Section 4: 
Prussian Napoleonic Artillery

SOJ-07 (22)

Deployment of Cavalry Commanded to Cover Artillery

(“Aufstellung einer zur Deckung von Geschütz kommandirten Kavallerie”)
Translated by Geert van Uythoven

The 52nd chapter of the Militair-Wochenblatt contains a thesis about artillery cover. Without going into these new ideas, I merely consider the case as it is right now, not how it should be, and will only treat the passage of the thesis were the author has the opinion that: “the case, in which batteries will act on its own with a proportionately cover of cavalry or infantry should be treated as a very rare case”. Regarding this statement, one should make an exception of the frequent advance and rear guard combats, to which I will limit my opinions in this article –which one also can treat as a contribution to ‘little wars’- as I believe that the horse artillery, in combination with single squadrons or a cavalry regiment, will form the forward ['vortrab'] or rear force ['nachtrab'] of an advance or rear guard of a corps.

The latest tactics which connects both arms so closely calls for the creation of such commands frequently, and the author of this article participated often in them during the 1812, 1813, and 1814 campaigns.

The more mechanical the deployment of the cavalry as a rule takes place in such cases, the more one should be surprised, that they nevertheless should receive the attention of the commanding officer in so many respects.

If cavalry is commanded to cover artillery during the pursuit of the enemy, or during a retreat, it will usually take up position close behind, or close to the flanks of them: so do single squadrons as well as regiments. Both ways, if not using the cover of the terrain ¹, can impossible be regarded as efficient, then:

1. The enemy will expect this deployment when it will take place mechanically, and planning his attacks accordingly. When this attack succeeds, artillery and cavalry altogether will be defeated;
2. it will more or less uncover the flanks of the artillery, and finally
3. both forces are deployed close to each other, forming one target at which the enemy can concentrate his fire. The damage done by this has been shown by experience, and is already enough reason to act in this case also according to the spirit of the new.

To remove these disadvantages, according to the opinion of the author, the cavalry in advance and rear guards, which would be commanded to cover the artillery during the fighting, would have to take up a forward position on the flanks of the enemy. In an oblique direction in order not to present the enemy our own flank.

Assuming that a half horse artillery battery would have to be covered by two squadrons: so should one of these deploy 100 to 200 paces to the right and forward of the battery, and with an

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¹ Ein Kavallerieoffizier (1817) “Aufstellung einer zur Deckung von Geschütz kommandirten Kavallerie”, in Militair-Wochenblatt, Volume 2 (Berlin 1817), pp.272-274
advanced right wing; the other one at the same distance with an advanced left wing, opposing the former squadron, to the left and forward of the battery.

The enemy forward or rear force, when not outnumbering us, would in such circumstances never dare to undertake an attack. If he nevertheless would try it, even when outnumbering us, he will not be able to defeat us, when beside these dispositions he will be opposed by a calm presence of mind, and a decisive use of the right moment.

Assuming that the enemy would attack the cavalry, it would present our artillery their flank. These would have to wait until they have advanced into canister range, and then fire, giving by doing this at the cavalry the signal to counterattack. If the enemy would direct his attack at the artillery, he would have to pay dearly during its retreat, when the conditions of not acting to rashly, and determination will be fulfilled by both arms.

For the remainder, anyone understanding the spirit of such dispositions will be able to think about other possibilities of attack, and will never doubt the way how to act defensively and offensively.

Form the above one can justly derive the disposition of a cavalry brigade, as for example in the case given in the theses in chapter 52 already mentioned, with a force consisting of five regiments in two lines with a horse artillery battery. The flanks of the enemy however could in such a case be threatened easier and more advantageous by forming wing columns in sections (‘Züge’); our artillery would even be better covered, and the 5th regiment –if two lines of two regiments are formed- be used most efficient, by deploying it at a farther distance to cover our own most threatened flank. In such a case it could act more independent, using every advantageous opportunity to harm the enemy.

It has especially to be remarked that, when the enemy would deploy artillery against us, he would have to direct it against three points or, if he targets only one of these, leave both other unharmed. In such a case it should not only be permitted to the cavalry, but be their duty, to change position when they notice that the enemy has found the range at them; in which case they should by alternate movements move to a side, backwards or forward again, so that the tactical deployment of the whole position is not disturbed.

Stubbornly staying at a fixed position in such occasions is not perseverance, but obstinate courage, or even pedantry! One who cannot make the difference between changing position with leaving its assigned post, and who is calmly and steadfast prepared to sacrifice troops with such pedantry, will be the cause that much blood will be spilled for the fatherland for nothing.

When in the year 1647 Duke Ulrich von Württemberg commanded the Allied rear guard against Turenne, and was fired at by him during the attack on a defile near Augsburg, the immortal General [Turenne] praised the Duke, saying among other things: “The enemy squadrons did nothing else then changing position time and again, without flinching.”

Footnotes:
1) For example when low ground will provide the cavalry a covered position which, as soon as it will not hamper our
Prussian M1816 6-pdr (drawn 1822)
The decisive factor of artillery lays in all cases especially in the effect its projectiles have, and were they will land. Therefore, it is dependent of the size, weight, and the velocity of the projectile; the density of the object fired at, etc. The effect will be greater when the projectile is bigger and heavier, the greater its velocity is during its movement, and the less the targeted object will be able to withstand penetration.

Because of the fact that at the distances on which firing usually will take place, clearly all kinds of artillery projectiles will have the effect of killing, wounding, or damaging humans, animals, and objects. It is commonly known that a roundshot is able to lay down complete infantry files. Therefore, it has only a comparably minor effect (called by the Austrians ‘ertrag’, ‘yield’) against a thin line when fired at from the front. Therefore, when firing at such targets canister is generally used, when an enfilade shot is not possible.

From this derives that one roundshot is able to kill more then three men. If one would fire however on an infantry column of considerable depth, a roundshot would be able to hit so many men until its kinetic energy has been used. Therefore, the loss in men by a single roundshot can be considerable.

How many men a roundshot will be able to harm is however not clearly known: the calibre; the distance; the troop formation; the angle at which the roundshot will hit the target; the terrain, on which the grazes are made, diminishing the kinetic energy of the roundshot more or less, etc., all influence the ability of a roundshot to penetrate. So a general rule cannot be given, although it is surprising that such an important issue has not been researched since the introduction of field artillery into military service took place already a long time ago; and because of its extensive deployment, especially during the revolutionary wars. We are still much in the dark about the effect, and one can judge only superficial about it. In the meanwhile the artillery itself is not to blame for this, as they are not able to mark the effect of their shots from close by.

To receive more information about this issue, earlier costly experiments have been held by the Sardinian artillery, during which was fired at old horses, counting a horse for two men each. However, the results of these experiments are based on too many fixed conditions to serve as a general rule, especially because of the fact that the bodies of humans and horses have a different anatomy and resistance, which stand to each other in a still unknown proportion. According to these experiments, when using a field charge, the following mortal effects would be achieved:

<table>
<thead>
<tr>
<th>calibre</th>
<th>400 paces</th>
<th>800 paces</th>
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</thead>
<tbody>
<tr>
<td>12-pdr</td>
<td>48</td>
<td>36</td>
</tr>
<tr>
<td>6-pdr</td>
<td>39</td>
<td>28</td>
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<tr>
<td>3-pdr</td>
<td>30</td>
<td>19</td>
</tr>
</tbody>
</table>

From this one can easily conclude that the effect of the guns is very exaggerated, and that one should put not much trust in these numbers. So with these experiments nothing positive has been achieved for science. Therefore, it is preferred to put more trust in specific experiences made during campaigns, when these are reported by trustworthy individuals. However, because of the fact that the various artilleries differ from each other in powder charges, guns, and calibres, and because not much effort has been put in gathering such information, again nothing has been gained this way.

In the Prussian artillery, when treating the effect of guns, commonly an example of the Polish 1794 campaign is being used as an example, were a 6-pdr roundshot at a range of about 1,000 paces killed three horses, wounding a fourth one. An effect which is fixed on six men (see §.557 of the *Leitfadens zum Unterricht in der Artillerie*).

In the meanwhile there are enough cases which sufficiently give proof of the outstanding effect of roundshot and grenades. Only these cases will for a part not come to the publicity, or they are achieved under too much doubtful conditions to be reliable. However, during the latter campaigns there should have been numerous instances; because of the many ways the war was fought on level and also mountainous terrain; and with the frequent use of columns and masses, sufficiently having taken place that when these would become public, would illustrate this issue more than enough to fill this omission in artillery science.

When treating this issue, the author of this piece is convinced that it should be very easy present-day, to clarify this issue. Not only because of the fact that the individuals that took part in the latter wars are mostly still alive, but also because the nature of the artillery is not as secret to the army anymore as it was previously, besides that artillery science is given at all our military schools; maybe not in all its aspects, but at least its basics. As such enabling one, when accounts about this issue are brought forward, to review them according to all relevant circumstances under which the event took place, in order to remove all doubt. Later on this will become more difficult, as many facts will fade from memory. (…)
The use of the separate arms of the armies of our times, as well as their composition deriving of this, were developed during the latest campaigns against France. Resulting in basics which caused essential changes in all sorts of units. The artillery was completely reformed because of this, with many faulty aspects already corrected, while more of these faults will be corrected soon. To this subject belong my opinions about especially the existing composition of 12-pdr batteries consisting of six 12-pdr cannon and two 6-pdr howitzers.

One should first answer the following questions: “What should 6-pdr, and what 12-pdr batteries achieve? What should cannon, and what should howitzers achieve?” Having answered these questions, one will be able to make a correct judgement about the present-day composition of a 12-pdr battery. Because of their greater manoeuvrability, which even with foot batteries can be greatly improved by seating the crew on the vehicles when moving into battle, the 6-pdr batteries have a much more comprehensive use as the 12-pdr batteries. The horse artillery is usually able to follow the movement of cavalry, the foot artillery to follow the infantry. Therefore, both are perfectly suited to support both main arms.

With these batteries, it is necessary to add two howitzers which have the same manoeuvrability. Partially, to engage an enemy behind cover or especially its masses already at long ranges; partially to prepare, or support, or defend against attacks on defiles, entrenchments and other defensible points with their grenade fire without any delay. The reserve artillery, in which the howitzer and heavy batteries are included, will often still be at a great distance when one will encounter such obstacles. Before these howitzers would arrive the important element of surprise will be lost.

Of an even more definite profit as for the direct attack or defence are the howitzers of the light batteries during the pursuit of the enemy, who on such an occasion will do his best to evade direct fire; grenades will be the only mean to alarm and to damage the enemy. Although during such operations the cannon seems to be of no use at all, these are the only ones able to oppose the enemy in the open, and the only ones able to defeat a serious enemy attack, which would leave howitzers very vulnerable when supported by only a weak covering force. During defence, the 6-pdr cannon should fire at the enemy as powerful as possible, efficiently combining musketry with canister. This will grant the heavy guns and other troops the time to retreat, to reach a new position, or to reform the dispersed troops for new resistance. Because these 6-pdrs are manoeuvrable enough, when covered by light troops, to inflict serious damage to an enemy pressing forward, while still able to escape.

When more power is needed instead of manoeuvrability; or when it is necessary to fire at they enemy effectively at greater ranges (1,500 to 1,800 paces); to destroy strong, artificial obstacles that hamper our attack, one will need the 12-pdr batteries. Such deployment of power will need more time though; the 12-pdr batteries need more time, compared with the 6-pdrs to reach their position to engage the enemy.

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[A treatise of a Prussian artillery officer about the 12-pdr cannon and 10-pdr howitzer batteries in the artillery reserve.]
Power and calmness is their character. When nothing is able to endure the enemy batteries, the 12-pdr batteries will deploy calmly, engaging the enemy. And when these are not able to destroy them as well, at least they will attract the fire which is hampering our advance, and often pave the road to victory in this way.

For what purpose are two howitzers attached to these batteries? Cannon need open terrain for their use, howitzers need terrain covering them completely. To engage an enemy standing behind cover, light howitzers will always be at hand, being just as effective. But will the enemy evade the direct fire of our 12-pdr batteries when shot at by these, by using defiles and heights, when the howitzers would be absent?

The battery commander is not able, nor is he allowed, to expose his howitzers to enemy cannon fire (except when in great need, because of the lack of cannon or the necessity to bring as much fire to bear at the enemy as possible; so that he is forced to do this). Therefore, basically, he will have to deploy his howitzers separated from his battery. Or he will have to leave them behind when time lacks to do this. When it comes down to counter-battery fire, howitzers deployed in the open will never be able to stand a fight for long, because the still unreliable grenade shot will have only a minor effect on the spaced cannon of the battery, while the howitzers will suffer from the much better aimed roundshot of the enemy.

The author speaks about this from his own experience. Because on 13 February 1814 he opposed with a 7-pdr howitzer battery of eight pieces, about as many cannon of the enemy, which within two hours decided the event at our disadvantage, forcing us to give up.

In this lies the disadvantage of the organisation of the 12-pdr batteries. In most cases, the howitzers will have to be detached from the 12-pdr cannon, forcing the commander to divide his attention. Something that will have a disadvantageous effect; when not on both kinds of guns, then at least on the smaller amount.

The latest campaigns have proved this sufficiently as well. When one wants to achieve something efficiently with the heavy howitzers, one should merge the sections of two batteries. And the question if these will be missed by both batteries, has to be answered with a certain “no”.

But how much would a 12-pdr battery gain in power, when both howitzers would be replaced by 12-pdrs? The use of such a battery, now consisting of eight 12-pdr cannon, has become much easier. Their abilities during the attack and defence in open terrain is improved because of the enhanced probability of hits, compared with that of both howitzers. When the battery is divided into two equal parts to provide for detachments, both halves will be strong enough to be utilised with great effect, while otherwise both single howitzers would become completely useless.

It still remains to threat the argument, that one when necessary could merge two equal sections of 10-pdr howitzers taken from two 12-pdr batteries, to give these howitzers complete independence and a representative effect. However, when everything would favour such a combination it would be executed only moments before the use of this arm, and as such the results will never be outstanding. The oldest officer would resume command – provided no hard feelings will derive out of this, what regrettably enough is often the case. What demands could the commanding officer make on his comrades, and what are his crews, horse teams, and guns able to achieve? Finally, without any supplies such a combination cannot exist in the long term, and only a few days of march will cause its complete dissolution.

So what should be the best way to organise the 10-pdr howitzer batteries? Every one of these guns, with a horse team of eight horses, is accompanied by two grenade caissons with a horse team of six horses. For a complete battery, one would need two supply wagons with a horse team of six horses, and a field forge. If one would create a 10-pdr howitzer battery of four guns, the complete battery would consist of fifteen vehicles, about 130 men and 110 horses. All
together a force which is still manageable, and which as a battery under a capable commander would have enough power to fulfil all that is expected from it. If with a battery organised this way a detachment of a single section would be necessary, this could be done without any disadvantage for the battery as a whole, as every section could have its own supply wagon attached to it. These batteries should become part of the reserve artillery as well, under the overall command of the commanding staff officer, from were they could easily be assigned to support any serious attack, for which a preparation would be necessary in all cases.

Now however, the 10-pdr howitzer batteries would make the present-day 7-pdr howitzer batteries unnecessary. Even more because of the fact that a 10-pdr howitzer grenade is far more precise as a 7-pdr grenade, so that at a distance of 1,400 paces, a half 10-pdr battery will have the same effect as a whole 7-pdr battery, when the space between the objects which is the target will not be over 100 paces. In addition, one has began to devise the 10-pdr howitzers for a smaller powder charge, resulting in a gun with a much lesser weight, which could be reduced even more without any disadvantage according to the opinion of many experienced artillerymen. So that the 10-pdr howitzer can be pulled by a horse team of six horses, as easy as the 6-pdr cannon. In such a case, the introduction of 10-pdr howitzer batteries would be even more useful, so that this kind of weapon which until now was treated very stepmotherly, would have great independence and a free use. And because of their lesser amount, instead of the 7-pdr howitzer batteries necessary now, this would mean substantial savings.”
Artillery Overhead Fire

Translated and composed by Geert van Uythoven

(...)

Although the subject of artillery fire in relation to overhead fire is seldom described in battle accounts etc., there is evidence that the artillery could and did fire over the heads of its own line of troops:

Source:

[Battle of Hondschoote, 8 September 1793]

“(…) die andere Hälfte des Bataillons unter dem Major von Mallet musste zur Reserve hinter eine Windmühle rücken, welche auf einer kleinen Anhöhe lag, um die darauf stehenden Hannöverschen Kanonen zu decken, welche über die Linie Grenadiers hinweg, den Feind beschossen.”

“(….) The other half of the battalion, commanded by Major von Mallet, had to advance as a reserve behind a windmill, which was situated on a small height, to cover the Hanoverian guns placed there, which fired at the enemy over the heads of the line of grenadiers.”

50 Schels, Johann Baptist von (1813): Leichte Truppen; Kleiner Krieg. Ein praktisches Handbuch für Offiziere aller Waffengattungen, Volume 1, Section 2 (Wien) pp.94-95
At the moment, again the question has been raised if the combination of howitzers with cannon in one and the same battery is advantageous, or disadvantageous. This combination is an old habit. Such is the case nearly from the same moment on that one altogether started to regard batteries as the tactically basic entities of the artillery, and as such fixing it at a certain number of guns. The Germans were the first to compose batteries out of cannon and howitzers together; the Spanish and French copied this much later.

Gustav Adolph was compelled to organise batteries as tactical entities. The flighty splitting up of guns during the period of linear tactics itself did not annul this basic rule. It puzzles historians that in a time, during which one had an open eye for weaknesses, on the other hand cannon batteries were mingled with howitzers; so that a certain independence was intended. This contradiction can only be explained by the detachment system of that time, which asks for independent detachments. The present-day tactics knows no other: in the close combination of all three arms [i.e. infantry, cavalry, and artillery], the battery is the tactical basic entity within the Division, as well as in the fundamental order of battle; the brigade deployment.

During the Seven Years War and later on the field artillery appears tactically in three basic forms:

1. regimental guns;
2. batteries, and
3. reserve guns.

Only the last two forms had howitzers; the first not. An exception on this are the Saxons, who during a few campaigns attached 4-pdr howitzers to their grenadier battalions.

As combinations of both kinds of guns seems so natural, and so obvious as well, this might be the reasons that authors did not take the trouble to define the reasons for this development more closely. Still, this subject deserves a closer look and explanation, as experience has learned that not always the most efficient use is being made of the howitzers in the batteries. That means that they operated in the firing line, trying to stay in pace with the cannon fire; or that their ammunition was saved very conscientious. In all cases they are regarded as something subordinate, instead of being treated in tactical respect as something complementary (co-ordinated). Proof for this is, that in accounts of gun battles, the howitzers are seldom mentioned, as if it is not worth to mention their exploits separately. From where derives the indifference regarding this weapon? Is the ground for this maybe the lack of opportunities to give a based judgement of the characteristics of howitzers within the cannon batteries? The opponents of a combination with cannon state that many combat situations are possible, in which both weapons cannot be used simultaneously, and that therefore part of the battery is doomed to a certain passivity, or at least will not be able to achieve what could have been achieved when the composition would be similar [i.e. only one kind of weapon within the battery]. Further: often the strength of a battery is calculated as the total amount of guns present, while only the cannon
(so only three quarters of the battery) were active; that at the most dangerous moments, during close range canister combats, the howitzer are at a great disadvantage compared with cannon; that altogether cannon, because of the unreliability of the howitzers, not gain much in any combat. We cannot deny all these facts. It is only that in general has been decided for a combination, and no European artillery makes an exception of this rule. But still, on the other hand we may not be blind for the advantages of this combination.

Even more, it seems that these advantages are still not acknowledged generally, and not exhaustively treated. One is limiting himself to much to both major characteristics of the howitzers:

1. Its use as a curved firing gun in general, and
2. their projectiles as a hollow sphere.

However, their combination with cannon has other advantages, based on the combination itself.

If the question: “To what purpose serve the howitzers in cannon batteries?” is asked in general, there is only one answer to give. Namely: they should serve complementary, as a completion. It is necessary to learn about the advantages in their whole extent. One allows me to make a comparison here. As a complement for general combat situations, Divisional cavalry appears in the infantry Divisions; for specific combat situations, the horse artillery appears in cavalry Divisions (‘Gefechtslehre beider verbundenen Waffen’ by E. von Decker, introduction). Should for artillery combat, the howitzers not be regarded as complement to the cannon?

The word ‘complement’ refers to certain conditions. In the meanwhile, it would betray scarce knowledge of the abilities of howitzers, when one would regard them as a complement and nothing else. As there exist many combat situations in which their solitary use would be very disadvantageous. And therefore one would be wrong in regarding the howitzers as completely subordinate to cannon. One should distinguish three different relations in artillery combat:

1. Were cannon will have the main effect;
2. were howitzers will have the main effect, and
3. were both kinds of weapons will have a combined effect.

Until now, historians apparently did not understand the need to treat all three relations different when writing accounts of artillery combats.

The artillery is a firing arm only, and in addition, long range combat is characteristic. Because of this it distinguishes itself completely from all other firing arms. The new tactics placed their effectiveness at the longer close ranges in the right perspective, and only short-sighted authors prohibit their use at musket ranges. Artillery combat has to distinguish three moments, or better classifications:

1. Combat at longer ranges;
2. Combat at medium ranges, and
3. Combat at close ranges.

The limit were no.1 begins is partially defined by the technical characteristics of the gun, partially by the boundaries of the battleground. The limits of no.2 and 3 are much more unclear; partially influenced by the probability of a hit, partially by the moral element within the artillery itself. Because of this, one battery would decide to limber up and retreat, while another one would not fear to remain in position. Often, the decision is made because of the laughable value attached to saving the guns. Therefore, in this respect, the tactician can count on a maximum range, but he can never rely on a minimum.

The artillery is useful in an offensive, as well as in defensive roles; however, the defensive element is superior, and therefore artillery is able to excel more in such a role as in an offensive one.
Cannon fire directly; their projectiles raise only minor above the earth’s surface, its effect is more in the vertical flat and as such it is judged. Therefore, the so called terrain usually decides about their usefulness. Obstacles on a level plain, and finally the condition of the ground (weak or hard) have a major effect. In order not to be influenced by the terrain too much, one takes heavier calibres into the field.

A roundshot, arriving at its destination, has a singular effect only. Canister makes cannon effective at close range, and in certain instances independent and defensible against every other arm.

The display of power of cannon has a physical as well as a moral aspect, however the first aspect is the major one. Soldiers who will fear the noise only, do not deserve this name.

Howitzers must combine throwing and shooting into one gun. Fulfilling one condition will of course have a negative effect on the other one, and because of this the howitzer became an unreliable gun. Still, a combination of both was necessary, to make the gun usable in the field, and to prepare its combination with cannon. They are effective not only against visible, but also—as a throwing gun- against targets behind cover. Its effect is more in the horizontal flat, and it dominates broken ground and intersected terrain more as cannon do.

In long range fire fights the howitzers are able to display their whole effectiveness; at medium range they are paralysed, and the smaller charges they have with them are only a minor substitute. At close ranges, the abilities of howitzers are far below those of cannon.

A grenade, arriving at its target, will have a double effect; as roundshot and as an exploding hollow sphere. The effect of the latter is bigger on morale as that of a regular roundshot. Only experienced soldiers will endure continues grenade fire.

Form the above can be concluded that: Cannon are suited for defensive combat, howitzers are suited for the offensive.

The howitzers complement artillery combat because of the following characteristics:
1. They enable the artillery to operate on every terrain;
2. they add more offensive elements to the artillery;
3. they complement fire combat at long ranges;
4. they enable the execution of many secondary tasks (incendiary, lighting up, etc.), and
5. they enlarge the moral effect of artillery fire.

One should not believe that the abilities of cannon would diminish because of this; they will always have precedence, and because of their greater reliability maintain their efficiency. The artilleryman should never forget the basic rule: for what can be achieved with cannon, one should not use howitzers.

Howitzers, regarded as a combination of two conditions, will never reach an absolute perfection. Therefore, quantity should replace quality. This leads to howitzer batteries, and from these the twofold purpose of these guns derive:
1. Serving as a complement to the artillery combat. For this purpose, the howitzers should operate in small detachments. And
2. operating using their characteristics to the utmost. For this purpose they should operate in larger formations.

So far in general. However, in order to be able to make the right judgement about the question that was asked, a closer view at the internal tactical nature of artillery is necessary. The field artillery has, in relation to its allocation in the armies, a twofold purpose:
1. As direct support to the troops themselves—light foot and artillery batteries, and
2. to gain larger advantages by independent operations –reserve artillery, utilised according to the principles for the reserve, consisting of all the usual field calibres. The first part belongs to the troops, the latter to the whole force.

The first part, as small as it may be, has to be organised for independent artillery combat if it should reach its goals. The latter part as well, but here it finds another basis. As in this case the goal will in some situations be reached by complete batteries (12-pdr, 6-pdr, horse artillery, howitzer batteries), in other situations by parts of separate batteries. This is the difference. The goal is the same, but the result is reached by other means.

Only by a combination of cannon with howitzers it will be possible to give artillery combat a certain perfection. And from this derives that all brigade batteries (foot and horse as well) should consist of cannon and howitzers out of necessity; then only in this way perfection will be reached. Question remains if the reserve artillery also has to consist of separate independent units? It seems to suffice if this is the case with the reserve artillery force as a whole, and this purpose can be reached if it is composed of all calibres, with the right proportion in numbers.

The present-day common calibres are the 6-pdr and 12-pdr cannon. From this another question derives: does every calibre need its own howitzer complement, i.e. the 6-pdr cannon 7-pdr howitzers, and the 12-pdr cannon 10-pdr howitzers, or both maybe –as with the Saxons- a medium calibre (8-pdr howitzers)?

For the 6-pdr batteries the calibre of the howitzers may never be smaller then 7-pdrs, if these should be regarded as a complement to the long range artillery combat. In such case, the throwing range would have to be necessarily longer then the firing range of the 6-pdr cannon. The opinion of General von Scharnhorst about this subject is Litreally the following: “Because of the fact that in many instances there has to be fired at considerable distances (ranges), the howitzers are an indispensable complement to the 6-pdr cannon, and their frequent use finds reason in their usefulness at long ranges. The person who is not able to take into account the whole picture, and therefore will not note the uncertainty of the howitzer on medium distances, would easily be inclined to oversee the huge profit and characteristic use of howitzers. This consists not only in setting fire to villages, and bombarding entrenchments, but especially in its capability of harming troops at long ranges.”

So 7-pdr howitzers –heavier pieces could have a negative influence on the manœuvrability of the light field guns- are a necessary tool to make the 6-pdr batteries tactically complete and independent.

For the horse artillery the howitzers are even more essential, something that needs no further proof. It will suffice to remark that their offensive characteristic will fully come forward in this case. Indeed, when the effect of howitzers at closer ranges would not be so subordinate, one would wish the horse artillery to have an even greater number of howitzers as they have present-day.

The 12-pdr batteries have, compared with the 6-pdr, because of their longer range an important advantage, and in this regard they need no howitzers as a complement. They are preferably used in defensive roles, and here the question should be asked: “What advantage would both howitzers give them in static positions?” Is it not the case that two 12-pdrs instead of the howitzers would raise the fighting power of the battery, contrary to the drop caused by the presence of both 10-pdr howitzers? For that matter, would it not be better, when in static positions, to separate the heavy cannon from the howitzers completely, in order to use both according to their own characteristics, completely in accordance with the goals and intentions? And finally: has the combination of the heavy calibres with howitzers really more advantages as disadvantages? The advantages of their combination are the following:
1. For 12-pdr batteries there are separate cases imaginable in which they will have to make a stand independently. In such a case, howitzers will give them an advantage;
2. the advantage of a reinforced long range artillery combat is also the case with 12-pdrs, however not so decisive because the cannon themselves have a longer range, and
3. a mixed battery will dominate the terrain much better.

On the other hand, the disadvantages of their combination are the following:
1. One is forced to add 10-pdr howitzers to 12-pdr cannon, to be able to equal these partially in throwing range, partially in the effect of canister. However, we cannot hide the fact that this is a waste of power: then at one hand the throwing range of 10-pdr howitzers is substantially longer as that of 7-pdr howitzers; on the other hand, their grenades do not explode in more pieces then those of these. If the howitzers are separated from the 12-pdr cannon, the reason mentioned first [i.e. the throwing range] will not be valid anymore. One could do with 7-pdr howitzers, saving much on equipment and maintenance. And although it should be noted that 10-pdr howitzers are more accurate then 7-pdr howitzers, this difference could also be solved by some technical adjustment for the latter ones. In all cases however, the usefulness of 10-pdr howitzers compared with 7-pdr howitzers are in no proportion with the greater costs, as is sufficiently proved by experience;
2. the defensive power of 12-pdr cannon –and that is even their main task- is weakened by every attachment of howitzers, on the contrary raised however by exchanging them for 12-pdr cannon;
3. with the saved costs new howitzer batteries could be created, of with the present-day number –there is only one battery for a whole army corps- obviously is much to small;
4. In static positions, in every case the situation will dictate the deployment of cannon; in other cases deployment of howitzers. When the latter are separated from the first, more unity in leadership will be the case, and every kind of gun could be used and treated according its characteristics much better then it is the case at present, and
5. Only seldom, reserve-guns will find themselves in a situation in which they will have to operate independently. So for what reason should howitzers be attached to them? And if such a situation would arise, it would suffice to attach separate sections of an howitzer battery to it. At present however the howitzers are removed from the line, to be deployed in another place, leading to disadvantageous isolation.

Because of the above one can state that:
1. The 6-pdr foot and horse batteries need the 7-pdr howitzers. In which way these should be treated and deployed is treated in the *Gefechtslehre*. The same applies to the half measure to include one howitzer when detaching half batteries. All half measures are no good, and
2. reserve batteries do not need howitzers. Yes, I dare to state that for the 6-pdr batteries as well. One should organise them into batteries of eight cannon, preferably creating new howitzer batteries out of the saved ones, preferably 7-pdr ones.

The latter measure has more advantages. Can we deny that the real tactical use of howitzers is much less known then the use of cannon? Their removal would take away the task of the commander to make himself more familiar with the characteristics and tactical proportions as is the case now, acting in dispersed order. And because of the reason that it is the nature of humans to pay more attention to the complete situation, as to separate parts. A commander of an howitzer battery will look at the terrain with a totally other view then the commander of a cannon battery. Unity in leadership will guarantee unity in action, and this is the basis of all tactical deployment of force. How many outstanding moments in which howitzers can be been used to their perfection, are lost now because of the reason that the commander pays much more interest to the three times as strong amount of cannon? The commander is responsible for the correct leadership and deployment of all his guns; question is if this responsibility also extends with the same earnest to the howitzers inside the batteries? Enough. Whatever we will
believe about the proportion of howitzers within reserve batteries; they still remain stepchildren, and they do not deserve to be treated as such. Their removal shall and must result into a much better use. Their characteristics will be studied more closely. And should we not recognise this as the way to gain better results with them, as they are able to achieve today?

Someone who dares to bring forward different views [like me] should not be afraid for opposition. Hail to him, if these are not stones thrown because of prejudice, because of which in most cases the arm to throw has already been raised.

Finally the question remains, if the 10-pdr howitzer calibre is necessary at all, or if we cannot do completely without them? it seems to me that the 10-pdr howitzers were introduced because of their analogy with 12-pdrs, instead of their bigger calibre proper. If this is not the case, then one should ask himself why we take 7-pdr howitzer batteries and not 10-pdr howitzer batteries into the field. If the howitzers would be removed from the reserve batteries, namely the 12-pdr batteries, then every reason would disappear immediately, and one will be able to save substantially on equipment and maintenance—and in relation to their horse teams of eight horses in tactical manoeuvrability.