

This article was downloaded by: [University of North Carolina Charlotte]

On: 14 August 2013, At: 01:20

Publisher: Routledge

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



Royal United Services Institution. Journal

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/rusi19>

Lessons from the Late War

Captain John L. Needham R.M.A.
a

^a Professor of Fortification, Royal Naval College, Greenwich
Published online: 11 Sep 2009.

To cite this article: Captain John L. Needham R.M.A. (1878) Lessons from the Late War, Royal United Services Institution. Journal, 22:98, 941-956, DOI: [10.1080/03071847809416659](https://doi.org/10.1080/03071847809416659)

To link to this article: <http://dx.doi.org/10.1080/03071847809416659>

PLEASE SCROLL DOWN FOR ARTICLE

Taylor & Francis makes every effort to ensure the accuracy of all the information (the "Content") contained in the publications on our platform. However, Taylor & Francis, our agents, and our licensors make no representations or warranties whatsoever as to the accuracy, completeness,

or suitability for any purpose of the Content. Any opinions and views expressed in this publication are the opinions and views of the authors, and are not the views of or endorsed by Taylor & Francis. The accuracy of the Content should not be relied upon and should be independently verified with primary sources of information. Taylor and Francis shall not be liable for any losses, actions, claims, proceedings, demands, costs, expenses, damages, and other liabilities whatsoever or howsoever caused arising directly or indirectly in connection with, in relation to or arising out of the use of the Content.

This article may be used for research, teaching, and private study purposes. Any substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly forbidden. Terms & Conditions of access and use can be found at <http://www.tandfonline.com/page/terms-and-conditions>

Royal United Service Institi

VOL. XXII.

1878.

No.

LECTURE.

Friday, June 28th, 1878.

LIEUTENANT-GENERAL SIR ARNOLD KEMBALL, K.C.B.,
in the Chair.

LESSONS FROM THE LATE WAR.

By Captain JOHN L. NEEDHAM, R.M.A., Professor of Fort
Royal Naval College, Greenwich.

SIR ARNOLD KEMBALL, Ladies, and Gentlemen: Since, in accordance with a wish expressed by the Council of this Institution, I have to prepare a lecture on "Lessons from the late War," it has been remarked to me by more than one Officer whose reputation as a military writer and critic gives weight to any opinion expressed, that the time has not yet come for drawing deductions from the war of 1877; that we have not as yet sufficiently detailed authentic information to enable us to draw conclusions from the events of the campaign just concluded. Now, Sir, it is true that no such complete and impartial narrative of the late operations in the East has as yet been published as is contained, for instance, in the German Official Histories of the Campaigns of 1866 and 1870; but the events recorded in those works; but, nevertheless, a vast mass of literature has already appeared, in which many of the details of the late war are described with more or less minute accuracy and discussed with more or less impartiality. In the first place, the graphic and picturesque, and comparing them with later events, I should say remarkably accurate descriptions of many of the events in the war telegraphed home, while the scenes they were still fresh in their memory, by the Special Correspondents of the press; by correspondents not only of English, but also of Continental papers; by correspondents, many of whom were Officers of known proved ability, conversant with the theoretical as well as the practical branches of their profession. We have official reports of many of the principal episodes of the campaign:—such as those written by the Grand Duke Nicholas, by General Gourkko, by General Krudener, and other Officers holding high command. We have the fragmentary but shrewd notes jotted down from time

by that keen observer and unsparing critic, Captain Ko the Russian General Staff. We have the plain unvarnished accounts of non-commissioned officers and men of the Russian army; we have the more carefully written histories of the campaign by Mr. Norman and Mr. Williams; while other accounts lately in the pages of the Austrian *Organ der Militär-Wissenschaften*, and of the Prussian *Militär-Wochenblatt*; and, finally, the very admirable account of the struggle round Plevna published by the well-known German military writer, von Trotha. Well, Sir, there is, I would submit, much to be learned from all these accounts taken and compared together; and I have been obliged, from various causes, to devote much time to the study of them, I propose this afternoon to lay before you a short summary of some of what seem to me to be the principal deductions from the accounts I have alluded to; trusting that in the discussion which I hope may follow, remarks may be made and opinions expressed which will prevent this afternoon being recorded as altogether unproductive to the journals of this Institution.

The most convenient way of dealing with the subject, I think, in the first place, to enumerate the deductions from the late war; and then, taking them in succession, to consider particular episodes or events of the campaign upon which they are based, or which would seem to confirm the truth of them. I may remark that since it would obviously be simply impossible to touch upon all the points of so wide a subject in the time allotted, the Council of this Institution very wisely limits lectures to one subject. I shall confine myself exclusively to the tactical lessons of the campaign; leaving the broader questions of strategy, and of the organization, organization, and mobilization of armies, to be discussed by some more competent person; and I may add, that one of the points to which I shall refer have already been alluded to in a paper recently delivered in this theatre, and in the discussion which followed; but since on that occasion much more attention was given to the question raised in the same paper, it will, I think, be allowable to return to them briefly again.

From the experiences of the late war may be adduced the following points for consideration:—

in the first place, the imperative necessity, under the present conditions of warfare, of utilising the power of firing conferred upon infantry by modern improvements in the rifle;—

in the second place, the necessity for improving the arrangements both for insuring that there shall always be a sufficient supply of ammunition at hand, and also for issuing and distributing cartridges to men actually engaged; and, also, the necessity of lightening the equipment of the soldier—of decreasing, if possible, the weight of his kit—both in order that he may be able to move more rapidly and with less fatigue, and also that he may not have to carry about his person a greater number of cartridges than is necessary at the present time;

in the third place, the necessity of providing that there be a sufficient supply of intrenching tools forthcoming at not only before and after an action, but also at any moment they may be wanted during the course of a battle; an necessity for exercising men to a greater extent than is content in digging; of practising Officers in designing and men in actually constructing such hasty intrenchments and fortifications as may be employed with advantage on a field for the defence of a position;

in the fourth place, the necessity for adding to the army a proportion of guns of larger calibre and greater range now employed; and, also, of rendering the light guns as mobile as possible, so that they may be able to accompany the army in its progress.

Such then I venture to submit are some of the most tactical lessons to be derived from the late war. In them I have given the precedence to the subject of long range fire, because it seems to me that the constant use of this by the Turks is the most striking feature in the tactics of the late war. It has been remarked that every campaign which has taken place during the last quarter of a century has been characterised by the introduction of some new or greatly improved weapon, or by the adoption of some new tactical procedure. The Crimean War, for instance, will be remembered in history as the first in which rifled muskets were used. The Italian War of 1859 was the first occasion on which rifled field-pieces were employed. The American War of Secession from the introduction of armoured men and ironclad monitors; from the employment of torpedoes, and from the extended use of hastily improvised cover. The war of 1866 in Bohemia as the campaign in which breech-loading firearms of only of a comparatively low power and short range, first came prominently into notice. The Franco-German War of 1870-71 was the campaign in which far-reaching, hard-hitting, and rapid-fire rifles of great precision were used; whilst in the late war we have, for the first time, long-range fire constantly and systematically employed. The tactics of the Turks, as far as can be gathered from public reports, and as far as I can learn from eye-witnesses who saw the fighting, were extremely simple, and the reasoning on which they were based is at all events intelligible and consistent. Turkish authorities provided their infantry with a weapon of great range, a range of over 3,000 paces, and which can be reloaded fifteen times a minute, they recognised that it would be to make a great demand upon human nature, or at all events upon the patience of men, to ask that men, armed with so perfect a weapon, should always wait patiently until the object at which they were to fire became distinctly visible, or until an assailant, advancing towards them out of a position, should have arrived at comparative quarters, before they themselves opened fire. Accepting, then, the impossibility of persuading their men to always carefully guard their cartridges, not to fire until the enemy had arrived v

used to be called "effective musketry range," they do would be better to let their men endeavour to utilize extreme limits, all the power of the rapid firing weapon they were provided; to open fire immediately the enemy the very longest range of their rifles, and to fire as rapidly while, at the same time, since it was inevitable that such action would involve the consumption of an enormous cartridges, every effort was made not only to amass supply of ammunition, but also to insure that the men never run short of cartridges. Accordingly, immediately came within the very longest range of their rifles, the rule, opened fire, and endeavoured to keep up a continuous rain of bullets over all the ground occupied by troops upon which his troops, if concealed from view, were drawn up; or over which they would have to advance entirely regardless of the expenditure of ammunition involved. And there can be no doubt—we have testimony upon this a host of witnesses, we have the testimony of the Russians themselves—that immense loss was frequently inflicted upon assaulting columns by these means, that, on more than the advance of the Russian lines was not only retarded but stayed; that the attack faded away; that the onslaught time at all events definitely arrested by this unaimed fire before the Russians, armed with a weapon of inferior arrive near enough to the defenders to reply to the fire devastating their ranks. General Todleben, in a letter Brialmont, states that the number of Turkish bullets among the Russian ranks when they were still 2,000 yards from the defenders' position was such, that divisions which numbered from 10,000 to 12,000 men, were speedily reduced to strength of from 4,000 to 5,000; that, in other words, their effectives. Captain Kouropatkine, speaking of the battle of the Loftcha, states that at 2,000 yards from the Turkish position soldiers were struck down by the defenders' bullets, and that, in other words, men were falling rapidly on all sides; and General who was present with the Russian Guard when it received "a storm of fire" at Gorni Dubniak, states, that at 3,000 yards from the defenders' position, the Russians began to suffer loss, and that many men were falling rapidly, and as the attack progressed reserves suffered nearly as much as the firing line. If necessary I could quote in detail a number of instances which confirm the truth of these statements; but the fact that the Russian suffered severe loss from the long-range firing of the enemy is admitted, is so universally conceded, that it is needless to multiply proofs. I will, therefore, only cite a single instance which seems to me to be very instructive. Here is the narrative of a commissioned officer of the Vladimir Regiment, which, on September, on the day of the last grand attack upon the Russian lines round Plevna, formed a part of General Skobeleff's army. During the forenoon of the day, this regiment had been

move up into a position in some vineyards and maize fields, to or about 2,200 yards, away from the central Turkish redoubt Green Hill. The most advanced of the Turkish trenches were 200 to 300 yards in front of this redoubt, and were there sumably, from 1,700 to 1,900 yards from the Russian position: describing these preliminary movements the narrator continues "had not been long in the vineyard when the Turks began " us. Many of our men were wounded before the order was " us to advance, and among them the Captain of my company was lying down among the vines. When at last we moved forward " bullets fell upon us like hail. They pelted upon us on " Men fell on all sides, in the front ranks and in the rear " alike. We had not gone more than fifty paces when the " my subdivision was struck in the chest; he died two days " wards. The other peloton Officer led on the company, but " further on he was hit too. We could not fire. Our Kr " were only sighted up to 600 yards, and the Turks were " and a half away." Here is an instance, related by an eye-witness of what long-range fire can do; a company loses all its cohesion, becomes naturally seriously demoralised, before it can arrive within a mile of the position it has to assault. The particular battalion which this company belonged to did not, it is almost needless to say, carry the Turkish trenches. In the words of the narrator " before we got near the trenches there was no one left to attack them.

On the other side the Russians also, incited thereto by the losses they were suffering, endeavoured, on more than one occasion, to reply by long-range fire to the long-range fire which was directed against them. The Krink rifles carried by the Russian soldiers were sighted up to 600 yards, rough wooden sights were manufactured for some regiments and adjusted to the rifles, but as this naturally could not increase the actual carrying-power of the rifles it advantaged the Russians but little, and they could not have any effect to the fire which was devastating their ranks. On one instance is, however, recorded of high-angle fire being used with success by the Russians. On the 23rd of August, on one of the memorable struggles for the Schipka Pass, a Turkish battery assembled in some groves and thickets, some thousand yards from the main Russian position. The Officer in immediate command of the section of the Russian line opposite to this battery directed the men of the companies near him to raise the barrels of their rifles for 600 paces, and to aim at the tops of some trees, which stood half way between the Russian position and the wood in which the Turks were concealed. By this means so high a fire was obtained that not only were the Turks unable to move from their woods, but were even obliged to fall back from the skirts of the groves.

And not only on the actual field of battle, but also on the range, it has been very conclusively proved that long range fire is exceedingly effective. Want of time prevents me giving details of experiments which have been recently made in Austria, France,

and Prussia, but I may mention that in some trials recently the Steinfeld Range, near Vienna, a party of men fired at dummies set up 1,500 yards away, representing three guns. Of the total number of bullets discharged, 9 per cent. struck targets; and in recent trials in Prussia, at 1,500 yards, 11 of the shots fired hit targets representing a company in line; 8 per cent. of the shots fired struck targets representing a company in line lying down; 22 per cent. of the shots fired hit targets representing a company in columns standing, and 16 struck targets representing the company in column lying down. It must, therefore, I think, be admitted, that very serious damage may be inflicted upon an enemy by long-range fire. That, however, much difference of opinion exists as to the advisability of such its employment, is notorious. The main arguments adduced in favour of its introduction may, I think, be summarised as follows:—

First, that long-range fire necessarily involves the expenditure of a great amount of ammunition, and that, therefore, if men are not allowed to open fire at long distances, they will be likely to run short of ammunition before the decisive moment of battle arrives;

In the second place, that long-range fire will be fatal to the offensive spirit of any force constantly employing it. That, in other words, it will be found impossible to rally forward a line of men once they have been allowed to halt at a great distance from the enemy upon which a long-range fire is directed;

And thirdly, that if men are allowed to fire at long range they will get into the habit of shooting wildly, and that, consequently, their fire will decrease in efficiency as the enemy draws near to the position.

Taking this last objection first, it seems to me that the evil which it only makes itself felt when what the Germans call the "discipline" of the troops is imperfect; or where Officers have not been sufficiently practised in the use of long-range fire. To the present time, long range fire has only been used by the French and Turkish, and of both of these armies it is said that their fire decreased in efficiency as the enemy drew near to the position, that the bullets fired by the defenders flew over the heads of the assailants as these latter advanced to closer quarters. However, this was always the case with the Turkish bullet, and may be doubtful. General Zeddeler, speaking again of the Gornj Dubniak, says that as the Russian attacking forces approached the position, the rain of lead which fell upon them was none but those who saw it can form any conception of what it was like; and, if I remember rightly, an Officer, speaking in the not long ago, described the Turkish soldier as looking very much like the enemy when he fired at him at short ranges. But, in any case, it must be remembered, that both by the French and by the Turkish, long range fire was employed in an unmethodical and reckless manner. There were no regulations prescribing how, when, or where it should be used; neither Officers nor men were practised in its use.

discipline of the troops was most imperfect. But if the manner in which long-range fire should be employed has been carefully thought out and worked out beforehand; if appropriate regulations have been drawn up for governing its employment; if the fire of the troops is kept under control, if, for instance, they fire by volleys only, if the firing be independent, it be ordered to cease after each man has fired a certain number of rounds, it is difficult to see why the fact that troops having fired at long ranges should afterwards make them short at shorter distances. That there is more force in the first volley than in the second cannot be denied; but they are both of them objectionable, and apply to the use of long-range fire by attackers rather than by defenders.

How to bring up supplies of ammunition into the firing line, how to distribute cartridges to men actually engaged, is admitted to be the most difficult at the same time that it is one of the most important problems which has yet to be solved in modern warfare. On the other hand, it ought to be no difficult matter to organize arrangements which shall ensure that a stationary line of defenders shall not run short of cartridges. The number of rounds fired by the Turks in the late war was enormous. In some of the more obstinate and tested struggles of the campaign, each man is said to have fired 300, 400, and even up to 500 rounds; and yet in no instance recorded of the Turks running short of ammunition. Immediately a shelter trench was excavated, receptacles were hollowed out for ammunition barrels or boxes, these were kept constantly supplied with cartridges, and from these the men helped themselves.

The objections, then, to the use of long-range fire apply more to the attack than to the defence, and, therefore, it may be said that I would contend, that in future, long-range fire will be employed in every defensive force, especially as, by its employment, in any other way, can loss be inflicted simultaneously upon all the troops upon the skirmishers, supports, and reserves—of an attack. In his "Précis of Modern Tactics," Colonel Home states that it is "possible to bring up the main body of an assailing party in a closer formation than is often supposed, because the fire of the defender will be mainly directed upon the assailant's skirmishers." And von Scherff also argues that, "the fire of the defence is diverted as the attack progresses from that portion of the line which comprises the main body, or true assaulting force, to the necessity of checking the advanced line of the attack." "it is upon this diversion of the fire from the main body of the defence that the possibility of an attack mainly rests." But, if the defence be disposed—as the Turks frequently were—in two or more lines, if, by taking advantage of sloping ground, these lines are so disposed that the men in rear can fire with safety over the heads of the men in front, the troops in the rear lines may keep up a high and exceedingly effective fire upon the supports and reserve of the attacker, whilst the men in the front line confine their fire to checking the advance of the skirmishers or foremost fighting line. But if, actuated by these or other considerations, the defence

long-range fire, the assailant must reply to it. In several of the battles of the late war, the Russian method of attack was criticised. The Russians are blamed for pushing on to the assault still a thousand yards or more away from the defenders' position, rushing forward to the final onslaught before the way had been sufficiently prepared for the fire of skirmishers. In other words, they are censured for not employing long-range fire. That the so was owing to the inferiority of the weapons they carried, once they could open fire, the men advanced much more rapidly than in the Russian Army, speaking of one of the battles at Plevna, said:—"This part of the advance was terrible. We were struck down on all sides, and we could not reply. When we opened fire, it was not so bad; we were so busily firing that we did not think much of his bullets."

To conclude, then, this portion of the subject, long-range fire would contend, be in future employed by every defensive force. It would lend a moral support to his advance, as well as with a view to inflicting a serious loss upon the enemy, the assailant must reply to the long-range fire by long-range fire, and therefore, however correct the arguments urged against it, long-range fire will in the future be largely employed. That this is the view of the matter taken by the authorities on the Continent may be inferred from the fact that the latest published musketry regulations for the Austrian and Prussian Armies, instructions are laid down for using long-range fire. In other words, its employment is recognized and sanctioned. An article recently published in the organ of the French Government concludes with these words:—"It is time that those who employ long-range fire should nevertheless range themselves by the ranks. It is its convinced partizans, as at all events resigned partizans, must not be forgotten that no advantage will be obtained by the long-range fire, but that, on the contrary, grave inconveniences will result from its employment, if we practise it for the first time on the field of battle. The employment of long-range fire is too difficult and too delicate a matter to be

intimately connected with the question of long-range fire. The supply and distribution of ammunition to men engaged in battle, but this subject has been so recently discussed in this the organ of the French Government, that it is not proposed now to enter upon it at any length. Since referred to, however, an article bearing upon the matter was published by General Zeddeler, and therefore, perhaps, it is not uninteresting to note the deductions derived by that Officer from his personal experience he gained during the late war, especially having previously accompanied the Staff of the Prussian Army during seven months of the campaign of 1870 and 1871, General Zeddeler was exceptionally well qualified to draw conclusions from his experience. In the first place, after pointing out the absolute necessity of increasing the number of ball cartridges available in the hands of the army during action, and which it may be remarked is more the case in our own, General Zeddeler strongly insists upon the necessity of giving to the men from the outset a greater number

suggesting that each man might carry 105 rounds, namely, pouch, as at present, and an additional 45 in his havresack, the same time, recognizing that there is a limit to the burden would be wise to impose upon a soldier, General Zeddeler rec a corresponding diminution of his general equipment. The immediate reserve of small arm ammunition, consisting of 2 per man, should be carried, General Zeddeler warmly adv pack animals; and, taking 2,000 rounds of ball cartridge as for each animal, 30 such animals would be required to carry supply of ammunition for a regiment of four battalions. T and larger reserve, consisting of 75 rounds per man, should b General Zeddeler recommends, in carts or waggons. These should be attached to regiments, and, on the regiment to w belong going into action, they should be drawn up in the i neighbourhood of the site selected for binding up, in the first the wounded men of the regiment, as the constant comm between this spot and the front would facilitate forwarding tion from the waggons to the men actually engaged. The should be emptied in succession, and, as soon as the suppl are exhausted, it should be sent to the rear to be replenish pack animals should be attached, two to each company, ar each be accompanied by two men. The Captain of every should look after the animals attached to his command, and held responsible that they always keep close up to the me soon as all the cartridges carried by one animal are serve should be sent back to the waggon to bring up more. In every man going into action would have immediately avail rounds of ball cartridge: namely, 105 carried by himself; carried by the pack animals of his company; and 75 rounds the waggons of his regiment.

Passing on now to the subject of intrenchments. It did n the experience of the late war to teach us that a trench of most simple profile, adequately garrisoned, is, under certa fulfilled conditions, practically unassailable by, at all events attack. This truth was enunciated after the American War General Barnard, of the United States Engineers, in a Rep defences of Washington, and has since been amply confirme recent campaigns. That the Turks fully appreciated the a to be derived from the judicious employment of hasty intr and field fortifications may, I think, be gathered from the accounts of their defensive battles. Immediately Turkis were ordered to occupy a position, they at once endeavoure cover for their deployed lines by utilizing the features and of the ground, supplementing this natural cover, where nec scooping out what in the first place were very shallow shelte As soon as possible these trenches were extended and enla excavations were deepened, the parapets increased in thic height. As time went on, traverses were constructed to defenders against oblique or enfilade fire; receptacles wer out for food, water, and ammunition, so that neither hun

nor want of powder might oblige the defenders to even quit their posts; and, finally, bomb-proof cover was provided. If a position was held for any length of time, redoubts were constructed on the most commanding points of the ground, armed with guns, and traced so as to give a flank fire along the front, or a cross fire along the ground in advance of the longer lines of trenches. In the case of these redoubts again, the care taken to provide cover for them against hostile fire, not only against direct or horizontal fire, but against enfilading, oblique, or curved fire, is ever the most noticeable. Where the works were exposed to artillery-fire, where it was anticipated that they would be subjected to a prolonged bombardment, it was to be expected that guns of a larger calibre than ordinary pieces would be brought against them, the parapets were made 20 feet thick, to secure the defenders behind them from the effect of the horizontal fire of the enemy. Huge traverses, of very substantial construction, were constructed across the interior to screen the defenders from oblique and enfilading fire; and, finally, behind these traverses, and in front of the parapets, and sometimes under the counterscarps of the trenches, bomb-proof accommodation, of a very admirable type, was provided. The small amount of damage done to the garrisons of these redoubts by the Russian artillery, even when this latter had been reinforced, it sometimes was, by siege guns and guns of position, proved that the excellently well the precautions taken answered the end in view. In one of many instances which go to prove how effectual was the cover provided, I may mention that it has been stated to me that on one occasion more than 300 shells struck or fell within a single redoubt, and that only five of its garrison were wounded.

With regard to the supply of tools for the construction of trenches, the Turks do not seem to have had any regular system of transport. Sometimes the tools were carried by pack animals, sometimes they were conveyed in waggons or caissons, sometimes borne by the men themselves; but some way or other the necessary implements seem to have been always forthcoming, when they were wanted. On the other hand, from the Russian side there were constant complaints of the want of intrenching tools. Kouropatkine, speaking of the attack on Loftcha, states "that the want of tools for rapidly intrenching ourselves in the position we had taken was a very apparent. In order to obtain the necessary number of tools, they had to be collected from different corps, and when the work was done, they were not always punctually returned." Several instances might be cited to show how severely the want of intrenching tools was often felt by the Russians. On one occasion it is stated that a line of men, severely galled by the enemy's fire, were so covered by the enemy that they loosened the earth with their bayonets, and endeavoured to pile it up with their drinking water, and on another occasion a body of men, unable to cover themselves with a mound of earth, piled up a parapet of corpses, using for the purpose the bodies of friends and foes indiscriminately. But the late campaign has thus demonstrated, perhaps in a mo-

manner than any former war, the fact that intrenching is almost as necessary a part of the equipment of an army as rifles, it has thrown little or no light upon the way in which intrenching tools should be conveyed; though it may be noted that Captain Kouropatkine expressed a very decided opinion against their being carried by the men themselves to carry. The first thing, he noted, that a man throws away when he becomes distressed or when he gets forward more rapidly, is his intrenching tool; and, therefore, if these are given to the men they are very likely not to be for when they are wanted.

But, further, the late campaign shows, I would submit, that it is sufficient merely to have organized arrangements which will insure that a sufficient supply of intrenching tools shall always be coming. More than that must be done. The men must be taught, by previous practice, how to use them, the Officers of the staff must understand how to intelligently supervise and direct their work. From remarks made here and there, from hints dropped and again rather than from any outspoken statements on the subject, it is very evident, or at all events there is strong reason for supposing that on several occasions, even when the Russian soldiers had their intrenching tools, they could not use them to advantage. When the Engineers were present to design, direct, and give a work of intrenching seems to have been performed fairly well by the Russians; but when the ordinary line soldier—in other words, an unskilled, untrained workman—was thrown upon his own resources, the work does not seem to have progressed in nearly so satisfactory a manner. General Skobeleff, in some of his reports, speaks of the results in which the work was done when pioneers were present, and Captain Kouropatkine speaks of the assistance rendered by Officers of the staff passed through the Russian military schools, in a way from which it may be inferred that when these trained Officers and men were absent the results achieved were not so satisfactory. Neither can it be a matter for surprise. No vast amount of knowledge is required to enable an Officer to design or superintend the construction of hasty intrenchments and simple field fortifications as may be required on the field of battle or in the first stages of defence to strengthen a position; but, nevertheless, unless the few simple principles which should govern the construction of such works are fully applied, there is, it has been shown by experience, by the experience of the late war among others, a tendency to bungle over what seems to be and what really is, a very simple task. On the other hand, it may be an equal mistake to suppose that committing to memory the details, learning by heart a number of dimensions, will fit an Officer to design or construct hasty intrenchments. In a work on "The Art of Outposts," which is now considered old-fashioned, but which nevertheless contains much which may still be read with advantage, it is stated, "If the main conditions to be observed in defending a position are kept in view, there will be a natural tendency for the details to come right of themselves; provided these, the main principles, are at home when wanted, an Officer may safely trust

"common sense suggesting more on the spot than a
"supply."

Passing on now to the last of the deductions I enumerated possible to attentively study the accounts of the battles occurrences of the late war without being struck by the part played by the Russian artillery during the campaign the effect produced by artillery fire is due as much to the material damage occasioned by it is a very old proposition campaign in Bohemia in 1866, of the total losses suffered by the Austrians, only some 3 per cent. were occasioned by artillery. 90 per cent. of the total losses were caused by the bullets of the rifle, 4 per cent. by cold steel, and 3 per cent. by artillery during the battle of Gravelotte, of the total Prussian loss, 90 per cent. were caused by bullets, less than 5 per cent. by artillery fire. Nevertheless, it was expected, when the campaign began, that the Russian artillery, far superior in the number of guns to that of its adversary, would influence, in a very decisive manner, the operations of the campaign; but, as a matter of fact, it contributed nothing to the success achieved. When the second offensive was made upon the Turkish lines round Plevna, a large number of batteries were in action for several hours against the Turkish batteries before the infantry advanced to the assault, and prior to the attack more than 300 guns, amongst which were some of the largest calibre and great power, bombarded the Turkish batteries. I think, four days and five nights before the attack was made, on both occasions, the attack failed. Again, during the battle of Gorni Dubniak 60 Russian guns concentrated their fire for several hours upon a single Turkish redoubt, armed with four guns. It did so little execution that several successive attempts to take it by storm were subsequently repulsed. That the Turkish batteries were admirably designed to withstand artillery fire I have pointed out, but still, the fact that the Russian artillery, on several occasions, achieved nothing worthy of mention must be ascribed to the faulty manner in which it was handled. One of the mistakes committed by those who were responsible for the management of the Russian artillery is, I think, very clearly indicated by Captain von Trotha. In the first place, the batteries were, at the present time, as a rule, uniformly distributed along the whole front of the battle or front of attack, no attempt being made to concentrate a large number of guns to employ against decisive points. So that the guns opened fire at long ranges, and always directly at the enemy's works, no attempt being made to sweep his lines with enfilade fire. And, thirdly, it was but seldom the Russian artillery advanced as the infantry moved forward, and consequently the Russian artillery was very frequently masked immediately the infantry began to advance.

With regard to this last criticism it may be noted that on occasions on which Russian batteries did advance into the musketry fire of the defenders they were generally obliged to do so on account of the losses they suffered in men and horses.

noticed by Captain von Trotha; but none the less does he in the necessity of batteries pushing forward with an attack that they may be at hand in readiness to seize, by skilful manoeuvring if necessary, any opportunity which may present co-operating in the attack. That in so doing they may, and will, suffer loss is admitted; but answering in anticipation of a position which may be urged to pushing forward guns into the line of battle, Captain von Trotha argues, with much reason, that the battery which, from an advanced position, has been able to produce a decisive effect for five minutes before being put out of action, obliged to retire, will have contributed more towards the success than ten batteries, which from a retired position have during the whole day a well-aimed, it may be, but never effective fire.

Finally, the small amount of damage done to the Turkish by the Russian artillery would seem to indicate the necessity of augmenting the present field artillery of an army with guns of a larger calibre and of greater power. At 2,500 yards, the 4-pounder Russian artillery were unable to make any impression at all on the Turkish works; they did absolutely no damage whatsoever to the trenchments of the defenders; and even the 9-pounders did but little damage. That a recognition of the necessity of thus adding to the artillery of an army guns more powerful than those in present use, forced upon the Russian leaders by the events of the late campaign, I think, may be inferred from the fact that the largest of the types of field-pieces which are at the present time being manufactured for the re-armament of the Russian artillery has a calibre of 120 millimetres, or 4·7 inches, a calibre, I believe, larger than that of any in use in any European Army, and throws a shell weighing 25 lb.

As I have now reached the limit of my time, I must content myself with a few remarks I have ventured to address to you, and in which I have only attempted to indicate in the briefest manner a few of what to me to be the most important tactical lessons of the late war.

Captain TROTTER, R.E.: Perhaps I may be permitted to say a few words on the subject of the campaign. There are one or two points I noted in the course of which I should like to allude to. The lecturer said that, if there were no intrenchments, he thought it practicable that the front line might be made up of the enemy's skirmishers while the rear line was firing upon the supports. I think that would hardly be practicable. I think both lines would be inclined to fire upon the enemy's skirmishers (who would probably be the only people they could see), than to think of firing upon the supports or reserves from another point about the ammunition. At the first battle at which the British were victorious, the men were provided each with 150 rounds of ammunition, carried 50 rounds in their pouches, and the remaining 100 rounds, some in tin cans, in pockets made on the breasts of their tunics, and others in leather sacks, mixed with their biscuits, or in any other place where they could find it. In addition to what was carried by the soldiers themselves, there were 300 rounds of ammunition carried by the mules of each battalion (the very arrangement the lecturer suggested as being the best possible), each carrying 2,000 rounds, and there is no doubt it was a very good arrangement. I saw on some occasions the mules being actually taken into the lines of skirmishers to provide them with fresh ammunition. An objection

was, that the ammunition was all carried in the original boxes which America, and these had to be broken open and the cartridges distilled heavy fire, not a very easy thing to be done. No doubt that might upon. As to artillery, it has been said that the Russian gunners the war fired at very long ranges. There is no doubt that, in Asia Minor, very end of the war, that was invariably the case; but in the fatal battle of Alajagh, I understand that the Russians brought their guns up to within the Turks. It was the first time they had done so; and it gave rise to over the Turkish Army that the Russians had been supplied with Prussian Officers. I believe the real fact was, that the guns belonged to the Grenadiers from Moscow, which had just arrived at the seat of war. Officers were better educated and more efficient than those of the country which had previously been taking part in the war. Their guns were within about 1,500 yards of the Turkish lines, and fired with tremor. The same thing happened at the battle of Devch Boyun in front of Erzerum. Guns were brought up very much closer than I had ever seen before,¹ effective, especially in the centre, where the Turkish troops wavered without awaiting the attack of the Russian infantry. As regards the artillery, I made an estimate that, at Kars, the Russians fired every casualty that occurred. While I was with Ismail Pasha's force district, on one occasion, I saw 60 or 70 shells burst in the immediate Turkish field battery. I went down to ascertain the number of men I found there had only been one man touched.

Admiral SELWYN: I think, if I had no other observation to make very much inclined to get up and compliment the lecturer for one of the most instructive lectures that has ever been given at this Institution. It has been delivered in a manner which deserves the highest praise, which have been touched are those which must receive the most close attention in our Army in a very short time. There is one change which is now being made with the cartridge. We are now going at last, I believe, to a cartridge case—at least, a solid drawn cartridge case—and I hope no more made about that, and that the words which have been spoken here to their echo in the breasts of those who have to decide the matter; the cartridge which might be made is 10 pounds in the 100 lighter than the one now made. That is a very important point with reference to how near a man can carry; and due attention, I consider, has not in our decision yet to the fact that the cartridge is really the first thing to consider in the loading arm; that whereas you may use almost any form of rifle to carry the quantity of ammunition that you ought to carry if you do the cartridge-case as simple as possible in its construction. It ought to be free from galvanic action between its component parts. It ought to be able to resist the amount of rust or damage to the interior of the chamber without being incapacitated from withdrawal, and, most of all, it ought to be the very best cartridge-case possible, which will produce the effect we want from it. I was during the whole of last year, and I noticed particularly that the cartridges given to the Turks was both highly efficient in itself, and produced a larger expenditure than had ever been thought probable in any other. The Turks were also our masters in the art of intrenching. Vauban learned every lesson he ever knew from the Turkish system of intrenching; they have not yet ceased to employ their spades as thoroughly well as Vauban's days. Osman Pasha, who was the unaided engineer at Kars, that the military school at Constantinople can turn out equally good for practical purposes with any school in the whole of Europe. They have the knowledge of the use of the spade by a whole army, such as, I am not yet thought necessary to be given to all our soldiers, and they can carry with them sufficient intrenching tools for that purpose. There is one thing to be noted in the general carrying of an intrenching tool by each soldier.

¹ I was not present at the battle of Alajagh.

must not increase in any manner the weights he now carries. This can be done by economising some of the useless weight which soldiers now carry. A rifle is made up of 4 lbs. of wood in the stock, and 4 lbs. of steel or iron in the barrel, there are nearly four useless pounds for all practicable purposes. If that useless weight is partly replaced by a useful intrenching tool, in the circumstances it is very unlikely that the soldier will ever throw that tool away. The ordinary intrenching tool is an incumbrance to him, and likely to throw it away: for that reason, I never have been an advocate of complicated and curious weapons which have been from time to time introduced under the name of intrenching tools. I think this can be done, and can be done, during peace, that we may be prepared for war; and I believe, I may have been relieved at the present moment from the immediate fear of such a relief really means nothing else than the extension of the great future, which every one who studies European politics must see is coming.

MR. C. B. NORMAN: There is one point I should venture to remark upon the carrying of intrenching tools. Certainly the Turks had no very good way of carrying them. They were sometimes carried on the back of pack animals, and sometimes were close forward up to the front when they were wanted. In carrying these tools was instituted in India, which certainly worked very well. They were carried in wooden frames, very similar to the crates in which china is carried in England, with lattice-work bars. Each camel was able to carry fifty pounds of these tools in this way with the handle running vertically down, and one of the pickaxe over the top. By this means the intrenching tools were kept up with the battalions. The camel is of course a very awkward animal, especially under fire, but I think smaller crates were used on more than one occasion which were put on the backs of mules, and certainly they would be of great advantage to any enemy operating in a mountainous country as in the Balkans or Armenia, if a certain number of mules, say two to each company, could be employed to carry intrenching tools, just as I believe they will be spared for the purpose of carrying ammunition.

As to the Russian artillery fire, I cannot help thinking it was greatly to be regretted that want of instruction on the part of the Officers that so little damage was done. I remember being once with Sir Arnold Kemball, and seeing shell after shell falling absolutely underneath the gun when the crews were endeavouring to get it into action. On one occasion we saw three men on the ground, and my mind was that they must be knocked over, but after looking about they jumped up and dragged the gun out of action. I do not think there was a single man killed at that battery, but that was entirely owing to the percussion fuze failing. Perhaps that is a lesson that may be lost upon us; percussion fuzes are certainly nothing like time fuzes.

THE CHAIRMAN: I consider myself very fortunate to have been invited on this occasion, to hear the views of Captain Needham. I think the difficulty which he has mastered his details, and the clearness with which he has stated his conclusions, have resulted in a very interesting lecture, entitling him to the thanks of the meeting. His conclusions are quite in accordance with my own in Armenia. It is scarcely fair to compare European troops, regularly trained, with raw Turkish levies who were suddenly called into the field in 1877 without the slightest organization, and who had had no opportunity of drill or ball practice. It is not surprising, therefore, that in long-range fire they have wasted an enormous quantity of ammunition altogether out of proportion to the effect produced, but at whatever cost the ammunition was forthcoming the effect produced was generally decisive. As regards the supply of ammunition, the mode of providing intrenching tools, the Turks were no doubt deficient in the rule of thumb arrangements, but it is a fact nevertheless that their arrangements, except at the first battle, was always ready when required, and the tools were at hand. We hear more, I think, of shortcomings in these matters in the better organized and well-disciplined Russian Army. Be this as it may, it is certainly marvellous that the Turks should have effected so much with the defects of organization. I need not detain the meeting with further remarks before proposing a vote of thanks to Captain Needham, except to

point which I think important—I mean the mode of carrying an soldier, as improvised by the Turks, which proved very efficient. has already referred to it. The pouches being insufficient, Mukht aged his men to sew slips of cloth on the breasts of their coats w Circassian fashion, to contain cartridges, also to provide themselves of cloth or leather similarly fitted. By this means he succeeded in weight over the body, affording also some sort of protection aga fire, and enabling the soldier to carry from 100 to 150 rounds of more with greater ease and advantage than when tumbled in bul sack, and mixed up with its contents.