Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

- [ ] Coloured covers/ Couverture de couleur
- [ ] Covers damaged/ Couverture endommagée
- [ ] Covers restored and/or laminated/ Couverture restaurée et/ou pelliculée
- [ ] Cover title missing/ Le titre de couverture manque
- [ ] Coloured maps/ Cartes géographiques en couleur
- [ ] Coloured ink (i.e. other than blue or black)/ Encre de couleur (i.e. autre que bleue ou noire)
- [ ] Coloured plates and/or illustrations/ Planches et/ou illustrations en couleur
- [x] Bound with other material/ Relié avec d'autres documents
- [x] Tight binding may cause shadows or distortion along interior margin/ La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure
- [ ] Blank leaves added during restoration may appear within the text. Whenever possible, these have been omitted from filming/ Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.

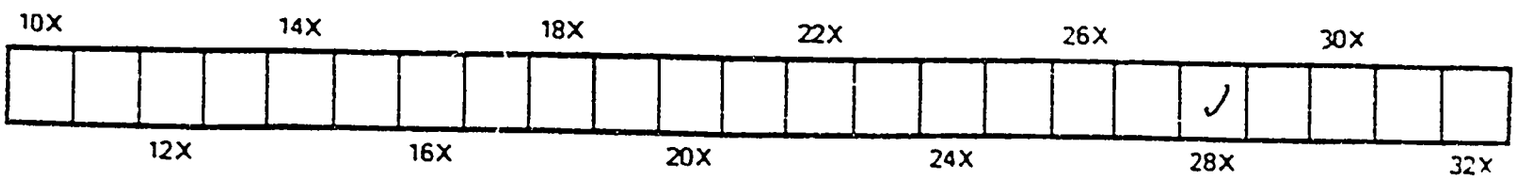
- [ ] Coloured pages/ Pages de couleur
- [ ] Pages damaged/ Pages endommagées
- [ ] Pages restored and/or laminated/ Pages restaurées et/ou pelliculées
- [x] Pages discoloured, stained or foxed/ Pages décolorées, tachetées ou piquées
- [ ] Pages detached/ Pages détachées
- [x] Showthrough/ Transparence
- [x] Quality of print varies/ Qualité inégale de l'impression
- [x] Continuous pagination/ Pagination continue
- [ ] Includes index(es)/ Comprend un (des) index

Title on header taken from:/ Le titre de l'en-tête provient:

- [ ] Title page of issue/ Page de titre de la livraison
- [ ] Caption of issue/ Titre de départ de la livraison
- [ ] Masthead/ Générique (périodiques) de la livraison

- [ ] Additional comments:/ Commentaires supplémentaires:

This item is filmed at the reduction ratio checked below/
Ce document est filmé au taux de réduction indiqué ci-dessous.



The Volunteer Review

AND MILITARY AND NAVAL GAZETTE.

A Journal Devoted to the Interests of the Military and Naval Forces of the Dominion of Canada

VOL. VII. OTTAWA, (CANADA,) TUESDAY, MARCH 18, 1873. No 11.

NEWS OF THE WEEK.

English advices of the 1st March state that a testimonial banquet was given last evening to the Hon. Peter John Locke King, the eminent English politician and member of Parliament. Five hundred persons were present, includidg Messrs. Gladstone and Cardwell. A number of speeches were delivered. Gladstone's was the occasion of much comment; in the course of his remarks the Premier adverted to the Irish Educatien Bill recently introduced in Parliament, and intimated that the Government would consent to modifications which would not better the Bill, in order to avoid the adoption of any worse measure. In concluding his remarks upon this subject, Mr. Gladstone said, "When the hour of the dissolution of the Ministry arrives, we will be ready to retire, but we will not needlessly abandon our posts."

A despatch from Berlin to the London *Times* says that many Russian officers and diplomatists left St. Petersburg for Asia, and probably the Khiva campaign will commence at an early day.

An official despatch from Berlin to the London *Times* says the Government of France has officially given Germany financial guarantees for the payment at the designated time of the last milliard of the war indemnity, and that negotiations between the two Governments for the entire evacuation of French territory by German troops at an early day have already been commenced.

The *Daily Telegraph* of this morning has a special despatch from Madrid stating that the streets in the vicinity of the palace of the Cortes were thronged with people during the session of the Assembly yesterday and much excitement prevailed. Detachments of the Civic Guards were stationed at various strategic points in anticipation of an outbreak. The same despatch says that Senor Figueras, President of the Council, will to-day propose the dissolution of the Assembly.

Col. Egerton Leigh, Conservative candidate, has been elected member of Parliament for Middle Cheshire.

A contradiction is given to the report from Madrid that the Spanish Government has received an intimation that the European powers will jointly refuse to continue diplomatic relation with Spain if a Federal Republic is proclaimed.

In the House of Commons on Tuesday, the 11th inst. Mr. Gladstone's Irish Educational Bill was rejected by a majority of *three votes* in a full house; he has since waited on the Queen with his resignation, but it is extremely doubtful whether the Conservative party, with such a leader as D'Israli could manage the present House. Reports state that a *replatrage* of the old material with Grenville at its head will be the *dernier resort* of the Whig Radicals—it will most decidedly be a change for the worse.

The most joyful intelligence which could be received throughout the outlying provinces of the Empire would be that of the political death of the miserable *doctrinaries* who had done more to lower England in the scale of nations in their four unlucky years of tenure of office, than her enemies could accomplish in as many centuries. The dissolution of the presen House of Commons is a foregone conclusion, and the new franchise in the hands of the sober working man will give the conservatives a decided majority by which some of the errors perpetrated by the Whig Radicals may be retrieved.

Advices from Gibralter states that 200 carbineers attached to the Spanish prison at San Roque, a city of Andalusia, 7 miles north-west of Gibraltar, attempted to create a rising in favour of Don Carlos, but the insurrectionary demonstration was suppressed and the offenders imprisoned.

The Committee of the Assembly having charge of President Figueras' bill for the dissolution of the Assembly and other purposes are still in conference with the Ministry. A compromise is sought by which the threatened crisis may be averted. At a late hour last night nothing had been made public concerning the probable issue of the conference.

Among reports current in Madrid is one to the effect that a mixed directory will be appointed to assume control of the Government. The members mentioned are Figueras, Reviero, Orenz, Martos and Castelar. The Government will be styled Pure Republican.

A despatch from the Provinces says that they were undisturbed by the movements of Carlists and reports state that quiet prevails. A band of men which was attempting to leave the Province of Madrid to join the Carlist forces were overtaken yesterday by Government troops and dispersed after a short conflict. Fifteen of the band, including its chief were taken.

A despatch from Pampeluna, under date of the 12th says their is no truth in the reports which have been current for some time that the Carlists are besieging that place. The insurrectionists cut the telegraph lines and railroads, severing the communication with the town, and then spread false reports, but at no time has it been in danger of falling into their hands. The Carlist force in the Province of Navarre does not number 3.000 men. Gen. Norillas arrived at Lagrono yesterday and immediately assumed the command of the army of the North.

The debate on the bill dissolving the Assembly, convoking the constituent Cortes, and providing for elections for members of the latter, opened in the Assembly yesterday. The President of the Chamber left the chair and made a patriotic speech, declaring that he should not oppose the Government's determination to dissolve the Assembly and call a constituent Cortes. Prime Minister Figueras exhorted the Liberals to pursue a conciliatory course, and urged Conservatives to trust in the Republic Assembly. Voted to take the bill into consideration, 186 yeas to 19 nays.

A large crowd of people in front of the Hall, on learning the result of the vote, gave repeated cheers for the Republic.

The *Imperciel* says the vote is a death blow to the Radical pary. It is expected Henri, Mortos, Sorroska and Griro, who voted against the Government, will resign.

ON THE BEST DETAIL FORMATION FOR THE NEW INFANTRY TACTICS.

BY J. H. A. MACDONALD.

Lieutenant Colonel Queen's Edinburgh, R. V. Brigade.

(*Continued from Page* 111)

But before going to this, let me say a word about "touch." If the reader is not already persuaded that the old system of close touch ought to be abolished, I despair of being able to convince him of this by argument. It is essentially a bowling green principle for retaining distance and dressing, and is based on a most unsound idea of the possibility of mathematical exactitude of movement. Thus the recruit at drill is treated as if every loss of dressing or of touch were a fault, and as if he were bound to recover it mechanically without the of his eyesight. The loss of dressing or touch may be no fault at all, and in ninety nine cases out of one hundred, where it is the result of fault. it is not the fault of the men in whom it is first apparent. What is wanted in the training of the soldier is not so much to attempt to bully him into never losing dressing or touch. That is impossible. It ought rather to be assumed that they must be lost sometimes, and he should be taught how to recover himself neatly, Nay, I go further and assert, that the perfection of movement for the soldier will never be attained until he is given the room to enable him to go a little out of the direct line, without deranging his company, and it is encouraged to do so when circumstances require it. By this I mean, that when men are marched overground covered with small obstructions, it should not be necessary for them either to stumble over these, or to fall back so as to get round them, and then double up, thus breaking up the present connection by touch, but that the company should have such flexibility of form as to enable it to pass these without any derangement whatever. simply by the men availing themselves of the freedom allowed them by there being spaces between them. The great fault of the present system is that it ignores all obstacles which are not large enough to call for a command from those in charge of the men. It assumes the presence of large rocks or clumps of trees, but not of boulders or stumps; of corn ricks, but not of stooks; of sheets of water, but not of ruts and puddles. There is provision made for passing obstacles that are so prominent that the commander will see them, and give orders, but none for passing those that may come in the way of an individual soldier. In fact, the old mathematical idea is adhered to. Many men are treated as the geometric line, from which parts may be cut off as the necessity of the case may require. But each man in the line is treated merely as a point without breadth or length, as to which it is quite unnecessary to make any arrangements to enable it to pass obstacles. This should not be so. Both the steadiness of the whole and the saving of the energy of each part are dependent upon consideration being given to obstacles, however small, and formations being devised to enable the individual men to pass obstructions with the least derangement to the company and the least wear and tear to themselves I cannot better express what is wanted than in the words of Colonel Lumley Graham of the 18th Royal Irish when pleading against "touch,"—total absence of constraint in the position of the soldier, both when halted and on the march so that he may be able to use his arms and legs to the greatest advantage."* If this end is to be attained, touch *must* be abolished, and that it is essential to attain it admits of no doubt. As long as "touch" is retained, there are only two ways in which the individual soldier can act when passing bad ground. He must either force himself over difficulties as best he can, or he must break rules and lose touch, either by lurching to one side and bumping his comrade, or by falling to the rear, going round the obstacle and then coming up again. There should be no need for this, and the adoption of the four deep formation would put an end to it altogether; men marching in fours deep, with arm's length distance, could pass obstacles without difficulty to themselves, and without deranging the other "fours" in any way.

And now, let us see how working by four deep formation would answer in detail. In the first place it would remove the last excuse that remains for the retention of what Colonel Lumley Graham calls an "arbitrary" and what I call an "artificial" front. There is nothing in the whole of our present drill system more objectionable and uncalled for than the tyrannical dominion accorded to that useless idol *Front*. That drill should be conducted as against an enemy, and that it is needful to keep a stout front to him, I admit; but I deny altogether that, in order to do this, a battalion must have an artificial front fastened upon it, so as to hamper its freedom of movement. There is no need arbitrarily to fix a front and back to a body of soldiers. If in real warfare the actual position of the enemy is not known at a particular time, of what avail is it that a battalion or a company has a particular side that is called the Front? And if the position of the enemy is known, what need is there to make it a matter of study, to bring one arbitrarily chosen side of a battalion or company towards the enemy, when there is no true difference between that side and the other? Why should artificial complications be devised for large bodies of troops, which would never be thought of by sensible men, if dealing with a small number? Let me use here an illustration that I formerly gave in one of the Military Gazettes in answer to the objections of an old soldier to my proposal, published in 1867, to abolish artificial fronts:—

"If twenty files of soldiers marching down a street (in company) against a town mob, suddenly find the mob, which they expected to be in front of them, rush in at the end of the street behind them, their natural procedure, to meet the mob, would be to turn about simply, and so repel them. What I, and those who think with me believe is, that this, which is the natural mode of procedure in the case of a few men, is also the natural mode, however large the body of men may be, and that if the natural mode is at the same time a workable mode, it should be followed in preference to any other artificial mode."

Nothing could more plainly show the artificiality of "Front" than this, that the expressions "Front" and "Flank" are often applied in the "Field Exercise" itself, when speaking of tactics, not to the position of the enemy but to the battalion abstractedly. For example, "Front turn" by no means implies that when the turn has been made the battalion is truly fronting the enemy, although according to theory it should do so. Again, "Flank march" by no means implies that a body of troops is being marched to a flank as regards the position of the enemy. Instead of this, on two separate occasions the "Field Exercise"* speaks of *flank march* being a useful way of effecting an *advance or retreat*, a mode of expression more Hibernian than clear.

Can this tyrannical bugbear not be got rid of, and the commanding officer be allowed to form his front as he pleases? If he can be trusted to dispose his men to fight the enemy. he surely can be trusted to fix their front for them. "Right in front" and "Left in front" are gone, and no one wishes them back. Would it not be well to send "Front" after them? If, so early as 1833, when all was still as stiff and rigid as possible, this was laid down; "Battalions must know how to perform the countermarch, but otherwise, both in Exercise and in the real practise of troops in the field, they should be so prepared as to *render it immaterial which rank is in front.*"(*l*) it is surely time now, in 1872, to consider whether this exception should be made the rule. And nothing could be more simple, particularly if the four deep formation well adopted. And the simple formula is this. In order to form the two line rank as at present—on the word 'Two deep,' *Second and fourth men of section of four, step to the left and forward*, in order to form again into four deep, *The same men* (that is the left man of each two) *step back and to the right.* To move to the right or left, the company being already in fours, the order would simply be *Right Turn* or *Left Turn*. Whenever the temporary duty for which two deep had been formed was over, the alternate men who come up to form two deep would fall back into four deep at once. The diagram shows, that the order in which the men stand to one another is always the same whichever way they are turned.

* Field Exercise, 1870, pp, 116 and 275.

(*l*) Field Exercise, 1833, p. 96.

[To be Continued.]

* A new system of tactics, 1867

RUSSIAN FORCES IN THE CASPIAN SEA.—The Cologne *Gazette* gives an account of the Russian forces in Central Asia. On the Caspian Sea Russia has seventeen steamers of, together, 980 horse power and 4400 tons, and seventeen sailing vessels of together 125[illegible] tons. This fleet is considered sufficient to transport in a very short time half, if not the whole of a division across the Caspian Sea. On the Sea of Aral are stated to be six Russian steamers of 180 horse power and 500 tons. The regular forces which have been advanced to the Russian frontier districts consists of 18 battalions and 4 batteries, to which, however, are to be added considerable contingents of the Tshernomic and Caucasian line Cossacks. In reality this force is to be considered only as the vanguard of the Russo-Asiatic army. After the complete subjection of the Caucasus, the main body of that army is now the so called Army of the Caucasus, of which the front is contfnuously and exclusively directed towards Asia, and which may be transported at any given moment to Central Asia by the fleet of the Caspian Sea. This explains why that army has not been dissolved after the subjection of the population of the Caucasus. It is composed now of 6 divisions of infantry, 1 division of cavalry, 31 batteries with 167 cannon, 2 battalions of sappers and miners, and 36 garrison battalions—altogether, when on the war footing 163,759 men, of whom 90,000 to 100,000 may be put in the field immediately. One of the newly formed railway battalions has already been joined to that army.

THE EMPLOYMENT OF MITRAILLEURS DURING THE RECENT WAR, AND THEIR USE IN FUTURE WARS.

By Lieutenant Colonel H. C. Fletcher, Scots Fusilier Guards.

In bringing before your notice the subject of the employment of the Gatling gun in war, I wish it to be understood that I have little or nothing to say that is original, and have no dogmatic opinions to offer, founded either on carefully constructed theories or on extended practice. I have merely endeavored to collate from various documents and especially from the reports of the War Office Committee, of which Colonel Wray is President, and of which I have the honor to be one of its members, the opinions for and against the employment of this description of weapon, and the reasons deduced from the examination of oral and written evidences for its adoption into, or rejection from the category of military arms.

The mechanical construction of the gun has been already carefully described in a paper contributed to this Institution by Mr. Gatling (see vol. xiv., p. 504, *et seq*.), and if not readily understood, will readily be comprehended on an inspection of the drawings kindly placed at my disposed by the Secretary for War; and on examination of the gun itself, also lent to the Institution for the purpose of illustrating this paper.

The subject of the employment of mitrailleurs in the wars of the future has also been very ably dealt with by *Major* Fosbery, V. C., in a paper communicated by him to this Institution (see vol. xiii. p. 539, *et seq*.); and the only excuse I can offer for again bringing it before the notice of the members of this Institution, lies in the fresh light that has been thrown on the merits or demerits of the mitrailleurs during the recent campaigns between France and Germany, where they were for the first time extensively used, rnd from the fact, regretted by Major Fosbery, that his lecture was not followed by a discussion, which would probably have elicited some valuable opinions. On these grounds I have ventured to re-open the subject, and with that view purpose to lay before you a summary of the several arguments for and against the adoption into the service of the machine gun, embracing generally under that name the Gatling, preferred by Colonel Wray's Committee, and the French mitrailleurs.

The idea of machine guns is not new; weapons somewhat resembling in principle the present Gatling Battery, were manufactured in the early part of the sixteenth century. They were known as orgues or orgels, and the term is thus defined by M. Remi in his "Memoires de l'Artilery." "An orgue is a machine composed of several musket barrels fastened together, and used for the defence of breaches and entrenchments on account of the possibility of firing from them many shots at once." Of these orgues specimens still exist in Germany. They are specially mentioned by Weigel in his description of the arsenal at Nuremberg, in 1698, and are called Todtenorgels, on account of the deadly power of the thirty three barrels of which each were composed (*l*). Probably, as was the case with revolvers at that early period, defects in manufacturing skill prevented their perfection; whilst, although some of them appear to have been loaded at the breech, no attempt was made to secure continuity of fire, such as is possessed by the modern Gatling Gun. In another and most important respect, the old machine guns were defective. The method of inserting the charge in rigid cartridge cases were unknown, and, as Major Fosbery points out, the serviceability of this description of weapon has mainly resulted from the adoption of the metal cartridge case of comparatively recent invention.

It is not, however, with the history of mitrailleurs that I propose to deal; allusion to it was necessary, first, to show that these arms were known to our forefathers, and were by them recognized for serviceable military purposes; and, secondly, to meet the objection which might be raised against them that they have never played a prominent part in former wars, by pointing out that although the principle might have been recognized, its application was defective.

The real point at issue is, whether the best form of the machine gun, which, assuming the Report of Colonel Wray's Committee to be correct, is that known as the Gatling, is a weapon which ought to find its place in modern warfare. That it posseses fearfully destructive powers, no one who ever seen it fired, can doubt; but whether it should, in accordance with its greatest admirers, take the place of the lighter artillery, whether it should supplement that arm, as some who are more moderate would recommend, or whether it should be cast aside as a curious, but comparatively unserviceable weapon, as others would urge, are the questions that I would desire to present to you this evening.

In order to form just conclusions on this important subject, a knowledge of the grounds on which the admirers and the opponents of the mitrailleurs (to use the term as embracing the principle) found their opinions, is esaential; and, therefore, I propose to endeavor, first, to place before you in a few words the alleged reasons for, and against their extensive introduction into the Services, and then try to prove how far these reasons have been justified by the experiences of the late war.

To commence with the opinions of those most in favor of the arm, Major Fosbery in his paper (before alluded to) when advocating the adoption into our Services of the Montigny mitrailleurs, sums up their advantages and disadvantages in comparison with field artillery. He commences his argument by laying down the broad principle that in war as in peace, machinery should, as far as practicable, take the place of human labour. "If," he says, "it is possible, by means of a machine, not too liable to derangement, and not too complicated for the comprehension of the soldier, to make three or four men do the work of 120, the advantages must be self evident." Granting this hypothesis, it remains to be shown whether the result claimed has not already been attained by artillery, and whether, if guns are still further to replace men, an increase in field artillery would not fulfil the desired object.

Major Fosbery considers that room exists for the employment of an intermediate weapon between infantry and artillery, and infers that at the shorter ranges the mitrailleurs will be a more certain, and, consequently, more effective arm than the field guns. He instances the experiments made before the *Segment and Shrapnel Shell Committee* in 1869, where, to judge from the report, the results of artillery fire against infantry—but feebly entrenched—was remarkably slight, and where the numerous faulty rounds, consequent generally on defective fuzes, showed that there are in artillery fire important elements of error, irrespective of inaccuracies. Greater rapidity of fire is claimed for the mitrailleur as compared with the field gun, measuring that rapidity by the number of shots compared with the number of pieces of segment, or bullets in shrapnel; and if at the longer ranges, say at 1,400 or 2,000 yards, the advantage lies with the field gun; at ranges under 1,200 yards, the conditions are, by Major Fosbery, believed to be reversed. The mitrailleur if exposed to artlery fire at the longer distance, would, consequently, probably be knocked over, whilst if approached by that arm within its effective range, it would inflict serious injury on the horses and gun detachments,

Mr. Gatling, in the paper before referred to, presses the utility of his invention to a point beyond Major Fosbery. He advocates powerful long range Gatlings to compete with field guns, and thus sums up their advantages:—

1. Equal range, and greater accuracy and precision than field guns.
2. Rapidity and continuity of fire, viz. 200 shots per minute, each bullet weighing a half pound.
3. No re-sighting or no re-laying between each discharge there being little or no recoil.
4. Lightness.
5. Great power of ricochet fire.
6. Economy in money, in horses, and in men.

In his pamphlet, Mr. Gatling still further urges the claims of his gun in comparison with infantry. He considers it as the means of revolutionizing in a great degree the present modes of warfare. A few men furnished with those death dealing engines will, according to his opinion, be able to defeat thousands armed with ordinary weapons. consequently, their use will, in a great degree, supersede the necessity for large armies.

He considers the accuracy of the Gatling fire will, shot for shot, be much greater than that of the infantry, on account of its greater steadiness, and its want of nerves, whilst the exposure of life, owing to the small number of men necessary for the service of the gun, will be comparatively very slight.

Having thus briefly alluded to the opinions ably set forth by Mr. Fosbery and Mr. Gatling, I propose to detail the reasons, founded on experiment, which induced Colonel Wray's committee to reject for land Service the larger Gatling gun, and to recognize the smaller arm, throwing a bullet of similar size to that of the new army rifle. In their report of the 28th October, 1870, the Committee point out the difference of opinion which existed as to the value of these arms in Prussia and in France, the former being adverse to them on the ground that the narrow sphere within which their effect was restricted did not compensate for the *personnel* and *material* required in serving them, whilst the latter taking a different view, adopted the mitraillurs in comparatively large numbers. The Committee then justify their preference for the Gatling over the Montigny, and having selected the former, state what they consider to be theis uses in warfare. As this part of the report summarizes generally the opinion of those who hold a moderate view on this disputed question, I think it well to read it *in extenso*:—

(To be continued.)

(*l*) Since writing this paper, the author's attention has been called by Captain H. Brackenbury, R. A., to the employment of weapons somewhat resembling in principle the mitrailleure as early as the year 1382. They were termed ribandeause or ribaldequins, and were used by the men of Ghent in their attack on Bruges.

INFANTY TACTICS AND THE ORDER OF BATTLE.

The following excellent paper on infantry tactics and the order of battle, is from the *Journal of the Royal United Service Institution*, to which work it has been contributed by Lieut.-Colonel W. J. Williams, of the Royal Artillery :—

1. *Swarms of Skirmishers and Extended Supports.*

Some of our students of tactics now recommended to us swarms of skirmishers and ranks of opened out files in support. No closed formation, it is said, can live under fire; we must attack and defend, especially we must attack, with swarms of skirmishers; and supports must be extended. These opinions seem to us to be zealous exaggerations. In their impatience of our old steady drill, and of our regulation of withdrawing skirmishers that we may have a steady line in front, some of our reformers are carried too far. They go with those German authors who have departed farthest from what is still the German regulation; we would rather hold with him who inspired the "retrospect of the retrospect." It was the German regulation which prevailed against the French army; the looser order of battle was tried only against the levies which France put into the field after her army was lost.

If we examine the theories of swarms of skirmishers and of opened-out supports, we find both theories wanting. Swarms of skirmisher is not a much safer formation in line; and opened-out supports must suffer as much as supports with closed files. It is difficult to fix the exact meaning of swarms of skirmishers; but we may fairly suppose that swarms of skirmishers would cover about the same front as would be covered by the same number of men in line. If the skirmishers were not equally distributed along their front, and as their loss, at that particular time, would be a little less than the loss of a line; but the tendency would be to an equal distribution along the front, and as the skirmishers should be more equally distributed, they would suffer more loss. That the theory for opening out the files of supports to attain to greater safety is fallacious, becomes evident to us by the consideration that in infantry fighting supports are not aimed at. By rain of fire passing over the skirmishers a company of 100 men in support would suffer equally, whether it were on a front of 40 paces or of 80, or of 120; each file will still be in the rain.

There is no doubt that the term "skirmishing swarms," not swarms of skirmishers gives a true picture of what the Germans saw when they looked at their first line in close battle. They saw that their first line, with its reinforcements all in, had lost its organization of companies; and they saw that the men did not try to dress in ranks, but worked their way here and there in groups. This disorder was properly named the "skirmisher-swarm.,, We do not deny the power of the skirmisher-swarm; but we believe that swarms of skirmishers, sent out at first, would be wasted by fire until they were powerless. We allow that no regular formation can be maintained in the front line of battle; but we deny the neccessity and the advisableness of adopting a loose array for our supports.

The true principle of modern Infantry tactics is to expose few men to the fire of the enemy, until the enemy being close to us, or we being close to the enemy, our strength is wanted. The object is to bring our strength close to the enemy. The issue must be decided, now as heretofore, by the threatening advance of superior numbers ready with the bayonet.

II. *Necessary Change in our Tactics.*

The new conditions of musketry fire necessitates one chief change in our infantry tactics. We must cease to close skirmishers on their supports, and to assemble skirmishers on their reserve.

Our field exercise aims at securing to us the effective delivery of our musketry fire; little or no care has been taken to provide against unnecessary loss in our ranks from the fire of the enemy. The regulations give us skirmishers in front of our line; but the skirmishers are to run away to the rear, when the enemy comes close to them, or when they come close to the enemy. At what distance from the enemy are our skirmishers to run away and leave our line bare? The flight of skirmishers, near the enemy, would ruin the steadiness of our line, if it did not immediately cause disaster. If our skirmishers were to come back to us at any safe distance from the enemy, our line would be exposed to the fire of skirmishers, and we would suffer more loss than we should inflict. In either case, we could deliver no fire during the flight of our skirmishers, whilst the fire of the enemy would not cease. We must never withdraw our skirmishers. Our skirmishers must be the first to meet the enemy. To make our skirmishers strong enough to meet the enemy, we must reinforce them. The skirmishers, reinforced by all that may be left of the battalion, must fight in a skirmisher swarm, that is to say, in line without regard to organization of Companies and without regard to dressing. We must not be disturbed by the sight of our skirmishers running away round our flanks to the rear; our minds should be filled with the idea of advancing.

III. *Order of Battle of a Brigade.*

A brigade should consist of three or of six battalions, because the normal order of battle of a brigade is three lines of equal strength. We will suppose a brigade consists of three battalions. A battalion should consist of eight companies; a company should consist of sixty files.

The normal order of battle of a brigade is is three lines of one battalion each. In the open there should be a distance of 300 yards between the first and second and between the second and third lines. In the open, and under fire, our first battalion would be exposed to unnecessary loss if the whole of it were placed in front from the commencement; we should therefore divide our first battalion on three lines. In the open then, and under fire, our brigade would stand on five lines. In front would be the two flank companies of the first battalion, at 150 yards in their rear would be Nos. 2 and 7 companies of the same battalion as supports, and at 150 yards in rear of the supports the remaining companies of the battalion in reserve. At 300 yards in rear of the reserve of the first line would be the second battalion in second line. A 300 yards in rear of the second line would be the third battalion in third line. The two flank companies of the first battalion should be extended on a line of 400 paces, the proper front of a battalion and of a brigade; the companies in support should remain, each company, in closed line the companies in reserve should be in line. The second and third battalions should be in lines. The brigade would thus stand on a front of 400 paces; and in the open, and under fire, but distant from the enemy, the brigade would have a depth of 900 yards.

In this order of battle there is nothing new to our field exercise. We are accustomed to see a brigade formed with its three battalions on one line, or at most, on two lines; but these shallow formations are due to our practice of holding too great a front, and of dispensing, partly or wholly, with second or third lines. Shallow formations would avail us, and would perhaps be necessary, against a numerous enemy, inferior in *morale* and in arms; but only the deeper formation of battalion in rear of battalion could give us the chance of showing the value of our soldiers in a fair field against an enemy worthy of our best endeavours.

IV. *Defence.*

In the open, a brigade would stand in its defence in five lines ordered as above stated. The flank companies of the first battalion would stand on the line intended to be defended. All the formations would be in line, except the two companies in front, which would be extended on a line of 400 paces. In this order the brigade would remain under the cannon fire preceding the attack of the enemy. This first cannon fire would be aimed mostly at our guns, which would be in line with and on the flanks of our two companies in front. Our infantry would suffer very little from this first fire; whilst they would all be near enough to come up in time to meet the enemy on the line selected for defence.

Our infantry should still be withheld as long as possible from the cannon fire, which the enemy would bring to bear upon us from his second artillery positions taken up nearer to our front. Only upon the appearance of the infantry of the enemy within 700 yards of our front, should two companies commence to fire and our nearest formations commence to close up. Although they would still for some time be exposed to the cannon fire which the enemy would direct upon us across the front of his attack, our second and third lines must commence their advance as soon as our two companies have opened fire.

Upon the nearer approach of the enemy it would be necessary to reinforce our two companies with the supports; to move up the supports nearer to the skirmishers, and the reserve nearer to the supports; to reinforce the skirmishers with two more companies, and then to throw the two remaining companies into the skirmisher swarm. These reinforcements should not be made too soon. Meanwhile, the second and third lines should have continued their advance, and in doing so the third line have much lessened its ditance from the second line. The third line, on approaching the front should form double company columns. Upon the arrival of the second line at a distance of fifty yards from the front, and the arrival of the third line at fifty yards from the second line, both lines should advance. The first line, in skirmish-swarm, would then get up and lead the charge.

As we are here considering the fighting of a brigade only with reference to a certain order of battle, we do not propose to treat of attacks on a flank of the enemy striving to break in upon our front. We shall content ourselves with saying that some action against a flank of the attack of the enemy is almost necessary to the safety of the defence.

V. *Attack.*

In the open, a brigade should advance with its three battalions deployed in three

lines at distances of 300 yards apart. This would certainly be the best formation in which to advance under cannon fire.

On arrival of the leading battalions within musketry range or 700 yards, of the enemy, the two flank companies should run out, extending from their outer flanks lie down at 300 yards to the front and fire; Nos. 2 and 7 companies should run out, each company in line, and lie down at 150 yards to the front; and the remaining four companies should lie down in line. The second and third lines should continue their advance. The skirmishers would then be at 400 yards distance from the enemy; the supports and reserves at distances of 150 yards to the rear; and the second and third lines would be closing up.

There should be as little delay as possible in the advance of the brigade. The object is only to get within charging distance of the enemy; to waste the enemy by fire is the proper duty of artillery, both before and during the attack. The skirmishers should gain ground by short runs, and always lie down to fire. The supports, advancing always at the double, and always lying down when not advancing, should gradually draw nearer to the skirmishers and reinforce them when they need reinforcement. The reserve, advancing always at the double, and always lying down when not advancing, should gradually draw nearer to the supports and replace them, and then reinforce the skirmishers. The second line should draw nearer to the first line, and the third line nearer to the second line, both lines lying down when not on the move. The third line should form double company columns on its passage out of the zone of cannon fire. All the formations in rear must conform with the operations of the skirmishers; and, at any time during the advance, every formation in rear should be near enough to support the formation next in front.

Before the arrival of our skirmishers within charging distance or 50 yards of the enemy, the whole of the first line should be in skirmisher swarm. When the skirmisher swarm is within charging distance of the enemy, the advance of the second and third lines, at distances of fifty yards, will cause the skirmisher swarm to get up and lead the charge of the brigade.

What is urged against this method of attack is that the leading battalion, sent up to the front in successive detachments to spread along a line of 400 paces, would be a confused swarm, out of hand of the battalion commander, out of hand of the captains, and not to be trusted to lead the charge. To this we reply that there is no other practicable method of advancing a brigade through the open, to bring it into contact with the enemy; and that men can be trained to act in a skirmisher swarm as well as they could act in that formation which, within fifty yards of the enemy, should represent what on parade is a line. The impulse to charge when at close quarters can not be communicated by word of command of battalion commander or of captain, nor by sound of bugle, but only by the sight of a wavering enemy, or the resolute advance of a good support. The skirmisher swarms, leavened by its officers, would act, not by word of command, but of its own impulse. It is vain now to talk of any better line in front. No line could be marched up to the enemy; and if a perfect line could fall from the skies to find itself near the enemy, it would quickly assume the shape of a skirmisher swarm. The disorganisation of companies in the leading battalion must not be held to be an insuperable objection to the only practical method of advancing a brigade to attack the enemy.

Again, it is objected that the skirmisher swarm would not be able to manœuvre. To this we reply that the skirmisher swarm would have only to advance, and that it could reform at leisure when its work was done. Infantry have very little manœuvring to do in battle.

The objection that to drill for a loose method of fighting would be injurious to discipline, seems almost unworthy of confutation. Much discipline is no doubt imparted by steady drill, and our soldiers may still be drilled to approach perfection, but both officers and soldiers may be taught how to fight. A logical deduction from this objection is, that the discipline of our soldiers is partly dependent upon their stupidity.

VI. *Double Company Columns.*

By double company columns we mean quarter columns of four half companies. A battalion in line would form four double company columns on the right half companies of right companies; or two central double company columns on the right half companies of Nos. 3 and 5 companies, the two companies on each flank remaining deployed, or double company columns in the right or the left wing only, the other wing remaining deployed. The change of formation could be made on the move, at the halt, or with the right half companies of right companies lying down. The columns would usually remain in line at deploying intervals, under the direction of the battalion commander; but a senior captain should command each double company column much as, in cavalry, a captain commands a squadron.

We advocate the formation of double company columns in third line not under cannon-fire. This formation would undoubtedly be the best for the first and second lines to rally upon should they be repulsed in attack or defence. We could usually form one third line in double company columns when it had arrived within 300 yards of the enemy; for the cross cannon fire of the enemy could seldom be brought to bear on us so close to him. Covered by two lines in front the third line would always suffer less from musketry fire when in company columns than when in line.

VII. *Conclusion.*

The order of battle of a brigade being as we have stated above, brigades would be placed side by side, not one in rear of another, in defence. Artillery would be placed in the front line in the intervals of divisions, so that guns would be separated from guns by intervals of two battalions, or about 800 paces. Cavalry, and the reserve of artillery and infantry, would be independent of the general order of battle.

In attack, brigades should advance one in rear of another, on a front of 400 paces, rather than side by side. A rear brigade would advance, at 300 yards' distance from the rear of the brigade in front, in three lines, with distance of 300 yards; and close its lines and lessen its distance from the brigade in front during the advance. An attack should always be prepared by artillery, and then supported by artillery well advanced on the flanks. Deep attacks on a narrow front are the most favourable to the action of the artillery of the attack; and by deep attacks only can we reasonably hope to bring a superiority of force to bear upon the enemy. Two or more divisions attacking together would advance on a front of one division, or 800 paces; but 800 paces is the limit imposed upon the breadth of an attack, by the necessity of having artillery firing inwards across the flanks, in supports, and the necessity of arising in superior force upon the enemy in his lines.

AN AUSTRIAN OPINION OF PRUSSIAN TACTICS

One vaunts the skill of the Prussian in adopting, even during the course of a campaign, new methods of fighting which have been acknowledged as practicable. If this is on the one hand a proof of the great suppleness of the Prussian army; if it shows as clear as daylight that it is capable of conforming its actions and its tactics to its adversary of the moment, one may also on the other hand ask oneself, if this aptitude for rapidly substituting new formations for those which are allowed to be impracticable or bad, is really a science peculiar to the Prussian generals, or whether these discoveries should not to a great extent be attributed to chance.

In making a closer examination of this question, one may see that halo of glory which crowns the helmet of the Prussian generals fading. Let us admit that up to the present, favoured by good fortune with a precedent (far be it from us to desire on that account to deny their real merit), and that that magical initiative which they have always known how to make use of, has not been one of the least items connected with their success. According to all the information which has been collected up till now, chance has been just as much a helping genius for this brilliant army, as fortune has been a smiling goddess to it.

But this does not take away one atom of the merit which the Prussians incontestably possess of finding out with marvellous perspecuity the advantages of the good things which chance reveals, and of taking advantage of them when they have recognized them as practicable.

The great good fortune of the Prussians may be partly attributed to the fact, that their superior officers, whilst having the firm determination and the energy to carry out unflinchingly the orders which have been given them, nevertheless reserve the right of judging the advantages which formations other than those in accordance with and prescribed by the regulations may, according to circumstances, present, and that they never have that narrowness of mind which, whilst aware that there is something better to be done, still prefers to stick to that which is mediocre or bad simply because it is the regulation, as is the case elsewhere. —*Wehr Zeitung.*

The tramway between Lisbon and Pintra is to be opened to public travel in a fortnight.

The master printers throughout Germany to-day (March 8.) locked out all their employes who are unionists.

The Pope, replying to an address presented to him to-day, said that reconciliation with the Italian Government was impossible; God would punish the invaders of his dominions. As Catholic men are unshakeable in their faith, he had the utmost confidence in the ultimate triumph of the Church.

CONTENTS OF No. 10, VOL. VII.

The Volunteer Review,

AND

MILITARY AND NAVAL GAZETTE.

"Unbribed, unbought, our swords we draw,
To guard the Monarch, fence the Law."

OTTAWA, TUESDAY, MARCH 18, 1873.

TO CORRESPONDENTS.—Letters addressed to either the Editor or Publisher, as well as Communications intended for publication, must, invariably, be *pre-paid*. Correspondents will also bear in mind that one end of the envelope should be left open, and in the corner the words "Printer's copy" written; and a two or five cent stamp (according to the weight of the communication) placed thereon will pay the postage

THERE can be very little doubt of the interesting scientific fact that our Yankee cousins lay claim to the invention of *jack knives*, and in fact to all useful as well as ornamental mechanical appliances. The New York *Mining and Engineering Journal* has an article on the "Gunpowder Problem," in which it is asserted, with characteristic modesty, that the late Colonel RODMAN invented the "pebble powder" now in use for the larger class of English artillery! We should regret exceedingly to deprive the late lamented and gallant officer of any credit which his undoubted scientific and mechanical skill entitled him to, but it can add nothing to his fame, nor is it intended for any other purpose than to flatter that diseased morbid national egotism for which the people of the United States are so notorious, to claim for the *mammoth* powder first used by him the credit of being the type from which the English *pebble* powder has been taken.

It is within our own remembrance that quite recently one of RODMAN'S *fifteen* inch guns was tried at Shoeburyness with the regular service charge of this boasted *mammoth* powder, and it proved itself deficient in energy, so that the shot hardly indented the plate which had been perforated by the same weight of shot and a less weight of English *pebble* powder. Whenever the English military or naval authorities had adopted those *American inventions*, they have always found to their cost that they were unreliable makeshifts involving the loss of large sums of money, as, for instance, the *Monitor* system in naval construction, as well as scores of similar humbugs.

There is, however, in the article referred to, which will be found in another column, two principles which are worthy of consideration. It is asserted that Colonel RODMAN, for want of mechanical facilities and proper material, was obliged to produce a powder which would give the required velocity without increasing materially the pressure on the gun; and secondly, that the use of a slow-burning powder would have the effect of decreasing the pressure at the breech and increasing it at the muzzle of the gun. In order to prove the truth of both these principles, the experience of the Woolwich *Infants* is referred to, and all their misfortunes traced to the use of "mammoth powder too violent for guns of this size."

As the thickness of metal decreases from the breech of a gun to the muzzle, it is evident that Colonel RODMAN argued from false premises if he sought to establish the truth of the theory in the article. The evidence that the greatest pressure is always exerted at the breech of the gun is too clear to admit of doubt. The very fact that the first action of combustion throws the inertia of the shot on the expanding gas, and that the examples adduced the *Woolwich* guns have proved the maximum velocity of the shot to be attained at 88 inches from the breech, the whole length of bore being 134 inches, and consequently the maximum pressure was attained before the shot had moved half the length of the bore is conclusive proof of that fact. With all due deference to our contemporary, the object the gallant officer had in view was the thorough combustion of the charge, and consequently the application of the whole force thereof within the gun. The Woolwich guns have not failed because the *pebble* powder was too violent, but from the vicious system of rifling adopted causing the shot to jam in the bore.

If a slow-burning gunpowder has the effect of increasing the pressure at the muzzle of the gun, it is the worst that can possibly be used, for it is at the muzzle a gun will fail first, and of this fact the gallant Colonel was practically aware that the experience gained by the history of Paixhan, and other guns in the United States Navy, painfully illustrated the folly of trusting to mere theoretical innovations; while it is evident his object was to economise the force while he secured its full power and equalized the pressure over the inferior material which he was obliged to employ in his guns.

We are of opinion that the cast iron used in the manufacture of United States artillery is the best article of its kind in the world; and if employed as indicated by Captain SELWYN, R.N., in his remarks on Commander DAWSON'S paper read before the "Royal United Service Institution," guns as strong as the *Woolwich Infant* could be obtained at half their cost, and the full value of the late lamented officer's invention fairly tested.

The principle on which the theory of the *perforate' prismatic powder* is founded is correct, but there has been no very extensive trial of its effects, while its adoption by Russia is no test whatever of its value.

In the employment of the artillery of modern times, it has become a matter of primary necessity to apply the whole force within the bore of the gun; and it does not argue a thorough knowledge of the mechanical aspects of the case to assume that the gun being given, it is necessary to invent a gunpowder whose force will be equal to the discharge of the shot while exerting only a minimum pressure on the gun, the absurdity of the position consisting in the idea that the same velocity can be acquired by the lesser force, the weight of shot being equal. Taking a RODMAN gun of 15 inches diameter and a gun built on the principle of the "Woolwich Infant" of the same bore, both will throw the same weight of shot, but it is evident the latter will bear the greater pressure and is by far the strongest gun. It certainly never entered the late Colonel RODMAN'S mind that he could invent a powder of sufficient force to give a velocity of 1320 feet per second to the shot from his gun without subjecting it to the same pressure as the stronger gun, and while we hope our neighbors will continue their experiments in order to obtain the best description of powder and that most capable of imparting the greatest velocity to the shot they will leave the idea of the adaptability of the power to the gun aside and endeavour to build guns capable of controlling the force applied by the proper combustion of powder. It is well known that the weight of projectiles is dependent on the size or diameter of the bore of the gun, that its velocity is dependent on the force applied by the gunpowder, and

the weight of that material to produce the necessary effect is also known. Under the circumstances, then, "the Gunpowder Problem" should present no insuperable difficulty for solution, beyond that of perfect combustion within the gun.

WE republish the very well written and talented paper on *The Employment of Mitrailleurs during the recent war, and their use in future wars*, read by Lieutenant-Colonel H C. FLETCHER, Scots' Fusilier Guards (now Military Secretary to His Excellency the Governor General of Canada), at the "Royal United Service Institution," on Monday the 22nd January, 1872, for the purpose of placing before our readers the best analytical description that has yet appeared of this much talked of weapon. For active operations in the field, it would seem to be solely adapted to the service with cavalry or the defence of passes, and it must be well covered either by an epaulement, gun pit or other defence; but its greatest value will be found in defending the dead angles of a fortified position, enfilading the exposed flank of a work and repelling attempts at storming.

From its light weight it will be the peculiar and appropriate artillery of the cavalry when on picket or reconnoitering duty, and its range will enable infantry to be kept at bay sufficiently long for all required purposes of reconnaisance, instead of employing *mounted riflemen*. Cavalry with those guns would be enabled to act with effect without destroying their distinctive characteristics, and it would be perfectly possible to train a sufficient number of the rank and file of each troop to man those guns, if necessary. The proportion of officers and men to a battery of *twelve* Gatling guns is about 72 all told, or say *six* men to each gun, exclusive of wagon drivers, officers, &c. It would not be a hard matter to find at least 24 men in every troop of fifty that could be easily trained to the service, and no cavalry officer should be allowed to attain the rank of lieutenant till he had proved himself competent to manage as well as command a Gatling battery. There would thus be saved the expense of a separate corps, while a higher standard of training would be introduced into the cavalry arm of the service. As it is possible the mitrailleur might be rendered available for service in Canada, the topographical developments of the country presenting many advantageous features for the use of such a weapon, and the cost being very much less than that of a nine-pounder field gun. It would be advisable to furnish one to each troop of cavalry on proof that they had the necessary number of men and officers competent to use it; but it would be necessary to simplify the equipment very much from that laid down in Colonel FLETCHER'S valuable paper. As there are under the arrangements detailed 2,208 cartridges carried with each gun, and only 4,500 in each S.A.A. cart, would it not be quite possible to dispense with the cart altogether, carrying the ammunition in the limber, as in our present field pieces, without interfering with the present provision by which the machine could go into action with its *six drums* filled, while the tumbril could be removed out of danger so as to avoid the fate of the ammunition wagon of the French Mitrailleur at Wessenberg? There can be no doubt but its equipment might be simplified so as to render it a valuable weapon for cavalry.

Colonel FLETCHER has done good service by pointing out the value of this weapon in such a convincing manner. The paper is worthy of his reputation.

"Another trial with the Lay torpedo came off to-day at the torpedo station at this place, but which, however, proved a decided failure. After running out from the shore a distance of half a mile, the gas was consumed, and the propelling powers at once ceased, and it became unmanageable. A boat was sent to it, and it was obliged to be towed to the shore, to the chargrin of its inventor, who at this trial intended to demonstrate to the Government officials beyond a doubt its capacity to run a distance of two miles, return and perform the mission of destroying an enemy's vessel, all of which its inventor claimed it would do at the first trial before a board of Army and Navy officers. It is singular that at every trial except the first an accident has happened. A large number of spectators were present to-day.—Special despatch to the New York *Times*, Newport, R.I., March 1."

THE above paragraph is exactly what we expected to learn of the ultimate fate of the *Torpedo* boats and of the system that our respected contemporary the United States *Army and Navy Journal* proclaimed as being the true Naval defence of a maratime country, and about which the scientific corps in the British Army and more than one officer in the Royal Navy declared their conviction that the Government were very remiss in not creating a *Torpedo* establishment where officers could be readily trained to the use of what was assumed to be a weapon superior to the guns of the iron clad monitors of the *Devastation* class.

It is not long since the United States *Army and Navy Journal* was quite trenchant on the stolidity or stupity of the British Government and people in only *servilely* copying the inventions of the scientists of the United States after said inventions had become effete and useless, owing to the march of improvement; and especially in this case of submarine attack and defence, it was triumphantly shewn that England was behind the times. The world has also had the experience of Lt. BRENNIL, R E, during a fortnight's residence in the States, and the great knowledge acquired in that time of the value of the *Torpedo* System as an agent in warfare destined to supersede altogether the use of artillery or armor-plating.

The total and inevitable break down of the whole hope of the system in the failure of Mr. LAY'S *Torpedo* boat is a telling rebuke to those reckless speculators who endeavour to overcome by mechanical means physical impossibilities. The simple proposition in the *Torpedo* system is to construct a machine which shall have all the attributes of human volition and manipulative skill.

It is quite possible for Mr. LAY or Captain ERICSSON to construct a machine, whether in boat form or otherwise, capable of moving a few fathoms on a mill pond and even there a limit will be reached when the weight of the shore cable or cables, made as they may be of the lightest material, alone will cause the machine to deviate from the direct course it may be directed on; but these people have never taken into account the motion of a vessel at sea, the rate at which waves will travel, the difficulty of keeping the *Torpedo* submerged, and the utter impossitility of directing such a machine with certainty in an estuary or river owing to the steam or tide race.

It is to be hoped that this complete failure of the so-called system will put a stop at once to all speculation on such an *ignus-fautus* in English Military and Naval circles, and that the practical minds of the officers of both services will be directed to the application of true mechanical principles in developing the artillery and constructing a sea worthy Navy.

The interests of the Empire will be best served by providing for England's wants by aid of English brains, and always remembering that the defence of Great Britain is not alone the sole duty of the Parent State.

THE question of the employment of steam on canals was solved successfully in Ireland as far back as 1848. In that year the *Grand Canal* Company employed barges propelled by steam on a canal the locks of which were only 100 x 20 x 5. The peculiar machinery employed consisted of what was known as the *helmet* boiler, in shape like the iron hat of the man-at arms of the sixteenth and seventeenth centuries; two cylinders with a stroke of three feet bolted on to the boiler, the heads of their piston rods working into a crank shaft on which two mitre wheels were staked and geared into corresponding mitres on the end of two propeller shafts, the propellers being about three feet in diameter working on each side of the rudder without in any way interfering with its motion.

The load of the barge was 90 tons; the space occupied by the machinery was 12 x 12 x 7 feet in the stern of the boat, which was built of iron to prevent accidents from fire. The fuel used was peat. The propeller towed three other barges, making a total load of nearly 400 tons, at the rate of four miles an hour in the prism of the canal, and they have been known to make twelve

miles per hour with full loads o the river Shannon, which expands into la ge lakes a few miles above where the Gran Canal in tersects it. The engines were high pres sure, nominal power, twelve ho se, capable of working with ease to seventy-fi ve. If our enterprising neighbors had their eyes open, they would discover all this witho ut the elaborate and unsatisfactory trials they have made, as detailed in the follo wing paragraph :—

"The commission authorized by the act of the State Legislature of New York to award a prize for the best mod e of steam propulsion, has submitted a re port which contains some interesting detail s of the experiments made. Three boats only made the three round trips required by the Act, and though several others made the attempt they fell short but a little. The jealousy and indisposition to give the ri ht of way to the steamers, on the part of the horse boatmen and lock tenders, caused delays of from one day to two and a half on each trip. The blockade of horse boats las t up during the epizootic, and the insufficie nt depth of water, also caused serious hindr ances on the experimental trips ; but in spite of the delays, the time made by the stea mboats was from 2 68 to 3 32 miles per ho ur, and the trip from Buffalo to Troy was brought in side of seven days, one boat ma king it on an average in five days and six hours when loaded. A saving from 20 to 2 3½ per cent. is also found in favor of steam, with a pros pect of increasing this percenta ge in actual service. This shews that the use of boats propelled by steam, on the tru nk canals, is entirely feasible, and with the adoption of a better system of locks, the d ys of horse boats will be numbered.— *Bost on Globe.*

The following paragraph fr om a Western exchange is worthy of attent ion, especially as Canada possesses the lar gest pine forests in the world ; and at the r ate they are being manufactured into lum ber, in a few years vast areas will be denu ded and barren which a little care might ma ke productive of a valuable material for do mestic use.

"The great increase in the price of pine lumber for the last few year s and the growing scarcety of the pine fores ts, as they never sprout again under ordin ary circumstanstances, leads to inquire if t here is no practical way of avoiding the c oming scarcity. We are already told that w ithin five years. Williamsport, the great Pe nnsylvania lumber market, will, as such, b e no more. The pine forests wi l all have be en cut down and sawed into lumber. It has occurred to me that a fact which accidenta lly came to my notice might be of use to y ou.

A party of hunters fr om Morristown, while on an excursion to Pike Co. Pa., a few weeks ago, were telling me the history of their exploits, and among other things one of them, a worker of wood, mentioned the fact that in all instances where pine forests had been cut down and tilled, if but once, a new growth of pines immediately sprang up, and in the ordinary course of time forests of pine equal to the old original growth covered the ground. Now, if the pine forests can all be renewed by once plowing, it seems to me a thing which should be generally known and recommended. If you desire, I can ascertain the names of parties in Pike County, who personally will vouch for these facts.—Morristown.

The following paragraph from *Broad Arrow* describing the launch of a most useful class of vessels, and of a description to be particularly adapted to our rivers and lakes. It is not stated whether they are adapted for the application of sail power, but as they carry only four days coal, it is evident they must depend on some other motive power for cruising or operations extending over a longer period.

In order to adapt these vessels to the lake service, they should have greater coal capacity, an additional 100 tons of stowage would not very materially add to the size or draught of the vessels which should in no case exceed six feet, it might be found by adding five feet to length and the same to beam. But the disposition would prevent their use on two of our most important canals. The Champlain with locks of 133x30 x5, and the Rideau Canal of 130x33x5—so hat it were better to construct vessels of a larger size for lake service, and leave those for the use of the canals.

The St. Lawrence and Welland Canal (will when completed) be equal to the admission of vessels of 180 feet keel, 35 feet beam, and *eight* feet draught, which would give vessels of nearly 500 tons as about the size required for our Lake fleet. An increase in the number of this class of vessels is very desirable, because without them the larger vessels of the British fleet would be totally useless in coast operations.

It is a matter for doubt as to whether the bilge keels will be a good substitute under sail, for the *keel proper*. And we could prefer having the vessels fitted out as *twin* screw propellers, principally for the facility of turning. The greatest drawbacks however, are the small capacity for coal stowage, because it limits their operations altogether.

"There was a double launch at Chatham Dockyard on Tuesday (11th Feburary) the vessels being the *Ariel* and the *Zephyr*. Both are built upon what is known as the composite principle, and are of the *Coquette* class, the only difference in those vessels being that they are only supplied with an iron keel plate ; and have no keel, and are consequently flat bottomed, but to make up for this they are provided with two "bilge kees." The dimensions of the vessels are—length 125ft. ; breadth 23ft. ; depth 12ft, ; tonnage, 307. It was originally intended that the tonnage should have been 295, but some alterations made in the beams of the vessels after they had been commenced allowed for the additional tonnage. The framework of the vessel is of angle iron, 3in by 3½ in. and about ⅜ of an inch in thickness. The frames are about 1 foot 8in. apart. There is no skin of iron plates, but only two thicknesses of wood, 3in. and 2in. respectively, both laid horizontally. Each vessel will carry two 64-pounder rifle guns and two 20 pounders, and it is expected that they will become very useful, for while carrying these guns their draught of water is but small, which will enable them to operate successfully up shallow rivers. They are fitted with compound engines of 90 horse power (nominal) ; they have been supplied by Messrs. Humphrys, Tennant, and Co., of Deptford, and are expected to indicate 360 horse power on trial. The vessels will carry about four day's consumption of coal. They are also fitted with one of Griffith's screws each. At the launch few persons were present. The *Zephyr* was the first to leave the stocks, and was "christened" By Miss Galway, daughter of the Commandant of the School of Military Engineering ; the *Ariel* being christened by Miss Hickman, daughter of Colonel Hickman, commanding the General Depot Battalion. The *Rifleman* attained a speed of about eleven knots on her last trial trip, and has returned to Chatham.—*Broad Arrow.*

On Wednesday evening (12th inst.) His Excellency the Governor General Earl Dufferin, and Countess Dufferin held a Drawing room in the Senate Chamber. at 9 p. m. A guard of honor of the Governor General's Guards, with the band of that splendid regiment was in attendance. The presentations numbered over six hundred.

His Excellency was attended by Lieut. Col. Fletcher, Scots Fusilier Guards. Military Secretary ; Lieuts. Coulson and Hamilton, aide de camps ; Mr. Patterson, private Secretary, and the following staff.

Colonel P. Robertson Ross, Adjutant General of the Canadian Army ; Lieut. Col. Powell, Deputy Adjutant General at head quarters . Lieut. Col. Stuart, Assistant Adjutant General ; Lieut. Col Macpherson, Lieut. Col. Jackson, Acting D. A. G. ; Lieut Col. Aumond ; Lieut. Col. Forest ; Lieut. Col. Ross, Governor General's Guards ; Lieut Col. Wilson ; Lieut. Col. Brunel ; Lieut. Colonel Coffin ; Lieutenant Colonel Wiley ; Major Wickstead. Guards ; Major Smith, Brigade Major ; Major D. A. McDonald, Major White, Governor General's Guards ; Captain Cluff ; Capt. Eagleson ; Capt. Perry Militia Staff, and the officers of the Guards.

The Senate Chamber presented a very beautiful appearance, with the benches filled by the fashion and beauty of the city. Her Excellency's suite was composed of Lady Harriet Fletcher ; Miss Hamilton, Quebec ; Lady Macdonald ; Mrs. Tilley, and other ladies of rank. There was a large muster of Senators, and Ministers of the Crown, headed by Sir John A Macdonald K C. B., and the Hon. Mr, Tilley, the Ministers, with one exception being in Windsor uniform. A large number of members of the Commons were present on the occasion.

This, the first Drawing Room held by their Excellencies was a very great success. The Earl and Countess Dufferin have done a great deal to impart tone to society at the capital, and have dispensed their hospitalities with princely liberality, well becoming the representatives of the Majesty of

England, honorable and creditable to their generosity and kindly feeling. No individual who has had the honor of social contact with either, but has been morally benefitted thereby.

WE had a visit from Capt. THOS. R. JACKSON, 1st Canadian Cavalry, Bayham, Ont., on Wednesday last, who is on his way to Dublin, Ireland, having obtained a month's leave of absence. We understand the gallant captain intends to join the Cavalry School or a regiment of cavalry there during his stay in Ireland.

THE Council of the Dominion Rifle Association meets at the Departmental Buildings, Western Block on the 25th inst., and the annual meeting of the Association takes place on the 26th.

REVIEWS.

The *Edinburgh Review* for January has been received, it contains the following articles: The Recovery of Jerusalem; Letters and Journals of Lord Elgin; History of Ancient Manuscripts; The Works of Thackaray; Froud's English in Ireland; The English Salmon Fisheries; English State Papers, ; 1639-41; The Church and Dissent; Middlemarch; The Geneva Arbitration. The Leonard Scott Publishing Co., 140, Fulton-street, New York.

We regret to learn that Captain and Adjutant C. F. D. Gagnier, of the Provincial Battalion in Garrison at Fort Garry, died on the 3rd March, the following lines from the pen of a gallant comrade shows how much his loss is deplored:—

IN MEMORIAM.

Captain and Adjutant C. F. D. Gagnier, died a Fort Garry, March 3, 1873.

Dead!—Not as he had wished to die
With face upturned towards the sky
And feet towards the foe.

Dead!—But not on the battle-field,
Resolved to die but not to yield
In stern strife stricken low,

Though banded with Disease, fell Death
Stole, coward-wise, the hero-breath
Yet in Life's early prime.

Still, be his meed of glory bright,
As though in battle for the Right
He changed Earth's veil for Heaven's light,
Eternity for Time.

E. H. G.

REMITTANCES Received on Subscription to THE VOLUNTEER REVIEW up to Saturday, the 15th inst.—

BROCKVILLE, Ont.—Ens. Wm. Bowie, G.T.R.	$6.00
BURRITT'S RAPIDS, O—Lt.-Col. G. Sheuherd	2.00
ELMVALE, Ont—Ens. D. C. McIntosh. ...	4.00
GLENBURNIE, Ont.—Captain C. N. Spooner .	1.00
JANETVILLE Ont.—Lieut. David McGill ...	4.00
OTTAWA, Ont.—Lt.-Col. William Warren.	2.01
STRATFORD, Ont.—Mr Jas. Wilson, G.T.R...	2.00
SAULT STE. MARIE, O.—Capt. Jos. Wilson..	2.00
WATERLOO, Que.—Lieut. L. H. Brooks.....	2.00
LAWRENCEVILLE, NS—Ens. Leonard W. Elliott	2.00

(Per Col. Lovelace.)

COBOURG, Ont.—Captain Dumble.....	2.00
KINGSTON, Ont.—Capt. A. F. Macpherson..	2.00
HAWKESBURY MILLS.—Major Urquhart ....,	2.00
PRESCOTT, Ont.—Captain W. Armstrong...	2.00
" —Col. White.....	2.00

CORRESPONDENCE.

The Editor does not hold himself responsible for individual expressions of opinion in communications addressed to the VOLUNTEER REVIEW

DISTRIC OF BEDFORD RIFLE ASSOTION.

The fifth Annual meeting of this Association was held at Sweetsburg, County of Missisquoi, on the 11th of March; the attendance of officers and members was good, all the corps in the District being represented. The President, Lieut. Col. Miller 79th Batt. was prevented by sickness from being present, the chair was taken by Lieut. Col. Hall, 52nd Batt. Vice President.

The Treasurer's report showed the receipt for the year to be $471.55, and disbursements $467.87, leaving on hand a balance of $3.68.

The office-bearers for the ensuing year were elected as follows:—

President.—Lieut. Colonel Hall, 52nd Batt.

Vice Presidents.—Lieut. Col, Miller 79th; Lt.-Col. Rowe, 60th; Hon. T. Wood, M.L.C. Hon. L.S. Huntingdon, M.P.; Geo. B. Baker Esq. M. P.; E. Carter, Esq. M. P.; Major Gilmour, 60th; Major Amyrauld, S.F.B. A.; Major Fourdrinier, 79th; Dr. Gibson, 60th; Dr. Hamilton, 52nd.; Major Manson, 52nd; Capt. A. Westover; Capt. Peter Smith.

Secretary Treasurer.—Lieut. Col. Fletcher, C.M.G.

Council.- The Captains of Companies and Troops belonging to the Association.

Executive Committee.—Lieut. Cols. Fletcher, C.M.G. and Miller; Major Amyrauld, and Capt. Bockus.

It was agreed to hold the next annual Matches at Sweetsburg in September.

The old list of Matches was adopted with the addition of a new match to be fired by Battalions or Batteries, ten men from each, to fire in extended order at uncertain distances, advancing or retiring, 5 shots each, the firing to be by word of command.

This Match will be a novelty and will be excellent practice for judging distances.

Votes of thanks were passed to the retiring officers for their efficient services during the past year, and to those gentlemen who contributed so liberally to the prize list of the last Annual Matches.

By the excellent spirit shewn at the meeting, the next matches bid fair to exceed in number of Competitors, and value of prizes, the competitions of former years.

The Border Men have rifles, and are determined, by keeping up their practice, to be ready for any emergency.

MONTREAL.

(FROM OUR OWN CORRESPONDENT.)

The Military School is at present in a flourishing condition, under command of Col. Harwood, D.A.G.; Colonel D'Orsonnes, as adjutant, and the indefatigable Major Labranche, with Captain Atkinson as instructors. The average attendance for the last month has been about forty, and there are several commissioned officers from different parts of the country, who are there to qualify.

On the 10th the cadets presented Major Labranche with a silver mounted cane, and Captain Atkinson with a gold breastpin, as a mark of their esteem and in appreciation of their services to them. Major Labranche and Capt. Atkinson briefly thanked the donors. Major Labranche in reply said that he had done no more than his duty, and that he had done it every time; that he believed that the strict and impartial manner of carrying out the rules and regulations of the school was of decided advantage to the Service, as they, the cadets, had come there to learn the military profession, which was not only to learn their drill, but to acquire a knowledge of that true qualification, discipline, without which all they were taught would be useless.

A volunteer writing to the *Star* newspaper says:—"Could you inform me and others that are in the same position, the reason why a corps of volunteers in this city have not received their drill money for the last year, or if the Governement will allow us interest at the same rate that the city will have to pay for the loan lately obtained in England,? If so, we might let our pay stop at interest, if not, I think it a strange way to treat the corps to which we belong.'

The annual meeting of the 1st or Prince of Wales Rifle Association was held last evening in the Sergeants, Mess room, 18 St. James street, about 30 members being present, the President, Lt-Col. Bond, in the chair. The Treasurer's report showed that after holding two matches last year, there is a balance in hand of $74.00. The total roll of membership is 54. The annual prize meeting was held on 5th Oct., and one match was open to all volunteers. The Col.'s cup won by Serg. Quinn, will be competed for again this year, as it has to be won twice in three years. The following were elected officers for 1873:—President, Lt. Col. Bond; Vice-President, Major Molloy; Secretary-Treasure, Capt. Mudge; Assistant-Secretary Serg, Porteous.—Committee Capt. Barnjum Capt. Balfour, Lt. Watt, Sergeants, Harman, Quinn, Stuart Batchelor, Murphy, and Cor. Hill.

The following cadets obtained certificates before the Commandant of the Military School yesterday:—First Class—George E. Clarke, Montreal West; James Gaw, Iberville; Polidore Prive, Rouville; Robert Hackwell, Shefford. Second Class—Harold B. Smith, Hochelaga; John Chernard, Mentreal West; James M. Glass. Montreal East; Jos L. Routier, Prescott; Ozias Routier, Prescott.

B.

THE DEPARTED.

Oh, the merry days of childhood,
When we wandered glad and free,
In the dim shades of the wildwood—
How the dream comes back to me!

And I seem to view the tresses
Of long, sunny golden hair,
And again I feel the kisses
Of the lips so free from care.

And I see deep blue eyes gleaming,
Sparkling in their wanton glee;
And I see the ringlets streaming,
Back from faces dear to me.

How they played low in the wildwood,
Building up bright dreams of joy!
Happy in fast fleeting childhood;
Happy, gay, without alloy.

But those faces sweet have perished,
Gone the forms so fair to view;
And the friends—those friends I cherished—
Now are sleeping 'neath the yew.

They are resting 'neath the daisies,
Where the gladsome flowers peep,
And they've left life's solemn mazes
For a long and dreamless sleep.

But the friends I loved in childhood—
Oh, those friends! I miss them so:
For they're absent from the wildwood—
Absent from the valley low.

And I long for those I cherished,
Mourn for faces young and fair;
But the one's I loved have perished,
Oh! I miss them eveeywhere.

M. O.

THE GUNPOWDER PROBLEM.

(From the N.Y. Mining and Engineering Journal)

It has long been known that the chief difficulty to be overcome in the construction of large cannon results from the fact that the destructive effect of gunpowder increases, when we enlarge the calibre, much more rapidly than the restraining power of the gun. An enlargement of the calibre implies an addition to the weight of the projectiles and of the charges of powder; and not only is the total effect increased, but also its relative intensity; that is to say, not only is the number of square inches increased upon which the expanding gases act, but the intensity of the pressure per square inch is also augmented. When the necessity for larger guns became imperative, European constructors supplanted cast iron with wrought iron and steel, and thus succeeded in increasing the strength of their guns to the required degree. But when the progress of naval construction called for still greater ballistic power, even this resource began to show signs of inadequacy. In the meantime, the same problem had to be solved by American constructors, who approached it in a different manner. As this country possessed no workshops or machinery adequate to the forging of very large cannon, instead of endeavoring to build guns which powder could not destroy, our officers endeavored to obtain a powder which would give the necessary velocity to the projectiles without destroying the gun. This course was first marked out by Rodman, when he built his famous 15 inch gun. Foreseeing that unless he could maintain the velocity of the projectiles, the increased size would be of insufficient advantages to compensate its inconvenience, he applied himself to the study of the action of gunpowder. His first result was the establishment of "mammoth" or large graind powder for the service of large guns. He demonstrated that by this device the velocity of large projectiles could be maintained with a great reduction in the destructive effects of the powder. This identical device has, within the last three years, been adopted by the English for all their large guns, under the name of "pebble powder." Although this powder was introduced into our service prior to 1860, the English appear to regard it as an innovation originating in their own country. The value of priority in the matter is, however, much diminished by the fact that the effect of varying the size of the grain has been known in a general way, in all countries, for many years, and perhaps for centuries; and the mammoth powder is merely an extreme case in the application of an old principle. But the first accurate and available determinations and measurement of these effects are due entirely to Rodman.

This distinguished officers made a number of brilliant inventions, in which he displayed the rare and double merit of elucidating principles and originating ingenious devices for making them available. A striking illustration of this invention of perforated powder, which was made by pressing the materials, in a moist and adhesive condition, into the form of hexagonal prisms, with perforations parallel to the axis. While experiments were progressing with this powder, an eminent Russian officer, Majors (now Major General) Gadolin, being in this country, and taking much interest in the subject, recommended its trial in Russia, and the result was its adoption, first, by the Russian, and afterwards by the Prussian government, in whose heavy guns it is now used exclusively. The principle involved may be briefly stated. While the shot is moving from its seat to the muzzle, and acquiring its velocity, the force of the powder is undergoing great and rapid changes of intensity. This intensity is known to reach its maximum, with ordinary powders, before the shot has moved a foot from its original seat. The pressure then falls off rapidly as the shot moves towards the muzzle. It is these earlier pressures which are so dangerous, while the later ones are far within the limit of pressure which the gun is capable of enduring with safety.

Now, if it were practicable to manage the powder in such a manner that the earlier pressures would be reduced, and the later ones increased, the total force would be the same, while the dangerous pressure would be avoided. Rodman sought to attain this action by the following means. It is clear that the pressure at any moment has a direct relation to the quantity of gas developed by the powder in its progressive combustion; and again the quantity of gas developed at any moment has a direct relation to the quantity of powder surface undergoing combustion at any moment. Hence, if the surface of a given weight of powder be small, the quantity of gas at first developed, and the consequent early pressure will also be small. If the powder, in other words, can be made to burn less rapidly at first, and more rapidly afterwards, the desired end may be reached. Since large grained powder presents less original surface than an equal weight of small grain, this object is in some degree approached by mammoth powder. A further approximation is obtained by the prismatic from; for the large, symmetrical grains present, at first a comparatively small surface, while the perforations are constantly increasing their diameters and surfaces, as the grain is consumed.

Recent experiments with the thirty-five ton gun Woolwich gun have shown, that even mammoth powder is too violent for guns of this size. This conclusion was reached in this country several years ago, after the bursting of several large rifles firing this grade of powder. Within the last two years the Ordnance Bureaux both of the Army and Navy have recognized, that it is indispensable to further progress to gain a more thorough control over the energy of gunpowder that has been yet reached by other nations, and with this view have applied themselves vigorously to the problem. The results thus far attained have not been made public, but are said by those who know to be peculiarly gratifying.

The Navy Bureau is experimenting upon powder for the fifteen inch gun, while the Army Bureau is firing heavy rifles, and have succeeded in obtaining high volocities with unprecedentedly low pressures. We understand that some new and important features have been introduced, but we are not informed as to their character. The experimental powder has been manufactured by Messrs. Dupont & Co., of Wilmington, who are entitled to the highest credit for their intelligence and zeal, as well as for the excellence of their prodvcts. The important nature of these investigations may be inferred from the remark recently made to us by a distinguished officer engaged in them who said that if the results continue to be what they have been, we shall be able to obtain, with perfect safety, from cast-iron guns of the largest calibre, higher velocities than have ever yet been reached with similar calibres elsewhere. During the coming year these experiments will be diligently prosecuted.

THAT gallant soldier, true patriot, and venerable Bishop of the Methodist Episcopal Church, the Rev. Dr. RICHARDSON, during the course of a lecture delivered at Brighton on the following interesting incidents in the early history of Canada, illustrating the manner in which this country has been added to the British Empire by bravery and self-denial of those gallant souls that first won it from the savage Indian; next from the wild wood; finally defending it against treason and diplomatic plundering, imbecility and treachery, is represented as follows:

The Bishop said:—"I do not expect to give a Lecture, as the few thoughts I may be able to give you this evening, may be better called a rambling address. When I first began to speak upon the early history of Canada, I considered it only an address, but some of my warm friends have magnified my rambling remarks into a "Grand Lecture on Canada." Time would not suffice to-night to make any lengthened remarks, so I will confine myself to that which more particularly relates to Upper Canada. But the question may be asked, How do you know anything of Canada? In reply, I will have to give you a few jottings of my own life. I was born in the good old town of Kingston, in the year 1791. My father was an officer of the King's Navy, and came to Canada at the close of the American war. He served on the Lakes from 1785. I became early acquainted with the stirring events of the old French, Indian and Revolutionary wars from narratives furnished me by my mother, the family with whom she had lived being engaged in the two latter wars. I was in the King's service in the Kingston Navy, which was quite formidable, being composed of many vessels, some of them of large size, during the wars 1813-14, and 1815. The war of 1812 had many distressing episodes, especially on our borders, in which those who had previously been friends, became deadly enemies. I suffered the loss of my arm in this

war, at Fort Oswego. I served on the shid called the *Wolf*. For services rendered there, I received honorable mention. After the war the forces were reduced, and many of the old settlers made up their minds to seek their fortune elsewhere in Upper Canada. The Government made grants of lands to them in different parts of the country, and my father got lot No. 1 on broken front in the Township of Cramahe, and built a house on Presqu'Isle Bay. I lived here several years, and was here converted, and from thence went from one end of Canada to the other in my Master's service. My first Circuit extended from York (now Toronto) north and east, embracing the greater portion of the southern part of the county of York. To Brighton I always turned my longing eyes, and the emotions that crowd my mind when I think of this spot as being the one from which I started on my homeward journey, will always make Brighton one of the dearest spots on earth to me.

But now I must say something of Canada, my own country, one which is dear to me. But the Canada of the present day is not the Canada of my youthful days. That one contained what is now the Provinces of Quebec and Ontario, formerly Upper and Lower Canada. The Rev. Lecturer then went on to give a short synopsis of the discovery of Canada and its settlement by the French, and spoke in a general manner of the principal men who bore sway in those days. In relation to the large mounds that have been formed in different parts of Canada and the West, said: We have often been surprised at the large accumulation of human bones found in mounds, especially in the west and south-west of the territories which the French possessed, and they must have been caused by a wholesale massacre of the French by the Indians. The French must have become very numerous at these posts, as they had possession for nearly 224 years before it was taken from them by the gallant Wolfe. Even this is handed down to us by tradition from the Indians, that in the space of seven days the whole French population had been swept from the face of the western part of their possessions. I will now speak of the border warfare that came under the notice of Mr. Stedman, with whom my mother lived. His recollection of all that happened on the Niagara frontier was reliable, as he had taken part in the engagements. When Sir William Johnston came to Lewiston, he wished to send a messenger to another fort a short distance up the river above the Falls of Niagara. He offered a considerable prize to any one who would go Mr. Stedman volunteered. An officer determined to accompany him. The Indians were concealed in the thick woods between them and their journey's end. When they reached the woods, they halted, when the Indians immediately poured in a volley, and the officer fell. Stedman then mounted the officer's horse and galloped full speed through the woods, the Indians firing for a considerable distance, yet he reached the fort safely. One of the Indians afterwards told him that he had fired at him nine times, and could not hit him. In this part of the country there is also a place called the "Devil's Hole," into which the Indians had forced a party of soldiers, their wives and children, with their waggons down a fearful chasm. I remember when human bones could be found there, with various parts of the iron used on the waggons.

We will now come down to the manner of the settlement of our country, These may be divided into three classes: "The United Empire Loyalists, who came over immediately after the Revolutionary war," "Emigrants from the Old Country," and "Americans who came over on the invitation of Governor Simcoe," and received grants of land from Government the U. E. Loyalists came over to Kingston, and took up the lands westward, which was then divided into towns, from which we have now the Township on the lower part of the Bay of Quinte. The sufferings of the early U. E. Loyalists were great. During the first winter they were in Kingston, they had only turnips to eat. But yet for the love of their country they were willing to endure much more. With them it was a matter of principle, and they preferred giving up their comfortable homes in the United States rather than prove faithless to their king. As to the second class we have not much to say, as there were not many of them in this part of Canada at that time. As to the third class, my father brought over the first of the Americans that settled at Presqu'Isle. At this time he was owner of a small sloop of some sixty tons burden. In that small vessel he took over 145 passengers, men, women and children, from Oswego, to your harbour. These parties ware the ancestors of many of the families in this section of country. Those who got up these companies to come over, received grants of land. Amongst them was the grandfather of your present member, Mr. Keeler, who with others received a grant of 12000 acres in these wild lands of Canada. This part of the country was at that time called the Newcastle District, and included the Counties of Northumberland and Durham, extending north to the Hudson's Bay Territory, The capital was on Presqu'Isle, and here the courts were held. A sad calamity befel the the court in 1805 A king's sloop, under the command of Capt. Paxton, having on board the Judge, lawyers, and other officers of the court, and also an Indian prisoner, charged with murder, started from Toronto and arrived in safety about sundown, opposite Presqu'Isle. During the night a fearful storm arose, and nothing was afterwards seen of the vessel. I remember the storm well, as I was lying in Oswego, at that time. It was one of the most sever storms I ever encountered. Vessels were driven from their moorings and driven up the Oswego river against the current for a considerable distance. After the loss of the vessel with the officers of the court, the courts were removed, as it was impossible to find any of the judges who would risk themselves in the passage.

The *Stedman* referred to was engaged as Commissariat officer with the English troops in garrison at Fort Niagara, and was with the detachment forced over the "Devil's Hole," near the present whirlpool during Pontiac's war in 1763, every one was killed except himself and a drummer boy whose belt caught in a projecting branch of a tree and thus saved his life.

With the rank of Captain, Stedman served in Lord Cornwallis's fatal expedition to South Carolina, and was present at the surrender of Yorkton, he wrote a history of the Revolutionary War.

Major Monerieff has adapted his principle of the counter weight to some carriages for the 64 pounder converted guns, which are to be placed on the land faces of some English ports, and appear likely to work with ease and simplicity. The apparatus in each case will be fitted with reflecting sights, which will enable the detachment under cover to lay and fire the gun without exposure. The only risk they will incur arises from the descent of a shell into the gun pit.

The Versailles correspondent of the London *Daily Telegraph* states that the preparation for Bazaine's trial seem at last to be drawing to a close, nine months having elapsed since he gave himself up a prisoner, since which time he has been closely guarded by five sentries by day and twelve by night. One thousand one hundred and forty witnesses have been heard during this process of preparing the case; 660 have been found to be of no use, so that when the trial takes place 480 witnesses will have to be heard for the prosecution. For the defence the Marshal has called upon fifteen or sixteen officers who were witnesses of all he did at Metz, and he will rely greatly upon the written documents, which he considers to justify the line of conduct he presued. By the army Bazaine is looked upon as "*le bouc emissaire*," the scapegoat for the sins of mismanagement and the downfall of national vanity during the late campaign. But by the non military class, and by the immense number of those who do not reason, he is regarded as a traitor who took money from the Prussians; who pretended to defend Metz when he really did nothing of the kind; who wilfully threw away the lives of his men; who was on the best terms with Prince Frederick Charles and all the chiefs of his German army; and who used positively to leave Metz and go to the German outpost, where *petit soupers a la regime* were held frequently, and where the grand plot by which Metz was to be delivered up to the Red Prince was concocted.

Says the *Army and Navy Gazette*: "Among the guns just tried at Calais were two steel breech loading field pieces which were fabricated as far back as 1868. One gun made of metal, furnished by M. Holtzer, split up at the first discharge, but the other piece stood over 400 rounds before it was considered unsafe. In comparing the experiments made at Calais with a French bronze gun, a French steel gun, and a Prussian steel gun of 4, the following conclusions were arrived at: The trajectory of the French steel gun is greater than that of the other pieces when fired at a short range, and less when fired at a long one. The deviation is less than in the bronze piece, but especially at long range; it is inferior to the Prussian gun in precision. The consequence is that the Calais Artillery Committee recommend several modifications. As for the breech apparatus, it stood fire perfectly. These experiments will be renewed at Calais shortly, and when a decision has been arrived at M. Thiers will go to Tarbes to see the new French gun at work. There can be no doubt about a breech-loader being selected, as, in addition to other advantages, it will inspire confidence. The French army does not see why, if the Prussians have breech-loaders, they should be deprived of them."

PRUSSIAN INFANTRY TACTICS.

A work recently published at Berlin under the title, "Studies on the New Infantry Tactics," by Major von Scherff, of the head-quarter staff, has been translated by Lieut. Graham, and is published by Messrs H. S. King and Co., Cornhill. The following is an article which has lately appeared in the *Militair Wochenblatt*, the organ of the Prussian Army, with regard to this important book:—

"Under this modest and unpretentious title a book has just appeared which would seem about to exercise considerable influence on the new rules of the tactics of fiighting.

"The two great wars which in these last ten years have surprised Europe by the manner in which they have been carried on, and by their results, have convinced all those who have taken part in them of the necessity for some tactical rules more suitable to the powerful efficacy of modern weapons than those which have been employed hitherto. Those who have been the victors in the combats are especially convinced that the precepts of fighting taught at drill during peace time, and which were believed to be in accordance with the exigencies of the new armament, did not answer sufficiently the expectation formed of them. Each one feels the necessity for increasing the solidity of troops which are fighting in skirmishing order, and of introducing order and a certain system in the disorder and losseness attending on this metnod of fighting which infantry are now obliged to follow owing to the effects of the long range of breech loading arms, and of the rifled cannon. It is the discussion of this important question, with which so many capable and practical men in the army have been already occupied, and which for some time past has been and is now keeping the mind of every officer who thinks and reflects on the stretch, so to speak—that the author of these studies in a very clear manner, with a logical force which is rare, and while basing his remarks upon a profound experience of that which happens as well during war as during peace. We dare not pronounce in a definite manner upon the value of the solution of this question, but we think that we can now, before a more authorised criticism has been pronounced, say, that up till now the essential points of the debate have never yet been put forward with an equal precision and clearness.

"War demands decisive results, and these decisive results can only be obtained by the offensive, whether that offensive be taken from the beginning or whether it ensues after a happily conducted defence. But by the side of this there is in every war a series of engagements which have not for their object a similar defence or solution, which are like the interludes of a grand drama. It is in accordance with them that the mode of action should be regulated; one ought either to have some decisive result immediately in view, or else one ought never to have to look for it.

"This is the base of modern infantry tactics, which, relatively to the manner of conducting the fight, should place before everything else the following fundamental principles:—

"1st. Every commanding officer thrown upon his own resources, and finding himself in front of the enemy, ought from the beginning to ask himself the following questions: Can he, or ought he, yes or no, achieve a decisive result, or else, will he, yes or no, be able to obtain any advantages by shortening or by protracting the combat?

"2nd. If a negative answer must be given to those two questions, he must avoid fighting as much as possible; or else cease fighting if fighting has begun.

"3rd. If the case permits him to come to the determination to accept a decisive combat, he should on principle conduct it offensively. If, on the other hand, without being sufficiently strong by himself to decide the action, he can rely on receiving ultimately sufficient reinforcements, he ought to protract the fight as much as possible, and act in such a manner, so as to take away all idea of the offensive which the enemy may have by assuming it himself.

"'4th. It is only in cases which are altogether exceptional, or if the terrain requires it in a quite particular manner, that he ought to accept a decisive battle in a position which at the commencement places him on the denfensive. Thence we have, as the chief tactical forms, the offensive, the defensive offensive, and the protracted combat, which the author calls in addition the demonstrative. These three denominations forms the titles of the three chapters of the book.'

"For the offensive a formation is necessary which permits of the greatest possible mobility, which offers at the same time guarantees against the enemy's fire, whilst favouring to the highest degree possible the efficiency of the fire of the attack. This formation will be found in the individual order, an expression which must be applied to all those fighting dispositions comprised up till now under the denominations of extended order or deployed order, which latter are less significative.

"Every offensive fight must undergo the following phases:—The preparation, the carying it out, every effort being strained to the utmost extent, the reaction which follows this tension, and finally the re-establishment of order. The formation in question should adapt itself to each of these phases.

"It is necessary to consider apart from these different periods of the fight, the manœuvres by which one engages, the effective character of a protracted fight, and allow a decision to be arrived at, if one ought to attack, where and how is it to be made. If it is decided to attack, this attack must be carried on against some determined object, by the shortest road possible, without stopping and with all the available forces, consequently one must act concentrated, and with the reserves as weak as possible.

"The blade cuts or else it breaks; the army conquers, or else there only remains to collect the debris.

"This attack should be carried out by a first line of skirmishers; one company entirely deployed, each man is allowed the space of 1½ paces; a second company forming a second line of support, deploying by degrees according to necessity; two companies massed in rear, to make the assault properly so called, and for breaking through.

"The first line of skirmishers approaching the enemy without firing if it is possible, up to that distance where the efficacy of the weapon comes into play, advances from thence by fractions, and by rushes, without any halting, and keeping up an individual fire by word of command, up to the place indicated as that where the final shock is to take place. The second line, that of the supports intended to supply all the reinforcements which the different circumstances of the fight may render necessary, in doubling up from the first line, gives at the moment which precedes the decisive shock, to the fire of the latter with as much severity as possible. The companies in close order, form up into columns of half battalions for example up to that zone in which they are only liable to be hit by stray bullets, should the moment they leave it, only assume a line formation in company columns at from forty to eighty paces distant from each other. When they are fifty paces from the line of skirmishers reinforced by the entire line of the supports, the signal for the assault is given and one hurls oneself upon the enemy in order to break through the lines with cries of "Hurrah, hurrah! Forwards, forwards!"

"Every one must endeavour to reach the extremity of the position attacked, and this must form a boundary which should never be overstepped. In a body of troops which has made a similar attack the re-establishment of order must now be the principal point attended to. If pursuit is necessary, it must be entrusted to the reserves, which follow, or to the cavalry.

"Their mission is also to parry counter attacks on the part of the defence, to cover the flanks of the assailant, who ought to have one single object to attend to, viz., of attaining that end which has been determined on,

"The artillery should prepare, to accompany and complete the action.

"Everything that we have said," continues the *Militair Wochenblatt* "is hardly an indication of the materials contained in this excellent work. Our only object was to draw attention to it, and reccommend its immediate perusal.

"In the interest of the German Army, we wish great success to this courageous book. May it on its part contribute to ensure victory again under our colours!"

THE DARIEN SHIP CANAL.—The New York *Sun* says:—As the cutting of a canal through the Isthmus of Panama is still a shadowy project, seagoing men will be pleased to learn that the Chilian Government contemplate the establishment of a harbour of refuge near Cape Horn. The captain of the British barque *Cedric* has discovered a splendid bay with safe anchorage in the Island of Wollaston, of the Hermit group, south of Terra del Fuego, and 29 miles distant from Cape Horn. The bay is well protected from winds and storms, and the vegetation around is magnificent. The Indians were found to be docile, and much more intelligent than the wretched inhabitants of Terra del Fuego. The harbour is said to be superior even to that of the Falkland Island. These islands as is well known, belong to Great Britain, and the discovery of a sheltering harbor near Cape Horn will tend to seriously affect the prosperity of the British settlement.

COLONIZATION ROADS.—The Ontario estimates for 1873 contains the following items: Pembroke and Mattawa road to extend the same towards the Mattawa, $9,000 Mississippi to complete through Ashley and Meays, $5,000. Paterson road—to repair from Madawasga to Papineau Creek, $1.000. The appropriation of $4,000 made last session for the survey and exploration of a road line from Fairy Lake to the mouth of Mattawa river on the Ottawa not having been expended, is revoked.