



Vol. X.
No. 77

MONTREAL, APRIL 1, 1895.

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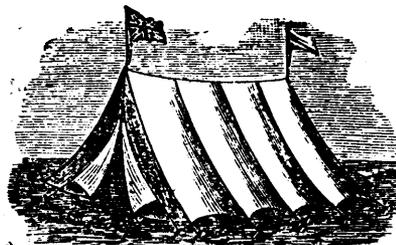
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THE CANADIAN

Military Gazette

Successor to the Canadian Militia Gazette.

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No. 7.

MONTREAL, APRIL 1, 1895.

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All communications and remittances should be addressed to the editor, P. O. Box 1071, Montreal.

MONTREAL, APRIL 1, 1895.

Notes and Comments

While there was nothing particularly brilliant in the Hon. J. C. Patterson's administration of the Militia Department, members of the force will regret his retirement. While lacking the practical military experience which we hold the Minister of Militia and Defence should be possessed of, Mr. Patterson made a very respectable and useful minister indeed. One thing the force discovered, he was in earnest. He did not accept the portfolio merely to fill a gap, intending to be a mere salaried figure-head. He was determined to do the best he could for the militia under existing conditions, and to carry out his wishes intelligently

he industriously set himself to work to post himself on the organization and requirements of the force. The militia had considerable confidence in him, for it was soon discovered that his word could be depended upon. The improvements he inaugurated were, it is true, of the tinkering character which have become traditional in the department, but it was scarcely to be expected that with his limited knowledge of the requirements that he would undertake to shoulder the responsibility of introducing the much-needed scheme of re-organization. Had he remained at the head of the department much longer greater things would naturally have been expected of him. As it is he was one of the best ministers we have ever had, and that is scarcely saying enough, for truly it is not much.

According to all accounts Mr. Dickey is to be the new minister. Whoever it is, it is to be hoped that he will be a man of some practical experience in the militia and with a determination to put the force on a thoroughly efficient footing. The minister who administers the militia into satisfactory shape will deserve well of the Dominion.

One of the first duties of the new minister will be to fill the vacancies in the permanent force. Will he give the commissions to influential incompetents or select either graduates of the Royal Military College or else officers who have made a mark for themselves in the Active Militia? We shall be able to gauge the new administration pretty well by the result, so let us all watch. The charge of lack of material to choose from cannot be made this

time, for some of the best graduates the R.M.C. ever turned out are among the applicants for these commissions.

A reader sends me a letter which appeared in the *New York Herald* of a recent date, which he points out supports very strongly the arguments in these columns against the total abolition of display parades. The letter is certainly very American in style, but it puts the case strongly. It is signed "Veteran," and reads as follows:

"I am an old soldier. I am a member of the National Guard of this State, having served in every position, and now occupy a high one. All the talk going on about forced marches, camp, riot duty, etc., is simply wasted energy. A week's tour of camp is all that we require in the way of hardship, unless we are compelled to. What the guard want to induce respectable young men to join is a little more street parades, where they can show themselves to their girls in uniform. The vainer the man the better soldier he is; this I know from experience. Give me a company of dandy soldiers. I will face four times their numbers in lower grade. What the guard wants is to elevate the tone of its members—more gala days, with bright bunting, girls and men applauding, a grand hurrah. 'Did you see me to-day?' 'Was I not the best of the whole bunch?' 'Didn't we do fine?' &c. General Emmons Clark conducted the Seventh regiment on that basis for twenty five years. Look at it to-day. A soldier is an actor and loves applause and is vain."

Among the diverse objects displayed in the new museum of the Royal United Service Institution at the opening by His Royal Highness the Prince of Wales, was one which had no antiquarian or historical associations, but which deservedly attracted attention and careful inspection. It was the trunk of a tree, seventeen inches in diameter, which had been cut completely across in fifteen seconds by the fire of a small-bore Maxim machine

gun, fired at fifty yards distance. As this marvellous weapon, at its greatest speed, sends 600 shots per minute from its single barrel, it follows that 150 little bullets at the most cut down a very substantial tree in a quarter of a minute! The effect of a Maxim, which can breach or utterly demolish brick walls in a few minutes, and before the fire from which strong doors or gateways would disappear almost as quickly as do the flimsy structures in a pantomime, can hardly be over-estimated; and its use must revolutionise, or at least modify, many of the hitherto generally accepted *maxims* of field fortification.

There is no part of a militiaman's duty which is more irksome and distasteful alike to officers, non-coms and men, than that which comes under the category of "aid to the civil powers" in case of riot. The *Army and Navy Gazette* has lately published some most interesting remarks on this very subject. Fortunately the occasions have been of late years few and far between when soldiers, either in England or Canada, have been called upon to strengthen the hands of the police; but it was not very long ago that attention was directed to the unsatisfactory condition of the law in England by circumstances which called forth an expression of opinion on the part of the London and provincial press. The outcome of the publicity which the matter then received was a series of questions in the House of Commons, and the ultimate appointment of a committee by the Home Secretary to advise him on certain points of difficulty. Of that committee Sir John Bridge was chosen chairman on account of his great experience as a police magistrate and recognized standing as a lawyer. Sir John Bridge had for his colleagues Sir Godfrey Lushington, Permanent Under-Secretary for the Home Department; Colonel Coleridge Grove, Assistant-Adjutant-General, Horse Guards; Lt.-Col. H. M. Moorsom, Chief Constable of the county of Lancaster; and Mr. J. L. Wharton, M.P., Chairman of the Quarter Sessions for Durhan. It was the duty of this committee to inquire into "the precautions to be taken in case of riots or apprehended riots, and into the several and relative responsi-

bilities of the civil and military authorities in case of riot."

The committee sat last year, and its report has just been issued. There seems all through to have been a praiseworthy unanimity among the different members, for they were so fully in accord with regard to the various details brought before them that they did not deem it expedient to call any witnesses. In this they are to be congratulated, for when it is possible for them to do so it is far better for the members of a committee to make up their minds independent of outside expressions of opinion. As a rule witnesses bring all sorts of irrelevant matters forward to complicate those who have subsequently to weigh over the evidence, and the inquiry conducted by Sir John Bridge's committee was one of those in which no evidence was actually required. The army, therefore, will be in no way disappointed to find that this time the usual course was not had recourse to. It is laid down in the report as a fundamental principle that "the calling out of the military to aid in the suppression of rioting should never be resorted to except as a sort of supreme effort." This, of course, was well-known before, but it was desirable to have the fact emphasised, as it cannot be too often or too distinctly made known that there is a wide distinction between a soldier and a policeman, and that it is unfair to expect of the soldier that, in addition to his own particular duties, that he should be called upon to discharge those of the policeman, unless it be that the latter finds himself absolutely powerless to protect life and property. In those circumstances there are few soldiers who would not readily volunteer to come to the aid of the civil power, but no good and much harm would be done by if it became a practice to "call out the military" on every paltry pretext.

Sir John Bridge's committee has been well advised in placing it on record once again that, as far as possible, the civil powers should be taught to be self-reliant. As to the course of procedure when the services of the military are brought into requisition, the committee lay down some very sound and practi-

cal rules. It is stated that "a rota of justices, who should hold themselves in readiness to proceed with troops and prints of proclamation under the Riot Act, should always be kept." But before appealing to the General Officer Commanding the District for military aid it is the duty of the magistrates to satisfy themselves in consultation with their chief constable that all police augmentation which it is in his power to avail himself of has been exhausted. Then, and not until then, will the chief constable forward the requisition to the proper military authorities, stating the number and the composition of the troops which are required, and describing precisely the place to which they are to be sent. If the magistrate thinks, however, that the emergency is so pressing that a direct requisition to the military is imperative, he will be justified in "taking the law into his own hands" and calling for military assistance on his own responsibility.

We now come to that portion of the report which deals with the proper course of action to be pursued when the troops arrive on the scene of disturbance. This part is of great importance to all officers and non-commissioned officers. They might, any of them, find themselves called upon at any moment to give aid to the civil powers, and it behoves them to know what their duties and responsibilities are. The troops having arrived, the committee think "the magistrate should remain as near the commanding officer as possible," and in the event of a riot the proclamation should be read, and this should "operate as a distinct warning to the crowd that those not dispersing within an hour are guilty of felony." Under this heading the report says:—

"It must be clearly understood that to justify the exercise of military force in the prevention of serious outrages and damage to persons or property is not necessary to wait for the proclamation being read, much less to wait till one hour has expired after it has been read. The time when the proclamation was read should be carefully noted by the magistrate. If the magistrate comes to the conclusion that the police are unable to cope with the riot, and that the necessity of the case demands the interference of the military by action, then, whether the Riot Act has been read or not, it will be his duty at once to request the officer commanding the troops to take action. This request should be made distinctly and, if possible, in writing, although if given by word of mouth it will be suffi-

cient. When so requested to take action, it will be the duty of the officer to take such military steps as in his opinion the situation demands, and in doing so he will have absolute discretion as to the action to be taken, and as to the arms, including firearms, which the troops shall use, and as to the orders he shall give, including the order to fire. But it must be clearly understood that the magistrate and the officer will each be responsible respectively for anything done or ordered by them which is not justified by the circumstances of the case. If the officer thinks it unnecessary to take immediate action it is not obligatory upon him to do so, nor is he to continue any longer than he thinks it absolutely necessary."

The effect of this recommendation will be to protect the officer in command to some extent, for it will be in his power to exercise discretion. Some may think that all responsibility ought to be taken off the shoulders of the military commander, but a little reflection will show that this would be undesirable. An officer must always see that the magistrate accepts his part of the responsibility—that he is "as near him as possible"—and that he consults with him as to the course which it is expedient to adopt. A soldier ought to know how to deal with a combination of forces, be they disciplined or otherwise, and will, of course be best acquainted with the temper of those acting immediately under his command. It would never do to interfere with his authority as it would be interfered with if all discretion were taken from him at so critical a moment. All of us would wish to find soldiers relieved entirely from such duties as those with which the committee had to deal; but there must be times when it will be impossible to trust entirely to the civil power, and the effect of the committee's deliberation will be to place matters on a more satisfactory basis, on the theory that two heads are better than one. In such cases there can be no doubt that it is wisest to rely upon the judgment of the military commander as to the use of extreme measures. And that this is the view of Sir John Bridge's committee is shown by the words, "If the officer thinks it necessary to take immediate action it is not obligatory upon him to do so, nor is he to continue any longer than he thinks it absolutely necessary." We feel sure that this discretionary power placed in the hands of the senior military officer is for everybody's good, and it is satisfactory to find that the committee have laid so much stress on this all-important point.

News of the Service.

NOTE.—Our readers are respectfully requested to contribute to this department all items of Military News affecting their own corps, districts or friends, coming under their notice. Without we are assisted in this way we cannot make this department as complete as we would desire. Remember that all the doings of every corps are of general interest throughout the entire militia force. You can mail a large package of manuscript, so long as not enclosed in an envelope, for one cent. At any rate, forward copies of your local papers with all references to your corps and your comrades. Address,

EDITOR, CANADIAN MILITARY GAZETTE
P.O. Box, 387, Montreal, Que.

Halifax.

A guard of honour from the 63rd and a saluting party from the H.G.A. were ordered to parade on Tuesday 19th inst., at 3 p.m., the guard of honour to attend His Honour the Lieut.-Governor on the occasion of the closing of the Local Legislature, and the saluting party to fire the usual salute. Late in the evening of the 18th, the parade was postponed to the following day. The King's Regt. also furnished a guard of honour. Everything went off with remarkable steadiness. The H.G.A. came in for some complimentary remarks from the Royal Artillery who were watching the way they brought the 9 pd. guns over a glare of ice, placed them in position, firing the 15 guns with the utmost regularity, washed out the guns, and replaced them. The first gun was fired at 3:07, and the detachments were on their way home at 3:15 p.m.

The 63rd Regimental School have commenced recruit drill, and I am glad I am neither a recruit nor the Sergt.-Major, for they have a cold time of it drilling in a large drill shed without a fire. Several holes in the roof, and at least 288 out of the 576 panes of the windows of the shed broken.

Club Swinging Record Broken.

A successful attempt to lower the world's record in club swinging was performed by Corporal Kershaw, 1st Kings regiment, at the gymnasium, Glacis barracks, last night. He commenced at 8 a.m. yesterday morning and kept up till 8:30 p.m. The present record, now held by a sergeant in the Norfolk regiment, a gymnastic instructor, with two 2 lb. clubs is 12 hours and 20 minutes. Corpl. Kershaw swung continuously for twelve hours and thirty minutes, with 3 lb. clubs, and had it not been for the closing of the school there is no doubt Kershaw would have kept longer with the clubs. At intervals he was served with refreshments, but never stopped the swinging of the clubs. It is worth noting that many civilians witnessed the performance and expressed their surprise at so young a man attempting such a feat. Perhaps the authorities at the school of gymnasia at Aldershot will learn about this, and ultimately a contest may result between the present holder and Corpl. Kershaw. — Halifax Daily Echo, March 20th, 1895.
GRAVELCRUSHER.

Kingston.

KINGSTON, March 25th.—The drill season of 1895 has opened, and all is bustle and preparation in the ranks of

the 14th Batt. This evening, the first regimental parade will be held.

The different companies have met during the past week, and completed their organization for the season. In all cases the men turned out in large numbers, and gratifying enthusiasm was manifested by all ranks.

For several reasons, the season of 1895 is expected to prove an unusually successful one for Kingston's crack rifle corps. In the first place, the several companies have had the benefit of a winter's training in the gymnasium, under the instruction of Sergt.-Major Morgans. That this will prove a great advantage, will hardly be denied. Again, a large number of recruits have been added to the strength of the regiment during the winter, and these have also had the benefit of the gymnastic training and several of the companies have engaged the services of drill-instructors for the season, and have made it imperative upon the men to attend drill regularly.

Several new officers will make their first appearance with the regiment this evening.

"B" Company 14th Batt. met on the evening of March 20th, for re-organization, and elected the following officers for the company association.

President—Color-Sergeant J. Graham.
Vice-President—Sergt. J. Forsythe.
Treasurer—Sergt. W. Hamilton.
Secretary—Private W. White.

Rifle Committee—Sergt. Newman (chairman), Sergt. Hamilton, Corporal Franklyn, Private Dempster.

General Committee—Corporal Franklyn (chairman), Privates Denny, Sanderson and Mack.

In the efficiency competition for 1894, the 14th won first place, and the Gilmour cup, in Military District No. 3, the battalion's figure of merit being 88. The 57th Batt. "Peterboro' Rangers" stand second in the published returns, with 81.7.

The relative standing of the several companies of the 14th is as follows: 1st, "C" Company, with 111 points; 2nd, "E" with 102.4 points; 3rd, "F" with 89.6 points; 4th, "D" with 86.2 points; 5th, "B" with 85 points, and 6th, "A" with 53.8 points.

The bugle band of the 14th elected the following officers at a recent meeting: President, J. Bennett; secretary, Allan Stroud; treasurer, B. Galloway; instructor, A. E. Dean.

The members of this band held their annual dinner a few evening ago, in the band-room at the drill-shed. Toasts, story and song were the order of the evening, and a very pleasant time was spent. During the season just beginning several new marches composed by one of the buglers will be played.

The committee having in charge the making of arrangements for a grand celebration of the Queen's birthday in this city, will allow the 14th \$200 for the entertainment of a visiting corps. It has not yet been decided what battalion will be invited to visit us on that day. A military demonstration will be a leading

feature of the day's proceedings.

The band of the 14th, will wear an improved uniform this year. At a recent meeting of the members, the funds necessary to procure the requisite articles were appropriated. The regulation staff caps (peaked) will be adopted, new and improved cross-belts will be procured, and the tunics will be altered in the direction of improvement.

Capt. Hudon of "A" Battery, le. for Quebec on March 20th, to take the place of Lieut.-Col. Wilson, who sails for England on the 30th inst., for a special course of instruction.

Sergt. D'Amour left on the following day, for Montreal. He will spend a brief interval visiting friends there before proceeding to Halifax, whence he will sail for England, by steamship Mongolian, on Saturday, the 30th March. This will be Sergt. D'Amour's second visit to England, he having represented "A" Battery on the Canadian Artillery team that visited Shoeburyness in 1886.

Some of the many friends of the Staff-Sergeants and Sergeants of "A" Battery are talking of entertaining their military friends to dinner shortly, to show their appreciation of the courtesies extended to them by the latter. The sergeants of the battery are very popular with the citizens of Kingston.

The people of Barriefield are taking up a collection for a purse to be presented to the Battery as a mark of appreciation of the good work done by the detachment sent to assist in lighting the fire in the village on Tuesday morning, March 19th, when had it not been for the efforts of the gallant artillerymen, very much greater loss would have been sustained by the villagers. Corporal William Bramah, (who is a brother of Gunner J. A. Bramah who has saved so many lives by his intrepidity and powers as a swimmer, and for whom the Royal Humane Society's medal is asked) rendered especially good service on this occasion and by his fearless conduct was the means of saving much valuable property.

The men attached to "A" Battery for the short course of instruction, had their first firing practice last week. The guns were in position on the Fort Henry hill, and the firing was done, at a moving target on the ice. The practice made was very fair.

It is to be sincerely hoped that the Kingston Field Battery will this year awake from the lethargy that has enveloped it in the past, and earn a more creditable reputation than it at present possesses.

On a previous occasion your correspondent dealt with this corps, its opportunities and the advantages taken of them, and in the near future, further space may be devoted to it, not with any desire to do it an injury, but with a sincere wish to see it wake up and do justice to itself.

VEDETTE.

St. John, N. B.

The Bugle Band Sleigh Drive.

The Bugle Band of the 62nd Fusiliers to the number of 18, with Sergeant Woodland in charge, held their sleigh drive last evening. After driving out as far as the Three-mile House they returned to the Officer's club on Charlotte street, where a splendid repast was prepared for them in Mrs. Woodland's best style. Major Sturdee acted as chairman and Mr. Kake as vice, and after full justice had been done to the solids, Major Sturdee made a few remarks, during which he explained that while in England he had arranged for eight chromatic attachments to be sent out, and that this would enable the bugle band to play more perfect music than in the past. He spoke very highly of the work done by the band, and he hoped that the boys would continue to work as they had done in order to make the bugle band a credit to the corps to the officers of the corps, and above all a credit to the band themselves.

Songs were sung by several of the members of the band, and a very enjoyable time was spent. The health of the band committee was drank with all the honors and in replying Major Sturdee referred in very glowing terms to the work which Sergeant Woodland had done for the band and hoped that his connexion with the band would long continue. A hearty vote of thanks was accorded the sergeant, and after the hearty thanks of all present had been given to Mrs. Woodland for the fine dinner she supplied, the meeting closed with singing of God Save the Queen. The bugle band sleigh drive was a decided success.—St. John Telegraph.

Toronto.

It looks queer in this young country of our to read of any company of the active militia giving its thirty-third annual entertainment. Such, nevertheless is a fact and to E Co. of the Queen's Own belongs the proud distinction.

This company celebrated their thirty-third annual on Thursday evening, the 14th march, at Temperance Hall, and with as great success as characterised any of the former events.

To the ex-members of "Thirsty-five" as it used to be called, the bare idea of E. Co. going to Temperance Hall for their "annual" will seem queer, but any misgiving as to the company going to the demnition bow-wows, will be allayed when I inform them that the refreshments were just as varied and just as extensive as those provided at any previous spread.

Capt. Musson presided over the guests and members of the company who had assembled to the number of about 150, among whom were representatives of almost every corps in the district.

Corp. Reeves was presented by Lt.-Col. Hamilton, during the evening, with a handsomely engraved set of sleeve links, given by the members of his company under his guidance for the examination of the N. C. O. class now going out.

The Q. O. R. Buglers paid a visit to the asylum on Friday evening, 15th inst., and under Sergt. Ross gave a revised edition of "Judge McGinty's Court."

This with the fancy drum march under the Bugle-Major, made a very enjoyable evening to the poor unfortunates, who are inmates of the institution.

The annual meeting of the Toronto Rifle Association was held Tuesday evening the 12th inst., in their rooms, on Yonge street. The financial report was received, showing the association to be in a good position, with a good cash balance and no liabilities. It was decided to affiliate with the D.R.A., O.R.A., and N. R. A. The following officers were elected for the ensuing season: Captain Kirkpatrick, president; T. S. Bayles, 1st vice-president; C. Wilson, 2nd vice-president; Lieut. Alf. Curran, secretary and treasurer; W. J. Graham, Capt. Rennie, Lieut. J. Davidson and W. Macdonald, committee; Capt. Mercer and Lieut. A. D. Cartwright, auditors.

"In accordance with instruction received from headquarters" so the order reads that has recently been forwarded to the different regiments, all the Martini Metfords together with all unexpended ammunition have been ordered to be returned to the Supt. of Stores at Toronto without delay.

This order has caused considerable surmising by all ranks, some inclining to the belief that the rifle is not satisfactory, whilst others hold that as these were issued only for experiment, that the experiments are over and that the government has called them in preparatory to a general issue of a larger number.

In view of the many divided opinions that can be obtained relative to the merits of this rifle, it does not seem possible that the government intend anything of the kind, but rather an admission that the rifle in its present shape is not what it might be.

Certainly nothing seems more absurd than issuing them for experiment so late in the season that no satisfactory test could be made, and without knowing how they would work on a hot summer day, as well as a cold raw October afternoon, would tend to debar any rifle shot from giving a final decision.

We have at last heard of the efficiency competition, but never a word of the 200 yards range at the Lake Shore ranges.

The city riflemen look with dread on the prospects of it remaining closed another season, as the effect on the young shots of all the regiments is hurtful in the extreme. No satisfactory plan of working the ranges without this butt has yet been evolved, and the tiresome wait, so notable of the old Garrison Commons, bids fair to make the new ranges a failure.

It would certainly bring the matters to a focus if the rifle committees of the city regiments were to wait on the city member, because the present is a most opportune time to press for what they have every right to demand from the govern-

ment, and the present condition of this butt is the only drawback from making the coming season a most successful one for all regiments.

Come gentlemen, press your claim. The party to the west of the range has no grounds for his complaint and a little pull on his side must give way to the right and justice on the side of the riflemen.

The Morris Tube Range in the Q.O.R. Sergeant's Mess was opened Monday evening, 11th inst., by a team match between teams captained by the president and vice-president of the mess. The ranges were 200 and 500 yards, and the match resulted in favor of the vice-president's team by 31 points.

A return match will be fired at an early date. Mr. Alex Muir, one of the honorary members of the mess, has donated a handsome trophy for competition between the members of the mess.

With a view of testing the light provided for the Drill Hall Range, Lt.-Col. Buchan had representatives from the city corps fire a few shots, on the evening of the 21st inst. The light not being altogether satisfactory, further test will be made after certain suggested changes are carried out.

The delay in fitting up the ranges, as well, in fact as the Drill Hall, is the subject of adverse comment on the part of all ranks, and the feeling is not altogether unlikely to cost the present administration not a few supporters for the exasperating policy they are displaying—in fact one might term it extreme indifference.

The spring drill of the city regiments starts the last week in March, and the probabilities are that the same drill will finish long before any of these regiments take possession. If the contractor was compelled to put a larger staff of men on, in place of spinning out the work with a few, all this could have been remedied.

The annual gathering of "R" Co Q. O. R., took place Tuesday evening, the 19th inst, in St. Georges' Hall, and was thoroughly enjoyable.

The stiff formal dinner was dispensed with in favor of a more free and easy card party, concert and supper, and the result proved the wise decision of the committee. Capt. Rennie was the recipient during the evening of many compliments at the standing of the company in the recent competition.

B Co. Royal Grenadiers (Capt Cameron and Lt. Boyd) wins the Cumberland cup for the season of 1894, with D Co. (Capt. Stenson and Lieut. Mason) holding second place.

Last post has sounded, the result of the efficient competition has been announced, and with the sounding of lights out closes the final stage of the greatest farce the force of this or any other district has ever been regaled with.

To the 13th Bn. of Hamilton falls the trophy for the year of 1894 and without a

doubt the elapsing of nearly a quarter of the year of 1895, mars in a great measure the intoxicating pleasure of being named as the leading regiment of the 2nd Military District.

The 13th Bn. have honestly won hearty congratulatinns for the hard work done by their regiment last year, but I feel safe in saying that no one desires to cheapen their victory or lessen his congratulation when he says that winning the Gzowski or any similiar cup does not by any means determine the position of any regiment in the service.

No sane person will admit the inferiority of the Queen's Own to any regiment in Canada, and no regiments will give voice to the fact that the Q.O.R. are the crack corps of the Dominion quicker than their old friends, and for the season of 1894 more successful competitors, the 13th of Hamilton and the Victoria Rifles of Montreal.

The Q.O.R. stand to-day with a record parade of 757 of all ranks, fully equipped in officers, brass band over 40, bugle band 30, Pioneers Corp. 10, Ambulance 20, Signal Corp. 10 and a Cyclist corp of 22, and yet as in the whole competition this strength appears to have been a weakness, as it certainly did not seem to favor them in the recent inspections. No one blames the inspecting officers, but all admit that an anylisis of the figures, forcibly reminds one of the close and capable manner in which their work was performed.

The trouble lies nearer headquarters, and while the whole system could be no doubt changed, the more satisfactory way would be to withdraw the trophy which is constantly being derided, although given with the best intent by one of the staunchest friends of the Canadian Militia.

The pressure to keep pace with the terms of this competition is too high and will yet effect, in fact is seriously affecting all the regiments striving to carry out the conditions. Instead of men taking a pleasure in their work and regarding a drill as a relaxation, they now look upon it as an extra part of their daily toile and at the first opportunity sever their connection with the regiment in which, under different conditions, they would become long and just as efficient members.

The time is now ripe for a discontinuance of the competition as both the Q. O.R. and 13th have won the cup twice.

The recent article in Athletic Life reflecting so unfairly and unjustly on the Grenadiers, has redounded with great force on the head of the rash writer, as a late issue of the Toronto Star publishes a statement to the effect that such an article, although ample apology has been tendered, has been the cause of the author's resignation from a prominent position in the leading athletic club of the Dominion.

Neither the writer nor the paper have come out of the affair with any credit.

Quebec.

QUEBEC, 23rd March 1895.

The Hon. J. C. Patterson, Minister of Militia and Defence and Col. C. E. Panet the Deputy Minister, arrived in the city this week and are stopping at the Garrison Club.

Mr. Francis Joseph Dixon, U. L., of Toronto, President of the Royal Military College Club, is spending a few days in the city, the guest of Captain Ernest F. Wurtele, R.L.

On the 12th inst., Lieut.-Col. J. F. Wilson and Captain R. W. Rutherford of the Royal Canadian Artillery, who are shortly to leave for England, were entertained at a banquet at the Union Club.

There were from thirty-five to forty in attendance, presided over by Mr. Ulric Tessier, the vice-president of the club. The decorations were very pretty and the music supplied by the band of the Royal Canadian Artillery. After the toast of the Queen, the chairman proposed that of "Our Guests" which was received with loud applause.

Suitable replies were made by Lieut.-Col. Wilson and Captain Rutherford. After a number of speeches the dinner was brought to a close by the singing of "Auld Lang Syne."

The R. C. A. hockey-team were defeated by the Crescents on the evening of the 16th inst., by 7 goals to 2.

Garrison Sergt.-Major Lyndon, of the R.C.A. has again resumed duty after a spell of illness.

Electric light has been introduced into the Barrack of "B" Field Battery R. C. A., and it is anticipated that it will be taken into general use at the Citadel in the near future.

On Monday evening the 18th inst., the Non-Commissioned officers and men of "B" Field Battery R.C.A., gave a ball in their quarters in d'Auteuil street. The occasion being as a farewell to Lieut.-Col. Wilson and Sergt. Slade before their departure for an instructional tour to England and in celebration of St. Patrick's Day. Refreshments were served at 12:30 and dancing kept up till an early hour. The committee are deserving of much praise for the success of the ball and who were indefatigable in their efforts to please their friends both military and civil. The committee consisted of Sergt.-Major O'Grady, chairman; Sergt. Slade, Sergt. Morgan, Sergt. Costin, Corp. Simpson, Drivers Lamothe, Reade, Shannahan, Seeves, McMahon, Watson and Johnson.

The 8th Royal Rifles are steadily at work with their annual training. The muster last evening was not large, averaging about ten files per company. In addition to which the brass and bugle bands were in attendance.

The R.C.A. are giving a grand variety concert on Monday at the Academy of Music.

Mr. A. A. Bartlett, of the Prince Edward Island Brigade of Garrison Artillery is taking a special course of instruction at the Citadel.

PATROL.

THE BALLISTICS OF THE RIFLE

Paper Read Before the Montreal Military Institute on February 2, 1895, by Major H. F. Perley, Headquarters Staff.

(Continued.)

Using the co-efficients thus obtained the following table has been compiled, the muzzle velocity in each case being taken at 1300 f. s.

Range.	$\frac{d^2}{w} = 2.9237$		$\frac{d^2}{w} = 2.9532$		$\frac{d^2}{w} = 2.9827$	
	Velo-city.	Time of Flight.	Velo-city.	Time of Flight.	Velo-city.	Time of Flight.
Yds.	f. s.	Sec'nds	f. s.	Sec'nds	f. s.	Sec'nds
0	1300	0.00000	1300	0.00000	1300	0.00000
500	867	1.46737	801	1.47474	862	1.47739
1000	666	3.43797	601	3.46910	657	3.48556

From the foregoing it will be seen that with a decrease in

$$\frac{d^2}{w}$$

there is a decrease in the time of flight and consequently a flatter trajectory, and riflemen may see in this the reason for the rule which obtains, that a low barometer tells them to lower their elevation, and *vice-versa*, when the barometer stands high.

There is another element effecting the flight of a bullet, viz., the retardation or acceleration due to the motion of the air at the time the shot is fired. It is well known that a head wind, or one blowing from the target to the firing point, has a retarding effect, such effect being in proportion to its velocity; that the velocity of the bullet is thereby reduced; and that a change in elevation becomes necessary. When a wind blows directly from the firing point to the target it accelerates the forward movement of the bullet, and a lowering of the backsight has to be made. With respect to this I cannot do better than to quote directly from "The Modern Sportsman's Gun and Rifle."

Vol. 2.... "A wind directly from the front or rear produces a somewhat similar effect to a rise or fall in the barometer. Assuming that a bullet has a mean velocity of 1200 f. s. in a 400 yards range it would just take *one second* to traverse that distance if there were not any wind;—but if a head wind were blowing the bullet would be retarded in proportion to the wind's velocity. A wind blowing at the rate of $20\frac{1}{2}$ miles per hour has a velocity of 10 yards per second, and a bullet meeting such a head wind would be retarded to that extent, the range would become equivalent to 410 yards, and *over* one second would be required to traverse that distance. In the case of a rear wind the forward motion of the bullet would be accelerated, the range would be reduced to 390 yards, and the time of flight would be *less* than one second, but as the "drop" of the bullet is in proportion to the square of the time, the difference between the position of the bullets on the target would be about 19 inches, or $9\frac{1}{2}$ inches above, and $9\frac{1}{2}$ inches below what it would have been had there not been any wind. In a range taking double the time the difference would be increased four-fold, and in one-half of the time there would be only one-quarter the difference. This is on the supposition that the wind has a velocity of $20\frac{1}{2}$ miles per hour; if the velocity be $10\frac{1}{4}$ miles per hour, the differ-

ence of "drop" would be one-half as much, and so with other wind velocities; and it is also based on the assumption that the mean velocity of the bullet is uniformly 1200 f. s. whereas every bullet having a different velocity would require a different estimation, and as all bullets lose speed during their flight, there would be a change in the variation with every change in distance."

Besides these front and rear winds there are winds which blow from all quarters, some steady, others changeable and fickle, such as are termed "fish-tail," all of which have their retarding or accelerating influences, and for which the allowances to be made to counteract their effects, can only be determined by actual experience on the range.

It has been previously stated that a bullet discharged from a rifle has two motions, (1) that of translation, or its onward movement to a point of impact, and (2) that of rotation, or its spinning around its longer axis. Relative to the first motion it has been shewn how and to what extent it is retarded during flight, and how the amount of such retardation can be calculated; but with respect to the second motion we are aware that it continues practically unchanged as regards its amount during the whole of the flight of the bullet, irrespective of any change in velocity.

The velocity of rotation is determined from the formula

$$R = \frac{12 v}{T}$$

... where R is the number of rotations per second, V the muzzle velocity in feet per second, and T the length of the barrel, in inches, occupied by *one* turn of the rifling.

Assuming the m. v. of the m. h. rifle to be 1320 f. s., and the spirality of the rifling *one* turn in 22 inches, the number of rotations per second will be 720. For comparison—the m. v. of a Snider bullet is 1170 f. s., and the twist of the rifling *one* turn in 78 inches, then the number of rotations will be 180, or the spin of the m. h. bullet is to that of the Snider as 720 to 180, or as 4 to 1, but this proportion is not constant as it varies with every variation in the m. v. of either rifle.

The onward movement of a bullet is affected by "drift," which, according to Major MacKinlay in his "Text Book of Gunnery," is "a differential effect due to several causes"; that "opinions differ greatly as to the explanation of this difficult problem in rigid dynamics"; and, "in the present state of our knowledge it is impossible to give reasons for drift, which will be received by all, as different explanations have been given by various authorities."

The received explanation of drift is that it is a motion depending upon the initial velocity, and the degree and direction of the spirality of the rifling. A high velocity and quick spirality give a high velocity of rotation, and consequently the degree of drift is increased. This drift, or movement of the bullet from the direct line of flight is towards the right when the rifling is in that direction, and towards the left where the spirality is left-handed, and its amount has to be determined for every gun.

Drift is an important factor and its action has, in the case of great guns, (howitzers with their varying charges excepted), to be allowed for by inclining the rear sight at an angle to the perpendicular to the axis of the trunnions, such inclination being called the "permanent angle of deflection." It may also be stated that the rifling of the Lee-Metford rifle is to the left, and apparently there must be a large amount of drift attending the flight of its bullet, for the foresight in

the latest pattern is most noticeably to the left of the axis of the barrel to counteract its effect.

At the moment of discharge an upward or downward movement of the muzzles of rifles, whether great or small, takes place, and thus an initial direction is given to the projectile in excess or reduction of the elevation for which the gun is laid, and this movement is termed "jump." It is not a definite quantity, and at times it varies in extent in the same gun at different angles of elevation, and it also varies with the position in which the gun is held at the time of discharge. When fired from a fixed rest the m. h. is found to shoot higher than when fired from the back position, where the barrel is supported further forward than in the prone.

The quantity of "jump" varies with the grasp with which the rifle is held by the marksman. Thus, a sturdy, short-necked man finds the sights at the shorter ranges come easily into view, whilst he finds it difficult to "crane his neck," to the sights for long distances; and, *vice-versa*, the tall, long-necked man finds difficulties with the short range sights, and comfort with those for longer distances. It is therefore scarcely possible under such circumstances that either of these men will have an equally firm grip of the rifle at all elevations, and the "jump" may therefore take different proportions with variations in the height of sight and be different with two men if they chanced to use the same rifle. Jump is also found to vary with a variation in the powder charge, but as "fixed ammunition" is always held on a range, the amount or degree of variation must depend on the gun and the shooter, and not on the cartridge.

The amount of recoil of a rifle is practically limited by the amount of blow on the shoulder which an ordinary man can sustain repeatedly without lessening his accuracy of aim. As this blow depends on the bullet and the powder charge, it follows that if a very high velocity is required, the weight of the bullet must be reduced, and this has been carried out in the Lee-Metford rifle with its light bullet of small diameter.

Neither the formula for, nor the calculation of an example of recoil are given, as they involve the use of too many figures but it may be stated that the recoil of the m. h. is determined to be 16.6 ft. lbs., or a force of 16.6 lbs. exerted over a distance of *one foot*. If we suppose the effects of recoil to be neutralized in a distance of one-half of a foot, then the resistance must be equal to 32.2 ft. lbs., for $32.2 \times \frac{1}{2} = 16.6 \times 1$. The "set-back" of a man's shoulder in firing a Martini may be taken as three inches, or one-quarter of a foot, and the force of recoil will then amount to 66.4 ft. lbs.

The one action of the powder charge to which it has been stated reference would be made, is the pressure exerted after its ignition. Gun powder is an explosive propellant compound, and the terms explosive and propellant are not synonymous or convertible, for a chemical mixture may possess the explosive powder in a much higher degree than the propellant. Fulminates of gold, silver and mercury are highly explosive, but they have not the propellant force of gun powder, nor can they be used as a substitute for it. Their explosion is termed "detonation," which is merely a very rapid explosion, and the difference between these terms may be explained by judging the difference between a push and a blow, which after all is only a difference in velocity.

When a charge of gunpowder is exploded in a gun, a force is created, which must equal the energy contained in the

bullet on its emergence from the muzzle ; the loss caused by the beating of the barrel ; the friction of the bullet in its passage through the grooves of the rifling ; and the resistance of the column of air in the bore, which has to be expelled in advance of the bullet.

When a body has been set in motion from a state of rest, a certain amount of force or pressure must have been exerted upon it, and such force or pressure is termed *work*, and its quantity or amount is measured by the product of the pressure or force into the distance through which the body has been moved, and such product is expressed in foot-pounds ; but as the pressure or force exerted in the expansion of the gasses of an ignited powder charge in the bore of a gun is *not constant* but *variable*, the product of the mean pressure on the bullet into the distance moved through the bore must be taken.

When a bullet is in motion it is said to have *energy*, i.e., it is capable of doing *work* or overcoming resistance, and its amount is determined by the well known formula

$$\frac{w v^2}{2 g n d}$$

..... Where *w* is the weight of the bullet in pounds, *v* the velocity in feet per second, and *g* the accelerating force of gravity, or the constant 32.2.

For the m. h. the weight of the bullet is 0.06857 lbs., and if a m. v. of 1315 f. s. be assumed, the energy at the muzzle will be 1841 ft. lbs.; that is—if an uniform resistance of 1841 lbs. were opposed to the bullet as it leaves the muzzle, it would penetrate *one foot* before being brought to a state of rest. This amount of energy decreases with a reduction in velocity very rapidly, in fact in proportion to the squares of the muzzle velocity and that at the moment of impact. Thus, assuming the m. v. to be 1200 f.s., and at the time of impact 600 f.s., the energies developed would be as 144 to 36, or 4 to 1 ; or whilst the velocity was reduced one-half, the energy or impact was reduced to one-quarter of that at the muzzle

The penetrative energy of a projectile varies as its circumference, and also with its hardness. Bullets made of pure lead are sufficient for very ordinary purposes of penetration, but those hardened with tin or antimony, or the bullet of the Lee-Metford in its hard envelope of cupronickel, have a greater penetrative power, and this power can, within certain limits be increased with a reduction in diameter, the weight remaining the same.

Gunnery books tell us that *penetrative energy* is determined by the formula

$$\frac{w v^2}{2 g n d}$$

which put into figures for the m. h. and for comparison, for the Lee-Metford, and assuming the point of impact for both rifles to be 50 feet distant from the muzzles we obtain for the first an energy of 1152 ft lbs., and for the latter 1645 ft lbs.

These results show that the penetrative energy of the smaller bullet at 50 feet, is to that of the larger bullet at the same distance as 1.42 to 1.

Penetrative energy is also increased by the velocity of rotation, or "spin" of the bullet, but to what extent this exists has not yet been determined, but it is well known that the penetration of elongated rifle bullets is increased in a higher ratio than theory would assign. It has been previously stated that whilst there is a constant reduction in the velocity of translation, there is but little, if any, reduction in the velocity of rotation, even at long ranges, and therefore the "spin" generated at the muzzle continues during flight.

We have found that the number of revolutions or "spin" of the m. h. bullet is 730 per second. For the Lee-Metford

velocity of 1850 f.s. (Mark II ammunition) the number of revolutions at the muzzle is 2220. It may thus be noted that the "spin," or, if it may be so termed, the *penetrative power* of the Lee-Metford bullet is to that of the m. h. bullet, as 222 to 72, or say, 3 to 1. From this it may be deduced that a quick spirality of rifling, great muzzle velocity, and a bullet of small diameter produce the greatest penetrative effect.

With reference to this penetrative effect or action, I am, through the courtesy of Lt.-Col. Macpherson, Director of Stores, Militia Department, enabled to quote the following from a letter by Mr. Wm. Ogilvie, D.L.S., on trials made by him of the magazine rifle.

"The penetration of the new rifle is marvellous. The bullet pierces 15 to 18 inches of hard maple and elm, and still has force enough to kill. I pierced a 10 inch oak and still had force enough to make a big splash in the water beyond, force enough I would say to kill any ordinary animal. I put *four* bullets through a green standing piece 34 inches in diameter and *one* through another 35½ inches in diameter, and all had force enough to kill after, as evidenced by the cutting of limbs beyond. I then pierced 20½ inches of perfectly sound dry pine and 1½ inches of dry ash, and the bullet crossed a clearing 150 yards wide after, and struck with force enough to be heard distinctly. My last trial was with 7 half dry hemlock planks backed by a lot of dirty pine planks. The bullet pierced the 21 inches of hemlock, and three of the pine planks in such a direction that the penetration in them aggregated 15½ inches, or altogether 35½ inches of sound wood, and had the pine planks been clean it would have probably gone an inch or two further. Now the 28 inches of hemlock I can safely say equal the 28 inches of pine in resistance, so that the distance it would have gone into pine would have been about 45 inches. Fired into ordinary clay, and loam free from sand and stones, the bullet will penetrate about 3 feet. A ricochet from clay has much more force than any bullet I ever saw ; in fact a ricochet shot from a distance of one or two hundred yards, seems to lose but little of its force, and the bullet so far as can be judged from the mark in the ground, and the noise of its flight, appears to keep point first, and to keep its rotary motion. In this connection I may say that the bullet which pierced the 21 inches of hemlock and 15½ inches of pine, did not turn out of its course, though it struck two of the planks at a very oblique angle ; and, to judge from the scratches on it, it kept up its rotation also."

These results are interesting and of value, but for the purpose of calculating the insistance offered to the passage of the bullet into or through wood, clay, etc., the muzzle velocity of the cartridge used, and the distance from the gun to the point of impact or the object hit, are required, neither of which are stated by Mr. Ogilvie.

From Col. Macpherson I have learned that the ammunition used by Mr. Ogilvie was Mark II, or the *powder* cartridge, the muzzle velocity of which is stated to be 1850 f.s. Taking this velocity as correct for the cartridges used, and assuming that the objects hit were at a distance of 50 feet from the rifle, we are enabled to determine the following results.

Out of the trials mentioned by Mr. Ogilvie, only *two* show that the resistance met with exceeded the penetrative energy of the bullet, viz., where it pierced hemlock and pine planks to an equivalent depth of 45 inches, and penetrated clay to a depth of 36 inches.

With a muzzle velocity of 1850 f.s. the remaining velocity will, at 50 feet from the muzzle, be 1812 f.s. and the penetrativ

energy of the bullet with that velocity will be 1645 ft. lbs. If therefore an uniform resistance of 1645 lbs. be opposed to the bullet it would penetrate *one foot* before being brought to a state of rest. In Mr. Ogilvie's trial it was brought to rest in 45 inches, or 3.75 feet, and the *mean resistance per foot penetrated* will therefore be

$$\frac{1645}{3.75} = 438.06$$

ft. lbs., which, for example, may called "the factor of resistance" of pine for the Lee-Metford rifle, and it can be so used in the following statement.

Mr. Ogilvie pierced 26½ inches of dry pine and 1½ inches of dry ash, equal to say, 30 inches, or 2.50 feet of dry pine, and the bullet after emergence crossed a clearing 150 yards in width, and struck a tree heavily. The *energy* destroyed in passing through that thickness of wood will be equivalent to the "factor of resistance" of pine multiplied by the depth penetrated, or 438.06 x 2.50 = 1097 ft lbs. and the *remaining energy* after emergence will therefore be 1645 - 1097 = 548 ft. lbs., and the velocity for this reduced amount of penetrative energy will be 1046 f.s., a velocity equal to that of the bullet at 500 yards, when fired in the ordinary way, and it may thus be sure that trees would be struck heavily after passing over a distance of 150 yards.

Mr. Ogilvie states the penetration into clay was 3 feet ; the penetration energy being 1645 ft. lbs., the resistance per foot in depth will be 548.5 lbs. The nearest to this with the m. h. is a statement or a "Treatise on Small Arms &c.," that the average penetration into dry earth of the m. h. bullet at 1000 yards is 8 inches. As the m. v. of the m. h. is stated to be 1315 f.s., the remaining velocity at 1000 yards will be 664 f.s. Using these data, the protractive energy at 1000 yards will be 332 ft. lbs., and as the depth penetrated was 8 inches, or two-thirds of a foot, the resistance per foot in depth will be 503 ft. lbs.

In "The Modern Sportsman's Gun and Rifle," vol 2, it is stated : "That bullets having the same energy, but differing in calibre, would not however have the same powder of penetration, for they would be met with a resistance proportionate to the squares of their diameters. Hence if two bullets of 0.50 and 0.40 bore respectively, and of the same weight, struck with the same velocity, their energy would be equal, but the resistance to the larger bullet would be as 25, and to the smaller as 16, so that the former would only penetrate about two-thirds as far as the latter."

The amount of work done by the concussion of a charge of gunpowder into gas is influenced by the length and diameter of the barrel in which explosion takes place ; and where the same weight of powder and bullet are discharged from two rifles of the same calibre, the advantage lies with the longer barrel, as in such case the gases will be enabled to expand to a greater extent, and the *work* done will be proportionately increased. This action of the powder-gases is called *expansion*, the number of volumes of which depends upon the proportion the space occupied by the powder charge in the barrel bears to the whole space in the barrel.

The length of the barrel of the M.H. is 33 inches ; the diameter of the bore, 0.45 inch ; the area of the bore is 0.159 square inch ; and the whole space in the bore—assuming that the diameter, 0.45 inch, is carried through the whole length of the barrel, is 5.247 cubic inches.

One hundred grains of dry powder (Q.F.G2) will occupy 0.39714 cubic inch of space, and as the charge of the m.h. is 85 grains, the space it will occupy in the bore will be 0.3367 cubic inch, and the

number of times the gases generated on explosion in the bore will be expanded will be $5.247 \div 0.3367 = 15.584$.

One of the results obtained by Messrs. Noble and Abel from their experiments on fired gunpowder was the determination of the amount of work done by the explosion of a pound of gunpowder, and the increase due to the number of times the gases developed expanded in the bore of a gun. As the table prepared by Captain Noble (*Text Book of Gunnery*) is based upon a pound of powder as an unit, and the work accomplished is stated in *foot-tons*, all of which are applicable to big guns and heavy charges, I have reduced the amounts thus given to suit an unit of 10 grains of powder, and expressed the work done in *foot-pounds*, the results being tabulated as follows:—

No. of Expansions.	Work per 1/700th of a pound, or 10 grains of powder.	No. of Expansions.	Work per 1/700th of a pound, or 10 grains of powder.	No. of Expansions.	Work per 1/700th of a pound, or 10 grains of powder.
	ft. lbs.		ft. lbs.		ft. lbs.
1	0	8	350.720	15	422.304
2	156.960	9	361.508	16	429.398
3	221.910	10	376.822	17	435.900
4	262.742	11	387.728	18	442.041
5	292.432	12	397.504	19	447.820
6	315.642	13	406.515	20	453.270
7	334.675	14	414.726	21	458.425

By the use of this table the theoretical amount of work developed by the explosion of 85 grains of powder in the M-H barrel can be determined. As previously stated the number of expansions is 15.584. Opposite 15 in the table is the number 422.304, and for the decimal part .584 we must multiply it by the difference between the tabular amounts for 15 and 16 expansions, the result being 4.108, which, added to 422.304 makes 426.412, or the number of foot-pounds of work developed by the explosion of 10 grains of powder expanded 15.584 times. As the service charge is 85 grains, the amount of work developed by the explosion will be $426.412 \times 8.5 = 3,624.5$ foot pounds.

This amount represents the work of the powder charge, but only a portion of it is expended on the bullet, the amount of which being determined from the weight of the bullet and its M.V., the difference between the two amounts will represent the *loss* of energy due to a heating of the barrel; the forcing of the bullet through the grooves of the rifling with all the friction caused thereby; the expulsion of the solids formed by the combustion of the powder charge; and the gravimetric density of the charge; from the amounts in the table have been determined for a gravimetric density of unity, which does not obtain in practice, and, in the case of great guns, is always allowed for.

A M-H rifle bullet with a muzzle velocity of 1315 f.s., has an energy when leaving the muzzle of 1841 foot-pounds, and as the effect obtained from the explosion of 85 grains of powder is 3624.5 foot-pounds, it follows that the useful effect obtained is only 50.8 per cent., but this percentage only holds good so long as the M.V. does not vary, and thus the advantage to be gained by a high muzzle velocity is apparent, for the work developed by the powder charge remains constant where its weight and number of expansions are unchanged. The subject of "expansions" admits of a large

amount of explanation, too large to be included in this paper.

We have stated that the powder charge in a M-H expands 15.584 times before the bullet emerges from the muzzle, and that with *expansion* energy is created, or work is done; and that the amount of energy so created is in excess of the energy developed in the bullet. By the use of Captain Noble's table, as modified herein, we are able to determine the "work done" by the bullet at each successive expansion; its velocity at each point in the bore; and the time occupied by the bullet in passing each unit of space, the results being tabulated as follows:—

No. of Expansions.	Energy of Expansions.	Energy of Bullet.	Velocity of Bullet through the Bore.	Time.
	ft. lbs.	ft. lbs.	ft. sec.	Seconds.
1	0	0	0	0
2	1283.16	677.6	797.8	0.0029068
3	1877.73	958.1	948.5	0.0027425
4	2233.23	1134.3	1032.3	0.0029848
5	2485.66	1262.2	1089.9	0.0031513
6	2682.94	1362.8	1131.3	0.0032710
7	2844.73	1444.9	1164.9	0.0033682
8	2981.12	1514.2	1192.5	0.0034480
9	3099.08	1574.1	1215.9	0.0035156
10	3219.98	1626.9	1236.1	0.0035741
11	3295.68	1674.0	1253.8	0.0036159
12	3379.29	1716.4	1269.7	0.0036712
13	3455.37	1755.1	1283.9	0.0037123
14	3525.17	1790.4	1296.6	0.0037490
15	3589.58	1823.2	1308.3	0.0037828
15.584	3624.50	1841.0	1315.0	0.0038022

The amounts in the column headed "Time" are intended to show the period when the bullet passes from point to point of expansion and finally out of the bore. The interval between the points is not constant, that is, the bullet does not travel equal spaces in equal times, but equal spaces in unequal and constantly increasing portions of time. This must be so, for as the work done by the expansion of the powder charge is cumulative, or is increased as each unit of length of the bore is passed over, so must the time vary and be increased by a certain increment in proportion to the increase of work done by each expansion. The accuracy of these amounts of time is not vouchsafed for, as they are based on the hypothesis that if a M-H bullet at the moment of leaving the muzzle is moving at the rate of 1315 feet per second, it must have moved over the available length of the bore, 2.5 feet, in

$$\frac{1}{2} \left(\frac{2.5}{1315} \right) = 0.003802$$

part of a second, or expressed as a fraction 1-263rd, and from this as a starting point the remaining periods were decided from the velocities given in column 4.

An inspection of the foregoing table shows that the bullet is given a sudden kick which continues with abated strength up to the fourth expansion, after which it, the bullet, is pushed forward with a regular and cumulative force. The differences between the "energy of expansions" and the "energy of the bullet" are the measures of the "loss" between the energy due to the powder charge and that of the bullet.

My paper has come to a close, and I

have tried to convey the information it contains in as clear and concise a manner as possible, the trouble I met with in so doing being the fact the sub-heads into which the subject had to be divided are each of sufficient importance to demand a long paper for their proper elucidation, hence the necessity for condensation and a selection of the more salient points; but I trust that I have been able to offer something that perhaps is new to many, and I hope instructive also.

The Royal Military College.

MAJOR MAYNE COMES TO ITS DEFENCE.

He Recites What He Knows of the Institution, Points Out What Good it is Doing and How it is Run.

From the Montreal Star.

KINGSTON, March 16.—Major C. B. Mayne, of the Royal Engineers, of Chatham, England, has written the following letter in defence of the Royal Military College of Kingston against the attacks of the Patrons and other politicians who have been thundering forth against the institution:

"It is difficult," says Major Mayne, "for one who left Canada, even so recently as August, 1893, to understand the vehemence of the attack since made on the Royal Military College, or to form an estimate of how far that attack meets with the approbation of the people of the Dominion. But I may, without apology, even though now far from Canada, raise my voice on

BEHALF OF THE INSTITUTION

with which I was connected for seven of the best years of my life, and more especially as I firmly believe that it is of enduring value to the Dominion—a country endeared to me in many ways—in which I have many warm friends, and to which I hope to return to end my days.

The attack on the Royal Military College, so far as I can understand it from the Canadian papers—which I still have sent to me,—seems to be directed partly against the cost of the institution to the Dominion, and partly against its internal organization and administration.

To these points, therefore, I will chiefly confine my remarks.

THE COST OF IT.

It is very easy to appeal to the lower feelings of numbers of thoughtless people, by adding up all the money that has been spent on the Royal Military College—including, perhaps, interest—and then, after deducting the sums paid by the parents of cadets, to divide by the number of students who have passed through the College, and to say each cadet has cost the Dominion so many dollars.

There is a great tendency nowadays to look at things from their material side only, forgetting that the material advantages are but the lowest of all advantages, and that a nation which looks to material advancement alone is doomed to fall and disappear.

But, before passing to the higher and real advantages of the Royal Military College, let me ask, Where rests the responsibility for the amount of the outlay by the Dominion upon each cadet?

The Legislature, in prescribing the object of the education to be imparted at the College, practically, at the same time, determined the number of instructors required to carry out its object. The staff is rather less than in excess of the minimum necessary to deal efficiently

with the numerous general and technical subjects included in military officers' education.

While the number on the staff of instructors is thus regulated by the subjects to be taught—and cannot wisely be reduced—it would suffice for more than double the number of students in attendance, and with but slight increase in the number of assistant instructors, would even meet the demands of 200 students.

But the residential accommodation available for cadets is not adapted for more than sixty; and, even were more accommodation available, the number in attendance could not be increased beyond ninety-six, since by Act of Parliament only 24 may be received at one time or annually.

Thus, to a want of due proportion between necessary expenditure in salaries for a minimum staff of instructors, and the number of revenue giving cadets in attendance, is attributable much of the average outlay by the country for each cadet.

It has further been urged that in estimating the average outlay upon individual cadets, all graduates who are not actually in Canada's military service must be excluded from the reckoning. But this contention wholly ignores the necessities of the Canadian military system, which aims at the establishment of an available latent force in lieu of a standing army—too costly to be at present contemplated.

It may not be denied that the most remunerative use the Dominion can make of the special education it has given to cadets is to employ their attainments

IN SUCH MILITARY APPOINTMENTS

as exist; yet, assuming such appointments not to be available, graduates of the Royal Military College in civil life are necessarily highly important elements in Canada's defensive power. Nor is it unreasonable to attach national value to the qualifications of the young men the college has equipped for the battle of life.

Is it no gain to Canada that those who pass through the college course receive a physical, intellectual and moral training such as makes it difficult to recognize their identity with the faultily developed, raw and undisciplined lads who had joined four years previously?

Can it truthfully be said that such men as Mackay, Stairs, Robinson, Lang, Cartwright, M'Innis, Lesslie, Perry, Macpherson, the two Joly de Lotbinières and many others formerly cadets of the Royal Military College, will have no leaving effect on the societies in which they live and amongst whom not a few are destined to become leaders?

Will their physical, intellectual and moral training have no powerful yet unobtrusive, countervailing effect against the subtle tendency of Democracy to make disturbing jealousy a prevailing and governing principle of citizenship?

Will they exercise no useful influence in opposing the fatally seductive error that equality is liberty, and in diminishing blind impatience with nature's beautiful and universal law of harmony in the adaptation of differences?

The physical training at the Royal Military College cannot be equalled anywhere else in Canada. Regular hours, good nutritious food, bathing, boating, cricket, foot-ball, hockey, golf, tennis, snowshoeing, skating, tobogganing, gymnastics, field surveying and artillery and infantry drills work wonders on the cadets before they have been a year at the college.

The intellectual training includes English and French literature, mathematics, surveying, astronomy, physics (inclusive of heat and electricity), chemistry, engineering, civil and military—very practical, free-hand and geometrical drawing—and other military science.

It is a mistake to suppose that the Royal Military College—because styled

military—provides for only a technical military education. Its standard of education fits its graduates to enter

WITH BUT FEW EXCEPTIONS,
any civil pursuit.

The college is organized on a military basis in order to satisfy the leading purpose of its foundation—to give such instruction as is required for a thorough knowledge of the military profession.

To make the application of military discipline possible, the cadets are enlisted just as are soldiers and treated as military men.

Their literary education is not, however—and in the nature of things cannot be—restricted to solely and purely military subjects. Military and civil surveying are, in essentials, alike. Military and civil engineering rest on the same principles, and in much of the details of their application are identical. The same laws, and similar instruments concern alike the observations of the military and of the civil astronomer. The chemistry and the physics of the army officer do not differ in kind from those of the civil professor. In short a general and scientific education directed through channels of military thought is the necessary foundation of higher technical military acquirements. In intellectual training it is a great advantage that the members of a class at the Royal Military College are at present limited to a maximum of 24. There are no classes of 40 or 50—as is so common elsewhere in Canada—to prevent each student having that personal attention so important to the development of his attainments. Indeed, it may be said that the chief work of the professors and instructors at the Royal Military College during the first year of a cadet's career is to teach him how to think for himself, and this is a training which it is impossible to give when classes are so large as to include 40 or 50 students.

As regards the moral training of the cadets, no institution can point to a higher standard than is maintained at the Royal Military College in spite of the difficulties encountered in trying to maintain it. Honor and its subdivisions of Truth, Duty and Valor, are ever upheld to the cadets. And speaking as one who has had to deal with their discipline, I can say that dishonesty, untruth, willful neglect of duty and cowardice were always punished far more severely than mere breaches of the regulations; and it is my strong opinion that after their four years stay at the Royal Military College, the cadets left with very different views on these points from those with which they joined—though, of course, there were some incorrigible cases.

The religious duties of the cadets are well maintained. Prayers are read every morning and the wishes of the local clergy with regard to the cadets of their religious tenets are invariably met with as far as possible.

INTERNAL ORGANIZATION AND ADMINISTRATION:

Those who attack the internal organization and administration of the Royal Military College, I think, entirely fail to grasp the high principles on which they are based.

The Royal Military College has a military organization. The cadets are enlisted soldiers, and as such the parents have, de jure, no authority over them, though practically their claims as parents are not put aside. The object of the military organization is chiefly the inculcation of that great virtue—discipline, so especially important in a Democracy of Individualism, and to fit the cadets for appointment as officers of the Canadian militia,—though this latter receives but little support outside the Royal Military College.

Now comes the nature of the military training of the cadets. Are they to be trained to be fitted for officers or for privates?

A very great deal depends upon this. The training of a private ends with his attainment of familiarity with the technical duties of a soldier's life. His duties are clearly defined; his discharge of them is closely watched; and his responsibilities are narrowly limited.

Far different is the position of the military officer upon whom devolves the responsibility of exercising a wide discretion and taking the initiative.

Honor and trustworthiness are valuable and equally estimable in private and officer; but, while most desirable in the private, in the officer they are absolutely essential.

To train a cadet, then he must be led to regulate his own conduct—not by dread of detection when at fault, but by an honorable sense of his independent responsibility; and this course must be followed although frequent failures may occur—even when they are as grave as that which recently happened.

Many and many a time have I heard of irregularities indirectly, but I always refused to punish the delinquents on such information. I sent for them and told them what I had heard, and said I hoped it was incorrect; and I know that the other discipline officers acted on the same principle. We would not have any underhand dealings with the cadets, however persuaded we might be of their guilt.

The so-called 'hazing' which goes on at the Royal Military College is common to almost all educational institutions. I went through it, and so has almost every officer in the army. The only thing required is to keep it within the bounds of healthy fun.

When I joined the Royal Military College in 1886, the initiation was openly done: preparations were made before the staff of the College, and chairs were placed for them in case any of them cared to see what went on. In those days no bullying took place.

After a time the College authorities received orders from Ottawa that initiation was to be stopped. I protested saying its suppression would lead to bullying, and interfere with the existing healthy cadet discipline. My pleading was of no avail, and what I prophesied—from my knowledge of youthful nature, has taken place. But still the responsibility for that outbreak does not invalidate the soundness of the principle of administering the Royal Military College on the basis of reliance, and trust on the cadets collectively and individually if they are to be trained so as to fitted for the position of officers.

As regards the organization of the Royal Military College I can safely say that it cannot in fairness be adversely criticised. And, although I have had the honor of serving on the staff of the College, I am sure I shall not be misunderstood when I say that I have never been associated with a body of men whose efforts were more conscientious and continuously directed to the work they were entrusted with than the staff of the Royal Military College of Canada. Every one of them is not only an able man, but they are all men whose abilities are backed up by the highest moral purposes. One and all of us always had the welfare and progress of the cadets at heart, as was particularly noticeable when the staff discussed college matters amongst themselves.

If the public of Canada do not appreciate the necessity for the Royal Military College to the Dominion, it is probably due to the circumstance that its graduates have not been permitted to play that role in Canadian life which in fairness to the country should be assigned to them. And if the public do not consider the organization and administration of the College well adapted and directed to accomplish the object in view, it is because they have not set themselves to consider the difficulties—physical, intellectual and moral, of the task.

Many parents do not give the college a second thought when they hear it mentioned; others think it is something like one of the ordinary schools of 'Military Instruction'; others again regard it as a government job; and still more look on it as an institution by which the party out of power, and knowing nothing about it are ignorant of its value.

But it affords a peculiarly high physical, intellectual and moral training to the students who enter it; and as it excels all other institutions, in the way it realizes the combination of these branches of training it cannot but be of great benefit to the Dominion.

Whether Canada makes the

BEST USE OF THIS ADVANTAGE

is another question altogether—and the neglect to do so is greatly to be regretted. In every other country in the world, even in the United States, every cadet who qualifies and passes through the the Government Military College of the country, has a provision for life offered to him to the great and lasting advantage of the country.

So important are the advantages of a training on a military basis, that many states of the United States have military schools endowed and encouraged by the State administration; and even the provinces of Canada might reap great advantages if they assisted the Royal Military College and made use of more of its graduates in public works and in provincial offices.

Comparisons are said to be odious, but as I am pleading for the maintenance of an Institution with which I am now no longer connected except by ties of pleasant memories and deep interest for its continued welfare, I may say that I have been told by men of public standing in Canada that they have approvingly noticed the very marked advantages of the Royal Military College training in its effect upon the appearance and manner of its students. Such an effect is not the result of accident, but is due to the continued application of a principle of honor, trust, responsibility, and military discipline the influence of which cannot but be beneficial to any community taking full advantage of these.

One other evidence in favor of the Royal Military College should not be disregarded—and that is the voice of every graduate. Hear them speak! It is in tones of love and respect. They value their training for they know what it was in its inner being. They may laugh at the foibles of professors and over their own dare devil tricks but invariably they will speak well of their training as a whole.

In conclusion, let me press upon those who criticise the R. M. College not to confound the advantages it offers to the country, with the manner in which these advantages are turned to account in the interests of Canada. But, that it is even now doing some good, there cannot be any doubt, though the good does not make itself evident to the degree it should do, from the indifference with which the work accomplished in the college is treated.

If the college is to be condemned let it be condemned for failure to do the work entrusted to it—if such failure can be established. Should this test be applied and the existence of the college made to depend upon the result—then there can be no fear, as to the continuance and growth of the institution for which I can only wish 'Long Life and Prosperity.'

C. B. MAYNE,

Chatham, England. Major R. E.

Close observers report the Queen's health to be in a most precarious condition, though the news is not officially given to the public.

THE CRIMEA IN 1854 & 1855

Littell's Living Age, of March 16th, contains the conclusion of the series of articles by General Sir Evelyn Wood on the Crimea. These last episodes are so full of interest that we produce the chapter almost in its entirety

On the 10th June there was a conference at the British headquarters, of the senior artillery and engineer officers of the allied armies, who unanimously agreed that, after forty-eight hours' bombardment, a general assault should be delivered between five and six o'clock in the morning. This hour was chosen to enable the artillery to destroy any repairs made by the enemy during the night, and it was considered that the assaulting columns could be assembled during the night and concealed until they went forward. Three columns were to start from the French left attack, and storm the Bastion du Mat, and adjoining batteries. The British troops were to assault the Redan, and further northwards. The French were to assail the Malakoff, and the works between it and the harbor. The date was eventually postponed to Monday the 18th June, which was partly chosen with the hope that a brilliant success might obliterate any bitterness of feeling remaining in connection with the events of June, 1815.

During the week, 10th-17th June, I, with several of my comrades of the Naval Brigade, suffered from low fever and intestinal complaints, and although I managed to evade being put on the sick list, I was much reduced in strength, and did not shake off the fever until I got back on board ship, where I was sent after being severely wounded. We went down to battery at 2.30 a.m., on the 13th June and reopened fire, mainly on the Malakoff works, as soon as we could see to lay our guns. But those Russian batteries being deprived of the support they had previously received from the Mamelon, from which, moreover, they were now bombarded, our especial target, the groups of guns under the ruined Malakoff Tower, soon ceased to reply to our fire. The ammunition of our foes had again begun to run short, and the infantry soldiers who replaced the trained seamen gunners, most of whom had been killed, were of course far less efficient than those whom they succeeded. It was moreover necessary to keep gun detachments in the sea front forts, for during the night 16th-17th, the steamers of the allied fleets stood in, and bombarded them. Nevertheless the Russians fired some nineteen thousand projectiles in the course of the day. At the time, we were ignorant of the Russians being short of ammunition, and imagined that their lessened rate of reply was entirely due to the effect of our fire.

During the forenoon of the 17th June, General Pelissier called on Lord Raglan, and it was arranged that the allies should open fire at daylight on the 18th, and after any repairs which might have been effected by the Russians during the night, had been destroyed, that the French should assault the Malakoff, between 5 and 5.30 a.m., the English assailing the Redan at such time as Lord Raglan might think advisable. On that Sunday afternoon, there was perhaps scarcely any one in either of the allied armies, who was not confident that we should take Sevastopol next day. General Pelissier sent his senior engineer officer over to Sir Harry Jones in the evening, to say that he had changed his mind, and in conformity with the advice of his general

officers, had determined to assault at daylight; the terms of the message precluded the possibility of effecting any change in this decision. Lord Raglan was at the time riding round the camps, visiting the general officers who were to command the columns next morning, and received this unwelcome intimation only on his return at about 8 p.m. He fully realized the dangers incurred by this most unfortunate change, but considering it better to assent rather than create any ill-feeling in the minds of our allies by refusing to co-operate with them, gave, though reluctantly, fresh orders, and his troops, parading at midnight, reached their assigned positions before break of day on the 18th.

I was still suffering from fever, and towards the middle of the day, having slept, missed Captain Peel, and on making inquiries was told that he had gone back to camp. I again missed him there, so returned to the battery. I was cantering my pony up the covered approach, when, within fifty yards of the Lancaster gun, the pony swerved to the right, out of the trench, and stood still, trembling violently. There were many shells bursting near the battery, but none, I noticed, very near, and the pony was generally steady under fire. I applied both spurs, but the pony planted his fore feet on the ground and refused to move, and just as I was shortening my reins to force him on, I heard the peculiar whirr of an irregular mass falling through the air, and a large piece of a mortar shell, which had burst in the air, fell down under the pony's forehead. The pony evidently heard it long before I did.

My chief had gone to see Lord Raglan, so I again missed him. Captain Peel's opinion was valued more and more, and he gained influence daily. I do not think it is generally known that he proposed a scheme for breaking the floating boom, which closed the entrance to the harbor. His suggestion was to lash on either side of his own ship a laden collier, and then, sending every one else below, to himself steer the ship at full speed at the obstacle. It was calculated that the weight of the vessels would break the boom, and, once inside, casting off the colliers, Peel would engage the forts, being supported by the whole of the fleet, which he intended should follow him. Though his plan was not adopted, it, no doubt, gave him increased consideration at headquarters.

I found my chief in camp in the evening, and from some words I caught when entering his tent, gathered that he was arranging with one of the senior officers for the assault. He turned to me and said, "Oh, Wood, you're not well today." I replied, "Not very well, sir, but not very ill," to which he said, "You had better go to bed, I shan't want you tomorrow morning."

"I suppose, sir, by that we are going to assault?"

"Yes; and as you are not well enough to go up with us, you will please stop in camp."

"Are you going to take your other aide-de-camp?" I asked.

"Yes; I promised him a long time ago," was the answer.

I left the tent feeling very sulky, but Captain Peel called me back, and, to soothe my vexation, said, "Well, you may go with me as far as the battery, but no further!" I immediately asked, "Is the other aide-de-camp to go with you?" to which he answered in the affirmative.

About 10 p.m., after charging the sentry near our camp to call me, I fell asleep. The sentry did not call me, in consequence, as I afterwards learnt, of orders given personally by Captain Peel that I was not to be awakened.

The noise made by the men falling in,

however, awoke me at midnight, and my brother aide-de-camp kindly came in to see if I was up. We had fully made up our minds that our chief would be killed in the assault, and had agreed to stand by him, or bring in his body. I had been taking large doses of laudanum and other sedative medicines the two preceding days, and on Mr. Daniels leaving me, feeling worn out, I turned over, and slept again till Michael Hardy, of the Leander, came into the tent, and shook me.

Hardy, on arousing me, said the ladder party had moved off; to which I replied I was too ill to go out. He answered, "Shure, you'll never forgive yourself if you miss this morning's fun;" and, somewhat against my will, proceeded to dress me. Having accomplished this, he propped me up against the tent-pole while he got my pony, on which he put me, being obliged at first to hold me on to the saddle, for I was too weak to grip with my legs. We hurried after the party which was now some way ahead, as fast as the darkness permitted, overtaking it soon after 1 a.m., as it reached the 21-gun battery, where I tied up my pony to a gun.

When I reported myself to Captain Peel, who was seeing the men told off into parties, six men to each ladder, and a petty officer pair of ladders, I asked my chief if he had thought to bring down a Union Jack, that we might have it up in the Redan before the regimental colors, which, however, as I found later, were not taken out. He regretted that it had been forgotten, but agreed it was then impossible to remedy the mistake.

Captain Peel now sent me with a message to the other end of the battery, and, having delivered it, I was obliged to sit down on a gabion and rest for a quarter an hour, for I was feeling so weak as to be almost incapable of exertion. The 21 gun battery was a curious scene of confusion. The night was still dark, and what with excited commanding officers looking for the engineers who were to guide us, and the number of men passing into the battery at the same time, meeting and crossing each other on their way, together with the attempts to enforce silence, which were not altogether successful, it appeared at first as if we should never get into our places.

When, after resting, I returned to the right of the battery, where I had left Captain Peel, the ladder party had moved off to pick up their loads, which had been placed by the Royal Engineers in a slight hollow to the north of the third parallel. I went a short distance towards this spot, and then realizing that the party must come back again towards the Quarries, I walked straight in that direction, and presently had the satisfaction of seeing my chief, who was then engaged in having the sections re-numbered to ensure that every man was in his proper place on either side of the ladders. This being done, a tot of rum was issued all round, and we all lay down under a breast-work about three feet high, to the north of the Quarries and a little further to the rear, waiting for the signal, which was to be a flag hoisted in the 8-gun battery. In the interval before the signal was made, Captain Peel sent me on five different messages, none of which were essential, so eager was he that I should be spared from the fire we were about to meet. This I only knew later from a letter written to his brother on the following day, and at the time I was greatly irritated, so much so, that on the last occasion, just at the false dawn, in spite of occasional bullets fired from the Redan, I walked straight across the open towards the rear, instead of going round by the zig-zag. Peel then called me back giving up the attempt to be rid of me.

Mr. Kinglake, in his history, says,

"The night of the 17th-18th was a beautiful midsummer night, and the stars in the heavens disclosed the marches of troops to a vigilant garrison;" while the Staff Officer, writing from headquarters, says, "At 2 a.m., when Lord Raglan left his house, it was so dark that the staff could only ride at a foot's pace." The latter statement is the more accurate, for between two and three o'clock no one could see more than a hundred yards. Possibly from being unwell I was specially susceptible to chills, for I noted in my diary, "there was a cold mist." I am sure, however, we should not accept Mr. Kinglake's statement of the garrison having observed these marches of our troops, and being "thus able to divine in some measure the special plan of attack." The Russians, of course, knew that an assault was impending, and, fortunately for them and unfortunately for us, Todleben began, at dusk on the 17th, mounting field guns en barbette on the Malakoff, and making every preparation to receive the attack.

At 2 a.m., on the 18th, Second-Lieutenant Khroustchow, Briansk Regiment, who was lying concealed close to the French advanced trenches, reported that masses of troops were collecting in the Carenage Ravine. We know from the French engineer journal that they had begun to concentrate there at 10 p.m. on the 17th. The Russian bugles sounded the assembly and afterwards their long-suffering troops manned the parapets, and a field battery came into action in the gorge of the Malakoff. The allies were getting into position about the same time.

The French, who had abandoned the idea of assaulting the works at and about the Bastion du Mat, put twenty-five thousand men under arms; their assaulting divisions, consisting of about six thousand men each, being led by General Mayran on the extreme right, by General Brunet in the centre, and by General d'Autemarre on the left. The columns were intended to carry all the Russian works extending from the harbor on the north, to the Gervais battery on the south. This last stood between the Malakoff and the Redan. The Imperial Guard was placed as a reserve behind the Victoria fort.

General Pelissier had arranged to give the signal for the advance from the site of the Lancaster battery, but he was late in leaving headquarters not mounting his horse till two o'clock. His unwieldy figure did not permit of his riding ordinarily beyond a foot's pace, and the darkness of the night would have prevented any but a bold horseman from travelling faster. He was still some distance from the position he had determined to take up, when the assaulting column on the extreme north went forward. General Mayran mistook the blazing fuse of an ordinary mortar shell fired from the Mamelon for the signal rocket, and at 3.50 a.m. led forward his division, marching himself in front of the leading brigade, against the batteries standing immediately over Carcenage Bay. He had nearly eight hundred yards to cross, and although his men were at first sheltered by the nature of the ground, they were soon met by a heavy fire, not only from land batteries, but six steamers anchored off the mouth of Carcenage Bay, and only a comparatively few men reached the obstacles in front of the batteries. Mayran was severely wounded almost immediately, and shortly afterwards mortally wounded. His troops were rallied by the brigadier, General Faily, and, taking cover, they fired into the embrasures.

General Pelissier had intended that the advance of all three divisions should be

simultaneous. General d'Autemarre's division had furnished the guard for the trenches the previous day, and the cooking places had been placed to the south of the Mamelon, on the ground where Brunet's division was to assemble prior to the assault. When this division arrived, the company cooks of D'Autemarre's division were preparing the morning soup, and Brunet's troops were halted to avoid upsetting the cooking pots. Thus the division was late in getting into its position of "concentration."

When General Mayran went out prematurely, the fact of the centre column not being ready, gave the Russians time to concentrate all their fire on Mayran's troops, marching on the little Redan which lay between the most northern battery and the Malakoff, the Russians relieved from the pressure of Mayran's column, mounted their parapets and assailed Brunet's two brigades with grape, case, and bullets. The heads of the columns were shattered by the terrible shower of missiles poured on to them. The general himself was killed, and the leading part of the column moved too far to its right, halting and taking cover when within one hundred yards of a battery. Several officers tried again and again to lead the men forward but were struck down, and no substantial advantage was there gained. The other brigade moved three hundred yards rather further south, and some few of the boldest approached the ditch of the entrenchment which joined the Malakoff and Little Redan, but those who actually reached the ditch were too few in numbers to penetrate the work, their comrades lying strewn, dead and dying behind them.

When Brunet's column went forward, General d'Autemarre moved down the Dockyard Ravine, and one of his leading battalions pushed on into the suburb, while a party of engineers got into the Gervais battery without serious resistance. Here they remained for about forty minutes, but not being supported, eventually fell back.

Before I attempt to describe what happened to the stormers sent forward against the Redan, I may state briefly the proceedings of General Eyre's column. On the extreme British left, a brigade under General Eyre was detailed to move down the ravine which separated the right of the French on their western attack, and the left of our left attack. He was directed to seize the works in the cemetery at the head of the Dockyard Creek. He moved off from his point of concentration about 2 a.m., and was approaching some Russian rifle-pits which lay between him and the cemetery, when he was anticipated by the 10th battalion of chasseurs, which carried the rifle-pits by a flank attack.

Eyre, himself a man of great courage, of which he had given many proofs when in command of the 73rd Perthshire Regiment during the Kaffir wars, had, before marching off from parade, stimulated the ardor of his men by a short, burning speech, addressing himself particularly to the premier Irish battalion. This doubtless was, in part, the cause of a mistake which cost us dear, for the troops carried not only the Russian works in the cemetery, but pushed on to some houses at the foot of the enemy's main line of works in the Garden batteries; these were seized, and held till sunset. This was our sole success during the day, and was achieved at the cost of five hundred and sixty men, of whom thirty were officers, out of a total strength of two thousand.

The Redan as its technical name implies, was formed of two faces, each about seventy yards in length, meeting in a salient, the line of parapet being continued to the works on either side.

The parapet at the salient itself was seventeen feet high, and on the left face fifteen feet above the surface of the ground. The ditch, eleven feet deep, varied in width from twenty feet at the salient to fifteen feet on the faces. As the work was open in the rear, we could not have held it, even if we had got in, so long as the enemy was still in the Bastion du Mât, Barrack, and Malakoff batteries.

The glacis of the Redan was the natural surface of the ground, which met in a ridge on the line of the capital; every part was seen, to some degree, from the adjoining flanks, but these were on a much lower level than the salient. Nevertheless the glacis itself was exposed to fire from the Barrack and Garden batteries, and from the Gervais and other Malakoff batteries. The slope up which the stormers were to pass was covered by long, rank grass, and seamed with holes made by the explosion of mortar-shell, by innumerable rifle-trenches, and by some disused gravel-pits.

The brigade orders issued by the commanding Royal Engineers, laid down that that the Redan was to be assaulted by three columns.

Each column was composed and was to move as follows:—

Advanced party:—

Sappers.....	10
Skirmishers.....	100
Ladder party.....	120
Men carrying bags of hay or wool..	50

Storming party:

Bayonets.....	400
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Reserve:—

Bayonets.....	800
Workmen.....	400

The left column (No. 1), under command of Major-General Sir John Campbell, was to march on the reentering angle formed by the right face of the work and its flank, about sixty yards west of the salient. The right column (No. 3), under Acting Brigadier General Colonel Yea, was to enter the Redan at the opposite point to No. 1 column.

The orders for the centre column (No. 2) were ambiguous. They were

To advance upon the salient of the Redan, and force its way into the work.

If the columns 1 and 3 have been successful, No. 2 will remain as a reserve to the columns in its front.

No. 2, after entering the Redan, is to consider itself as a Reserve, and not to advance beyond the lodgement, which the workmen will have commenced.

From the above it was understood that the centre column (No. 2) was not to go forward until those on the flanks had to carry the work, but the order is equally open to the construction that this column was to deliver the assault simultaneously with the others, and was to become the reserve after the lodgement had been effected. It is, however, clear, from Lord Raglan's despatch dated 19th June, 1855, that the centre column was to start after the moving on the flanks of the Redan. This was the most unfortunate because the salient was the safest line of advance, and the least swept by shells on the 18th June.

These arrangements apparently contemplated that, covered by the fire of two hundred skirmishers, eight hundred men were to advance for a distance of between four hundred and five hundred yards over open ground, and accompanied by men carrying heavy ladders, eighteen feet in length.

There has been no account written, either clear or satisfactory to my mind, of the proceeding of the left column, detailed to attack the right face (proper) of the Redan. Mr. Kinglake, who shows generally a most generous appreciation of the rank and file, has, in an apparent endeavor to smooth over the defeat, done but scant justice to some of our comrades. His descriptions were doubtless based on what he has been told by officers engaged in the struggle, and I, therefore, quote (but not verbatim) sufficient extracts to show generally what he intended to convey:—

The head of the left assaulting column crossed the parapet on the signal being given, but the one hundred skirmishers or covering party hung back under the slope close to the western face of the Quarries, and caused others to halt. The foot soldier seemed averse to carrying burdens over a vast space under torrents of fire without having his rifle in his hand. The guiding Engineer was immediately mortally wounded. Colonel Tylden impatiently cheered on the men, asking what they were stopping for? At this moment Lieutenant Graham, who had charge of the ladder party, seeing the im-

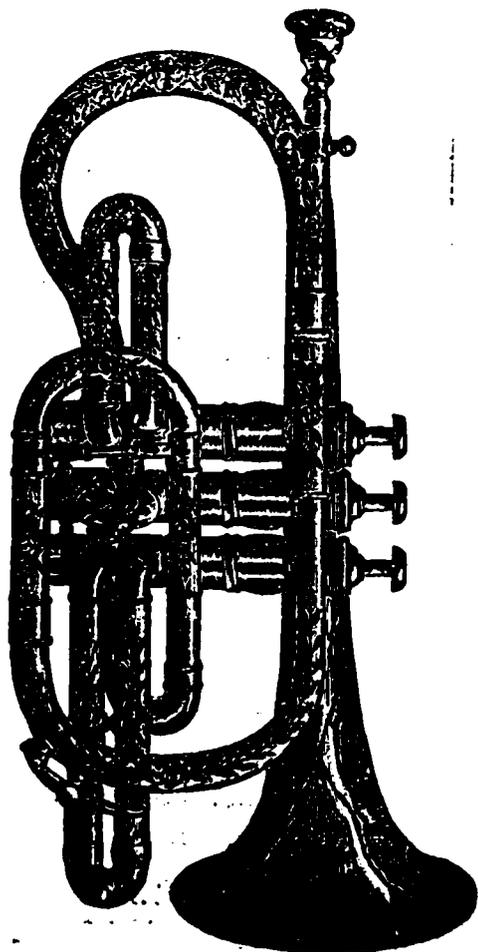
possibility of getting up on the face of the work, asked if he might lead it on the salient, and the colonel replied: "Anywhere as long as you get on," but almost at the same moment the colonel fell mortally wounded. Graham carried his chief a few paces back to a more sheltered spot, and then turned back to the ladder party. The sailors were awaiting orders, but the soldier ladder party had disappeared, and eventually Graham, after showing the most distinguished courage himself, moved the naval ladder party into the trench, although the men protested that they were willing to go forward with him without any others.

Mr. Kinglake goes on to say, that when the storming party wanted to cross the parapet, the men were stopped and even turned from their course by soldiers who, having absented themselves from their divisions without leave, had crowded into the trench to take part in attack; therefore the storming party filed off to the left, moving westward, and on coming to the end of an unfinished parapet, thence got up to the Artakoff battery, *i.e.*, the one on the proper right flank of the Redan. It is obvious that all the stormers had only to follow the general, as some did, and they would have immediately disengaged themselves from the intruding soldiery; moreover Mr. Kinglake weakens his explanation later in his narrative, when he makes Colonel Lord West, who succeeded to the command on Sir John Campbell being killed, lament the fact of there being a parapet to cover the men, for he thought if there had been no shelter he might have induced them to advance.

Mr. Kinglake says that when the stormers went forward in the wrong direction, they were brought back with a loss of only three or four men, but he omits to mention that our burying parties found more dead bodies grouped around Sir John Campbell, and that out of four hundred rank and file, the left storming party lost, in the twenty minutes' work, one hundred and thirteen men, killed and wounded, of whom nine were officers.

TO BE CONTINUED.]

The annual convention of the Canadian Order of Home Circles, which has proved a very successful gathering, was brought to a close at Toronto Friday.



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