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Notes on Artillery Dictated by Napoleon at St. Helena to Baron Gourgaud.

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These notes, here given in their original form, have been communicated to the *Revue d'Artillerie* by Viscount de Grouchy who has drawn them from among his family papers. It would be superfluous to insist on their historical interest. Taken from dictation with a view to ultimate editing and publication, which however never came to pass, the notes are free from the adornments of style which usually characterize a work meant for the public, and indeed their extreme conciseness detracts somewhat from their clearness. Notwithstanding this the Director of the Revue has respectfully preserved the original form, for fear of altering the sense.

Batteries

The unit of artillery is the battery: for horse artillery 6 guns; for field 8. The officers, N.C.O.'s and gunners of a company are sufficient for its service. It would be better, were it not determined otherwise by the details of artillery, to form a unit of 4 guns, because a battery of 8 guns is already too numerous not to be often divided; but what forces the adoption of the larger unit is on account of artificers, spare stores, forges, &c. In taking a unit of 4 guns all that would be doubled; the extra expense involved would not be compensated by the advantage attaching to the 4-gun unit.

Abolition of the Gribeauval 4- and 8-pdr

The 4-pdr and the 8-pdr have been rightly suppressed. Gribeauval simplified and experience has proved the necessity of further simplification. We have progressed in that direction. The 8-pdrs. and the 4-pdrs. were often employed in the wrong place: the ammunition of 8-pdrs. was expended where that of 4-pdrs. would have sufficed. It was a very considerable loss if transport is considered, it was 2 rounds instead of 1. Often there were only 4-pdrs. when 8-pdrs. were required. There is no line officer, nor even artillery officer, who can well grasp the opportune moment and determine if 8 or 4-pdrs. should be employed, and even if he could, he is obliged to utilize what he has at hand. A single calibre is therefore sufficient for field work, then there can be no uncertainty.

*Napoleon on the Gribeauval 6-*pouce *Howitzer*

The 6-*pouce* howitzer is too wasteful: it consumes as much as a 24-pdr shot. They have rightly replaced it by a howitzer of 5 inches 6 lines; this slight difference of 6 lines gives a great advantage. The caisson holds 75 rounds, whilst that of the 6-in. only holds 50, and in supposing that the 5½ -in. shell be inferior to the 6-in. the question comes to this: which would you rather have, one 6-in. howitzer or two 5½-in. ones. But the 5½-in. shell is already preferable to the 6-in. one. Gribeanval's carriage was altogether faulty. It has been altered, and rightly so, for there has been a gain of 100 per cent. in transport, and lightness given to both the carriage and the howitzer. But the latter still requires improvement: it should have a greater range, which might be obtained by lengthening it.

There should be two sorts of howitzers, one to combine with the 6-pdrs., the other with the 12-pdrs. The latter must have the inconvenience of greater weight, so as to obtain the greatest possible range from the form of the chamber, length, thickness of metal, &c. All these drawbacks are amply compensated in a reserve howitzer by the range being increased to the utmost. The field howitzers of the Boulogne Camp had that advantage.

Napoleon on 12-pdrs

The 12-pdr in either system remains in reserve to be employed with premeditation by general officers, either of the line or of the artillery.

It is equally necessary that the existing 12-pdrs. should have an increased range, not that changes in the gun are necessary, but in the carriage, which should admit of greater elevation being given to the gun. Parks should also have 12-pdr grenades[327] which would weigh . . . . to be used with the 12-pdrs. Every caisson should contain some of these grenades [Shrapnel] in place of common shell.

This is contrary to Gribeanval's principle, which however is false. There are a thousand circumstances in war where it is requisite to open fire at a very long range, whether from one bank to the other of a wide river, or to hinder the enemy from encamping and occupying a position which can only be attacked from a distance. Finally it is a real disadvantage not to reply to an enemy's fire. We look however to artillery officers not to fire uselessly, for we pretend in no way to attack the fundamental principle that to open fire at a long range under ordinary circumstances is to burn ammunition and to destroy its effect.

Guns of higher calibre than 12-pdrs. are very useless. We have acted wisely in suppressing the 16-pdr which the Prussians and Austrians still drag about.

Napoleon on Caissons and Ammunition Provision

Artillery officers have differed in opinion as to whether the 8 guns with their limbers should march past, the caissons following behind the 8th gun, or whether each caisson should follow its gun. Theory and the old orders demand that the 8 guns should be first, in order to come into action with the utmost rapidity after passing a defile, so as to open fire and extinguish that of the enemy; before the limbers are empty the caissons come and take their place. Successive fire after the passage of a defile may indeed allow the enemy to dismount the first guns, and give him for the moment a superiority which may cause the loss of many men.

In general, artillery officers prefer that the caisson should follow the gun. They fear the caisson may make a mistake and get lost amid the perplexities and circumstances of a battle. They feel the want of obtaining every possible security that the caisson shall not be far from its gun, and they can find no other means than by keeping the caisson always under the eye of the No. 1 of the gun.

A limber, containing but 15 rounds of 6-pdr and 6 rounds of shell, is a very slight provision. It is thought that the caissons of a battery should follow the guns, to obviate the inconvenience of successive fire on issuing from a defile.

Two pack-mules, carrying 2 boxes of 12-pdr ammunition or 15 rounds of 6-pdr each, or . . . of shells, could follow a gun without being in the way or retarding the movement of the other guns. Every 6-pdr Would thus find itself with 60 rounds including the contents of its limber, before the arrival of the caisson.

The advantages of two pack-mules per gun or howitzer are numerous.

1. The supply of the 6-pdr can thus be carried to 200 rounds, and that with a single caisson. The caisson might keep out of fire, lessen the number of accidents which throw disorder into a battery, and save the lives of many men and horses.
2. As every mule carries 24 rounds these would be the first source of supply, and the limber would remain untouched, as it should be, for the moment of retreat or as a last resource.
3. The *fireworker* would take the ammunition from a mule within reach of the gun, but out of the line of fire; the other mule would be further in rear. These mules might pass to and fro, deposit

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[327] On *the meaning of the word, "grenade."* By this word Napoleon doubtless meant "shrapnel," invented by the General of that name, and which had been in use in England since 1803. An English howitzer and two caissons filled with these shell having been taken at the battle of Albuera (16 May 1811), the Emperor ordered General Eblé,[327] the ad interim President of the Committee (letter of the 22 Aug. 1811), to have experiments carried out to determine the mode of loading these shell. Thenceforth Napoleon attached great importance to their property of bursting on graze and projecting their contents as far as possible.

their boxes and go to the caisson for new ones, an arrangement which would require that the shells should be carried ready fuzed in the caissons.

4. It would be an advantage for the artillery and for the army to keep the caissons far from the enemy's fire, in ditches, ravines or defiles, which would cause an army to be much lighter in its movements and upon the field of battle.
5. The disadvantage would be inappreciable in retreat, since as soon as its boxes were empty the caisson might commence its retreat 4 or 5 hours before the end of the day.

Every battery should also have 4 pack-horses or mules loaded with infantry ammunition, so as to be able to supply the skirmishers without having recourse to the caissons. The places where the most infantry ammunition will be consumed will be woods, and hillocks where caissons could not get and where pack-animals are of very great service.

Often even on plains the caisson meets with many difficulties: it cannot move because the ground is too soft, and when after much effort the gunners get their pieces into action, it is advantageous not to tire the caisson horses. The more one sees of war the more one understands the utility of having a fourth of the ammunition supply carried on a mule's back.

Napoleon on Siege Guns

The 24-pdrs. weigh nearly 6000 lbs.; it is sometimes difficult to bring them into action under fire. The idea which has been expressed of having light 24-pdrs. is good. If we had had these pieces in Egypt, we should probably have taken some into Syria by land. It was judged impossible to take the existing 24-pdrs. across the desert of Katieh, and if we had had four of these pieces in front of Acre, the town would have been taken on the first day. A 24-pdr carronade which was taken at Kaiffa from Sidney Smith's long boat, was placed in a battery, and its effect was incomparably superior to that of the 12-pdr, and yet this carronade cannot be compared for effect with a 24-pdr gun. For all places situated in mountainous regions guns of high calibre are necessary, and in many such a position where a [AnXI] light 24-pdr could be taken it would be almost impossible to take the ordinary 24-pdr

It must not be concluded from this that we should substitute the [AnXI] short 24-pdr for the ordinary one, but the short one should be maintained and improved, and the arsenals should have some to provide for extraordinary circumstances.

It would be wrong to say that we thus complicate the equipments of artillery: it is difference of calibre which causes complication. The [Gribeauval] 16-pdr has been rightly suppressed. The 12-pdr is sufficient for ricochet fire, direct fire, and for the defence of places and where the 16-pdr might have some advantages, these are not equal to that of supplying a place with the same ammunition as is issued to troops in the field. It was on this principle that we did well in abolishing the 8-in. howitzer. In the same way places should be adapted for 6-pdrs., so that artillery should have but 4 calibres, the 6-, 12-, 24-pdrs. and the 5½-in. howitzer. In this way we abolish 4 calibres.

Napoleon on Mountain Guns

We should add 3-pdrs. for mountain equipment. In abolishing the Rostaing guns, we get rid of stubborn beasts not worth the trouble they give. 3-pdrs. should be a minimum calibre. Some of them are made very light and carry as far as the Rostaing pieces.

Napoleon on Mortars

The [Gribeauval] 10-*pouce* mortar has been suppressed, and the 8-in. and 12-in. preserved. The 8-in., which throws a 40 lb shell, is an excellent mortar: it is the true siege mortar.

The 6-*pouce* mortars appear necessary, both for the attack and defence of places. These mortars, which do not weigh 100 lbs., have the greatest effect in trenches and covered ways. A field artillery park should have twenty of these which can be used with 5½-in. shell, and may be useful against redoubts and villages and thus save the howitzers, the fire of which is very destructive to their carriages.

The question of the 12-*pouce* and 10-*pouce* mortars is not yet decided. The 12-*pouce* throws a 150 lb. shell, the 10-*pouce* only 100 lb. In this respect the 12-*pouce* is to be preferred. Since we have an 8-in. it is useful to have one with far more power, but M. de Gribeauval abolished the [Valliere] 12-*pouce* and adopted the [Gribeauval] 10-in., because he thought that the calibre of 8 or 9-*pouce* was the best for long ranges.

The mortars that were cast at Cadiz had less than 9-*pouces*. More experiments are still required, and if they confirm the old ones, to the effect that the longest ranges are obtainable between 8 and 9-*pouces*, we should then abolish the 8-*pouce* and substitute for them the new calibre. Of course the mortar should have a cylindrical Gomer chamber and the lightest possible for short ranges and beds for long ones. We should have thus 3 mortars: the 5½-*pouce*., the new model between 8-*pouce* and 9-*pouce*, and the 12-*pouce*.

A mortar shell of the new model would not weigh more than 60 lbs. That is not a sufficient weight and would cause one to feel the want of the effect of a 12-*pouce* shell.

Long-ranging mortars are only useful at particular points of the coast or in places destined to defend a particular point, for the fire is so uncertain, long and difficult that it can be of no use at ordinary times. It was on the occasion of the bombardment of Cadiz that mortars were cast at Seville with a range of 3000-*toise* [fathoms]. The coasts of Flushing, Ile d'Aix and Hyères were armed with these. These mortars, joined to the special carriages which were given to the coast guns to enable them to fire at 45 degrees, were a sufficient defence to drive off the English whenever they attempted to cast anchor in Hyères roads.

Field batteries

Field batteries comprise 2 howitzers per battery, which makes one fourth for them and one third for horse artillery. An equipment of 40 batteries gives 80 howitzers. This has been blamed, but wrongly so. The 5½-in. howitzer is not more expensive than an 8-pdr and this large number of howitzers is necessary to dislodge the enemy from villages, to shatter redoubts, &c. Frederick the Great (called Frédéric II by Napoleon) was the first to augment the number of howitzers.

If a calculation be made of the equipment of field artillery, according to the proportions which have been adopted in the late wars of 6 and 12-pdrs. and 5½-in. howitzers, a great economy will be found when comparing it with an equipment of an equal number of pieces on Gribeauval's system.

Field Battery - A battery with six 6-pdrs. and two 5½-in. howitzers would have in carriages: 8 gun carriages, 2 spare ones, 1 forge, 1 proloug,1 6 caissons with 6 and 12 mules, 4 caissons with shell and 4 mules; total: 23 carriages, 121 horses, 1541 rounds and the mules (see note D). We should have a caisson and a half per 6-pdr, which would make: 26 carriages, 130 horses, 1576 rounds. There are thus 3 carriages, 9 horses and 102 6-pdr rounds more, but 66 fewer howitzer rounds.

Field Battery with Pack-Mules - The 6-pdr with pack-mules would have 196 rounds in the first case or 211 in the second; the howitzer 188 or 155. The double supply would give under the 1st hypothesis 6 carriages more for the 6-pdrs. and 3 for the howitzers, total 9, which would bring the number of carriages to 31 and the number of rounds to 324 per gun and 300 per howitzer.

Under the 2nd hypothesis the double supply would require 9 gun caissons and 4 howitzer caissons, making 13 caissons and would bring the number of carriages to 39. Difference in the caissons in addition under the 2nd hypothesis:

There would be 406 rounds per gun, and 310 per howitzer. The 2nd hypothesis gives then 476 rounds, but employs 11 carriages and 64 horses more; now these 64 horses might be replaced by pack mules with 1500 rounds, but the proportion of 324 for 6-pdr and 300 for howitzer is sufficient and forms exactly a double supply.

In comparing a 12-pdr under the mule hypothesis we find 136 rounds in caisson, 10 in limber and two mules with 12 each, total, l70 rounds; difference, 44 rounds or 3 horses. In the double supply let us add 2 caissons and we shall have 306 rounds. Under the 2nd hypothesis there would be 6 caissons, which would make 405 rounds. In drawing up a scale, put pack-mules, double supply: 5 mules (3 in front line, 2 in the second at the park) and of the 3 remaining, 2 with the gun, one with the divisional reserve; the 2 of the double supply would be with the general park.

We should count also in each artillery division 2 small arms ammunition caissons, so that wherever there is an artillery officer there may be also some cartridges, and I believe also 2 mules carrying 6000 rounds.

A division being supposed to have 3 batteries that would give the value of 7 caissons or 108,000 rounds; as the division is supposed to consist of 12 battalions with 36 mules or 108,000 cartridges, it would thus have 216,000 rounds which would give 27 rounds a man to 8000 infantry. We will suppose the army up to full strength. The company has 136 men; take away 3 officers, 2 drummers, 2 pioneers, 1 musician, there remain 128. Taking away the fifteenth part for the difference between full strength and the number present, we get 120 present; this, for six companies, makes 720 muskets. In subtracting only the fifteenth we suppose the commencement of the campaign, for, after a few engagements and marches, the difference will be much more considerable.

The 3 battalion-mules will carry 9000 rounds or 12 per man. In adding to the divisional supply half a caisson per battalion we should have 7500 rounds or 10 per man; in adding half a pack-mule we shall still have 2 rounds a man, total 24, which for a division of 12 battalions demands 12 caissons and 6 mules, of which half for each battery reserve, and half for the divisional park.
A half caisson, or 11 rounds per man, will be with the park of the army corps; a half mule per battalion with the same park (which gives 2 rounds a man); so that the division will possess there 12 caissons and 6 mules.

A half caisson and a half mule with the army park: altogether 13 (11 +2) rounds per man. A half caisson or 22 rounds on requisitioned carriages or in a depot within the enceinte of the army, at one or two days' march. This ammunition will be in boxes. Another estimate of a half caisson in boxes, but not on carriages. Thus each battalion will have:—

A caisson and a half and 6 males in service order with the corps, with the division, or at the army corps park and at the general park. One caisson load in boxes within reach of the army.

That will make 40,000 rounds on caissons and pack-mules in front line, 15,000 at a depot. The 40,000 moveable rounds give from 40 to 50 per man; the 15,000 depot rounds give 20 to 25; total, 70 to 75 rounds a man with the army, 25 rounds at a depot in the second line, at less than 5 marches from the army.

A battalion will thus have 6 mules, of which 3 present with it and 3 with the artillery, and 2 caissons, of which one and a half would be horsed.

A division of 12 battalions will have 6 caissons and 6 mules with it; the same at the army corps park; and the same at the general park of the army. Total 18 caissons and 18 mules, and besides there will be 36 mules with the battalions and belonging to them. That will make 270,000 rounds horsed, 18,000 on park mules, 36,000 on the battalion mules, total, 324,000, which for 8000 infantry gives 40 rounds a man, and the value of 24 caissons at the rear of the army, at less than 5 days march.

We must put then on these carriages 2 caissons per battalion. Suppose 80,000 infantry, or 100 battalions, we should require 200 small arms ammunition . caissons, of which only 150 horsed, which would only need 750 horses, without counting rejected ones, and 180 pack-mules, and 360 belonging to the corps. That makes 1400 horses to carry the cartridges, which appears to be the mean