

plotely to separate them from the battery, is in nine cases out of ten to ensure them not being at hand. As to cover, it is, according to my experience, in flat countries rarely available; a good arrangement, when possible, is to draw the waggons up in line on the flank and a little in the rear." This was published in 1856, and applies to smooth-bores, and so far was no doubt true, but it cannot be carried out with rifled guns. What we deprecate, however, in the Austrian drill is having the waggons or part of them sometimes manœuvring with the battery, and sometimes detached. We cannot help thinking this must lead to difficulty and confusion. Unless the waggons are to form integral part of the battery, they should be wholly detached and under the command of an officer, whose duty should be to keep them always as close to the guns as is consistent with protection from the enemies' fire. He must always know where the guns are, and what are the movements they are likely to make, and for this purpose communication must be kept up with the battery by one or more mounted non-commissioned officers. The duty of the officer in charge of the waggons would be difficult, and would demand considerable judgement and intelligence. Peace manœuvres, however, afford excellent opportunities for practice.

Except when in line for action. "Fire line" is formed, the guns are kept at six paces interval. This has the advantage of keeping the batteries compact, and interferes as little as possible with other troops; but, on the other hand, it renders some of the movements less simple; as for example, ground cannot be taken to a flank by the simple "right or left take ground," or "sub-division right or left wheel," but must be done by the wheel of half batteries, or the successive wheel of divisions. It has, however, what strikes us as a more serious defect, that which takes the drivers longest to learn is to maintain their intervals accurately, the greater the interval the greater the difficulty the tendency is to crowd together, and this tendency cannot but be increased if they are constantly practised at reduced intervals.

Changing front to rear of a battery at reduced intervals by the simple inwards about wheel of half batteries is not in the Austrian Drill Book. The half batteries wheel about to the same hand, so that they cannot retire upon their own ground.

[To be Continued.]

The following is a synopsis of a lecture delivered by Major MONAGHAN before the Royal United Service Institution lately. The gallant Major being the inventor of the celebrated gun carriage which has made his name famous throughout the world, his opinion of its application as an agent of coast defence is valuable.

"After some preliminary remarks, in which he alluded to the practical way in which all great reforms in the United Kingdom were finally brought about by the recognition of their necessity, and referred to the national machinery of defence, said it might be taken for granted, on an emergency it would be impolitic to depend on the Auxiliary forces for the composition of moving field corps like those produced on a recent occasion by the Swiss army. As our local forces would only consist if imperfect infantry, without proper cavalry, field artillery or

military train, the most they could be expected to do would be to strengthen the brigade of the Regular troops, by giving them some of their best battalions, of which they would take as many as they could absorb, though when this was done a force would be produced numerically quite inadequate for the Imperial defences, and some way of utilising to greater effect the remaining scattered battalions of Auxiliary forces was therefore, surely worth considering. For the defence of this island our authorities had already recognised the importance of securing the *foei* of our naval power—the dockyards, which, with the Thames, had been already more or less efficiently fortified, and the question was what was the next most important measure to be taken? If he was not misinformed, it was a foregone conclusion that the capital was next to be defended. The defence of London should begin at the coast itself, where the action of the navy and the difficulties of disembarkation both combine to give the country an advantage which it would be impolitic not to seize. Considering that our coast line, though much extended, had but few points of great importance to be defended, he would divide the coast line into four classes of positions: 1. The dockyards the Thames, &c., which have already been fortified; 2. The great commercial harbours, &c., not yet protected; 3. Sheltered bays and reaches of beach affording favourable conditions for landing a large force, and which therefore might be selected by an enemy for that purpose; 4. The remainder of the coast, which, in proportion to its unsuitability for the purposes of invasion, could be safely left with small provisions for defence. Passing the first two classes, and directing their attention entirely to the third, the sheltered bays and reaches, which an enemy would be most likely to select, the lecturer stated that these places had formerly been protected by martello towers, but the martello towers had now become obsolete, though the danger which they were intended to meet still remains, and exists moreover, in a large number of localities, and perhaps in a greater degree than formerly, and he questioned very much the policy of disarming the martello towers, for as long as they stood, an enemy would certainly try to select other ground to disembark. Doubtless the landing of an enemy would be carried out at several points at once more or less distant from each other, and its chances of success would depend on being able to evade observation in crossing the Channel; it would most likely take at positions far removed from the Channel fleet, only guarded by a few coast vessels, which could be easily disposed of by the war-ships which escorted the transports, and it would be attempted at points where the enemy could depend on the landing being least expected. In the face of such artillery as the war-ships would carry, no common batteries on shore could possibly remain unsilenced long within range of the powerful guns that would be brought into play and which would always be at the disposal of an invader. To put up iron works for small guns in such extended position was out of the question; to mount them behind earthen parapets and embrasures would be to see them torn to pieces as soon as struck; while to work them *en barbette* would be to expose the men to destruction by a sea shell, which was as bad as old grape shot was at short distance. Coast batteries of this description consequently must be discarded altogether. What then he would suggest was neither the building of fortresses, the complete dependence on a field force, nor the making of coast

batteries, which would either be too expensive or useless for the purpose, from their inability to resist ships' artillery, but rather to offer an alternative for bringing on the issue of the battle at the moment most advantageous to an enemy, and under conditions more likely to succeed than if such a field force as we could expect to maintain was alone to be relied on. He then entered into most elaborate and scientific details of his scheme for coast defence, the principal features of which appeared 'the establishing on those parts of the coast it was likely an enemy would select for landing his troops, of a number of batteries, to be constructed in the most advantageous positions, with access to the rear and with each other by roads screened from observation from the front. These batteries would, moreover, be sunk, so that the top would be level with the earth's surface, and be armed with Palliser or 64 p under guns mounted on a new carriage invented by him, whose principal quality he described as combining with mobility the power of recoiling under cover, and the employment of hydro pneumatic agency for utilising the recoil, but which may shortly be described as a method of raising the gun over the top of the batteries would, of course, offer no mark for the enemy's guns, and the latter's shot having nothing to pierce would invariably strike the ground and ricochet. Smaller earthworks for occupation by infantry should also be made in the intervals between the batteries, and from these defensive works a most deadly fire could be converged upon the crowded transports, boats, and landing parties, sufficiently hot to make the operation of landing an exceedingly difficult if not impossible one. In the support of the batteries and occupation of the earthworks, the Volunteers would have a good field for showing all those qualities they are said to possess, on ground, too, which they might be specially trained to defend. Of course it would be apparent that, without very complete arrangements for the action of the local forces and for supporting them when threatened, the best arrangements of coast batteries would be neutralised, and to make any scheme of defence effective, it required to be taken up earnestly and carried out with completeness. The possibility of withstanding the attack of very powerful artillery was the one condition which made the whole scheme practicable. As long as it was possible for naval batteries to silence, or even to keep down the fire of land batteries, the process of disembarkation remained comparatively easy; but as soon, however, as the land batteries were capable of maintaining their fire in presence of the ships, the enemy is exposed to the chances of disaster at a most critical moment, when his numerical strength would actually be an element of weakness. The lecturer then concluded by hinting to those who, for financial reasons, would stint a reasonable expenditure for security, that even the threat of an invasion of England lessens our sense of security, and thereby affects the monetary stability of the country, and that a serious or permanent threat of the kind might partly remove the great market to another centre.

Capt. H. Brackenbury criticised the scheme as one that must tend to the dispersion of the forces instead of concentration, as it would be necessary to defend each point where it was probably an enemy might land, whereas the whole art of war was the discovery how to concentrate rapidly. With respect to a place where landing might be effected with ease he stated that Gortschakoff had spoken of the River Crouch, near