

the arm in the field. His opinion, we have seen, is not asked as to the selection of the arm for service, and it is clearly never required for the distribution of it afterwards. He can seldom be known to his commander but by the wants of the arm, or by the sins of the system. Can it be wondered then that, rarely coming in contact but on these ungracious occasions, he seldom obtains the consideration which he does not appear to deserve? As to signalizing himself by any application of the arm in the field, it is out of the question. He remains an individual without the power of moving a single gun."

Horse Artillery.

Never having had the honour of serving in this distinguished branch, I have not touched upon its special tactics. Future wars will, I believe, give it a wider field of employment, both as a reserve to strike quickly and decisively; and also to give to our Uhlans the power of holding what they touch, a proportion of horse artillery Gatling-guns with cavalry would, I believe, be a happy marriage of fire and steel in the feelers of an army. At the most favourable range against targets, 4 cwt. of ammunition from Gatlings produces three times the result of 12 cwt. from field guns, or nine times the effect; but field guns could destroy the Gatlings at long range.

Siege and Garrison Artillery.

Siege and Garrison Artillery tactics include the attack and defence of fortresses, as well as the tactical use of the latter, with an army acting under their protection, or pivoting upon them, and runs into strategic consideration of bases, depots, and lines of communication—too large a subject for this paper. It will suffice to say that the feeble defence of the mass of French fortresses is attributable to their ancient construction and armament; a system of fortification 200 years old, is miscalled modern, and a mass of houses crowded into a weak enciente have crumbled rapidly into ruin under the concentrated fire of Prussian guns, defended, as these fortresses appear to have been, by everybody but garrison artillerymen. The comparatively protracted defence of Paris by detached forts appears to point to the advantages of a salient system of Moncrieff pits, as also the disadvantages of embrasures acting as shot-funnels to an enemy's projectiles.

The Prussians have largely employed the barbette system. It would be seen if they approached closer for breaching purposes, whether the French fire would be sufficiently accurate to dismount guns so placed. Against skilful and unopposed fire, as at Shoeburyness, such guns would be put hors de combat in a few minutes. Increased range of modern artillery gives a wide field for the selection of sites for enfilade batteries. A considerable distance beyond the salients of Mont Avron were woods; behind these, Prussian batteries were made, and armed unseen. The trees in the line of fire were partially sawn through, and fell with the first discharge, leaving unimpeded the path of their terrible projectiles. Thionville was reduced in the same manner; only one battery was in the open, and that a screen battery, such as we make at Shoeburyness. Only one round each quarter of an hour was allowed from any gun. This was to insure accurate laying, and possibly also for the fear of damage to breechloading apparatus.

It may be interesting to know that this application of a natural screen having been foreseen before the present war by us of the Royal Artillery, an experiment of the same sort was carried out at a sham fight, the

locality of which shall be nameless, or the experimentalist would certainly have a heavy bill of damages laid to his charge; though the real value of the destroyed Government timber was only a few shillings, the amount demanded would doubtless cool his military ardour.

The resistance of the Paris revetments and casemates remains to be compared to the system in some Prussian forts, which have no escarp, but slopes of earth, and rely upon flank fire and countercarps against a *coup de main*. The effect of concussion in continuous fire of very heavy guns in casemates, may have the effect upon artillery men which a naval officer informs me continuous heavy fire has upon British tars, of all men the least nervous: it is said to be a shock from which men and officers suffer for days. It is reported that the crews of guns in Paris casemates had to be relieved frequently and often fainted at the gun.

The Prussians are getting to feel the disadvantage of using only one projectile, common shell and percussion fuse, firing up hill or into soft ground, they fail. They are introducing Shrapnel and a time fuse. Trusting to one nature of fire appears rather like a quack doctor who has but one pill for all cases. I cannot but believe they have copied much that may be seen at Shoeburyness, but are still some way behind us in technical artillery matters. In artillery tactics they are in advance, possibly because artillery tactics have never been in the hands of artillery officers.

As regards our field and Garrison Artillery *matériel*, guns, and ammunition, &c., I believe it has always been the best in the world, and as long as England maintains her manufacturing supremacy, will, I trust, remain so, in spite of adverse criticism from home and foreign sources.

Technical Artillery Instruction.—Field, Siege, and Garrison.

Improvements in artillery *matériel* are thought by many to be worse than useless, useless accompanied by a corresponding increase of intelligence and training. I believed I was giving voice to the wish of a large proportion of my brother officers when I proposed a plan for encouraging this professional knowledge among the rank and file or applying it, where it exists, by selecting the best-qualified non-commissioned officers or men, for pointing our guns in action. Our expensive modern projectiles will be worse than wasted in war, as they are in peace, fired away by men who may be short sighted, unable to adjust a tang at scale or incapable of setting a fuse to a given range.

Some years spent in daily instruction of the rank and file of the Royal Artillery have impressed me very painfully with the vast importance of this subject, about which I cannot think myself mistaken.

There is an absolute necessity for adopting some system of selection in our artillery, unless we are content to be swept from future fields of battle with bloodshed and dishonour, as an imposture, an incumbrance to a self-reliant British infantry, armed with terrible breechloaders, who will only ask us to batter buildings or expect us to fire at nothing smaller than a town. Unpalatable as such expressions may be, there is nothing gained by dishonestly shirking conclusions that may be drawn from the results of the late and present campaigns, and from the deliberate trials of the Dartmoor Committee. Their report shows marvellously few hits when the circumstances approached nearest to the probabilities of actual war—viz, unknown range, uneven ground, and rapid fire; add to these the element of nervous-

ness and confusion, and you would have still less than the results reported upon by the Committee "as so unsatisfactory, and the expenditure of ammunition so much out of all proportion to the effect produced." The success of Captain Nolan's range-finder together with a system of picked marksmen trained to its use, would, I believe, when combined with mobility given by gun-axle seats, again restore to field artillery its destructive superiority over the other arms.

The French artillery choose the best shots with carbines as likely to be the best natural gunners, and a further selection is then made by the inexpensive plan of trials, by pointing guns at objects against time, but without ammunition, and lastly by actual firing at a target. These selected men are termed "pointours," and every gun in peace or war is laid by one of them, there being sufficient in each battery to make up casualties. It will be time enough to object to copy the French field artillery in anything when it can be proved that they have failed in everything. When the mists of passion shall have blown off the late contest between France and Prussia it will, I believe, be found that the Regular French artillery have not utterly failed, but lost heavily in boldly supporting and saving their infantry. Their free tactics (combined with certain defects in *matériel* I shall not dwell upon here) have caused loss in guns and men. It is doubly painful that some would prefer retrograding to a less efficient weapon, rather than educate our gunners up to our arms of precision. Because our national qualities make us good gunners, our men are phlegmatic to a fault. The Teuton and Scandinavian blood gives that precision in action which the excitable Gaul has failed to show. The French artillery officer knew their national defect, and tried to remedy it by selecting gunners as much as possible from Alsace. Gunnery education is only possible to us by a system of selection and prizes, not necessary to the Prussians, because all their men are educated. The French rank and file are morallike our own—mixed and very varied in education.

Restricting the annual practice to a certain percentage of most intelligent and keen-sighted non-commissioned officers and gunners of each battery, would reduce the expense below that of the present wasteful system.

As regards the garrison brigades, a little modification in the amount allowed for annual practice would, without extra expense, meet the requirements of competition, a considerable portion of which might be carried on with the old smooth-bore ammunition, all but obsolete, encumbering as it does our controllers, with the charge of pyramids rivaling that of Cheops. A preliminary instruction and examination by subaltern officers before sending in the names of those selected for practice in their divisions would benefit both officer and man: refreshing the half-forgotten knowledge of the former, increasing his interest in his profession and his men, giving him a measure of their intellectual calibre, and enabling him to recommend for promotion with justice and confidence; while there would be a reaction of kindly feeling and respect from the men to their battery officers, who in garrison brigades, as matters now stand, have little to do with them except in the routine of orderly duty. The majority of subalterns in the Royal Artillery have reached an age when men in other branches generally command companies, and sometimes regiments. They might be entrusted with the instruction and selection of their marksmen.