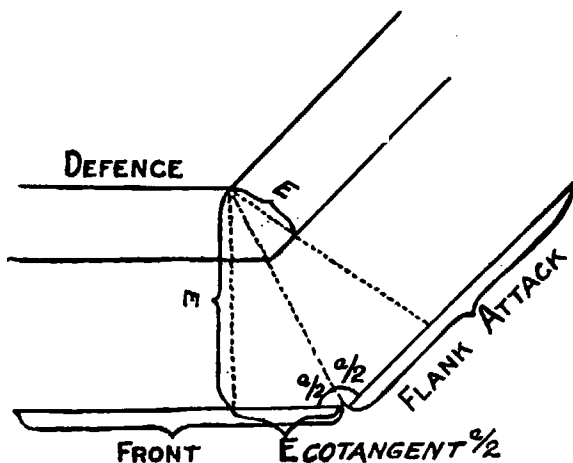
¹ Rohne, "Musketry Instruction for the Infantry," Sec: 28.

² The following may serve to make clear the extreme difficulty of counter-acting numerical superiority by superior skill. Let us imagine a skirmishing line A composed of 100 rifles, whose ability to hit the target is double that of an opposing line B of 200 rifles, density of formation being equal. By doubled hitting power I mean that the individual shot in line A makes in a given time double the number of hits made by an individual in line B. Thus the proportion of hitting power would at the opening of the fight be as 1:1. Let us say that each line has eventually made 30 hits. Taking "Musketry Instruction for the Infantry" (appendix 14) for a basis, line A would have 26 men disabled as against 28 men in line B. But the loss of 26 men would be more acutely felt by A than the loss of 28 men by B, the former now disposing of only 74 rifles to the 172 of the latter. A having double the hitting power of B, the proportion, originally as 1:1, would now be as 148:172, or as 1:1.16. From this onward fire superiority will incline toward the stronger line in a rapidly increasing ratio.

chance. Against a strongly occupied position liable only to frontal attack the attacker must surely bleed to death. Although his rearward lines may afford him the means of covering the losses of the firing line, it must be remembered that the defender also is not solely dependent on his single line of skirmishers, but that he likewise has reserves, perhaps not quite so numerous, at his disposal.

It is for this reason that the Drill Regulations for the Infantry, Part II., Secs. 69 to 71, declare a purely frontal attack to be impracticable. By extending his front the attacker can certainly bring an increased number of rifles into action, but the defender may reply by employing similar tactics.

The only way in which it is possible to make numerical superiority really felt lies in the combination of the frontal with a flank, or enveloping attack. Both in 1806 and 1870-71 did the Prussian (respectively German) troops favour the enveloping attack, and employed it with generally good results. The principal advantages which make it, whenever successful, so effective are to be found in the fact of its threatening the enemy's line of retreat. I will not here dwell on this point, but will confine myself to the consideration of its bearing on fire effect, and shall endeavour to demonstrate that it is in fact the one safe way and means of arriving at fire superiority.



The enveloping attack facilitates the deployment of a firing line greatly exceeding the extent of that of the opponent; the attacking front increasing in width in comparison with that of the defence:—

- a. The smaller the angle formed by the flank attack with the original front,
- b. the greater the distance from the enemy.

If E (see diagram) denotes the distance from the enemy, α the angle of the flank attack with the proper front (respectively the angle of the enemy's newly formed flank with his original front), the measure by which the attacker's fire front exceeds that of the defender will equal $2 E$

cotangent $a/2$. If, for instance, a equals 90° , the attacker's front is prolonged beyond that of the defender :—

At the distance of 200 metres by 400 metres

"	"	500	"	1000	"
"	"	1000	"	2000	"
"	"	2000	"	4000	"

When, as in the diagram, the angle is one of 135° (the defender's flank in that case being thrown back at an angle of only 45°) the front of the attack will only be increased at :—

200 metres by 208 metres

500	"	520	"
1000	"	1041	"
2000	"	2082	"

Directing the attack upon the enemy's salient point, the proportion of the attacker's to the defender's front will furnish a standard of the amount of fire superiority that may be expected to result. This proportion depends in a great measure on the breadth of front against which the main attack is to be launched. If it is intended, for instance, when the forces engaged are small, to force an entry into the hostile position over a space 100 metres wide, the length of fire front which can be directed upon the point will be at an angle of 90° (135°) at the distance of :—

200 metres	$100 + 400 = 500$	metres	$(100 + 208 = 308$	metres)
500	"	$100 + 1000 = 1100$	"	$(100 + 520 = 620$ ")
800	"	$100 + 1600 = 1700$	"	$(100 + 832 = 932$ ")
1000	"	$100 + 2000 = 2100$	"	$(100 + 1041 = 1141$ ")
2000	"	$100 + 4000 = 4100$	"	$(100 + 2082 = 2182$ ")

Hence it follows that the length of the attacker's firing line, which at the distance of 200 metres is 5 (3) times that of the defender, is at a distance of 2,000 metres 41 (22) times that length.

If, on the other hand, the point of entry is to be 1,000 metres wide, the attacker's length of fire front will be at the distance of :—

200 metres	$1000 + 400 = 1400$	(resp. $1000 + 208 = 1208$)	metres
500	"	$1000 + 1000 = 2000$ ("	$1000 + 520 = 1520$ ")
800	"	$1000 + 1600 = 2600$ ("	$1000 + 832 = 1832$ ")
1000	"	$1000 + 2000 = 3000$ ("	$1000 + 1041 = 2041$ ")
2000	"	$1000 + 4000 = 5000$ ("	$1000 + 2082 = 3082$ ")

The odds in favour of the attack, which with the small front at the distance of 200 metres were as 5 (3) : 1, have dropped with the attack on the wider front to 1.4 (1.2) ; at a distance of 2,000 metres from 41 (22) to 5 (3).

It is remarkable how the length of the fire front—therewith fire superiority—increases with the distance from the enemy. This proves the high importance of artillery co-operation in an enveloping attack, because of the diminution of fire superiority at the very distances at which infantry fire assumes decisive effect (below 800 metres).

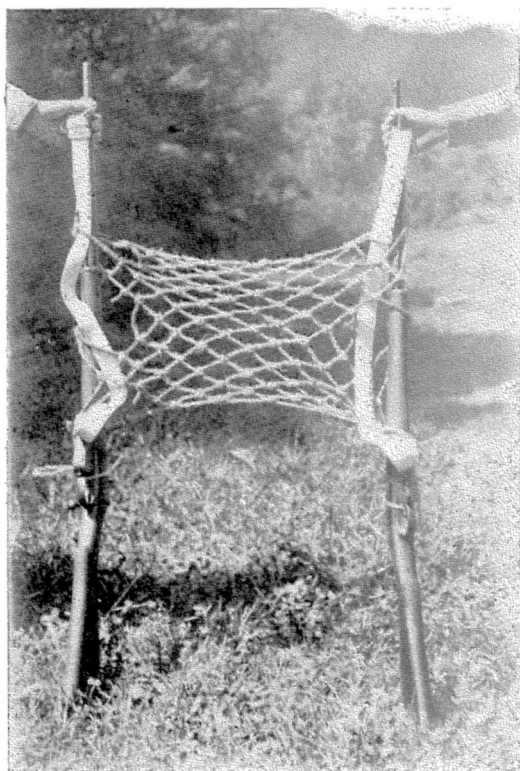
However, yet another factor appears which tends to promote fire superiority in an enveloping attack. In a frontal attack projectiles passing over the opponent's firing line only threaten danger to the supports in rear; but in the flanking attack a second target offers itself to shots aimed too high. The attacker concentrates a vast number of bullets on a narrow space, whilst the defender, on the contrary, must distribute a smaller number over a wide range.

Should the attack succeed in making the effect of the enveloping movement surprisingly rapid, the chances of success are considerably improved; and if the defender is not timely in a position to form an angle with his second line, his front is exposed to a flanking fire, when to the already mentioned advantages to the attack must be added the further fact of individual firers in the lying-down position offering a much larger target to flanking than to frontal fire. The vulnerable surface of a marksman exposed to fire from a flank is, according to Supplement 11, *Militär-Wochenblatt* of 1898, twice as great as that of a man being fired at from the front.

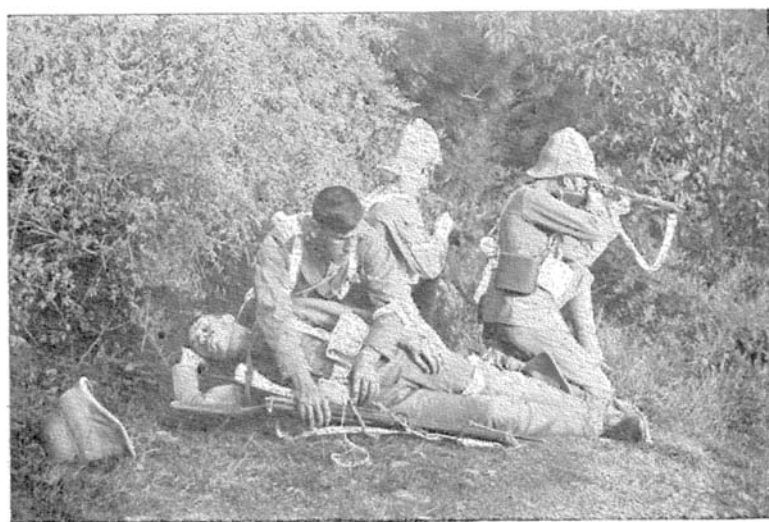
Another advantage accompanying the attack against a salient angle lies in the fact of the attacker's front constantly contracting with the progress of the attack, thereby reducing the necessity of reinforcing to replace the casualties which, in a frontal attack, is necessary in a much greater measure. And at the very moment of reinforcing the fighting line the casualties are most numerous, because a double target is presented to the enemy, one of them being a target of the full height of the body.

Two not unimportant lessons for the defence may be deduced from these studies. One is in the selection and occupation of positions to pay attention to strong flank defences—strengthened if necessary by artificial means—in order to reduce the attacker's chances of success to a minimum. The other is to omit taking up points of support in advance of the main position, unless they are situated in such close proximity to the latter that in turning them the attacker must expose himself to a very heavy flanking fire from the main position.

I am aware that I have in these studies brought forward no single new point. But it appears to me to be important to show that tactical rules rest upon the laws of ballistics. I ask that the figures quoted may only be regarded as examples which can claim only relative, not absolute, significance.



THE NET.



PREPARING TO MOVE ON.

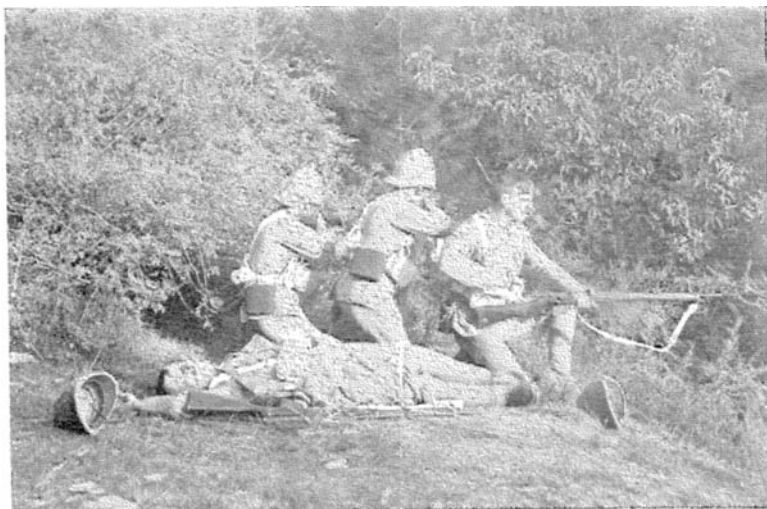


ON THE MOVE—DOWN HILL.



ABOUT TO LIFT.

THE CORKER NET.



AT BAY.



MOVING OFF.

Taken by Major A. C. Yate, Dalkousie, 25th Sept., 1899.