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THE FIELD ARTILLERY IN ITS POSITION UNDER THE COMMAND OF GENERALS OF ARMY CORPS DISTRICTS.

By PRINCE KRAFT ZU HOHENLOHE-INGELFINGEN. Translated (by permission) by Lieut.-Col. WALFORD, h.p., R.A.

Introduction.

THE radical changes which the field artillery has undergone, owing to the abolition of the Inspector-General of Field Artillery and to the fact that this arm, like the infantry and cavalry, is now placed under the General Officers Commanding Districts, consist mainly of the following :—

1. In future the Supreme Court of Appeal, with regard to the details of the training of field artillery, will only exceptionally (that is, only when the General commanding happens to have served in the artillery) be presided over by an Officer of the arm; the same rule will also hold good with reference to inspections.

2. The principles of the tactical employment of field artillery will henceforward be brought to light by the Officer commanding the troops alone, and this during the exercises with the other arms; the superior Officers of the technical arm will have nothing to do with the matter.

3. Personal questions, such as the career of the Officers of the arm, judgment with regard to their efficiency, matters affecting their honour, &c., will henceforward come before the highest authorities through the Generals of Districts, and such questions will thus be dealt with in the artillery exactly as they are in the infantry and cavalry.

I. The Course of Elementary Tactics.

Many a gunner of the old school will shake his head when he hears that the General of a District, who may have passed his whole service in the infantry or cavalry, is now to be the highest Court of Appeal with regard to the inspection of field artillery, and that his criticism is, within the limits of the corps, to be decisive as to the future course of training of that arm; and many thoughtful Officers of the other arms will perhaps consider his

doubts to be entirely justified. There will indeed be found not a few Officers of infantry and cavalry who will, in their modesty, believe themselves to be quite incompetent to supervise the training of field artillery in detail or to inspect and criticize their elementary tactics, since they will feel convinced that they know nothing about them.

It certainly cannot be denied that the long-felt and frequently expressed wish of the artillery, to pass entirely, permanently, and, as a matter of organization (even in peace), under the command of Generals of Districts, arose in part, even though those concerned had not the least idea of the fact, from their experience that they have always been praised by these Generals on the rare occasions on which they have up to the present been inspected by them. Never have they been seriously found fault with by any Officer who had been brought up in one of the other arms. For such Officers did not consider themselves authorized, indeed were not so under the former organization, to notice and reprove faults in elementary tactics. This was the duty of the "technical superiors." For if, under the former organization, the General of a District had reproved any faults in elementary tactics, he would have found himself exposed to the risk of a conflict of authority with the Inspector of Artillery. He had every reason to avoid this as far as possible; since, owing to the nature of the organization of the artillery with its double system of command there were already plenty of opportunities for friction and the conflict of authority. For this reason the General in command seldom felt any desire to concern himself with questions relating to the elementary tactics of the artillery. For, indeed, they are not sufficiently interesting to induce him to study them seriously, while he has, moreover, other things to do than to work at the details of matters which do not form part of his duty. An inspection of artillery by a General in command was formerly little more than a compliment (and a sort of holiday for the men) offered by that Officer to an arm which was only half under his command. When this holiday was over then came the "technical superior," like a sort of devil's advocate, from whom the troops heard nothing but blame, since all possible praise had already been lavished upon them. It is thus not wonderful that these technical superiors were disagreeable to the troops, and that the latter desired to be rid of them altogether, and to be placed directly under the command of the General of the District, who was so delightfully kind. I must at this point expressly warn against any suspicion that I at all suggest by these words that the artillery Officers had any intention to throw dust in the eyes of their non-artillery superiors. These feelings, as I have already said, produced their effect without the knowledge of those concerned. They are too human and too natural not to be altogether pardonable. When I look back on past inspections, I cannot myself claim immunity from the same feelings.

It would certainly be a great evil, if the future inspections of field artillery by the General in command were, as they used to be, regarded merely as an act of politeness, or were to be considered by the men simply as a holiday; for when troops are only praised and never blamed they are sure to fall off.

The question arises, whether this evil will be a consequence of placing the artillery under the command of the General of the District.

This question is identical with another, namely, whether Generals who have not been brought up in the artillery will venture to supervise and inspect the training of field artillery in elementary tactics, and whether they are rendered capable of doing so by their military past.

In order to solve this question, it is necessary to lay down distinctly and exactly how far a General in command ought to concern himself with the details of elementary tactics, and also what are the peculiarities of these details.

As far as the position which a General in command holds to the different arms which are under him, and as far as the time which is at his disposal will permit, it is established that it is his duty to inspect every regiment annually when its training is completed. But, since they have, in addition, to give their opinion regarding the fitness of the field Officers for regimental commands, Generals usually arrange to be present also, as far as possible, at the inspection of battalions by the Divisional Commanders, and they are thus able, at least once in every two years, to see each battalion once exercised in detail. When time will permit, and when they have special reason to pay particular attention to some one or other of their subordinate Officers, they are allowed here and there to be present at the inspection in detail of yet smaller bodies of troops, and we not unfrequently see the head of an army corps at the inspection of a company or a squadron, or even at an inspection of infantry recruits or of riding in the cavalry. But such attention to minute details forms certainly no part of the duty of a General in command. It is only absolutely necessary that he shall inspect a field Officer's command (which in the artillery consists of a complete brigade division of three or four batteries), and shall be in a position to thoroughly criticize their training.

What then are the details with regard to which he has to give an opinion?

First of all the general military appearance, the carriage, the equipment, and the training of the men; and, secondly, the elementary tactics of the troops, which finds its highest expression in service practice.

No one will deny that every General can give a valuable opinion on the former question, whether the troops he inspects be infantry, cavalry, or artillery. The carriage of the men, their dress, correct instruction in the military duties of soldiers, and military matters in general, are in all arms judged by the same standard. It may perhaps be objected, that a General who has served only in the infantry will be an indifferent judge as to whether the fitting of the harness and the arrangements for draught of the artillery have been well carried out. But anyone who has a military eye for things in general will see at the first glance if there are any grave faults in this respect. An Officer of such high rank neither will, nor ought, to trouble himself as to whether every trace is correctly hooked in, or every hame is exactly fitted, or with any such details; any more than, if he has previously served in the infantry, he need pay attention to whether every chin-strap in the squadrons is correctly put on.

With regard to the second point, the *elementary tactics*, everything is already laid down in the Regulations. It is certainly neither desirable, nor is it within the limits of possibility, that the Artillery Regulations should be so entirely a second nature to a General who has never served in that arm as they are to a field Officer who has grown gray among the guns. But, if we look through and consider the details of the several parts of the Artillery Regulations, we shall find that such knowledge is not necessary to a General, if he is a sound and experienced man and has all arms under his command, in order to enable him to be in a position to fully inspect and criticize artillery in their elementary tactics.

The first portion of the Drill Regulations relates to *Foot Drill*. Now everyone will agree that a General in command must be able to give a valuable opinion with regard to this. The trifling differences in foot drill between artillery and the other arms, which arise simply from the fact that some of the men (the drivers and horse artillery) wear spurs, while others do not, are of no importance. It would indeed be a very good thing for the field artillery if they could now and then get a few hints from a sound infantry Officer about their foot drill and about training in marching. The artillery take the gun as their unit, the infantry take the man. The artillery there-

fore attach the greatest importance to the good effect (a consequence of good training) of their gun, while the instruction of the infantry finds its highest expression in the greatest possible perfection of each individual soldier. It thus comes about, that in the field artillery the care of the individual soldier does not always receive so much attention as is its due. This usually becomes evident by the carriage of the men and by their foot drill, for these drills are generally carried out *en bloc*. We are often pleased when the few evolutions which are called for have been carried out according to the Regulations, and entirely fail to realize that a free, unconstrained, and natural march must be developed by individual instruction, or again what an excellent effect such individual instruction and a correct attitude in marching have upon the health, the discipline, and the spirit of the man. I have certainly often been told that the artillery have a host of things to learn, and have no time to expend in so much trouble about marching. But this is quite wrong, for a raw untrained man can be much more easily and quickly taught to acquire a correct, free, and unconstrained action in marching, when the instructor gives him good individual instruction, than when he from the first squeezes his recruits together in rigid order, and puts them through the evolutions as a body. Moreover, since the improvement in small arms and the growth in importance of individual fire in action, the infantry soldier has at least as many things to learn as the gunner.

On this point a General who has come from one of the other arms will be a better critic than a field Officer who has grown gray among the guns.

The next part of the Drill Regulations refers to *Standing Gun Drill*. This is certainly that portion of artillery work which a non-gunner will find the greatest difficulty in criticizing. And yet it is one of the most important items with regard to the effect of the arm, for it will be obvious to every thinking soldier, that a battery of which the guns are badly and carelessly served cannot make many hits. We need only remember that a gun laid incorrectly, or a tangent scale wrongly adjusted, must cause a miss. But a General who has even only once attentively watched artillery at gun drill, will quickly learn to recognize whether the service of the guns is correctly carried out. Owing to the difference of the functions of individuals in the service of a gun, active gunners soon draw attention to an insufficient accuracy of drill by the loud hints which they give each other, or which are tendered by the Officers and non-commissioned officers. No other troops are so absolutely obliged to speak loud as are the artillery. A General who knows this, and who proposes to make standing gun drill the object of his inspection, will content himself with giving a sharp reproof whenever he hears anything beyond loud, ringing, regulation words of command. If he goes a little further, and every now and then looks over a gun before it is fired, and convinces himself that the elevation which was ordered has been given, he will, as far as regards detail, have done all that he can do, whether he be a gunner or no. But he will seldom have time to make a special inspection of standing gun drill. The Inspector-General of Artillery could only do so exceptionally. He used to form his opinion with regard to the gun drill when he inspected the drills with horsed guns, and also at service practice. I shall come to this later on.

Another section of the Regulations refers to *Instruction in Driving*. With regard to this practice, it is also no part of the duty of an Officer of such high rank as a General in command or an Inspector-General to judge whether the corners and turns in taking ground or in wheeling are correctly carried out according to Regulations, by the different pairs of the six horses, or whether the driving when limbering up or coming into action follows exactly the right curve. Attention to this can, and must, be left to Officers of lower rank. It will be sufficient if the rates of march at the different paces be correct

(which may be checked by an Aide-de-Camp with a watch with a second-hand, if distances be taped out and marked on the drill-ground), if the columns move evenly at a rapid pace, without any checks or hurrying and without losing their intervals, and again if there is absolute silence among the troops and nothing is audible beyond words of command and trumpet calls. He will not trouble himself at all with regard to the old, but ever new, questions of the instructor in driving, as to whether, and when, a short wheel or a wide wheel is to be used. He will usually make no special inspection of driving drill, and will not attend the elementary driving in the *manège*. He will, at the most, in cases where young Officers have arranged to form a class for instruction in driving, do them the honour of being present at a part of their drill. With respect to the rest, his time will as a rule be too limited to allow him to judge the driving of the troops except at the drills with horsed guns, while in that the three criterions, which I have before named, viz., pace, evenness, and quiet, will be sufficient to enable him to form and give a well-grounded opinion.

From what has been said above it follows that the General, beyond occasionally seeing a foot parade, need only inspect *Drills with Horsed Guns* in order to go as far into the details of field artillery as is in accordance with his high position. With regard to this particular exercise he will, as a commander of all arms, consider it from the point of view that the artillery must be in a position to carry out whatever he may demand from it in war.

What are the demands which he will make upon it? He will realize that it must be at the right moment in the position where he needs it, and that it must be able to shoot well wherever he employs it. In order to arrive betimes into position, it must be able to get over distances of such length as may be consequent on this duty, and this either in column or in line at a rapid pace (a trot), and in line at a gallop also; in doing this it must not become disordered, nor must the horses be overstrained, while it must advance into its fire position in good order, quietly and with confidence. How great are the distances which field artillery must be by practice accustomed to traverse?

The greatest distance which a mass of artillery has, under ordinary circumstances, to pass over at a rapid drill pace, is that which must be traversed when the corps artillery is ordered to hurry up to the head of the corps for action. We know that the corps artillery marches, as a rule, in rear of the leading Division of the corps. When an engagement develops itself at the head of a corps on the march, and the corps artillery is directed to take part in it at once, the latter will have therefore to move at a rapid pace over a distance equal to the length of a Division in order of march. It must after that form line and advance into its position. The General therefore can, and must, require it to trot in good order in column for a distance of 6,000 paces, and then to gallop 1,000 paces to the front; in other words to trot for twenty and gallop for two minutes. Far greater demands than this may be made upon field artillery in war. It may have to march many miles at a rapid pace. But such forced marches scarcely come under the head of exercises, since during them there will be intervals of walking and of halting, in order to let the horses get their wind. These movements are thus forced marches and not drill movements.

The above advance will in war, at least as far as relates to the trot in column, be ordinarily carried out on high-roads or made roads. The General can therefore inspect it on the open drill-ground, without failing to keep up the likeness of war. With this object he can cause field artillery to trot round the drill-ground for twenty minutes (his Aide-de-Camp checking the pace by the marked distances), and finally he can order them to advance into their fire position by a gallop to the front of two minutes. But I must not

omit to say, with reference to this matter, that the column of route is the formation which will be exclusively used in war. If the General desires, however, to make a slight change, he may direct that the force shall form column of sections for the latter part of the column movement. When the evolutions necessary for all this are carried out by a mass of artillery (a brigade division or a regiment) at the regulation pace (300 paces per minute for the trot and 500 for the gallop), without talking or any irregular suggestions on the part of the Officers and without any checks or hurrying in the column, in such a manner that the line of artillery stands finally ready for action in the selected position,¹ the General will know that this artillery can give him all that he must ask from them; he need go no farther than this into the details of the exercises with horsed guns. He certainly need not be a professional gunner in order to form a correct judgment in this matter. On the contrary, I am almost inclined to believe that a General who is not a gunner will inspect such masses in a manner more in accordance with the conditions of war than if he were a professional artilleryman. The latter is a little inclined to ride artillery hobbies, to call for complicated drill movements, and to attach inordinate importance to good driving, exact right angles, neat deployments, &c., whereas a General, who is simply a Commander of troops, cannot even in peace desire more than he must demand in war. The latter will, therefore, inspect in a manner more in accordance with service conditions, and his criticism will, as used to be said, "smell more of powder and ball."

We have not long since known cases where the professional gunner, as the war period faded more and more into the past, fell farther and farther away from his true war duties, and thus took to drill problems which could never be used in war, such as the half-column in sections, the line of columns of sections, and other peace manœuvres, which were borrowed from the cavalry, but are quite valueless for artillery.

After the fire position has been taken up, the General will ride along the line of batteries in action, and will observe whether the service of the guns is carried out smartly in military style; he will thus, as I have said above, inspect the standing gun drill.

It may happen (and there is no order against it) that a General may wish to make at his inspection a more exact inquiry into the efficiency of individual batteries for war, and also into the value of individual battery commanders. He will find it most easy to do this, if he orders the mass of artillery to be led into a position² to which the whole force must advance by batteries. He will thus have every facility to carefully observe each battery and each battery commander; if this evolution is carried out well and in good order, the troops are efficient as regards their elementary tactics. This is of all evolutions the one most in accordance with war conditions, since it is very frequently used in war. For when a mass of artillery comes up in column at a trot, and the Commander wishes to open fire at once, the leading battery will in most cases form line, open fire and find its range, the other batteries coming up in succession as they arrive. Moreover in very rare cases will the ground permit an entire brigade division to advance on its full front with the correct intervals.

In the three great battles of Königgrätz, St. Privat, and Sedan I only once saw a brigade division advance in line; this was in the first position at Königgrätz. In every other of the very numerous cases the advance took place by batteries.

If a General thus inspects the "exercises with horsed guns" of a brigade

¹ Against a marked target, and following a pre-arranged tactical idea.

² Against a marked target, and according to some simple tactical idea.

division which has completed its training; that is to say, if he first inspects it in line, then makes the above-mentioned long movement, then watches the service of the guns, and finally makes it advance again into position by batteries, he will be able within an hour to form a correct judgment as to whether the troops can meet the demands which he must make upon them. A regiment will require an hour and a half. In this estimate I have allowed for two marches past, each in a different formation. The horses must be in very fair condition if the troops are able to carry out such continued movements at a rapid pace. Horses in bad condition, badly fed or with bad legs, will be no more capable of carrying them out than will those which are overfed. The General will thus, when he inspects the first position, be able to judge of the condition of the teams.

It appeared at first almost an anomaly when I said that a General who is not a gunner is in certain respects better fitted to inspect a mass of artillery than a senior Officer who has grown old in the arm. But such phenomena have been not uncommon. Frederick the Great himself was decidedly not a renowned horseman. He used to hit his horse over the ears with his cane. But he knew better than anyone, either before or after him, what he could and must demand from the cavalry. But I own that every General is not a genius, as the great King was. I have, however, known many practical infantry Generals who understood right well how to use cavalry, and what they must demand from them, and who moreover improved cavalry matters by their criticisms. If it be said that I ought to confine myself to artillery questions, I will ask who brought about the enormous improvement of field artillery, by showing the need for rifled guns? Was it not King William I, supported by the Chief of the General War Department, General von Voigts-Rhetz, both of them Infantry Generals? And they did this in spite of the opposition of the then Inspector-General of Artillery.

It is obvious that a General who proposes to inspect artillery must be so far acquainted with the nature of that arm that he knows how and where he would use it in action. But so much we may very well expect from each of our Generals, since they are called upon to handle all arms in war, and must therefore know how and where to do so in peace.

But the *Practice*. Every non-gunner will from the first consider that only a gunner can inspect the practice of artillery. Everyone is accustomed to believe that there is something specially secret in the practice of artillery, and that it can be appreciated and understood by the initiated only; so much so that people often fancy that no layman may dare to lift the veil from before this sacred mystery, and that only one of the "illuminati" is in a position to form a judgment concerning the practice of the arm. A few decades ago, the artillery surrounded their art of shooting with so much scientific mist, that everyone else thought that, in order to form an independent opinion on the practice ground, one ought to be learned in mathematics, physics, and chemistry. But since then, the artillery have burst asunder the fetters of technical science, as His Majesty the Emperor Frederick III very accurately remarked, and have laid down the mask of learning. Moreover, the infantry have with their rifled arms practised the principles of the art of shooting, and were indeed for some time in advance of the artillery. What then is the theoretical difference between infantry and artillery practice? At the most this, that the artillery has the larger shooting machine and the larger shot. On the other hand, artillery practice is the simpler and easier of the two, since the gun stands fast, while the shooting of infantry is complicated by the fact that the rifle is held to the shoulder. It is not necessary to be able to calculate either parabolas or the resistance of the air, in order to know that a high tangent scale gives a more curved

trajectory and a greater range than a low one. And if the artillery now possesses a special kind of practice, that with shrapnel, no one need be afraid to give an opinion concerning it. Any person who has, even only once, stood sufficiently near to the target to be able to see the effect of shrapnel, will quickly obtain a full insight into the nature of this kind of practice. Has not every General and every Divisional Commander, even though he may have passed his life in the cavalry, to form an opinion concerning the practice of the infantry regiments which are under his command? As he is now bound to pass judgment on the more difficult, he will certainly be able to criticize and inspect the simpler form.

The results of the practice of infantry can be even examined and judged in the study from the Practice Report alone. I might almost say that this is possible with artillery practice also. In order to make it so, nothing, in my opinion, beyond one order is required; in the practice regulations of the infantry a rule is laid down that every knowingly false score on the target shall be punished (by court-martial and not merely by the Commanding Officer) as a false report. A similar regulation with regard to the range-party is very desirable at artillery practice; this would make the practice report so trustworthy that all Officers would be able to judge and criticize artillery practice also (at any rate, the elementary practice) by simply reading the practice reports in an office.

An inspection on the spot would be desirable only in the case of the service practice of the artillery (which may be compared with the field firing of the infantry), less, however, for the purpose of seeing how the troops shoot, since that can even in this case be learnt from the reports, than in order to see how they carry on their practice.

In my opinion the General would do best if, on the day of inspection, he remained during a part of the practice in the neighbourhood of the troops, and during the other part in the neighbourhood of the target. While he is near the troops he can observe whether the batteries advance into position in good order and in a soldierlike manner, whether confidence and quiet govern the service of the guns (uncertainty always shows itself plainly by much talking in addition to the words of command), whether the battery commanders keep their fire in hand, whether they order the proper corrections, and how they appear to be skilled in the observation of fire from the battery. When near the target he would know by the first shot whether the range has been at once correctly judged. The continuation of the practice would show him whether the first shots were exactly observed and whether the troops found the correct range, so that the effect of the fire may be eventually consistent with the accuracy of guns of precision. For, if the matériel be good, the effect in hits offers the best standard by which to judge of the excellence of the service of the guns and of the conduct of the fire; it is thus also a criterion of the elementary gun drill. While the artillery still had smooth-bore guns, it was within certain limits a mere chance where they hit. But now that they have rifled guns, good shooting depends upon the service of the guns and the conduct of the battery. No battery can shoot well unless it be well drilled and well worked. A battery which is badly trained and badly managed can hit nothing. The General will thus best judge by results with regard to the elementary tactics of the battery.

If he has any time left on the day of inspection, and can thus be present at the comparison of the practice report with the observations from the battery (which takes place by regulation after every practice, for the information of the Officers), it will be so much the better. For he may thus best learn to know his subordinates, as to how far they are skilled in observation of the effect of fire, and as to what was their personal opinion while the practice was being carried on.

It would be very desirable that many Officers of the other arms, and at least all Generals, should once every year attend a comprehensive practice of artillery (when possible on the day of inspection), since in war every General will probably have artillery, even if only temporarily, under his command, and will in any case have to stand under the fire of hostile artillery. For on the practice ground the strength and the weakness of this arm are plainly visible to the eyes of an observer, without any necessity for wearisome study on his part.

When the position has been taken up, and before the commencement of the fire, it will be observed, if an effort be made to estimate the range, how difficult it is to get a clear view of the target, even at medium ranges. The range of 2,000 metres is certainly one at which in these days the fire of artillery may be annihilating, if it is in the main accurate. But can the enemy be always visible at a distance of more than a mile, even if he be not behind cover? If the light be unfavourable, or the weather foggy, or if a wood of greater height than the target stand behind it, it sometimes happens that an enemy posted in the open altogether escapes notice. In order to give our practice an air of reality, we use on the practice ground some means of imitating the smoke and the noise of the enemy. It not unfrequently happens that these first enable us to catch sight of the target. From this fact every thinking soldier will draw the conclusion that at long and medium ranges the assailant will be often able in war to open fire before the defender, since the latter will not see the former until he commences to fire. And this will take place in war even more often than we should be prepared to expect, judging by our experience at practice; since in a battle which has once got into full swing the attention of the defender's artillery will frequently have been already drawn in another direction.

Again, we can see on the practice ground, and this before the fire opens, how difficult it is to judge such long distances, even approximately; and 2,000 metres is really only a medium range. But great mistakes in the original estimate of the range add enormously to the length of time required for ranging.

As soon as the fire commences we shall notice how difficult is the observation of the shots. The shell is the best range-finder which has up to the present been invented. But how difficult it is, under unfavourable conditions, to observe fire with accuracy, and to be certain whether a shot has been short or over; this will be very evident on the practice ground. Let us suppose, for example, that a few hundred paces in front of the target there is a depression in the ground, in which the first shell bursts, the range having been judged so much too short. The smoke of the burst will not be visible until it has risen and grown thin, when it will look as if it was behind the target. We shall imagine consequently that the shell was over, and shall therefore reduce the elevation. It is within my experience that very well trained gunners have fired away the whole of their ammunition without a single hit, and I have seen in battle a long line of artillery firing for a considerable time from one position, and shooting 500 paces short, until at last I told them of the fact from my own observation. There are in battle even greater difficulties; not only does the enemy's fire confuse us with the smoke and the flashes of his guns, but sometimes also several batteries are firing at the same target, and we are thus left uncertain as to which of the bursts which we observe is that which must govern our corrections. In my experience we have been for half an hour in this state of uncertainty, until at last I gave the order to fire salvoes by batteries, which gave us a group of six simultaneous bursts, and could thus be more distinctly observed.

Arrangements are now made at all practice grounds which render it possible to fire also at moving targets. Any one who has, even only once, been

present at such practice will see clearly how seriously the difficulties of observation and correction are increased when the target can change its position. These difficulties are still greater when the target moves not only in the direction of the line of fire, but also across it. Infantry can easily follow with their rifles the crossing movement of a target, but the gun is a fixed firing machine, of which the trajectory can be quickly changed by using the elevating gear, but of which the traversing to either side is much more difficult. A single shot which is wrongly judged when firing at a moving target (for example, if it be thought short when in reality it was over) may lead the Battery Commander into such errors that he may throw away all his ammunition by firing over the target. The nearer the target comes the greater will be the effect of such doubt upon his nerves, and he may thus become very excited, especially if the target moves quickly. But perfect calm and quiet calculation are absolutely necessary if the observation and correction of fire are to be accurately carried on. A Battery Commander who is excited and uncertain will rarely hit anything. I have seen well practised Battery Commanders who, from sheer anxiety to do well, have become so excited on the practice ground, owing to the presence of many and distinguished observers, that they could hit nothing at all. It will be obvious what enormous effect such physical conditions may produce when the target in battle is a charging enemy, who will capture the battery if he is not shot down. The consequence of this is that the most effective projectile of field artillery, a shrapnel which bursts in the air in front of the target, is very seldom of use against a quickly moving target, since the setting of the fuze of a shell which has once been entered into the gun cannot be altered.

A cavalry Officer who watches artillery practice may thus draw conclusions from it, as to how he ought to act when he wishes to capture a battery in action. He will neither walk nor halt for a moment while within sight or reach of the artillery, and will during his movement of attack, if the available space and the character of the ground are suitable, by no means go straight at the battery: he will prefer to incline first to the right and then to the left, in order to oblige the enemy who is laying on him to continually change his line of fire, and thus to make him nervous. It will also be a great advantage to the attacking cavalry if they charge the battery at the same moment from different directions, and thus divide the attention of the artillery and encourage errors.

On the other hand, an observer on the practice ground will see most distinctly that artillery when firing at short ranges at a standing target can and must hit with (I may say) every shot. The range of from 1,000 to 1,200 metres is now a very short one for artillery, while for infantry it is almost the limit of effective fire. It would be an excellent thing if, in the presence of Officers of the other arms, a battery and a company of infantry might annually fire simultaneously at similar targets, in order to show observers that between 1,000 and 1,200 metres artillery has from thirty to fifty times the effect of infantry, while the latter (allowing for an equal expenditure of time and of weight and cost of ammunition) will not succeed until they arrive at 500 metres in equalling the effect of the artillery at 1,200 metres. An infantry Officer will thus learn that if his attack is directed against artillery he will do well to pay no attention to the enemy until he has pressed on without a check to within 500 metres of him. The experience which he will gain on the practice ground, that artillery can at a range of from 1,000 to 1,200 metres exactly measure the distance of the target, will further teach him never to neglect to obtain information from the artillery, as he advances past it against the enemy, with respect to the range at which they are firing, for this will give him a starting point from which he can, by counting his paces as he advances, decide when he has arrived at 500 paces from the target.

For it is notoriously very difficult for the infantry, even at 500 metres, to see whether the small bullets of their rifles fall short or over.

Observers who stand near the targets can see the effect of the projectiles of the artillery. They will notice that this effect extends farther in depth than in width. They will thus acquire the conviction that dense, and above all deep, targets offer the most favourable objects for the fire of artillery, which is consequently most effective against columns. Cavalry and artillery will conclude from this that they must avoid all column formations if at any time they are compelled to show themselves within effective range of the enemy's artillery, and that they may expect to suffer the least possible loss from such fire if they can take up an extended order of battle.

II. *Applied Tactics.*

The fact that field artillery will in their course of applied tactics be directed by Officers commanding troops of all arms is not absolutely dependent upon the new organization, since they used even formerly to be told off at the detachment exercises and field manœuvres to Generals of Army Corps, Divisional Commanders, and even to Officers commanding brigades. But this was rather a matter of form as regarded the details. Very great importance was attached, even at the manœuvres, to the judgment of the artillery superior Officers. Differences of opinion and conflicts of authority were thus certain to occur, to the great disadvantage of the troops themselves, who often did not exactly know whom they ought to obey. In most cases, therefore, the Officers commanding the troops gave up the "technical troops" to the command of their "technical Officers." The former often preferred not to trouble themselves about this arm, which was only temporarily and indeed only half under their command. The troops themselves were obliged to be guided principally by the opinion of the "technical Officers," since in their hands lay their weal and woe and their future career. But this half-and-half arrangement, as I have already stated in another place ("Letters on Field Artillery"), had a bad effect upon everyone, especially as regarded the discipline of the troops.

But this half-and-half arrangement is now at an end, since the field artillery is now altogether placed under the Generals commanding Districts. Henceforward the qualification returns will pass through the hands of the General in command, and every artillery Officer will say to himself that in applied tactics (for example, at exercises in combination with the other arms) he simply has to work by such principles as shall be recommended to him by these Officers as correct.

The General in command knows already, from the requirements of his other troops, what he must demand from his field artillery, and has further seen, at his inspections of elementary tactics on the drill ground and on the practice ground, what he may expect and require from their assistance.

Thus the first duty of the artillery is to beat down that of the enemy. The power of the gun teaches us that this can be decisively done at a range of 2,000 to 2,500 metres. Nevertheless, the necessity of protecting the advance of the other arms from the fire of the enemy, and of dividing the enemy's attention, will in most cases oblige us, when acting on the offensive, to open fire earlier at yet longer ranges. If this be done we may reckon on being able to come into action, without suffering serious loss, in positions which offer suitable ranges (2,000 to 2,500 metres) for a decisive artillery combat, and even sometimes to surprise the enemy by so doing. If, however, the character of the country is such, that we can march into these positions without being seen by the enemy, it will then be better to advance into

them at once, without delaying in a more distant position. If we succeed in escaping the enemy's observation until we open fire, we have then surprised him, and there is a considerable probability that we shall find our range, and therefore hit, before he can do so, if only we carry out ranging with the greatest possible calm. We shall then be able to change to shrapnel fire, which indeed is decisive in the artillery combat, earlier than the enemy, and shall thus soon obtain the superiority in the artillery duel.

Observation of the effect of the newest description of shrapnel has of late rendered many gunners fearful that we shall not be able to come into action at 2,000 metres from the enemy's artillery. Most ingenious and complicated means have therefore been thought out, by which to diminish the effect of the hostile fire and to find cover for the advancing artillery, both during the advance and also as they come into action. For some time there was a preference for positions which were in rear of heights instead of on them, and from which it was proposed to hit the enemy by firing over the hills in front, using subsidiary aiming points, which sometimes lay in rear of the guns. A General in command, seeing this, once naively asked, "Are you shooting through the hill?" I will acknowledge that this complicated plan may be all right in peace; but in the hurly-burly of battle it will come to grief. In order to carry it out observers must be sent out to the front and flank, for the purpose of signalling the results of the first trial shots. Can the artillery commander absolutely depend upon these men? Observation is in truth so difficult, that he will prefer to keep it in his own hands. Will the signals not be misunderstood if other troops march directly across the station of the observers? But the principal objection to such a position is, that we cannot from it fire at the foot of the hills. If the enemy advances to the attack, we cannot from a position of this kind hit the ground at the base of the hills, and cannot therefore assist the other arms of our own army in repulsing the attack. There is even some risk that the enemy's infantry may reach the crest of the heights through this dead angle, and may thus rush in on us from a very short distance without our being able to fire on them. The energetic advocate of the auxiliary aiming point would in such a case move forward to the crest of the heights. But who can assure me that my guns will still be capable of movement? The artillery duel will, in future, cause far larger loss than it formerly did, and it may very well happen that, if many horses are hit, the necessary supply of others may take up so much time, that we shall not be able to make use of the proper moment for taking up a position on the crest of the heights. Practice with auxiliary aiming points is an excellent invention for siege and fortress work, and has been rendered systematic by the use of the new elevating arcs; in these cases it also very much assists the correct service of the guns. But field artillery will be able to employ it with advantage only under very rare and exceptional circumstances. The normal, and in most cases the best, position for field artillery is, and will continue to be, that which affords the best view, that is to say on the crest of the heights. There is, of course, no reason why this crest should not be used to give cover, provided that the guns can look directly over the hill. But they must, especially when on the defensive, be able to hit the foot of the height.

Another scheme for diminishing the effect of the enemy's fire, and one which even gunners with much experience believed in after a time, was to advance the position to the front slope of the hill; the idea being that artillery which stands in front of a background higher than itself is more difficult to see and to hit than if it showed clearly against the horizon. This plan may now and then be correct, when such artillery has some quite special task to carry out. But as a rule a position on the slope which lies towards

the enemy will, when the latter is posted on the hill, be so limited both in the length and the breadth of its field of sight, that it will be distinctly undesirable, and we shall be absolutely obliged to prefer the position on the height in rear, as offering a better view.

Other ingenious people have made their hobby of an unseen creeping-up into position, and have thus thrown away an enormous amount of time before they got to work.

I need hardly say that every intelligent gunner will make use of all such natural cover as the character of the ground may afford, just as an infantry soldier, when he is under fire, seeks for shelter behind trees, undulations of the ground, bushes, walls, and hedges. With this object the guns should, as I have already said, be brought only so far up to the crest of the height as will allow the bore to clear it. Use should be made of everything which may render the target difficult for the enemy. For example, a hedge which stands a few hundred paces in front of the line of artillery may easily deceive the foe. He probably thinks that we are standing close up to this hedge, and therefore ranges himself and expends all his ammunition upon it; I once saw this happen to my great delight. A high wood which stands directly in rear of us may render us completely invisible, if the sun is at such an angle that the shadow of the trees falls upon our line of guns; there are also other similar cases. Artificial cover should certainly be thrown up, even during an action, if there is time to do so. We should also select for choice a line of advance which is covered from the view of the enemy by the lie of the ground, rather than one which is easily visible to him. It would lead me too far if I should here speak of all the possibilities which can be appreciated and made use of, when the character of the ground is correctly known. But we must take care not to search too anxiously for cover, since to do so entails the risk of making our own men sensitive about it, while it makes fear a matter of regulation and takes the edge off their dash. There is no protection from fire equal to killing your enemy as quickly as possible.

It is especially important that we should use the shortest road into position and open fire as quickly as possible, when the moment approaches at which the other arms will push on into decisive action. In this case the artillery which is to advance will be greatly assisted in their movement, if another line of artillery continues to fire from a longer range. If this be carried out the combat will rage along the whole line, and there is more likelihood that the enemy will not pay strict attention to the advancing guns, and will not therefore fire at them. At the Battle of St. Privat single batteries pushed forward straight across the open until they were within 300 paces of the enemy's infantry, whom they surprised with their effective fire. Owing to the present power of field-guns such short ranges will in future be necessary only when the artillery would in all other positions be masked by the other troops of their own force. The range of 1,000 metres will be quite near enough, for the effect of field artillery does not materially increase after this.

The action of field artillery in the attack requires as a rule three positions. From the first fire is opened at long ranges. The advance into the second is made in echelons, whenever it may be desired to bring the artillery fight to a final decision. This second position will be found at a range of about 2,000 metres or a little over. When the enemy's artillery has been overcome, the other arms move on to the attack and the artillery advances, again by echelons, to within about 1,000 metres of the object of attack, with the object of making it impossible for the enemy to direct his fire upon the other arms. When our infantry has got in to 500 metres, and has combined their fire with that of the artillery, this fire will continue for a short time only, until the enemy has been so broken by it that the charge can succeed.

The first of these positions should be carefully selected, and the movement into it should be made under cover, in order wherever possible to surprise the enemy by our appearance in it. In taking up the second position, and yet more in taking up the third, considerations regarding a prompt effect of our fire are of more importance than those relating to cover in front of the battery.

It obviously cannot be my intention to lay down here a system which shall be applicable to all cases. A favourable opportunity, or the nature of the ground, may make it unnecessary, or altogether impossible, to take up three different positions. If, for example, the character of the ground is so favourable, that we can surprise the enemy by moving unseen and at once into a position at a range of 2,200 metres, we ought to omit the first position. If, after having taken up a position at a long range, we find that between it and the enemy there is but one other, and that that is at a range of about 1,400 or 1,500 metres, then the second and third positions will be one and the same. In cavalry actions more especially we shall often take up less than three positions, and sometimes shall use only one, that for final and decisive action.

When acting on the defensive the General in command will indicate that artillery position to which he attributes the greatest value. That arm will arrange for a stout resistance at this point, both by increasing their fire-effect by ascertaining the various ranges, and by diminishing the effect of the enemy's fire by means of the construction of artificial cover. If the main position is anything more than a rear-guard position (in which it is proposed to hold the enemy only for a time, and which it is intended to abandon at some definite moment), and is such that the General is determined to fight a decisive action upon it, the artillery will, in order to lessen the loss, send back their teams into places which afford cover, and should perhaps station their ammunition-wagons (the teams being unhooked) in rear of the guns, either in lieu of or in addition to the limbers. If the enemy can possibly manage it, he will not attack the strong front, but rather a wing or a flank. Again a good defence is inconceivable unless it be combined with a counter-attack. In order to oppose the movements which I have first mentioned, and with the object of emphasizing counter-attacks by the use of artillery, a part of the batteries should be kept ready in reserve with their horses hooked in. At the present day, when the artillery forms an integral part of the army corps, and is no longer a more or less independent technical arm, the General in command will not, even in peace manœuvres, permit the batteries to leave their position before they have received an order from the commander of the troops to do so. He well knows that the retirement of artillery may far too easily become the signal for a general retreat, and that the infantry can more readily sustain an attack when it is supported by the fire of artillery up to the shortest ranges. The dread of losing guns is no longer a factor in the question. The loss of guns is of itself no disgrace. Some batteries have lost guns and have thus gained the highest honour; and this, perhaps, entirely because they did lose them.

The offensive and the defensive are not always very sharply divided from each other. The last wars have afforded many examples of accidental encounters, in which both sides proposed to attack. Cases have also occurred where neither side had any definite idea of attacking, but where both of them found themselves on the march and thus accidentally came in contact. In such cases only the Officer commanding the troops can lay down where the artillery is to come into action, since their place is at the point where he intends to deploy, that is, to pass from the order of march to the order of battle. The fact that the artillery now forms an integral part of the army corps will in this case have the most advantageous results, since they will

this be accustomed to carry out in their entirety the orders of the Officer commanding the troops and to enter into his ideas, instead of, as formerly, desiring to be a detached, isolated, and independent arm. In accidental encounters the artillery must, when they first form line, move with the greatest possible rapidity. The nature of such casual engagements is the origin of the fact that in them neither party takes up the attitude of assailant or defender in such a distinct manner as is the case in pre-arranged and well-planned actions. The fight sways more backwards and forwards, and the rôles vary according as the troops which come up into action change the condition of one or the other side. In this case less care need be taken with regard to cover in the artillery positions, and we should strive only to obtain the best possible effect from our fire. Artificial cover should also rarely be thrown up for the guns, but the limbers and teams may be placed behind natural shelter.

III. *Personal Matters.*

It follows, as a necessary consequence of the organization of the field artillery under the Generals commanding Districts, that all personal matters concerning the Officers will from this time forward pass through their hands into those of the highest authorities, instead of, as formerly, passing for the greater part through the Inspectors and the Inspector-General.

Personal matters which affect the Officers include—

- i. Questions connected with military law.
- ii. Questions regarding the laws of honour.
- iii. The selection of Officers as Instructors and for special appointments.
- iv. All estimates and decisions with regard to the general efficiency of Officers, and to their qualifications for promotion.

i. Questions connected with military law have always been in the hands of Generals of Districts.

ii. I have for this reason never been able to understand why questions regarding the laws of honour have, in the case of Officers of the artillery, followed up to the present another path. It is impossible that questions of honour can be judged differently in the case of one arm and in that of the others, even though the former were really differently situated as regarded technical and scientific matters. The fact that all questions arising on this subject were decided by a second authority was certainly not of advantage to the status of the artillery. Such an arrangement was directly calculated to awaken a suspicion that questions affecting honour were less sharply looked after in the artillery, and that scientific proficiency was perhaps held to be of more importance; such a suspicion must injure the status of the arm with respect to the Army in general. This difficulty was further accentuated by conflicts regarding command between the various authorities. The fact that the Generals of Districts were supreme in matters of military law, while the superintendence of interior economy was the duty of the superior Officers of the arm, was already sufficient to produce conflicts respecting command. While the General of the District had to do with courts-martial, the superior Officers of the arm had the control of the keeping of the books, including the defaulter-books. But if, on the occasion of a court-martial, a sentence is laid before the General of a District with the nature of which he finds fault, while the united opinion of the superior Officers of the arm supports it, there must be a conflict of authority, and the junior Officers cannot sometimes be certain as to whose opinion they ought to follow. And such conflicts are even more likely to occur in the case of questions of honour. For even the very best authorities sometimes differ in

opinion as to whether a certain case calls for the decision of a court-martial or of a court of honour. But it is very desirable, in the interests of the discipline of the troops, that all such matters should be governed by one spirit and one principle. I may be told that the wording of the law affords complete and satisfactory guidance in this matter. But troops cannot be governed by the letter of the law. The letter kills. The letter of the law is only of use for the purpose of expressing its correct spirit. True common-sense, and indeed one single spirit and principle, must direct in all these matters. The preservation of discipline and its superintendence (and thus also the management of the defaulter-books) must be an expression of the spirit in which, following the law, the powers of military justice are administered; and one and the same spirit must govern matters connected with both courts-martial and courts of honour. In this respect the infantry and cavalry were formerly better off than the artillery. In the former, the higher administration of justice, the supervision of discipline (including the inspection of defaulter-books), and the decision as to whether a court of honour should or should not be held, were in one and the same hand, in that of the Officer commanding the Division. Connected with this question is the fact that circumstances which become known owing to a judicial inquiry may really thus grow into matters of importance, owing to the expression of the opinion of so many persons.

But formerly such circumstances did not sometimes come at all officially to the knowledge of the superior Officers of the arm, that is to say, to that of the Inspectors and the Inspector-General. For this reason also it is important, in order to obtain a correct opinion as to the Officers, that the power of higher justice, and all matters connected with questions of honour and the estimate of the efficiency of individuals, should be placed in one and the same hand, exactly as is the case with the infantry and cavalry. In this respect also the artillery is now the equal of the other two arms.

iii. Many a gunner will regard the change of organization of the field artillery with apparently well-founded doubt, so far as regards questions which concern the selection of Officers for Artillery Instructorships and for appointments. These are (in addition to the Instructors in Artillery at the War School and the War Academy) the Instructors at the School for Non-commissioned Officers, at the Artillery and Engineer School, those at the School of Gunnery, and the members of the Proof Committee. But these doubts will diminish, if we do not allow ourselves to be deceived by the unfounded belief that artillery must be a specially scientific arm, and if we do not shirk the certain amount of trouble which is necessary in order to get at the "*raison d'être*" of these institutions.

I must first most decidedly deny that the action of artillery requires more scientific knowledge than does that of the infantry. The laws according to which an infantry bullet flies through the air are exactly the same as those which govern the trajectory of an artillery shell. The only difference is that one is larger than the other. The grooves, the twist of rifling, and the shape of the shot are governed by the same principles in all firearms. The charge has in every case a similar effect. Mathematics, physics, and chemistry play exactly the same part in the infantry as in the artillery. But the infantry has never considered it necessary to pose as a specially scientific and peculiar arm. It has indeed done exactly the reverse. As I have already stated above, it had at one time far surpassed the artillery in progress. It was for nearly twenty years universally provided with rifled firearms, while a part of the artillery considered such weapons as impossible, another part held them to be useless, and a third made vain attempts to invent them. In former days, when the artillery themselves cast their guns, there was more to be said than there is now for the idea that extraordinary

technical knowledge was necessary. But since the firearms of the artillery have been constructed in civil manufactories, just as the infantry arms are, the former, like the latter, have had nothing to do but to prove their weapons and use them in battle.

As soon as the artillery had been armed with rifled guns, they felt the need of a school of instruction after the pattern of that of the infantry. When this institution had been got into working order, it soon came to pass that there was no necessity that a good battery Officer of artillery should stay as long as formerly to study at the Artillery School. The first of the three years of study at this institution had already been dropped, since Ensigns of artillery were permitted to join the War School and to pass through the same elementary training as those of the other arms; it was next recognized that the last year of study was also unnecessary in order to make a good battery Officer of artillery. Since then the greater proportion of young Officers of artillery remain only a single year (or rather from nine to ten months) at the above institution. What ought they to learn there? Simply so much as is necessary to enable them to do good work as battery Officers. The best instructors in artillery for them would be Officers selected from the smartest of the senior battery Officers. But these can be perfectly well selected at headquarters, according to the qualification returns of the Generals of Districts, in the same manner as the instructors are selected for the School of Musketry.

My assertion, that a battery Officer of artillery requires no more scientific knowledge than an Officer of infantry, would lead us to the conclusion that a practical Officer of artillery does not in general need to study at any special Artillery-School. I do not wish to contradict this conclusion, especially since the School of Gunnery has developed such remarkable efficiency, that an Officer learns there in three or four months more artillery work than he would learn in a year at the Artillery School, and since means are already provided to enable all artillery Officers to visit the School of Gunnery. But I will not enter further into this question, since it is out of place here.

A small number of the students of the Artillery School, particularly such as show special inclination for and interest in science, study at this institution during a second year; they work at the more advanced subjects connected with artillery, such as physics, chemistry, and higher mathematics. Is a special artillery central authority needed in order to select their instructors? Certainly not, since these instructors will be chosen from the leading professors of the University of Berlin.

But what shall we say with regard to the Director of the Artillery School? Every gunner who has in his time visited this institution will agree with me that for this position it is not necessary to have a learned man. The best regimental commander of artillery would certainly be the Director best suited to this institution; and since I have shown that the General of a District is in a position to judge as to the merits of the artillery Officers who are under his command, it is also unnecessary that a central artillery authority should select the Director of this institution. The selection can be made at headquarters, from the reports received from the Generals of Districts, quite as satisfactorily as is that of the Director of War Schools. The principal characteristic which the Director of the Artillery School must possess is a disposition half soldier and half schoolmaster; that is to say, he must be a man of authority, and must know how to manage young Officers, of whom so great a number are gathered together at this institution, that their moral and military training is not so easy as is that of a regiment.

Those Officers who have stayed for a second year at the Artillery School will later on, after they have for awhile returned to practical duty, be qualified for appointment to the Proof Committee or to technical institutions,

according as to which form of science they have especially excelled in during their stay at the Artillery School. The reports of the Artillery School will amply suffice to give all information about them, and there is therefore no need for the existence of an artillery authority to make a selection in accordance with these reports.

With respect to the non-commissioned officers' school, the instructors will rarely require to be of exceptional ability, since all that the students at this institution have to learn is limited to such elementary matters that their instruction can be carried on by any moderately educated Officer. Practical laboratory work alone requires special knowledge on the part of the instructor, and this can be taught by the existing Officers of the laboratory in Berlin, who in the practice of their departmental work have developed a system which is rather mechanical than scientific. But for that very reason their instruction will produce better practical results than if it were given in a learned and theoretical form.

iv. The last and the most delicate of these personal questions is the classification of Officers with regard to their efficiency and their suitability for promotion.

I have already stated at sufficient length, that a General in command, who has to lead all arms in war, must be able also to decide as to the standard of their training in peace. He can, moreover, give an exact and satisfactory opinion as to their Officers, owing to the fact that even in peace he has, at the manœuvres, sufficient opportunity of learning their efficiency in leading their arm in battle. This was not formerly the case. The superior Officer of artillery formed his opinion almost altogether on how he found the troops to have been trained. At the manœuvres, when action in combination with the other arms was represented, the field artillery came under the command of the Corps and Division Commanders. The Inspector of Artillery had not always any opportunity of seeing his subordinates at this their principal work. At any rate he could not interfere, either to blame or to improve, unless he was prepared to create friction with the Commander of the troops. Thus frequently nothing was left to him but to depend upon such communications as the Officer commanding the troops might make to him regarding the conduct of the Officers concerned. But these communications were often very scanty. For the Officer commanding the troops had no special reason to interest himself in the individual value of Officers who were only temporarily under his command. Many also were especially averse to find any fault, since they did not know all about the Officers concerned, and did not like to injure their career for reasons founded on merely cursory observation. Thus the opinion given concerning the working of the field artillery was sometimes rather summary, and consisted only of the statement that they had done everything all right. The Inspector of Artillery could not make much out of this, and the consequence was, that the principal quality of an Officer, namely, his efficiency in the conduct of his command when in action in combination with the other arms, had nothing whatever to do with any decision as to his future. This depended principally upon how he trained his men. But is the best armourer, he who makes the sword, always the best fighter? Only, certainly, in very rare cases.

The General in command, under whom the field artillery will from this time forward remain always placed, will henceforth feel as much interest in one of his Officers of artillery as he feels for one of the infantry or cavalry. He will in the course of the year learn to know his Officers throughout the entire circle of their duty. He will thus be in a position to weigh the different duties against each other, and to attribute to each the amount of value which belongs to it. He may perhaps, for example, prefer an Officer who always brings up his guns quickly to the right spot for supporting the

other arms, even if he here and there gives occasion for blame as regards his elementary exercises, to another Officer, whose battery is a pattern for correctness in drill, but who never brings it up ready into position at the right moment; for the former shows a tactical eye and tactical skill, while the latter knows only how to forge the weapon, and not how to use it.

The General in command, who will henceforward take the same interest in all the three arms, will also endeavour to assist all three as regards their promotion. This was not formerly the case, since the recommendations in the artillery did not pass through his office. It mattered nothing to him if the artillery as regarded their career fell behind the infantry and cavalry. The promotion in the whole of the artillery was, by the action of the superior Officers of the arm, kept nearly at a level, and if the artillery of any army corps had at any time a chance of promotion, this was stopped by transferring Officers to it. In this respect also the new organization will be of advantage to the artillery. This will become most distinctly evident in relation to the promotion to the higher ranks. Such promotion will in future depend upon how far Officers are fit to command Divisions. Whether this be the case or not, the arm will nevertheless get a step by such promotion. This was not formerly the case. It used to be said of many a man that, though he was not fit to command a Division, he might still be capable of doing the duty of his rank with the "technical troops." What the other arms formerly thought of the artillery in this respect I once learnt to my horror, when I heard a distinguished old Officer, speaking in praise of a young artillery General, say as follows: "He is not a mere artillery General, he is a real General."

Some apprehension has been expressed on the part of the infantry and cavalry that, owing to the fact that the artillery has been placed under the Generals of Districts, while the Inspectors and the Inspector-General have been abolished, the infantry and cavalry may be prejudiced with regard to their promotion to the command of Divisions, since the artillery will now have their share of it. In my opinion this apprehension is unfounded, since the command of a Division will not be given to every Officer.

The head of the Army will always select such individuals as are competent to employ all three arms, and will not tie himself down to a certain fixed proportion between the different arms. The number of the men who combine sufficient experience with the necessary physical vigour is moreover not too large. It will do no harm to the Army if the selection be made from a larger number of men, since a more exacting standard can then be laid down, and that is to the advantage of all arms.

An opinion has also been expressed, that the artillery will suffer by the abolition of the Inspector-General, since that arm will now have no authority to represent it in influential quarters. This is a loose way of speaking, which has no particular meaning. Will the infantry and cavalry be represented as a whole? And have these two arms any desire to be represented? How is such a representation to be practically expressed?

I am of opinion that the artillery will in future be better represented by the Generals of Districts than it was formerly by the authorities of the arm, whose claims were frequently very troublesome, since they were half considered as being outside the army. For instance, an Instructor in Tactics once spoke against any increase of the artillery, on the ground that the train of the army would be thus very much enlarged. A General who has entire command of the field artillery will no longer regard them as "train," but as an arm. Let us, for example, take the case that the present peace establishment of the field artillery is obviously not sufficient; an Inspector-General of Artillery would have to lay the necessary proposals before the War Ministry. But the latter would undoubtedly be opposed from the first to any scheme of increase, and would say that the artillery are never contented, and are always

asking too much. The Generals of Districts, under the old organization, would have no interest whatever in putting in a word for the improvement of the establishment. But when once the field artillery has been completely put under the command of these Generals, the latter fully sympathize with any possible failing of the peace organization, and the War Ministry cannot altogether avoid supplying a need, which has simultaneously been considered necessary by all the Generals, and which has been so reported by them.

With regard to the position of the artillery in the eyes of the other arms, and of Officers of high rank, it can be improved only by a closer connection with them, and by a more intimate acquaintance. The field artillery were already in war under the command of the Corps and Division Commanders. The longer the war lasted, the higher was the status of the artillery in the eyes of their comrades of the other arms, especially when they had first had an opportunity of fighting shoulder to shoulder with them, and of enduring together to the end. This became more and more evident the longer the war lasted. Everyone who took part in the last war, which continued during nearly eight months, will certify to this fact.

Of what use then was the former representation of the artillery by a central authority of the arm, as far as concerned its status with the other arms? The ruling principle, which had been laid down from long ago for the guidance of the "technical arm," that artillery must not be exposed to infantry fire, had before long struck in such deep roots, that a very esteemed and highly scientific artillery Officer made the assertion that rifled guns could not be served with the necessary care when the gunners were exposed to the risk of losing their lives. It is therefore not astonishing that one of the foremost authorities of the Army (*nomina sunt odiosa*) said once to me, that the chief reason why there was such a rush for the artillery was, that in this arm a man was not exposed to so heavy an infantry fire, and had thus less chance of being shot. However, the artillery has in the last campaigns quite knocked the bottom out of that idea. It has held its ground, and worked very close up to the infantry, under the very heaviest fire of the enemy's infantry. Then after the battle have we not seen Generals embracing their Battery Commanders, while the privates of the infantry patted the guns which had helped them through so many hours of trouble? However, something still remained of the old prejudice, and it is not long since a very influential person, speaking of a corps of Officers which had especially distinguished itself, said that it was really too good for the artillery.

But nothing of this sort will be any longer possible, when the artillery is a part of the army corps, exactly as are the infantry and the cavalry. Then the same sense of belonging to each other, and the same comradeship, will grow up and gather strength in peace, as first arose after hard fighting in war; and no arm will think itself better than another.

The artillery must certainly have a representative in the higher commands of troops to which it is told off, but it does not need to be represented beyond them. This appears a play upon words, but it is not so. It shows the essence of the matter. Namely, that it is decidedly unnecessary that the artillery should have special high authorities to represent its interests, since those authorities which are now permanently, and as a matter of organization, placed over the artillery will naturally take as much care of the interests of the whole of the artillery which belongs to them as they do of their other subordinates. But these authorities will feel the need of a professional gunner on their Staff, either as an Officer of the General Staff, or as an Aide-de-Camp, in order that he may, when necessary, give information regarding such elementary details or matters of regulation as the General in command, considering his multifarious and extensive duties, cannot possibly keep himself up in. This will be found especially necessary at inspections

and manœuvres. All this sort of thing was even formerly so arranged, in the Divisional and Corps commands, that infantry and cavalry Officers were always to be found on the Staff; so that the General when he inspected infantry was accompanied by an infantry Officer, and by a cavalry Officer when he saw the cavalry. Consideration is taken of this fact also in the new organization, since the Staff of each command is to be increased by the addition of an artillery Officer. With regard to further details, we shall hardly expect to find that, in the working of the office, all questions which concern the artillery will be given over to the artillery Officer on the Staff. For example, in the future, as now, personal matters will be left to one Officer and discharges to another, whether they belong to the infantry, cavalry, or artillery. For the Officers can only lay each question before the General for his decision in continuation of what has gone before, and in accordance with the existing laws, rules, and regulations. If it were otherwise, misunderstandings would arise, especially in personal questions, with regard to which the individual opinions and inclinations of the Staff Officer must be altogether set on one side.

Everything which has been discussed in the foregoing paper with regard to the advantages to the artillery and to the Army, which have resulted from placing the field artillery under the Generals of Districts, might lead us to the conclusion, that it would be still better if the field artillery were in peace told off to the Divisions also, exactly as are the infantry and cavalry. But I will not now enter into this question, since I desire to occupy myself with existing facts only, and have no wish to make propositions of organization for the future. Besides, we do not know whether there may not be an intention to make some day or other a change of organization in this direction, while it may perhaps be now merely postponed, in order to avoid making too great an advance all at once.