

Technical and Bibliographic Notes / Notes techniques et bibliographiques

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

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

Coloured covers/
Couverture de couleur

Covers damaged/
Couverture endommagée

Covers restored and/or laminated/
Couverture restaurée et/ou pelliculée

Cover title missing/
Le titre de couverture manque

Coloured maps/
Cartes géographiques en couleur

Coloured ink (i.e. other than blue or black)/
Encre de couleur (i.e. autre que bleue ou noire)

Coloured plates and/or illustrations/
Planches et/ou illustrations en couleur

Bound with other material/
Relié avec d'autres documents

Tight binding may cause shadows or distortion along interior margin/
La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure

Blank leaves added during restoration may appear within the text. Whenever possible, these have been omitted from filming/
Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.

Coloured pages/
Pages de couleur

Pages damaged/
Pages endommagées

Pages restored and/or laminated/
Pages restaurées et/ou pelliculées

Pages discoloured, stained or foxed/
Pages décolorées, tachetées ou piquées

Pages detached/
Pages détachées

Showthrough/
Transparence

Quality of print varies/
Qualité inégale de l'impression

Continuous pagination/
Pagination continue

Includes index(es)/
Comprend un (des) index

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

Title page of issue/
Page de titre de la livraison

Caption of issue/
Titre de départ de la livraison

Masthead/
Générique (périodiques) de la livraison

Additional comments: /
Commentaires supplémentaires:

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

10X	12X	14X	16X	18X	20X	22X	24X	26X	28X	30X	32X
									<input checked="" type="checkbox"/>		



The Volunteer Review

AND MILITARY AND NAVAL GAZETTE.

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

VOL. VIII.

OTTAWA, (CANADA,) TUESDAY, AUGUST 4, 1874.

No. 31.

NEWS OF THE WEEK.

On Sunday evening, the 26th July, the city of Pittsburgh, U.S., was visited with a disastrous rain storm, doing immense damage and causing severe loss of life. The rain fell heavily for several hours, accompanied by a terrific gale of wind. The streets in the city were flooded and an immense flow of water caused a rapid rise in the Monongahela river. Many vessels moored at the wharves were swept away and several were swamped. The country is inundated for miles. The total number of lives lost is estimated at 250, and the total number of buildings destroyed is 147. Twelve miles of country were devastated.

From Cincinnati we learn that the storm of Sunday night was very severe in Kentucky. The bridges near Lynchburg, on the Hillsboro branch of the Marietta road, have been washed away. Roads west and north are not affected. At Sparta, on the Louisville Short Line, a southward bound freight train went through a bridge damaged by water. No one was hurt. A mile and a half south of Sparta the engine, baggage car and one of the passenger cars of a train went through the bridge. One man was fatally and three seriously injured. Five miles further south five baggage cars were ditched. Between Cincinnati and Walton all the bridges are down.

Great damage is reported to the corn crops, by being broken down by the wind, in Ohio, Indiana and Kentucky.

The Licking River on the morning of the 28 came down three or four feet higher than the surface of the Ohio, and shot across the stream, driving driftwood against the boats at the public landing on the Cincinnati side of the river, tearing coal boats from their moorings and sinking them.

The loss is now estimated at \$100,000. Twenty barges were lost. Williamson's coal elevator company also lost twelve cars.

Six thousand barrels of Breadstuffs arrived in Halifax during the week ending 25th July.

Favorable reports have been received from the Newfoundland Fisheries.

While a schooner was loading at Richibucto, N.B., with locomotives at the Intercolonial Wharf, two of the engines slipped and fell over-board, causing the vessel to upset.

Another party of Menonites, 300 in number, arrived at Toronto on the 25th July, bound for Manitoba.

The war of races has commenced in the Mississippi State, and scenes of violence such as preceded Arkansas and Louisiana outbreaks last year are frequent. Numerous bands of negroes, armed with shot-guns, are making their way to the cities and towns, others are selling their mules to buy arms and follow them, and there is a universal armament of the whites, and a general preparation for a struggle which the firing of a single shot may precipitate.

The London Times says a prospectus has been issued of the Canadian Meat and Produce Company (limited), with a capital of £200,000, in shares of £10, for "purchasing and slaughtering, in Canada or elsewhere, cattle or stock, exporting to Great Britain and elsewhere, fresh joints of meat, manufacturing preserved meats of various kinds, and utilising in various ways the fat, hides, and other parts."

The Secretary of State for the Colonies offered to act as arbitrator between British Columbia and the Dominion Government for the settlement of the dispute respecting the "Terms of Union," provided both Governments agree to accept his decision as final.

At the Goodwood races on the 30th July, the race for the Goodwood cup, value 300 sovereigns, with added subscription of \$20,000, each half forfeit, two miles and a half, was won by *Doncaster*; *Kaiser* second, and *Miss Toto* third. Six started.

From Brussels we learn that a committee composed of delegates from each State represented at the International Congress, has been appointed to prepare, under the Presidency of Baron Jommi, a report upon the programme which is to be followed in the proceedings of the body. It is understood that a majority of the delegates favor the exclusion of all points relating to naval warfare and a strict adherence to matters strictly connected with the amelioration of human suffering in times of war.

Private advices from Havana state that a Cuban force crossed the Trocha and committed great destruction in burning of Spanish plantations in the Trinidad valley. Two Spanish forts were also burned. A force of emancipated negroes was also in the neighborhood of Cienfuegos, destroying plantations and successfully enlisting slaves and Coolies in the Cuban ranks.

Disraeli in England, Gambetta in France, Castelar in Spain, and Laskar in Germany—here are four Jews who have made themselves the most powerful men in the four most powerful governments of Europe.

Detectives are watching Mitchell the Fenian, who is now in Ireland.

An African Exploring Expedition, on a large and costly scale, is contemplated by the proprietors of the London *Daily Telegraph*, in conjunction with James Gordon Bennet, of the *N. Y. Herald*. Stanley, of the Livingstone Search Expedition, will have charge of the undertaking, the object of which is to complete the work left unfinished by the Great Explorer.

Arrangements are being made to send the "locked out" agricultural hands in England to Canada.

Another Bishop of the Roman faith has been sent to prison for violating the German ecclesiastical law.

In the French House of Assembly on the 27th July, M. Depeyae opposed the dissolution of the Assembly. He alleged that motions were made in revenge for votes, by which the public and the plebiscite had been rejected.

M. Chabond la Tour, Minister of the Interior, also spoke against dissolution. He reminded the Assembly that by the law of March, 1873, it was pledged to vote constitutional law before it was dissolved. When the President's powers are organized, deputies could appeal to their constituents without endangering public order.

M. Duval and others supported the motion arguing that the uneasiness caused by the present unsettled condition of affairs paralyzed trade, and the only remedy was in an appeal to the people.

A vote was taken, and M Leon de Malleville's motion for dissolution was defeated by 332 yeas to 374 nays.

There is a serious strike of the operatives of the flax mills at Belfast. The striking work people are making threatening demonstrations. Crowds of them are parading the streets, and have attacked several bakeries. The magistrates have asked for four hundred additional policemen.

Berlin July 27.—Journals here say that war between Russia and China is inevitable, in consequence of the designs of the latter upon Kashgar.

Berlin, July 27.—Despatches from Kissen-gen announce the health of Bismarck improving, but the wound is as yet unhealed and the Prince cannot write.

The Vienna journals say Austria has received a circular note from Germany asking the Great Powers to combine to prevent the continuance of Carlist atrocities in Spain, and has given a favorable reply. The London *Morning Post* asserts that Germany will propose in the Brussels Congress the recognition of the present Government of Spain.

ANNUAL REPORT ON THE STATE OF
THE MILITIA FOR 1873.

APPENDIX No. I

(Continued from Page 351)

REPORT ON THE ARTILLERY OF THE PROVINCE
OF QUEBEC.

CITADEL, QUEBEC,

31st December, 1873.

SIR, I have the honor to submit my annual report, under the following heads.—

Field Artillery,
Garrison Artillery,
Engineers,
Gunnery School,
Forts;
Armament and Warlike Stores.

FIELD ARTILLERY.

The tabular statement marked (A 1 and 2), on form supplied shows that, of the four Field Batteries comprising this force, two only have guns, viz., the Quebec and Montreal Field Batteries, and I cannot report satisfactorily of the training.

The Quebec Field Battery, under Major Baby, whose report of drill and practice I enclose, marked (B), and the Sheffield Battery, under Major Amyrauld, only turned out, the latter having no guns, his men were instructed in foot drill and riding drill.

In physique and intelligence they are the finest battery I have seen.

It is unfortunate they have had the discouragement of being two years without guns.

Their period of enrolment expires next year.

The Beauce Field Battery has only two seven-pounder muzzle loading mountain guns, the other two with their equipment having been sent to Manitoba, as shown in last year's Militia Report, page 35.

The Officer commanding proposed to postpone his training until the end of the current year, with the hope of having a complete equipment by that time, and performing the two years' drill consecutively for 32 days.

As regards Field Artillery equipment, I beg to refer to the opinion expressed last year in my report, embodied in that of the late Adjutant General of Militia, Colonel Robertson-Ross, page 23. There are no Artillery or Engineers in Military District No. 6, and no Engineers in No. 7.

The proportion of the scientific arms (which require the longest training) is much below that supposed necessary to accompany the best Infantry.

The inadequate training of at least a large proportion of the Canadian militia might warrant a proportionate support from good field artillery, if such was procurable, indifferent field artillery being worse than an encumbrance.

I recommend a field battery being kept for permanent duty at each of the Gunnery Schools, to which detachments from the Militia batteries could be attached as supernumeraries for short courses. It is impossible to train field artillery properly with the eight (8) horses supplied.

The Quebec Gunnery School has not been supplied with field guns, the only one in my possession having no carriage. There are four (4) muzzle loading rifle field guns

completely equipped in the store at the foot of the Citadel Hill, but I have not been successful in obtaining the use of them for instructional purposes, as they form the equipment of the Quebec Field Battery, some of whose men have joined "B" battery for a "short course" of instruction, which it is difficult to give with out the guns.

GARRISON ARTILLERY.

I see no reason to alter the recommendation made in last year's Militia report on this arm, to the Adjutant General, (Par. 24, 25, 26, & 27.)

The tabular statement (A) shows the Grosse Isle detachment Quebec Garrison Artillery under Lieutenant Frederick Montizambert, and the St. John's battery under Major Drumm, are the only portion of the Active Militia Garrison Artillery who have completed their training as yet.

I have not been given an opportunity of inspecting the Grand Trunk Railway Brigade of Artillery, since my appointment as Inspector, though I have more than once expressed my wish to inspect them. I cannot, therefore, report on their state of efficiency.

ENGINEERS.

There are no adequate means of instructing the Engineer Companies. Lieut. Devine, Montreal Engineers, is the only officer of this arm who has gone through a "Long Course" of instruction at the Gunnery School, Quebec.

He has forty (40) of all ranks regularly enrolled in his Company, No. 1, but not having received uniforms, to which I am informed the Company was entitled two years ago, the number attending drill was limited to the amount of old clothing available.

No. 2 Company, commanded by Major Kennedy has not trained this year.

Captain Clarke, Montreal Grand Trunk Railway Engineer Company, is the only officer of the Brigade who has passed an examination by me previous to promotion, in accordance with General Order (12), No 1 paragraphs 1 and 2, dated Head-quarters Ottawa, 10th May, 1870.

His examination was satisfactory.

ST. HELEN'S ISLAND, MONTREAL.

The absence of a winter drill room is a drawback to the instruction of the detachment from "B" Battery at St. Helen's Island. I beg to refer to page 28 of last year's Militia report, and to my letter of the 17th December, 1873, on this subject, in which I recommended a portion of the store shed being partitioned off for this purpose. Last summer the prevalence of picnic parties on the island was a source of danger, the long grass on the island caught fire and the Government boat-house was burnt; further damage was prevented by the detachment "B" Battery using the fire engine in charge of the storekeeper, who, however, objected to its use, the sergeant in charge having taken it without orders (*vide* correspondence transmitted to Head quarters, 20th August, 1873.)

If picnic parties are to be allowed the privilege of using the island, the strength of the detachment should be increased to 50 to allow of sentries on the powder magazine and armoury, as well as patrols (*vide* letter 12th November, 1873.

The fire engines should be placed in charge of the officer in command of the detachment, which should be practised with it periodically.

I need not comment on this serious consequence of fire where there is a magazine of powder and a valuable store of arms. I beg to refer to my letters on this subject.

The same remarks apply to the Citadel of Quebec, where there is no fire engine, since the departure of the Imperial troops, (*vide* letter dated 17th September, 1872.) though a considerable amount of gunpowder and valuable arms are stored in the Citadel. An incipient fire in the quarters of His Excellency, which, for the want of a fire engine might have been productive of serious results, was fortunately extinguished at night by the officer on duty, going his rounds.

The services of the Battery have been freely rendered at large fires in the city, but the want of a fire engine made their assistance of much less value than it might have been.

FORTS.

I beg to refer to page 28, Militia Report for last year, and regret to add that the ruinous condition of the unoccupied casemates has exceeded my worst anticipations, of the probable effects of this climate. Those casemates that have been constantly occupied have not suffered, but the rear walls of five casemates in Dalhousie, and four in Richmond bastions are separated from the arches, and falling outwards. An expenditure of \$6 for timber supports was authorized for those in the latter bastion, (*vide* letter dated 21st April, 1873.)

The wooden covering of the water tank in the diamond ditch, was reported on the 14th May, 1872, as having fallen in, and being in a dangerous condition.

The masonry of the cavalier at the King's bastion was partially painted by the workmen employed under the Board of Works.

I would recommend that a subaltern officer of Royal Engineers, with rank and pay as a Captain, a sergeant-foreman of works and twenty-five enlisted artificers, receiving the same rate of working pay as in the Royal Engineers, should be maintained in the Citadel, as part of the establishment of the Gunnery school. The officer could also be employed as Instructor in military surveying and fortification. Such an arrangement would, in my opinion, be found the most efficient and economical method of preventing the ruin of the works, for want of the annual petty repairs, which are good economy in the end.

The forts at point Levis and Engineer Park, are still in good order, having been looked after by non-commissioned officers as caretakers, who have been allowed fuel.

Hope and Palace Gates, which could not be said to have any military value, have been destroyed, also the guard houses, and the upper part of the walls of the town lines between those gates lowered to about two feet.

The emplacements for guns are not to be interfered with. The Grand Battery is on a natural escarpment of rock, and offers a most favourable position for guns, as does also the whole extent of the lines from the Legislative buildings to the Artillery barracks, commanding the river St. Charles and the opposite shore, which is open and easily swept by the fire of the rifled guns. I think it imperative that the rights of Federal Government in this locality should not be further interfered with.

I beg respectfully to submit that the ordnance lands and buildings have been given over by the Imperial Government for the purposes of defence, moneys resulting from

rents and sales of such properties, should be applied to purposes of defence. If such a course were pursued over the whole Dominion, the Militia estimates would be reduced to a mere trifle, and fixed some sum for defence placed beyond the fluctuations of party or political feeling.

A portion of such sums might be devoted to the purchase of land in such localities, as those recommended by Colonel Jarvis, R. E., for detached works, beyond the present lines, to be thrown up on emergency; plans, sections and elevations having been previously fixed upon and drawn, so that a moderate degree of professional skill, with ample civil labor would, if necessity arose, produce formidable obstacles to an enemy, such as would enable us to keep the gate of Canada until assistance came from the mother country.

History has often repeated itself, and the flag that was swept from this continent, and waved alone on Cape Diamond (the Gibraltar of America) has spread from the Atlantic to the Pacific shore.

I have the honor to be, Sir,

Your most obedient servant,

T. B. STRANGE, Lt.-Colonel,
Inspector of Artillery,
and Warlike Stores,

The Acting Adjt. General,
Ottawa.

(B)

QUEBEC, 20th Dec. 1873,

Lieut.-Col. Strange.

I of. A.,

The Citadel.

SIR,—I have the honor to report that the Quebec Field Battery turned out on Wednesday, the 10th September last, to perform the annual drill for the year, 1873-4, under canvas.

The battery was ferried over to the Island of Orleans on Thursday, the 11th September, moving by sub-divisions, at 8 and 10 o'clock a.m., and at 1 and 4 o'clock p.m., and encamped at St. Peter's.

The routine of camp life was as follows:—Reveille at 5½ a.m.; first post at 9, and lights out at 10 o'clock p.m. Breakfast at 8 o'clock, dinner at one, and tea at 6 o'clock. Drills, from 6½ to 7½ a.m.; at stables and standing gun drill; from 9½ to 11½ o'clock a.m., driving drill and gun drill; and from 2½ to 5 o'clock p.m., battery drill mounted. The usual morning and evening gun was fired.

The camp at St. Peter's broke up on Wednesday, 17th September, and the battery marched to St. John, some fifteen miles distant, passing over a hilly country. The arrangements made to repair the bridge over the Rivière à Famine were dispensed with, the battery having arrived in time to ford the stream.

The annual ball practice took place on Friday, the 19th September. The usual precautions were taken against accidents. Enclosed will be found in the range report.

The annual inspection of the battery was made by the Inspector of Artillery on Saturday, the 20th September. Lieut. Col. Lemontagne, Brigade Major, was also present. After a minute inspection, the Battery marched past in column of divisions at the walk and trot. A few manoeuvres were then executed, and the flank guns were dismounted and again mounted, Lieutenants Lindsay and De Lery being in charge.

The camp at St. John broke up on Mon-

day, the 22nd September, and the battery marched to Ste Famille.

The battery marched from Ste Famille to the Bout de L'Isle on Wednesday, the 24th September, remaining over night, and returned to town on Thursday, the 25th September, crossing over by sub divisions at 8 and 11 o'clock a.m., at noon, and 4 o'clock p.m., returning into stores the armament, harness, clothing and camp equipage.

The original intention of marching by the north shore to St. Joachim, and from thence crossing over to the Island of Orleans, had to be abandoned, the necessary authorization to pay for camping grounds not having been received in time. Awaiting this authorization, the battery encamped on the Government property at St. Peter.

After many difficulties, the services of two steamers were secured to convey the battery from St. John to St. Joachim on Sunday, the 27th September, but unfortunately one of the steamers having been withdrawn at the last moment, the return march by the mainland was of necessity given up, the battery in lieu thereof moving around the island.

The conduct of the N. C. officers and men was exemplary, and the great zeal shown on all occasions was everything that could be desired. The services of Lieutenants Lindsay and DeLery are hereby acknowledged. The health, whilst in camp, was satisfactory, and there are no casualties to report.

The drill performed has to a certain extent tested the utility of field batteries in Canada. This corps, at an unfavourable period of the year, turned out seventy-six men and sixty two horses, out of an establishment of seventy-nine men and sixty horses. The camp was raised on three several occasions, and the St. Lawrence was twice crossed during the sixteen days' drill. Whilst on the march, and on favourable occasions, the battery manoeuvred through the fields, coming into action to the front, flanks, and rear, care being taken to screen guns and gunners whilst in action, and also to place limbers and wagons under cover. On rainy days, the usual drills were replaced by lectures on gunnery, and on several occasions guns were dismounted, and mounted, and disabled wheels replaced. Much valuable information and a certain amount of self reliance have been acquired, which must increase the efficiency of this corps.

I have the honor to be, Sir,

Your most obedient servant.

M. W. BART,
Com. Q. F. B.

GRAND TRUNK RAILWAY BRIGADE,
MONTREAL, Nov. 11th, 1873.

SIR,—I have the honor to report, for your information, my opinion on the state of the companies of the Grand Trunk Railway Brigade, after the annual training of years 1873 and 1874. Only a portion, however, have at this date, concluded their prescribed course, principally owing to the great stress put upon our men during the summer and autumn, connected with the change of gauge.

On the 10th October, inspected the two batteries at Stratford, Ontario, belonging to 2nd Brigade Artillery, Lt.-Col. Spicer; and at the same time and place Nos. 4 and 5 Companies of 3rd Battalion Rifles, No. 5 marching from St. Mary's. The two batteries are excellent, as far as foot drill and a fine appearance can make them, but some of the officers are very deficient in their knowledge of drill. The other two companies are fair. The band is kept up at

their own expense, and is in an improving condition.

On the 11th of October, I inspected the H. Q. of the 3rd Battalion of Rifles, at Brantford, and all work was stopped in order to have a good turn out on the plains near the station. They marched past in good style, performed the manual and firing exercises, battalion and company drill, skirmishing, practising, retiring, with advancing and retiring, and expended twenty rounds of blank cartridge. The force, at this point, is in excellent order, you will perceive by my reports for the last two years, that they have always, in my opinion been up to the mark; this is helped materially by the care and pains bestowed upon it by Lt.-Col. B. S. Stevenson, in the interior economy, if that name can be applied to this force. The right men are Captains of companies, as they command the men both in their civil and military capacity, and should be invariably followed in this organization.

The officers at this point are fairly up in their work. I have inspected Lt. Colonel Hickson's Brigade, with the exception of No. 6 Battery, Captain Symington, by two batteries at a time. By this means it gave me time to check the pay rolls and have a thorough inspection of the men and their ability to perform drill. The musters were excellent, and the batteries performed foot drill steadily. The whole have completed their target practice. You will perceive in this brigade that we have had a dead lock with regard to promotion, owing to the fact that it is impossible for the officers of this force to go to the Gunnery Schools, even for the short course. I hope you will be able to remedy this at once, as the officers are by far the weakest point in the force, and we have already too limited a number.

Inspected the 1st Battalion Rifles, Lt.-Col. Bailey. They are in excellent order both in drill and as regards the efficiency of the officers belonging to the battalion. I also saw one company of the 2nd Battalion, Captain Wall. The same remarks apply to this company as to the 1st Battalion. Target practice has been carried out, to my knowledge, to a greater extent than in any previous year. Prizes and very large amounts have been subscribed for, and got up by the officers and non-commissioned officers in every company. The prizes at the Dominion and Provincial matches for battalion and companies have been, without exception, carried by the brigade, showing a high state of efficiency in the use of the national weapon, the Snider Rifle. I have also inspected all armouries connected with the brigade, they are in good order, with the exception of Brockville.

I have the honor to be, Sir,

Your obedient servant,

P. W. WORSLEY, Lt.-Colonel,
B. M., G. T. R. B.

The Acting Adjt. Gen. of Militia,
Ottawa.

MONTREAL, Nov. 19th 1873.

List of all the Corps in the Grand Trunk Rifle Brigade, not inspected by the Brigade Major, and a Statement when they will perform their drill:—

1st Brigade Artillery, No. 6 Battery	20th May, 1874
2nd do	Nos. 1, 2, 3 & 4 do., 30th March 74
1st Batt. Rifles, Nos. 5 & 6 Companies,	30th Nov. 1874
2nd do	" 4, 5, 6, 7 & 8 Companies, between
do	Nov. and December, 1873
do	Nos. 6 & 7 Companies, 15th Nov. 1873

P. W. WORSLEY, Lieut.-Colonel,
Brigade Major, G. T. R. B.

(To be continued.)

RIFLE COMPETITION.

"PRINCE OF WALES" PRIZE MEETING.

On Saturday the Prince of Wales Rifles held their annual battalic matches, and were fortunate in having a fine day. A rather sharp wind was blowing across the range, but the scoring on the whole was very good, especially in the competition for the Colonel's cup. This cup was presented by Lieut. Col. Bond the year before last, and was then won by Sergt. Quinn, but Sergt. Hill carried it off last year and was again fortunate on Saturday, making a score of 67 points out of a possible 82 Sergt. Quinn being second, 64 points. Sergt. Hill thus become the happy owner of this magnificent prize. Lieut. Colonels Fletcher Bacon, Stevenson and others of the active militia were on the grounds the greater part of the day, and watched the firing with interest. In consequence of the very small allowance of ammunition (40 rounds per man) made by Government, the men of the force do not get the practice they ought to have, as it comes too hard on a working man to have to pay for his ammunition and lose half a day's pay every time he goes out to practice.

The following is a summary of the matches:--

1st COMPETITION OR OPENING MATCH.

Prize	Points.
1st Prize \$8 Sergt Hill.....	20
2nd " 6 Sergt Murphy.....	19
3rd " 4 Sergt Porteous.....	18
4th " 1 Sergt Quinn.....	17
5th " 1 Sergt Jones.....	17
6th " 1 Pte E McFee.....	17
7th " 1 Sergt Bruce.....	16
8th " 1 Pte Ellicott.....	16

200 yards; 7 shots; 22 entries.

2ND COMPETITION OR LADIES PRIZE.

Open only to members of the Rifle Association, 500 and 600 yards. 7 shots each range. 19 entries,

Prize	Points.
1st Prize \$12 Sergt Hill.....	41
2nd " 8 Capt Stevenson.....	39
3rd " 5 Sergt Quinn.....	34
4th " 3 Sergt Jones.....	31
5th " 2 Sergt Porteous.....	29
6th " 2 Pte Larkin.....	29
7th " 2 Capt Mudge.....	29
8th " 2 Pte Quinn.....	29
7th " 2 Pte R McFee.....	29
10th " 2 Pte McQuaid.....	27

3RD COMPETITION OR COLONEL'S PRIZE.

200, 500 and 600 yards. 7 shots each range. 23 entries.

Prize	Points.
1st Col's cup and \$5 Sergt Hill.....	67
2nd " 8 Sergt Quinn.....	64
3rd " 5 Sergt Murphy.....	62
4th " 2 Capt Mudge.....	62
5th " 2 Sergt Bruce.....	54
6th " 2 Pte McLeod.....	52

4TH COMPETITION, CHALLENGE MATCH

Open to all comers. 200 and 600 yards, 5 shots each range. 64 entries.

Prize	Points.
1st \$14 Lt. Balfour 8th Batt, Que..	30
2nd 8 Capt Ivison, G T R.....	28
3rd 5 Sergt Hill, P W R.....	27
4th 2 Pte Willson, M G A.....	27
5th 2 Pte West, M G A.....	26
6th 2 Pte Willson, G T R.....	26
7th 2 Pte Gleason, G T R.....	26
8th 2 Sergt Turnbull, G T R.....	25

9th	1 Pte Imrie, G T R.....	24
10th	1 Sergt Holtby, M G A.....	24
11th	1 Corpl Stuart, M G A.....	24
12th	1 Mr Ross, M R C.....	24
13th	1 Pte McGillevray, G T R.....	23

5TH COMPETITION OR ASSOCIATION MATCH

Open only to members of the Association; 400 and 500 yds, 5 shots at each range; 26 entries.

Prize.	Points.
1, 200 rds amm & \$10 Sergt Quinn ...	35
2, 150 " 7 Sergt Hill	35
3, 90 " 4 Pte McQuade	29
4, 10 " 3 Capt Stevenson	28
5, 10 " 3 Sergt Bruce.....	28
6, 10 " 3 Sergt Murphy.....	28
7, 10 " 2 Corpl Beck.....	26
8, 10 " 2 Pte Ellicott	26
9, 10 " 2 Sergt Porteous	25

The ammunition was presented by the M. G. A. Rifle Club.

6TH COMPETITION OR BAND MATCH.

Open only to members of the Band, 200 yards, any position; 5 shots, 10 entries.

Prize	Points
1st Prize \$5 Drum'r Heavysago.....	14
2nd " 4 Pte Richardson.....	13
3rd " 3 Drum Major Young	13
4th " 2 Pte Knox.....	8
5th " 1 Pte McLea.....	6

7TH COMPETITION OR CONSOLATION.

200 yards, 5 shots, any position:

Prize	Points
1st Prize \$5 Pte Peard.....	14
2nd " 3 Pte Vosburg.....	13
3rd " 1 Sergt Doran.....	12
4th " 1 Corpl Malin.....	11
5th " 1 Sergt Bachelor.....	11
6th " 1 Sgt Major Johnson.....	10

Highest aggregate score, \$5 and Brigade Major's badge—Sergt Hill, 163 points.—*Mon treat Herald.*

We have received from the Secretary Capt. and Adj. S. Davids a copy of the Programme of the matches of the 6th Battalion which are to come off at Point St. Charles ranges, on Tuesday the 4th August, commencing at 2 o'clock, p. m. The following is the list of Prizes offered for competition.

1st competition.—The "Maiden" Stakes. At 200 and 400 yards; 5 shots at each Range. Open to all men of the Regiment who have never won a prize.

1st Prize.....	\$10
2nd "	5
3rd "	3
4th "	2
5th "	1

2nd competition.—Battalion matches. Open to all members of the Battalion; 200 500 and 600 yards; 5 shots each range.

1st Prize.....	\$10
2nd "	5
3rd "	3
4th "	2

The winner of the 1st Prize to receive the "Brigade Major's Badge," and the highest score in each Company, to receive a "Marksman's Badge."

2nd competition.—(Lieut. Col. Theodore Lyman's Prize.) A Silver Cup.

Open to all members of the Battalion. 500 yards; 5 shot.

4th Competition.—Open to all members of the Active Militia, (including members of the late "Royals.")—Ranges, 300 and 500 yards; 5 shots each range.—Entrance fee, 50 cents.

1st Prize.....	\$10
2nd "	5
3rd "	3
4th "	2

5th Competition.—Consolation Stakes.—Open to all members unsuccessful at this meeting: 200 yards; 5 shots.

1st Prize.....	a Coat (Presented by R. Seath Esq.)
2nd "	a Hat (Presented by J Stenhouse, Esq)
3rd "	a Hat (Presented by J. L. Marcou & Co.)
4th "	\$2
5th "	2

And Four Prizes of \$1 each

Aggregate Prizes.—For the best aggregate score in competitions 2, 3, and 4.

1st Prize.....	a Silver Medal (Presented by Capt. and Adj. David
2nd "	a Gold Pencil Case (Presented by Major Horne.)

RANSAY RIFLE ASSOCIATION.

The annual shooting match of the Ramsay Rifle Association was held at the rifle range on Monday and Tuesday, the 6th and 7th July. The attendance was not as large as on some former occasions. During both days a strong wind prevailed, which will account in some measure for the small scores made. The following are the scores made by the winners of prizes in the several matches, in their proper order:

Ranges.—200 yards. 400 yards. NO 1 MATCH.

	Tot	Prize
1 Thos. Houston.....	30	\$10 00
2 P McArthur.....	29	8 00
3 S H Davis.....	25	7 00
4 J K Cole.....	25	6 00
5 Sergt Lockart.....	23	5 00
6 D McEwen.....	21	3 00
7 M Patterson.....	19	2 00
8 Sergt Coulter.....	19	1 00
9 S W Ward.....	18	1 50

400 yards, 100 yards, 200 yards. NO 2 MATCH.

	Tot	Prize
1 T Houston.....	65	12 00
2 P White duck.....	59	10 00
3 J C Stevens.....	57	8 00
4 J K Cole.....	56	7 00
5 F Coulter.....	54	5 00
6 P McArthur.....	54	4 00
7 H Lockart.....	53	3 00
8 W H Wylie.....	49	2 00
9 D McEwen.....	48	1 00
10 T Coulter.....	48	1 00

200 yards. NO 3 MATCH.

	Tot	Prize
1 J C Stevens.....	33	5 00
2 S H Leckie.....	30	4 00
3 J K Cole.....	30	3 00
4 P McArthur.....	29	2 00
5 T Houston.....	29	1 00
6 H Lockart.....	29	1 00

500 yards, 600 yards, no 4 MATCH.

	Total	Prizes
1 T Houston	29	10 00
2 S H Davis	24	8 00
3 D McEwon	20	6 00
4 T Coulter	16	4 00
5 P McArthur	12	2 00
6 W Hall	12	1 00
7 D McDonald	11	1 00

Ranges.—100 yards 200 yards no 5 MATCH.

	Total	Prize
1 W Hall	33	10 00
2 T Houston	36	8 00
3 S H Davis	36	5 00
4 P McArthur	34	3 00
5 H Lockart	28	2 00
6 J C Stevens	32	1 00
7 M Patterson	32	1 00

The new regulation Wimbledon target was used; the bull's eye counting 5; centre, 4; inner, 3; and a outer, 2—each one being a circle instead of a square as formerly.—*Almonde Gazette.*

CAMP TILLEY, NEAR BRUNSWICK.

SUCCESSFUL SHAM BATTLE!

On Friday last at 3 o'clock p. m., the troops, with band playing and colors flying marched into town in column of route, preceded by advanced guards, and followed by the usual rear guards. They marched down Water Street to William Henry street, wheeling up which, they proceeded to Carlton street, down which they marched to the green in the vicinity of the new hotel. Here a halt was called, and skirmishers were thrown out, with support, in rear of which the Brigade formed into mass of column, subsequently deploying into line of quarter column, and then again into line, when a rapid advance was made on an enemy, supposed to have landed on the shore, and to entrenched themselves in a strong position in the woods skirting the railway track, and on the high ground at O'Neill's farm. So rapid, however, was the advances made by the skirmishers, and so well did they take advantage of the natural flatness of the field, that they succeeded in holding the enemy in check. An attack in force having been determined upon, the skirmishers were recalled, the whole line advanced pouring in volley after volley with such great effect as to disperse the foe who retreated in great disorder, leaving their dead and wounded behind.

The position taken up by the line was admirably adapted for offensive operations. The 67th Battalion threw out its skirmishers and supports with great rapidity; the rear guard, under command of Capt. Hutton, performed its duty so well as to call forth commendatory remarks from the Brigadier. In order to test the mobility of the troops, Brigadier Maunsell put them through a number of brigade movements, in line, column and echelon, ending by volley firing of squares in echelon. The forces returned to camp, marching down Patrick and up Water streets, keeping step with the music of the 67th and 71st Batt. bands; the streets throughout the entire route were lined by populace, who were loud in their praise of the music and of the soldierly bearing of the men. A Bostonian who happened to be in the street, remarked how well their red uniforms looked, and said they were a fine looking lot of men. Col. Inches' commanding figure, as he gallantly rode his charger, towered away above the whole. The ladies in particular admired his soldierly appearance.

The prizes for rifle practice, contributed—not by the Government—which we think ought to be the case—for one good marksman in actual warfare is worth a dozen of poor shots—but by a few of the well wishers of the Brigade—were on the return of the troops to the camp, presented by His Honor the Lieut. Governor to those entitled to receive them. His Honor in a short address expressed his commendation, more particularly speaking of the exemplary conduct of the men as reported to him by the Brigadier. The Brigade orders on the breaking up of the camp, thanking the men for the manner in which their duty had been performed and for their ready obedience to orders, were read by Brigade Major Inches. Three hearty cheers were then given for the Queen, the Lieut. Governor, and Brigadier Maunsell. The men were then marched to their quarters and dismissed until the hour of tattoo.

Saturday morning at a very early hour the troops were preparing for their departure from the camp homeward bound. At 3-30 a.m., the 64th Batt., headed by their fine band, marched down Water street, en route for the railway depot, the tap of the big drum arousing the drowsy inhabitants of the town from their slumbers. Windows were thrown up and adieu wafted to the soldier boys, while a large number turned out to escort them to the depot, among whom was the St. Andrews band. At sharp six, the men being all aboard, and the warning shriek of the whistle sounded, the train began slowly to move away; the St. Andrews band played Auld Lang Syne and the populace, with waving hats and stentorian lungs, giving three hearty cheers, which were as heartily responded to by the men of the Battalion.

DEPARTURE OF THE 71ST BATTALION.

At 9 30 a. m., the 71st Batt. marched down Water street to the music of their band, which played in fine style the popular air "The girl I left behind me." Arriving at the railway depot they marched by companies into the cars, and at the word "all aboard" the train began to move, the St. Andrews band again paying their compatriots the compliment of playing Auld Lang Syne, and the citizens heartily cheering the boys in red, wishing them God speed and safe home. Brigadier Maunsell left with this Battalion, intending, however, to proceed to St. John, en route to Shediac to inspect the camp.

The St. George company, Capt. Chas. McGee, and the St. Stephen company, Capt. Henry Hutton, left the former at 11 a.m. by the tug steamer *Utopia*, the latter at 3 p.m., by the steamer *Belle Brown*; each of these companies were plied down to their respective points of departure by the St. Andrews band, and as the boats hove off their lines and moved away from the wharf, the band struck up Auld Lang Syne, the people cheering, the soldiers as heartily returning the compliment.

One soldier from each company was left to strike the tents and prepare the stores for transportation, which work was completed Saturday evening. On Monday the last of the red coats took their departure from St. Andrews.

RETROSPECTIVE.

The conduct of the soldiers while in camp or at liberty in the town was such as to gain the approbation and respect of all the citizens. It is true that in a few individual instances some of the men got a little too much grog aboard, but no unpleasantness

at any time took place between the soldiers and the civilians. The officers without exception, are a fine, gentlemanly lot of fellows affable and courteous, as a rule kind and thoughtful towards their men. Brigadier Maunsell and Colonel Inches won the respect and esteem of all, whether citizens or soldiers, with whom they came in contact. The troops, while in camp, enjoyed the very best health, the only sickness being a very few cases of dysentery, caused by the change of diet. It is worthy of the consideration of the military authorities whether or not it would be advisable to serve out part of the time rations of salt meat, as by far the greater portion of the men are accustomed to eating salt food.

The soldiers, as far as we could learn, were well satisfied with the arrangements made for their comfort. The first few days in camp were rather disagreeable, from the steady pouring of rain. Both officers and men are agreed in the opinion that St. Andrews is the best and healthiest place for a camp, and a general desire exists amongst them to go there again. They also felt pleased with the civil and courteous manner displayed towards them by the inhabitants of St. Andrews.—*St. Croix Courier.*

The *Pall Mall Gazette* says:—"The German War Department has ordered that the fortifications on the eastern frontier shall be completed in the course of the present year. The plans and estimates for these works were approved some months ago, but certain modifications have since been decided upon. At Posen the fortifications are to be on a much larger scale than was originally contemplated, and it is said that the works at Wilhelmshaven on the land side will also be greatly extended. At Kiel, besides the fortifications of the Friedrichsort, two forts will be erected at Oberjagersberg and Koruhgen on the right bank of the bay of Kiel. The harbor works of the bay were much injured by the spring tides this year, and steps are to be taken to protect them against inundations. The dyke at Friedrichsort will be provided for this purpose with a stone front, and the dredging works in the dock at Ellerbeck are to be pushed forward as quickly as possible. According to the *Ostsee Zeitung*, the two monitors *Rhein* and *Mosel*, built for service on the Rhine by the Weser Shipbuilding Company, have been fully equipped. They will shortly be sent by the North Sea to Rotterdam, and thence up the Rhine to Coblenz. They lie very low in the water, so as to present the smallest possible surface for the aim of an enemy's guns. Two 12-centimetre guns are placed in the centre turret, and to each vessel will be attached fifty Infantry soldiers besides the crew."

It is stated that Italy has made a demand upon France for the recall of the war ship *Orenoque*, which has been permanently stationed at Civita Vecchi, as a refuge for the Pope in case of necessity.

The *Opinions* asserts that negotiations are in progress which have in view the sending by the maritime powers squadrons to the Spanish coast after the example of Germany. It is understood that this step, if taken, is not to involve the question of intervention.

The *North German Gazette* states that the squadron will leave British waters about the beginning of August, for its new station.

CONTENTS OF No. 30, VOL. VIII.

POETRY:—	
The Ruby and the Rose	358
EDITORIALS:—	
Hydraulics of Great Rivers	351
Our Recruiting Makeshifts Fallacies	355
Most Efficient Destiny	353
Advantages of Military Drills	355
Board of Engineers for Fortifications	350
The News of the Week	349
CORRESPONDENCE:—	
Marksman	357
ISLE COMPETITION:—	
No. 1 Company (P. R. W.) rifle match	353
ELECTIONS:—	
Annual Report on the State of the Militia for 1873	350
Militia Inspection	351
Our Recruiting Makeshifts Fallacies	357
Army Organization	358
Our Elshorles	350
Sioux Messengers	350
The Wimbledon Team	360
MILITARY GENERAL ORDERS	362



The Volunteer Review,
AND
MILITARY AND NAVAL GAZETTE.

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

OTTAWA, TUESDAY, AUGUST 4, 1871.

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 at 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.

LIEUT. J. B. VIKTER, of Victoria, is our authorised Agent for Vancouver Island, British Columbia. As is also Captain H. V. EDMONDS for New Westminster and adjacent country.

The purpose we had in view by our notice of the "Hydraulics of Great Rivers" was to point out the necessity of having hydrographic surveys made by Engineers trained to a correct knowledge of hydraulic science, and, therefore, able to collect the statistics necessary to base correct conclusions of what the value of the river or rivers operated on really are. In the case under consideration either the writer in the *Edinburgh Review* must have misapprehended M. REYV's conclusions, or the latter gentleman has been misled by the data he obtained, and which appears to have been ascertained by very imperfect operations. In order to shew this, the following from the article in the *Edinburgh*

Review will be conclusive evidence—if the working out of the details in our last article was ever so erroneous. After giving examples of accelerated motion on an inclined plane, and the peculiarity of that law of friction that retards the uniform flow of water in a river channel, the *Review* says: "Thus of two particles of water one at the surface and one at the bottom of the stream, the former is constantly gaining on the latter, and in the course of a mile or so will have left it far behind in its seaward course."

"It is this relation between the top and bottom flow on which depends the actual discharge of a river. The subject is one that has by no means been neglected. Distinguished men have made experiments in order to gauge the flow of rivers; and the results of their observations have been embodied in certain mathematical formulas which, if not absolutely identical, do not very materially differ from one another when applied to our modest English rivers. They are chiefly based on the experimental data of DUBOAT, with additions by subsequent investigators. The formula of WEIßBACH is that quoted by Professor RANKINE in his latest and posthumous work, the "Mechanical Text Book." The object of that formula is to ascertain the proportionate friction of a stream on its bed represented by what is called the co-efficient of friction. This formula refers to velocity alone and only relates to depth in a round-about way, that is to say, as it is indicated by velocity. The direct importance of this relation appears to demand more distinct recognition. It is not surprising that M. REYV found hydraulic formulas based on observations of smaller rivers to be inadequate when he sought to apply them to the mighty flood of the Parana, or that the great Mississippi survey should have been deprived of its anticipated value by the imperfection of the mode of measurement adopted by the surveyors."

From what follows it is evident that M. REYV's idea of a hydraulic survey was confined to obtaining a few cross sections of the river and its surface velocity as being all the data requisite to pronounce on its discharge. "It soon became clear that any attempt to ascertain the volume and flood of a river like the Parana by empirical formulas was nothing more or less than guess work. Actual measurements of widths, depths and velocities was indispensable. The method adopted by M. REYV for ascertaining the cross section of the Parana by a combination of soundings and sextant observations may be studied with advantage in any hydrographic survey. If it cannot be called altogether novel it is highly commendable as an example of exactitude alike in rule, habit and in expression. For the measurement of the velocity of the stream, as to which the ordinary clumsy expedient of floats could give no reliable data, an instrument called a

correct meter was employed. This resembles a little mill—windmill we were about to say, but at all events a vane—of a foot in diameter which is turned with rapidity when immersed in a running stream. The action of the vane gives motion to a small train of wheels, as in a gas meter or as in a watch. These indexes denote the number of revolutions made by the vane; which is kept at right angles to the stream by a sort of rudder attached to the meter.

"M. REYV does not claim the invention of this portable means of observation; but he has introduced two important improvements in the method of using it. One is that instead of trusting to the ingenuity of the maker to convert revolutions into feet and furlongs, the actual reading of each meter should be ascertained by moving it through perfectly still water for a measured distance. This furnishes an equation for the instrument, allowing for the loss of friction which is constant and not proportionate to velocity, so that the exact number of revolutions is booked on the spot and reduction into length made afterwards. The other improvement consists in the attachment of the meter to an iron bar six feet long, which M. REYV calls the current integrator, which can be raised or lowered at will from a boat so as to ascertain the velocity of the current at any required depth."

As to the novelty of the mode of taking the cross sections and making the surveys generally, we have only to say that it is as old as the science of navigation, and has been known to every midshipman capable of handling a sextant since nautical hydrographic surveying became a part of the education of naval officers in the service of Great Britain, and that was long before M. REYV's era.

The other improvement in hydraulic surveying—the current meter—has been known for over one hundred years as the Poto-meter—or a stream measurer—and that with all the improvements is at best a clumsy substitute for those older and more accurate results furnished by proper observation and the use of those empirical formulas which have been apparently too hastily abandoned for modes subject to far greater sources of error. We now come to the discovery of the new law of hydraulics, a law by the way which has been thoroughly understood since DU BOAT's time at least if not long before. We are told "The bulk of the observations upon the currents of the Plata, the Parana, Guaya, the Peninsula de Palmas and the Uruguay were surface velocities alone. It was supposed that from these observations the mean velocity might be ascertained by formula as before mentioned. In dealing with phenomena of such magnitude, however, an important fact became apparent. The velocity of the river at any given cross section proved to be directly proportionate to the depth. Thus, if a shoal occurs in the middle of the channel

the velocity of the current over the shoal is less than that of the deeper water on either side; and this diminution of speed is proportionate to the loss of depth. So direct is this relation that a plan of the surface velocities, if projected on an appropriation, coincides very closely with the section of the bottom of the river. Any want of parallelism in the two curves is capable of explanation, either by the curvative of the banks or by some physical irregularity of the channel.

Instead of this being a recent discovery it is really the foundation of one of those empirical formulæ which M. REYR decries. It is that expressed in the words of the Abbe Bossut (an older authority than DUK BTA). "That when water flows uniformly in any channel or bed the accelerating force which obliges it to move is equal to the sum of all the resistances which it meets with, whether arising from its own viscosity or the friction of its bed." Now it is evident that the accelerating force of water in motion is its surface inclination, or the inclined plane down which it rolls—and that owing to retarding causes, such as shoals, or the relation of depth to velocity, as we shall show, are not so direct as those experiments on the Parana would lead us to believe. Nor would we place much faith on the measurements of under currents subject to such variations with an iron bar suspended from the axis of the vane of a wind or water mill. We also deny the accuracy of the next conclusion. "So far as the actual experiments go the result was—first, that the greatest rapidity of the current is at the surface, and the least rapidity at the bottom—and secondly, that the increase of this rapidity is in the simple ratio of the distance from the bottom. Thus both by calculation and by measurement the mean velocity of a stream at any part of its width occurs at half the depth of the water at that part from the surface."

"Now the text book of the Irish Department of Public Works" has been known for the last twenty-seven years as "The Principles and Practice of Hydraulic Engineering," by JOHN DWYER, C.E. After giving at page 30, the formula for finding the mean velocity, he says: "To ascertain this mean velocity is of the utmost importance, as from it and the sectional area we deduce the expense or discharge; but its particular place in the stream cannot be ascertained. In moderate velocities it is more than one-fourth of the depth distant from the bottom, and in very great velocities it was found to be much higher, but never in the middle of the depth."

The bed of a river is generally very irregular owing to various obstructions. If the inclination exceed two feet per mile it is generally a series of ascending and descending curves—the train or uniform discharge or force of the river must be measured on the ascending curves, because no matter what may be the phenomena governing the velocity after passing over them the body of the stream is practically quiescent from an

ascending curve to the other—in other words, the water itself furnishes the bottom over which the discharge is effected between the top of one ascending curve and another in the pool reach, or by whatever name the descending curve is known. What actually takes place is the surface current is forced to the bottom—the surface velocity of the pool is less than that of the rapid over the ascending curve, while the velocity at the level of the bottom of stream at the same depth as it passed over the rapid is greater, and this will afford no new data for any discovery in hydraulic science. The formation of the pool or descending curve is due to the deflection of the current and displacement by which its flow on the surface is retarded after acquiring great rapidity, by passing over the descending curve—and this which was well known sets at rest the claim to the following discovery:—

"No small increase of professional knowledge is thus gained. But never occurred an experiment which seemed on the first blush to run counter to the theory. In two successive measurements of the current of the Plata the apparent anomaly was detected that a decrease of the velocity of the surface current was accompanied by an increase of the velocity of the bottom current. Such an unexpected contradiction of an accepted theory would have been set down by nine men out of ten to error of observation. The field book would very likely have been 'corrected,' that is to say cooked, and the fatal expression 'we know that cannot be right,' might have strangled a discovery the importance of which to the study of hydraulics it is not easy to over estimate." We greatly doubt the inferences of the Reviewer. There has been no discovery. Only to an expert the curvature that the survey was altogether a very clumsy affair, entrusted to men possessing other qualifications than the knowledge of hydraulic science and practice of hydrographic surveying—and a very little credit need be given to the evidence of any party or parties who would assume that any Engineer would cook his field book.

In a recent issue we gave some notice to an invention by Rev. CHAS. RAMUS, M.A., of what he calls a Polysphenic ship. Today we give further extracts from his account of the experiments with what is in reality a flat bottomed scow, with the exception that instead of the bottom or surface in contact with the water being a plane. It is composed of three parallel planes sloped and separated from each other by low steps, the longitudinal steps resembling a gigantic saw; and the propelling power with which such wonderful results were achieved, appears to have been rockets whose force were generated outside the models, being in fact projectiles owing their energies to explosive forces and in comparison to the Engineer that should be supplied in an ordinary case, more than one thousand times more powerful. Acting out-

side the vessel they would lift it as the projector describes, but such a fact would be entirely beyond the power of such machinery on the high sea.

We will not analyze the effect produced on the steps proper, by the force of displacement at high speeds, but merely remarked that it is easier and requires less force to pass the smooth back of a saw over a smooth plane surface than to pass the separated edge of that implement over the same.

"The first of the experiments was made with the 7lb. model. This model was by the propelling power driven forward over the water 66 yards in six seconds, the rocket in that time having been completely discharged, and the model brought to a state of rest on the water. The average speed observed in this case was 33 feet in a second, or about 20 knots an hour but it may be assumed that at its greatest the speed could not have been less than 25 knots an hour. The second experiment was made with a model of smaller form, but of slightly different proportions, and weighing with the full rocket 3lb. 3oz. The distance run in this case was 105 yards, and this distance, the time being carefully noted by two independent observers, was performed in exactly three seconds, being at the rate of 63 knots an hour—a speed that will be allowed far to surpass any speed ever attained by any water borne object before. The model owing to the water space being being limited was driven into the bank before the rocket was fully discharged, otherwise more than double the distance of 105 yards might have been effected. Several months before I had made some very satisfactory experiments with this model when it had attained in rough water a computed speed of 40 knots with 3 oz. of powder, so that the result now recorded was no greater than I had anticipated. The motion of both models was from the beginning to the end of their course completely steady, so as to give them more the appearance of sliding over smooth ice than of passing over the surface of water. There was scarcely any water disturbance, though each model had a fixed rudder of thin metal by which they were directed in an absolutely straight line. There was no splash at starting, and at the end of their course the decks were found unwetted, and so evenly was the motion maintained under the propelling force of the rocket that, had it not been for the draught of air, I feel sure that a set of ordinary chessmen set up on their decks might have remained without being displaced during their course."

"As I felt certain that it would be asked, what would be the effect of using a rocket to drive a model of the ordinary shape, it is as well to state that not long before I made the experiments now brought forward, I endeavored to propel a ship shaped model weighing 6 lb. with a rocket of the same size and charge as those used for my inclined plane models. Immediately after the firing of the rocket the model was urged forward, and when the speed increased its fore part was lifted out of the water so as to cause the model to fall over, and thus the experiment ended amid smoke and total confusion."

"The first or larger model was 3 feet 9 inches long and 5 3/4 inches broad, and floated when at rest in 1 1/4 inch of water. The slope of the three parallel inclines was 1 in 18. The second model was likewise of solid fir, was 29 1/2 inches long and 4 3/4 in

broad, and floated when at rest in 7.8 inch of water. Its three inclines were sloped to 1 in 17. When drawn slowly over the water these models are found to offer a larger resistance than models of the ordinary shape. This is evidently owing to the fact that at low rates of speed they carry a considerable quantity of water before each of the inclines. This they continue to do until the equilibrium between the horizontal pressure of the inclines forward and the pressure of the water in the contrary direction is destroyed. This action seems to take place suddenly, when the model at once rises in the water and passes over the mass of the hitherto obstructing fluid. No true lifting action of the water seems to take effect on the inclined planes until the water is relatively in full motion against them. Up to this period the water merely exercises a dead pressure against the inclines. When the vessel is fairly lifted, and the water passes freely beneath its bottom, it will continue to override the water, which can no longer be removed in the brief time given for the vessel's passage, and to use this irremovable water as a support or fulcrum of infinite lubricity over which it glides with comparatively small and scarcely increasing resistance."

"On one occasion I used the 7 lb model with a rocket of the same power as those employed in the experiments detailed, and found that over waves which might have had their intervals equal to one half the length of the model there was no retardation whatever. The speed recorded and distance run was precisely the same as in a perfectly smooth pond. With other experiments for the same purpose I have always found that waves have not caused any increased obstruction to a model's course."

The facts are summed up by the author as follows:

"I now submit the question to an unprejudiced public, among whom no doubt will be found many who will repeat my experiments with the same results, and by their verification aid me in overcoming those countless difficulties which every inventor has to encounter, when the invention that he offers is one that tends to change the foundations of wealth and runs counter to the prejudice and self interest of large and important bodies of men."

The lumbermen of the Ottawa Valley have formed themselves into an Association, and at the next meeting of the Dominion Parliament application is to be made for an Act of Incorporation. The following officers were elected in the meantime provisionally: Hon. John Hamilton, Hawkesbury, President; W. G. Perley, Esq. Ottawa Vice-President; James Cunningham, Esq., Treasurer. Executive Committee—Mr. Boyd, Bobcaygeon; Mr. J. M. Carrier, Ottawa; Mr. Campbell Peterboro; Mr. James Little, Montreal; Mr. Smith, Toronto; Mr. James McLaren, Buckingham; Mr. A. H. Baldwin, Ottawa; Mr. Mather, Gatineau Mills; Mr. Fraser, Westmeath; Mr. Hilliard, Pakenham; Mr. Cook, Quebec; Hon. Jas. Skead, Ottawa; Mr. P. White, M.P., Pembroke.

A resolution was agreed to that the depressed state of the trade necessitated the shutting down of the mills as early as possible, and in the meantime the reduction of the amount of lumber produced to one-half

the usual quantity at each mill. This step was taken after mature consideration, and we are confident will produce the best results for the future prosperity of the lumber trade.

The formation of a similar Association by the lumbermen of the Western States, was no doubt in a great measure the occasion of the Canadian organization. Would it not therefore be desirable for the interests of both to affiliate together, or at least enter into some arrangement whereby their mutual interests could be protected? Over production has been the bane of the trade, and it is to be hoped in future that the supply kept on hand will be but little over the demand.

A FRIEND writes us to say that the Cobourg Camp was a complete success, Capt. Wm. Johnston, (a thorough soldier) of the Peterboro' Company, was appointed Brigade Musketry Instructor, and to him is mainly due the great proficiency made in Infantry drill. The inspection occupied three hours, Lieutenant Colonel Jarvis Brigade Inspector, expressing himself satisfied with the proficiency and soldierly appearance of the men, reflecting great credit on the pains taken by the officers to bring up the men to such a state of proficiency. The men also expressed themselves satisfied with the treatment they had received, and regretted that the time had not been extended to a longer period.

REVIEWS.

Blackwood's Magazine for July, the first number of a new volume, is now before us. The most noticeable articles among its contents are: "Family Jewels," "Two Cities—Two Books," and "Brackenbury's Narrative of the Ashanti War."

The first is a collection of gems of verse which have a family likeness; examples of one subject variously treated by poets of different ages. The writer says: "We have directed our readers' attention throughout to no case of spurious imitation by baser hands of noble jewels, nor to instances where they have been meanly purloined; we have aimed at exhibiting their accent in the right line to one generation after another of the royal family of poets."

In the second we have a picture of Florence, in connection with George Eliot's "Romola;" and Venice, with which is associated in like manner George Sand's "Conuelo."

The third of these articles is a review of an "authentic memoir of that extraordinary war which England made on the Gold Coast last winter." The book tells of the "ancient history of the region;" "the troubles of the governors and traders of old;" "the Ashanti invasion which led to this last war, and the steps taken to meet it;" its results, and the prospects of the settlements, giving altogether a very fair idea of the whole subject.

The serials, "Alicio Lorraine" and "Valentine and his Brother," are continued.

In "Quid sit Orandum," a short poem of three or four pages, we are presented in a concise form with the principal arguments in favor of the efficacy of prayer.

From the *Broad Arrow* of May 30, we extract the following items of the visit of the Russian Emperor to the Woolwich Arsenal; "At the Arsenal he witnessed the manufacture of a gun in its various stages, the first thing which he saw being the welding of a 38 ton trunnion coil. The royal and imperial party had no sooner taken their places on a platform overlooking the workshop than the artificers lifted a large iron grating and revealed a "fiery furnace" which sent forth such a fierce, blazing heat that everybody was compelled to shield his face from the hot blast. In a huge pair of nippers the red hot coil was dragged out of the furnace, which in its turn had to be sprinkled with water to subdue the intensity of its heat. So, too, had they to treat the coil—a vast tubular piece of iron, which, after being suspended in the air for a few moments, was placed under the Nasmyth hammer, and gently embraced by it. Next the coil, which never seemed to lose a particle of its glaring heat, but shone as fiercely and as redly as ever, was swung round by the crane, and then the machinery tossed the mass of burning metal on its side, in which position it lay for a while as inert as a spent shell. Brain and muscle combined treated this 20 ton coil with something of the contempt shown by a mastiff for a toy terrier. It laid the reddened tube on one side as easily as might be, and brought it into position again, and then the gigantic hammer welded another huge bit of metal into the coil. This was the most remarkable thing which the authorities could show the Emperor, who watched the extraordinary scene with great interest. His Imperial Majesty was then shown the manufacture of iron field gun carriages, the cutting of iron by the circular saw, and the putting together of a wheel by hydraulic machinery—spokes, felloes, and all being pushed together until a complete wheel had been made."

The *Brazilian Times* says that the Brazilian Committee on Artillery Studies, after nearly two years of consideration of the various systems of cannon, have pronounced definitely in favor of the Whitworth rifle cannon as that which, from its material, the processes of manufacture, and the system, most nearly approaches perfection. The committee emphatically condemn the French system of cast iron strengthened by wrought iron bands, as unscientific and practically proved inefficient. The Krupp gun, of Krupp cast steel, strengthened with bands, they consider unreliable, notwithstanding its fine material, chiefly owing to the uncertainty and irregularity of effect which, they say, always attend the action of the hammer, however ponderous, on masses of iron. Finally, they consider the English Armstrong, Woolwich, and Whitworth cannon much superior, in construction and strength, to the best yet produced on the Continent, the Woolwich an improvement on the Armstrong, and the Whitworth far ahead of either in the essential qualities of a good gun. This superiority of the Whitworth cannon the committee ascribe to the quality of the homogeneous steel used, to the care in its selection, to the oil tempering which it receives, to the use of the hydraulic press instead of the hammer, and to the mode of constructing and connecting the cylinders and other parts of the gun. In relation to the quality of duration, the committee mention that, while the Krupp cannon, has an average life of 600 to 500 shots, the Whitworth cannon employed by the Brazilian forces during the Paraguayan war, have averaged 3,500 to 4,000 shots each, without a single case of bursting or serious damage having occurred among them.

DOMINION OF CANADA.



MILITIA GENERAL ORDERS.

HEAD QUARTERS,

Ottawa, 31st July, 1874.

GENERAL ORDERS (21).

No. 1.

ACTIVE MILITIA.

"A" and "B" Battery, Schools of Gunnery.
Preliminary Medical Examination of Men.

Adverting to No. 13 of General Orders (24) 20th October, 1871—When men are forwarded to either of the Schools of Gunnery, before leaving the Head Quarters of their Corps they are to be medically examined by the Medical Officer of the Corps to which they belong, or should there be no Medical Officer attached to the Corps, then by any regularly qualified Medical practitioner. The allowance for this service will be one dollar for each man examined and accepted. The amount to be certified by the officer Commanding the Corps, and transmitted through the usual channels.

Provisional Battalion of Infantry on Service in Manitoba.

To be Quarter Master:

Supply Sergeant Alfred Peter Stuart, vice Joseph H. Somerville, whose resignation is hereby accepted.

PROVINCE OF ONTARIO.

77th "Wentworth" Battalion of Infantry.

No. 1 Company, Dundas.

Erratum in No. 1 of G. O. (20) 24th instant, read "To be ensign specially and provisionally," instead of "To be Lieutenant specially and provisionally."

PROVINCE OF QUEBEC.

52nd "Brome" Battalion of Light Infantry.

No. 4 Company, East Farnham.

To be Lieutenant:

Sergeant Charles S. Dow, M.S. vice Percival L. Cowan, left limits.

Ensign George Berkley Hall, having left limits his name is hereby removed from the list of Officers of the Active Militia.

PROVINCE OF NEW BRUNSWICK.

62nd "St. John's" Battalion of Infantry.

To be Captain, from 23rd July, 1874:

Lieutenant William Farren, M.S., vice George Kerr Berton, who is hereby permitted to retire retaining rank.

To be Lieutenant, from 23rd July, 1874:

Ensign James Sidney Kaye, M.S., vice Farren, promoted.

To be Paymaster, from 23rd July, 1874:

Brevet Major and Quarter Master Michael W. Maher, vice Captain Charles Campbell, who is hereby permitted to retire retaining rank.

To be Quartermaster, from 23rd July, 1874:

Ensign George K. Wallace, vice Maher, appointed Paymaster.

PROVINCE OF NOVA SCOTIA.

2nd "Halifax" Brigade of Garrison Artillery.

No. 3 Battery, Richmond.

To be Captain:

1st Lieutenant John M. De Wolf, Q.F.O. vice Macpherson, promoted.

To be 2nd Lieutenant:

Sergeant Daniel S. Sawart, M. S., vice George Henry Williams, whose resignation is hereby accepted.

No. 2.

CERTIFICATES GRANTED.

SCHOOLS OF GUNNERY.

PROVINCE OF QUEBEC.

SECOND CLASS "SHORT COURSE" CERTIFICATES

Regimental Division. Names.

City of Quebec. —Acting Bombardier Samuel Thompson, late P. Quebec Brigade of G.A.

do —Gunner Alexander McDonald, late Quebec P. Brigade of G. A.

do —Acting Bombardier Alexander Richie, late Quebec P. Brigade of G. A.

do —Gunner Patrick Dolan, late Quebec P. Brigade of G. A.

do —Gunner Jonathan Hiddle, late Quebec P. Brigade of G. A.

do —Acting Bombardier Peter Murphy, late Quebec P. Brigade of G. A.

BOARDS OF EXAMINERS.

PROVINCE OF ONTARIO.

SECOND CLASS CAVALRY CERTIFICATE.

Cornet John Stewart, Ottawa Troop of Cavalry.

By Command of his Excellency the Governor General.

WALKER POWELL, Lieut. Col.
Acting Adjutant General of Militia,
Canada.

The Gazette de Cologne says that the great iron revolving turrets which have been experimented on at the polygon at Tegel since 1869, and which have borne all possible proofs, are to be adopted in the new German fortresses. Two of these turrets will secure communication between the forts St. Quentin and St. Privat, before Metz; two others are to be established on the flanks of those two works, and will command the valleys of the Moselle and the Saïlle. All the iron required will be cast in special foundries erected for the purpose. Each turret will be formed of a small number of large plates, which will be united by means of mortises, etc., produced in the castings. The central platform will be arranged for a single cannon, but arrangements will be made which will permit the introduction of others. The embrasures are so narrow that there will be but little fear of any projectiles entering. During the experiments seven projectiles of 150 kilogrammes fired from a gun twenty four hundredths of a metre in diameter, struck the sides of a gun carriage without injuring it materially. One writer says that this application of armor plates will render the fortress of Germany, whether on sea or land, much superior to those of other nations. This may probably arise from his never having heard of such applications elsewhere.

Reckoning up the Artillery force engaged in the review at Woolwich and Aldershot, before the Czar, the London Times says: Ninety-four guns and forty eight guns make a total of 142 guns, all within easy call of London, and disposable for reviews. If we remember rightly, the number which passes at the grand St. Petersburg parades is 126, and four or five batteries of these are mitrail-leuses, a weapon we never bring on to the review ground, though we have adopted a form of it, and though it is to be seen at the Arsenal. The 126 guns at St. Petersburg belong to a force of 40,000 men, but our 142 guns cannot be said to belong to more than 20,000 men for review purposes at all events, counting in the Woolwich garrison. Thus it will be seen that the show of Artillery we are able to make at any time on what may be called a Metropolitan parade is really very great, though we would fain hope it is not quantity but quality which makes its chief interest.

The Emperor William is to visit Italy during the present year, probably in the autumn. The provincial correspondence expresses the hope that the visit of the German squadron to the coast of Spain will effect a happy change in Spanish affairs.

REMITTANCES received on Subscription to THE VOLUNTEER REVIEW up to Saturday the 1st Inst.

(Per Capt. & A. Lt. Bland, Halifax.)
Halifax, N.S.—Capt. W. A. Purcell, 5 May 74 \$2.00
Ottawa, N.S.—Capt. G. Rayne, 10 Aug. 1874. . . 4.00
Port William, N.S.—Ens. Osbert Marshall, 10 Sept. 1874. 4.00
Peterborough, Ont.—Cap. Wm. John Ton, 10 May 1875. 2.0

THE WHITE KING'S BURIAL—A.D. 1610.

[At such time as the body of King Charles I. was brought out of St. George's Hall (Windsor) the sky was serene and clear, but presently it began to snow and it fell so fast that by the time they came to the West end of the Royal Chapel the black velvet pall was all white, the color of Innocency. So went the *White King* to his grave—*Sir Thomas Herbert's Memoirs.*

In a grey old grange of Sussex dwelt a stout old cavalier,
By the Roundheads nigh forgotten since that bitter troublous year,
Whon upon a serge hung scaffold with his sad glance proud and high,
The prisoner King of England came calmly out to die.

Long years since then had fled—the Knights their locks were grey,
But he still could troll a ballad of wild times past away,
When he dealt his cards with Goring or charged for King and Crown,
Or with crusab dropped in his flagan drank, God send this *Crum well* (a) down.

'Twas a rough dark winter's eve, with his grandson on his knee,
Sir Humphrey watched the firelight as it flared and flickered free;
Now he curled his stiff moustache, now he hummed an olden stave—
Ere he told how went the *White King* from the scaffold to the grave—

"When the headman's axe had fallen on our Sovereign's comely head,
"When *Noll Cromwell's* work was finished and our lord the King was dead;
Though the traitors who were weeping now their butchery was o'er,
"To the Palace in St. James's the murdered corpse we bore.

"We had thought a grave to find him where his father's ashes lie,
"In the Seventh Henry's chapel, but a Round-head scowling high,
"Bade us "bury Charles at Windsor"—shame our gallant King to thrust—
"Near the grave where Blue-beard Harry sleeps to mingle with such dust.

"Slowly, sadly from St. James', on a dreary winter's day,
"Followed we our master's body—how my heart ached all the way—
"Passing through long lines of Roundheads—I can feel the whole thrill now,
"As the hot blood of the *Mildmay's* mantled on your grandsire's brow.

"The sun was shining brightly in St. George's ancient Hall,
"As with heart-drawn sighs we courtiers stood around our master's pall,
"Ere we got into the chapel with solemn step and slow,
"The sky grew dark above us and the pall was white with snow.

"There were tears good grandson Walter in eyes that never sank,
"When with reeking steeds and flashing swords, we charged *Phil Skippin's* flank;
"Near the grave I saw a Roundhead—even then boy I could trace,
"An old scar he got at *Naseby* when I cut him on the face.

"When the Royal corps was resting nigh the dark, deep open grave,
"Rudely clanking down the chapel stood a graceless Roundhead knave,
"Bishop *Juxon* I'm commanded by the Parliamto say,
"That you read no burial service o'er Charles Stuart here to-day.

"There were fierce men standing round him—knights, baronets and lords,
"Whose white hands in that chapel sought the pommel of their swords,
"Pointing to the corps, said *Juxon*, as his dark blue e-grew dim,
"Would ye wrangle near God's altar o'er the honored dust of him?

"Boy, long years away have fled since I saw what I have told,
"Grey's my hair but hearts of cavaliers can never quite grow old,
"If again a Stuart calls me I will draw for King and Crown,
"As I drew when fled the Roundheads at the gates of Worcester town." (b)

W. J. B. STEVENS.

(a) A well known punning toast of the Royalists during *Oliver Cromwell's* Protectorate.

(b) In 1612 Prince *Rupert* utterly routed the Parliamentarian forces under the *Earl of Essex* at Worcester Gates. In 1651 *Oliver Cromwell* destroyed the army of Prince *Charles* (afterwards *Charles II.*) at the same place.

ARMY ORGANIZATION.

(By General George B. McClellan.)

(Continued from page 317.)

THE ARTILLERY.

In modern warfare the arm of service next in importance to the infantry is certainly the artillery. For although the former can (under great disadvantages, it must be confessed) dispense with the co-operation of the cavalry, it can not safely be deprived of the assistance of the artillery, except, perhaps, for a short time in a very mountainous or densely wooded country, which would not form a practicable theatre of operations on a large scale. So also the cavalry with its artillery can frequently operate independently of the infantry, while if entirely without artillery its field of action would be very much curtailed.

There are three main subdivisions of the artillery, which are quite distinct in regard to material, and not identical in organization and instruction.

I. The Garrison and Sea-coast Artillery.

II. The Siege Artillery.

III. The Field Artillery.

The first and second we will dismiss after a very brief notice; but we must first touch upon some general points of organization common to all the artillery.

The lowest unit of organization, or the captain's command, in the artillery is the battery, which corresponds very nearly, so far as the number of officers and men is concerned, with the company of infantry, but its tactical or effective value in battle is very much greater. In most services artillery regiments are formed of a certain number of batteries; after these is an intermediate unit, usually of about four batteries, corresponding with the battalion as the battery does with the company.

In some armies there are distinct regiments of garrison and of field artillery, in others each regiment contains a certain number of batteries of each of the different kinds of artillery. In some armies the service of the pontoniers—i. e., the troops whose business it is to construct bridges or floating supports—is performed by the artillery, there being in that case either certain companies of pontoniers in each regiment, or special regiments for the purpose.

1. *The Garrison and Sea coast Artillery.*—The personnel of these batteries usually consists of a captain, three lieutenants, and about 200 non-commissioned officers and men. Their material comprises the heaviest calibres of guns and mortars that are made, in order to secure the longest ranges and greatest effect. The use of this very heavy material is permissible, for the reason that the guns and ammunition are in position before the occasion for employing them arises, so that it is not necessary to move them to any considerable distance. In addition to the heavy rifled guns, smooth bore shell guns, and mortars used in this service against vessels of war and the works of attack in a siege, these batteries also serve light guns for flanking purposes and close ranges against troops.

II. *The Siege Artillery.*—The personnel of these batteries is about the same as that of the garrison artillery, and usually there is

no distinction between the two. Their material is the heaviest that can be transported conveniently to the place where it is to be used, and is, of course, usually much lighter than that of the garrison artillery. In the siege of a fortress near water communications, much heavier guns can, of course, be used than when a long line of land transportation must be followed. The purposes to be accomplished by this kind of artillery are, to silence the fire of the heavy guns in the besieged works, to destroy their parapets, and breach the walls in order to permit an assault. Mortars are also employed by the siege artillery to destroy magazines, and reach points covered by the parapets from direct fire. In some armies all the siege works pertaining directly to the use of the siege guns—for example, the construction of the parapets or "batteries" to protect the guns and cannoneers, the platforms the embrasures, the field magazines to contain the daily supplies of ammunition—are built by the artillery troops under the direction of their own officers. In other armies all of this work is performed by the engineers.

III. *The Field Artillery.*—This always accompanies the troops on the march and in battle, and must, therefore, be so light as to admit of easy transportation not only over bad roads, but also across rough and broken country. It is divided into the *horse artillery*, in which the cannoneers are mounted on horses when in movement, in order to enable them to accompany cavalry on long marches, this kind of artillery being especially intended for that purpose, and the *foot artillery*, in which the cannoneers habitually walk, or, during rapid movements over short distances—as, for instance, in changing position in battle—ride upon the boxes of the limbers and caissons. This last kind of artillery is designed to serve with the infantry, and is usually subdivided into the light field batteries, specially adapted for rapid movements and service over broken ground, and the heavy or reserve field batteries intended more particularly for the defence of positions and long range fighting. Now that rifled guns have been so generally introduced, this last distinction is of less importance than formerly, or it is perhaps more correct to say that the difference between the two kinds is not so great in regard to weights and facility of movement as it used to be. Within a few years field batteries in different armies have consisted of from six to ten guns, but the experience of modern wars seems to have settled the question that six is the best number. That number can be thoroughly well handled in battle by a captain, while, on the other hand, the care of the men, material, and horses is quite enough for one officer. The battery is never divided or broken up except for strictly temporary purposes. In another connection will be touched upon the considerations which regulate the selection of the material of the artillery and its use.

The war of 1870-71 proved so clearly the vast superiority of the Prussian artillery that we cannot err in giving the composition of the personnel and material of their batteries as the best example of a good organization. It should be stated that the Prussians have abandoned the smooth bore gun, and use only the breech loading rifled steel gun of the 4-pounder and 6-pounder calibres. It must be said, however, that the propriety of the entire abandonment of the smooth-bore gun is open to discussion.

The following is the composition of the

Prussian 6 gun field batteries on the war footing:

	6-Pndr. Bat'ry	4-Pndr. Bat'ry	Horse Artillery
Captain.....	1	1	1
First Lieutenant.....	1	1	1
Second Lieutenants.....	2	2	2
First Sergeant.....	1	1	1
Porte-epce Fahrurich.....	1	1	1
Sergeants.....	3	3	3
Corporals.....	9	9	8
Lance-Corporals, etc.....	15	15	15
Musicians.....	2	2	2
Privates.....	114	108	114
Train Soldiers.....	4	4	4
Saddlers.....	1	1	1
Hospital Attendant.....	1	1	1
Horses.....	120	121	207

Of the 129 lance corporals and privates of a heavy foot battery, 48 are cannoncers, 53 drivers, and 28 in reserve. Of the 126 horses, 92 are draft horses for the guns and caissons, 12 for supplies, 22 saddle animals. Of the 10 carts and waggons belonging to the battery, 6 are ammunition carts, 2 for supplies, 1 travelling forage, 1 baggage wagon.

The composition of the light foot battery differs from the heavy only in having one cannoncer less for each gun, and two horses less for supplies. Of the 129 lance corporals and privates of a horse battery there are 42 cannoncers, 49 drivers, 38 in reserve. Of the 207 horses, 92 are draft animals, 6 for supplies, and 109 saddle horses.

RECAPITULATION.

	Officers	N. C. OFFICERS and MEN	Horses	Quills
6-pdr. Foot Battery.....	4	151	120	6
4-pdr. Foot Battery.....	4	145	121	6
Horse Battery.....	4	150	207	6

On the peace establishment the number of officers remains the same, the number of privates, horses, and guns is reduced so that each foot battery consists of 4 guns, 4 officers, 109 men, 1 hospital steward, 40 horses (i. e., 24 draft horses, 4 forage cart horses, 3 officers' horses, 7 non commissioned officers' and 2 trumpeters' horses); each horse battery consists of 4 guns, 4 officers, 90 men, 2 hospital stewards and saddlers, and 72 horses (i. e., 24 draft horses, 4 forage cart horses, and 44 saddle horses).

The regiment of field artillery consists of 4 divisions, of which 3 are made up of batteries of foot artillery, and 1 division of horse artillery. Each division of foot artillery has two light (4 pounder) and two heavy (6 pounder) batteries. On the peace footing the horse artillery division has 3 batteries, in war it usually has 4. The peace strength of the regiment of field artillery is therefore 15 batteries, or 60 guns; on the war footing, 16 batteries, or 96 guns.

The staff of a division of foot artillery consists of 1 field officer as commander, 1 lieutenant as adjutant, 1 non commissioned officer as clerk, 1 veterinary surgeon, also usually 2 supernumerary captains.

The staff of a division of horse artillery consists of 1 field officer as commander, 1 lieutenant as adjutant, 1 non commissioned officer as clerk.

The regimental staff consists of 1 colonel as commander, 1 lieutenant as adjutant, 1 supernumerary captain or lieutenant in charge of the artificers, 1 pyrameter, 1 chief trumpeter, 2 non-commissioned officers as

clerk, 4 artificers, 1 chief veterinary and 1 veterinary surgeon, also 4 surgeons and 4 assistant surgeons. On the war footing a veterinary surgeon is provided for each battery.

THE CAVALRY.

Although still of very great importance—necessary, in fact, in every well organized army—the relative value and the sphere of action of the cavalry have decidedly diminished since the general introduction of breech loaders and of rifled field guns. In some of the best armies of the world it is now outnumbered by the artillery. The same considerations which in recent times have led to the simplification of the general organization of the infantry have also made themselves felt in respect of the cavalry. Although the various distinctions of cuirassiers, lancers, etc., etc., are still to a certain extent maintained, the tendency is toward a division of the cavalry simply into the light and heavy cavalry.

The former consists—or should consist—of active, intelligent, and light men, mounted on strong, active, and enduring horses. One of the chief purposes to be accomplished by this kind of cavalry is to move in all directions around their own army, and as far as possible from it, in order to obtain the earliest information practicable as to the movements of the enemy, and to prevent him from procuring the corresponding

information. This kind of cavalry is especially adapted for distant expeditions, surprises, etc., and is of great use in battle. The heavy cavalry, which is less important than it once was, is not so well adapted for rapid and distant service, or the duty of flankers, but is more especially intended for action on the field of battle. We will not in this place dwell further on these points, but will now give a very few examples of the present organization of the cavalry.

In this, as in the other arms of service, the lowest unit of administration and tactics is commanded by a captain, and its strength should be determined by the limit of the capacity of a good officer in respect of handling his command in battle, and in caring properly for the instruction and well being of the men and horses at other times. This unit is called a squadron in all armies except the English and American, where it is denominated a troop or company, although in both the real tactical unit is the squadron, composed of two troops or companies.

The strength of the squadron varies in different armies from 120 to 216 non commissioned officers and men.

The following table will give a sufficiently accurate idea of the composition of the squadron and the troop in the principal armies of the world, on the war footing:

ORGANIZATION OF A SQUADRON OF CAVALRY ON THE WAR FOOTING IN—

	Germany.	Franco.	Austria.	Italy.	Russia.	England. The Troop.	U. States. The Troop.
Captain.....	1	1	1	1	1	1	1
Second Captain.....	1	1	1	1	1	1	1
First Lieutenants.....	1	1	2	2	1	1	1
Second Lieutenants.....	3	1	1	1	2	1	1
Sub-Lieutenants.....		4	2	2	2	1	1
Sergeants.....	6	10	2	5	3	1	7
Corporals.....	9	27	12	11	16	5	4
Musicians.....	3	4	2	4	3	1	2
First-class Privates.....	20	22	2	6	14	70c	67
Second-class Privates.....	112	98	230	110	1	1	1
Farriers.....		3		1	1	1	1
Saddler.....				1	1		

a The French regiments of heavy cavalry have 55 second class privates per squadron; those of the line, 95; and the light cavalry, 108.

b The organization in the table is that of the Austrian light cavalry; the heavy cavalry have only 1 trumpeter and 162 privates per squadron.

c In the 70 privates are included the corporals.

In the cavalry the reductions on the peace footing are usually much less than in the other arms of service—i. e., in the German service the number of second class privates is reduced from 112 to 97; in France the theoretical reduction is two sergeants, four corporals, and enough second class privates to reduce the number in each squadron of the various kinds of cavalry to 69; at the present time, however, the French squadrons do not count more than 100 non commissioned officers and men, so necessary do they find it to economize. In the Austrian, French and Russian armies, every two squadrons are commanded by a field officer, but in the other services there is nothing intermediate to the squadron and the regiment—the latter commanded by a colonel, assisted by field and staff officers, whose numbers vary much in different armies.

In the United States service the regiment consists of six squadrons of two companies each, in England generally of four squadrons of two troops each. The Germans have four squadrons to the regiment, the Austrians six for the heavy cavalry and eight for the light, the Russians from six to ten, the Italians four squadrons. The French regiment formerly had six squadrons; now it has five.

In the various European armies there is a depot squadron for each regiment, the organization and use of which will be explained in a different connection. Cavalry is often formed into brigades of two or more regiments, provided with a suitable amount of horse artillery.

Before concluding for the present our remarks upon the cavalry, it may be well to allude briefly to the subject of "mounted infantry," that is to say, infantry who are provided with horses or mules for the sole purpose of insuring rapidity of movement for long distances, it being always understood that they are to fight only on foot, and that they are to be armed and equipped accordingly. There is a wide difference between such troops and the dragoons, originally intended to fight either mounted or dismounted. This double action of the dragoons made it necessary to instruct them in the tactics and use of weapons of the cavalry as well as of the infantry, and they were of course encumbered with a double set of arms, the result generally being that they were indifferent cavalry and worse infantry. With regard to the mounted infantry the intention is to arm them solely as infantry, and to instruct them as such; but that they are to learn only enough of cavalry duty to enable them to

take care of their horses, and go through the simple formations needed for the march. This subject is attracting much attention on the part of many of the most intelligent European officers, but nothing definite seems to have been done in regard to the permanent organization of such troops. It is evident, if the use of mounted infantry is important, that it is necessary to organize a special corps for the purpose, employing only men who can ride and take proper care of their animals, otherwise the latter would be destroyed after a few marches. It has also been suggested that it would be advantageous to organize trains of light carts or wagons for the rapid transportation of considerable bodies of infantry. However the details of the matter may be arranged, it is probable that in the next great war the question of mounted infantry will be practically solved.

THE ENGINEER TROOPS.

It is now time to consider briefly the organization and general duties of certain special bodies of troops few in number, but upon whom devolve duties of the highest importance on the march, in battle, in retreats and sieges, and for which a high order of intelligence and careful instruction are necessary. These troops are armed, and not infrequently are called upon to fight, as infantry; moreover their special duties are so often performed under the heaviest fire and most dangerous circumstances that they can be fairly regarded as coming within the category of combatants. Certainly the coolness and heroism displayed by these troops in hundreds of instances can justly be compared with the most remarkable actions of the three principal arms of service. Among the duties which they are called upon to perform or direct are the construction and repair of roads and bridges of all kinds, the construction of field fortifications, the works of attack against field and permanent defenses, and generally leading assaults of works in order to remove the obstacles placed in the way of the storming parties. The distribution of these duties, and the organization of the troops who perform them vary much in different armies. In some they are assigned altogether to the engineer troops; in others those relating particularly to the heavy guns employed in sieges devolve upon the artillery; again in others the construction of floating bridges falls to the artillery, or to a special corps of pontoniers; finally, there are cases where a particular corps is organized for the work of constructing and repairing roads and bridges on fixed supports. In this last case the engineer troops are confined pretty closely to the work of sappers and miners, *i. e.* the construction of the works of attack against permanent fortifications. As with regard to the artillery, so in this case we will take the German organization as a good example of a suitable composition of the troops in question, called by them pioneers, officered entirely from the corps of engineers. In times of peace these troops are organized in battalions of four companies each—one battalion to each army corps. The strength of the battalion is eighteen officers and 503 men. Of the four companies one is a company of pontoniers, two of sappers, and one of miners. On the breaking out of war one of the sapper companies is withdrawn from the battalion to serve or *dépot* company, and of three new companies for garrison service in the fortifications.

The remaining three companies are brought up to a total strength of seventeen

officers and 708 men. From the three field companies are organized a light field bridge train, and a train of entrenching tools. Special heavy bridge trains, for the passage of large rivers, are organized from the permanent *dépôts* as necessity may require.

We have now given, in a general way, the organization of the different combatant arms of service up to the brigade. Before we can pass on to the composition of the division and the army corps it will be necessary to give a brief description of the organization and duties of the different staff corps and the non-combatants, for these form essential portions of the larger units. With this our next paper will commence.

(To be Continued).

THE CANADIANS AT WIMBLEDON.

The *Pall Mall Gazette* of July 11th says:—The presentation of an address by the Canadians to Sir Garnet Wolseley will be remembered as a pleasing event in the proceedings of this meeting. It took place yesterday in the garden adjoining Lord Ducie's quarters. The Canadians, twenty in number, under the command of Lieutenant Colonel Gilmor, were drawn up on either side of a table, and Sir Garnet was introduced by Lord Ducie. The gallant officer was accompanied by Lady Wolseley, and among the company who clustered round the table were Lady Ducie, Lord Carnarvon, Lord Lisgar, Lord Eversley, Sir Henry and Lady Alice Havelock, Sir John Rose, and Lieutenant Colonel Oxley. Colonel Gzowski read the address, which was handsomely illuminated and enclosed in a box made of Canadian wood and, Sir Garnet made the following reply:—

"You have been good enough to present me with an address stating that my services in Canada are still remembered by its people. My long stay in British America seems with pleasant recollections, and it is an honor to find that you regard me as identified with your people; for if a love for a country and intense interest in everything that concerns it can entitle a man to claim it as his home, then, indeed, I am as much a Canadian as any man born in your provinces. I can never forget the gallantry, the devotion to its sovereign and to duty displayed by that noble band of Canadians which I had the honor of leading through many miles of wilderness from Ontario to the Red River in 1870. I can never hope to be associated with better soldiers than with the militia regiments of that expeditionary force. They were well worthy of being brothers in arms of those men who lately fought their way so gloriously to Commaissie. I thank you most sincerely for your kind congratulations and good wishes, and I trust I may never forfeit in any way the good opinion of the the people of Ontario, to whom I am bound by so many endearing ties."

After the Canadian team had been introduced, the whole company walked across to the Canadian compartment, and were entertained at luncheon.

THE GATLING GUN.—In transmitting the official report of "the Board of Officers appointed by S. O. No. 108 A.G.O., May 31, 1873, on Gatling Guns of Large Calibre for Flank Defence," the Board of Engineers for Fortifications give expression to their own views in the letter which follows, and the publication of which completes the discussion of the subject.

CONTINENTAL ARMIES AND FORTS.

The *Cologne Gazette* of June 14 intimates that it must be looked upon as an unquestionable recognition of the value of the German military organization that it has been almost the only pattern after which new military changes have been made in the different lands, among which may be named France and Russia. While the new French Military Constitution is nearly a complete imitation of the German, there were in the case of the Russian movement local peculiarities which made such an imitation in many parts impossible. The main features of the Russian system are these: The obligation to serve is general for the Russian population able to bear arms. Substitution is permitted in the case of young men upon whom the lot has not fallen, and who may serve instead of the next members of their family upon whom the lot may have fallen. Those who are freed from active service by the lot enter from their twenty-first to forty first year into the *Apaltshenie* or *Lands-turm*. The active service is for six, the reserve for seven years. Young people of superior education have the right of doing their time of service, (according to their amount of culture,) in from three to six months, two and four years. Freedom from service is secured only after fifteen years of age by having passed the number of years required in the army, or from being freed by lot from the obligation. The *Cologne Gazette* suggests that such an arrangement might be of advantage in Germany, where emigrants is going on so rapidly. Points of difference between the Russian and German plan are—(1) that the time of service in the former is about twice as long, which prevents so many men comparatively from being enrolled as in the German Army; (2) three years longer in the reserve; (3) various exceptions from service. The Prussian institution of *Dratz* reserves is made up for by those who are for the time not taken, being in the first place handed over to the reserve army. Carrying on the service to forty-one in the *Lundsturm* was intended largely to increase the strength of the army, but it is not likely that the Russian Army will soon gain an ascendancy over the German. The new fortification system of France commenced this spring. A beginning has been made with Grenoble, the works of which will be strengthened with five advanced forts. The acceptance of the new fortification arrangement of Paris was intended for the middle, or at least end, of April. There will be then eleven very advanced forts, and a new girdle line of the already existing fortifications. Probably at Lyons also the extension of the fortifications will this year be commenced. Besides, it is intended to raise Verdun, Soissons, and Rheims into military positions of the first rank. As flank positions, the works of Bel'fort and Langress, in the south, and in the north Douay and Lillie are to be extended. In the first direction, Besancon will form a first and Lillie a second reserve position. At all important railway points—as, for instance, where important railways cross rivers—stoppage forts will be erected, where the nature of the ground admits of this. Even the fortification of the entire passes and roads in the Morvan Mountains, between the Yonne and Cote d'Or, is in prospect. As early as last year comprehensive fortification works were arranged for in order to render the military manufactories at Bourges secure. As regards the modes of fortification, the polygonal glacis is that which will be adopted in these works.