

or four hundred yards in front of them. At times the line is choked with a village or a wood. Supposing a deep wood were available, an enemy would take the advantage of it, like the Prussians at Woerth, or near Metz, and bring up heavy masses of infantry to your defences, without any loss from artillery fire."

To all this I answer, in the first place, that where we are unable to use our artillery, the enemy is deprived also of his "demoralising" artillery attack. It will be found also that, owing to the immense range of our guns, it would very rarely happen that he could reach such a screening wood without at first running the gauntlet of our fire. But let us give him every advantage, and suppose that there is a wood along one mile of our line of defence, and that it is sufficiently large to allow an enemy to bring up masses without exposure. I think I can show that such can be made a source of peril rather than strength to any army which, like a German army, is commanded, not by a man, but by a system.

These are the dispositions which the English general would have made in view to this peril. He would have ordered forty of the Gatling carriages to be massed at some convenient shunting, and these would be brought up and distributed along the line at the edge of the wood, at forty yards distance from each other. Navvies and infantry would set to work to clear a belt of wood, say two hundred yards deep, and a strong body of the garrison infantry would come up to lend their services to the defence. The infantry shelter, where the railway was an embankment above the level of the surrounding country, would be behind this embankment, so that an assaulting column might be first down with the enfilading of the Gatlings; the same where there was a cutting with the inner side higher than the one nearest the enemy. The railway would, in the latter case, make an admirable ditch of a fortification, with flanking caponiers in the Gatling carriages. Where there was a cutting with the high bank towards the enemy, it could be turned into a lofty rampart, and manned entirely by the garrison division being furnished also with a few Gatlings behind enfilades.

Now I ask what possible tactics could carry this mile of defence? The swarm attack, regarded as a front attack, is virtually no attack at all. It is not believed in by its inventors, even where the opponents are only a line of shooters armed solely with the breech-loader. Suppose a regular line was sent against this arsenal of multiplying destruction, how many of them would reach the defences, and if they did reach them, what good would they do? As for the advance in column, machine guns have for ever set that question at rest, as it was proposed they should do when my father, the late Sir John Scott Lillie, brought forward what was, in all essentials the first mitrailleuse, the "Lillie Rifle Battery," a short time after the battle of Inkerman. I propose, also, that riflemen should fire from the top of the Gatling carriages, behind an iron screen working on hinges. Rockets also might be used from the same position, to bring a curved fire on points which the guns could not reach.

I have alluded to the "Magazine Rifle," and proposed to arm the garrison division with it. I see no reason why some such weapon should not be put in the hands of a much larger section of our forces. I cannot do better than quote a short article from

"The Field" newspaper, describing it. Mr. Walsh, the editor of that journal, is known to be one of the best judges in the world of the mechanism of small arms:—

"We have recently inspected a repeating rifle invented by Captain Meig, and just now brought over by him from America on his way to the Vienna Exhibition, and, as far as we can judge from the superficial trial to which we submitted it, it is a marvel in point of ingenuity and efficiency. The magazine, instead of containing seven or nine cartridges, as is the case in Spencer's, has a revolving cylinder consisting of five tubes, each of which contains ten charges, the whole amounting to fifty. These can be fired with such rapidity as to occupy only half a minute with reasonable aim, or a quarter of a minute with aim; and a new magazine can be inserted with nearly as great rapidity as in the Spencer rifle. Captain Meig took the lock and repeating parts to pieces for our inspection, and in reference to their simplicity and apparent durability we can only state that they are as complete as can possibly be expected in a gun intended to do the work performed by it. The inventor fired upwards of fifty rounds in our presence with extraordinary rapidity and precision, striking a small piece of paper at nearly every shot, whether advancing or retreating, 'on the double.' The firing is accomplished by a sliding motion backwards and forwards, in a line parallel with the axis of the barrel, and consequently the aim is not so much disturbed as in those guns which are opened by a lever. As the gun is not protected by a patent, we are not permitted to describe its mechanism minutely, the inventor preferring to depend on his prior claim, and on the possession by the Lowell Works (U.S.) of the plant necessary for its production at a low cost, which he states will not exceed £6. in large numbers. The cartridge contains 60 grs. of powder and 300 grs. of lead, and is of the ordinary central fire bottle construction now generally adopted in this country. Before leaving London, Captain Meig submitted the gun to the Duke of Cambridge, but we have not heard with what result, as he was to start for Vienna immediately afterwards. The weight of the rifle, unloaded, is a little over 8 lb.; with its fifty charges and cylinder, complete, 12 lb."

Now it is evident at once that if there exists a weapon capable of delivering fifty bullets in a quarter of a minute, a shelter trench held by resolute men becomes at once a fortification strong beyond the wildest dreams of Vauban and Cormontaigne. Imagine a swarm of shooters running across two hundred yards of open, exposed all the way to this terrific fire. If any reached their goal what would they gain by it? They would still find a line of men plying each his infernal instrument with reasonable aim." "Carrying" such a position would be a hundred times more dangerous than retreating before it.

It will be urged that the invention is "novel," "American" "gim-crack." At any rate, in the view of Mr. Walsh, it is singularly ingenious and efficient. It exists, moreover, and the present writer had the good fortune to be present at these experiments, and saw the American, with his rifle fixed to his shoulder, run backwards and strike the mark at every discharge. And the fact of its existence seems to be to point to the conclusion that the principle may be improved upon, if necessary, but that it cannot be ignored. Grant that in an assault

fifty rifles were to go wrong in a hundred, it would still open up a new chapter in defensive war.

Tactical as well as mechanical objections may be brought against it, no doubt. It may be said that in range, accuracy and weight of bullets, it is inferior to the rifles at present in use; and that it is unwise to give troops a weapon that may induce them to throw away all their cartridges too quickly. In the case of troops manoeuvring in the field, these arguments have their weight. But the greater the force of these objections, the greater the value of the weapon in defensive warfare.

For they show that it is perfectly impossible to place an active attacking force on an equality with a purely defensive force at the crucial moment. A garrison army, like the force I had described, having special duties, may have a weapon of overwhelming superiority. In adjusting the ration of morale there can be no comparison instituted between a Prussian or Russian Guardsman running along in the open, and an English Volunteer in a shelter trench, holding an ever detonating piece, and conscious that the nearer his antagonist comes, the more certain must be his destruction. It is true that some of the tactical objections just urged apply, although in a lesser degree, to the defence as well as the attack. But range and accuracy in the early stages of an action could be obtained by arming a shooting company of picked men with the Martini-Henry. The increase of power afforded to the present system of railway defence by such a weapon is so marked that, at any rate, a special garrison division should be armed with these. If all the Reserve Forces in England were provided with this rifle, or a similar improved weapon, the length that we could give to our lines of defence would be very great indeed.

Hitherto, I have been considering the defensive powers of what I may call the containing line. I think I have proved it to be very strong. It must be remembered, however, that its chief tactical function is to expose the attacking force to a flank attack. And this flank attack it would be scarcely possible for him to escape if he committed himself to a *bona fide* attack on the line of railway. Supposing that he attempted to contain the English army with some sixty thousand men, and that this force was drawn up at a right angle to the rest of his line. It is easy to show that both sections of his army are compromised. The English field artillery would enfilade that portion of his army which was attacking the railway line. A concentration of iron redoubts would be brought to act on the containing force that was facing the active field army, and the terrible segments of the seven ton gun would rake this line from end to end. The fire of the breech-loaders would be incessant, and riflemen from the portion of railway not attacked might hurry out and assail the other flank of the enemy. It is evident that his position would be critical; indeed, all who witnessed a serious flank attack during the last war speak of its vast significance in the presence of the new weapons. Resistance and retreat are both equally dangerous; indeed, the German officers press strongly upon their men that in a war of breech-loaders, retreat is the more dangerous of the two. All this while, although the English would be firing at crowds, the enemy's marksmen would be aiming at solitary skirmishers. A charge with the bayonet might be attempted, but what chance would the swarm attack have under this double enfilade. My project, it will be seen from this,