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The Volunteer Review

AND MILITARY AND NAVAL GAZETTE.

A Journal Devoted to the Interests of the Militar and Naval Forces of the Dominion of Canad

VOL. VI. OTTAWA, (CANADA,) MONDAY, SEPTEMBER 23, 1872. No. 39.

NEWS OF THE WEEK.

His royal Highness the Prince of Wales was present at the autumn manœuvres.

The Princess Beatrice, the youngest daughter of the Queen is betrothed to the Marquis of Stafford.

As might have been expected, the amount of the Geneva Board of Arbitrators has been against Great Britain for £3,500,000 sterling in the Alabama and kindred cases; the English people do not bear the infliction with dignity, but they have themselves alone to blame for it.

Previous to the formation of the High Joint Commission, the question was altogether in their favor; the anxiety of the sentimental Republicans of the Whig-Radical school, to stand well with the Washington Cabinet, for present and ulterior purposes, impelled Gladstone and Co, to send instructions to their Commissioners to consent to the establishment of *rectrospective provisions* of International laws, which covered the unjust claims of the politicians of the United States, and laid the foundation of an imminent and deadly contest.

The part played by one of our Statesmen was merely subordinate, and it is to his firmness and good sense, that we owe the few traits in the treaty of Washington which redeems it from eternal infamy. Whatthe opinions of the English people really are, may be found from the comments of the organs of the really patriotic party;

The Tory jurnals condemn, in unmeasured terms, the action of the Geneva Tribunal. The London *Advertiser* says;—"What a farce has been played at Geneva, where England has been adjudged to pay a tribute to a bully who repudiates his own obligations. America is not yet contented with the settlement of the claims against England.

The *Herald* breathes defiance and hatred of America, and says that "the breach between the two countries has only been widened. Of course, had the arbitrators decided upon a larger sum of indemnity, England would pay it; if they had awarded nothing. America could but show her teeth. What humiliation next awaits us?"

The *Standard* comments upon the award in a similar strain. It says:—"We went to Geneva for justice and reconciliation, but instead met with invectives from the American counsel and a partially adverse award, dictated rather by a desire for compromise than by equity. The whole proceedings in connection with the Arbitration are entirely unsatisfactory to England."

As the English representative refused to sign the award, and as Sir Alex. Cockburn, the emminent English Jurist is engaged in proposing a protest, we may rest satisfied that enough of partiality has been shown to warrant their proceedings. On the other hand the journals of the Radical party are jubilant as they always have been over the national shame, and declare the Gladstone government will pay the amount within a year.

The patient representative of the tribe Isaachar, the British tax payer, will have to put his shoulder to this additional burden which will be cribbed from the wages of the labourer and artisan, from the resources of the Army and Navy, to pay for the friendship of John Bright's friends, and to enable a schoolmaster to claim credit as a Christian Statesman.

It appears the award as given covers the whole of the Alabama claims, and was agreed to by all the arbitrators, damages were given in the case of the "Florida" by a vote of four against one, and the "Shenandoah" by three against two.

The *Times* declares *itself* ready to pay the award to improve the law of nations, and that it is a plain proof of England's genuine neutrality during the war. The world at large and the mass of the English people look on the whole transaction as a craven-hearted surrender to bullyism.

The meeting of the Internationalists have adopted the platform in favour of universal suffrage, vote by ballot for legislative and magisterial officers, compulsory and gratuitous common school education, the disbandment of standing armies, the abolition of indirect taxes, and the substitution there for of a progressive income-tax, and the suppression of usury.

The Agricultural Districts are in a state of agitation over the labor question. Incendiary fires are common. And in Ireland, a monster indignation meeting is to take place at Dublin, to protest against the oppression to which the Whig-Radicals have been obliged to subject the *ultra Radical* Irish press. Such are the results of Whig-Radical rule.

The first contract for delivering French coal in England has been completed by proprietors of the Pas de Calais.

Edmond About, of literary celebrity, has been arrested at Strasbourg, and is to be tried by a German Court Martial for endeavoring to excite sedition in Alsace and Lorraine. The French authorities are endeavoring to procure his release.

Gambetta has been giving evidence before the Court Martial on the Strasburg capitulation.

From Italy we learn that the Pope will not leave Rome.

A Congress of the *Old Catholics* will be held at Cologne; it will be attended by the Bishop of Lincoln and others of the Church of England hierachy.

The condition of Spain is unsatisfactory, society is disturbed to a fearful extent.

The correspondence between the Emperor William's Minister Bismarck and the Bishop of Ermland, on the subject of the excommunication, is published. The Bishop takes decided ground against the interference of the secular authority in matters of religion. The tone of the communications on both sides is sharp and uncompromising.

King Charles of Sweden died at Malino on the 18th inst.

The Czar of Russia will demand the abrogation of the Treaty of Paris. This is the first outcome of the conference of the three Emperors at Berlin. England alone will have to face the music, and to do it under the disadvantage of the position she voluntarily assumed by the Treaty of Washington.

The Secretary of the Evangelical Alliance has returned to New York from Europe—a large number of Europeans will take part in the conference proposed in the Autumn of 1873. It is also stated that Dr. Schaff (the Secretary) has secured the co-operation of a great number of English and United States Divines in the work of revising the Bible, which is to be begun immediately.

The Electioneering contest for the Presidency still goes on with vigor, both parties being sanguine of success.

Forrester, the presumed murderer of Benjamin Nathan, has been arrested; and if one half what is told of him is true, it would give the world a queer idea of the state of society, and of the administration of the law in the United States.

The Indians are giving trouble on the Western frontiers, having lately defeated and dispersed a strong force of United States troops detached to cover the operations of the Railway Surveyors.

The revolutionists in Cuba are said to number 13,000 partially armed men.

Sir George E. Cartier, Bart., Minister of Militia and Defence, was elected member of Parliament for the County of Provencher in Manatoba by acclamation. He is about to leave for a tour in Europe, and received a grand ovation in Ottawa on the 16th. It is doubtful whether he will sit as member for Provencher.

The affairs of the Dominion are progresing prosperously.

THE NATIONAL RIFLE ASSOCIATION.

(From the U.S. Army and Navy Journal.)

MEETING OF THE DIRECTORS.

The eleventh annual meeting of the board of directors of the National Rifle Association was held at 184 Broadway, on Tuesday, Sept 3. The meeting was called to order at 4 p. m. In the absence of the President, Major George Moore was called to the chair. Present Messrs. Wingate, Peck, Woodward, Shaler, Smith, Harding, Powell, Squire. The Secretary stated that he had received a letter from the Secretary of War returning thanks for the offer of the use of the range for the small arms board, and stating that the communication would be referred to that board for action. A letter from Captain Prince, U. S. A., in regard to the necessary height for embankments, was also read, together with a letter from the adjutant of the Seventy-first Infantry, N. G. stating that the regiment proposed to join the organization in a body, and requesting that they might be the first to have the privilege of shooting on the ground. The treasurer's report was then read, showing receipts for August to be $6,247, disbursements $6,235.95, balance on hand $100.11. The treasurer also stated that since making this report he had received the subscription of Company F, Twenty second regiment, $102.50, together with $5 in addition, making the total sum in hand $212.55. On motion the treasurer's report was received and referred to a special auditing committee, consisting of Messrs. Harding, Partridge, and Powell.

The committee on fitting up the range reported that having found it would be necessary to clear off the fences and piles of stone which obstructed the premises; they had obtained an offer from a contractor in Flushing, who demanded fifty cents a running foot for the work which would make an aggregate of $1,500. The committee deeming this extortionate, had concluded an arrangement with Mr. Poppenhausen on behalf of the railroad, by which he agrees to clear off the fences, stones, and all brush less than eight inches in diameter, on condition that that he be paid thirty cents a cubic yard for whatever embankments may be required for the pool targets, being a short embankment contemplated to be made and not included in his former contract. By this arrangement the committee are of opinion that the cost of clearing off the fences etc. will not exceed the sum of $300.

The secretary stated that the printing of the manual had been completed, and presented with an advance copy to the board.

CANADIAN RIFLE PRACTICE AND RANGES.

The following report from the committee appointed to visit the Canadian ranges was then read.

To the directors of the National Rifle Association.

The committee appointed to investigate the subject of Canadian rifle practice would respectfully report that they have completed the duties assigned to them, having spent from Saturday 17th inst., to Tuesday, 27th in Canada.

Their first visit was at Fort Erie, upon Col. Thomas C. Scoble, the Secretary of the Ontario Rifle Association, who not only gave them all the information in his power, but provided them with many valuable forms and blanks. Colonel Scoble also accompanied the committee to Toronto and exhibited to them the manner in which the range at that city is laid out and operated. He also very kindly telegraphed their arrival, so that the committee were met at the range by a number of the most celebrated shots of Hamilton and Toronto, who gave an exhibition of their skill both with the Snider and Metford. The committee then proceeded over the storehouse of the Association, and afforded every opportunity of carrying out the object of their visit.

The committee then proceeded to Montreal and made a thorough examination of the range at Point St. Charles, which was then being fitted up for the match of the Quebec Rifle Association, which commenced on Tuesday last. The committee are under obligations to Colonel Fletcher, the Secretary, who showed them over the range, and gave them a full explanation of the method pursued by him, together with a copy of his forms, etc. They are also indebted to Messrs Esdaile, Fairbanks, Capt. Cannon, and other gentlemen interested in rifle practice, from whom they obtained much information.

During their visit they saw some of the crack small bore shots practising at 1,000 yards, and as they remained in Montreal during the first day of the match they had an opportunity of witnessing the range in practical operation.

The advantages of this visit have been very great in giving a practical acquaintance with many important details. While it would take up too much time to go into any extended report, the committee present the following as a brief synopsis of the most important points observed by them.

1. The committee found no range in Canada which was equal in appearance to that belonging to the Association. They all however, possess the great advantage of having water behind them, and can thus escape the expense of the high embankment which we have to construct.

II. While opinions differed as to the height required for the embankment, to secure safety, the opinions of those whose experience in drilling new recruits in rifle practice made their conclusions the most valuable, were that 30 feet would be sufficient. To avoid all question, however, your committee would recommend that they be raised ten feet, so as to make them thirty five feet in height.

III. At Toronto the marking was partly by Hill's side system (as shown at page 119, Wingates Manual) and partly by the sunken pit (shown at page 121) the latter being preferred. At Montreal the former system was used entirely. Both systems have their advantages, and both their disadvantages. Your committee are of the opinion that where wide targets are used at long ranges the pit system, is preferable, and at the smaller targets, the side system is preferable particularly where it can be made with one side open. The double system of mantlet on the Hill system is not at all recommended.

IV. Two markers are placed in each butt, one to be a check on the other. These in all cases must be cool steady men; boys are useless. In Canada a detail, including a mounted orderly, is furnished from the garrison troops under the command of an officer, who not only act as markers, but perform such other fatigue duty as may be required. They are furnished with tents, and camp on the ground till the end of the match. As the Association pays the men one dollar a day, and they get off from drill, the soldiers are very glad to go. In addition the care-taker of the range is paid by the government. The committee feel satisfied that a similar detail can be obtained from the troops stationed in this vicinity, through the War Department, and they would recommend that an immediate application be made for that purpose.

V. The regulation military arm of Canada is the Snider. This is a good gun, accurate up to 700 yards; but as far as the committee could see, the gun itself possesses no advantages over the Remington. At the same time, as the sights are finer and the trigger-pull but six pounds, as against the ten or twelve pounds of the Remington or Springfield, it is easier to make better shooting with it. The Martini-Henri, having a better barrel, heavier charges, and smaller bore, shoots better at long ranges than the Snider; the sights are also good and very accurate. The committee regret that they did not see any practice with this rifle. One of those sent over to Toronto from England was taken down to the range, but it was found that the rifle was of one issue, while the cartridges accompanying it were of another, and it could not be used. For long ranges and where military rifles are not required, the Metford rifle is almost universally used, and seems a most admirable weapon. It is a muzzle loader, with a pistol stock, weighing a little less than ten pounds, forty six calibre, with a very shallow groove. Charge—ninety grains of powder; ball of hardened lead and peculiar pattern, weighing 530 grains. A wad is used on top of the powder, made of felt, soaked in oil, which cleans the barrel after every shot The bullet is patched with smooth thin paper, and is made a trifle smaller than the bore, so as to pass down easily. The back sight is a peep or aperture sight hinged on the small of the stock, well forward, and has a silver-plated scale on the side, on the Vernier principle, divided into degrees, minutes and seconds, and worked with a screw on top, so that an exact elevation can be obtained. The opening in the aperture sight can be increased or diminished. The front sight moves from right to left by a screw; having a scale in front; each dimension is two minutes, representing two inches on the target at 100 yards; 100 at 500 yards, etc. This is known as a wind gauge, and is moved so as to make the allowance that may be required without removing the sight from the bull's eye. On the rear of the sight is a small spirit level to enable the marksman to judge if his piece is horizontal. The front sights proper consist of a pin with a hollow head, a semicircle with a split in the centre, besides numerous others more or less complicated. By the use of these elaborate sights, together with great care in loading, and the gun, in addition, having a very low trajectory (the elevation at 1,000 yards being about 2 deg, 20 min.) very accurate shooting is made, your committee having seen four bull's-eyes made in five shots at 1,000 yards, the bull's eye being three feet square. As this rifle will be introduced at our matches by quite a number of Canadians who will be present it is hoped that something of American manufacture may be produced to equal it. The committee submit with their report samples of the different kinds of ammunition they found in use.

VI. The following is a sketch of the manner in which the Rifle associations of Canada are organized.

The Government in Canada appropriates annually $10,000 for the encouragement of rifle practice generally, and $5.000 for the reward of the best company battalion and district shots in the ranks of the volunteers. The grant of $10,000 is distributed first, to

the Central or Dominion Rifle Association, which is composed of the delegates from the Provincial Rifle Associations, and which holds its matches alternately in each province.

Second. To the provisional Rifle Association in Ontario, Quebec, Nova Scotia, New Brunswick, which are composed of delegates from the county organizations in each province and which holds its match at the capital of each province annually.

Third. To the county and local Rifle Associations, which are composed of the residents of the locality in which it is situated, and which also holds annual matches.

The grant of $5,000 is awarded to the non-commissioned officers and privates making the best scores at the course of rifle practice which they undergo at the brigade camps in each year. At these camps evey man must fire forty rounds at 200, 400, and 600 yards, under competent instruction.

The system works as follows: A county or local Association, supported by local subscription, annual memberships, entrance fees to matches and a grant from Government and from the Provincial Aosociation, selects from its best shots a team to represent it at the provincial match, which is supported in a like manner. The Provincial Association in like manner, selects from the best shots a team to represent it at the Dominion Rifle Association match, and from these again a team is selected to represent Canada at the National Rifle Association match at Wimbledon, Eng. Beside these association matches, a number of others open to all comers and to volunteers only, are held, and sufficient prizes offered to render the practice popular. The registered number of members of the Ontario Rifle Association ic about 3,000, of the Dominion 8,000.

The leading officers are, of course, officers in the Militia, who have, however, to pass an examination before they can serve. Frequently they are in the regular service, and under pay; and this is generally the case with the secretary, whose duties take up much of his time. The markers as above stated are soldiers; so also are the caretakers, or range keepers.

VII. The aims of the Central Rifle Asso ciations are briefly as follows:

1. To build up the local Rifle Associations.

2. To so arrange their prizes as to have numerous small prizes, so as to encourage beginners, and to discourage "pot-hunters."

3. To place all competitors on a equal footing at every match, and discourage all disputes.

4. To arrange for every detail beforehand so that the firing would proceed without delay.

5. To encourage practice with military rifles of the regulation pattern.

VIII. In addition to the money obtained from Government, all the funds required by the Association are obtained without trouble by sending a subscription paper among the merchants and business men. The Quebec prize list this year was 3,627 50' and that at Ontario about 3,000, the average prizes offered at each range being about $200

IX. Your committee are able to collect some valuable information about the effect of rifle ranges upon the accuracy of aim of the English troops; and they purpose to publish as soon as possible some account of the marked improvement in shooting which the successive yearly matches have developed. this improvement has already compelled some changes in the size of bull's-eyes and centres; but it has outreached all such devices, and the number of crack shots has become really embarrassing. A favorable breeze aiding the marksmen at one of the matches larely shot for at Wimbledon, there were no less than eight ties at 200 yards, all having the highest possible scores. Twenty tied with 14 marks, and 8 with 18 marks. There is no probability of such fine shooting at our ranges for years to come, but these facts indicate the positive value of these ranges, and they show us too that we cannot expect to retain all our open prizes. At first they will be taken by men who have had large experience; and no doubt our Ontario and Quebec friends, who practice twice a week, and are crack shots, will have the pleasure of exhibiting American prizes to their countrymen.

In conclusion your committee desire to express their sense of the great hospitality with which they were received, particularly by Col. Scoble, and by Messrs. Fletcher, Esdaile, Fairbanks and others; and as a number of these gentlemen intend being present at our match during the fall, it is hoped that an opportunity may be afforded by which some attention may be shown to them in return.

GEO. W. WINGATE, } Committee.
J. A. CHURCH, }
New York, August 31, 1872.

ENGLISH RIFLE PRACTICE AND RANGES.

The following report from the committee appointed to examine the subject of rifle practice in England was then read:

NEW YORK, August 1, 1872.

Colonel Wm. C. Church, President, National Rifle Association.

COLONEL: Acting under instructions from your Association requesting me to examine into the workings of the National Rifle Association of England, and the method of competitive rifle shooting as exhibited at Wimbledon annually, together with all details as to targets, instruction, etc. connected with the subject, I have the honor to report that on arriving in London I placed myself in correspondence with our minister, General Schenck, who kindly detailed his Secretary, Colonel Moran to assist me in gathering information on this subject. Provided with letters of introduction to Lord Ducie, President, and Captain Mildmay, Secretary, and other prominent members of the National Rifle Association, I called on these gentlemen and was courteously and kindly received, but under all the politeness and hospitality experienced at their hands, I found that a certain reticence in giving me positive information everywhere prevailed, which I ascribe to the universal excitement regarding the *Alabama* claims, which unfortunately pervaded the entire English people. Under these circumstances I determined to act independently in the matter, and can conscienteously say that I am under no obligation to a single member of the National Rifle Association of England, for any facts or information I may have gathered. The method of instruction at the different rifle ranges throughout Great Britain. is laid down in the regulation Book of Tactics, and as your association is provided with these and other books issued by the English Government, I need not go into this part of the subject. I visited the ranges in Birmingham, Manchester, Bradford, Huddersfield, and London, and found that the proficieucy in accurate shooting was surprising. Every large town had its one or more volunteer regiments, and every regiment has its own range, where practice with the rifle goes on from April to November. The men seem to take that pleasure in using the rifle that our young men do in games of ball, boating, and other athletic sports. The clerk or mechanic, with a few hours leisure on an afternoon, naturally shoulders his musket and goes to his reglmental range, and takes real delight in shooting at the targets. A Government ordnance sergeant is detailed at each range, who always has for sale cartridges at a nominal price, and for a small sum markers and scorers are employed to register the shooting of each man. Then the Gover'nt requires each volunteer to shoot, each spring and autumn, sixty rounds of ammunition. This practice is divided into three series of twenty rounds each, or five rounds to each distance, commencing at 100 yards and ending at 1,000. A correct record is kept in books for that purpose by the orderly sergeant, and certified to by that officer. Prizes from twenty-five to five dollars, together with certain military exemptions, is the reward of averages over forty. From these superior marksmen a certain number are selected to represent the different corps at Wimbledon, and as all the regiments are members of the National Rifle Association, they are entitled to enter at this annual competition. Under these circumstances it is no wonder that such wonderful scores are made; for missing a target, even at the regimental ranges is rather the exception than the rule, I need not enter into the apparent want of discipline and drill in the volunteer army of Great Britain, as my opinion is simply an individual one and does not affect the matter of rifle shooting, for on this latter point no one can help giving the palm of superiority to the English soldier, both regular and volunteer, The targets now universally used at all ranges and at Wimbledon are Richards, and I can safely recommend this target for the use of your Association. Circulars, prices, and all details I have placed in the hands of Captain Wingate. At Wimbledon during my short stay, I was the recipient of every attention, and I only regretted that my limited time did not admit of a more extended visit. The system here is simply that of the smaller ranges carried on a grand scale. The prizes are large and numerous and the competition extends during two weeks, ending in a grand review and distribution of prizes won. Each prize is shot for in three stages, any number of competitors being admitted on payment of a small sum. Each stage is divided into certain distances, and an established average is requisite to advance from one stage to another; those remaining at the end of the last, have to shoot a series comprising all the distances contained in the three ranges. This I believe is a general rule and contains the entire system for trials of skill in rifle shooting. There are also pool targets, where any may enter upon payment of ten shillings; this forms a pool which goes to the winner. Scoring books, plans of the camp, and reports of the Association, I have placed in possession of Captain Wingate. The English Government has recognized the National Rifle Association as a National organization and has fostered it with a care that shows its great importance. It is supported by fees and contributions from members among whom are found most of the nobility, and the aggregate amount of prizes annually contributed by the English people, from the Queen down to the wealthy Commoner, is simply enormous, and under these circumstances we are not surprised to see over three thousand volunteers meet at Wimbledon to test their skill and win their rewards. I feel that we have too long neglected this most important subject of rifle practice,

when I can testify to seeing over twenty competitors out of fifty strike the bull's eye five times out of five, and none of the remainder failing to strike it three times. I regret now that as commandant of one of National Guard regiments, I have permitted the years to slip by without inaugurating rifle practice in my command. This Association has now brought this subject before the people in such a clear light and under such auspicious circumstances, that I cannot but hope that all will lend a helping hand and teach our young soldiers that perfection in the manual is nothing without the ability to practically use the musket in the direction it is intended for, viz.,to hit what it is fired at. In conclusion I would say, that any experience I may have gained while in Europe bearing upon this subject, is a at the service of this Association, and I shall only be too glad to aid in any manner the successful carrying out of the aims and object of the National Rifle Association of the United States. I am Sir, very respectfully, your obedient servant.

HARRY ROCKFELLAR.
Col. Seventy-First Infantry, N. G.

Mr. Peck, on behalf of the Committee on prizes, presented a scheme for competition for the State prize, and stated that a copy thereof had been sent together with a copy of the manual, to the Adjutant General Woodward the report was referred to the executive committee. The committee for procuring an appropriation from the Supervisors reported progress. The following names were then proposed and elected as members: Lieutenant C. F. Robbins. W. Wynne, E. N. Maidson, E. S. Browe, P. L. Delph, A. G. Constable, David Tucker, Fred P. Fairbanks, Dr. Charles, F. D. Roberts, George S. Schermerhorn, Jr., J. Howland, D. Perrine, John E. McEwen, Charles L. West, B. F. Logbaum, Wm, M. Moore. On motion the secretary was directed to address the Secretary of War, requesting that a detail of the number of men that would be required as markers, sentries, etc., for the range of the Association during its coming meeting should be made from the regular troops stationed in this vicinity. On motion the meeting adjourned, to meet on Tuesday next at the same place and hour.

RIFLE MATCHES.

KINGSTON RIFLE ASSOCIATION.

(FROM OUR OWN CORRESPONDENT.)

The Kingston Rifle Association, newly formed this year, held their first meeting on the Rifle Ranges Barriefield, on Tuesday, Wednesday and Thursday, the 10th, 11th 12th insts., which was in every way a grand success. On Tuesday morning at 10 o'clock, as soon as the squads were formed up, (of which there were 4 containing 54 competitors) at the 200 yard range for the all comers match, Mrs. Kerr, the wife of the gallant President of the K.R.A., stepped to the front, and after a few remarks pertinent to the occasion by the President, Lieut.-Colonel Kerr, fi. [illegible] the first shot scoring a bull's eye; after which, Captain Barrow in command of the range, called for three cheers for the lady who had so kindly consented to open the first annual meeting, and had done it so successfully. The distribution of prizes with the names and scores of the various winners are given elsewhere. The shooting on the first day was very good, the day being a good rifle shooting one, tho' the Pluvial God would insist on an occasional interference with the sport, yet take it all in all he behaved pretty decently considering the evident bad humor of the clerk of the weather who threatened to stop proceedings on the slightest provocation. The shooting for the ladies prize I cannot let pass without special reference, as it was something extraordinary. It took place on the afternoon of the second day, and was finished in the presence of many of the fair sex who had turned out to greet the successful competitors. The day was all that could be desired, a gentle zephyr, a clear sky, and a not too brillant sun. The terms of the match were seven shots at 500 yards, and the highest score consequently that could possibly be made was 28 points, by the kind courtsey of Dr. J. K. Oliver, Surgeon of the 14th P.W.A., and Secretary K.R.A., I am enabled to give you the analysis of this contest during which the excitement ran high among those interested in rifle shooting, when shot after shot that blessed blue disc kept popping up on the Bull's eye. The score stood as follows:—

Ladies Match, prize $50; 500 yds. 7 shots.

Winners names.		*Score.*	*Tota*
Lieut. Baillie,	47th, Frontenac,	25	28
Cap. W.H.Cotton,	"A" Battery,	25	"
Serg. M. Baillie.	47th, Frontenac,	25	"
Lieut. J. Cotton,	"A" Battery,	24	"
Private Hume,	14th, P.W.R.R.,	23	"
Serg. H. Conley,	14th, P.W.R.R.,	23	"
Serg. Bennet,	15th, Argyle L.I.,	33	"
Gun. A. Hora.	K. Field Battery,	23	"
Mr. Gr. Croggan,	"A" Battery,	22	"

There were 40 entries for this match which was the best contested one of the meeting.

Thursday the 12 inst. was a very bad rifle shooting day, as it blew a gale all day long, nevertheless, it did not prevent some good shooting considering the great disadvantage the contestants labored under. I am sorry to have to record the occurrence of a bad accident that happened to the last man firing by the blowing away of the breech-block of his rifle, which cut his face and was nearly driven into his brain, and the eye (the left one) seriously wounded by the brass of the cartridge. The poor fellow was carefully attended to by the worthy Secretary who as usual was ready for any emergency of the sort, and fixed him up on the spot. I am glad to say the patient was doing well when last I heard of him.

I think we could pick a team here of 8 or 10 men who would give any other team from the Province pretty hard work to beat.

ONTARIO RIFLE ASSOCIATION

FIFTH ANNUAL PRIZE MEETING.

The weather for the competitions yesterday was very unfavorable for good shooting. A strong wind commenced to blow from the south east about eleven o'clock in the morning, and continued throughout the day. In the afternoon it blew almost a gale, and at the 200 yard range it was very difficult to hold the rifle steady to the shoulder. The wind too, was very changeable, veering about from the south-east to the south. A few drops of rain fell in the morning, and at five o'clock in the afternoon it commenced to pour down, and continued during the remainder of the evening, The competition in the match for the "Tait Cup" was concluded about ten a. m. resulting in a victory for the 10th Royal team, who made a total score of 587 points. This match was almost a repetition of the Battalion match on the day previous, the same men from each Battalion firing in both match. The Battalion Match was won by the 13th Battalion, but yesterday morning the Toronto men turned the tables on their friends from Hamilton, defeating them by nine points. Some excellent scores were made by. Corp. Thompson, Pte. Shephard and Sergt. Black, of the 10th Royals' team, which will be found below.

The Beesely testemonial prizes were shot for at mid day, and at the conclusion of this competition the company match was commenced but was not completed when firing ceased for the day.

A large number of shots were fired at the pool target, but owing to the strong wind very few bull's eyes were obtained. Out of 258 pool tickets sold during the day only 11 bull's eyes were scored.

Some of the crack shots were practising with the Remington breech loading rifle at the pool target as a test, but it could not be considered satisfactory, as the day was unfavourable.

So far the meeting of the Association has proved a gratifying success, and everything has worked off smoothly, which is mainly attributed to the excellent arrangements made by the Secretary Lieut. Col. Scoble.

The marking has proved satisfactory generally, the staff of markers appearing well up to their work. The men from the A Battery of the Canadian Artillery, who are marking at the 600 yards range, lose no time between the hits, which greatly facilitates the progress of the shooting.

The following are the scores of the winning teams in the Battalion Match, which we were unable to publish in yesterday's issue. The prizes were as follows:—First prize, the Merchants' Challenge Trophy and $75; second prize $50; third, $30 fourth $20; fifth $10.

13TH BATTALION, HAMILTON.

	200 yds.	500 yds.	600 yds.	Total.
Lieut. Mason	12	13	16	41
Pte. J. Mason	14	15	14	43
Major Gibson	11	15	7	33
Corp. Mitchell	17	17	10	44
Ens. Adams	14	14	18	46
Pte. Willis	10	18	10	38
Col.-Sergt. Omand	15	19	16	50
Pte. J. Mitchell	16	17	12	45
Pte. D. Mitchell	18	18	12	48
Pte. Murison	12	10	15	37
Total				425

2ND BRIGADE GRAND TRUNK ARTILLERY.

Lieut Barker	14	7	13	34
Sergt. Major Anderson	17	16	13	46
Sergt. Major Kruit	19	18	11	43
Sergt. Major Gray	14	17	12	49
Sergt. OBrien	15	17	17	48
Sergt. Glenfield	15	18	12	45
Corp. Meredith	15	11	16	42
G. Baker	14	13	8	35
Gr. Little	17	9	16	42
Gr. Eales	17	12	10	39
Total				423

OTTAWA GARRISON ARTILLERY.

Capt. Cotton	17	18	11	46
Lieut. Grant	15	12	13	40
Lieut. Cotton	15	11	13	39
Lieut. Harris	11	14	10	35
Gr. Waters	16	18	10	44
Gr. Debouchervile	14	17	16	47
Lieut. Patrick	15	9	16	40
Sergt. McDonald	14	12	11	37
Corp. Fletcher	13	14	17	44
Gr. Morrison	16	15	12	43
Total				435

10TH ROYALS TORONTO.

Ens. Bailey	13	13	8	34
Sergt, Phillips	15	12	14	41
Sergt. McMullen	14	15	4	33
Corp. Thompson	16	13	10	39
Pte. Mills	15	17	8	40
Sergt Doudiet	15	15	6	36
Sergt. Barr	14	16	10	40
Pte. Bell	17	16	19	52
Pte. Shepherd	15	14	13	42
Sergt. Black	12	17	16	45
Total				402

7TH BATTALION, LONDON.

Lt. Col. R. Lewis	12	13	2	27
Bugle-Major Hiscott	13	17	9	39
Capt. Morden	13	12	13	38
Lieut. McKenzie	9	15	11	35
Pte. Mummery	14	14	12	40
Ens. Elliot	14	14	7	35
Ens. Wastie	17	12	9	38
Sergt. Jackson	13	16	11	40
Sergt. Donison	16	18	2	36
Pte. Coombs	14	15	11	40
Total				368

Scores of the other teams.

	Total.
Queen's Own Rifles	365
12th Batt (York)	351
Gov. Gen'r. Foot Guards	343
3rd Batt. Grand Trunk Rifles	334
38th Battalion	332
20th Battalion	326
37th Battalion (at two ranges retired)	154

SIR PETER TAIT CUP.

The following is the score of the winning team in the competitition for the "Sir Peter Tait Cup," presented by Sir Peter Tait, D L. to the Militia of the Dominion of Canada, in commemoration of the visit of Lieut-Col. Skinner and the Ontario team to Wimbledon, 1871, to be shot for annually by ten members from any corps of Militia in the Dominion. Ranges 200, 500 and 600 yards. Five shots at each range. The Cup to be held by the Lieut. Governor of the province of the winning team.

10TH ROYALS—TORONTO.

	200 yds.	500 yds.	600 yds.	Total.
Ens. Bailey	21	15	20	56
Sergt. Phillip	18	22	19	59
Sergt. McMullor	19	23	15	57
Cerp. J. Thompson	21	19	25	65
Pte. Mills	21	15	22	58
Sergt. Dondiet	20	23	16	59
Sergt. Barr	21	14	23	58
Pte. Beil	17	28	14	53
Pte. Shepherd	21	25	16	62
Sergt. Black	17	22	21	60
Total				587

SCORES OF OTHER TEAMS.

	Total.
13th Batt. Hamilton	578
2nd Batt. G. T. Artillery, (Toronto)	566
Ottawa. B Garrison Artillery	562
7th Batt. London	584
3rd Batt. G. T. Rifles	514
Queen's Own Rifles	504
Governor General's Foot Guards	455
12th Batt. (York)	454
20th Batt	437

THE BEESELY TESTIMONIAL PRIZES.

The prizes in this competition were as follows:—First prize a Martini-Henry rifle and 600 rounds of Boxer Henry ammunition. second, Martini Henri rifle and 500 rounds of ammunition; third, do, do and 400 rounds; fourth, do, do, and 300 rounds; fifth, do, do, and 240 rounds, sixth, do, do, and 100 rounds. Ranges, 200, 500 and 600 yards. Seven shots at each range.

The following are the names of prize winners in this competition:

	200 yds.	500 yds.	600 yds.	Total.
1st. Gr. Little, 2nd G.T.A	14	15	17	46
2nd. Lieut. Grant, O. B. G. A.	16	16	13	45
3rd. Sergt. Marsh, 49th Bat	14	16	14	44
4th. Asst. Surg. Aikins, 37th.	17	14	13	44
5th. Sergt. J. Baillie, 47th Bat	15	17	12	44
6th, Sergt. Major Anderson 2nd G. T. A	18	16	10	44

There were 187 competitors.

The returns for the above match were incomplete last evening, but we believe these to be the six highest.

The "T C Street" prizes, and "the President's Prizes" will be shot for to day.—*Toronto Leader.*

SIXTH BRIGADE RIFLE ASSOCIATION.

ANNUAL MATCHES AT LINDSAY.

The annual matches of the sixth Brigade Rifle Association were held at the rifle range in this town on Tuesday last. The weather was very favourable for the occasion and there was a large attendance of the volunteers of the District. Among the officers present were Brigade Major Smith of the 40th Battalion, Col. Cubit, and Capts. Cottingham and Scott, of the 45th; Lieut. McNaughton, of the Coburg Battery, and several others. Col. Boulton, President of the Association and Col. Williams M. P. P., were unavoidably absent from the matches. Major Deacon and the officers of the Lindsay Company formed the local committee, and on the whole everything passed off satisfactorily. The town was enlivened by the presence of the Band of the 46th Battalion under Mr. Phillips.

The matches came to a close at dusk and afterwards a cold colation was furnished by the ladies of the town. A promenade concert took place in the Drill Shed, which was attended by a very large number of persons—the brass and string bands of the 46th regiment having performed in first rate style. During the intermission between the first and second parts of the programme. The Association prizes were awarded to the successful competitors, On the platform were Messrs. D. Brown, W. McDonald, John McClellan, A. Lacourse, and Adam Hudspedth, and the prizes were presented by Mr. S. C. Wood, M. P. P. The winners were greeted with loud applause from the hundreds of spectators present. Mr. G. S. Sterling of the St. George's Resturant catered for the occasion in a capital style. A special train took the band to Port Hope immediately after the concert, and on the following morning the volunteers from a distance left for home—all pleased with the reception they had met with in Lindsay. We may add that it was mainly through the exertions of Major Deacon that the matches were held here this year, and he deserves every credit for his successful endeavors. The local committee feel that it would be unnecessary to insert the names of all the contributors to the Rifle Association fund—nor would space permit it—but they desire to return their warmest thanks to the people of Lindsay who helped to make the affair a success.

The following are the matches, with the names of the winners, scores, &c., from which it will be seen the Lindsay company succeeded in obtaining a good share of the prizes:—

BATSALION MATCH.

1st prize—Presented by Midland R, R. $30, 46th regiment, Colonel Cubit commanding.

2nd prize—Presented by Midland, R. R. $20, 46th regiment. Col. Williams, M. P. P., commanding.

3rd prize—Presentnd by Midland R. R., 510, 40th Regiment, Colonel Smith commanding.

COMPANY MATCH.

1st prize—Presented by the Counties Council of Northumberland and Durham, $20, No. 1 Company, 45th Battalion, Capt. Scott.

2nd prize—$15, Cobourg Artillery, Lieut. McNaughton

3rd prize—$10, No. 6 Company, 45th Batt. Capt, Thirkell.

4th prize—$5, No. 4 Company, 45th Batt. Lieut. Mason, commanding.

ALL COMERS MATCH.

1st prize presented by the Ladies of Lindsay, $20. Lieut. McNaughton, Cobourg Artillery, 46 points,

2nd prize—Presented by the merchants of Lindsay, $15, Sergt. Scott, 45to Regt. 35 points.

3rd prize—$10, Sergt. Williams, 45th Batt. 36 points.

4th prize—Presented by Major A. Kleiser, a handrome clock, value $15. Corp. Hopkins, 34 points.

5th prisv—Presented by Mr. T. Beal a silver cup, value $12, Capta- Scott, 33rd points.

6th prize—Presented by Mr, H. Best, a Colt's revolver, value $10, Sergt. Hobus, 32 points.

7th prize—Presented by Mr. Lancashire a coat value, value $10 Sergt, Palmer, 40th Regt, 40 points.

8th prize—presented by Mr, Mathias, an album value $5, Pte, Ellery, 40to Regt. 28 points.

9th prize—Presented bo Mr. Haisley, a valise, value $4, Gunner McNaghton, 28 points.

10th prize—Presented by Mr. J. Lovell, a valise, value $3, Pte. Sanderson. 45th Reg., 28 points.

11th prize—presented by Mr. J. Berry, a bridle, value $3, Pte. Brady, 40th Regt., 28 points.

Distances 200, 500 and 600 yards. There were abodt 70 competitors.

CAVALRY MATCH.

1st prize—$5, Sergt. Adams,
2nd prize—$2, Hussar Purcell,

On the following day a match took place between the members of the Lindsay Company, when the following prizes were awarded:

Serg. Williams,	Medal and Cash		$5
Copr. Hopkins,	Boots, $5,	"	3
Cap. Thirkell,	Boots 4,	"	2
Prt. Brady,	Pipe 4,	"	1
Serg. Tyrll,	Vest 5,	"	0
Lieut. Mason,	Cup and	"	2
Corp. Nugent,		"	3
Prt. G. Watson,		"	2
" Brynell,		"	1

Ensg'n Morison, walking-stick, value $1.50.

Medal to be the property of the Volunteer who wins it two years in succession, consequently as this is the second year Serg. Williams has won it, it becomes his property.—*Victoria Warder.*

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The Volunteer Review,

AND

MILITARY AND NAVAL GAZETTE.

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

OTTAWA, MONDAY, SEPTEMBER 23, 1872.

LIEUT.-COLONEL WAINEWRIGHT GRIFFITHS, at present on a tour through British Columbia, has kindly consented to act as the Agent for the VOLUNTEER REVIEW in that Province,

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

THE calibre or bore of a piece of ordnance depends upon the form of the shot to be fired from it. A smooth bore gun will not throw an elongated shot; it will turn over in its flight, strike the object at which it is fired lengthwise, and its range will not be as great as that of a round shot from the same piece Rifling a gun has the advantage of enabling it to throw a heavier shot from a smaller calibre, thus: a 12-pounder smooth bore gun is 4·62 inches in diameter at the bore; a 12-pounder rifled piece being just 3 inches. The elongated shot will offer less resistance to the air, and consequently the range will be further, all other considerations being equal. The difference in weight of the guns is no less remarkable: a smooth bore requires 1¼ to 4 cwt. of metal to every lb. of shot, the rifled gun ¼ to 1 cwt.

To what enterprising individual the honor of discovering the value of rifled fire arms is due, cannot now be determined; it has been said that the world owed the invention, as it does that of artillery, to Germany; and that at a very early period in the history of the weapons of modern warfare; it is probable it may have been one of those accidental contrivances which has more than once determined the value of an invention; and it may have arisen from the practice of building up a gun with straight bars of iron secured together by iron hoops, of which *Mons Meg*, in Edinbugh Castle, is an example; but there were certain practical inconveniences attending that mode of construction for which it became necessary to devise a remedy, as the outer hoops were liable to get slack and the inner bars to get forced apart. To obviate the difficulty the inner bars were *twisted* around the central core, and it was found that this disposition not only answered the purpose but gave increased accuracy of fire; it was only necessary to reproduce the *grooves* where the bars joined on the inner bore of the cast ordnance, a matter of no particular difficulty to human ingenuity, and the Rifle as it existed to within a late period was invented.

As the chief object attained by rifling a gun is accuracy of fire, and a longer range, the conditions necessary to secure those advantages are that the shot should fit the bore accurately, and that it should leave the gun by a spinning or rotatory motion around its own axis, to counteract the pressure of the air which tends to turn it over and render its flight unsteady.

An elongated bolt has greater power of penetration than a round shot, the latter exerting more of a smashing force in consequence of its larger diameter. Both are adapted to peculiar operations, and their relative value will be discussed in order.

As has been shewn, ordnance may be classed under the divisions of cast-iron or bronze, which are generally smooth-bores, and *built up* generally rifled; the former being the class in use up to 1860; since then they are being gradually superseded by the latter.

The various classes of guns which the inventive genius and mechanical skill of the period has produced, may be classed as follows:—

Muzzle or breech-loading rifled guns having projectiles of hard metal fitting the bore mechanically. Muzzle or breech-loading guns with projectiles having a soft metal envelope or sabot which is expended by the gas in the bore; Muzzle or breech-loading guns with projectiles having soft metal studs or ribs to fit the grooves. Breech-loading guns with projectiles having a soft metal coating larger in diameter than the bore.

The *Lancaster* and *Whitworth* guns are types of the first class—the first having an elliptical, and the latter an hexagonal bore. The projectiles of those guns are made of iron or steel without any external coating whatever, the shot being accurately turned to fit the bore. The *Lancaster* gun may be called a spiral ellipse, the *Whitworth* a spiral hexagonal. The first being a two grooved, and the latter a six grooved rifle with one revolution in 130 inches.

The great advantages possessed by those guns are: economy, simplicity and durability, while the chief objections are that both bore and projectile being hard metal fracture of one or other would be the result of jamming, a tendency towards that operation being shewn when experiments were made and the rapid wearing out of the bore by friction.

The guns rifled on the *Lancaster* principle were merely service cast-iron pieces, and the tendency to jam displayed by the shot arose from the fact of the spiral of the rifling having an increasing twist. As the shot was a plain elongated bolt made without any spiral twist, so that its centre or axis, and that of the gun, could neither be coincident nor parallel, it is not a matter of much surprise that it failed.

A gun known as Mr. BRITTON'S illustrates the second class—it has five shallow grooves and the shot of iron is enclosed in an envelope of lead with a wooden sabot attached.

The so-called *Woolwich* system is an example of the third class, and is applied to the heavy service ordnance, so conspicuously lately for the disastrous failures in practice. The grooves are three or more in number, according to the calibre of the piece, and they have rounded sides; the projectiles have gun metal studs, only two in each row, both being equal for the 7-inch gun, the grooves of which have an uniform twist; but for the 8-inch and higher calibres the top stud in each row is smaller than the bottom stud, so as to allow of the studs accommodating themselves to the varying angle of the grooves which in those guns have an increasing twist—the number of rows of studs is equal to the number of grooves. The system has been borrowed from the French, their guns have six spiral grooves and the projectile has corresponding rows of zinc studs; the sides of the grooves are angular; they are wider and shallower at the muzzle than at the breech, and thus oppose mechanical obstructions to the passage of the shot.

During the contest in the United States the armies on both sides used artillery belonging to this class; the Northern troops their Parrott guns, which threw a projectile with a brass ring at the base having projections radiating towards, but not to the centre, to prevent the shot turning round; they were *leaden coated*, and the nominal 9-pounder threw a 25 lb. shot. The Reed gun used by the Southern troops had an expanding ring on the base of iron, copper, or lead. Brookes' gun, largely used for siege ordnance, had a

copper-capped plate termed a *ratchet sabot* attached. In both systems there was danger from the fragments of the sabot and leaden coating.

Gen. TIMMERHAUS, of the Belgian army, proposed in 1856, to employ a *papier-mache* sabot. And the *MacKay* gun, referred to in a former article, made the nearest attempt to solve the problem involved in the employment of muzzle-loading rifled ordnance. It was a gun of many grooved bore with a sharp uniform twist; the shot was considerably reduced in diameter at the base; a quantity of saw dust was placed between the cartridge and the shot, which being forced into the grooves and on to the shot by the expansion of gas consequent on the ignition of the charge, it received proper rotation without injury to the bore or danger from the fragments of the sabot.

The *Armstrong* and *Prussian* system are the best examples of the fourth class; the first has a many grooved bore with two chambers, one for the charge and one for the shot. The projectile is coated with lead fastened to the shot by zinc solder, and is larger than the bore; the action of the charge is to compress it into the grooves before the shot can move.

The *Prussian* shot is cast with undercut projecting rings, and the leaden envelope is cast over all, the outer mould giving to the surface a number of grooves which are wider at the base of the shot, so that the compression is gradual.

The advantages of the breech-loading system are the wear of the bore from the rush of the gas, or from irregular movement in the shot is prevented. That a shot of larger diameter than the bore can be used, and its axis or centre will be coincident with that of the gun, and its rotation consequently secured. That the gun can be loaded when run up without exposing the gunners; that it can be worked in a smaller space requiring less cost for batteries, platforms, mantelets, &c.; that the cleaning of the bore can be more readily effected, and any ignited substance left therein can be seen and removed; and lastly, there is no danger of the shot not being *home*.

The objections or disadvantages are: that on account of absence of windage and the necessity for compressing the projectile the strain caused by a given charge will be proportionately great; that no flame from the charge can pass the shell to light its fuze, thus entailing the necessity of percussion shells; that the ammunition is expensive; that the construction is more complicated than that of a muzzle-loading gun, and *skilled* labor is requisite to keep it serviceable; that guns and ammunition are more costly; that if the gun be of large calibre the breech-loading apparatus will be unwieldly; that with the same weight of metal the breech loading gun is a weaker and less enduring construction than the muzzle-loader; and lastly, that if soft coated projectiles larger than the bore be used the strain is much increased, and want of windage compels the use of a more complicated and dangerous fuze.

At the same time any system of rifled ordnance must fulfil the following conditions to be effective:—

Accuracy of fire.

Simplicity and durability in gun and projectile. The latter should not be liable to jam in the bore in loading or firing.

Must be easily set in motion and pass out of the gun without causing too great strain; and for heavy ordnance it must allow the use of large charges.

Muzzle loading guns are liable to all those disadvantages—it has not accuracy of fire—its shot is liable to jam—is not easily set in motion, as recent experiments at Shoeburyness show, a sudden increase of strain from 22 tons to the square inch to over 60 tons.

The advantages of the system are; it is less costly, simpler, and said to be stronger, but it is more exposed than the breech loading system, and if loaded carelessly or any simple accident occurs the shot will not be rammed home—and these are the differences of the two systems.

As might have been expected the experience of the Franco-Prussian war has led to many important changes in Tactics and armament.

Previous to the contest the Prussians depended, in a great measure, on the attack in close column; the lessons taught at St. Privat, where 6000 guardsmen fell in ten minutes, has not been forgotten, and the change now made may be in the other extreme. It is that of fighting in line in loose order, employing a large proportion of the force as skirmishers, engaging the enemy's attention in front while his flanks are being turned, and as a consequence strengthening the wings of the attacking force at the expense of the centre.

SOLOMON says "there is nothing new under the sun," and this revolution in the art of war, as far as Grand Tactics are concerned, illustrates the proposition. It was one of the famous tactical rules of the Great FREDERICK to turn his enemy's flank; but it was not always eminently successful, for during the NAPOLEONIC wars it failed in every instance; that able tactician having rendered the operation nugatory by launching his whole force against the weakened centre dividing his opponents and dealing with each moiety at his leisure.

Nor does it seem that the fighting in loose order would be very available to any force not drilled to absolute perfection; the finale of each battle will and must be a charge; in loose order that would be useless, if not impossible, and it is very doubtful whether in the heat of action troops could be concentrated for a final rush at the right moment.

There can be no doubt but that *disciplined disorder* can be practised as well as disciplined order, but it must be a very perfect organization indeed that will permit the exercise of both modes.

Fighting in line has always been the British order of battle, and to that circumstance is to be attributed the comparatively small loss suffered in victory or defeat, as well as the known readiness of the soldier toiled on one field to try conclusions on another the next day.

The only wonder is that Continental armies adhered to the attack in column for such a length of time, seeing that in every case the loss was proportionately greater than the force which attacked in line.

In all those discoveries and changes there are lessons of grave import for ourselves, and the question of skirmishing alone is worth all the others, as it involves the exercise of the reasoning faculties of the soldier in the accurate judging of distances and the facilities for cover.

Tactical considerations as involving a flank or front attack are of little importance, the officer in command must be the best judge of what disposition the circumstances of the attack or advance call, for once it is made it is little matter whether the first result is attained by piercing the centre or turning either flanks.

Hitherto from unavoidable circumstances this question of covering the advance by a skirmishing line has not received sufficient attention from our military authorities, and yet it is one of the utmost importance, as undoubtedly the success of operations altogether depends on it. The efforts and effect of artillery can be measured by its range, and neutralized by an equal or overwhelmed by a superior force; but the skirmishers, intelligently handled and supported, will compel the best artillery force to fall back, and reduce the contest to a trial of skill and endurance between the opposing battalions.

The operations of cavalry do not seem to be taken into account in the discussions on this important subject, and yet if the new Prussian tactics are adopted that arm of the service will recover its lost prestige and position. Infantry in loose order can encounter no more destructive foe than a well handled body of cavalry.

It does not appear then that the Prussian system of tactics, ancient or modern, has very much to recommend it, and as a rule it has only been successful against powers that allowed their military operations to be paralyzed by outside influences, and whose systems had fallen into decay.

THE people of the Colonial possessions of Great Britain have great reason to complain of the ignorance which pervades the Colonial Secretary's department, and all its branches of the actual social condition of the Colonies and the wants of their inhabitants.

This state of affairs receives a striking illustration from the Report of the Emigration Commissioners of the United Kingdom for the year 1871. This astute body holds its

meetings in Park Street, Westminster, and enlightens the British public in the following style:

"Canada cannot at present absorb more than between 30,000 and 40,000 emigrants a year, and the excess beyond that number can obtain employment only in the extensive labor market of the United States."

Whether designed or prompted by ignorance, such an assertion could not fail to be most injurious to the best interests of this country as much as to Great Britain herself, for her subjects withdrawn by such misrepresentations to the United States help to swell the population of her rival, and carry at the same time actual material to aid in the development of her resources.

The people of the United States reckon that every emigrant is value to their general national wealth for $1,000, and as that is substracted from the resources of the State whence the emigrant comes, it follows that the patriotic wise men of Park street, Westminster, are engaged in the laudable work of robbing their own country and defrauding her colonies.

Yankee astuteness has already done very considerable work in the way of enticing the surplus population of Europe to her own shores, but it is doubtful whether all their exertions would equal in value that effected for them by "the Emigration Commissioners of the United Kingdom."

The statement is, however, false, and is founded on a very stupid proposition. In 1847, it is stated in the Report that 100,000 emigrants arrived in Canada in a few months, that a large portion of them passed over to the States, and that the turn given to the tide has continued ever since "and must continue so long as the emigration is of its present dimensions; and to entice into Canada a larger amount of emigrants than its labor markets could absorb, would only delay for a short time, the emigration of excess to the neighboring States, and would in the mean time expose them possibly to distress, certainly to loss of time and means."

And this assertion is made in the face of facts not only tending in a contrary direction, but actually occurring under the eyes of these astute Commissioners.

At the time their Report was penned, the wages of the labourer in Canada was six shillings sterling per day, and the buying power of that sum was greater than nine shillings sterling in the United States, to which the Commissioners have done their utmost to divert the tide of Emigration.

Moreover, it was a false assumption that any great proportion of the emigrants of 1847, passed from Canada to the United States; by far the larger number remained in this country, and are now in many cases, wealthy farmers—actually paying for the transport of the supply of surplus labor which the Commissioners are trying to drive into a foreign market.

In order to show how this question really stands we have only to refer to the emigration returns from the British Isles for 1871, and we find that the total number of emigrants from British Ports for that year, English, Irish, Scotch, and foreigners, were:

To the United States	198,843
To British North America	32,671
To Australia and New Zealand	12,227
To all other places	8,694
Total	352,435

The exertions of the Commissioners have tended to secure a result of this description, and if they knew the details of the business in which they have been engaged, or studied the interest of Great Britain, their exertions should have been diverted to reverse the numbers.

It is no exaggeration to say that Canada could absorb from two hundred thousand to three hundred thousand emigrants annually, to the manifest interests of the Empire of which they would continue good subjects, but that object is entirely beyond the patriotism of the Whig-Radicals who are cosmopolitians.

WE publish in this issue from the United States *Army and Navy Journal*, a Report of Commissioners appointed to examine officers of the United States Naval service, who have completed a course of instruction in the mysteries of the Torpedo.

Our contemporary, the *Broad Arrow*, in its issue of 17th August, had a very interesting article on the subject, as well as an elaborate history of a *Torpdeo boat* and its adventures, the sequal thereto will be told in the following from the *Army and Navy Journal*, as we believe the boat to be experimentalized on, is that to which the tragic story belongs.

"A Torpedo boat formerly owned by the late "Pet" Halstead, of Newark, N.J., and which has been lying at the Brooklyn Navy-yard some years, was ordered by the Secretary of the Navy to be tried and experimented upon with a view of purchasing it, one instalment of money having been paid, the balance of the payment pending the trial and success of the boat. A board of officers consisting of Vice Admiral S. C. Rowan, President; Commodore J. C. Howell; Captain W. D. Whiting, Commanders M. Sicard, E. S. Mathews, W. N. Allen, and Lieutenant Commander H. B. Roboson were appointed to examine into its peculiarities and test its usefulness. Accordingly a meeting was held at the Navy-yard Wednesday, September 11; but the board were not ready to proceed with a trial and it was postponed until the following Wednesday There has been some litigation concerning the ownership of the vessel between a Mr. King and the Messrs. Halstead. Mr. Abe Halstead is the one in whose charge the boat is now, he having satisfactorily established his claim to the Secretary of the Navy and thus obtained the first instalment of purchase money, and the vessel is placed in charge of the ordnance department at the Brooklyn Navy-yard awaiting its trial. It is known at the yard as the "Intelligent Elephant." It certainly does not derive the name from its size in comparison with other vessels, it measuring about 30 feet long and 9 feet deep, though it is bulky in appearance and is built of iron, with air and water-tight compartments for its regulation and control. At the bottom of the boat amidship, is a flat gate, the upper part and ends being round and tapering. The water being kept from entering the vessel when it is open by compressed air. Out of this gate some one is expected to pass and place a torpedo under a vessel, an electric wire being attached and connected with a battery in the boat and thus fired. It is estimated that the air compartments will contain compressed air enough to last ten hours in use under the water. The water compartments are filled for sinking the boat by opening a valve, and can be ejected by pumps or forced out by the compressed air being let in, there being a connection between both compartments. The boat will hold thirteen persons and has been tried in the Passaic river with that number on board. Six men are sufficient for working it, its motive power being produced by part of them through the agency of a crank. Its speed would be about four knots an hour, or according to the amount of labor used. The lookout is an iron cupola on top, somewhat larger than a man's head. When under water the boat is without other ventilation except the compressed air in her; when the air becomes foul it can be let out by opening thumb bolts. Nothing more definite can be learned until her trial next Wednesday. We may here say that the *Herald* and *World's* accounts of this vessel is incorrect and in parts ridiculous."

The value of the whole system of *Torpedoes* may be deduced from the fact betrayed in the Report of the Commissioners, and that is up to the present, no means have been devised for placing the machinery in contact with a vessel, better than a *submarine boat* with a man diving through an aperture therein for the purpose of placing the *Torpedo* in position, and no vessel has been constructed for the purpose with a greater motive power than *four* knots an hour.

It does not reflect great credit on the scientific skill of the English or United States naval officers to find advocates of such an absurd theory amongst them. The projection of Torpedoes from a vessel is about as dangerous to friends as foes. The recent rocket experiments in England proved what was well known, that any projectile will take the line of least resistence in its flight, and under water that is always upwards, hence the Torpedoes fire will be limited to a very circumscribed area, and the missile cannot be projected effectively at all.

The fact of attempting to place it beneath a vessel under way would result in the destruction of the operator, and it may be used solely for harbor defence, but it is equally dangerous to friends as foes.

It is remarkable that the Commissioners strongly insist on the necessity for retaining the *precussion fuze*, and do not seem to think electricity safe or reliable in operating these submarine mines; so after all, actual contact will be the condition of their efficiency, and no seaman will be frightened by that circumstance.

As harbor defences supported by iron-clad floating batteries and by shore de-

fences, Torpedoes may be valuable auxillaries in the new system of naval tactics for purely defensive purposes, and even then the time and care requisite will more than counterbalance their value, while the fact remains that if any portion of the active defence fails, they could be removed by the attacking force with perfect impunity.

We are of opinion that the elaboration of a system of tactics in which Torpedoes were combined, would be a mere waste of time.

The Honorable Sir George E. CARTIER Bart., Minister of Militia and Defence, arrived in this City on Monday evening, 16th inst., at 7 o'clock. He was received at the station by Militia Staff Officers in uniform, a guard of honor from the Canadian guards with the requisite band, the Mayor and Corporation, and all the members of the Senate and House of Commons in the city.

He was escorted to the Mayors carriage, a torch light procession of firemen being formed, the whole proceeded to the City Hall through densely crowded streets, the people enthusiastically cheering the celebrated statesman.

On arriving at the City Hall, His Worship the Mayor read the following address:—

To the Honorable Sir George Etienne Cartier, Baronet, Minister of Militia and Defence.

The Corporation of the City of Ottawa desire to express their unfeigned satisfaction at your return to the capital, and beg to express the hope that your health has so far improved as to give assurance of early and perfect re establishment.

On behalf of the citizens we beg to express our full appreciation of the important services you have in the past rendered to the country, and sincerely hope you may long be spared to continue your valuable labors for its welfare.

EUG. MARTINEAU,
Mayor.

City Hall, Ottawa, Sept. 16, 1872.

Sir GEORGE replied at considerable length in both languages, the Hon. JAMES SKEAD, Messrs A. WRIGHT, M. P., and J. M. CURRIER, M. P. addressed the people.

At the termination of the proceedings the procession was reformed and escorted the Honorable Baronet to his residence on Metcalf Street.

He left this city on Friday the 20th inst., for Montreal, *en route* for Europe, where it is said he will remain for three or four months.

On the evening of his arrival the intelligence was received that he had been elected M. P. for the County of Provencher, in the Province of Manitoba, thus proving the soundness of the principles established by Confederation, that Canadian statesmen no longer represent sections.

There is no man in Canada at the present, nor has this country ever produced an individual that has written his name in broader, bolder, or deeper characters on the pages of its history as well as on that of the British Empire, than Sir GEORGE E. CARTIER Bart., the country can claim great and unselfish Statesmen, but the Minister of Militia and Defence deliberately sacrificed his personal prestige in order to advance its interests, and consolidate its diverse races into an homogeneous British Nationality.

CORRESPONDENCE.

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

To the Editor of the VOLUNTEER REVIEW.

SIR,—Permit me to call your attention, and also that of your numerous readers, to the following italicized passage in the following extract in the "Leeds (Eng.) Mercury."

"The Canadians wear the triumph which "they won in the Rajah of Kolapore's Prize "on Saturday with unusual modesty, yet "their victory was of a most surprising "character. In the first place, *the rifles they "shot with were the old converted pattern, and "the barrels were not grooved like the new ones "which our Volunteer use.*"

SAPPER.

THE TORPEDO SERVICE.

REPORT OF EXAMINATION OF OFFICERS UNDER INSTRUCTIONS IN TORPEDO SERVICE.

U. S. NAVAL TORPEDO STATION, NEWPORT R. I. July 31, 1872.

Rear-Admiral A. Ludlow Case, U. S. Navy, Chief of the Bureau of Ordnance, Navy Department, Washington, D. C.

ADMIRAL: We have the honor to make the following report of the result of the observations of the board, convened by order of the honorable secretary of the Navy, to witness the examination of the officers who have just completed the course of instruction at the torpedo school.

The scope of examination, and the practical experiments upon which our opinions and recommendations are based, are noted in the accompanying journal of the proceedings of the board, to which your attention is respectfully called.

Recognizing as the board does, the pre eminent importance of an efficient offensive and defensive torpedo service in time of war, it has been with unusual interest that the degree of excellence which the school has now attained has been noticed.

The proficiency of the officers of the present class in the various branches of physical science in which they have been instructed, exhibits an interest in the specialty to which they have been assigned, creditable alike to the *esprit de corps* of the class and on the zeal and efficiency of the Academic Staff of the school.

The rapid development of the station in point of conveniences for theoretical instruction, and in the means for manufacturing torpedoes for the use of the naval service, gives evidence of an energetic and judicious administration of the executive department, of which the board would speak in terms of high commendation.

Notwithstanding all that has been accomplished, however, a further expenditure of money is needed to make the school and station equal to the growing demand of the service for efficient torpedo armament, and, we think, the success already attained warrants the bureau in urging that the institution should be fostered through the medium of favorable legislation and liberal appropriation.

From the results of the examination, and from the character of the experiments which the board has had the pleasure of witnessing we beg leave to submit the following recommendation and expressions of opinion:

A vessel of such speed, steering qualities and dimensions as will render her fit for making experiments in harbor-water and at sea, with all classes of spar and towing torpedoes, is looked upon by the boards as an indispensable adjunct of the torpedo school.

A fleet of launches and row-boats, fitted with the different appliances used in the service of all varieties of torpedoes is deemed equally essential.

The importance of acquiring all needed apparatus for making elaborate experiments is recognized, and the desirability of repeating as far and as completely as possible all European experiments, with a view to engrafting into our own torpedo system and service any features or perfection considered valuable, is strongly urged.

The board is disposed to consider exclusive reliance on the electric fuze, of any class or character, not sufficiently well supported by results heretofore developed in torpedo warfare to warrant the total abandonment of the contact (percussion) or detonating fuze, and therefore recommends that a series of experments be made with torpedoes fitted with both the electric and contact (percussion) fuzes, in order to determine whether the latter is not, under many circumstances, a valuable auxiliary to the more mechanical and theoretically perfect electric fuze.

The board would recommend that *pari passu* with the perfecting of the means of operating offensively with torpedoes, especial attention be paid to experiments tending to develop the best means for defending vessels underway and at anchor against torpedo attack.

To make certain that the officers have the means of becoming thoroughly skilled in the operation and practical working of torpedoes, we recommend that it be made an imperative rule, that at least one day in seven of the whole course be devoted to the working of torpedoes afloat, and that the explosion of different kinds of movable torpedoes under or against both moving and fixed objects of attack, simple and inexpensive in their construction, be constantly practised.

In conclusion the board would suggest that all graduates of the school be designated in the Navy Register by suitable annotation, in order that commanders of squadrons and vessels may be able to select, from those indicated as experts, officers for torpedo service.

We further think, in view of the great advantages which are to be derved from a thorough knowledge of the construction, manipulation, and uses of torpedoes, that in the interests of the service, the school should be thrown open to officers of all grades, it being understood that no officer under instruction, whatever his rank, shall be connected with the academic or executive staff, or exercise command, authority, or right to quarters.

We have the honor to be, Admiral, very respectfully, your obedient servants,

JOHN RODGERS, Rear-Admiral, U. S. Navy
J. C. HOLWELL, Commodore, U. S. Navy.
A. C. RHIND, Captain, U. S. Navy.
D. L. BRAINE, Commander, U. S. Navy.
ROBT. F. BRADFORD, Commander, U. S. "

THE IRISH EMIGRANT'S LOVE.

In pensive thought she passed the church,
And up the sunny woodland came,
Until she found the silver birch,
Where long ago he carved her name.
And "Oh" she sighed, as soft she kissed
With loving lips the gentle tree,
"Alone, alone, I kept the tryst—
O love, my love, return to me.

"Return, Columbia's realm afar,
Where year by year your feet delay,
We cannot match for sun or star,
By silver night or golden day;
Yet here the levin flashes dire,
Alarm not oft, we never know
Her awful rushing forest fire,
The silent horror of her snow.

"Her birds are brighter far of wing,
A richer lustre lights her flowers,
But still they say no bird can sing,
Or blossom breathe as sweet as ours,
Her people's heart is wise and bold,
Her borders beautiful and free,
But oh! the New is not the Old,
Come back to Ireland love—and me.

THE ROTATION AND FLIGHT OF PROJECTILES.

(From the Broad Arrow.).

We referred in our last impression to the paper read by Mr. Hope, and the discussion which ensued, in the Mechanical Science Section of the British Association, relative to "the Woolwich"—or, strictly speaking, "the "French"—system of rifling. Mr. Hope's complaint that the laws of nature are set aside, capped by Mr. Merrifield's equally strong assertion that all mechanical laws are set at defiance in this system, have already we cannot doubt, made their due impression on our readers. We now turn to Mr. Froude's apology for the lack of rotatory power exhibited by the short bearing studs system, as a matter deserving of the most serious attention.

Mr. Froude, like Mr. Merrifield, is a mathematician whose experience in other provinces of scientific research demand for his observations grave consideration. Mr. Froude stated, very lucidly, the scientific principles, which explain a fact well-known to artillerists, viz., that under certain circumstances, a projectile ejected from the bore with a slightly unsteady motion, frequently steadies itself at a certain period of its flight. Mr. Froude is of course aware that this phenomenon occurs only within certain narrow limits. It depends upon the amount of the irregularity originally impressed upon the projectile, or, in other words, upon the degree of perfection with which it is spun. A properly rifled shot leaves the gun without any irregularity of motion whatever,* making a sharp continuous whizz in the air. But if the same angle of spiral and weight of profectile be retained, and its interior be hollowed out, so that its length may be considerably increased, the rotation impressed upon the projectile will be imperfect in proportion to its additional length.† If these projectiles of great length are to be adequately spun, the angle of spiral must be proportionately increased; otherwise that irregularity occurs which is sometimes called by the popular designation of "wobbling," and which we have before likened to the irregular gyrations of a schoolboy's top before it has steadied itself. Should the disproportion between the length of the projectile and the angle of the spiral be smaller, the imperfection of the spin may be so inconsiderable that the projectile may steady itself before reaching a distant object. But if the disproportion be great, the result will become manifest in the misdirection of the shot, and the loss of the penetrative power in proportion to the amount of work expended in its irregular movements. The obvious cure for this evil is to increase the angle of the spiral, but this cannot be done in very heavy guns so long as the whole effort of rotation is concentrated upon a single stud in each groove, in the bore. "The studs in the projectile," says the Superintendent, Royal Gun Factory, "confine us to a less twist than I would like to give any gun." Another remedy has, therefore, been adopted, viz., to diminish the hollow space in the interior, and thus adjust the centre of gravity by shortening the projectile

The 12-inch projectiles afford an apt illustration of the moderate limits within which Mr. Froude's explanation applies. Mr. Froude will remember the devious manner in which the seven shortest 12-inch projectiles fired by the *Hotspur* against the *Glatton*, played around the bull's eyes, now striking above, now below, now to right, and now to left of them—the two that struck the turret hitting eighteen inches below the marks. Much of this difficulty arose, as we stated at the time, because the ships were only 200 yards apart, and the shortest 12-inch projectile does not steady itself till it reaches 400 to 600 yards in its flight; so that an enemy less distant enjoys a chance of escape not given to one a little farther off. Had the *Hotspur* fired the original 12-inch common shell, which was, 3 calibres long, and contained 43½lbs. of powder, and which, as officially stated, "proved so exceedingly unsteady in flight and shot so indifferently," Mr. Froude would have seen what occurred with them, viz., "the shell appearing to turn over in flight." We are officially told that this was owing "to the unfortunate introduction of the 12-inch gun *with such a twist* as rendered it necessary to discard its two *longest* projectiles, viz., its common and shrapnel shells, constructed at first to weigh about 600lb., *on the score of bad shooting, for two shorter and less powerful ones.*" ("Ammunition" Part II.) The relative proportion between the length and angle of spiral, to ensure perfect spin at starting, is well known, having been worked out experimentally by Sir Joseph Whitworth; but "the stud in the projectile limits us to a less twist than the manufacturer would like to give any "gun." The consequence is, that reduction of powder capacity, consequent on the shortening of the projectile has been resorted to as the only available expedient.

Now the relative values of shells is as the squares of their bursting charges in pounds. What we have lost by this failure of rotatory power in the 12 inch common shell may be seen by comparing the squares of their charges, thus.—

12-in. 35-ton gun. Common shell.	12-in. 25-ton gun. Original shell.	12-in. 25-ton gun Present shell.
405	2070	1225

In other words, the shell power of the "Woolwich Infant" is only one-fifth that which the 25-ton gun was designed to have and one-third that to which it has been reduced for lack of rotatory power. As rotation is entirely a question of proportion between length, angle of spiral, and velocity, it is evident that if a 495 lb. shell having a cavity to contain 35 lbs. of powder be the maximum length for a 12-inch 25-ton gun; then, if a 700-lb. shell of similar length is to be fired from a 12-inch 35-ton gun, the cavity in the interior must be greatly reduced, as it is, to 20 lbs. bursting charge. It would, indeed, be much less than that, but that the 35-ton gun has a sharper angle of twist, giving more rotation, and consequently admits of the use of a 700-lb. shell 4½ inches longer than the 495 lb. one for the 25-ton gun.

The cored shot fired at the *Glatton* were only one-fourth shorter than the original 12-inch common shells, yet their unsteadiness in flight was apparent to all who had eyes to see or ears to hear; but they would probably have steadied themselves at 400 or 600 yards' range. Still, Mr. Froude must remember that whatever motion the projectile had on leaving the gun must have been impressed upon it by an expenditure of power within the bore. The power so used is a subtraction from the onward driving force, and results in a diminution of velocity and of blow. In the 7-inch gun competition, this misapplication of force was found to be equivalent to 59 feet initial velocity. Supposing this to be the amount of velocity lost in the 25-ton gun—and, looking at the wedge-shaped stud in the United Service Institution, we can well believe it is at least so,—the loss of striking force upon the *Glatton's* turret due to this cause was 653 foot tons, or about one-eleventh of the actual hitting force. Except, then, for the irregularity which Mr. Froude witnessed at Portland, the *Glatton's* turret must have been completely perforated by both of the hitting shot.

Mr. Froude must have observed at Portland that both of the hitting shot broke up through their studholes in the *Glatton's* turret, the rear pieces thrown violently backwards into the sea, causing a further loss of penetration. To lessen this liability, the armour-piercing shells have their walls thickened in their interior, behind the studholes. This way of strengthening the shell is, of course, attended with a corresponding reduction of powder capacity; and as the value of the projectiles, as shells, varies as the squares of their bursting charges, their relative explosive powers are—

12-inch 35-ton Gun. Palliser Shell.	12-inch 25-ton Gun. Orignal Palliser Shell
81	225

12-inch 25-ton Gun. Present Palliser Shell.
196

So that the studs in the projectile reduce the bursting power of the armour-piercing 12 in. shell for the 35-ton gun to little more than one third that of the original one for the 25-ton gun, and to less than one half that of the one now in use.

We quite concur with Mr. Froude in deprecating the reduction of windage, which is necessary for easy loading in continuous firing. The proper way of centering the projectile in the bore, which is essential to perfect rotation, is by adopting a centering system of rifling. No reduction of windage will make French studs centre their projectile in the bore. Centering ribs accomplish this purpose without any reduction of windage.

* That form of deviation to the right or left common to all elongated projectiles, and which is called from the French "derivation," is not here in question.

† Long projectiles require a more rapid rotatory motion than short ones of equal weight; for the resultant of the resistance of the air, which, pressing in front of the centre of gravity of an elongated shot and below the ground, tends to give the projectile a rotation round its shorter axis, acts with a greater leverage as the length of the shot is increased.—See Lieut.-Col. Owen's *Principles and Practice of Modern Artillery*.

THE WOOLWICH SYSTEM OF RIFLING AT THE BRITISH ASSOCIATION.

At a meeting of Section G (Mechanical Science) of the British Association, on Monday, *Mr. W. Hope, V. C.*, read a paper entitled "A suggestion for estimating the error in the flight of heavy projectiles due to the Woolwich system of rifling." Commencing with an apology for his subject, Mr. Hope said it was as much as if he were to offer a suggestion for ascertaining the error in the

proposition that two and two make five. He did not mean to infer that the members of Section G could have any lingering doubt in their minds as to whether the Woolwich system of rifling big guns eccentrically from their projectiles can produce accurate results. But the association was established for the "advancement of science," and gunnery is, or, rather, should be, a branch of applied science. When, therefore, it was found that in rifling big guns the government officials were acting not only in violation of the plainest and most obvious teaching of science, but also in defiance of common sense, the action afforded an opportunity for a misapplication of public money. The theory of the rifle, whether a big gun or a small one, was that, by causing the projectile to rotate round its axis in the direction of its trajectory, a steadiness was imparted to its flight analogous to that which enabled a top to stand upon its point while spinning. But just as an unskilful schoolboy will start his top with a "wobble," or in other words will cause it to rotate round a line not concident with its axis, and thus to lose its steadiness, and even to cease to spin at all, so a gun may be made in such a way as to cause its projectile to wobble in like manner, and altogether to lose the directness of its course. Incredible as it might appear, the authorities at Woolwich specially rifled their guns so as to rotate the projectile round some line divergent from its axis. The result was what we had recently seen; the guns themelsves are ripped up and rendered unserviceable, and their shooting was most inaccurate. Yet in spite of all remonstrance, the officials at Woolwich stick to their system with a tenacity worthy of a better cause. It is the practice of the annonymous and inscrutable powers there presiding, and known in the Service only by the name of "They," to allow in the case of big guns considerable "windage," that is to say, the shot is made smaller than the bore of the gun. "They" fondly imagine that the laws of gravity do not apply to heavy projectiles while in the bores of guns, that the shot on entering the guns become suspended midway between the top and the bottom of the bore, so as to distribute the windage equally all round the shot. He need not tell Section G that no phenomenon of that nature has ever yet been observed, and that the shot in every case lies on the bottom of the bore, so that the windage is not equally distributed. This being so, it is evident that the circle representing a cross section of the bore of the gun is eccentric from the circle representing the shot, and it follows that if the gun is rifled round its own axis, it cannot make the shot rotate round its axis, but round some other line. When a Woolwich gun is fired, the rifling acts first, of course, upon the front set of studs of the projectile, and, with a violent jerk, aggregated by the acceleration in the twist of the rifling wrenches the shot out of the former line of its own axis parallel with that of the gun, and places it to a certain extent athwart the gun—a proceeding which the shot every now and then resents by ripping up the gun with its studs. In a less unfavourable case the shot simply starts from the gun with a "wobble," analogous to that of the badly spun top. Mr. Hope then entered into some calculations, professedly only of an approximate character, to show how much deflection in the flight of a Palliser shell would probably be caused by half an inch of windage; and concluded by strongly denouncing the Woolwich authorities for their neglect of the many valuable suggestions for the improvement of rifling made to them by competent authorities.

In the debate which followed, *Mr. Webster* made some remarks on the manner of revolution of a shot under the conditions supposed by Mr. Hope. *Mr Fulcher*, of Woolwich, stated that the windage had since last March been much reduced; and that now, at the muzzle of the gun, it amounted to no more than five thousandths of an inch. *Mr. Froude, F.R.S.*, said he believed some windage was necessary to allow for the effects of fouling, and expressed his belief that the usual unsteadiness of flight was due to "the final discharge of the unexhausted explosive force of the gases on the basis of the shot as it leaves the muzzle." He further urged that the shot must and does become rapidly steadied, even if at first unsteady, by the same principle, whatever it is, which obliges a rotating shot to conform its axis of rotation tangential to its curved trajectory, as it had now been conclusively proved to do by an experiment with a spherical shell fired at 45 deg. out of a rifled mortar, carrying a flagstaff in front of it which, as the charge used was small, and the velocity also therefore small, was visible throughout the flight. The shell followed the flagstaff exactly throughout, even into earth, in which both were buried with the axis tangential to the line of descent. This principle appeared to be indentical with that by which a spinning top with a rounded point, when started obliquely, tended to right itself on a vertical axis, while one with a fine point would maintain an oblique or "precessional" axis—for the friction of the side of the point on the plane on which it rested gave that increased velocity to the "precesssional" motion which, on gyroscopic principles, continually tended to lessen the inclination of the axis. *Mr. Merrifield*, while expressing his general concurrence with the explanation of the mechanism af the flight of projectiles given by Mr. Froude, drew attention to the close analogy between a screw of uniform pitch, that is, a screw between two turns of which the distance was always uniform, so that it could turn in a nut without jamming, and a straight bolt sliding in a well-planed groove, or an eight wheeled engine running on a straight line of railway. Altering the pitch or twist of a screw was equivalent to bending the slide or making the engine go round a curve. The bolt would not run in a bent slide, unless the bolt bent also; and in order to make long engines go round a curve, engineers had adopted the device of the Bogie carriage—that is to say, they mounted the front four wheels on a little truck, which allowed them to turn separately from the other four. Now, a rifle shot could not have a Bogie carriage, or even a joint. As a result, instead of the Woolwich shot having flanges exactly fitting the gun, it was made to take the rifling by means of two rings of soft brass studs. The projectile had to be weakened along regular lines, in order to receive these, and they gave lines of weakness resembling those purposely made to facilitate the tearing of postage stamps from one another. Alluding to Mr. Chadwick's remark that the Woolwich authorities were under the disadvantage of having inferior metal to that used by Sir Joseph Whiteworth, he fully admitted this to be the case, but he considered that to be an additional reason for avoiding a system of rifling which tried the gun so unnecessarily as the Woolwich system. He called attention to the fact that while the ordinary and proper "life" of a large gun was reckoned at 1200 or 1300 rounds at least, the 12½-ton gun in the *Plucky* was not allowed to fire more than 400 shots, and had actually been changed twice for the boat to fire less than 1200 rounds, the guns first used being returned to Woolwich. He also called attention to the limit imposed by this system of rifling, both on the size of the guns and on the length of the shot; for the increase of these could not be met by a corresponding increase in the distance between the studs. Naval designers were very much hampered in their work by this restriction of the efficiency of the implement, which was really the foundation and mechanical unit of their design of ships of war. He then, after briefly describing the advantages and defects of the Whitworth system, went on to say that the consent of all mechanicians and engineers with whom he had ever conversed was absolutely unanimous in the condemnation of the Woolwich system of rifling, and that he had never heard any serious defence of it. He would not attribute personal motives to any one, but he could not conceive of any reason why the authorities persisted in the use of the Woolwich system except sheer obstinacy and unwillingness to admit that they were in the wrong—qualities of great value in an officer entrusted with defence of a fortress, but very bad qualities in officers charged with the superintendence of mechanical work. *Mr. Hope*, in reply, briefly expressed his great pleasure at the discussion, as well as at hearing that the windage had been lately reduced. As the Woolwich authorities had once listened to reason, and had laid aside one error, he hoped that in the course of ten or twenty years they might lay aside some others, and that so, by degrees, reforms might be introduced into the Service.—*Broad Arrow.*

THE RUSSIAN ARMY.

It has been lately announced that the Russian Army was to be strengthened by the formation of ten new infantry divisions, or 40 additonal regiments, and a good deal of alarm has been felt in some quarters in consequence. A St. Petersburg correspondent of the *Journal de Bruxelles*, writing on the 10th inst., says the changes in question are only matters of reorganization, necessitated by the adoption of the new system, and that there will not be any real increase of the strengh os the army. In adopting the Prussian system, it is necessary to make arrangements to have reserve battalions in connection with every regiment over and above the battalions ready for immediate reserve. The reserves are meant to be the feeders of the service, to fill up the *cadres* when the army is actively employed, and also to hold the fortresses. At present the Russian army consists of 47 divisions of infantry, each division including four regiments—188 regiments, each of three battalions. To these are to be added ten new divisions of four regiments each, or 40 new regiments; but they are to be formed out of the existing regiments and battalions employed in garrison work and in the fortress. The total army will then consist of 57 divisions, or 228 regiments, every division having also its battalion of skirmishers. The total number of the infantry will be 741,000, to which in a very short time may be added 456 reserve battalions. For the present there are no changes contemplated in the cavalry; but the Cossacks will be converted into skirmishers, and to every cavalry division a Cossack regiment will be attached. Changes in the equipment of the troops are designed. In place of their present kepis, the gendarmes will have a helmet of the Prussian pattern, which is deemed more comfortable than the shakos and kepis. Recruiting for the year is fixed at the rate of six men per 1,000, the last time the old system will be applied.—*Pall Mall Gazette.*

DOMINION OF CANADA.

MILITIA GENERAL ORDERS.

HEAD QUARTERS,

Ottawa, 20th September, 1872.

GENERAL ORDERS (24).

No. 1.

ACTIVE MILITIA

Provisional Battalion on service in Manitoba.

To be Supernumerary Lieutenant and to act as Orderly Officer to the Deputy Adjutant General of Militia, Military District No. 10, until further orders:

Captain Samuel Bruce Harman.

To be Ensigns:

Captain John Allan.
do George Street.
Joseph Taillefer, Gentleman.

MEMO.—An extension of leave of absence for two months from 19th instant, is granted to Brevet Lieut. Colonel and Captain Thomas Scott, on urgent private affairs.

PROVINCE OF ONTARIO.

Ottawa Field Battery of Artillery.

To be 1st Lieutenant, provisionally:

2nd Lieutenant William McKay Wright, vice C. McNab, left limits.

Toronto Field Battery of Artillery.

To be 1st Lieutenant:

2nd Lieutenant Charles Wright, G.S., vice Armstrong, retired.

To be 2nd Lieutenant, provisionally:

David Watson Alexander, Gentleman, vice Wright, promoted.

"A" Battary, School of Gunnery Kingston.

Erratum in G. O. (23), 6th September, 1872. Adverting to the date of Major Irwin's appointment and from which he takes rank, *read* "from 11th July, 1872," *instead of* "23rd July, 1872."

1st Battalion, Governor General's Foot Guards.

To be Lieutenant Colonel:

Brevet Lieutenant Colonel and Major Thomas Ross, V. B.

To be Major:

Brevet Major and Captain William White, V. B., vice Ross, promoted.

To be Captains:

Captain and Adjutant Charles Lett Stephens, V. B., from 43rd Battalion, vice White, promoted.

Lieutenant John Walsh, M. S.

William Horace Lee, Esquire, (provisionally).

To be Lieutenants:

Ensign John Stoughton Dennis, M.S., vice Walsh, promoted.

Philip Turner Vankoughnet, Gentleman, M. S., formerly Lieutenant 10th Battalion.

McLeod Stewart, Gentleman, (provisionally).

William Ralph Bell, Gentleman, (provisionally).

To be Ensigns, provisionally:

Horace Gerald Dunlevie, Gentleman, vice Dennis, promoted.

Gerald H. Bate, Gentleman, (provisionally) vice Lee, resigned.

Alfred Hamlyn Todd, Gentleman, (provisionally).

To be Assistant Surgeon.

Henry Pulteney Wright, Esquire, M. D.

28th "Perth" Battalion of Infantry.

Quarter-Master Peter J. Smithwick having served five years as Quarter-Master to have the rank of Honorary Captain from 9th November, 1871.

LEAVE OF ABSENCE.

Captain W. B. Lindsay, No. 2 Company, 26th Battalion, for 6 months from 1st October next, to proceed to Europe on private affairs.

PROVINCE OF QUEBEC.

Montreal Brigade of Garrison Artillery.

To be Major, from 28th June, 1872.

Captain and Adjutant David Torrance Fraser, G. S., vice Cole, retired.

To be 2nd Lieutenant, provisionally, from 28th June, 1872:

William Foote, Gentleman.

To be Adjutant with rank of Captain, from 28th June, 1872:

Joshua Collins, Esquire, G. S. Woolwich, formerly Captain in the Forfar Artillery, vice Fraser, appointed Major.

Portneuf Provisional Battalion of Infantry.

No. 2 Company, St. Raymond.

To be Captain:

Lieutenant Sifroi Martel, M. S., vice Thomas Gendron, whose resignation is hereby accepted.

To be Lieutenant:

Ensign Eli Frénette, M. S., vice Martel, promoted.

To be Ensign:

Jules Martel, Gentleman, M. S., vice Frénette, promoted.

BREVET.

To be Lieutenant Colonel:

Major Acheson G. Irvine, M. S., 55th Battalion, from 28th June, 1872.

PROVINCE OF NEW BRUNSWICK.

62nd "St. John" Battalion of Infantry.

To be Ensign, provisionally:

Thomas H. Hale, Gentleman.

CONFIRMATION OF RANK.

GUNNERY.

The following Officers having passed before a Board of Artillery Officers at St. John, N.B., on 26th August last, are hereby respectively confirmed in their rank from that date:

2nd Lieutenant Joseph Ewing, No. 2 Battery, N. B. Brigade G. A.

2nd Lieutenant James William Fraser, No. 7 Battery, N. B. Brigade G. A.

PROVINCE OF NOVA SCOTIA.

66th "Halifax" Battalion of Infantry.

An additional Company of Infantry is hereby authorized for this Battalion, which now consists of eight Companies.

To be Majors:

Brevet Major and Adjutant Charles J. Macdonald, M.S., vice Oldright, retired.

Brevet Major and Captain John Robert Murry, Q.F.O., vice Morrow, retired.

To be Captains:

Lieutenant George W. Hart, Q.F.O., vice Murray, promoted.

Lieutenant Charles H. Hepworth, Q.F.O., vice Guy, retired.

Lieutenant Hugh Macdonald Henry, M.S., vice Francklyn, retired,

Lieutenant John Dence, M.S.

To be Lieutenant:

Ensign William Marshall Humphrey, V.B., vice Hart, promoted.

Ensign Frederick Mitchell, V. B., vice Hetherington, resigned.

Ensign Frank Graham, V.B., vice Tupper, left limits.

Ensign J. Arthur Waugh, V.B., vice Hepworth, promoted.

Captain John S.i . Thomson, Q.F.O., vice Henry, promoted.

Captain George Ackhurst, M,S., vice Dence, promoted.

John Herbin, Gentleman, V.B.

To be Ensign:

Stephen S. Thorne, Gentleman, provisionally, vice Humphrey, promoted,

Captain Charles E. Putner, vice Mitchell, promoted.

LEAVE OF ABSENCE.

Captain Alexander Nelson, No. 4 Company, 78th Battalion, for three months from 27th August last, on private affairs.

By Command of His Excellency the Governor General,

WALKER POWELL, Lt.-Colonel.
Deputy Adjutant-General of Militia.
Canada.