

Vol. X.
No. 6

MONTREAL, MARCH 15, 1895.

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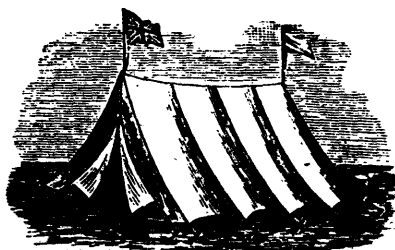
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THE CANADIAN

Military Gazette

Successor to the Canadian Militia Gazette.

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THE CANADIAN

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No attention is paid to anonymous communications, but the wishes of contributors as to the use of their names will be scrupulously regarded.

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

MONTREAL, MARCH 15, 1895.

Notes and Comments

One of the Ottawa press correspondents announces that one of the objects of Major General Herbert's visit to England is to consult the contractors who were to supply the Dominion with the Martini-Metford rifle. What about, is the question which naturally arises, and echo answers what? This suspense about the new rifle is becoming painful and the public and the force really ought to know what is the present position of affairs. The opinion of most experts who have seen and used the rifle is that it is a first rate weapon, but for its extreme weight, and that could easily be remedied, for it is now pretty clearly establish-

ed that the extra weight as compared with the Lee-Metford is due to the necessity of making the barrel larger to fit the old Martini-Henry stocks for the sake of saving a dollar and a half a rifle for new stocks. Talk about putting the cart before the horse and of penny-wise-and-pound-foolish policies after that!

There is no doubt about it, there is only one course open now, the appointment of a small arms committee to report upon the rifle, and that step should have been taken at the very first.

It is perhaps too much to hope that the government will give rein to its generosity sufficiently to re-arm the field artillery at the same time as the infantry is being provided with a new rifle, but the government might do worse than appoint at once an expert committee to take the question of artillery re-armorment into consideration. Our muzzle loading nine-pounders, like stage coaches and blunderbusses, were all very well in their time, but are obsolete now.

Every English service paper one gets old of nowadays contains more or less numerous accounts of ceremonies in connection with the distribution of the long service medal to English volunteers. It was stated on the floor of the Imperial House of Commons that similar medals were to be distributed among the Canadian militia, but they have not materialized yet. The veterans of our force are almost beginning to doubt that there is a chance of ever seeing them.

Is the same cheerful round of

squad and arm drill going to be the programme for this season's annual drill? It is to be presumed so, considering that the drills, so far as the city corps are concerned, are beginning, and no further orders for the year have been issued. No one will deny the paramount importance of squad, arm and company drill, but we submit that this elementary work can be carried out to a point of tediousness which is likely to take away much of the attraction from soldiering. We certainly think that it is time that in the efficiency returns some credit should be given for battalion drill.

The regimental rifle association throughout the Dominion are meeting and considering the season's campaign at the ranges. It is sincerely to be hoped that more attention will be given to the nursery and second class shots than in the past. No regiment can hope to make a record for itself at the ranges without it does this. Every regiment in the country can take an example from the Thirteenth of Hamilton in this respect. It is to be hoped also that this summer will see a skirmishing or judging distance match on every programme.

We have received several communications on our remarks about the importance of practical field training for our city battalions. All the writers agree upon the necessity of field manoeuvres of some kind, but all appear to object to the expense being thrown upon the battalions participating. We certainly think that the Militia Department should assist the battalions to take part in at least a couple of field days

a year, but if the government persists in its present stingy course, better to go to the personal expense than to go without the necessary training and its interesting experiences.

In Montreal the other evening a corps which is deserving of every encouragement held a jubilation. We refer to the Highland Cadets, organized several years ago by Major Lydon, the indefatigable Adjutant of the Royal Scots of Canada. This corps, which is composed of two splendid companies of strapping lads, has done more for the Montreal militia force since it has been organized than can be easily estimated. Most of the young kilties, when old enough, join one or the other of the city regiments and excellent soldiers they make, as the writer knows from personal experience. Not only are the lads all but perfect in their drill, but they are well grounded in all of the best qualities which go to make a good, enthusiastic, intelligent and neat soldier.

The corps practically turns over to the militia force every year twenty or thirty perfectly drilled and in every way desirable soldiers, and the country does not contribute one cent towards this training. The course of the government in refusing to assist in the maintenance of this excellent corps is mean, to almost a degree of dishonesty. The government would get excellent value for its money if it made a good round grant annually to this corps and any others of a similar organization and standard of excellence. The younger you catch your militiaman, the better soldier you can make him.

It looks as though the much vexed question of Imperial defence is likely to come ahead some of these days. The present system, or rather the lack of any system, appears to be proving unsatisfactory all around. A recent number of the *Naval and Military Record* remarked:—

"The question of colonial contribution to works of Imperial defence is continually being raised in some of our colonies. Recently in the Straits' Settlement all of the unofficial members of the Legislative Council, the justices of the peace, and the resident members of the Chinese Advisory Board resigned their offices as a

protest against the decision of the Imperial Government with regard to the military contribution of the colony. A public meeting at Singapore enthusiastically supported the action of these officials. What the colony particularly objects to is that the civil expenses are restricted, and that what remains of colonial balances is to be devoted to military purposes. The amount estimated for the military establishment in 1889 was £136,000, but for the next five years it is to be £154,730 per annum. In the opinion of the colonists most of this expenditure is really an Imperial charge. They do not, they say, mind bearing a fair share of the cost of the maintenance of troops, but it is unfair to expect them to bear an excessive burden simply because Singapore is a coaling station. "We are quite willing," said one of the protesting colonists, "to pay for the cost of protecting our own trade; we are willing to assist, in conjunction with other colonies, in paying a just apportionment of our Imperial obligation; but we protest, as a gross injustice, against being called upon to pay for the protection of what is practically wholly and entirely the British commerce and trade which passes through these waters to other ports."

In our last issue, the lecture given by Capt. English before the Montreal Military Institute, was credited to Capt. Lee of the same college.

The official "Efficiency Report" is crowded out of this issue, but we will publish it in full in our next.

Militia Reform.

To the Editor *Canadian Military Gazette*:

DEAR SIR.—Suggestions for the improvement of the active militia are continually being made, but a policy of "do nothing," is the permanent condition of our military administration.

The general apathy exhibited in regard to the unsatisfactory condition of the rural battalions is truly lamentable.

The tendency to subordinate everything connected with the force to politics is productive too the most unsatisfactory results.

The fitness of a candidate to fill a vacant office is the least consideration; this may be seen in the short sighted policy of ignoring the highly qualified graduates of Kingston Military College.

Our Minister of Militia and Defence; instead of giving his whole and undivided attention to the duties of his department, devotes his time to political strife, stumping the country and speech making at every bye-election, when he should be sitting in his office.

To divert public censure, political expediency demands a "scape goat," so the General Officer Commanding is invariably held up for public condemnation.

It should be the function of the G.O.C. to propose and to execute, but it rests with the Minister to sanction or disallow.

It is well known to those behind the scenes how the G.O.C. is hampered in his efforts to promote the efficiency of his department.

THE CANADIAN MILITARY GAZETTE is deserving of the warmest support for its unprejudiced views on this subject and the able and impartial manner with which it continues to advocate the cause of militia reform.

Yours obediently, I. R.

In an article upon the various activities connected with the work among the young people of St. George's parish, New York, which is given by the rector of the church, Rev. Dr. Rainsford, in "Harper's Young People" for January 12, we have an illustration of the Drill Corps connected with this church, as they appear marching through the streets of New York in uniform. It is another evidence of the extent to which military drill is pervading the country. A most useful purpose is served when the religious and sober-minded begin to understand the value of military training in the development of character. It is in this way that we shall conquer in a measure the prejudice against the army, which is the offspring of ignorance. There is a growing tendency toward the consolidation of conservative sentiment for defence against the rising tide of anarchy and disorder, and thoughtful students of our natural tendencies are coming to understand the value of the army and of military training.—*Army and Navy Journal*.

Fish Shooting in the West Indies.

"I took the big rifle to try my hand. It seemed ridiculously easy, but after missing three or four shots I began to recall my smattering of physics as to the refraction of rays of light passing through water. I proved a hopeless tyro, and finally with much humility asked my friend, who was chuckling over my chagrin, how to fire. 'A little away to the right,' he replied, and acting upon this advice I begged my next mullet. But he could not tell me any general laws, and I found from questioning him that he had finally learned to recognize from the look of the water how much allowance was necessary and in which direction to make it. I subsequently became a trifle more expert, and had several fine days, but I always had to try a few times first to get my hand in. It was easy to see which side one's bullet had struck by the direction in which the fish ran, and after a few trial shots one had a working formula. Even this, however, was very uncertain, for the angle and distance varied with the position of the sun, amount of light, depth of water, ripple, etc., till it seemed hopeless. That it was possible, however, Seymour proved conclusively, for he rarely missed, and his fish generally had a hole just behind the head. Still, where the light was bad we could often make a good bag and not a fish would have a mark, being nearly stunned by the concussion. To do this it is necessary that the ball should pass extremely close to the head."—HENRY WYDAM LANIER, *Outing for March*.

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.

Kingston.

KINGSTON, March, 9th.—A local daily paper makes the statement that "several desertions from 'A' Battery have occurred during the past week, and several more are to take place."

Mr. C. Price, a member of the chorus of the "Gaiety Girl" Comedy Company, which played here a few nights ago, is an ex-officer of the Imperial army. He went to the Soudan, as a lieutenant in a Lancer regiment, and was severely wounded at one of the bloody engagements in that memorable campaign. So severely did his regiment suffer that when it returned to England, Mr. Price was the senior officer, all his superiors having been killed. He was compelled to resign his commission, as his wound incapacitated him for military duties.

The band of the 14th Batt. is in a most flourishing and efficient condition. At the quarterly meeting the other evening, six new members were received. A number of new instruments, and a large quantity of the latest music will be received from England in a few days. The band earned over \$800 during the quarter last past. Another concert is being talked of, in which only members of the band will take part. An excursion to Rochester is one of the coming events to which the musicians will invite their friends.

The Staff-Sergeants and Sergeants of the 14th, claim that they are at a disadvantage, each time they desire to attend any social function given by the Sergeants of the other corps in the city, because they are compelled to turn their uniforms into stores, at the close of the autumn drill season, and during the winter, they cannot get possession of them for the purpose mentioned without considerable trouble. They ask that they may be allowed to retain possession of the uniforms during the "close season" for drill.

The 14th Batt. may this year forgo their regular Queen's Birthday excursion, and may go picnicking instead.

A few days ago, Driver Stamp of "A" Field Battery R. C. A. wrote to the *Daily News*, complaining that the men of the corps were looked down upon, and socially ostracised. This state of affairs, he claimed, was in great measure due to the neglect of the city clergymen to minister

to the spiritual necessities of the men, as they should. He pleaded for more attention for his comrades from the clergymen, and stood up for the respectability of the great majority of the soldiers.

When the paper containing the letter appeared, and the complaint was read at Tete du Pont barracks, Stamp was at once relieved from duty and spent some hours as a prisoner-at-large, until he was taken before Major Drury, next morning. He consented to write to the *News* stating that he had done the clergy of the Church of England an injustice, by including them among the number of those he accused of neglecting the men of the battery, and stating also that the clergymen of that church were commendably attentive to the men who professed their creed.

Upon sending this letter to the *News* for publication, Stamp was cautioned and allowed to go. Many of the citizens looked at the matter in the light in which he treated it in his first letter.

VEDETTE.

British Columbia.

An inspection of the British Columbia Battalion of Garrison Artillery was to have been held in September last, but a few days before the date fixed the order was countermanded and a school was opened, under the skilled direction of the officers and sergeants of the Royal Marine Artillery. The success of the school was evidenced by the long list of "certificates granted" appearing in last Militia General Orders, and the array of qualified instructors resulting from it did such good work in the month allotted for drill for the postponed inspections of the head master companies, that when this came off on Saturday, February 23, they acquitted themselves very creditably. Such at least was to be inferred from the incidental remarks of the Deputy Adjutant-General, Lt.-Col. Peters, who deferred giving a formal expression of opinion until after the company inspections, in infantry drill and with the 64-pounder, fixed to take place on the first three evenings of the succeeding week. The battalion inspection on the 23rd took place on Beacon Hill park, a delightful spot with a covering of velvet green such as is enjoyed in Canada only in this favored province at this season of the year. The weather was beautiful, and a crowd numbering thousands witnessed the inspection. It was not an elaborate one, but the several movements ordered by Lieut.-Col. E. G. Prior, the officer commanding, were performed with a ready confidence on the part of all ranks which showed gratifying familiarity with their respective duties.

The combatant officers of the three companies at Victoria (strength 325) consist of a lieutenant-colonel and ten lieutenants,—the excessive supply of subalterns being the natural and inevitable result of the ironbound rule forbidding promotions or appointments above that rank without the possession of a certifi-

cate such as it has been an absolute impossibility to obtain since the regular school here was closed in 1893. The special school held recently extended its course only far enough to give those who passed grade B certificates, and another month's instruction has yet to be taken before the lieutenants will be eligible for promotion. Pending appointments will if made increase the supply of subalterns to sixteen in Victoria.

Lieut.-Col. Rawstome, the officer commanding the Royal Marine Artillery here, attended at the commanding officers' parade of the B.C.G.A. on the 21st February and kindly presented the certificates well earned by the non-commissioned officers and men at the school recently held under his direction. He complimented the battalion on the large number who had taken the course, and the faithful manner in which all had attended to their work and he promised them a treat in artillery instruction when in a few months they are called upon to visit the Esquimaux fortifications and make themselves familiar with the modern guns—on disappearing platforms—being mounted there. This additional course will have to be taken to make the present certificates permanent. Col. Rawstome said it would demonstrate the work already done with the old 64-pounder muzzle loaders to be but the ABC of artillery drill. Needless to say the holders of certificates appreciate the promised opportunity of visiting the "fortifications," which are kept jealously guarded from the public.

Brantford.

The Dufferin Rifles are shaking off their winter quiet and are preparing for their spring drills, which will start about April 1st, in preparation for a field day to be held about the 24th May.

At a recent meeting of the Sergeants' Mess, the following were elected to fill the various offices of the mess for the coming year: President, Staff Sgt. Ritchie; Vice-President, Col. Sgt. J. Leask; Secretary, Sgt. F. J. Fisher; Treasurer, Staff-Sgt. L. Walker; Sup. of Ref., Quarter-Master Sgt. Sharpe; Room Committee, Sgts. Turner, Muir, Bugle Sgt. Oxtaby. The annual dinner of the mess will be held on Good Friday.

Toronto.

It has been definitely settled that Sergt Instr. Page of the R.C.D. and Cr. Sergt. Galloway of No. 26 will form part of the contingent leaving for Aldershot next month.

A very enjoyable lantern slide exhibition of local and other military slides was tendered by the Q.O.R. Sergeants Mess to the officers of the Garrison, on Tuesday evening, the 19th inst. The exhibition consisted of views of the different sham fights and inspections company and regimental outings, regimental games, exterior and interior of Gibraltar and some very gruesome pictures of the late Chilean war.

The Sergeants of the Q.O.R. are fitting up a Morris Tube gallery in their Mess Room.

There seems so little possibility of getting any use of the galleries in the new Drill Hall before the shooting season opens, that if any practise is to be obtained it must be on some makeshift range.

It would be one of the greatest surprises to the volunteer force of the city should the hall be in fit shape for the spring drill, even though it is being used for recruiting and non-com. classes.

Another very successful affair has been added to the long list of events which have been undertaken in the past by D. Co. Q. O. R. Their annual dinner at the Arlington Hotel, on Tuesday the 19th Feb., was as successful as any of its predecessors and to those who were fortunate enough to be entertained by Capt. Mason and his crack little corps come many pleasing reminiscences of a very happy night.

The toasts given during the evening were: The Queen, Canada, Canadian Militia, Our Commanding Officer and Staff, Our Guests and the Ladies, and responses were made by Lt.-Col. Hamilton, Major Delamere, Capt. Robertson, 48th Highlanders, Col.-Sgt. Langton, Col.-Sgt. Bennett, 10th R.G., and Pte Dickson.

A splendid array of talent was provided by the committee in charge and it was long past the witching hour ere the genial company, satiated with the good things provided, wended their ways homeward.

The twelfth annual dinner of the Q. O. R. Sergeants Mess was by long odds the greatest success in the history of the mess.

Owing to the destruction of Webb's and the inadequateness of their present quarters to comfortably house all whom they would like to have invited, it was necessary to limit the invitation list to representatives of brother Sergeant's messes.

The repast was served in Webb's best style and the splendid appearances of the main room handsomely decorated, brought forth many expressions of delight and compliment from the visitors. Amongst other present were: Sergt.-Major Stretton, G.G.B.G.; Sergt.-Major Spry, T.F.B.; Sergt.-Major Robertson, 48th; Sergt.-Major Cox, R.G.; Sergt. Instr Page, R.C.D.; Sergt. Instr Widgery, R.C.D.; Col.-Sergt. Galloway, No. 2 Co.; Sergt.-Instr Holmes, No. 2 Co.; Sergt McEvoy, 48th; Col.-Sgt. Ewart, 10th R. G.; Col.-Sgt. Atkinson, 13th Bn.; Sgt. Allan, 13th Bn.; Staff Sgt Ritchie, 38th Bn.; Mr. Alex Muir, Dr. Fotheringham, Mr. J. George, Mr. W. Sterling and others.

It lacked but a few minutes to nine when the guests were summoned from the ante-room and shortly after, thanks to a complete plan of the tables which had been prepared by the committee, enabling everyone present to at once locate his seat, a happy crowd was making havoc with the good things provided. After a discussion of the edibles, lasting exactly three quarters of an hour, a splendid programme was entered into and car-

ried on until about 1:30 a.m. when an adjournment was made from the tables, and the after part, so dearly enjoyable to guests at the Q.O.R. Sergeants Mess, then commenced, said afterpart being carried on without let up until the rosy streaks of dawn heralded the approach of another day and the closing scene of another successful dinner.

The members of the mess thought that their last year's dinner would be hard to beat, but after comparisons, were themselves surprised at the distance the twelfth annual left the eleventh annual in the rear.

After the toast of The Queen, came Canada Our Home, The Canadian Militia Our Brother Non-Com., Our Guests, and The Ladies. These were responded to by Mr. Alexander Muir, ex-Sergt-Major Kennedy, representatives of different corps, Dr. Fotheringham and Cr.-Sergt. Thompson.

The toast of Sergt-Major George, proposed by Mr. J. George was received with Highland honors and with a vein which spoke volumes for the esteem with which all present regarded the chairman of the evening.

A better array of talent was never provided at any previous mess entertainment, and the board of management for 1895 certainly deserve a hearty vote of thanks for the magnificent manner in which they provided for the entertainment of their guests.

A strange feature of the evening was the almost entire lack of mention of the Gzowski cub, and judging by the passing notice that the competition did get, by all representatives who mentioned it, seem to tell one that the interest in it had died a natural death and that few would mourn over its withdrawal from competition.

I by no means mean to infer from this that these representatives are not loyal to their different regiments, for all are of the most enthusiastic nature, but the fact seems to be generally admitted that the competition has not achieved the success that the donor no doubt fondly hoped for it.

Anyone passing St. Georges' Hall on the evening of the 4th inst., would have imagined that one of the vil ages of the Midway Plaisance had taken up its abode therein.

Enquiry would have brought out the information that it was only a small tribe of Dahomeians helping a larger tribe called Murray's Dandies to celebrate their 16th annual diuner.

It was an immense success and the evening passed all too quickly for the 90 guests who sat under the ministrations of Major Jack Murray.

Amongst others present were Lt.-Col. Hamilton, Lt.-Col. Starke, Major Manley Lieut. Forester, Dr. Murray, Lieut. Wyatt, Lieut. Barker, Sergt.-Maj. George and Col.-Sergt. Pearcy.

The absence of the company elephant and other features of this company were conspicuous by their absence due to the recent conflagration to which they fell a prey.

A large sign behind the popular com-

manding officer of I. Co. bore the words, "Our Father" and fully exemplified the great bond of friendship that exists between all the members.

The only time during the evening's entertainment that the fun seemed checked was when Major Murray alluded to the company as Crean's Dandies, and in a way, which to some seemed ominous, hinted at his retirement from the company he commanded so creditably for such a long time.

The shock was rather sudden, and all expressed the hope that the remarks had been wrongly interpreted and that the opening of spring drill would contain better luck in store for No. 10 than the loss of its able commander and one of the most popular men in the regiment.

The smoker of the Sergeants' Mess of the G.G.F.G. held on Thursday evening the 7th inst., in Richmond Hall was very successful.

A goodly representation of officers and Non Com. from sister corps were present all of whom thoroughly enjoyed themselves and departed greatly indebted to their excellent hosts, Sergt.-Major Stretton and his fellow Sergeants.

The unexpected has happened and at last the result of the Gzowski cup competition is declared and the Mountaineers take the cup.

To the 13th Bn. the Q.O.R. will soon hand over the coveted trophy and it is safe to say that for a year at least, they will keep it secure from fire or flood.

Quebec.

QUEBEC, 8th March 1895.

Mr. Kenneth J. R. Campbell, 6th Dragoon Guards, (Carabinieri) according to the London Times of the 21st February, has been awarded the Medal of the Royal Humane Society, in connection with saving a native from the Vice Consulate hulk in a river where crocodiles abound.

Mr. Campbell is the Deputy Commissioner and Vice-Consul of the Niger Coast Protectorate and has recently been here on leave and left the city on the 6th inst., for the purpose of returning to England.

The 8th Royal Rifles commenced their annual training on the 1st inst., and all hands are hard at work. The brass band has been re organized and from all accounts is doing very well.

Lieut. H. J. Lamb of the unattached list will be taken on the strength of the above corps for the period of their training and will be attached to letter "B" Company.

The Queen's Own Canadian Hussars have been issued their clothing, etc., and will commence their training in a few days.

Quite a number of changes have recently taken place in this corps, among which are mentioned that Captain Breakey of "A" Troop will become the Adjutant and will be succeeded by Lieut. R. E. W. Turner. It is stated that Messrs. Ashmead and L. Drum will take commis-

sions in Troops "B" and "A" respectively.

A cannon ball was found by the men employed in the excavations being made by Messrs. A. T. Pfeiffer & Co. McMahon street, in connection with the improvements to their property. The ball, which is solid cast iron, weighs about twenty pounds and was found at a depth of six feet under the ground.

The Royal Canadian Artillery paraded on Sunday with their brass band, a welcome change to that of the bugle band.

A hockey match was played in the beginning of February, at Camberley, England, between teams of the Staff College and of the Aldershot Division, resulting in a marked victory for the former. Among the team of the victors were three Canadians who are at present at the college; Captains H. E. Wise, Derbyshire Regiment, F. Thornton Taylor, Cheshire Regiment and Geo. M. Kirkpatrick of the Royal Engineers.

The French Canadian Troop of the R.C.A., gave a grand dramatic and musical soiree at the Jacques-Cartier Hall, and were assisted by the band of that corps. From the programme it is seen that the performance was such as to please the public.

Garrison Sergt. Major Lynden of the R.C.A., has been unable to attend to duty through illness for some time. Being one of the most active members of the Corps it is hoped that he will soon recover and return to his post.

Major T. S. Hethrington of the Q. O. C. H., was dined at the club by his many friends on the occasion of his promotion.

It is stated that Mr. Allard, of Levis, proposes making a 12 foot gun of aluminum which will be hardened by the tempering process and which he will send to Washington.

On the evening of the 8th inst., Mr. Justice Davidson read a paper on the "Responsibilities of the Militia and Justices of the Peace in Suppression of Riots," in the room of the Royal Canadian Artillery Institute. The learned gentleman was introduced by Lieut.-Colonel Montizambert the Chairman. This formed the second lecture of the season and was attended by about fifty persons.

The subject read was such as to create much interest, as it is to say the least one which is not very well known and which is of a very complicated nature. The manner in which it was treated was most concise and showed a careful study of the law relating to riots.

At the termination of the paper Lieut.-Col. Montizambert moved a vote of thanks which was seconded by Lieut.-Col. Vohl.

Among those present were noted:—Lieut.-Col. Montizambert, Lieut.-Col. Wilson, Major Farley, Captains R. W. Rutherford, V. B. Rivers, T. Benson, J. A. Paves and Messrs. J. H. C. Ogilvy, H.

A. Panet, H. C. Thacker and J. A. Benyon of the Royal Canadian Artillery, as well as Captain Imlah, Quartermaster. The 8th Royal Rifles were represented by Lieut.-Col. Geo. R. White, Majors G. E. A. Jones and J. S. Dunbar, and Capt J. Chas. Dunn, the remainder were unable to attend owing to its being their drill night. The 9th Battalion were represented by Lieut.-Col. A. Evanturel and Captain J. Ouellet. The Q. O. C. H. by Major T. Hethrington and Capt. F. B. Lawrence., the 87th Battalion by Major L. N. Laurin, Captains T. Aylwin and Ernest F. Wurtele. Retired list and Mr. H. J. Lamb Unattached list were also in attendance as well as a number of civilians and some of the N. C. O's of the Royal Canadian Artillery.

The next lecture will take place shortly and will be delivered by Captain R. W. Rutherford of the R.C.A. The work thus begun by the Institute will do a great deal of good and is such as to merit the approval of all those interested in military matters.

Montreal.

The sergeants of the Montreal Field Battery held a very enjoyable social on Thursday evening last. Since Major Hooper has taken command of this corps there seems to be decidedly more life in it. It is on the tapis that the new C. O. will dine his men in the near future.

Major Arthur d'Orsonnens has applied for a transfer from the 85th to the 65th as Adjutant.

The Prince of Wales have begun its annual drills with very fair muster. The sergeants of the P.W.R. had another social on Wednesday evening last. Lieutenant W. G. Brown, of the P. W. R. has left for St. Johns for a qualifying course.

The Montreal Military Institute has elected the following officers for the year: President, Major E. Ibbotson, Royal Scots; first vice-president, Lieut.-Col. Massey, R.I.; second vice-President, Major Busted, Victoria Rifles; third vice-president, Major Labelle, Mount Royal Rifles (65th Battalion); secretary-treasurer, Major Radiger, Victoria Rifles; committee, Lieut.-Col. Mattice, representing staff; Captain Alton Clerk, Duke of Connaught Canadian Hussars; Captain Costigan, Montreal Field Battery; Captain Bond, Prince of Wales Rifles; Captain Meakins, Victoria Rifles; Captain George Cameron, Royal Scots; Captain E. Mitchell, 6th Fusilliers; Lieut. St. Louis, Mount Royal Rifles; Major de Trois Maisons, 85th Battalion.

The efficiency returns show that the Victoria Rifles have again won the Sir Donald Smith cup with 129 88 points. The Scots received 122 30 points; the Prince [of Wales Regiment 119 75; the 6th 116-68 and the 65th 96 78.

The great Morris Tube Inter Regimental Match, for the prizes presented by Messrs. John Martin Sons & Co. has been

completed, and the 5th are the proud possessors of the coveted sterling silver cup, the first prize, while the Vic's take the second place, getting a handsome cup for their marksmanship. The prizes were distributed after Capt. Lee's lecture in the Vics Armoury on the evening of the 9th inst., a large number of the officers and men of all the city corps being present. The individual prizes were a handsome revolver and a complete rifle-man's out fit and were won by [Corpl MacNab of the 5th, and Gunner T. Sharpe of the M.G.A.

The following were the scores:

	200 yds	500 yds	600 yds to 1'
Sgt Major Currie.....	27	31	26-84
Sergt Currie.....	30	21	20-71
Pte Bothune.....	32	27	24-83
Pte Broadhurst.....	32	29	24-83
Pte Gardner.....	33	30	28-86
Pte Clarke.....	33	29	30-88
Corpl MacNab.....	33	33	33-94
Corpl Wilson.....	31	34	29-87
Pte Smith.....	33	26	27-83
Pte J. Kambarry.....	33	31	28-82
Pte U. Brown.....	27	22	16-65
Corpl Norton.....	30	26	22-78
Pte Kennedy.....	25	17	9-51
Pte McCowan.....	28	29	21-81
Pte J. Jouin.....	28	26	22-82

Grand total.....1295

3RD VICTORIA'S.

Capt Rodden.....	25	25	14-64
Lt-Col. MacAdam.....	31	26	23-80
Sgt Major Gorman.....	22	26	26-84
Sr Sergt McCrae.....	24	30	23-87
Pte Bimmore.....	34	29	28-91
Pte K. Mathews.....	31	23	23-83
Pte A. Thompson.....	25	21	27-86
Pte R. Kough.....	32	27	30-90
Pte G. Copping.....	26	26	19-74
Pte Mills.....	24	32	24-89
Pte E. Thomas.....	27	23	24-84
Pte T. Gascoigne.....	31	25	27-88
Lt H. Brown.....	27	31	22-80
Lt H. Jamieson.....	28	28	18-71
Pte E. Strathy.....	27	26	23-86

Grand total.....1172

6TH FUSILIERS.

Capt Wm. Andrews.....	34	32	20-86
Sr Sgt Lavers.....	33	19	26-88
Col-Sgt Jas. Riddle.....	31	24	27-89
Col-Sgt J. W. Marks.....	25	32	21-84
Col Sgt E. Pratt.....	30	32	27-89
Col Sgt B. Howard.....	16	30	21-87
Sgt J. Scott.....	25	31	29-85
Sgt C. Maurice.....	22	25	14-61
Sgt R. Lloyd.....	25	22	23-80
Corpl R. Smyth.....	29	17	18-64
Pte J. Scott.....	25	31	31-90
Pte J. Watt.....	31	26	26-88
Pte A. Cameron.....	24	34	25-88
Pte W. Neville.....	28	28	21-80
Pte G. Rosser.....	26	29	10-56

Grand total.....1152

MONTREAL GARRISON ARTILLERY.

Capt Collins.....	29	19	22-80
Col-Sgt Finlayson.....	28	30	16-74
Sgt Vaughan.....	21	16	16-63
Sgt Major Fellowes.....	29	23	27-89
Gunner Geo. Cooke.....	19	29	28-86
Gunner Geo. Sharpe.....	31	28	21-80
Gunner T. Sharpe.....	34	28	30-92
Sgt J. T. Wilson.....	25	29	24-88
Capt J. Myne.....	26	21	11-58
Sr Sgt J. J. Bell.....	15	32	30-93
Bomb J. Cooke.....	23	18	22-84
Sgt L. Winter.....	29	29	20-84
Sgt J. Galley.....	23	17	10-50
Sgt Roy.....	27	19	10-56

Grand total.....984

1ST PRINCE OF WALES.

Capt Finlayson.....	16	27	11-54
Col-Sgt J. Drysdale.....	31	27	27-86
Col-Sgt J. Bump.....	27	29	15-62
Sgt A. Ferguson.....	29	17	10-53
Sr Sgt J. Cooper.....	34	28	27-86
Corpl Sutherland.....	22	28	8-53
Pte Foote.....	28	28	21-87
Sr Sgt Donaldson.....	25	24	18-64
Pte Pendleton.....	22	24	8-51
Pte J. McCallum.....	22	24	17-60
Lt Smith.....	18	24	12-51
Lt Antcheson.....	20	29	26-86
Capt J. Hood.....	30	28	25-88
Pte Dawse.....	28	28	23-85

Grand Total.....912

WINNERS OF INDIVIDUAL PRIZES.

Corpl MacNab 5th									
200 yards	4	2	5	4	5	4	4	—28	
500 yards	4	5	5	4	5	5	5	—33	
600 yards	4	4	5	5	5	5	5	—33	
									94
Gunner T. Sharpe M.G.A.									
200 yards	5	5	5	5	4	5	5	—34	
500 yards	4	4	5	4	4	2	5	—28	
600 yards	4	4	5	2	5	5	5	—30	
									92



Royal Military College Club of Canada.

The eleventh annual meeting of the Royal Military College Club of Canada was held at the Russell House, city of Ottawa, on the 1st of March and was attended by the following officers and members:—

President, Lieut. E. H. Drury, U. L., Sherbrooke, Que.

Vice-President, Lieut. D. C. Campbell, U. L., Ottawa, Ont.

Hon. Secretary-Treas. Captain Ernest F. Wurtele, R. L., Quebec Que.

Members of managing committee:—
Captain Duncan MacPherson, R. L., Montreal.

Lieut. Fred W. White, U. L., Ottawa, Ont.

Members—Major John Houlston, 86 h Batt., Three Rivers, Que; Captains A. G. G. Wurtele, U. L., R. M. C., Kingston; F. M. Gaudet, R. C. A., Kingston; Lieut. Kenneth J. R. Campbell, 6th Dragoon Guards, Bonny, West Africa; Lieut. C. B. Farwell, Royal Engineers, India; Lieut. C. J. Armstrong, Royal Scots, Montreal; and the following Lieutenants on the unattached list, F. C. Anderson, Ottawa, Ont.; H. B. Mickleston, Kingston, Ont.; W. J. Stewart, Ottawa, Ont.; L. M. Lambe, Ottawa, Ont.; John G. Gibson, Cowansville, Que.; J. F. E. Johnston, Ottawa; R. M. Courtney, Ottawa, Ont.; B. H. Fraser, Ottawa, Ont.; F. Drayner, Quebec; F. Anderson, Ottawa, Ont.; W. H. Sullivan, Cornwall, Ont.; J. F. Fraser, Ottawa, Ont.; J. White, Ottawa, Ont.; Wm. Birmingham, Kingston, Ont.; R. E. Tyrwhitt, Ottawa, Ont.; E. T. B. Gillmore, Ottawa, Ont.; and Messrs. W. F. Powell, Ottawa; Ed. R. Tate, Lakefield, Ont.; Geo. E. Perley, and R. Blackburn, Ottawa, Ont.

Two sessions were held, one in the morning and the other in the afternoon. During the morning the annual report of the Hon. Secretary-Treasurer and that of the Auditors was read and adopted, and several other matters were considered bearing directly upon the welfare of the members.

The afternoon was taken up with the reading of papers and election of officers. Lieut. Kenneth Campbell, Carabiniers read a paper on the capture of Brohemie, West Coast of Africa; another was read by the Hon. Secretary on behalf of Mr. C. E. Cartwright, C. E., who was unable to attend the subject being the cost of steam shovel work.

The election of officers for the ensuing year resulted as follows:

President, Lieut. Francis Joseph Dixon U. L., Toronto, Ont.

Vice-Presidents, Captain P. G. Twinning, R. E., Kingston, Ont.

Lieut. Henri A. Panet, R. C. A., Quebec, Que.

Hon. Secretary-Treasurer, Capt. Ernest F. Wurtele, R. L., Quebec, Que., re-elected.

Managing Committee.—Lieut. E. H. Drury, U. L., Sherbrooke, Que; Lieut. C. W. Birmingham, U. L., Kingston, Ont.; Capt. F. M. Gaudet, R. C. A., Kingston, Ont.; Lieut. F. B. Wilson, U. L., Montreal, Que.; Lieut. John G. Hearn, U. L., Quebec, Que.

The annual dinner was held in the evening at the Russell House at which some fifty persons were present. The club guests present were Hon. J. C. Patterson, Minister of Militia and Defence; Colonel Walker Powell Adjutant General; Professor Forshaw Day, Royal Military College, Gentleman Cadet Battalion; Sergt. Major G. S. Wilkes of the R. M. C.

Letters of regret were read from Sir Mackenzie Bowell, Hon. Chas. Hibbert Tupper, Major-General Ivon Herbert, Capt. Streatfield, Major-General Cameron, Commandant, R. M. College, Kingston; W. E. Desbarats, CANADIAN MILITARY GAZETTE.

The dinner was in every respect a most enjoyable one and served in excellent style. Music was furnished by Valentine's orchestra. A number of toasts were duly honoured and replied to and songs were in order.

The Hon. the Minister of Militia and Defence in his speech referred to the fact that the Government had in view the placing of graduates of the college on the board of visitors, which, needless to add was received with applause as it has been contended that they should have a voice in the management of the affairs inasmuch as comes to the duty of the Board.

Lieut.-Col. D'Arcy E. Boulton.

We are indebted to a correspondent for the following sketch of this gallant officer's career, and are glad to publish it and do honor to Canada's veteran militiaman:—

Extract from Militia General Orders, January 26, 1895:

CAVALRY.

3RD "THE PRINCE OF WALES' CANADIAN DRAGOONS."—Lieut.-Col. D'Arcy Edward Boulton is permitted to resign his commission and to retain the rank of Lieut.-Col. on retirement, after more than 57 years' service as an officer of the Canadian Militia.

This brings to a close the military career of Lt.-Col. Boulton—a career as unique as it has been beneficial to the force.

Lt.-Col. Boulton was born at York, Toronto, in 1814. He was a pupil of Dr. Strachan, and finished his education in England. In 1837 he took the degree of

barrister. Upon the breaking out of the rebellion, December, 1837, Col. Boulton raised a company of infantry, and in January following received his commission as Lieutenant in His Majesty's Regiment of the Queen's Own, under Col. Kingsmill, of Peninsular fame. In February he was promoted to the command of his company. He served on the Niagara frontier, and was engaged in the battle of the Short Hills with the invaders of the United States.

Upon the disbanding of the Queen's Own on the restoration of peace, Capt. Boulton was attached to the 1st Regiment of Northumberland Militia. On the organization of the Volunteer Forces of Canada in the year 1855, under Colonel de Rottenburg, D.A.G., Captain Boulton was commissioned to raise a volunteer troop at Cobourg, designated "The Prince of Wales' Canadian Dragoon Guards," uniformed after the British regiment of his Royal Highness—scarlet and brass helmets. His commission to this corps was dated 6th March, 1856. In 1866 he was on duty, and in 1868 was attached to the 13th Hussars for instruction, taking a first class certificate, and serving under Colonel (now Sir Garnet) Wolseley. He received his commission as Lieut.-Colonel on the 26th November, 1857. During his long service he never was absent from duty, nor lost a day's service, except in 1874, when absent on leave. Col. Jenyns, 13th Hussars, when granting his certificate, said: "This officer is a good rider, and very efficient in every way. He paid great attention to every detail." Major-Gen. Herbert, in communicating with Lt.-Col. Boulton, was pleased to say: "I, with my own hand, convey to you my appreciation of your valuable services. Though parting from your regiment must no doubt be a trial, it will, I am sure, be a source of satisfaction to you to realize that in the course of the last 34 years you have not only retained the personal friendship and interest which were first awakened in H.R.H. the Prince of Wales by the manner in which you performed your duty, but you have succeeded in winning the regard of all the Imperial officers who have held command in Canada, as well as the respect of your subordinates."

Col. Boulton was in command of the brigade camp at Kingston in 1887, during the enforced absence of Col. Villiers, D.A.G.

From the earliest establishment of rifle associations Colonel Boulton always took an active interest in furthering the welfare of the rifleman.

His son, Senator Boulton, has won a Dominion reputation as Major Boulton, of Boulton's Scouts, as well as in his connection with Riel in 1870.

The gallant old Colonel has been a familiar figure in Cobourg. He has been the beau ideal of an officer, and a blank has been created in military circles which it will be very difficult to fill.

THE BALLISTICS OF THE RIFLE

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

The subject of this paper, "The Ballistics of the Rifle," is one having for its foundation three things, viz., the gun, the powder-charge, and the bullet. Of the first this paper will not treat; only reference to the action of the powder-charge will be made, and very little in a specific manner will be said about the bullet, for each would form the subject of a long and interesting paper. I only propose to treat on the actions produced by the gun, the powder-charge and the bullet in combination; and perhaps I may treat my subject in a superficial manner, but there are two reasons why that has to be done, (1) because it is necessary my paper should be as terse and brief as possible, and (2) because I am only a layman dabbling in the science of gunnery and obtaining knowledge by study alone, without the great advantages which practical experience confers; and I have to acknowledge that I have made a good use of the books I have consulted, and often used, without giving credit, the words of their several authors.

According to the scientific artillerymen, and there are *three* distinct kinds of ballistics, viz., interior ballistics, exterior ballistics, and the ballistics of penetration. The first refers to the action of the powder charge after its ignition in the bore, its action on the projectile up to its emergence from the muzzle, and the action of the projectile during its passage through the bore. The second refers to the motion of the projectile to a point of impact, and the influences which retard it, or cause it to deviate from its path; and the third refers to the energy developed on the impact, and how the amount of such energy can be determined.

The foregoing is the natural sequence, because it begins with the cause and ends with the effect, but strange to say, the artilleryman now-a-days begins with the effect, and works backward to discover or determine a cause which will produce the effect he desires. Thus, an armour plate of a certain thickness is to be perforated by a projectile. To effect perforation this projectile must be made of a certain shape, class of metal, weight and diameter, and its energy or perforating power must be fixed, and then the gun to be used must be selected, and the nature and weight of the powder-charge to give the required muzzle velocity must be determined, thus harking back from the effect to the cause.

In this paper the sequence mentioned has not been followed, as it was considered desirable not to do so, for we are to treat only of the rifle, and not of great guns and their immense charges of powder.

It is needless here to enter on the history of gunpowder, for that can be found in any encyclopædia, and all that is required for the purposes of this paper is to say that it is an explosive compound, by the ignition of which a force is created capable of propelling to distant or inaccessible points missiles in the shape of shot and shells and bullets, and imparting to them a deadly and destructive force or power; and also that it is not so much an explosive, as a substance mechanically compounded, which, on ignition, gives off gases with great rapidity. In this respect it differs from gun-cotton and compounds having nitro-glycerine as their base, for whilst the

explosion of those compounds is almost instantaneous, the ignition or burning of gunpowder is comparatively slow.

All projectiles on being discharged from a rifled gun possess, (1) a *velocity of translation* due to the propelling power of the powder-charge; (2) a *velocity of rotation* due to the spirality of the rifling and the velocity at the moment of leaving the muzzle of the gun; (3) an *energy* due to their weight and velocity during flight; and (4) a *penetrative* power due to the shape and materials of which they are composed and their velocity at the moment of impact; and these points have been taken for consideration.

The velocity of translation varies with the dimensions, shape and weight of the bullet, the amount and nature of the powder-charge, the amount of friction experienced in passing through the bore of the arm from which it is propelled, and the retarding influence of the atmosphere.

The path followed by a bullet in its translation from the gun to a point of impact is called its *trajectory*, and this path is further changed by the reason of the "drift" of the bullet, which is a movement to the right or left according to the direction of the rotation of the bullet.

There is not any such thing as "point-blank," "a term," as one writer says, "not yet expunged from popular speech," for as soon as a bullet leaves the muzzle of a gun the force of gravity begins to act, and between that force, the force of translation, and the retarding influence of the atmosphere, the path of a bullet in its flight is a curved line.

In early days when the science of gunnery was in its infancy, there were many theories as to the flight of projectiles, some believing that they were impelled in a straight line and then fell perpendicularly, and others that the first part of the course was straight, then curved, then directly to the earth. Another theory was that the path followed was a portion of a circle whose radius equalled that of the earth; and still another, that it was a parabolic curve affected by the resistance caused by the atmosphere.

As previously stated the trajectory of a bullet, and indeed of any projectile great or small, is a curve, not regular for any particular make of gun, but irregular, in that it varies at every point in its course, such variations being increased or decreased by the weight and density of the powder-charge; the weight, shape and dimensions of the projectile; the atmospheric conditions at the time when the gun was discharged; and the velocity of the projectile at different points in its path.

Every object or missile projected by any force whatever has its trajectory. A stone thrown at a dog, water issuing from a hose-pipe during a conflagration, or molten metal flowing from an aperture in the foundry-man's melting furnace, all have curved paths to their points of impact; and there is but one course where moving bodies have not any trajectory, and that is where they fall perpendicularly from a height, but though such course is a straight line, the mass or object is retarded in its descent by the resistance caused by the atmosphere, and this resistance is one of the most potent, if not *the most potent* of the influences which affect the flight of a bullet. Were it not for the retarding influence thus offered, a bullet would go on with undiminished speed regardless of distance, and the differences of size, shape or weight would not matter anything, for all projectiles starting with the same velocity would follow the same path and traverse the same distance, being brought to a state of rest by the force of gravity.

The resistance which hinders the onward progress of a bullet in its flight through a still atmosphere varies with its diameter, its sectional area, its velocity, its shape and steadiness during flight, and the density of the atmosphere.

As regards the sectional area it is found, other things remaining the same, that the greater the area exposed, the greater the resistance; thus the sectional area of elongated projectiles is circular, and the resistance they meet with varies as the squares of their respective diameters.

For many years the determination of the velocity, or velocities of a projectile at different points in its trajectory engaged the attention of eminent men of different nations, but their results were to a certain extent empirical, and it is only within the last thirty years, when electric recording instruments were employed for determining velocities that sufficient experimental data has been accumulated from which to deduce results useful for general application. Omitting reference to early observers it may be stated that Mons. Helie in France, and the Rev. F. Bashforth in England, arrived independently at results of great importance; Mr. Bashforth being at the time he made his experiments at Woolwich and Shoeburyness, Professor of Applied Mathematics to the advanced class of Royal Artillery Officers at Woolwich. Relative to these results mention will be made further on.

The shape of the head of a projectile has an influence on its forward motion, for if it be curved or pointed the air resistance is less than if flat. Mr. Bashforth found that at a certain velocity if the resistance to a projectile with a hemispherical head be represented by unity, the resistance to others of the same diameter, but with heads of different shapes, would be as follows:—

Hemispherical head	1.00
Hemispheroidal head	0.78
Ogival (1 diam.) head	0.83
do. (2 diam.) head	0.78
Flat head	1.53

It may thus be seen that the hemispheroidal, which is the shape of the Snider bullet, and the ogival, whose head is pointed and struck with a radius equal to two diameters, encounter equal resistance, whilst the flat head meets with *twice* the resistance that they meet with.

As previously stated, the elements affecting the flight of a projectile through the atmosphere vary as its weight, diameter, shape of head, velocity, and the retarding influence of the atmosphere; and Prof. Bashforth, from the results of his investigations, has prepared a set of tables, by the use of which, the weight, diameter and initial velocity being known, the remaining velocity of a projectile at any unit of distance over a given range can be determined; and from such velocities the times of flight can be calculated, and from them the trajectory, the drop of the bullet and its energy and penetrative power, as well as the angles of sight can be determined.

As muzzle, or initial velocity is a most important factor in these calculations, being the starting point for determining the remaining velocities and times of flight, it may be well to explain that it is obtained mechanically by means of an instrument called a chronograph, of which there are many kinds, notably those of Prof. Bashforth and Le Boulengé, the latter having the most extended use, and is the one used at the cartridge factory, Quebec.

This instrument consists of two electro magnets affixed to a vertical standard, which are each capable of sustaining a brass rod tipped with iron, the suspending power being so regulated that it is

just sufficient to hold the rods in suspension. These rods are of unequal length, the longer, which in time of use is covered with a removable tube of zinc or copper, is called the *chronometer*, and the shorter rod is known as the *registrar*.

In connection with this instrument, which is set up and observed in an office or special room, there is, at a distance outside, a firing shed, and at a stated distance therefrom a screen, usually a heavy plate of iron, free to swing on hinges affixed to its top edge. When a test is to be made a rifle is secured in a fixed rest in the firing shed, and across its muzzle a fine wire is placed, which is electrically in circuit with the chronometer, and the iron plate or screen is placed in circuit with the registrar, both circuits passing through a "disjuncter," the use of which is to regulate the proper falling of both rods, and thus eliminate error.

To use the instrument the rifle is loaded with one of a lot of cartridges to be tested, the chronometer and registrar are suspended by their respective magnets, and all communications and adjustments being in order, the rifle is fired. As the bullet emerges from the muzzle the wire is severed, the circuit to the chronograph is broken and the chronometer falls. The bullet passes over the intervening space and strikes the iron plate, which, swinging under the blow, breaks the circuit to the registrar, which falls on a trigger releasing a catch, and a knife actuated by a spring is forced forward and cuts or indents a mark on the tube carried by the chronometer. Both rods are caught in proper receptacles and the chronometer is taken out, and a measurement made with a graduated rod from zero to the indent on the tube gives the velocity in feet, or yards or metres. The velocity thus obtained is a mean between the actual velocity at the muzzle and that at the screen or iron plate.

Usually the velocities of ten cartridges are taken, the average of which is accepted as the velocity of the lot of which the cartridges were taken as a sample.

To enable a determination being made of the remaining velocities, the *co-efficient of retardation* must be determined, and it is a very simple calculation, for we have only to divide the square of the diameter of the bullet in inches, by its weight in pounds, or expressed algebraically—

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

where *d* represents the diameter in inches and *w* the weight in pounds.

The diameter of a M. H. bullet is 0.45 inch, and its weight 480 grains, thus—

$$\frac{d^2}{w} = \frac{0.45^2 \times 7000}{180} = 2.953$$

which is a factor representing the amount of retardation experienced in passing through the atmosphere a distance of *one foot*.

We are now in a position, using Bashforth's tables, to determine the remaining velocities at any point in the trajectory of a M. H. bullet, and for that purpose will assume that its muzzle, or initial velocity is 1300 feet per second, and that velocities, time, etc., are to be determined at points 50 yards apart, over a range of 500 yards.

As the factor 2.953 represents the retardation in *one foot*, then 2.953 multiplied by 150, or the number of feet in 50 yards, will amount to 442.95. In the *space* table we find opposite 1300 the

Number..... 42,178.81
From which deduct..... 442.95
Leaving..... 41,735.86

and by an inverse process we find that number in the table represents 1223,

which is the velocity at 50 yards. Again subtracting 442.95 we obtain 41,292.90, which is the tubular number for 1155, the velocity at 100 yards, and in this manner the remaining velocities can be determined.

Having found the velocities we are able, with the assistance of the table for *time*, to calculate the "time of flight" of the bullet over the units of distance selected. In this table for 1300, the muzzle velocity, we find the number 231.6071, and opposite 1223, the velocity at 50 yards, 231.2549, deducting which we have .3522, and dividing that number (0.3522) by 2.953 (the factor of retardation), we obtain 0.1186 second as the period taken by the bullet to pass from the muzzle, a distance of fifty yards. As the velocity at 100 yards is 1155 f.s., we have only to deduct the tubular number for that amount, or 230.8847 from 231.6071 (which is a constant amount), and the difference, 0.7224 divided by 2.953 gives 0.2446 seconds, the time occupied by the bullet in passing over 100 yards, and in this manner the remaining velocities can be calculated.

The times of flight over a 500 yard range having been determined, the heights from the place, or line of aim, to the trajectory at each unit of distance, 50 yards, may be calculated; but here the force of gravity has to be taken into account. This force is universal, and is the tendency of everything to fall in a direct line to the earth. If a bullet be dropped from a height it starts from a state of rest, and at the end of *one* second of time will have fallen 16.1 feet, and have attained a velocity of 32.2 feet, and this amount, 32.2, is termed the *accelerating force of gravity*, and has for its symbol the letter *g*. The distance through which a body falls in a given time is determined by the equation $D = (\frac{1}{2} g) t^2$, where *D* is the distance to be obtained, *g* the accelerating force of gravity, or 32.2, and *t* the time, or duration of the fall.

The heights at the different points on the trajectory for 500 yards can be calculated by the formula

$$H = (\frac{1}{2} g) t (T - t),$$

where *H* is the height to be obtained, *T* the whole time of flight, and *t* the time over a given distance. This will more plainly appear when put into figures. Thus, the whole time of flight over 500 yards is 1.4747 seconds, and the time over 50 yards 0.1186 second, then we have

$$\frac{32.2}{2} \times 0.1186 \times (1.4747 - 0.1186) = 2.589 \text{ feet;}$$

at 100 yards the figures will be:

$$\frac{32.2}{2} \times 0.2446 \times (1.4747 - 0.2446) = 4.844 \text{ feet, and in this manner the remaining heights can be calculated.}$$

The following statement gives the results from the foregoing calculations:

Distance.	Velocities.	Time.	Trajectory.	Drop.
Yards.	f. s.	Secs.	Feet.	Feet.
0	1300	0	0	0
50	1223	0.11859	2.589	0.1685
100	1155	0.24463	7.811	0.9332
150	1091	0.37889	16.83	2.310
200	1031	0.51998	29.92	4.351
250	973	0.66640	46.72	7.149
300	919	0.81906	67.65	10.80
350	869	0.97723	92.17	15.21
400	821	1.14137	120.13	20.71
450	775	1.31099	151.06	27.21
500	731	1.47471	184.00	35.00

The "drop" of the bullet is the dis-

tance through which it falls under the influence of gravity at any point in its flight, and is determined by the formula $\frac{1}{2} g t^2$ —using the results previously obtained, the amounts in the fifth column of the foregoing table have been determined.

The angle of elevation is found by dividing the "drop" at 500 yards by 1500, the number of feet in 500 yards, the result being the natural tangent of the angle required, which in this case is 0.02333, and from a table of natural tangents we find that this represents an angle of 1° 20' 12".

A difference of *one grain* of powder in a cartridge will make a difference of ten feet in the muzzle velocity. According to the standard fixed by the British Government for the M-H cartridge the charge is 85.2 grains, or—one cartridge may contain 87 grains and another 83 grains and both pass inspection, and yet the M-V of the first may be 1340 f. s., and of the latter 1300 f. s.

Let us see what effect this would have on a rifleman's score at 500 yards, if he had to fire consecutively two cartridges filled as above.

For the 87-grain cartridge we have a M-V of 1340 f. s.; then the remaining velocity at 500 yards will be 876 f. s., the "time" over the range 1.4335 seconds, and the "drop" of the bullet will amount to 33.0855 feet.

For the 83-grain cartridge we have a M-V of 1300 f. s.; then the remaining velocity at 500 yards will be 864 f. s., the "time" will be 1.4747 seconds, and the "drop" will amount to 35.0084 feet; then 35.0084 - 33.0855 = 1.9229 feet, or 23 inches, which will be the difference in position of the two shots on the target, always assuming that both were fired under the same conditions of holding, aim, etc.

From this illustration *three* things may be gathered: (1) a reason for unaccountable "drop" shots, (2) that to ensure uniformity in shooting—other things being equal—all cartridges must contain exactly the stipulated weight of powder, no more, no less, and (3) that the longer the range the greater will be the difference between the points of impact on the target.

Retardation is increased or diminished by changes in barometric pressure, and variations in the height of the thermometer; and it is further affected by the amount of moisture in the atmosphere. Prof. Bashforth's tables were calculated on the assumption that a cubic foot of dry air at a temperature of 62° Fahr., and a barometric pressure of 30 inches of mercury, weighs 534.22 grains.

When the barometer rises above or falls below 30 inches, the weight of a cubic foot of air is diminished or increased, and a further change takes place as the thermometer varies from 62°. The change due to moisture contained in the air so far as it affects so small an object as a rifle bullet, may be disregarded.

As the co-efficient

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

was determined under the conditions assumed by Prof. Bashforth, it will be necessary when extreme accuracy is required to modify it to suit changed conditions of atmospheric pressure and temperature, but as such calculations require the weight of a cubic foot of the air existing at the time of the trial, and recourse be had to meteorological tables for corrections for temperature and moisture, calculations which are beyond the scope of this paper, reference is only made thereto; but it must be borne in mind that a change in

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

other conditions remaining the same, does not mean any change in muzzle velocity, but changes in the remaining velocity, times of flight, energy, etc., which can be shown by an easy calculation, using only the difference in barometric pressure.

Thus—the co-efficient

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

of the M-H when the barometer stands at 30 inches, is 2.932. Assuming a trial of a lot of ammunition to be made when the barometer stands at 29.70 inches, then the co-efficient will be reduced and become

$$2.9532 \times \frac{29.70}{30.00} =$$

2.9532 × 0.99 = 2.9237. Again—assuming the barometer to stand at 30.30 inches, the co-efficient will be increased, and become

$$2.9532 \times \frac{30.30}{30.00} = 2.9827$$

(Continued in our next issue.)

THE CRIMEA IN 1854 & 1894

LITTELL'S LIVING AGE of February 16th, gives the 4th part of Sir Evelyn Wood's articles on the Crimea.

The placing of the guns in the 3rd parallel on the night of the 11th and 12th of April is described and the opening fire of the advanced batteries :

Captain Oldershaw, Royal Artillery, who had received orders to fight his guns at all risks, marched next day into the battery with two officers and sixty-five of all other ranks, and so thoroughly executed his orders that he silenced the guns in the Crow's Nest of the Garden batteries, after two hours' work. He was, however, overwhelmed later by the fire of thirty guns, many of heavy calibre, which concentrated on his four 32-pounders, struck down half the company, dismounted three of the guns, and in the words of the officer in command, "literally swept away the battery." Eventually the fourth gun was disabled, but neither Captain Oldershaw, nor the men still untouched, offered to leave the position, in which they remained until, having sustained this unequal conflict for nearly five hours, an order was received to withdraw the men. Three of the dismounted guns were lying upset, but with their muzzles in the air, and as the survivors marched out a salvo was fired from these disabled pieces. Of the sixty-five non-commissioned officers and men who marched into battery, eighteen had been sent away with wounded men, leaving forty-seven in action. Their casualties were forty-four killed and wounded.

Next morning an order was given (in error) for Captain Oldershaw to fight the battery again with fresh detachments. He was on parade when the eighteen men employed as stretcher bearers, and the three survivors of the previous day's fighting, sent a message through the senior surviving effective non-commissioned officer, a corporal, begging to be allowed to accompany him. Another officer had, however, already been detailed, but although he and his men behaved remarkably well, and their efforts in the rebuilt battery were supported by six guns in No. 8 battery, which had been armed during the night, yet by sunset on the 14th the two batteries were crushed, the gun detachments were withdrawn, and were not replaced.

The British soldier does not often

require speeches to raise his courage on going into action, but every one of us is the better from the contemplation of heroic deeds ; and were I a Royal Artilleryman, I should try to so record this achievement that young gunners might learn the names of those three survivors of the five hours' artillery duel on the 13th of April, who, having seen ninety-three per cent. of their comrades fall, begged for permission to recommence, with their captain, the same deadly work the following day.

Before nightfall on the 9th April the batteries on one face of the Redan had been silenced, and when darkness closed in, and we could no longer see to lay our guns, a shower of mortar-shells was directed on the Russians, who nevertheless worked so unremittently throughout the night, that early next morning they reopened fire on us with no perceptible loss of power. The French had, however, breached the Central bastion and inflicted terrible loss on the Flagstaff bastion, and by the evening of the 10th had practically destroyed the so-called White Works, which had been erected by the Russians on the lower spur of the Inkerman Ridge at the end of February.

Early on the 11th April I was sent by Captain Peel from the 21-gun battery with a note for Captain Lushington, the commander of the Naval Brigade, and by him was ordered to take it on to Lord Raglan. Scribbled on a scrap of paper were these words : "If the allies intend to assault, a better opportunity than this will not offer. The fire of the Russian batteries of the Malakoff is completely crushed." When galloping to headquarters my pony put his foot into a hole, and turning right over, rolled on me, covering my face and clothes with mud. I thus appeared before Lord Raglan, who was in the farmyard at headquarters, casting troop horses, apparently belonging to his escort. He astonished his staff by warmly shaking hands with the very dirty midshipman as he offered me breakfast. He then read the note, but merely remarked, "impossible, I fear."

As I was re-entering the battery I met four men carrying away the body of my friend and messmate, Lieutenant Douglas, the top of whose head had been knocked off by a round shot. He could not have suffered, as on the handsome face there was a smile such as I had often seen. He was a great favorite with all, but I, living in the same tent for six months, had become especially attached to him. Singularly unselfish, he had by his undaunted courage attracted the notice of Captain Peel, who admired his demeanor, calm under the hottest fire, and he was one of the four officers whom Captain Peel invited in the first bombardment to affect, even if they could not feel, a perfect disregard of fire. This Douglas never failed to do, but not in a spirit of bravado, and gave us the best example of conduct when under fire.

During the ten days of this bombardment the Russians were, as we heard later, short of powder, but their practice was much better than in October. One shell dropping into the magazine of the 8-gun battery in our front killed one man and wounded nine, and although the guns were uninjured they were buried so deeply in rubbish as to be unworkable until they were cleared next day. I saw a shell burst on striking the parapet, which killed two men, literally buried three others. We went for picks and shovels, which took time, and the men were insensible when we dug them out ; but they all recovered.

Close to a magazine which supplied the gun I was working, we had some

tools for filling fuses. A man was sawing a fuse clamped in a vice, when a shell bursting on the parapet scattered bits all around. One fragment struck the fuse and exploded it, but the man escaped with merely a scorched wrist, burnt by the composition in the fuse. On the other hand, a shell bursting over one of our 68-pounder guns killed or wounded thirteen men.

Lieutenant Graves, Royal Engineers, who was killed close to me at the abatis of the Redan on the 18th June, had a remarkable escape on the 10th April. He was standing in an embrasure which required repairs, when a round shot struck the sole (*i. e.*, ground surface) immediately under his feet, but although he was much bruised yet he was soon again at duty. The Engineer officers set a fine example to the men, which was now growing daily more necessary, as the recruits were very different in fighting value from those we had lost in the winter, and these boy soldiers are not spared in the Engineer journal. On the 14th April the officer on duty writes eulogizing the conduct of Privates Samuel Evans, and James Callaghan, 9th (Norfolk) Regiment for gallant conduct, adding : "In the midst of such conduct quite the reverse, perhaps it might be useful, and certainly it would be just, not to let the conduct of those men remain unnoticed."

Two days previously there is a complaint in the Engineer journal that our sharpshooters fire when it is not necessary, and do not fire when it is essential. The writer adds : "Very few regimental officers on duty in the trenches exert themselves or take any interest in the duty they are employed upon, leaving the men to extend themselves along the trenches in any manner they like, and to fire as much or as little as they please." It must, however, be borne in mind that there is no record available of the replies made by the regimental officers. No doubt in a long siege officers and men get slack, but I believe the apparent want of interest arose from ignorance of what was required, and that if the Engineer officers had pointed out daily the principal objects on which fire was to be directed, there would have been very few such complaints. It was not till late in the siege that the senior officers on duty learnt they were responsible that every one under them did his duty, and on the 17th April a memorandum was issued for the instruction of the general on duty in the trenches.

In an adverse report by the Royal Engineers there is a quaint indication of our still regarding men as machines : "There is a good deal of irregularity in regard to the men sent down to the trenches, many complaining they had been two consecutive nights on the working party." A month later, in another Engineer report, we get an interesting clue to causes of the line soldier's slackness : "The working parties appear to have exerted themselves and performed their tasks to the satisfaction of the Engineers. This favorable change may be attributed to fine weather and the better condition of the men to undergo fatigue."

During this, the second bombardment, it was computed the allies threw one hundred and thirty thousand projectiles into Sevastopol, the Russians answering with about three to our four shots. The losses were, however, out of all proportion, and the reason for this difference will be understood from a glance at the map. The Russian shells unless actually impinging on our parapets, guns, or bodies, exploded harmlessly behind the batteries. Many of their works were to some extent enfiladed by our guns, and thus a shot or shell missing its object

often slew some one further back. The Malakoff presented to our 21-gun battery a frontage of two hundred yards, but it was four hundred yards deep from south to north, and thus few of our shells failed to burst somewhere inside the work.

Moreover, it never occurred to our enemy any more than it did to us that all our labor and losses were to be incurred for an immediate result, and thus besides the nightly losses incurred in repairing the daily damage, troops were necessarily kept close at hand to repel the expected assault, and in spite of strenuous efforts to shelter them by bomb-proof cover, the Russian losses were terrible. The French had about fifteen hundred, and the English under three hundred casualties, but our foes lost over six thousand men in those ten days of fire. Those Russians who were killed outright were buried near where they fell, and these, by the end of the war, amounted to over fifty thousand.

I have shown that neither at Balaklava nor at Inkerman was the courage of the Russian soldiers sufficiently aggressive to reap victories within their grasp, but their enduring patience under fire has never been surpassed, if indeed ever equalled.

By the 18th April, the allies had beaten down the fire of the opposing batteries, and Todleben has recorded he momentarily expected the works opposite to the French would be successfully assaulted. Then it was we were told the French had run out of ammunition, and on the 19th April we practically ceased to bombard the works, for reasons now known to be connected with the proposed visit of the French emperor to the Crimea.

On the 20th April, we agreed to forget our work for a time, and organized a large picnic, spending the day at St. George's Monastery, which is beautifully situated on the sea cliffs near Balaklava, with gardens going down to the beach. There, with a cricket match and other games, we enjoyed our peaceful amusements, and to a greater degree from the contrasts of the scenes of the previous ten days.

On the 25th April, our battery had a fortunate escape, for the Russians managed to drop a 13-inch mortar shell right through the roof of a magazine. It broke the magazine man's neck, but did not explode. Although the regular bombardment had ceased, there was at this time always sufficient fire of some sort to prevent perfect repose, and the following day Captain Peel had a narrow escape. I was following close behind him through the covered way to the advance trenches, when a bullet passed between his legs, and cut a groove in my left gaiter, but such incidents were so common that I should not have recorded it had I not been so anxious for his safety.

During this week I saw one evening, an hour before sunset, a curious scene. A Zouave, so drunk that he could not walk straight, left the French advanced trenches under the Mamelon, and passing near the Russian rifle pits, reeled along till he reached where the French lines joined our advanced works. With his rifle on his shoulder he staggered about, singing at the top of his voice the "Marseillaise." No one fired, and we watched him till, re-entering the French trenches, he was made a prisoner by soldiers of his own nation.

Next month the Russians showed a like generous consideration. A man was lying wounded on the right of the 2nd parallel, left attack, and a comrade who went out to carry him in was at once knocked down. The Russians were shooting well, and our men might have

bled to death, but that the enemy holding the Quarries hoisted a white flag, to show the men might be removed, and this was done without further loss.

Although our hopes of an immediate assault had been checked on the 19th, yet they were revived a week later. There was a growing feeling that with a parallel opened by the French within one hundred yards of the Flagstaff Battery, and the greatly reduced strength of the Russian batteries, we ought to put an end to the struggle; and on the 23rd General Canrobert proposed to Lord Raglan an assault for the 28th or 29th to which he agreed, although our storming parties would have to cross over half a mile of open ground from the advanced trench to reach the Redan. On the 25th, however, Canrobert informed Lord Raglan that he and his generals had come to the conclusion it was "desirable to postpone the offensive operations against Sevastopol," the assigned reason being that the reserve French army then forming at Constantinople would not be ready till the 10th of May. The space at my disposal does not admit of my attempting to explain the causes of the vacillating orders issued at the time, but both armies were certainly, if not discontented, amazed, when an expedition which started on the 3rd of May to Kerich to destroy stores, was recalled three days later on the receipt of a telegram from Paris.

During the second week in May the Sardinian contingent of fifteen thousand men, under General Della Marmora, landed at Balaklava, to act under Lord Raglan's directions, and a week later occupied the left bank of the Tchernaya from the aqueduct opposite to Tchorgoum to the Tractir Bridge, which the French had held for some weeks. The little army of Sardinia, in their bright uniforms, perfect equipment, and generally well-organized system, formed a strange contrast to the British troops. The best feeling towards the British troops was evident in all ranks from their first arrival, and this increased as our acquaintance ripened.

On the 16th May Canrobert resigned the command, resuming the charge of a division, and recommending Pélissier as his successor. This was approved and carried out on the 19th May. His successor inspired great confidence amongst the British troops. Canrobert was very pleasant, and invariably complimentary to our army, but the rank and file, following the opinion of their officers, believed we should get more effective aid from the short, stout Norman, who, in manner and bearing, greatly resembled one of our rough North countrymen, though, in fact, he had a cultivated intellect. He had none of his predecessor's personal advantages, who was a handsome, well-preserved man, and who looked well on horseback; while, either because he was a poor rider, or that his corpulent body made riding beyond a foot's pace inconvenient, General Pélissier generally went about in a carriage, in spite of the absence of roads. Notwithstanding an unwieldy body, and his threescore years, his active mind and iron resolution put fresh vigor into the siege operations, and the successful though costly attacks on the Cemetery near the Quarantine harbor, which was taken on the night of the 23rd May, with a loss of twenty-three hundred men, showed the French army it had a chief who would shrink from no sacrifice in order to attain a mastery over our enemy.

On the 20th there was a tragedy in the Middle Ravine on our right. A French non-commissioned officer having some grievance against an officer

waited for him until, on being relieved, he was returning at the head of his company from the trenches. There the soldier rushed at his captain, and striking him with a knife the officer fell dead. We were all impressed with the promptitude of our allies' justice, for the man was seized, and shot almost immediately.

During the second week in May, cholera reappeared in the army, and the Naval Brigade moved its camp from the sheltered ravine in which we had lived since November, to the top of the hill near the 3rd Division. We did not, however, escape entirely, and in passing a divisional hospital on the 21st, I counted twenty-one bodies sewn up in their blankets ready for the burial parties.

I have stated that concurrent with the appointment of a general to command in the trenches there was more harmonious work, but we had still something to learn, for on the 23rd May, a working party employed in throwing up an advance battery on the left attack, having finished their task early, was withdrawn by the field officer, who left no one to guard the work, and the Russians entering it carried off unmolested a number of gabions.

It is curious how unprepared we were for siege operations even at the end of eight months' experience. During the night of the 20th May, the Engineer officers wished to light up the glacis of the Redan on which they could hear a number of the enemy at work, and they applied to the general officer in command of the trenches to give the order. It transpired, however, the Royal Artillery had but two light balls in the batteries, and the general decided they must be kept for use in the event of the Russians making a sortie.

A fortnight later, June 3rd, we find in the official record: "Left attack—The Artillery fired carcasses at the town in the early part of the night but the greater part of them burst almost immediately after leaving the piece, and I did not observe any effect from them." The left attack was more fortunate than the right attack, for our official report runs: "Almost every one burst at the muzzle, causing great consternation, and injury to the troops in the advanced trenches."

I see by my journal I looked at some of these missiles next day, and observed they were made in the last century! This was unsatisfactory after eight months of a siege which cost England over half a million sterling a week.

During the forenoon of the 3rd June, several of the relief for the gun detachments were passing into the battery from the Woronzow Road. There was but little firing at the time, and the men, disregarding the orders which prescribed that they should enter by the covered way, came up straight across the open. Just as the last of the party approached the 21-gun battery, there was a shout of "Look out, Whistling Dick!" This induced all the men to hurry, for the appalling size of Whistling Dick struck terror even in the firmest heart. Although a bullet no thicker than a French bean is as capable of killing a man as is the largest shell in the world, yet most of us are so constituted as to fear the heavier missile to a degree entirely out of proportion to its relative destructive power.

All of the party except John Blewitt, ordinary seaman of her Majesty's ship Queen, safely reached the trench, and were crouching in it awaiting the explosion. Blewitt, as he bent forward to start running, was struck by the enormous mass of iron, thirteen inches in diameter immediately at the back of the knees, and fell to the ground crushed under its weight in sight of his horror-stricken messmates. He called out to his chum

Stephen Welch, "Oh, Stephen, don't leave me to die!" The fuse was hissing, but Welch, jumping up from under the cover of the bank, which must, humanly speaking, have ensured his safety, called out, "Come on, lads, let's try," and running out, had got his arms around Blewitt, and was trying to roll the shell from off his crushed legs, when it exploded, and not a particle even of the bodies or clothes of John Blewitt the heroic Welch could be found. Captain Mitchell assisted Welch's mother I believe, till her death. I did not witness Welch's divine-like act of self-sacrifice, but, passing soon afterwards, searched for his remains, and I recognized the spot this August when visiting the 21-gun battery.

On the 6th June, I accompanied Captain Peel as he went round the sailors' batteries of the right attack to ensure that everything was in readiness for what we hoped might be the beginning of the end of the siege. About 3 p.m. we fired our first gun at the Malakoff, and immediately afterwards from the Inkerman Ridge, over-looking the Sevastopol harbor to Kameish Bay, on a frontage of five miles, there burst forth from some five hundred and fifty guns a volume of sound grand beyond description. The Russians had still about double that number of pieces in position, half being of heavy calibre, but they were slow in answering our missiles from the Malakoff and Redan. We fired incessantly till dark, when the bombardment was taken up by the pieces throwing vertical projectiles, which scarcely left the Russian works in darkness all night, so constantly were they lit up by the bursting of mortar-shells. Up to 10.30 p.m., when I returned to camp, our casualties had been very light, not more than a dozen. The White Works batteries fired slowly till sunset, those in the Malakoff and Redan were silenced some time before the sun went down. Todleben describes the fire of the English as "murderous, entailing havoc and ruin."

At 1 a.m. on the 7th of June, after snatching an hour's sleep, I returned to battery with fresh gun detachments, and at daylight we reopened horizontal fire, which silenced the Mamelon and Malakoff batteries during the day, and during the afternoon the guns in the White Works ceased to reply. It does not follow that all had been dismounted, but in the Mamelon, as I observed next day, and in the Malakoff, as Todleben states, the guns and their carriages were buried under the ruined parapets. During the afternoon we saw those French troops which were to assault the southern and eastern faces of the Mamelon gradually filing into the trenches, and small detachments from the Light and 2nd Divisions passed through our battery towards the front, exchanging good-humored chaff as they went by, the men's faces radiant with the pleasure of the approaching fight.

The lunette which crowned the Mamelon hill dominated the French trenches, and was nearly a quarter of a mile distant from the nearest, a Russian trench interposing about half-way. The ground in front of the Redan sloped down gradually for five hundred yards to some disused quarries which the Russians converted into rifle trenches. Here the ground fell abruptly, enabling the enemy to overlook our advanced trenches, which were on lower ground. The quarries our troops were about to assault were well protected in rear by fire from the Redan down the gradual slope.

The sailors kept up a slow but accurate fire on the now silent Malakoff and Mamelon. Captain Pell had given me charge of two 8-inch sixty-five hundred weight guns, with orders to fire during

the assault as much as possible consistent with running no risk to our allies.

We were anxiously waiting for the signal for attack at 6 p.m. The setting sun cast a broad red light over the sky, and a soft mist rising from the ground obscured occasionally for a minute or two the troops assembling for the assault. It has been alleged the Russians had seen these preparations, but the small numbers present in the threatened works clearly negatives this assertion. For my account of the capture of the White Works and Quarries, I am dependent on others, but I had a perfect view both of the troops assailing the Mamelon and of those defending it, and shall endeavor to describe it first of all.

Soon after six o'clock the expected signal—a group of rockets—was sent up from the Victoria Ridge, and the French advanced. Three assaulting columns had been formed under the Mamelon—Algerian troops were on the right, the 50th Regiment, led by Colonel de Brancion, was in the centre, and the 3rd Zouaves on the left. At the moment there there was only one Russian battalion in the Mamelon, nine, however, being held in reserve under cover. By chance Admiral Nakimoff was visiting the work at the moment, and having left his horse at the gorge, was looking round the battery, when the cessation of fire from the allied guns, and the shouts of the stormers, made him look over the parapet.

When the signal went up I saw twenty-five men jump out abreast from the French trenches, and run rapidly up the slope of the hill of which the Mamelon was the summit. Only one cannon-shot was fired from the lunette, but some Russian sharpshooters lying in the pit half-way between the Mamelon and the French trenches, fired, killing three or four men, and then ran, they and the leading Frenchmen jumping the ditch almost at the same moment. The centre column, led by Colonel de Brancion, who was throughout well ahead of all, streamed into the lunette, and the Algerian column captured the (proper) left flank of the work at the same moment. A Frenchman, jumping on the parapet, waved a tricolor, and in three or four minutes the Russians were driven out. My two guns were ready with fuses accurately set, and I got several rounds into the retreating Russians before I was obliged to cease firing for fear of hitting the French, who came rushing out in pursuit. The leading group of Zouaves was led by one man who, sixty yards in front of his comrades, pushed the Russians as they ran. I kept my field-glass on this man until he had crossed the abatis, when he fired his rifle and disappeared into the ditch. He did not accompany his comrades as they fell back a few minutes later, so must have been killed or taken prisoner.

While this was occurring two heavy columns of Russians were assembling to the east of the Kornileff bastion of the Malakoff, on the northern slope of the Mamelon-Malakoff ridge. I had looked carefully over this ground during the flag of truce in March, and, knowing the lie of it, could, when standing on our parapet, see over the slope to the northward as low down as the Russians' waist-belts. I was thus enabled to pour on them a terrible fire from the 8-inch guns, the shells of which bursting just short enough for effect literally cut lanes through the columns; but the survivors closed up as fast as their comrades were knocked down. In a few minutes the Russians advanced, and, entering the Mamelon, drove the French out. They rallied momentarily outside, but the Russians were not only in great force, but

were well in hand, and the French being disorganized, were driven back. Through my field-glass I saw the man with the tricolor struck down and replaced four times by others, and then the flag went up and down several times in rapid succession; eventually it disappeared, and the Russians came on like a rolling wave from the Mamelon down to the French trenches, out of which our allies were pushed. The batteries of the allies now reopened fire on the Mamelon, which received a shower of projectiles till the French advanced for their final attack. During the above struggle a heavy French column was descending the Victoria Ridge, with drums and fies playing, under a long-range fire from the Russian ships in the harbor. They never ceased to send up shot and shell, which, though adding to the pictorial effect, had but little effect on the moving target. To the inspiring march of "Père Bugeau" the column came on at a steady double, with an appearance of overwhelming power which recalled Jomini's statement that troops previously shaken often gave way during the Napoleonic wars before such masses reached the position. The column disappeared into the ravine, where it was halted for a few minutes to re-form ranks. Just as the day closed in the darkness, coming on quicker from the clouds of smoke in the air, we saw the French left and centre column again advance from their trenches in our right front, while a heavy column of Algerian infantry moved on the Mamelon from the southeast, and in a few moments the sound of the fire, and the flash of the muskets in the falling darkness, showed us that the Russians were once more retreating.

Simultaneously with the advance on the Mamelon, General Bosquet sent two brigades at the White Works, in each of which there was only half a Russian battalion. These could not stand against the overpowering numbers of the French and a supporting battalion coming up was also easily swept away. The Russians now pushed two battalions forward across the Careenage Ravine, but Bosquet, foreseeing this move, had sent two battalions down the ravine, and these ascending its right bank behind the Russians, took them in the rear, and captured the greater part of the Russian supports.

When Lord Raglan saw the French drive the Russians out of the Mamelon he gave the signal to assault; our guns ceased to fire on the Quarries, and seven hundred men ran forward to the flanks of the work, from which the Russians were easily driven, with a loss of one hundred men. Our casualties were but few at the moment, as the men, having been ordered to advance on the flanks avoided generally treading on a number of fougasses which had been laid down in front of the salient. These were boxes holding from thirty to forty pounds of powder sunk flush with the surface of the ground, and so fitted with detonators as to explode when touched. They were not always fatal, for I saw a soldier who had stamped on one returning from the attack absolutely naked, every part of his clothing having been burnt from off his body.

Although the Quarries were easily taken, to hold and reverse the work was a task of great labor and danger. The enemy's batteries looked right into the intrenchment, and after firing heavily into it, the Russians made repeated attacks on our working parties striving to obtain cover before the day broke. Our soldiers, who were digging or guarding the working parties, welcomed the sorties, as they brought relief from the showers of shells which were poured on the

Quarries, except when Russians were approaching. The Russian officers did not spare themselves. The battalion commander of one column was killed, and the leader of another was wounded and taken prisoner, being recaptured, however, in a renewed struggle. During the ten hours of fighting and digging, many of our men became so exhausted that they could not stand up, even when a Russian column was on them. Colonel Campbell, of the 90th Light Infantry, who was in command of the parties employed, did not recover from over-fatigue for some weeks, and at day-break Lieutenant Wolsely, acting as assistant-engineer, collapsing from exhaustion, fell helpless to the ground, soon after the last attack had been repulsed. The bodily strength of the rank and file, less well nurtured, gave out sooner, and the gifted historian, Kinglake, describes graphically how in the last attack delivered just before daylight, when a Russian column, coming from Dockyard Ravine, got to within two hundred yards of the Quarries, Colonel Campbell and Lieutenant Wolsely, with difficulty, aroused their men who were stretched on the ground, so exhausted by ten hours' incessant fighting and digging, as to be nearly incapable of movement; even when lifted on to their feet they could scarcely stand up, and the prize for which the combatants had striven since 7 p.m. lay absolutely open to the Russians, when suddenly panic-stricken from, to our people, an unknown cause, they absolutely declined to advance in spite of the orders, entreaties, and even blows of their officers, and just as day dawned the column fell back, scared by some freak of imagination.

In this twenty-four hours the French took seventy-three guns, suffering a loss of fifty-five hundred casualties. The English had seven hundred casualties, forty-seven being officers. The Russians lost nearly five thousand in killed, wounded, and prisoners.

Next morning I went down to battery at 4 a.m. as the fire was to be continued. Soon after 8 a.m. I missed Captain Peel, and hearing he had been seen going towards the Mamelon, into which the Russians were pouring fire from mortars, I hurried after him, but he was coming out as I got up to the ditch. He ordered me back, but I begged hard to be allowed to go inside, so he said I might look round and follow him. The ditch where I saw the men jump overnight was not more than four or five feet wide. Following, apparently, our Royal Engineer's report, Mr. Kinglake states "the ditch was broad and deep." This is an error, as I stepped over it with but a slight effort.

I sat down in an embrasure alongside a Zouave, who talked English well. He declared he was the only survivor out of his squad of twelve men. The effect of the heavy fire on the demeanor of all was noticeable. Every face was grave. Men spoke in whispers even when transmitting orders. During the short time I there I saw upwards of a dozen men was wounded, and carried away, and dead of both nations were lying thick over the slopes. These had all been killed the previous evening, for the Russian mortar-shells fell with remarkable accuracy and thus while no one could stand inside with any certainty of living long, the southern and eastern slopes just outside the ditch were quite safe. Inside the scene was indescribable in its horrors. Dead men were lying heaped in every attitude imaginable; some half-buried in craters formed by shell; other bodies literally cut into two parts; and one I noticed had been blown twenty yards by the explosion of a mortar-shell. Some

corpses were lying crushed under overturned cannon, while others hung limply over injured guns, but which were still on their carriages. There was a truce in the afternoon during which, freed from all sense of danger, I had a better opportunity of examining the construction of the work. The amount of labor expended in obtaining cover from fire was extraordinary. The bomb-proof galleries and magazines consisted of earth on top, then a row of gabions, then baulks of timber two feet three inches in diameter. The thickness overhead was nearly ten feet. Our Engineers argued, and apparently with reason, that all this cover, though good for its purpose, impaired the defence of the place, which was so crowded by the huge earth traverses that the defenders could not use their rifles.

When I next stood on the Mamelon, in August, 1894, the circumstances were very different in some respects, though singularly alike in other aspects. The hill remains to-day a chaos of holes, excavated by shells, and by men searching for iron and projectiles; but it is easy for one who knew it in June, 1854, to trace the original work. A visitor new to the place might be puzzled by the French additions, and by a deep, well-cut trench which the Russians have recently excavated. Thus the outer ditch of proposed new fortifications encircles all the English left attack, and crossing the Woronzow Road close to our covered way, made by and named after "The Sailors," runs to the southward of the 21-gun battery, and thence by the Middle Ravine outside the Mamelon down to the harbor. In June, 1854, when I stood there, we had a temporary truce for two hours. In August, 1894, the Russian fleet carrying out its annual manœuvres, was bombarding the forts north of the harbor, and was first answered by what we knew forty years ago as the Wasp Fort, and then by a long line of batteries erected since 1879. The scene reminded me greatly of October, 1854, when our ships were doing in earnest what the Russians were now doing in peace manœuvres for practice.

When Captain Peel and I had examined the Mamelon, we strolled up to the Russian sentries, who were about two hundred yards outside the Malakoff. I recognized a Circassian to whom I had spoken at the truce in March, and we exchanged mutual compliments on our being alive. Captain Peel's starched shirt collars excited the admiration of the Russian officers, to one of whom he replied, in answer to a question, that "we had our laundry-women with us." The Russian soldiers and sailors, for their duties in garrisons are interchangeable, showed up grandly in stature amongst our immature recruits, for most of those soldiers who landed in Kalamita Bay were no longer with the Light and 2nd Divisions.

I have already shown that nearly all our losses during the winter were directly due to preventable causes, but we were now suffering from the effects of the enemy's fire. Besides the losses incurred in capturing the Mamelon and the Quarries the allies lost from the cannonade between the 6th and the 10th of June, seven hundred and fifty men, while the Russian casualties amounted to thirty-five hundred men. When we read these figures of such terrible import, it is easy to understand the bitter feelings expressed in the reply a Russian officer made to one of our own people who, during the flag of truce, observed our losses had been heavy. "You talk of your losses! Why, you don't know what loss is in comparison with what we are suffering!"

On the 10th June, Captain Peel, Lieut.

Dalyell of H.M.S. Leander, and I were discussing the chances of an assault for which the whole army was anxious, when Peel asked us if we had to lose a limb, which we could best spare? I replied, without hesitation, "left arm," and Dalyell agreed with me, but our chief argued that arms are more necessary than are legs to sailors. Eventually on my suggesting a one-leg man would probably become very fat, he came round to our view. Within a week all three were engaged together in the assault on the Redan, and it is remarkable that we were all wounded in the left arm. How this happened I propose to tell in the next and concluding part of these reminiscences.

There were reports some time ago in the Australian papers, and well-grounded reports too, that the Government of Victoria intended to discontinue the appointment of Imperial officers as commandants and staff officers of the local forces. The assumption, however, by Sir Frederick Sargood of the duties of Minister for Defence at once settles this matter, for Sir Frederick's views on the question are well known. He holds strongly that the time has not yet arrived when the Australian colonies can afford to dispense with the advice of experienced officers of the Imperial Army, and there can be no doubt as to the wisdom of Sir Frederick Sargood's decision. Separated as the Australian colonies are from the mother country, it would be in the highest degree dangerous for them to adopt any system of isolation in military matters. They have everything to gain by maintaining a proper bond of union between their own local defensive services and the Queen's army, and we can imagine no policy more injurious than that which advanced colonial politicians would adopt. It would have the effect of greatly retarding progress, and at the same time prove in the long run far more expensive than the system now in vogue, which secures for Australian officers of recognised position and experience in the Imperial Service, who are able to keep a watchful eye over expenditure and to take out with them every five years new ideas which prevent that stagnation that would be bound to follow if the colonists were mad enough to close their eyes to all the advantages they derive from the presence among them of men of the stamp of Major-Generals Tulloch and Hutton, not to mention many others. The officers named have done much to create organization out of chaos. Indeed, it is not too much to say that Australia is only now beginning to profit by the practical knowledge brought to bear on its defensive services by the officers who have been sent from the Imperial Army. We write in the interests of the colonies when we say that Sir Frederick Sargood's policy is an eminently sound and wise one, and that it would be an immense mistake if a noisy faction of political agitators were allowed to interfere with an arrangement which has produced such valuable results.—Army and Navy Gazette.

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