

CONFIDENTIAL.

REPORT

OF THE

COMMISSIONERS

APPOINTED TO CONSIDER

THE DEFENCES OF CANADA.

1862.

1862
(32)

(Seal of Province.)

(Signed) *MONCK.*

PROVINCE OF CANADA.

{ VICTORIA, by the Grace of God, of the United
Kingdom of Great Britain and Ireland,
Queen, Defender of the Faith, &c. &c. &c.

To Colonel John William Gordon, Royal Engineers, C.B., Aide-de-Camp to Her Majesty the Queen; Lieutenant-Colonel Henry Lynedoch Gardiner, Royal Artillery; and the Honourable Hamilton Hartly Killaly; and to Captain William Crossman, Royal Engineers, Secretary of this Our Royal Commission, greeting.

KNOW ye that, reposing especial trust and confidence in your loyalty, ability, and integrity, We, of Our special grace, certain knowledge, and mere motion, and of Our royal will and pleasure, do by these presents nominate and appoint you, the said John William Gordon, Henry Lynedoch Gardiner, and Hamilton Hartly Killaly, to be Our Commissioners for the following purposes.

Firstly. To inquire into the different points in Our province of Canada at which, in the opinion of you Our Commissioners, defensive works should be raised, the nature of those works; and, if possible, to accompany your report with plans of such works, and estimates of the expense of their construction.

Secondly. To report the mode which you would recommend for the protection of the system of water communication through Our said province, both generally and with reference to the local peculiarities of particular portions of it.

Thirdly. To state your opinion with reference to the maintenance and protection, in the event of war, of the railways of the country.

Fourthly. For your consideration and report of the different modes of access by railroad, water carriage, or ordinary roads, of troops from the United States to Canadian territory, and for suggestions of the localities where the nature of the country affords the best means of defence in the event of an attack by such approaches.

Fifthly and generally. To report a system of fortification and defence for Canada. To have and to hold the office of Commissioners as aforesaid unto you and each of you during Our royal pleasure. And We do further nominate and appoint you, the said William Crossman, Secretary of and to the said Commissioners. And it is Our further will and pleasure, and We do, in pursuance of the statute in that behalf, confer upon you and each of you the said Commissioners, the power of summoning before you any party or witnesses, and of requiring them to give evidence on oath, orally or in writing (or on solemn affirmation, if they be parties entitled to affirm in civil matters), and to produce

such documents and things as you, the said Commissioners, deem requisite to the full investigation of the matters into which you are appointed to examine. And We do further will and require you, Our said Commissioners, under this Our Royal Commission, to keep secret and not to divulge the contents or the substance of the contents of your proceedings, or report or reports, under this Our Commission, save to Ourselves, or to Our Governor General of Our province of Canada, unless compelled so to do by law, and to return the same in a sealed envelope, or sealed envelopes, to Our said Governor General of Our province of Canada. And We do hereby enjoin and require that a majority of you, the said Commissioners, shall be held to be and be a quorum for the transaction of business, and for carrying out the purposes of this Our Royal Commission. Of all which Our loving Subjects, and all others whom these presents may concern, are hereby required to take notice and govern themselves accordingly.

In testimony whereof We have caused these Our letters to be made patent, and the great seal of Our said province to be hereunto affixed. Witness Our right trusty and well-beloved cousin, the Right Honourable Charles Stanley, Viscount Monck, Baron Monck of Ballytramm, in the county of Wexford, Governor General of British North America, and Captain-General and Governor-in-Chief in and over Our provinces of Canada, Nova Scotia, New Brunswick, and the Island of Prince Edward, and Vice-Admiral of the same, &c. &c. &c.

At Quebec, this sixth day of February, in the year of Our Lord one thousand eight hundred and sixty-two, and in the twenty-fifth year of Our reign.

By Command,

(Signed) . C. ALLEYN, *Secretary.*

SECRETARY'S OFFICE,

Quebec, March 31, 1862.

Sir,

ADVERTING to my letter to you of the 5th February last, I have the honour to inform you that his Excellency the Governor General has been pleased to add Colonel Edward R. Wetherall, C.B., and Captain Bythesea, R.N., C.B., V.C., to the Commission already appointed on the Fortification and Defence of Canada.

These officers have been duly advised of their appointment.

I am directed by his Excellency to request that you will afford Colonel Wetherall and Captain Bythesea access to the documents now in possession of the Commission, with a view to enabling them thoroughly to understand and form their own views in reference to the proceedings of the Commission up to the date of their appointment.

I have, &c.

(Signed) C. ALLEYN,

Secretary.

*To Colonel J. W. Gordon, R.E., C.B.,
Montreal.*

TO THE QUEEN'S MOST EXCELLENT MAJESTY.

We, the undersigned, Commissioners appointed by Your Majesty to consider the most effectual means of placing the province of Canada in a complete state of defence, have visited the frontier from the boundary of New Brunswick to the entrance of Lake Superior; and having had under our consideration the Memoranda signed by Your Majesty's Secretary of State for War, and the instructions received from his Excellency the Governor General, and from the Lieutenant-General commanding the Forces in British North America, humbly beg leave to lay before Your Majesty the result of our deliberations.

1. Canada, like all other countries with an extensive frontier conterminous with a foreign and powerful neighbour, must, for security against invasion, possess armies and fortresses. Canada, for security against invasion, must possess army, fortresses, fleet.

The peculiar position of the province, having a water frontier of some hundred miles in extent, renders it necessary that a fleet be provided for the protection of the inland waters.

2. If it is intended to maintain the province as a portion of the British empire there is no possible way of evading these requirements. No way of evading these requirements.

The United States of America are now a military power, and have demonstrated their capability of raising and equipping in a short space of time an enormous mass of troops, and of bringing them to bear on any part of their enemy's frontier that may be necessary; and late operations in the western rivers of this continent have shown that they also possess the power of rapidly extemporizing a formidable fleet, adapted for lake warfare. United States now a military power.

3. The regular troops in Canada can only be looked upon as a nucleus round which the Militia and the Volunteers of the province will rally. United States can raise fleet for inland waters.

The undoubted loyalty of the people renders it certain that a large force would be collected in the event of a threatened invasion of their country; but Your Commissioners cannot too strongly urge the absolute necessity of the immediate adoption of a sound system of military organization which will insure a body of disciplined troops available to act in conjunction with Your Majesty's regular forces. H.M. regular forces only a nucleus for Militia and Volunteers.

Unless this is done, it is useless to take other measures to place the province in a state of defence. Large force readily collected.

4. The smallest military force which Your Commissioners consider essential to the occupation of the various positions and fortresses, is,— Sound system of military organization in province absolutely necessary.

Quebec	...	...	...	...	3,000
Montreal, Sherbrooke, and St. John's	...	...	...	...	15,000
Prescott	...	...	...	...	5,000
Kingston	...	...	...	...	10,000
Toronto and Niagara frontier	...	...	...	...	17,000
London, Guelph, and Detroit frontier	...	...	...	...	15,000

Military force for defence of Canada, 150,000 men.

Total effectives 65,000

An equal number is necessary as reserves, and adding one-fifth for casualties, the total force required may be stated at 150,000 men.

Population, 2,507,657.
Appendix No. 3.

The return of the enrolled Militia of the province, dated 8th January 1857, shows a total of 236,427 men. Since then the population has much increased, and is stated (by the census taken in 1861) at 2,507,657.

The country, therefore, is well able to furnish the force required.

Fortified places necessary for Canada, principle acknowledged and acted upon.

5. That fortified places are necessary for the defence of Canada is a principle that has long been conceded and acted upon, as is shown by the construction of fortresses at Quebec and Kingston, and of smaller defensive works at other important points, such as Prescott, Toronto, Amherstburgh, Isle-aux-Noix, &c.

Except at Quebec and Kingston, works heretofore constructed not adapted to modern warfare.

The works at the last-named places were block houses, or earthen redoubts of no great extent or strength, and were erected at a period when the United States were not so formidable in population and resources as they now are, and when Canada afforded a much more difficult theatre of operations than at present. They were doubtless sufficient at the time of their construction to oppose the troops likely to be brought against them, but the improvements in the arms of modern warfare render this description of works of little avail, except as auxiliary to field operations. Most of these defences have either entirely disappeared, or are in a very dilapidated condition, and all require complete reconstruction.

Maintenance of fortress at Quebec essential.

6. The necessity of having a secure base of operations in communication with the mother country, renders the maintenance of the fortress at Quebec indispensable.

No strong natural barriers.

Canada has no strong natural barriers, hence the greater need of possessing fortified places at the most important and most assailable points.

Forces must be inferior in number to those of United States.

Whatever number of Militia and Volunteers the province may be able to raise, the forces in this country must be numerically inferior to those of the United States, and fortified places alone can enable them to contend successfully with this disparity.

Difficult to maintain communication between Upper and Lower Canada in time of war.

The difficulty of maintaining in time of war the communications between the Eastern and Western divisions of the province is an additional reason for the construction of fortified places, as the troops acting in the West should be rendered independent of the precarious supplies from the Eastern or Lower Province, from which they are liable to be cut off.

Safety of naval establishments important.

Lastly, the safety of the naval establishments being an important consideration in the defence of Canada, it is necessary that works be thrown up for their protection.

Improvement of Quebec fortifications.

7. For these reasons, Your Commissioners recommend—
The improvement of the fortifications of Quebec.

Construction of works on vital points,

The construction of defensive works at certain points which will be hereafter described, both to guard the frontier, and for the safety of the navy, and

and of fortified places of arms in each district recommended.

The erection of fortified places in the several military districts, varying in extent and strength according to the power of assailing them possessed by the enemy, and to the importance of the locality in which they are situated. They should be on a sufficient scale to cover the magazines of arms, ammunition, and stores which each district should possess; to serve as rallying points for the Militia and other forces, and as bases of operations upon which the troops could retire, in case of being driven from the field.

Fortifications only recommended when absolutely necessary.

8. Admitting the necessity, as pointed out by Your Majesty's Secretary of State for War, of keeping the number of fortified places as small as possible, Your Commissioners have only proposed their construction at points where they are absolutely required, and where, from strategic reasons, they will be most valuable.

9. Your Commissioners have also, in accordance with their instructions, turned their attention to defensive positions which they propose should be entrenched, and in which the troops could be formed to offer battle to an invading force; they will be found described under the headings of the several military districts.

Defensive positions examined and reported upon.

The extent of the positions selected has generally been governed by the supposition that from 15,000 to 20,000 men would be available in each district on the outbreak of hostilities.

10. Your Commissioners, being convinced that the success of the military operations undertaken for the defence of Canada must depend on the naval supremacy on the lakes, strongly urge the absolute necessity of establishing that supremacy at the earliest moment after a declaration of war.

Success of military operations dependent upon naval supremacy in the lakes.

They are aware that by existing treaties no fleets can be maintained in the lakes in time of peace, but they recommend, as soon as the canal communications shall have been improved, as hereafter proposed, that iron-plated vessels, with all the armament and stores necessary, should be kept in readiness at Ottawa, or other convenient place not affected by the stipulations of the treaty, whence they could be taken into Lakes Ontario and Erie.

Iron plated vessels should be kept ready ;

During the progress of any negotiations likely to end in war, these vessels, without any breach of treaty or faith, could assemble at Gananoqui, below Kingston, for the purpose of passing into the lakes immediately war was proclaimed.

and passed up St. Lawrence as far as treaty will allow, if war is pending.

11. A portion of the St. Lawrence canals not being available after the actual commencement of hostilities, the enlargement of the Ottawa, Rideau, and Welland Canals, to an extent that will enable armoured vessels to pass through them, becomes an essential requirement in the defence of Canada.

Enlargement of Ottawa, Rideau, and Welland Canals essential.

Your Commissioners have been informed that no definite dimensions for this class of vessel, adapted for warfare on the lakes, has yet been determined on by the Admiralty, and are consequently unable to state the size the locks should be made.

12. Your Commissioners further recommend, that suitable establishments for building and repairing ships of war should be provided.

Naval establishments should be provided in each lake.

They have visited the various harbours on the lakes which may be available for ports of rendezvous, or harbours of refuge, and a list of these will be found in Appendix No. 17.

Appendix 17.

13. They recommend also that measures be adopted for raising and training naval volunteers.

Naval Volunteers should be raised.

14. In accordance with their instructions, Your Commissioners have directed their attention to the modes of attack on the province of Canada from the United States.

They are five in number, viz. :—

1st. By a naval descent on the shores of Lake Huron, at Goderich or Collingwood.

Probable modes of attack by invading forces.

2ndly. By the passage of a force across the Detroit River into the London district.

3rdly. By the passage of a force across the Niagara frontier.

4thly. By the passage of troops across the St. Lawrence from Ogdensburgh.

5thly. By several columns acting in concert between Derby Line and Huntingdon, with a view of converging on Montreal, and cutting the communication with Kingston, as well as with Quebec.

These are independent of any descents that might be made on the shores of Lake Erie and Ontario, the protection of which must be left to the navy.

Enemy will aim at causing dispersion of defending forces.

15. The probable plan of the enemy would be to place corps on all these assailable points, to oblige a dispersion of the troops along the whole frontier, turning these feints into positive attacks, if circumstances rendered it advisable.

Main attack probably by Lake Champlain, in order to take Montreal.

The main attack would undoubtedly be directed from the head of Lake Champlain on Montreal, as, by the possession of Rouse's Point, the enemy are enabled to turn the line of the Richelieu; and the capture of the important city of Montreal would sever the communications between Quebec and the upper province, and would paralyze the defence of the country.

Frontier assailable nearly everywhere.

16. The great length of the frontier renders it necessary that the troops be distributed to a certain extent, as it is assailable at almost any point; but Your Commissioners, without wishing to trespass upon the province of the General Commanding the Forces at the time being, strongly urge the necessity of a concentration of troops on important strategic points, from whence they could be thrown in masses upon the enemy, or where they could await the development of his plans; and as it is impossible to prevent a violation of the frontier, or even to afford a partial support to all points that may be threatened, they recommend that detachments should be limited as much as possible to the occupation of fortified places.

Troops should be concentrated.

Protection of Canals and Railways.

17. The protection of the canals and railways is reported on in the various districts in which they are situated.

Division of province into military districts. Plan No. 1.

18. At the end of last year the province was divided into five military districts, viz. :—

- 1st, or London District.
- 2nd, or Toronto „
- 3rd, or Kingston „
- 4th, or Montreal „
- 5th, or Quebec „

These divisions, as shown in the map attached, have been adopted by Your Commissioners, who will now proceed to consider the works of defence, and the military operations that will be necessary in each.

London District.

London District. Plans Nos. 1 and 2.

19. The London, or 1st Military District, is situated on the great peninsula between Lakes Huron and Erie, and is one of the richest and most populous portions of the province.

It is assailable on three sides, viz. :—

Avenues of attack.

- 1st. On the shores of Lake Huron.
- 2ndly. On the St. Clair and Detroit frontiers.
- 3rdly. On the shores of Lake Erie.

Frontier points to be defended. Plan No. 2.

20. The points on the frontier of this district at which Your Commissioners have considered it necessary that some defence should be provided, are, Goderich, Sarnia, Amherstburgh, and Port Stanley, being places at which a landing would probably be effected, and from which roads and railways lead into the interior of the country.

Goderich. Plan No. 4.

21. Goderich is situated at the northern end of the Buffalo and Lake Huron Railway, and also of the good gravelled roads leading to London and Guelph. There is a small harbour, which is likely to be improved, and a good beach for landing, though of limited extent,

both of which would afford great facilities for the disembarkation of hostile force, if unopposed.

As, for the reasons stated in paragraph 115, Your Commissioners do not consider that the navy will at present be available for the defence of any of the ports in Lake Huron, it becomes necessary that works be constructed to prevent a landing, and to deny the use of the harbour to the enemy; they do not, however, recommend the construction of any permanent or extensive works at this point; but, in the event of hostilities, the ground, which offers great facilities for defence, should be occupied by earthen batteries on the sites shown on the accompanying plan—No. 4.

Works to be thrown up in time of war.

These sites should be acquired by the Government without loss of time.

Land to be secured at once.

Your Commissioners do not think it probable that any landing would be made to the north of Goderich, unless it be at Sydenham, as the country there is but sparsely settled—the roads indifferent, and so long a period would elapse before the enemy could occupy any decisive point, that ample time would be given to organise the means of resistance.

From Sydenham one good road leads to Guelph, and in case of war, this point should be protected by earthworks, for the construction of which the ground is favourable.

Sydenham.
Batteries to be thrown up in event of war.

Port Bayfield, about twelve miles south of Goderich, is not capable, in its present state, of affording shelter to vessels; but the beach is favourable for disembarking a hostile force, and two good roads lead from it to the interior; one by Goderich, the other crossing the Goderich and Guelph road at Seaforth. Your Commissioners do not recommend any defensive works here, but it should be carefully watched, as a small force landed at this point might easily cut off the railway communication between Goderich and London.

Port Bayfield.
To be watched.

22. The importance of Sarnia consists not so much in its offering facilities for the disembarkation of a hostile force on the shore of the lake, or from the St. Clair river, as in offering a site for works to close the navigation of that river, and so to cut off the communication between the Western Lakes and Lake Erie, which in time of war would be an object of primary importance.

Sarnia.
Important point.
Plan No. 5.

A work at Point Edward would cover the extremity of the Grand Trunk Railway, and also indirectly that of the Great Western, the terminus of which is on the river bank, about a mile and a half below Point Edward. This point is vulnerable, as an invading force landing here, with the object of attacking London, would turn the works at Chatham.

The breadth of the river here is about 800 feet; either shore is therefore under point blank range of field artillery from the opposite bank.

It is to be presumed that the Government of the United States is fully alive to the great importance to be attached to the navigation of the St. Clair River, and that after a declaration of war, they would in all probability attempt to seize upon Point Edward, in order to ensure this advantage, and also that they would oppose the construction of works at that point, even if it should be occupied by a force sufficient to prevent their seizing it. Earthworks, moreover, could neither be thrown up or maintained, if opposed by heavy rifled ordnance, at so short a range.

Your Commissioners, therefore, strongly recommend the erection, with as little delay as possible, of a regular casemated work, to mount twenty guns, and with peace accommodation for 500 men.

Permanent work on Point Edward for 20 guns, and accommodation for 500 men recommended.

There is a military reserve of land at this point, which would be sufficient for the work contemplated.

The United States, it must be expected, would construct a similar work, but that would only have the effect of closing the channel to both parties. At present they have no work there, Fort Gratiot having been removed.

River and Lake St. Clair to be defended by gunboats.

23. No further defences for the River and Lake St. Clair are recommended than may be afforded by a few gunboats, which should be put together at Chatham, on the Thames, between which place and the lake, the river is navigable to vessels drawing $8\frac{1}{2}$ feet of water.

Mouth of Thames River to be protected in time of war.

In the event of war, the mouth of the Thames must be protected by batteries thrown up at the time.

Windsor.
No works recommended.

24. Your Commissioners do not recommend any works at Windsor, the terminus of the Great Western Railway. Being immediately opposite the large and populous town of Detroit, defences of considerable strength would be necessary, and the position offers no strategic advantage to compensate for such an outlay; moreover, it could be turned by troops effecting a landing either on the shores of Lake St. Clair, or between Windsor and Amherstburgh.

Amherstburgh.
Plan No. 6.

25. Amherstburgh, situated at the junction of the Detroit River with Lake Erie, completely commands the best and most frequented channel. There is another channel available for steamers on the United States side of Grosse Isle, which would in no way be interfered with by any works at Amherstburgh; but Your Commissioners attach considerable importance to the construction of works at this place, to deny the enemy the use of the harbour, which is the best at the western end of Lake Erie. It is, however, liable to be shelled from islands within a distance of 3,000 yards, a circumstance which might interfere with its security for naval purposes.

Permanent works recommended at Fort Malden and Bois Blanc Island.

It is recommended that enclosed works should be erected on the site of Fort Malden and on Bois Blanc Island. Fort Malden should be a permanent work, capable of resisting a regular attack, to which, doubtless, it would be exposed.

It is much to be regretted that the site of Fort Malden should have been selected for a lunatic asylum.

Port Stanley.

26. Port Stanley is the port of London, from which it is distant 26 miles, but connected with it by a railway and good turnpike road. At this point communication with the fleet on Lake Erie could most easily be maintained, and it should be protected by earthen works, for which the ground offers good sites on both sides of the creek. These should be thrown up when required.

Earthen works recommended on declaration of war.

The garrison of London would supply the troops necessary for the defence of Port Stanley, and, in the event of an attack, they could readily be supported.

Strategic points in district.

27. The interior strategic points of the London District are Chatham, London, St. Mary's, Stratford, Paris, and Guelph.

Chatham.
Works to be thrown up in event of war.

28. Chatham (situated on the River Thames, where it has before been stated that vessels may be put together for the defence of Lake St. Clair, and being on the direct approach, both by road or railway, from the Detroit frontier) is an important position to be held in advance, and should be protected by works to be thrown up in front of the town in case of war.

London.
Important strategic point.

29. London, the capital of the district, and the centre of the railway system, is a strategic point of the highest importance; but, unfortunately, there is no site in the neighbourhood adapted for the principal fortress of the district, nor is the ground favourable for the formation of a large entrenched camp. It is recommended, however, that the troops should first be assembled there, and should defend the positions selected to cover the approaches to the town, as long as they could safely be maintained.

Troops to be assembled there.

To oppose the advance of an enemy either by Sarnia or Chatham, by the lines of the Great Western Railway or main roads, one position, but of no strength, may be found between Komoka and the high ground behind Delaware. The length, about six miles, is much

Position at Komoka.

greater than is desirable, and the army would be divided by the Thames, which, although fordable in summer, would be a formidable obstacle in spring or autumn, and would require to be well bridged.

There are two other places in the vicinity of London which offer moderately good sites for defensive positions, one at St. John's, about six miles to the north of the town, which would cover the communication with St. Mary's, Stratford, and Guelph; the other about two miles south of London, where the road from St. Thomas and Port Stanley is crossed by the road to Delaware.

Position at St. John's,
6 miles north of London.

Position at Cross Roads,
2 miles south of London.

30. At St. Mary's, at the junction of the Grand Trunk line from Sarnia to Guelph, with a branch line from London to Stratford, an excellent defensive position can be obtained on the east bank of the Thames, in case it should be necessary to oppose an attempt to advance from Sarnia at this point.

St. Mary's.

Position on east bank of
Thames.

31. Stratford, at the intersection of the Buffalo and Lake Huron and Grand Trunk Railways, is a point at which it would have been desirable to have thrown up an entrenched position, where the army might offer battle, if necessary, to an enemy advancing either from Goderich or St. Mary's upon Guelph; but, on examination of the ground, it was found that it possessed no natural advantages for this purpose.

Stratford.

Ground unfavourable.

32. Paris is a point of considerable importance, as here the Buffalo and Lake Huron Railway intersects the Great Western, and the "Governor's road," from Hamilton to London, crosses the Grand River.

Paris.

Temporary works should be thrown up at a time of war, to serve as an "appui" for a defensive position. The best ground for this purpose is on the west or right bank of the Grand River, but it has the disadvantage of being divided by the "Canning Creek" (a stream of no great importance, but possessing steep and broken banks), and also of having the Grand River in rear of the position.

Position on right bank
of Grand River.

The Grand River is fordable below the dam at the Buffalo and Lake Huron Railway bridge, and, by breaking the dam, the river above it would also become fordable; the right bank, however, is high and rugged, and only passable for infantry.

There are three good bridges available for the passage of other arms, one at the town and two railway viaducts; the Buffalo and Lake Huron, close to the town; the Great Western, about a mile to the north of it.

The left of the position would rest on the high ground between the junction of the Canning Creek and the Grand River, and immediately covering the bridge. The "Governor's road" from Hamilton to London runs under the crest of the height.

The right flank extending beyond the Great Western Railway would be "en l'air," and would require strengthening by redoubts. Redoubts should also be constructed at the railway cutting, about half a mile to the right-rear of the position, to serve as a "tête-du-pont" for the viaduct over the Grand River.

Redoubts to support right
flank of position.

Redoubts as "tête-du-
pont" for viaduct.

This position is undoubtedly of very great importance, but it is incapable of any protracted defence, both from the faulty nature of the ground, as already pointed out, and from the fact that it could be turned by an enemy moving from London by either Brantford or Galt, and thus threatening the communication of the defending force with either Hamilton or Guelph.

33. Your Commissioners visited Brantford, on the Buffalo and Lake Huron Railway and on the Grand River, which is here not navigable. A canal constructed some years ago, with a view of rendering it so, is now in disuse.

Brantford.

The place is not of sufficient importance to require any works; and the only ground adapted for a defensive position is immediately

Position could not be
occupied advantageously.

behind (to the north of) the town, the approach to which is so masked by buildings that it could not be occupied advantageously.

Guelph.
Plans No. 2 and 7.

Important strategic
point.

34. Guelph, situated on the River Speed, is a station on the Grand Trunk Railway, at the junction of a branch line of the Great Western from Harrisburgh by Galt and Preston. The gravelled roads from Toronto to Goderich, and from Hamilton to Sydenham on the Georgian Bay, also meet here. It is, consequently, a strategic point of the first importance, and is the place of concentration for troops retiring from London, or from the Niagara frontier, if the retreat on Toronto should be menaced.

If occupied in force, it could not be passed with impunity by any invading army.

It is situated in a rich, well-settled country, offering great resources in men and supplies.

Site for place of arms and
defensive position.

An admirable site for a place of arms and defensive position is to be found on the ground rising between the railway and the Speed River, with the river running at its base; and on the opposite side of the stream is a hill, which affords a good position for an advanced work to cover the bridges, and to command the approaches from the west and south-west.

For these reasons Your Commissioners would strongly recommend that Guelph be selected as the site for a permanent fortress and place of arms for the London District.

Ground to be acquired
without delay.

The sites of the proposed Works are shown on Plan No. 7.

Ground necessary for their construction should be immediately acquired.

Interior line of commu-
nication between Guelph
and Ottawa.

35. A good military road, affording an interior line of communication, should be constructed from Guelph to Ottawa, passing to the north of Toronto by Newmarket, Peterborough, and Perth. Parts of existing roads will be found available for this purpose.

36. The accompanying tabular statement shows the works proposed in the London District, with an approximate estimate of the expense:—

Permanent works pro-
posed in London District.

PERMANENT WORKS.

		Guns.	Men.	Expense.	Total Expense.
				£	£
Sarnia	Point Edward	20	500	40,000	65,000
Amherstburgh	Bois Blanc Island	20	300		
	Fort Malden	20	500		
Guelph	Fortified place of arms	50	1,000	150,000	
Total .. ..		..	..	..	£255,000

Temporary works pro-
posed in London District.

WORKS TO BE THROWN UP IN EVENT OF WAR.

		Guns.	Men. Temporary Accommodation.	Expense.	Total Expense.
Brought forward .. ..		..	..	..	£255,000
Goderich	North side of harbour ..	10	150		300
	South do.	10	150		
Port Stanley	West side of harbour ..	10			
	East do.	10			
Thames River ..	Mouth of river	10	150		
Sydenham .. ..	.. ..	10	150		
Expense of land at Guelph and at four last-named places				£15,000	
Entrenched positions at Chatham, London, and Paris, according to nature of ground and probable approaches of the enemy .. ..				..	£270,000
Number of Troops for London District .. ..				..	15,000 men.

Toronto District.

37. The second, or Toronto District, embraces several towns of importance, and includes the whole of the Niagara peninsula, one of the most fertile and thickly-peopled portions of the country, and which, in former wars, was the scene of frequent military operations.

Toronto District.
Plans Nos. 1 and 2.

It is assailable—

- 1st. On the shores of Lake Erie.
- 2ndly. Across the Niagara River.
- 3rdly. On the shores of Lake Ontario.
- 4thly. At Collingwood, on the Georgian Bay.

Avenues of attack.

38. The principal defence of this district from attack from Lakes Ontario and Erie must depend on the maintenance of naval superiority in these lakes, to secure which must be the chief object of all defensive arrangements.

Defence of territory depends upon naval superiority.

39. The defence of the Niagara frontier must be considered chiefly as it affects the Welland Canal, the security of which is essential to the trade and commerce of Canada, as well as to naval operations on the lakes.

Niagara frontier.
Plan No. 8.

This canal is 27 miles in length from Port Dalhousie, on Lakes Ontario, to Port Colborne, on Lake Erie, and runs nearly parallel to the Niagara River, at a distance of about 10 miles. It is at present supplied with water from the Grand River, at Dunville, by means of a navigable feeder 21 miles in length, reaching the Welland at "The Junction," 7 miles from Port Colborne; but operations are now in progress to deepen the canal, and feed it from Lake Erie.

Importance of Welland Canal.

The locks on the main canal, 27 in number, will allow vessels 140 feet in length, 26 feet in breadth, and drawing 10 feet of water, to pass; but it is more than doubtful if armour-plated vessels will be able to pass through them, owing to the great beam that will probably be required. If this be the case, the value of the canal will be greatly reduced for war purposes; but it will still be of the utmost consequence that it should be protected.

The canal is exposed to the risk of being damaged or destroyed by the larger operations of war, both by land and water; that is, the entrance to it from either lake might be taken possession of by the enemy's fleet, or the land forces might attempt to seize it, and either maintain the canal in an efficient state, in order to secure a shorter communication than they now possess between the lakes, or destroy it, with the view of interrupting the communication between the British squadrons.

The canal might also be damaged or destroyed by artifice, by the employment of a few desperate men to injure the locks and banks at certain points.

A letter from Mr. Woodruff, superintendent of the canal, giving a detailed description of it, and specifying the points where it can be most easily destroyed, will be found in the Appendix.

Appendix No. 15.

40. It is necessary to establish permanent works at Port Dalhousie and at Port Colborne both for the protection of the canal and of the vessels that would co-operate in its defence.

Ports Dalhousie and Colborne to be defended by permanent works.

41. At Port Dalhousie, a work mounting 15 guns, and capable of containing a garrison of 300 men, should be constructed on the high ground to the east of the entrance. The nature of this work should be such as to render it secure against an attack either by sea or land, and it should be armed with guns of the heaviest calibre, commanding the entrance to the harbour, and the lake shore to the eastward.

Port Dalhousie.
Permanent work on east of entrance.

Guns should also be mounted on the land front, or in an outwork overlooking the ravine to the south, to cover the junction of the roads from Niagara and St. Catherine's.

Temporary works on west of entrance.

A battery should be erected on the west bank, and armed in the event of hostilities, to give a cross fire in front of the entrance of the harbour.

Iron shield to protect the lock gates.

Sites for these works should at once be secured.

A floating iron shield is recommended to protect the gates of the first lock from artillery fire from the lake.

Port Colborne.

42. At Port Colborne, the nature of the soil (a loose and shifting sand) renders the construction of permanent works on shore difficult and expensive; but considering the importance of this point, it is recommended that an iron, or an iron-faced tower, mounting 10 guns, be placed on the ledge of rocks to the east of the entrance.

Iron or iron-faced tower east of entrance.

The lock gates here do not require any protection, as they are situated at some distance from the lake.

Dunnville.
Plan No. 2.

43. The security of the dam at Dunnville, by which the water of the Grand River is raised to supply the canal, is at present an important consideration, and in the event of war breaking out before the works above referred to for obtaining the supply of water from Lake Erie are completed, earthen batteries must be thrown up for its protection.

Dam to be protected by earthworks.

Works at Dunnville and Port Maitland to be permanent, to protect dockyard.
Surveys required.

The defence of this point, and of Port Maitland, in the event of the naval establishment for Lake Erie being placed there, as recommended in paragraph 113, will have to be carefully considered, and accurate surveys must previously be made.

Protection of Welland Canal by local organization.

44. The protection of the general line of the canal against artifice or predatory attacks would have to be effected by means of a local organization of those employed on it as police, commanded by their own immediate superiors, and assisted by Volunteers from the several villages in the neighbourhood.

Military measures will be necessary to defend the canal from attacks by large bodies of the enemy, whether directed by the passage of the Niagara river or by a disembarkation on the shores of the lake.

45. Should British naval supremacy be maintained on the lakes, the latter operations would be impossible; it remains, therefore, to consider the passage of the Niagara river.

Passage of Niagara river.

This can be effected anywhere between Fort Erie and the mouth of the Chippewa Creek, and at several places between Queenston and Fort Mississauga. In order, therefore, to render this assailable frontier as secure as possible, a permanent work should be constructed at Fort Erie, on the site of the old fort; for if this were not done, that point would be immediately seized by the enemy, who would then have possession of both banks, closing the mouth of the river, and obtaining an excellent harbour. This work should have 20 guns, and afford accommodation for 500 men.

Permanent work at Fort Erie.

Battery opposite black rock.
Ground to be acquired.

A site for a battery should be secured opposite Black Rock, to command the channel, and to prevent boats passing down from Buffalo to assist in throwing troops across by Navy Island.

Permanent work at Niagara town.

Fort Mississauga should be removed, and a respectable work, mounting 20 heavy guns, with accommodation for 500 men, erected on its site.

Entrenched camp and temporary batteries on Queenston Heights.

An entrenched camp, embracing sites for batteries, to command the crossing between Queenston and Lewiston, should also be marked out on Queenston Heights, for a corps of observation of 3,000 or 4,000 men, who would be ready to oppose any landing attempted at the Chippewa or below Queenston.

Gunboats on Chippewa River, and temporary batteries at mouth of river.

Gunboats on the Chippewa, into which river they might be passed from the Welland Canal, would be an important auxiliary in the

defence of the frontier at that point, assisted by batteries on the north side of the river mouth.

46. The destruction of the suspension bridges at Niagara and Queenston is essential, and should be effected, on the declaration of war, without hesitation. Destruction of suspension bridges.

47. The central place of arms for this district should be established at the "Short Hills," on the site recommended by the commission which reported on the defence of the province in 1825. From this point, which is close to the Great Western Railway, and only four miles distant from the Welland Canal, there are good roads in all directions. Place of arms for district at "Short Hills."
Plan No. 8.

The description and extent of the defences here require careful consideration.

Your Commissioners recommend the construction of a "Keep" on the highest point of the hill, with a circle of outworks on the subordinate ridges; the citadel or keep to be from the first of a permanent character, with bomb-proof cover for the defenders, and for the stores of the district; the outer line to be constructed as field-works, but capable of being strengthened, or even rendered permanent, if desired. Permanent keep to be constructed.
Outworks temporary, but capable of being made permanent.

48. A position might also be occupied at Thorold, on the west bank of the canal, extending as far as the Beaver-Dam Bridge, with a strong corps of observation entrenched as previously stated on Queenston Heights. The advantage of this position is, that, independent of its natural strength, and assuming that about 10,000 men would be collected, a large force would be required to attack it. The time necessary for the passage of such a force across the Niagara River would prevent a surprise, and the central position occupied would enable the troops to move to any part where it might be desirable either to accept battle or to oppose the passage of the canal; and, if defeated, the army would still possess the power of retiring on its fortress at the "Short Hills." Thorold.
Entrenched position in rear of canal.

49. The defence of Hamilton from an attack by an invading force will depend in a great measure upon the operations undertaken for the defence of the Welland Canal. In case of the loss of British naval supremacy on Lake Ontario, any defences at Hamilton would be turned by troops effecting a landing between Burlington Bay and Toronto, and the retreat on that place by the Grand Trunk Railway and Lake Shore Road would be cut off. It is therefore not proposed to erect any works of a defensive nature at Hamilton, with a view of opposing a land attack. Hamilton.
Plan No. 9.

Your Commissioners consider it necessary, however, that the entrance to Burlington Bay should be protected, so that a refuge might be afforded to the fleet, if driven in by superior force. For this purpose, a tower faced with iron to seaward, and mounting six heavy guns, placed on the spit north of the channel, would be the best defence, in conjunction with a boom thrown across the entrance, in case of an expected attack; or, should defence be required, before time had elapsed sufficient for the erection of a tower, a floating iron battery might be improvised at Hamilton or Toronto, and moored near the extremity of the piers. Entrance to Burlington Bay to be protected by iron tower and boom.
Floating iron battery, if necessary.

50. There are two defensive positions near Hamilton. Position south-west of Hamilton.
The first of these, on the high ridge to the south-west of the town, extends from the high Queenston Road to the Albion Mills, a distance of about two miles, and possesses advantages for offering battle to any invading force that may have succeeded in passing the Place of Arms on the "Short Hills."

The number of troops required to occupy this ground thoroughly would be about 15,000 men.

It is unassailable in front by a direct attack, as the hill has a natural escarpment of about 80 or 100 feet in height. It might be attacked on both flanks—on the right by the road leading from Thorold, which crosses the position at Albion Mills, and on the left, by the line of railway between the left extremity of the heights and the lake shore.

Redoubts required on each flank of position.

On the right, there is a good position for a redoubt, which would command all the approaches to that flank, and would provide a powerful *appui* for it. On the left, a redoubt would have to be constructed on the low ground between the heights and the lake; this, in conjunction with gunboats on the lake, and in Burlington Bay, would prevent the enemy using the railway as a marching road, and would add materially to the strength of the left of the position.

Batteries on the spurs of the ridge to flank position.

In addition to these redoubts, which need only be thrown up when necessity arises, batteries should be constructed on the various spurs of the ridge, to command the roads, and to flank the front of the position.

This position covers Ancaster and Hamilton, on both of which places there are secure lines of retreat.

Position at Burlington Heights.

51. The second position alluded to is across the neck of land separating the swamp called "Coote's Paradise" from the head of Burlington Bay, about a quarter of a mile in extent, and known as "Burlington Heights;" 3,000 men could hold this position, but it could be turned by Ancaster and Dundas, and there is only one line of retreat, which, if cut off by the enemy, would necessitate the surrender of any force occupying it.

Harbours on Lake Erie.

52. Your Commissioners further inspected the various harbours on the shores of Lake Erie, in this and the London district, viz., Port Dover, Port Bruce, Port Burwill, Port Ryerse, &c. They are all small, and of no great importance on naval or military considerations, further than offering points of disembarkation for an enemy's force. It is, however, impossible to attempt to bar the whole coast to an enemy, as the works would be necessarily small, and would be overpowered by superior numbers at any point.

To be protected by Volunteer Artillery and temporary batteries.

In order, however, to give some protection against piratical attacks, and to encourage the formation of Volunteer artillery, your Commissioners recommend that at all ports where a company of Volunteer artillery may be raised, an earthen battery with magazine and store should be constructed and armed, the size of the battery to depend upon the number of men that may be enrolled, and upon the importance of the place.

Collingwood. Bad harbour; No permanent works recommended.

53. The harbour of Collingwood, on the Georgian Bay, being at the terminus of the Northern Railway to Toronto, may be of importance in a military point of view; but it is small, foul, and exposed, and ill adapted for defence.

Earthworks thrown up in event of war, manned by Volunteers.

It is not recommended that any permanent works be constructed here; but a battery to resist desultory attacks, and to be manned by Volunteers, might be thrown up.

Position covering Toronto on the approach from Collingwood.

54. In the event of a landing by a hostile force at Collingwood, a good position covering Toronto is to be found behind the Holland River, with its front and right protected by Lake Simcoe, and by Holland and Bradford marshes, and its left resting on the high land above Brownville and Lloydtown. The right flank could not be turned, and there are good lines of retreat upon Toronto and Kingston.

Toronto. Whole town cannot be defended by works.

55. The importance of the city of Toronto renders it necessary that some defensive measures be adopted there; but the extent of the town, the exposed nature of the site, and the absence of any com-

manding ground in its vicinity, renders it impossible to suggest any defences that could give equal protection to all parts.

The defences now existing consist of an old earthwork, containing two blockhouses and other wooden buildings, situated at the western extremity of the town. An earthen battery for six 68-pounder guns has been recently constructed on the lake face of this work, to command the western entrance of the harbour. An open earthwork for two guns has also been thrown up, about 1,000 yards farther west, for the same object.

Toronto. Existing defences.

The "New Barracks" are of stone, surrounded by a weak palisading on the three land sides, but entirely open to the lake, and cannot be considered of any importance in a defensive point of view.

56. The harbour is now in process of alteration from natural causes, and will in a few years, unless measures are taken to prevent it, be utterly ruined—a breach, now continually increasing, having been formed in the spit of sand which originally enclosed the harbour.

Toronto harbour.

If this entrance or breach is ever confined to certain limits, Toronto harbour will be very valuable in case of naval operations, and should be protected by erecting batteries on each side of the new entrance, or by floating batteries, as well as by a battery on the site of the one already mentioned as lately constructed for the protection of the western entrance; but, if this breach is not so confined, Toronto harbour cannot be considered of sufficient importance to require any military defence.

If lately formed breach confined to certain limits defensive works required or floating batteries.

57. The old fort is now surrounded by buildings connected with the railway, and should be removed. The two-gun battery to the west of it should also be dismantled.

Old fort and two-gun battery to be removed.

A regular work, capable of containing the magazines and stores necessary for this portion of the country, and to afford a place of deposit for the valuables of the city, as well as to protect the town from insult by predatory bands, should be erected on the site of the New Barracks, the buildings of which could be, to a certain extent, utilized for the purpose.

Permanent work required on site of New Barracks.

58. Port Hope is a point of considerable importance. The harbour admits vessels drawing 10 feet of water. The Grand Trunk Railway crosses the valley at the head of the harbour by a large viaduct, which it would be necessary to protect in case of war, and the terminus of the Peterborough Railway is in the town.

Port Hope.

The country in the vicinity, and for some miles to the north of it, is rich and highly cultivated, and great resources could be drawn from it.

In the event of war, it will therefore be desirable to erect defensive works here. The banks of the lake on each side of the harbour are high, and afford good sites for batteries, and a work to mount twelve guns should be projected, to occupy the high ground to the west of the town.

Temporary works.

These sites should be acquired without delay.

Sites should be acquired.

59. The accompanying tabular statement shows the works proposed for the defence of the Toronto district, with an approximate estimate of the expense.

PERMANENT WORKS.

Permanent works proposed in Toronto District.

		Guns.	Barrack Accommodation.	Expense.	Total Expense.
				£	£
Niagara Frontier and Welland Canal.	Fort Erie	20	500	40,000	
	Fort Mississagua	20	500	35,000	
	Port Dalhousie	15	300	30,000	
	Port Colborne	10	200	20,000	
	Place of arms "Short Hills," (including expense of land)	50	1,000	150,000	
Hamilton	Burlington Bay	6	100	15,000	
Toronto	Site of new Barracks	25	500	40,000	
		146	3,100		350,000
Dunville and Port Maitland.	If dockyard is established here, further survey is required, in order to adapt defensive works for protection of Naval establishments, but expense may be roughly estimated at ..			200,000	
				£	550,000

WORKS TO BE THROWN UP IN THE EVENT OF HOSTILITIES.

Temporary works proposed in Toronto District.

		Guns.	Barrack Accommodation.	Expense.	Total Expense.
				£	£
Niagara River	Opposite Black Rock ..	5	100	1,000	
Collingwood ..	Entrance to harbour ..	10	150	See remarks in Par. 52 relative to batteries to be constructed when companies of Volunteer Artillery have been raised.	
Sydenham ..	Do. do. ..	10	150		
Port Hope ..	Batteries at entrance, and work on ground above	20	400		
Entrenched positions on Queenston Heights, at Thorold, in front of Hamilton, and to cover Toronto near the Holland River.				..	£551,000

Garrison for Toronto district, 17,000 men, the greater number of whom would be encamped in time of war.

*Kingston District.*Kingston District.
Plans Nos. 1 and 2.

60. The third, or Kingston District, embraces the country to the north of the shore of Lake Ontario and the St. Lawrence, bounded to the east and west by lines drawn due north from Morrisburgh and Port Hope.

Port Cobourg.

61. Port Cobourg, and the other ports on Lake Ontario, west of the Bay of Quinté, in this district, are not of sufficient importance to require any defensive works, further than earthen batteries manned by Volunteers, to protect them against piratical or desultory attacks.

Kingston.
Plan No. 10.

62. The importance hitherto attached to Kingston has been mainly owing to the existence there of a naval establishment, and its being the mouth of the Rideau Canal. Extensive works have been erected at various times, with a view of protecting these important interests.

Existing defences.

The defences of Kingston at present consist of the Murney and Shoal Towers and the Market Battery on the western side, and Cedar Tower, Forts Henry and Frederick, and their towers, on the eastern. The towers are of solid masonry, generally three storeys high, and flanked by loop-holed caponiers.

Fort Henry is an irregular hexagonal casemated work, flanked by one caponier and two counterscarp galleries, with a lunette with casemated flanks on its south-west front, and branch ditches terminating at the water's edge on the east and west fronts.

Fort Frederick consists of two bastioned fronts, closed by a loop-holed wall, with a three-storied tower in the centre.

The Market Battery is a simple masonry battery, with a loop-holed gorge wall.

Ninety-four pieces of artillery form the armament of these works.

They all require considerable alteration and modification, as well as an entire revision of their armament, in order to give more protection to the objects they are intended to preserve.

Existing defences at Kingston require alteration and revision of armament.

63. The situation of the dockyard (see Plan No. 10) is very objectionable, inasmuch as it is completely exposed to bombardment from Wolfe and Garden Islands, as well as from the roadstead, at ranges varying from 4,000 to 5,000 yards. It could also be shelled from the ground to the east of Fort Henry, should a landing have been effected between Kingston and Ganonoqui, or from the western shore of the harbour, if a landing were made in Collins Bay. At neither of these points is there anything to prevent a disembarcation.

Situation of dockyard objectionable.

The works necessary for the protection of a dockyard so situated, or even if it were moved higher up the River Cataraqui, would require such enormous development, together with so strong a garrison, as to render such a scheme inadvisable.

Omitting the consideration of erecting works on the islands before mentioned, those considered necessary on the main land would extend over a space of 10 miles, requiring a garrison of at least 20,000 men.

Your Commissioners, therefore, recommend that the naval establishments be moved from Kingston to some more easily defended locality.

Removal of Naval establishments recommended.

As no docks or buildings of importance exist, the alteration of the site will not involve any additional expenditure.

64. The Bay of Quinté affords a most excellent position for a dockyard, for which there are apparently many suitable localities; but in the absence of any detailed survey of this part of the lake, your Commissioners cannot venture to define the best spot for the purpose.

Bay of Quinté.
Site for dockyard.

Belleville, on the River Moira, down which some of the best timber in the province is rafted, having ironworks in the immediate neighbourhood, and in direct communication by rail with the Rideau Canal, would seem to be an excellent site, if it is found from the necessary survey that the depth of water is, as there is reason to believe, sufficient.

Belleville.

Seems to possess great advantages.

The establishments, if placed here, could not be shelled from the lake; they could only be attacked by an enemy undertaking the larger operations of war, and effecting a disembarcation on the mainland, or on the peninsula of Prince Edward. This would be attended with great hazard, and would hardly be attempted unless the invader had the complete mastery of the lake.

The approaches to Belleville, or any other port in the Bay of Quinté, could be easily closed to the enemy by the erection of batteries at Long Reach, and at the narrow part of the channel.

Approaches easily closed by batteries.

65. The mouth of the Rideau Canal at "Kingston Mills," four miles north of Kingston, is well adapted for defence; and as the Grand Trunk Railway crosses the canal here by a viaduct, works should be thrown up, in the event of war, for the protection of this point.

Kingston Mills.
Mouth of Rideau Canal and railway viaduct to be protected by temporary works, manned from Kingston.

The defence of these works must depend on the garrison of Kingston. It is not probable they would be subjected to any but a desultory attack, as the passage of a force sufficient to keep that

garrison in check would be a large operation, and could not be undertaken while the fleet was able to keep the lake.

St. Lawrence, between Kingston and Prescott, to be protected by gunboats, and force at Prescott.

66. The St. Lawrence, between Kingston and Prescott, is exposed at so many points, that it would be useless to establish land batteries to oppose a crossing of the enemy.

As far as Tonowanda Creek, the navy from Kingston might prevent any attempt; below that, it must be opposed by the force at Prescott.

Brockville. Temporary batteries on islands near town.

67. Brockville is at the head of the railway to Perth, and is one of the approaches to the Rideau Canal from the United States.

The Grand Trunk Railway passes about a mile to the north of the place.

There are two islands in the river opposite the town, on which it would be advisable to construct batteries in time of war, to command the passage of the river. This post would be held in connexion with Prescott, 12 miles lower down.

Prescott.

68. Prescott is immediately opposite the town of Ogdensburgh, (in the State of New York,) which is the terminus of two railways, one from Rouse's Point, and the other from Sackett's Harbour. It is also in direct communication with Albany, and is a menacing point for Canada.

Of great importance.

Prescott is a place of great strategic importance, and it is at the head of the line of the St. Lawrence Canals, which commence a few miles lower down the river. It is on the Grand Trunk Railway, and only 25 miles distant from the Rideau Canal.

Permanent work.

The possession of this point by the enemy would sever the Upper and Lower divisions of the province, as the whole of the communications between the two could be controlled from it. It is therefore of great consequence that a strong permanent work, with casemated cover for its garrison, should be erected here, and that in time of war an entrenched camp for 5,000 men should be formed at a short distance back from the river, so as to be out of the reach of shells from the opposite side, but where the troops would be prepared to support the garrison of Prescott, or to oppose any attempt that might be made to land on the shore.

Entrenched camp.

The permanent work should mount 20 guns, and afford accommodation for 500 men.

Canals everywhere assailable.

69. The canals in this district extend for 10 miles, and are everywhere assailable; but if destroyed, the navigation of the river as far as the head of the Cornwall Canal would not necessarily be stopped, as powerful steamers can pass up and down all the rapids to that point.

Ottawa.

70. Your Commissioners visited Ottawa, the place selected for the capital of the province.

This city is in direct communication with Montreal and Kingston by canals, and with Prescott by railway; hence it is well situated for the assembly of reserve troops for the support of those places.

As it is, however, still in its infancy, and the seat of Government has not been transferred to it, your Commissioners propose that its defences should be left to be thrown up when required.

Defences to be planned for future construction.

The ground is favourable for a fortified position, and looking at the future of Ottawa, as the capital of a great country, and the centre of numerous canals, railways, and road communications, your Commissioners cannot but recommend, that in any scheme for the development of this city, the planning of defences of a permanent character should not be omitted.

71. The accompanying tabular statement shows the works proposed for the defence of the Kingston District, with an approximate estimate of the expense:—

PERMANENT WORKS.					Permanent works proposed in Kingston District.
		Guns.	Barrack Accommodation.	Expense.		Total Expense.
				£	£
Kingston ..	Additions to, and improvements of the present works	..	..	40,000	
Prescott ..		20	500	40,000	
Bay of Quinté	The expense of fortifying a new dockyard cannot be stated at less than .. .. .	..	..	200,000	£280,000

TEMPORARY WORKS IN TIME OF WAR.					Temporary works proposed in Kingston District.
		Guns.	Temporary Accommodation.		
Port Colbourg ..	.. .. .	5	100	
Kingston Mills	Mouth of Canal	12	500		
Brockville ..	Island in St. Lawrence ..	10	100		
Prescott ..	Entrenched camp .. ..	..	500	
Number of Troops for Kingston District					10,000 men.

Montreal District.

72. The fourth, or Montreal District, extends from the eastern boundary of the Kingston District to a line passing through Three Rivers from the north, to Richinond, Sherbrooke, and thence to the Boundary Line at Stanstead. Montreal District. Plans Nos. 1 and 3.

It is the principal district of the country, and the one on which the main attack of the enemy would certainly be directed.

73. The Cornwall Canal, which has been constructed to avoid the Long Sault Rapids, is of great importance, and in the event of hostilities occurring before the enlargement of the Ottawa and Rideau Canals, works should be erected at both its extremities, to protect the locks. It is also assailable near its centre from Barnhardt's Island, which belongs to the United States. The width of the stream between this island and the Canadian shore is not more than 100 yards, and can easily be crossed, as a ferry-boat continually passes and repasses without any difficulty. Cornwall Canal. In event of war, temporary works should be thrown up at each end, and

On a declaration of war, it will be necessary to seize and hold this island, if it is intended to retain possession of the Cornwall Canal. Barnhardt's Island seized and occupied.

74. Lake St. Francis should be left to the protection of the navy. The fort at Coteau du Lac, now dismantled, might, in case of war, be advantageously put in a state of repair, as it would afford a good position for an advanced post to watch the north shore of the St. Lawrence, and it would be in connexion with any works covering the viaducts at Vaudreuil and St. Anne's. Lake St. Francis to be protected by the navy. Old Fort at Coteau du Lac to be repaired in event of war.

75. The Beauharnois Canal connects Lake St. Louis with Lake St. Francis, and is of great importance to preserve. Beauharnois Canal.

General defensive measures for this canal are not necessary, inasmuch as its destruction will probably never be the principal aim of the enemy. The object of a force moving on Beauharnois will be more as a direct attack, or in co-operation with a direct attack, on Montreal. The preservation of the canal would, in such a case, be alike desirable to both parties. It would enable the enemy to keep open his communications with a co-operating force on the north bank of the St. Lawrence, and to draw supplies from Lake St. Francis by water. If any attempt is made to destroy the canal, it will be when the enemy is forced to retreat.

A small force should not be left on the south bank of Lake St. Francis, and a large one ought not to be placed in a position so hazardous; for it could only accept battle with its back on the St. Lawrence, without any secure means of crossing at this point, and in the event of a defeat its destruction or surrender would be inevitable.

To be protected by local organization.

It is therefore considered that it is only advisable to protect the canal from desultory attacks, and that an armed police, as recommended in the case of the Welland Canal, formed out of the men employed on it, would be sufficient for the purpose.

Houses near locks made defensible.

The houses near the locks should be loopholed, and rendered as defensible as possible.

Carillon and Grenville Canals.

Defence as in Par. 75.

76. It is not proposed that any works be constructed for the protection of the Carillon and Grenville Canals, on the Ottawa River; but that the same arrangements as proposed in the last paragraph, on the Beauharnois Canal, should be adopted.

Some of the houses attached to the locks in these canals were built with a view to defensive arrangements, and your Commissioners would recommend that, whenever it becomes necessary to erect buildings connected with the service of the canals in their immediate neighbourhood, they should be constructed with that object.

Montreal.
Plans Nos 3 and 11.

77. The defence of Montreal demands important consideration, inasmuch as this city is the commercial capital of Canada, the centre of all the great communications, and the principal strategic point in the province.

Its loss would imperil the maintenance of the rest of the country, with the exception of Quebec.

Must be strongly defended.

It should therefore be placed in such a state of defence as to oblige an enemy to sit down before it.

Communications from Montreal, east and west.

78. The principal communications between Montreal and Quebec and Kingston are by the St. Lawrence River and Canals, the Grand Trunk Railway, and the Rideau and Ottawa Canals, which all centre at this point. The whole of these are liable to interruption and destruction by an enemy, in the event of the capture of the city.

The railway communication with Quebec is on the south side of the St. Lawrence, and the line could be destroyed by the occupation of Richmond, or by the investment of Montreal at St. Lambert's.

Above Montreal the Grand Trunk Railway crosses the Ottawa by a viaduct from St. Anne's by Isle Perrot to Vaudreuil, near the junction of that river with the St. Lawrence, and it must be expected that an invading army would send a detachment across the St. Lawrence, or move down the left bank of the river from Cornwall, for the purpose of destroying this viaduct, and at the same time closing the navigation of the Ottawa.

Road on north bank of St. Lawrence to Quebec, and road to Ottawa, to be repaired and kept open.

79. Your Commissioners consider it highly important that secure communications should be established with Quebec and Kingston, and strongly recommend the attention of Government being directed to the advisability of repairing and keeping in good order the roads by the north bank of the St. Lawrence to Quebec, and by the Isle Jesus, St. Eustache, and Carillon, to Ottawa, and thence by Perth to Kingston.

The enlargement of the Ottawa and Rideau Canals, they again beg leave to point out as being of paramount importance. Enlargement of Rideau and Ottawa Canals.

80. The lines of attack upon Montreal have been previously alluded to (paragraphs 14 and 15).

The main body of the army for acting on the defensive should be formed in observation at St. John's, on the River Richelieu, covering Montreal from Stanstead, keeping any force collected at Rouse's Point in check, and threatening the flank of any corps moving by the Chateaugay River, or by the Grand Trunk Railway. Main body of army defending Montreal to be at St. John's.

81. Your Commissioners are averse to recommend the undertaking of any offensive operations, but they consider it their duty to point out the extreme importance of the possession of Rouse's Point, and the fort now in process of reconstruction there. This work covers the railway communication with Ogdensburgh, Plattsburgh, and the various lines diverging from Rouse's Point upon Portland, Boston, and New York. It also completely bars the entrance into Lake Champlain from Canada, and controls the navigation of the upper part of the Richelieu River. Importance of possession of Rouse's Point to either party.

The possession of it, therefore, by either party, must give a preponderating advantage in the event of war.

It is evident that the Government of the United States attaches very great importance to this point, from the exertions they are now making to complete the new work there.

82. The defences of Montreal may be classed under three heads:— Defences of Montreal.

Exterior Line.

Interior Line.

Citadel.

The two former, again, may be divided into permanent and temporary works.

The exterior line should consist of permanent works at St. John's, Isle-aux-Noix, and St. Lambert, and temporary works covering the heads of the bridges at St. Athanase and Chambly, and the viaducts at Vaudreuil and St. Anne's. Exterior line.

The interior line should consist of a permanent work on St. Helen's Island, with temporary works, in addition, on that island, and on Nun's Island, at Bout de l'Isle and Lachine. Interior line.

The citadel should be placed so as best to cover the communications on the north bank of the St. Lawrence with Quebec and Kingston, and your Commissioners consider that the only site suitable is on the north-east end of "The Mountain." Citadel on "Mountain."

Without a more accurate survey of the ground, they are unable to give any detailed plan of the work they would propose; but they consider it should be constructed for about 50 guns (besides flanking guns), and with peace accommodation for 2,000 men. It should, besides, possess large stores, magazines, &c.

The naval depôt, and the principal part of the military stores, must, as formerly, remain at St. Helen's Island, owing to the difficulty of transporting heavy stores to the top of "The Mountain," which is about 750 feet in height. Naval depôt and military stores on St. Helen's Island.

83. At Isle-aux-Noix the old earthen fort has been allowed to fall into a state of ruin. Your Commissioners strongly urge the necessity of immediate measures being taken for its reconstruction. Isle-aux-Noix.
Plan No. 3.
Reconstruction of old work.

It completely commands the navigation of the river, it serves as a valuable outpost to St. John's, and would afford protection to gun-boats, if naval operations should become necessary.

The barracks are good, and require no addition.

St. John's.
Plan No. 3.
Naval establishments
should be moved here
from Isle-aux-Noix.

84. It is considered that the naval establishments should be moved from Isle-aux-Noix to St. John's, as being lower down the river, and further away from Rouse's Point. It will also be under the protection of the works which it is proposed to construct here for the support of the main body of the army.

Permanent work re-
commended.
Tête-du-pont at
St. Athanase, opposite
St. John's.

At present there are no works at St. John's, the old fort having been allowed to fall into decay. Your Commissioners consider that the site of this work was well chosen, and recommend that at this point should be constructed a small permanent work, to act as a keep to an entrenched position thrown up in case of war.

A tête-du-pont, covering the bridge across the Richelieu at this place (to St. Athanase) should also be constructed, when required.

Chambly.
Plan No. 3.
Redoubts to protect the
bridge in case of war.

85. At Chambly there are good barracks; but no permanent works are recommended here.

In case of hostilities, redoubts should be thrown up, covering the head of the bridge above the town, the ground in the vicinity of which is well suited to the purpose.

Vaudrenil.
Tête-du-pont required
in case of war.

86. At Vaudrenil the ground is favourable for the construction of a work to cover the approach to Montreal, down the left bank of the St. Lawrence, by Isle Perrot. It is low, level, and not commanded by any adjacent heights.

Temporary work on
Isle Perrot.

To provide against the contingency of an army crossing to Isle Perrot, it will be advisable to place a work on that island, covering the railway viaduct, and the canal lock at St. Anne's, which is the key to the whole Ottawa navigation.

St. Lambert.
Entrenched camp.
Four small redoubts.
Ground suitable.

87. The works at St. Lambert, to cover the Victoria Bridge, and the ferry at the terminus of the St. John's and Rouse's Point Railway, should be in the form of an entrenched camp, traced with a radius of about 2,000 yards from the bridge.

Four small permanent redoubts, as shown in Plan No. 11, should be constructed, between which entrenchments could be thrown up afterwards.

The ground here being level, and not commanded, offers every facility for the construction of permanent works.

St. Helen's Island.
Temporary batteries,
with permanent keep.

88. The works on St. Helen's Island should consist of batteries on the south and east side, commanding the passage of the river, and sweeping the left front of the entrenched camp at St. Lambert's supported by a strong enclosed work as a keep, on the highest point of the island.

Nun's Island.
Temporary batteries.

Batteries should also be thrown up on Nun's Island, to sweep the right front of the entrenched camp.

Lachine.
Temporary battery.
Bout de l'Isle.
Temporary batteries.
Position west of Mon-
treal Mountain supported
by redoubts at centre and
flanks.

89. In the event of hostilities, a battery should be thrown up on the ridge behind the village of Lachine, and also at Bout de l'Isle, to oppose any landing that might be attempted at these points.

In case of a landing being effected to the west side of Montreal, a good position may be obtained on which the enemy might be opposed, extending from the west end of "The Mountain," below Monklands, to the St. Lawrence, opposite Nun's Island; but strong redoubts would be required at each extremity, and in the centre, near "The Tanneries."

Sherbrooke.
Plan No. 3.
Entrenched position to
cover Richmond and
secure railway commu-
nication.

90. With a view to covering Richmond, and protecting the railway communication with Quebec, Your Commissioners recommend that an entrenched position be selected at Sherbrooke, where the ground offers some advantages; but, owing to the high land being intersected by the valley of the St. Francis, the position is not so advantageous as might be desired. The river is, however, fordable at many points, and the banks are low.

In case of hostilities, it would also be desirable to erect some redoubts at Richmond, covering the junction of the two railways there.

Richmond.
Temporary redoubts to cover railway.

The viaduct across the Richelieu, at St. Hilaire, is a point which should be carefully watched. It is completely commanded by the Beloeil Mountain, on which a position should be held as long as possible; but if abandoned the viaduct should be destroyed, for which every preparation should previously be made.

St. Hilaire and Beloeil Mountain.

Viaduct to be destroyed if necessary.

91. Your Commissioners carefully examined the features of the ground on the line of the parallel of 45° north latitude. This line is penetrable along its whole length, though it will probably only be crossed east of Rouse's Point, at the place where the railway leads into Canada from Island Pond.

Boundary line, parallel of 45° north latitude.

Approach from Island Pond.

The Vermont Central Line is now open as far as Barton, about 16 miles from the frontier. When it is completed to Derby, the line of operations from that point will also be through Stanstead and Sherbrooke. Lake Memphremagog is a considerable obstacle to any movements to the west, and all the roads converge upon Sherbrooke, which is consequently a strategic point of great value.

Vermont Central Railway.

92. Freligsburgh, a short distance north of the frontier line, and 34 miles west from Derby, is also a strategic point.

Freligsburgh.
Plans Nos. 1 and 3.

The high roads from St. Alban's; Burlington, and Derby join here; but as it is considerably removed from all lines of railway, and consequently not likely to be selected as a line of operations by the enemy, it is not recommended to adopt any defensive measures at this place.

It is a point, however, that should be watched in the event of war.

To be watched in case of war.

93. Philipsburgh, at the head of Mississquoi Bay, is another point which should be observed, as, in the event of the enemy losing Rouse's Point, it would probably become an objective point to him.

Philipsburgh.
Plans Nos. 1 and 3.
To be watched in case of war.

94. The United States town of Chateaugay, situated on the Ogdensburgh Railway, about 40 miles west from Rouse's Point, and where the roads from Ogdensburgh and Plattsburgh meet, would probably become the base of operations for a column destined to invade the Valley of the Chateaugay River, as roads diverge from that place through Russelltown (now called Franklin) and Huntingdon upon Beauharnois; posts of observation should therefore be established at these places, in the event of war.

Russelltown (or Franklin) and Huntingdon to be watched in case of war.

The junction of the Plattsburgh and Caughnawaga Railway with the Ogdensburgh line, at Moore's Corners, deserves attention, as in all probability that approach would be used in any attack that may be directed upon Montreal from Rouse's Point.

Moore's Corners.

Having in view the probable inferiority in numbers of the defenders, Your Commissioners do not advocate this line being protected by troops, as detachments of sufficient strength to oppose effectually an invasion in that direction would materially weaken the main body. They therefore recommend, that in case of war this railway should be destroyed.

Destruction of Plattsburgh and Caughnawaga Railway recommended in case of war.

95. Your Commissioners are aware, that in the event of an attack by the Valley of the Chateaugay, the enemy will most probably endeavour to bring boats for the passage of the St. Lawrence by that river; but, as the navy will, it is presumed, be unopposed on Lake St. Francis, there should be no doubt of its ability to close the mouth of the Chateaugay River to the enemy.

Mouth of Chateaugay River to be closed to the enemy by navy.

96. For the same reason, that the navy will be unopposed in the St. Lawrence, below Montreal, it is not considered necessary that any works be constructed at Sorel, at the mouth of the Richelieu.

Sorel, mouth of Richelieu, guarded by navy.

97. The accompanying tabular statement shows the works proposed in the Montreal district, with an approximate estimate of the expense:—

Permanent works proposed in Montreal District.

PERMANENT WORKS.

		Guns.	Men.	Expense.	Total Expense.
				£	£
Montreal	Citadel	50	2,000	150,000	
	St. Helen's Island	15	500	40,000	
	St. Lambert	40	400	60,000	
	Tête-du-Pont				
St. John's	Site of old fort	20	Barracks existing	30,000	
Isle-aux-Noix	Site of old fort, retaining present barracks	20			Do.	30,000
			145	2,900		310,000

Temporary works proposed in Montreal District.

WORKS TO BE THROWN UP IN EVENT OF WAR.

		Guns.	Men.
Cornwall Canal	To protect locks	8	200
Coteau du Lac	Site of old fort	4	100
Montreal	Vaudreuil	10	200
	Isle Perrot (St. Anne's)	20	300
	Nunn's Island	20	300
	St. Lambert	40	600
	St. Helen's Island	30	Barracks existing
	Bout de l'Isle	10		150
	Lachine	10	150
St. John's	Tête-du-Pont (St. Athanase)	15	200
Chambly	Tête-du-Pont	10	150
Richmond	Redoubts	25	400
West of Montreal	Entrenched positions.		
Mountain			
Sherbrooke			
St. John's			

Number of Troops for Montreal District 15,000 men.

Quebec District.

Quebec District.
Plan No. 1.

98. The fifth, or Quebec military district, comprises the whole of the province east of the Montreal district.

Any attack on this part of the country would either be in co-operation with an attack on Montreal, or with a view of gaining possession of the important city of Quebec.

Security of Quebec of the utmost importance.

99. The security of Quebec is of the utmost importance. As long as Canada remains a portion of the British Empire, it must be looked upon as the key of the country.

Royal reinforcements will always make this stronghold their first halting place in their advance to the support of Canada, and the last to retire to in case of defeat.

Existing fortifications of Quebec.
Plan No. 12.

100. Considerable attention has already been paid to the erection of fortifications at this place.

At present they consist of an enceinte round the upper town, formed on the west side by four bastioned fronts of very low profile,

and in a very bad state of repair; to the north and east by an exposed wall running along the ridge overlooking the valleys of the St. Charles and the St. Lawrence. At the south angle, the enceinte is closed by the citadel on Cape Diamond (see plan No. 12).

Besides these works, four towers are placed about 1,000 yards in advance of the west fronts of the town, at intervals of about 450 yards, and extending across the Plains of Abraham from the cliffs overhanging the St. Lawrence to the ridge above the valley of the St. Charles.

The works on the west side of the town can be taken in reverse along their whole length from the opposite bank of the St. Charles River.

The state of the works at the citadel is more satisfactory than that of the town works; but here, also, towards the west the escarp is much exposed, and the south-west angle of Diamond Bastion is very weak, the guns in that bastion being completely exposed to fire from the south side of the St. Lawrence.

A thorough revision of the armament is required; and expense magazines, shell rooms, and traverses, are very much needed. Revision of armament required.

101. The navy must always exercise a considerable influence on the defence of Quebec during the summer months, at which period alone it is probable that an attack would be directed against the place, as the severity of the climate in winter precludes the idea of an enemy being able to undertake regular siege operations at that season. Influence of navy upon defence of Quebec.

It is to be presumed that the supremacy of the British navy will never be so far lost as to permit an enemy to approach Quebec from the sea.

The navy would, also, doubtless prevent the passage of the river between Quebec and Montreal.

As the stream between these places is of great breadth, an army approaching Quebec from the south would be unable to carry a sufficient number of boats with it to pass a large force over, and must depend to a great extent upon the resources to be found on the banks of the river. These would require time to collect, and so afford opportunities to the navy to frustrate the attempt.

102. If Quebec, therefore, is attacked, it will probably be by a force capturing Montreal and moving down the north bank of the river, an operation which would be very hazardous in the presence of a powerful fleet. Probable mode of attack upon Quebec.

A force would also, in all probability, co-operate on the south bank, and by establishing batteries above Point Levi prove a source of great annoyance to the town and garrison.

To meet these attacks, Your Commissioners recommend:—

1stly. That a position be entrenched on the Plains of Abraham about a mile in front of Quebec, the left resting on the steep cliffs overhanging the St. Lawrence, and the right on the River St. Charles. This position would be sustained by the line of towers situated in advance of the place, and by several stone buildings (the new jail being one) which could easily be rendered defensible, and so lend material support to the position. Entrenched position on the Plains of Abraham.

2ndly. That an enclosed work be constructed on the high ground to the south of Point Levi church to mount 20 guns, and with accommodation for 500 men, for the purpose of preventing the enemy occupying this ground. Enclosed permanent work at Point Levi.

For the improvement of the works of Quebec itself they recommend—

1stly. That the old "French Works," the ruins of which still exist in advance of the citadel, should be restored, as they completely command the deep ravine leading down from the heights to "the coves," and which must be watched and seen into. Old "French Works" to be restored.

They would also afford a powerful reverse fire upon the glacis of

the town works, and flank the only line by which approaches can be made on the citadel.

West front of town works to be removed,

2ndly. That the old enceinte on the west of the town should be removed. As before stated, the works are completely seen into from the other side of the St. Charles, and are in a very dilapidated state; the escarps are very much exposed, and the suburbs have been allowed to approach so close, that they are incapable of defence.

And replaced by a straight line.

As it is necessary, however, that an obstacle should still remain there to prevent the enemy by a *coup-de-main* taking possession of the town, Your Commissioners recommend that one straight ditch and line of parapet be run from Dalhousie Counterguard to the salient of the Barrack Bastion, the ditch to be flanked by the guns in the casemates of the counterguard, which should be faced with iron.

Cupolas or casemated battery at Barrack Bastion.

3rdly. That two or three heavy guns in ~~cupolas or casemates~~ should be placed on the salient of the Barrack Bastion to command the suburb of St. Roch and the valley of the St. Charles.

Remainder of town works to be retained and re-armed.

4thly. That the remainder of the town works be retained and re-armed, increasing the height of the escarp where necessary; that stone defensible guard-rooms be substituted for the wooden block-houses, and that arrangements should be made for removing all buildings against the walls in the event of a threatened attack.

Buildings against walls objectionable.

Grand Battery to be remodelled, and guns placed under casemates.

5thly. That the "Grand Battery" near the Laval College and Parliament House, be remodelled; the guns are too crowded, and there are no traverses, expense magazines, or artillery store-rooms. A casemated battery for ten 100-pounder Armstrong guns should be constructed on that site to cover the shipping, and to range over the high ground on the south side of the river.

Guns in Diamond Bastion to be covered.

6thly. That the guns in Diamond Bastion, which are now completely exposed to fire from the south side of the St. Lawrence, should be put under casemates; that the citadel generally be put in a thorough state of repair, and that the necessary traverses, expense magazines, and other buildings required for artillery purposes, be at once constructed.

Citadel, generally, to be repaired, and furnished with magazines, traverses, &c., where required.

Redoubt on left bank of St. Charles River in time of war.

7thly. That a redoubt be thrown up, in the event of war, on the left bank of the St. Charles, near the head of the Dorchester Bridge, to prevent the enemy erecting batteries there against the town lines.

Grand Trunk Railway below Quebec. Plan No. 1.

103. Below Quebec, the Grand Trunk Railway, which it will be of great consequence to maintain, may be liable to damage by predatory hands advancing from the North of the State of Maine, either by the Temiscouata or Allegash roads. It will be advisable therefore, in case of hostilities, to establish posts near Fort Ingall, where the roads by the Madawaska and by Baker's Creek from the St. John River meet; and at the Black River, where the Allegash road from Maine to St. Thomas branches off to L'Islet and St. Jean.

Posts at Fort Ingall and Black River in case of war.

It would be advisable also to place a force at Rivière du Loup, to protect the present terminus of the railway. The ground here is suitable for the erection of works of defence.

Force at Rivière du Loup in time of war.

Secure winter communication between England and Canada imperatively necessary.

104. As it is imperatively necessary that a secure communication be maintained between England and Canada during the season that the navigation of the St. Lawrence is closed, Your Commissioners have had under consideration the different lines of road and railway that have been proposed between Halifax and Quebec.

Winter road should be opened up by valley of Metapediae.

The present line of road, by the valley of the St. John, by which the troops were sent last winter, runs for such a considerable distance so close to the frontier, that it could not be used in time of war; they, therefore, strongly urge that no time be lost in opening up the road by the valley of the Metapediae to Metis on the St. Lawrence.

North shore line of proposed railway best for military purposes, Plan No. 1.

Of the three lines of railway shown on Plan No. 1, for military purposes, the preference is decidedly to be given to that by the north shore, and it is to be hoped that some arrangements will soon be come to, through which an undertaking so important to the British North American Provinces may be carried out.

105. Your Commissioners desire to draw attention to the advantages to be obtained by giving a complete development to the system of magnetic telegraphs across the whole country, from Halifax to the shores of Lake Huron. Telegraphic communication over the whole country for military purposes recommended.

The lines should be established where they will be most secure from the efforts of the enemy to destroy them.

That from Halifax to Quebec should be along the proposed Metis road, and should be brought into communication with the existing lines to Montreal.

A line should be established between Montreal and the shores of Lake Huron by Ottawa and Perth, and running as far to the north of the shore of Lake Ontario as practicable to Guelph.

Guelph and Montreal should be in telegraphic communication with all assailable points on the avenues of attack previously mentioned.

A store of wire should be kept on hand in Canada and at Halifax, in order that these lines may be established without loss of time on any necessity arising. Store of wire should be kept on hand.

106. The accompanying tabular statement shows the works proposed in the Quebec District, with an approximate estimate of the expense.

PERMANENT WORKS.

		Guns.	Men.	Expense.	Total Expense.
Quebec	Improvement of Citadel and Existing Works ..	..	..	120,000	200,000
		New Work on Site of old "French Works" ..	15	200		30,000
Point Levi	Enclosed Work ..	..	30	50,000	
		..			

Permanent works proposed in Quebec District.

TEMPORARY WORKS IN EVENT OF WAR.

		Guns.	Men.		
Quebec	Left Bank of St. Charles .. Entrenched Position on Plains of Abraham ..	12	200		
		—	—		
Rivière du Loup	To protect Railway	Field Artil.	200		
Fort Ingall	" "	"	100		
Black River	" "	"	100		

Temporary works proposed in Quebec District.

Number of Troops for Quebec District, 3,000 Men.

107. The following table shows the approximate expense of the permanent military works recommended by Your Commissioners for the various Military Districts. Summary of expense of proposed military works in the Province.

Permanent Works, including Purchase of Land.	Guns.	Barrack Accommodation.	Expense.	Remarks.
London, 1st Military District	110	2,300	£ 270,000	Including 200,000l. as estimated expense of Dockyard in each of these two Districts. Number of guns and men cannot be accurately determined.
Toronto, 2nd " "	146	3,100	551,000	
Kingston, 3rd " "	20	500	280,000	
Montreal, 4th " "	145	2,900	310,000	
Quebec, 5th " "	45	700	200,000	
	466	9,500	1,611,000	

NAVAL CONSIDERATIONS.

Naval considerations.

108. Your Commissioners will now proceed to make some further remarks on the means that will be required to make the naval power of the empire available for the defence of the Province.

Treaty prohibits naval force on the lakes in time of peace.
Appendix, No. 12.
Secure communication from Montreal to lakes essential.

By treaty between Great Britain and the United States, both countries are prohibited from having a naval force on the lakes in time of peace. It will therefore be necessary to secure a safe communication by which vessels of war may be pushed rapidly up from Montreal to the upper lakes on the outbreak of hostilities; and that on each lake a safe place for building and refitting ships should be provided.

Coaling depôt at Quebec.

109. They recommend that a coaling depôt (which should be extensive, from the fact that there is no coal in Canada) and naval store should be provided at Quebec; but that the head quarters of the navy should be at Montreal, and that stores for supplying everything required by the lake squadrons should be kept on St. Helen's Island.

Head-quarters of navy at Montreal.

Naval stores on St. Helen's Island.

St. Lawrence canals.
Appendix, No. 14.

110. Between Montreal and Lake Ontario, the canals of the St. Lawrence will allow the passage of vessels 176 feet in length, 44 feet in breadth and drawing 9 feet of water, but, as before stated, this line of communication from Cornwall upwards is frequently within such close range from the opposite side of the river, that it will not be available in time of war; at all events, after hostilities have continued for a time sufficient to enable the enemy to collect his resources on the frontier, and establish works.

Not available during war.

Should, if possible, be made use of, at the crisis, to pass flotilla on to the lakes.

Every effort should be made, however, to pass gunboats up the river on the outbreak of war, taking advantage of the time that must elapse between the declaration of war, and the collection of troops and stores, and the preparation of works that will be required to oppose a passage.

Ottawa and Rideau Canals for naval communication.

To obtain a secure communication the old line of the Ottawa and Rideau Canals must be adopted. These canals are on too small a scale for modern requirements, as vessels only 96 feet in length, 19 feet beam, and $4\frac{1}{2}$ feet draught of water can be passed through. They are not in good repair.

Must be enlarged.

Their reconstruction on a proper scale Your Commissioners cannot too strongly recommend as the very first and most necessary step to enable British vessels of war to enter Lake Ontario.

Bay of Quinté, winter station on Lake Ontario.

111. Your Commissioners, in paragraph 63, have stated their reasons for recommending that the naval establishments on Lake Ontario should be removed from Kingston to some point on the Bay of Quinté. At this place also the vessels should be laid up for the winter.

Toronto.

A secure harbour is likewise required at the western end of the lake, in which ships might, in case of a reverse, take refuge from a superior force. The position of Toronto would have been most favourable; but as this harbour is, as before stated, at present incapable of defence, it is considered that Port Dalhousie and Burlington Bay, at which places works have been recommended, will be available for the purpose.

Port Dalhousie and Burlington Bay.

Presqu'île Bay.

The inlet at Presqu'île, at the head of the Bay of Quinté, from which it is divided by a narrow neck of land, is a good harbour. A canal has been projected across the isthmus; this, Your Commissioners consider, would be of very great importance in a naval point of view, as it would afford a safe direct communication between the proposed dockyard and the upper part of the lake.

Canal from it to Bay of Quinté.

Welland Canal.
Appendix No. 14.

112. Between Lakes Ontario and Erie the only water communication is by the Welland Canal, the defences of which are treated of in paragraphs 39 to 44. A description of this canal will be found in the Appendix (No. 14).

113. Although it would have been desirable to place the naval establishments on Lake Erie at a distance from the Niagara frontier, the expense that would be required to improve any of the other harbours on that lake, renders it advisable to select Dunnville, on the Grand River, as the site for the dockyard.

Naval establishments, Lake Erie.

Dunnville most suitable place.

This place has a water communication with the Welland Canal; it is removed from the lake so as to be secure from bombardment; it is approached by a deep channel, and it is sufficiently near to the "Short Hills" to receive support, if threatened.

Both the establishments at Dunnville, and the entrance to the Grand River at Port Maitland, would, however, have to be protected by permanent works.

Must be protected by works.

The harbours of Port Stanley and Amherstburgh, and the anchorages under Pelée Island, might be found available under certain circumstances; the two first-named of these places being protected by batteries.

Port Stanley, Amherstburgh, and Pelée Island.

114. From Lake Erie vessels pass by the Detroit and St. Clair Rivers into Lake Huron; but this channel being within close range of the United States territory, would not be available in time of war.

St. Clair and Detroit Rivers unsafe in time of war.

In order that vessels may reach Lake Huron after the commencement of hostilities, your Commissioners have had under consideration two projects for commercial canals between that lake and the lower waters; one scheme is to connect Toronto on Lake Ontario with the Georgian Bay, by way of Lake Simcoe; the other, to unite Montreal and the same bay by way of the Ottawa River, Lake Nippissing, and the French River.

Safe communication by water to Lake Huron.

Proposed canal from Toronto to Georgian Bay.

Proposed canal from Ottawa to Georgian Bay.

Preference has been given to the latter of these two lines on account of the greater feasibility of construction; for naval purposes also the same line is to be preferred.

Appendix, No. 16.

By it vessels could not only pass from Montreal into Lake Huron by the shortest possible route, but they would also have access to that lake by the Rideau Canal, from Lake Ontario; and only one of the three ends of this double communication, that at the mouth of the French River, will entail additional expenditure for defensive works; the other two, Montreal and Kingston, being fortified, or proposed to be so, for other reasons.

Advantages of proposed canal from Ottawa to Georgian Bay.

Your Commissioners trust that a work so important to this Province, both in a commercial and military point of view, will not long be delayed.

115. Until this canal is constructed, your Commissioners do not consider that it will be possible to have a flotilla on Lake Huron.

Until this canal is completed, not possible to have a flotilla on Lake Huron.

The protection of the shores of that lake would be best secured by a naval force; but as long as there are no means of passing vessels into it in time of war, it would be necessary to construct all the vessels on the spot. There are no Canadian vessels there that could be made use of for war purposes.

Any fleet placed on that lake should be of great strength, to cope with the immense resources the United States possess in Lake Michigan: any small force would be overpowered.

Fleet on Lake Huron must be a large one.

Large establishments for the construction of ships and armoured vessels, requiring extensive works to protect them, would consequently be necessary; and considering the comparative insignificance of Canadian commerce on Lakes Huron and Superior at the present time, your Commissioners do not feel justified in recommending the immense outlay that would be required for the purpose.

Requiring large and expensive establishments on the spot, protected by works.

116. Your Commissioners, however, being of opinion that the construction of the important canal referred to is only a question of time, visited the various harbours in Lake Huron, with a view of examining their capabilities for naval purposes, if necessity should arise.

Harbours in Lake Huron available for naval purposes after construction of canal.

The entrance to the French River, where the proposed canal will

Mouth of French River.

debouch into the lake, is difficult from the number of sunken rocks and reefs; but when lighted and buoyed, will offer no objection on this score. When entered, the harbour affords excellent shelter and great depth of water, and is well adapted for a harbour of construction.

The ground, though rocky, affords good sites for works of defence.

Mouth of French River recommended as main naval station on Lake Huron, preferable to Penetanguishine.

Penetanguishine is an excellent harbour, and could easily be defended against an attack from the lake; but no communication is practicable with the lower lakes except by the French River. Your Commissioners consider that, as a site for the principal naval establishments in Lake Huron, the preference should be given to the mouth of that river, on account of the paramount importance of the consideration that the works of defence that must be constructed to cover the entrance of the canal, will also afford protection to the naval establishments; and, consequently, great expense will be saved.

Colpoy's Bay.

Colpoy's Bay is too extensive to receive protection from works of defence; but being divided from the harbour, under the "Fishing Islands" in Lake Huron, by a narrow neck of land, communication could readily be established between the vessels in Georgian Bay and those on Lake Huron by road and telegraph.

Entrance to Lake Superior.

117. Your Commissioners also visited the entrance to Lake Superior.

Although it would be of importance to close the entrance to that lake in time of war, still, so long as naval operations are impossible in Lake Huron, any works constructed for that purpose would be completely unsupported; and none, therefore, are recommended.

Modes of closing the channel if necessary.

118. When, however, the naval power of Great Britain is established in Lake Huron, the entrance to Lake Superior might be closed by destroying the canal on the United States' side of the river at Sault St. Marie. Doubtless, great importance would be attached to its maintenance by the Government of the United States, and a large body of troops would probably be sent for its protection. Should the attempt to destroy it be successful, it would be impossible to prevent its reconstruction except by the presence of a large force on the spot.

Artificial channel in Lake George.

The communication could be as effectually destroyed by blocking up the artificial channel in Lake George, and its restoration could be prevented by gun-boats.

Work on Bequabigong Island.

The connexion between the lakes might also be obstructed by erecting a work on Bequabigong Island in the narrow channel above St. Joseph's; but, as it would be difficult to maintain the garrison there during the winter, it would be preferable to employ a floating iron-battery on the frontier waters, which could be removed at the closing of the navigation.

Floating battery for frontier waters.

Road to Sault St. Marie from Bruce Mines.

A road is now in course of construction from the Bruce Mines to Sault St. Marie. To secure the end of this road, and to afford shelter to vessels in event of naval operations being carried on in Lake Huron, works should be constructed at the former place. The ground is very rocky; and as earthworks could not be thrown up, defences of a more permanent character would be required.

Conversion of trading vessels into vessels of war.

119. On a declaration of war, each party would do its utmost to form flotillas on the lakes by conversion of trading vessels into vessels of war. It appears to your Commissioners that the United States would have an advantage over Canada in extemporising such vessels, as fully three-fourths of the vessels on the lakes capable of being used for war purposes belong to them.

Advantage with United States.

Appendix, No. 13.

The resources of Canada, however, have recently been so much developed, and the country is so rapidly progressing, that the efforts of which it is capable should not be undervalued.

There is abundance of iron, good workmen, and extensive establishments at all the principal towns; and it must be borne in mind that the Power which can first bring iron-plated vessels with experienced crews into action, will derive most important advantages. Every effort should be made to be first on the lakes.

120. In order that the Canadian seamen, and others connected with the commerce of the lakes and the St. Lawrence, may be made available for the defence of their country, your Commissioners recommend the enrolment of Naval Volunteers on the same principle as the Royal Naval Reserve in England; and that, for purposes of drill, a ship of war should, in time of peace, be stationed at Quebec, and also in each lake, the one-gun vessel allowed by Treaty. Naval Volunteers. Ships of war at Quebec, and gun-boats on lakes, for drill purposes.

121. As, however, the best local and extemporised measures will be insufficient for the defence of the lakes, if, as at present, the Royal Navy cannot proceed above Montreal, your Commissioners take this opportunity of again expressing their firm conviction that enlargement and construction of the canals referred to in this Report are absolutely essential to the defence of Canada. Local measures insufficient for defence, unless safe water communication be provided above Montreal for the navy.

Apart from military considerations, the commercial circumstances of the country have for many years past rendered this step necessary; and it is hoped that a measure, involving to such a high degree the military security, as well as the mercantile prosperity of the province, will not long be delayed.

122. The following Table shows the distribution of vessels recommended for the protection of Quebec, the St. Lawrence, and Lakes Ontario and Erie.

VESSELS OF WAR.

Position.	Vessels.	No.	Class.	Remarks.
Quebec.. ..	Line-of-battle ships	2		
	Floating battery ..	1		
Between Quebec and Montreal.	Floating batteries .	2	Not drawing more than 18 ft. water.	These vessels would protect Sorel, mouth of Richelieu River, and Montreal.
	Corvettes.. ..	2		
	Dispatch vessels ..	2		
	Gunboats	7	3 Algerine. 4 Bouncer	
Lake St. Francis and St. Louis.	Gunboats	4	Bouncer	These could be reinforced from Montreal.
Lake Ontario ..	Floating batteries..	3	Not more than 176 feet long, 44 feet beam, and 9 feet draught of water.	
	Dispatch vessels ..	4		Wanderer.
	Gunboats	16		4 Algerine. 6 Bouncer. 6 Clown.
Lake Erie ..	Floating batteries..	3	Not more than 140 feet long, 26 feet beam, and 10 feet draught of water.	
	Gunboats	20		5 Algerine. 5 Britomart. 5 Bouncer. 5 Clown.
River Richelieu	Gunboats	6	Clown.	
	Total	72	Carrying about 550 guns, and requiring about 9,350 officers and men.	

Your Commissioners, having now performed the duty confided to them, humbly beg leave to submit their unanimous Report to Your Majesty; with the firm conviction, that should the three principal measures they have ventured to submit for consideration, viz. :—

The organization of the Militia and Volunteers;

The enlargement and construction of canals; and

The establishment of places of arms;

—be carried out, the loyal inhabitants of Canada, assisted by Your Majesty's forces, will be enabled fully to maintain the honour of Your Majesty's arms and the security of this great province.

Witness our hands and seals at Montreal, this First day of September, 1862.

(Signed) J. W. GORDON, Colonel Royal Engineers.

E. R. WETHERALL, Colonel (Chief of the Staff).

LYNEDOCH GARDINER, Lieutenant-Colonel
Royal Artillery.

J. BYTHESEA, Captain Royal Navy.

HAMILTON H. KILLALY, Civil Engineer.

W. CROSSMAN,

Captain Royal Engineers,

Secretary.

APPENDIX.

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APPENDIX No. I.

*Letter from Secretary of State for War, enclosing Memorandum from
Sir John F. Burgoyne.*

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Sir,

War Office, 28th February 1862.

With reference to my despatch dated the 15th instant, respecting the appointment of a Commission for the purpose of enquiring into the defence of the British North-American Provinces, I now transmit for your information a copy of a Memorandum which has been drawn up by the Inspector-General of Fortifications, of points to which he considers it desirable that the attention of the Commissioners should be drawn.

It will, however, rest with you to give such detailed instructions for the guidance of the Commission as your more perfect knowledge of the localities, and the present state of the bordering countries may suggest.

I have, &c. &c.,

(Signed) G. C. LEWIS.

To Lieut.-Gen. Sir W. F. Williams, Bart., K.C.B., &c. &c. &c.

*Memorandum of General Instructions for the Commission to report on the
Defence of Canada.*

24th February 1862.

A Commission to consider the best measures for the future protection of Canada, in case of war with the United States, will be appointed by the General in command, and will adopt the course of enquiry for their report that they shall judge best from the local knowledge that they possess; the following, therefore, are to be taken rather as suggestions for their consideration than as absolute guides.

There would appear to be three leading directions by which Canada may be invaded :

1st. On the Lower Province, the advance being on Quebec. This would, if successful, be no doubt the most damaging; as it would cut off the communication from Great Britain. But I apprehend it would be decidedly the most difficult, being from districts of fewest resources in supplies, communications, &c.; on the part where by far the greatest definite properties would be available.

2ndly. On the great central district of Montreal; the effect of which, if gained, would be to reach what may be considered the heart of the Province, and so cut off Upper Canada from its main base of action and source of supplies.

This attack would be the more to be guarded against, as it would proceed from districts where the greatest resources of the enemy exist, and from whence they could be readily collected and brought forward.

3rdly. Along the line of the Upper Country; the advances on which in force will be across the river-line connection of the Great Lakes. I apprehend

that if the operations are intended for decisive conquest, these would be undertaken rather as co-operating and secondary attacks, to divide our attention and force, than as the most effective efforts.

It will become an object of the Commission, then, to consider what points on the different lines would probably be those of assembly of the enemy's forces, for their depôts and collection of supplies, and what the lines by which the advance would be made from thence; not only with the view of the best defensive arrangements to defeat the approach, but also to enable offensive movements to be made upon them, if they should be left at any time not duly secured and protected.

The most advantageous and probable lines of advance by the enemy being thus defined, it will be desirable to make a thorough reconnoissance of the most favourable defensive positions to oppose them on each; so as to present the greatest obstacles and difficulties to the advance, either direct or on either flank. Each position should be surveyed or sketched, and the means defined for entrenching and improving them rapidly when the emergency shall call for their immediate occupation, and an attack upon them shall be threatened.

The Commission will bear in mind that the main basis of defensive power must necessarily consist of the local forces—militia and volunteers in large numbers, efficiently armed and equipped, and prepared by a reasonable amount of military exercises to oppose the invading army with effect, under the advantages of acting on the defensive. The probable strength of such force in each district may be approximately noted, and also the most secure and convenient sites defined for their assembly and for the collection of arms, ammunition, and equipments for them, and the measures pointed out for their early establishment.

The Commission will reduce its recommendation of permanent fortifications and standing defences to a very minimum: it will be most difficult, if not impossible, to obtain funds for such works; and while they are objects of the most costly kind, they will be more likely than any to have their utility superseded by altered circumstances.

Consideration will be given to the existing magazine and storage accommodation at the leading great stations; where the principal depôts are most necessary, and will be most secure; and the Commission may state what additions may be desirable.

The circumstances of the communications throughout the country, as regards the degree in which they may be available for military purposes, will engage the attention of the Commission; and how far the great defect of the leading lines of canals and railways being so near the frontier can best be remedied. The lines of canals, railways, and ordinary roads least subject to this disadvantage may be most encouraged, always on the understanding that there is no probability of obtaining any great expenditure on such objects purely for the military convenience.

Lastly, a most important subject of enquiry will be the available means for obtaining an influential naval force on the several Great Lakes, and by what measures there may be hopes of obtaining a superiority on each of them; the most important being, of course, the lowest—from Lake Ontario, upwards.

The General in command will give such other instructions to the Commission as he may think desirable.

(Signed) J. F. BURGOYNE.

APPENDIX No. 2.

Letter from Secretary of State for War, enclosing Second Memorandum from Sir John F. Burgoyne.

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Sir,

War Office, 6th March 1862.

With reference to my despatch dated the 28th ultimo, I now transmit for your information a copy of a further confidential memorandum which has been drawn up by the Inspector-General of Fortifications, containing a summary of the principal considerations to be borne in mind in dealing with the important question of the defence of our North American possessions.

I request that you will cause the paper to be laid before the Commission which is about to be appointed for the purpose of inquiring into the nature and extent of the defences necessary for the safety of these provinces.

I have, &c.
(Signed) G. C. LEWIS.

Lieut.-Gen. Sir W. F. Williams, Bart., K.C.B., &c., &c., &c.

*Memorandum by Sir John Burgoyne, on the Defence of Canada.—
February 1862.*

PROTECTION for Canada requires altogether new considerations from what would have influenced the question so lately as even a year ago.

At that time, and during immediately preceding years, the neighbouring United States on its borders were in an all-powerful condition, and could have rapidly brought to bear upon this, our weak point, such a force as we could hardly expect to withstand.

Canada has an open frontier of upwards of 1,000 miles in extent, and is of very small depth, so far as consists of that portion of it that is peopled or occupied;—a great part of that frontier is on immense lakes or inland seas, on the shores of which the opposing country has resources far exceeding those of Canada.

With a numerous and energetic population, a country far more densely settled, and vast unencumbered national wealth, and with popular and attractive institutions, the United States not only offered a formidable power with which to contend, but afforded strong inducements to speculating or wavering minds to union with or desertion to them.

At that period, putting forth the strength which they have exhibited against the Southern Secessionists, few would venture to suppose that Canada could have made any long resistance.

Circumstances, however, are now greatly altered, and Canada may look forward prospectively to a rapid rise towards a greater degree of equality.

The hitherto United States must be expected now to remain long in a very disunited condition, and financially in a very impoverished state, and, worst of all, under an altered system of government and institutions, of taxation and impediments to trade and progress, that will no longer attract enterprise and emigration to take root there; while Canada will hold out prospects far more encouraging.

It cannot then be too much to expect that Canada will rapidly rise in the scale of comparison between them.

The Northern Federal States will, however, for years, still be a powerful neighbour, which it will require great efforts to resist in case of conflict; and it is an interesting subject of inquiry how Canada is to be prepared for any such contingency as may arise.

Nor is this purely a military question, requiring a report upon the number and quality of troops, depôts of military stores, standing defences, &c., that abstractedly would appear desirable, but it has many social and political considerations mixed up with it, particularly as regards the measures that are to be taken up by the mother country and the colony respectively; for it will be needless to decide upon the establishment and maintenance of certain standing forces, fortifications, and other military means that Great Britain will not undertake, and that the colony cannot afford.

The subject must be taken as a whole, and the only useful propositions will be what can, under all circumstances, be considered practicable.

An argument has for years been plausibly maintained, has been very recently advocated strongly, and will probably be discussed before long in Parliament; which is, that colonies like Canada, which have free and independent control of their own revenues and affairs, and which have had the military lands and reserves handed over to them (in Canada, for instance, to an amount of considerable value), and are absolutely flourishing in a great degree, ought not to remain a burden on the resources of Great Britain for their protection.

This may be true in the abstract, but is also a question of national policy. If the colony has not in itself a power of self-defence against other nations which might covet its possession, as is the case with all our minor dependencies; and with Canada, the question is, whether we shall stand by and allow it to fall an easy prey into the hands of the rival power, whatever that may be, after all the cost and trouble we have had in its establishment.

It is not whether, as it is usually put, the colony shall defend itself, which in fact it cannot do, but whether it shall be abandoned to the enemy on the first war that may occur.

If the consequences, not only of its loss to us, but of its acquisition by another power, are considered less than the value of measures required from us for its defence, there will be a justification for abandoning it to its fate.

There can be no doubt of the justice and propriety of requiring the colonies to afford all the means for defence they can; let them even (particularly in the larger ones) provide the basis of defence, and Great Britain act only as co-operating, which will confine the great efforts to be required from her chiefly to the period of war, or to that when hostilities were closely threatened.

That any of our colonies can obtain absolute protection from our navy is a fallacy.

The only foreign possessions that can take entire care of themselves are the Australian settlements; they have so large a British population and so much wealth; while they are too far removed from any possible enemy to be attacked by any force sufficiently considerable for their conquest.

As regards Canada, since the power of self-rule, of public property in lands, of self-taxation and absolute control of its own revenue, has been conceded to it, the principle which has been adopted by Great Britain has been that the colony should provide local forces and means for self-protection, to which the Home Government would add a powerful assistance in case of attack, as it has done most liberally on the late threatening of hostilities. It has also maintained in the country, even during peace, a small standing force, and three leading reserve military stations, Quebec, Montreal, and Kingston, as a guide and basis for the defence of this great country; and, in its delicate position, that support may be considered moderate and really necessary hitherto, and will be required at least for some little time henceforward.

There are four leading elements that will be of influence in the defence of Canada:—

1. The organized armed bodies.
 2. The naval force on the Lakes.
 3. The fortifications or works of defence.
 4. The railway and canal communications.
- The essential one of all being the troops or armed forces.

Thoroughly well disposed as the whole population is to maintain its independence, and to resist any inroad, or offers of annexation to their neighbours, there is no repugnance to an enrolment *en masse* of the great bulk of those capable of bearing arms; and as they will amount probably a hundred thousand or more, the great standing defence of the country must rest on them, and if duly prepared and organized, they will, with moderate support, be fully equal to it.

The system to be followed with this force is to render it efficient at as small an expense, and with as little harassing interference with the time, social position, and engagements of the individuals, as possible; and this will vary during peace, or when war occurs, or is very threatening.

During peace, the enrolment of every corps should be maintained correct and complete, of all ranks, and in such manner as that the enumeration, on paper at least, should represent the numbers and individuals actually able and willing to join in the defence of their country.

The whole should, if possible, have gone through the first elements of military drill and exercises, even during peace, as a basis from which, on war breaking out, they could all very rapidly be made valuable troops.

This elementary acquirement will hardly be practicable where the population is very much scattered, but comparatively easy where it is collected within limited ranges, and should be as much as possible encouraged as a voluntary duty, or even as a pastime, commencing very generally with schoolboys. It has the great advantage that, when once thoroughly imbibed, it will be retained through life, like swimming, rowing, or such exercises.

The next useful practice will be that of rifle shooting; but that will necessarily be more refined, and dependent upon circumstances being more or less favourable. If it can be established and much followed as an ordinary amusement, and pretty generally diffused, it will add greatly to the prestige as well as to the actual defensive capabilities of the country.

The costly accessories of perfect military uniforms, bands, &c., might well be spared during peace, and greatly reduced even in war time; but it is very necessary that depôts of arms, accoutrements, and ammunition should be constantly maintained and in an efficient condition, which ought not to be very expensive after the first cost is defrayed, as the wear and consumption should be small.

A local force in large numbers, thus constituted, supported, or rather led and directed, by a moderate body of regulars, with an ample staff and a proportion of the refined establishments of an army, would be most powerful, acting essentially on the defensive in a country like Canada, even though subject to the disadvantages under which that country undoubtedly labours in many respects.

The naval power on the Lakes is one of the greatest difficulties with which we shall have to contend. By Treaty, neither Power is to maintain armed vessels on these Lakes, and therefore it would appear that we should, in case of war, start on an equality with the enemy. But this equality is completely destroyed by the superior means in the hands of the United States for creating such a force. Their great populations, their much larger proportion of mercantile naval resources, including steamers on the Lakes, and their great means of transport of resources from the interior, including leading naval ports, would be extremely in their favour in such a contest, but, as a matter of much importance to counteract, would be anxiously considered by our Naval Department. In the upper waters, the States would possess a peculiar advantage, in having one fine distinct Lake (Michigan) entirely within their own territory, possessing at the same time a navigable communication with the others, while we have but a very partial similar resource on Lake Huron.

It has even been rumoured that the States had an intention of evading the above-mentioned Treaty by a subterfuge, and establishing during peace an armed naval force on Lake Michigan, on the plea of its not being a joint occupation, but one exclusively their own. There is one peculiarity in a naval warfare on these Lakes,—that while, on the ocean, a very inferior naval force may find means of annoying its enemy by stealing out and roving over the seas, on these Lakes that which maintains a general superiority will effectually, in these confined waters, preclude the other from any such injurious action.

Fortifications and permanent standing defences are very attractive to contemplate, but most difficult of accomplishment.

It would be very easy to shew, in a military memoir on the defence of the country, how forts and fortresses might be multiplied to admirable effect, and how they would indisputably add largely to the improved defensive capabilities of Canada, but they are out of the question. Neither would the Home Government be willing, nor the resources of the colony enable it to undertake them; and even if they were practicable, such means of protection would be the least politic of all; because, though very costly, their utility might be greatly modified by the alterations in the circumstances in which Canada might hereafter be placed; while all other means might be regulated according to the times, these alone would remain stationary, and perhaps their value be entirely lost.

This consideration, however, only applies to elaborate permanent works; the sites for advantageous military positions and posts should be fully studied and defined, and then taken up and strengthened by field works, temporarily perfected and armed during war.

More than usual care and precautions might be taken in maintaining the *capabilities* for such additional defences at sites that are clearly valuable as leading depôt stations, such as Quebec above all others, and Montreal, Kingston, and Toronto.

Sorel would also appear to be a station of importance, as a hold to interrupt the water communication from the Richelieu into the St. Lawrence. There will also no doubt be positions in Upper Canada, to which great attention will be required, for the command of given communications and points of military interest, but the value of which can only be recognized on the spot.

Internal Communications.

When we consider the conformation of the occupied portion of Canada as a very long and comparatively narrow strip extended along the great mass of the United States, it is manifest that the whole of its communications must necessarily be totally wanting in strategical advantages. In proportion as communications are parallel to and at no great distance from the frontier (as they must be in Canada), will they be disadvantageous for war.

The ordinary roads will generally need but little attention. We may assume that they are very general and in various directions. It will be the available navigations and railways that, in the present time, will chiefly call for military consideration.

The primary great line of navigation is the St. Lawrence; we have its course entirely within our own territory from the sea to Quebec for large men-of-war, and from thence up to Montreal for sea-going ships of tolerable burden.

From near to and immediately above Montreal, occasional rapids occur, requiring artificial canals to pass them; and not far above Montreal, the St. Lawrence itself becomes the boundary, the United States having the right bank; and so the frontier continues, through the great Lakes beyond, and their connecting river course.

These branch canals along the river, so near the frontier line, are of course greatly exposed to the incursions of the enemy in time of war, and it would be impossible to rely on the continued use of them;—one of probably more importance than any, the Beauharnois Canal, immediately above Montreal, and of some length, though on Canadian territory, is on the right bank of the river, and consequently without any natural obstacle between it and the frontier, which is at no great distance. The military authorities endeavoured to prevent its being so placed, but it was established for commercial ends; and the cheapest and most convenient manner of gaining them was of course adopted.

These detached and greatly disseminated points would not be defensible; the idea of placing detachments for their security would be quite futile; nor would a fort or strong point or two serve, unless to guard a single lock or short branch, the *entire* of which was under its fire. An enemy has only to reach and be in possession for a very short time of any one part of any one

canal, and, with a few barrels of powder, he will ruin that part of the line to more or less effect, in proportion as that part operated upon may be more or less difficult to re-establish.

These effects will be more felt, perhaps, with regard to the Welland Canal, that unites Lake Ontario with Lake Erie, than at any other portion, because of its importance, and because there is no substitute for it; and it will be so serious to allow the enemy to gain possession of the use of it, that the General in command of that District would, no doubt, if he saw a possibility of such an occurrence, make preparations for the instantaneous destruction of some locks on it, when the emergency should arise.

The Rideau Canal was constructed essentially as a military communication in the interior from the Ottawa, a river which falls into the St. Lawrence, near Montreal, through the back settlements, to Kingston on Lake Ontario. Its construction, which was entirely at the expense of the British revenue, was strongly urged by the late Duke of Wellington. It has not the capabilities as a navigation of the line along the river; but, being so very much more secure from the enemy's incursions, it would be of great value in war. As a thorough communication, there is a disadvantage attending it, in the canal to pass some rapids on the Ottawa being of very inferior dimensions to that of the Rideau, a defect that will call for early amendment.

The railways are limited to the Grand Trunk, commencing at the Rivière du Loup, and extending to Montreal, entirely on the right bank of the St. Lawrence, and consequently at no great distance, nor with any natural intervening obstacle between it and the enemy's territory; and again, from Montreal into Upper Canada, it skirts the river, which soon becomes the line of boundary.

This railway communication, therefore, is subject to the disadvantages of the canals, and is not to be relied on, or in the least safe from interruptions and partial demolitions in time of war.

The present line of land communication between New Brunswick with Nova Scotia to Canada is by ordinary road along the St. John river, and consequently, for a considerable distance quite close to the frontier, which is peculiarly disadvantageous, considering the support that might be mutually wanted between the two provinces. A road more distant to the north, called the Metis road, and which skirts the heads of the bays which fall into the great entrance to the St. Lawrence, though more circuitous, might be of much value under many circumstances, and is well worthy of improvements, to render it as available as possible.

It has been urgently pressed, that it would be desirable to construct a line of railway along somewhat of the same course, to which the Imperial Government is required to contribute, as a most advantageous military communication.

There cannot be a doubt but that such a line would be very valuable, but hardly so much so, I think, as to justify the large outlay, unless there were a great showing of its utility and probable compensating returns from it for its social and commercial interests.

With regard to the military communication, it would only be as an occasional substitute for the fine navigation of the St. Lawrence; and though that is obstructed by the ice during several months in the year, I cannot consider that any *great* invasions of Canada can be carried on during those severe winter months, as seems to be commonly apprehended.

Winter campaigning is attended with the most severe hardships and sufferings, and with the greatest tendency to a rapid disorganization of troops; and this is felt in a far greater degree by the advancing army than by those who act on the defensive. It may, however, give rise to predatory incursions, which will be opposed by flying columns organized distinctly for the purpose.

Three leading lines for an attack of Canada from the United States would seem to offer themselves for consideration.

1. On the Lower St. Lawrence, towards Quebec.
2. On Montreal, from Lake Champlain.
3. From the Upper Lakes, along the St. Lawrence.

The two first aim at vital blows, and at intercepting the communication with England; the third by more gradual process and by which partial

occupation of our districts might be acquired, even if the entire conquest should not be effected.

The first, it is apprehended, would offer very great difficulties to the enemy, and would hardly be attempted, unless with an overwhelming superiority of force and means.

It would require an advance to a great distance from any effectual resources, through our territory and a country with small means, and with New Brunswick backed by Nova Scotia on one flank, and the advance from Montreal on the other; it would then come upon the St. Lawrence where it is a formidable stream, the navigation of which is entirely in our possession, and available for vessels of great size and power. It would be on the part nearest and most open to any amount of reinforcements and supplies from England, and the whole force and resources of our fleet would be at once brought into close co-operation with our regular land forces.

Under reasonable anticipations, then, of the future relative power on either side, an attack in that direction is not to be expected, nor probably even any serious demonstration; it is much more probable that the efforts there would be confined to what were purely defensive, and those perhaps so weak as to admit of some impression being made there even on themselves.

The approach for invasion most to be dreaded, would seem to be decidedly from Lake Champlain towards Montreal. It is the one where the greatest means could be the most readily collected and supported, while it aims at penetrating the centre of our great line and the heart of our resources.

The first measure that the enemy would no doubt desire to accomplish would be to obtain possession of the whole of the right bank of the St. Lawrence, to Sorel and Richmond, by which their position would be very threatening for attack, and well calculated for admitting of great concentration for the main effort, while the flanks would require but small forces for their security.

We may assume, then, that it is on the approach on Montreal, direct from the south, that the main conflict is to be expected, and along the line of the Richelieu that our determined efforts will be called for.

Without any precise knowledge of the country, it would seem that some favourable battle-fields could be selected on that line; these, previously thoroughly well studied, could no doubt be rapidly entrenched, and made very formidable.

We cannot but suppose, that simultaneously with this leading invasion, other advances will be made on different parts of the upper province; and they will be more or less dangerous in proportion to the preponderance of the relative naval power on the great Lakes.

It is impossible to foresee where and under what circumstances of force these enterprises may be attempted; they must be opposed by the detached columns allotted to the purpose, aided by the local levies, and whatever advantages can be obtained from features of the country.

In these co-operating attacks, the defending party may find opportunities of periods for making detachments from one force, which may be in temporary security, to reinforce another, and enable it to strike some blow of importance; and this will be more likely to be successful, in proportion as the attacks may be disjointed and numerous; and such manœuvres will be greatly facilitated, so long as the internal communications, particularly by railway, can be maintained.

Though consideration has been thus prominently given to the most available general defensible principles, it is far from being contemplated that opportunities may not offer for offensive movements on our part, that even if not of more substantial advantage, may at least greatly retard an advance, and forcibly damage the assumed idea of the overwhelming power of the enemy.

It will be a warfare of the precise nature of which little can be anticipated with any certainty, but which will give great room for the judgment and enterprising spirit of the General in command.

J. F. BURGOYNE, .

Inspector-General of Fortifications.

February 15, 1862.

APPENDIX, No. 3.

RETURN of the Population of Canada, showing the Number of Inhabitants in each Military District, taken from the Census of 1861.

District, No. 1, London.		District, No. 2, Toronto.		District, No. 3, Kingston.		District, No. 4, Montreal.		District, No. 5, Quebec.	
Counties and Cities.	Total Population.	Counties and Cities.	Total Population.	Counties and Cities.	Total Population.	Counties and Cities.	Total Population.	Counties and Cities.	Total Population.
Algona ..	4,916	Grey (‡) ..	18,876	Peterborough (‡) ..	14,797	Ottawa (‡) ..	6,553	Chaudière (‡) ..	10,004
Bruce ..	27,499	Simcoe ..	44,726	Hastings ..	44,978	Montcalm ..	14,738	Portneuf ..	21,291
Grey (‡) ..	18,876	Nipissing ..	2,094	Adirongton and Lennox ..	28,092	Joliette ..	21,198	Quebec ..	27,893
Wellington (‡) ..	43,037	Ontario ..	41,604	Renfrew ..	20,325	Berthier ..	14,608	Jacques Cartier ..	11,318
Halton (‡) ..	9,119	Victoria ..	23,039	Pontiac ..	14,125	Maskinonge ..	14,790	Montmorency ..	11,136
Wentworth (‡) ..	10,612	Peterborough (‡) ..	9,864	Ottawa (‡) ..	22,210	St. Maurice ..	11,100	Charlevoix ..	15,223
Brant (‡) ..	22,757	Durham ..	32,115	Russell (‡) ..	5,124	Chaudière (‡) ..	10,004	Chicoutimi ..	10,479
Norfolk (‡) ..	19,062	York ..	59,674	Dundas ..	18,777	Nicolet (‡) ..	5,394	Saguenay ..	6,101
Elgin ..	32,050	Peel ..	27,248	Grenville ..	24,197	Drummond (‡) ..	9,866	Gaspé ..	14,077
Kent ..	31,183	Halton (‡) ..	13,680	Leeds ..	35,700	Richmond (‡) ..	4,442	Bonaventure ..	13,029
Essex ..	25,217	Wentworth (‡) ..	21,223	Frontiac ..	27,317	Stanstead (‡) ..	6,129	Rimouki ..	20,354
Lambton ..	24,916	Lincold ..	27,625	Prince Edward ..	20,869	Brome ..	12,732	Témiscouata ..	18,561
Huron ..	51,934	Welland ..	24,988	Nordumberland ..	40,592	Missequoi ..	18,608	Kamouraska ..	21,058
Perth ..	38,088	Haldimand ..	23,708	Lanark ..	31,639	Iberville ..	16,991	L'Islet ..	13,306
Waterloo ..	38,757	Norfolk (‡) ..	9,331	Carleton ..	29,630	St. John's ..	14,853	Montnigny ..	13,386
Oxford ..	46,226	Brant (‡) ..	7,385	Kingston (City) ..	13,743	Chateaugay ..	17,637	Bellechasse ..	16,062
Middlesex ..	48,736	Wellington (‡) ..	6,151	Ottawa (City) ..	14,669	Steinbock ..	18,129	Dorchester ..	16,195
London (City) ..	11,555	Hamilton (City) ..	19,096			Stormont ..	18,129	Beauce ..	20,416
		Toronto (City) ..	44,821			Prescott ..	15,499	Compton ..	10,210
						Argenteuil ..	12,897	Stanstead (‡) ..	6,129
						Terrebonne ..	19,460	Richmond (‡) ..	4,445
						Assumption ..	17,355	Drummond (‡) ..	2,471
						Yamaska ..	16,045	Arthabaska ..	13,482
						Richfieu ..	19,070	Nicolet (‡) ..	16,172
						Bagot ..	18,841	Lebinière ..	20,018
						Shefford ..	17,779	Levis ..	22,098
						Rouville ..	18,227	Mégantic ..	17,889
						Chambly ..	13,132	Wolfe ..	6,548
						La Prairie ..	14,475	Quebec (City) ..	51,109
						Napierville ..	14,513		
						Beauharnois ..	15,749		
						Glengarry ..	21,187		
						Soulanges ..	12,221		
						Vaudreuil ..	12,282		
						Two Mountains ..	18,408		
						Laval ..	10,507		
						Hochelega ..	16,474		
						Verchères ..	15,486		
						Hycinthe ..	18,877		
						Montreal (City) ..	90,323		
						Three Rivers (City) ..	6,058		
						Sherbrooke (City) ..	6,899		
						Russell (‡) ..	1,708		
Total ..	504,876	Total ..	464,648	Total ..	406,714	Total ..	681,861	Total ..	449,859

London .. 504,876
 Toronto .. 464,648
 Kingston .. 406,714
 Montreal .. 681,861
 Quebec .. 449,859
GENERAL TOTAL .. 2,507,657

APPENDIX No. 4.

RETURN of the Volunteer Cavalry, Artillery, Engineers, and Infantry in each of the Military Districts in Canada, compiled from a Return called for by a Resolution of the Legislative Assembly, dated 28th April 1862.

	Cavalry.			Artillery.			Engineers.			Infantry.				
	Troops.	Officers.	Men.	Horses.	Batteries.	Officers.	Men.	Horses.	Companies.	Officers.	Men.	Companies.	Officers.	Men.
No. 1. London District	5	17	174	171	3	10	177	47	1	3	50	20	60	1,114
" 2. Toronto "	9	31	335	362	4	16	223	70	1	3	50	36	113	1,903
" 3. Kingaton "	5	23	255	255	6	25	370	93	1	3	87	23	73	1,302
" 4. Montreal "	9	31	409	414	8	32	428	54	1	3	50	71	226	3,765
" 5. Quebec "	6	22	318	245	6	22	384	45	1	3	50	32	113	1,946
Total	34	124	1,491	1,447	27	105	1,562	309	5	15	287	182	585	10,030

SUMMARY.

	Troops, Batteries, or Companies.	Officers.	Men.	Horses.
Cavalry	34	124	1,491	1,447
Artillery	27	105	1,582	309
Engineers	5	15	287	..
Infantry	182	566	10,030	..
Total Volunteer Force in Canada } (1st May 1862)	248	829	13,390	1,756

APPENDIX No. 5.

RETURN showing the Number of Arms supplied to the Volunteer Force of the Province of Canada up to this date.

Rifled Muskets, P. 53.	Short Enfield Rifles, P. 56.	Rifled Carbines.	Colt's Revolver Pistols, with Holsters.	Swords, Cavalry.	Remarks.
3,100	..	275	800	800	Provincial property.
5,010	529	..	..	..	Loaned by Imperial Government.
8,110	529	275	800	800	

There are also seven Field Batteries in the Province, the whole of the Stores of which were transferred by the Imperial Government in 1855 and 1856.

(Signed) A. DE SALABERRY, Lt.-Col.,
D.A.G.M., L.C.

*Militia Department, Quebec,
18th August 1862.*

APPENDIX No. 6.

MILITARY STORES IN CANADA.

Military Store Office, Montreal,

21st August 1862.

Sir,

In pursuance of the request contained in your letter of the 8th instant, I beg to transmit herewith for the information of the Defence Commissioners, Returns shewing the arms, ammunition, field and garrison artillery, intrenching tools, &c., &c., at the three store depôts of Quebec, Montreal, and Kingston; and to state that, in addition to the stores enumerated therein as being now in the country, the following are under orders for Canada, viz. :—

40,000 Rifles.

6,682,457 Rounds rifle-patt. ammunition.

4 18-pr. Batteries (16 guns).

20 12-pr. Howitzers.

2 20-pr. Batteries, Armstrong guns (12 guns).

500 Cavalry swords and carbines.

500 Pistols (Colt's revolvers).

500 Cavalry saddles and bridles.

I have, &c.,

(Signed) A. GUN,

*Deputy-Superintendent.**The Secretary to Defence Commission, Montreal.*

APPENDIX, No. 6.

RETURN showing Arms, Field and Garrison Artillery, Ammunition, Artillery Stores, Engineers' Stores and Intrenching Tools, Clothing and Naval Stores in charge of the Military Store Department in Canada; August 1862.

		Kingston.	Montreal.	Quebec.	Total.
SMALL ARMS.					
Carbines	Artillery Pattern, 1853, rifled ..	36	..	116	152
	Lancaster, oval bore (for Engineers)	..	..	80	80
Muskets, rifled.	Pattern, 1853, 1st Class, Interchangeable .. ..	..	9,057	907	9,964
	Ditto, Ditto, Non-interchangeable .. ..	..	7,592	2,584	10,176
	Ditto, 2nd Class ditto .. ..	..	5,519	3,239	8,758
	Pattern, 1856, 1st Class .. ..	..	6,000	63	6,063
Muskets, smooth bore	Percussion, extra service, Serjeants	42	..	..	42
	Ditto, ditto Privates	734	..	..	734
Rifles, Brunswick .. ..	.. ..	..	60	82	142
Swords	Common, for Indians	905	..	..	905
	Heavy Dragoon	207	..	..	207
	Saw back, brass-mounted.. ..	200	..	..	200
	Scimitar	9	..	..	9
FIELD AND GARRISON ARTILLERY.					
Brass Ordnance.	12-pr. Gun, 5 feet, 12 cwt. ..	1	8	..	9
	9-pr. " 6 " 13 " ..	6	..	..	6
	3-pr. " 3 " 2 " ..	2	3	..	5
	24-pr. Howitzer, 13 cwt. ..	2	4	1	7
	12-pr. " 6 " ..	3	4	..	7
	5½-inch " 9¾ " ..	5	..	..	5
	" " 4¾ " ..	4	..	..	4
	5½-inch Mortar	6	6	5	17
	4¾ " "	6	8	9	23
	68-pr. 95 cwt.	5	..	4	9
	8-inch Gun, 65 cwt.	3	..	..	3
	32-pr. Gun, 56 cwt. .. ..	..	101	40	141
	24-pr. " 9½ feet, 50 cwt. ..	36	145	95	276
	" " 9 " 48 "	18	272	17	307
	" " 7½ " 41 "	40	..	..	40
	" " " 20 " .. ..	..	..	2	2
18-pr. Gun, 9 feet, 42 " ..	..	2	25	27	
" " 8 " 38 "	10	1	..	11	
" " 6 " 27 "	26	..	..	26	
12-pr. Gun, 9 " 34 " ..	4	1	14	19	
" " 8½ " 27 "	19	1	29	49	
" " 6 " 24 "	5	..	..	5	
9-pr. Gun, 8½ " 28 " ..	..	1	..	1	
" " 5 " 17 " .. ..	..	1	20	21	
6-pr. Gun, 8½ " .. ..	..	..	6	6	
10-inch Howitzer .. ..	..	..	4	4	
24-pr. " " .. ..	..	..	2	2	
68-pr. Carronade, 36 cwt. ..	11	10	49	70	
42-pr. " "	5	..	..	5	
32-pr. " 17 cwt.	131	112	2	245	
24-pr. " 13 "	34	7	..	41	
18-pr. " 10 "	11	..	2	13	
12-pr. " 6 "	20	6	..	26	
10-inch Mortar, 18 " ..	4	..	8	12	
8-inch " 8 "	11	2	15	28	

				Kingsston.	Montreal.	Quebec.	Total.	
AMMUNITION.								
Cartridges, small Arm	Carbine, Artillery	2 drs.	17,599	9,166	15,220	41,985		
		Muskets, rifled, Pattern 1853, 2 $\frac{1}{2}$ "	683,272	2,073,337	1,695,035	4,451,644		
		" common, smooth bore, 4 $\frac{1}{2}$ "	437,600	488,500	..	926,100		
		Brunswick rifle	77,964	119,610	27,920	225,494		
		Victoria carbine .. .. .	..	..	83,300	83,300
	Pistol	2 $\frac{1}{2}$ drs.	13,447	7,273	..	20,720		
Cartridges, flannel, filled	8-inch Gun	10lbs.	1,003	..	90	1,093		
		32-pr. "	8 "	..	250	250		
		24-pr. "	8 "	1,200	..	1,200		
		9-pr. "	2 $\frac{1}{2}$ "	10	..	10		
		6-pr. "	1 $\frac{1}{2}$ "	24	465	489		
		6-pr. "	1 "	33	5	38		
		24-pr. Howitzer	2 "	100	..	100		
		12-pr. "	1 "	52	..	52		
Bursters	Calico, filled, diaphragm shell	12-pr. Armstrong	1 $\frac{1}{2}$ "	..	750	762	1,512	
			68-pr. and 8-in. Guns. 60 drs.	100	..	30	130	
				56-pr. Gun	55 "	16	..	16
			32-pr. "	40 "	1,246	..	1,540	2,786
			24-pr. "	30 "	2,064	80	4,120	6,264
			18-pr. "	25 "	600	600
			12-pr. "	20 "	..	1,100	500	1,600
			9-pr. "	15 "	..	120	500	620
			6-pr. "	10 "	..	600	500	1,100
			Calico, filled, { 12-pr. Gun, 1 oz. 1 $\frac{1}{2}$ dr.	35	..	35
			Shrapnel { 6-pr. "	9 $\frac{1}{2}$ drs.	..	25	..	25
			Iron, Armstrong	600	2,262	2,862
Rocket	{ 24-pr. Rocket, 8 $\frac{1}{2}$ oz.	..	..	200	300	500
		{ 12-pr. "	3 $\frac{1}{4}$ "	..	300	1,300	1,600	
POWDER.								
Powder	Large Grain .. .. .	.. .. .	242,714	423,343	{ (Red) 897,470 }	1,562,527	
		" Triumph	26,124	..	..	26,124
		Fine Grain	437	698	{ (Red) 14,888 }	16,023		
		" Triumph	28,550	..	..	28,550
		Large Grain, White .. .. .	..	..	34,300	34,300
		Fine Grain " .. .. .	..	..	7,169	7,169
		A Z .. .. .	..	4,950	4,500	9,450	
		Rifle Arm	2,224	..	600	2,824		
		Broken up from Cartridges .. .. .	..	6,335	..	6,335	
		Caps, Percussion (spare)	715,000	..	..	715,000
Carcasses, round, fixed, 13-inch	" " " 10 " .. .. .	.. .. .	92	..	47	139	
		" " " 8 "	177	24	77	278		
		" " " 5 $\frac{1}{2}$ "	624	109	284	1,017		
		" " " 4 $\frac{1}{2}$ "	686	151	1,452	2,289		
		" " " 4 $\frac{1}{2}$ "	72	26	355	453		
Rockets	Congreve, 24-pr. .. .. .	.. .. .	..	200	..	200
		" 12-pr. .. .. .	..	388	..	388	
		" 6-pr.	233	180	..	413		
		" 3-pr. .. .. .	..	736	..	736	
		" 1-pr. .. .. .	..	526	..	526	
		Signal 2-pr. .. .. .	..	227	..	227	
		" 1-pr.	211	191	..	402		
" 1 $\frac{1}{2}$ -pr.	200	205	..	405				
" 2 oz.	197	..	..	197		
Blue Lights	997	..	..	997		
Portfires, long, small	4,930	..	..	4,930		
Tubes	Quill, Congreve .. .. .	.. .. .	18,145	..	..	18,145
		" detonating	73,944	..	..	73,944
		Copper, friction	27,170	..	..	27,170
		Brass, fixed	150	..	..	150
Fuzes	Boxer's, common .. .. .	.. .. .	17,206	..	..	17,206
		" diaphragm	3,285	..	..	3,285
		For Shells, 13-in.	2,561	..	..	2,561
			" 10 "	4,796	4,796	
			" 8 "	9,045	9,045	
			" 5 $\frac{1}{2}$ "	10,060	10,060	
Fixed O. P. { " 4 $\frac{1}{2}$ "	500	..	..	500		
	.. .. .	1,500	..	..	1,500	
Slow Match	lbs.	1,500	..	..	1,500	
Quick Match	"	1 $\frac{1}{16}$	..	..	1 $\frac{1}{16}$	

		Kingston.	Montreal.	Quebec.	Total.		
Shells	Shells, empty, common	13-inch ..	..	1,174	487	1,661
		10 " ..	2,000	500	5,403	7,903	
		8 " ..	2,015	3,358	7,409	12,782	
		5½ " ..	..	2,386	5,181	7,567
		4½ " ..	..	265	615	880
		56-pr. ..	35	..	80	115	
		32 " ..	3,050	..	10,688	13,738	
		24 " ..	9,138	188	20,424	29,750	
		18 " ..	..	..	3,764	3,764
		12 " ..	..	634	300	934
		24-pr. Howitzer	..	..	382	382
		Loose hand, land	984	2,773	3,757
		Do. sea	236	970	1,206
		Shells, empty, Diaphragm	68-pr. and 8-inch	10	..	75	85
			32 " "	1,214	..	1,530	2,744
	24 " "		2,154	80	4,000	6,234	
	18 " "		..	..	600	600
	12 " "		..	1,100	500	1,600	
	9 " "		..	120	100	220	
	6 " "		..	600	582	1,182	
	Shrapnell, empty		68-pr.	209	209
			9-pr.	229	229
			68-pr. Gun	990	990
		32-pr. ..	..	..	844	844
		24 " "	..	276	6,480	6,756	
		18 " "	..	..	5,330	5,330
	Shells, Shrapnel, filled with lead balls	12 " "	..	..	6,725	6,725
		9 " "	..	1,694	2,108	3,802	
		6 " "	..	26	497	523	
		3 " "	..	196	..	196	
		24-pr. Howitzer	..	199	..	199	
		12-pr. " "	..	12	..	12	
	Boxer's Shrapnel, filled with lead balls	5½-in. " "	..	49	..	49	
		68-pr. carronade	..	50	..	50	
		6-pr. Gun	..	25	..	25	
		12-pr. Howitzer	..	35	..	35	
		Martin's 8-inch	..	..	20	20
		Armstrong's segment, 12-pr.	..	1,516	1,310	2,826	
	Shot	Round cast	68-pr. Gun	1,332	6,815	2,682	10,829
			56-pr. " "	562	..	875	1,437
			42-pr. " "	..	197	..	197
			32-pr. " "	21,401	29,200	16,721	67,322
			24-pr. " "	20,906	110,149	30,321	161,376
			18-pr. " "	13,953	10,063	19,308	43,324
			12-pr. " "	..	7,971	18,740	26,711
9 pr. " "			..	3,856	..	3,856	
6-pr. " "			..	3,072	..	3,072	
4-pr. " "			..	917	..	917	
Fixed to wood bottoms		3-pr. " "	..	1,439	847	2,286	
		2-pr. " "	..	402	6,038	6,440	
		1½-pr. " "	..	..	357	357
		1-pr. " "	3,022	..	41,512	44,534	
		½-pr. " "	..	1,000	..	1,000	
		24 pr. Gun	1,613	212	774	2,599	
		18-pr. " "	..	..	800	800
		12-pr. " "	..	..	4,281	4,281
		9-pr. " "	4,602	4,130	3,000	11,732	
		3-pr. " "	..	23	..	23	
Riveted to wood bottoms		24-pr. Howitzer	..	100	..	100	
		12-pr. Gun	..	1,210	..	1,210	
		12 oz. " "	..	..	4,216	4,216
		8 oz. " "	..	..	4,136	4,136
		6 oz. " "	..	..	311	311
Cast in sand	4 oz. " "	..	..	16,444	16,444	
	3 oz. " "	..	..	15,280	15,280	
	2 oz. " "	..	..	14,050	14,050	
	1 oz. " "	..	..	242	242	
Hollow..	8-inch..	1,493	..	55	1,548		
	68-pr. ..	413	37	677	1,127		
	42-pr. ..	72	..	..	72	
Grape Carronade	32-pr. ..	1,080	524	2,475	4,079		
	24-pr. ..	1,381	134	136	1,651		
	18-pr. ..	..	..	576	576	
	12-pr. ..	2,315	..	419	2,734		
Grape ..	68-pr. Gun	70	..	20	90		
	56-pr. " "	6	..	..	6	
	32-pr. " "	..	54	2,572	2,626		

		Kingston.	Montreal.	Quebec.	Total			
Shot	Grape, Gun— <i>continued</i>	24-pr. Gun ..	3,147	2,099	6,826	12,072		
		18-pr. " ..	1,983	463	1,584	4,030		
		12-pr. " ..	3,051	499	5,582	9,132		
		9-pr. " ..	3,066	104	..	3,170		
		6-pr. " ..	2,484	12	..	2,496		
		3-pr. " ..	..	23	..	23	
		Tin-case	Carronade.	68-pr. Carronade	540	91	785	1,416
				42-pr. " ..	60	58	..	118
				32-pr. " ..	1,982	762	3,044	5,788
				18-pr. " ..	1,289	..	1,877	3,166
	24-pr. " ..			1,610	122	383	2,115	
	Gun ..		12-pr. " ..	2,201	40	2,303	4,544	
			8-inch Gun ..	67	..	100	167	
			56-pr. " ..	6	6	
			32-pr. " ..	529	56	705	1,290	
			24-pr. " ..	3,907	1,303	6,090	11,300	
	Howitzer..	Gun ..	18-pr. " ..	1,316	437	2,001	3,744	
			12-pr. " ..	4,039	920	803	5,767	
			9-pr. " ..	2,677	984	2,671	6,332	
			6-pr. " ..	4,311	2,088	4,259	10,658	
3-pr. " ..			640	535	1,020	2,195		
Howitzer..		2-pr. " ..	..	280	..	280	
		24-pr. Howitzer	14	80	543	637		
		12-pr. " ..	..	30	216	246	
		10-inch " ..	..	..	180	180
		8-inch " ..	..	44	706	750	
Ammunition, limber	Travelling ..	5½-inch " ..	1,078	244	..	1,322		
		4½-inch " ..	48	..	..	48
		12-pr. Gun ..	..	..	6	6
		9-pr. " ..	..	..	6	6
		6-pr. " ..	..	..	2	2
	Travelling ..	24-pr. Howitzer	..	..	4	4
		Rocket ..	..	..	1	1
		12-pr. Gun ..	..	8	..	8	
		9-pr. " ..	4	..	..	4
		24-pr. " ..	2	3	..	5		
Travelling, with limber.	Sleigh.	12-pr. Rocket ..	..	2	..	2	
		6-pr. " ..	..	1	..	1	
		12-pr. ammunition waggons ..	..	8	..	8	
		Forge waggons ..	..	3	..	3	
		Waggon, S.A. ammunition ..	..	2	..	2	
	Sleigh.	Howitzer ..	24-pr. "	2	..	2	
			Ammuni- tion. { 6-pr. Gun	1	..	1	
		Carriages	Garrison.	24-pr. Howitzer	..	4	..	4
				12-pr. "	4	..	4
				68-pr. Gun ..	5	..	4	9
Carriages	Garrison.	32-pr. " ..	29	11	54	94		
		24-pr. " ..	..	15	18	33	
		18-pr. " ..	..	1	2	3	
		12-pr. " ..	..	1	..	1	
		8-in. " ..	2	..	..	2
	Wood, common	Rear Chock..	10-in. Howitzer	4	4	
			8-in. " ..	2	2	
		Iron ..	24-pr. "	1	1	
			8-pr. Gun	18	..	18	
			32-pr. Gun	1	1	
Trails for Carron- ades ..	Boat service ..	24-pr. " ..	..	2	1	3	
		18-pr. " ..	..	..	1	1
		12-pr. " ..	..	..	28	28
		9-pr. " ..	..	2	11	13	
		68-pr. Carronade	2	..	13	15		
	Traversing platforms, wood ..	Trails for Carron- ades ..	32-pr. " ..	10	..	39	39	
			24-pr. "	10	
		Waggons, platform ..	18-pr. "	11	
			12-pr. " ..	1	..	4	5	
			6-pr. Gun	1	1	
Waggons, platform ..	Dwarf. { 68-pr. 95 cwt.	..	5	..	..	5
		32-pr. 56 cwt.	6	..	..	6
	Common { 32-pr. ..	..	8	..	..	8
		24-pr. ..	7	..	..	7
		..	..	2	..	2
Beds ..	Iron..	24-pr. " ..	1	..	..	1
		I. S. 10-in. Mortar	4	..	..	4
	Wood ..	" 8-in. "	11	..	..	11
		5½-in. Mortar ..	6	..	..	6
		4½-in. " ..	8	..	..	8
Quoins, Mortar ..	For quoins ..	24-pr. Gun ..	7	..	..	7
		8-in. Mortar ..	5	..	..	5
Quoins, Mortar ..	For quoins ..	5½-in. " ..	6	..	..	6

	Kingston.	Montreal.	Quebec.	Total.
MISCELLANEOUS, ARTILLERY STORES, &c.				
Bags, powder	6			
Carts, forage	4			
Cartouches, canvas	9			
" leather, large	9			
" " small	20			
Chocks, wood, 32-pr. gun	12			
" 24-pr. carronade	14			
Handscrews, double	3			
" single	39			
Handspikes, wood, traversing platform	52			
" " travelling carriage	49			
" iron, with rollers	56			
Implements, shell or fuze, sets, No. 1	2			
" " " No. 2	2			
" " " No. 3	3			
" " " No. 4	6			
Irons, priming, land service, long	42			
" " short	48			
" " new pattern, sets	29			
Quadrants	54			
Rods, pointing, mortar	8			
Scales, tangent	68-pr. gun	5		
	24-pr. 9½ feet, No. 1	18		
	24-pr. 6 feet, No. 2	16		
	18-pr. 9 feet, No. 1	4		
	12-pr. 9 feet, No. 2	2		
	12-pr. 8½ feet, No. 2	2		
Sights, Millar's	12-pr. 7½ feet, No. 2	2		
	68-pr. gun, hind and fore	5 of each		
	8-in. " "	32		
	32-pr. " "	195		
	24-pr. " "	2		
	18-pr. " "	4		
	32-pr. carronade	88		
ENGINEER STORES AND INTRENCHING TOOLS.				
Axes, felling, helved	50	312	33	395
" " unhelved		78	50	128
" broad	33			33
Bags, sand	32,811			32,811
Bars, tamping, miners, copper	3			3
" " iron	30			30
Barrows, hand	9	13	57	79
" wheel	30	34	118	182
Billhooks	1,533	2,555		4,088
Chevaux de frise, 6 feet lengths			600	600
Crowbars, iron, 6 feet	10			10
" " 5½ feet	42			42
" " 5 feet	11			11
" " 4½ feet	35			35
" " 4 feet	11			11
" " 2 feet	19			19
Files for crosscut saws	14			14
Fuze, Bickford's, fathoms	58			58
Gabions, iron-tarred, Tyler's			2,250	2,250
Hatchets, hand	19	498	775	1,292
Hooks, reaping	19			19
Hammers, smith, hand	7			7
" " sledge	10			10
Helves, felling axes		1,433	637	2,070
" pickaxes		207	773	980
Jumpers, miners'	24			24
Knives, gabion			150	150
Levels, field			13	13
Lines, tracing, 50'			30	30
" marine tarred			30	30
Mallets, picket	23			23
Needles, miners'	31			31
Points, spare, for picks			3,000	3,000
" " jumpers			213	213
Picks, helved	219	506	3	728
" unhelved		399	129	528

	Kingston.	Montreal.	Quebec.	Total.
Saws, pit	35	..	..	35
„ hand	58	..	..	58
„ crosscut	10	..	..	10
Scythes, complete	32	17	..	49
Shovels	149	1,229	340	1,718
Spades	167	177	159	503
Stones, rag	104	..	..	104
„ grind	6	..	..	6
Tools, chests of	{	Carpenters'	29	29
		Miners'	15	15
		Masons'	3	3
		Smiths'	6	6
		Collar makers'	2	2
Wheelers'	1	1		
CLOTHING.				
Greatcoats, Artillery, blue, common .. .. .	..	656	41	697
„ Line, grey, sergeants' .. .. .	..	267	..	267
„ „ „ privates' .. .. .	..	8,032	12,586	20,618
Fur caps	72	24	..	96
Woollen comforters	27	3,991	..	4,018
„ drawers	419	5,994	..	6,413
„ Jerseys	449	5,950	..	6,399
„ stockings, pairs .. .. .	..	4,929	..	4,929
Knee-boots, pairs .. .. .	..	63	..	63
Vests chamois .. .. .	..	888	..	888

NAVAL STORES.

	Kingston.	Quebec.	Total.		
Axes, pole or boarding .. .. .	..	297	297		
Axletrees {	Iron, transporting	32	..	32	
	Wood, ship, fore and hind	10 of each	..	10	
Barrels {	Bridge, copper-hooped	51	..	51	
	Lined with lead .. .. .	..	31	31	
	Water-tight, whole .. .. .	..	39	39	
„ half .. .. .	..	137	137		
Baskets, ballast, half-bushel	10	..	10		
Beds, wood for quoins, ship guns {	8-inch	35	..	35	
	32-pr.	90	..	90	
	18-pr.	3	..	3	
	12-pr.	2	..	2	
Boards, pendulum	2	..	2		
Bolts, fighting, 8-inch	60	..	60		
Boxes, tube {	copper-lined	8	..	8	
	with straps and bags	3	..	3	
Blue lights .. .. .	..	192	192		
Carriages {	Gun {	32-pr. complete	4	..	4
		„ in frame, 7 pieces each	76	..	76
		8-inch, sliding	20	..	20
		18-pr. complete	4	..	4
		12-pr. „	2	..	2
Carronade, 32-pr. sliding	30	..	30		
Ironwork, sets of, for 32-pr. gun, ship-carronade, in frame	76	..	76		
And for 8-inch slides	17	..	17		
Cases (leather) for cartridges {	No. 2 .. .. .	..	30	..	30
		„ 3	52	..	52
		„ 4	259	..	259
		„ 7	1	..	1
Chocks, dismounting	32	..	32		
Compressors, iron	60	..	60		
Curbs {	Metal .. {	Large	12	..	12
		Small	32	..	32
	Iron, sets of {	Large, 18 pieces	0½	..	0½
		Small, 48 „ { centre side	2	..	2
		„ „ { side	1½	..	1½

	Kingston.	Quebec.	Total.
Funnels, shell, copper .. .. .	..	19	19
Fuzes	2,300	..	2,300
{ Moorsom's	3,001	..	3,001
{ Boxer's time, naval { 7½ sec.	1,601	..	1,601
{ 20 sec. .. .. .	..	..	..
Hammers, Dundas gun	437	..	437
Handspikes, wood, with rollers	44	..	44
Irons, priming, S.S.	261	272	533
Implements, rocket, sets .. .. .	..	11	11
Lanterns, Muscovy .. .. .	..	50	50
Match, slow .. .. .	..	34	34
Pikes, boarding .. .. .	..	1,717	1,717
Pendulums, brass	2	..	2
Portfires, long .. .. .	..	3,001	3,001
,, slow, blue paper .. .. .	..	7,851	7,851
Ordnance	27	..	27
{ Guns { 8-inch, 65 cwt.	183	..	183
{ 32-pr. 9½ feet, 56 cwt.	1	..	1
{ Mortars, S.S. { 13-inch, 81 cwt.	6	..	6
{ 10-inch, 52 cwt. .. .. .	..	20	20
Quadrants, brass	9	..	9
Quoins, ships	2	..	2
{ 18-pr. gun	74	..	74
{ 12-pr. ,,	210	..	210
{ 8-inch ,, .. .. .	..	300	300
{ 32-pr. ,, .. .. .	..	1,212	1,212
{ No. 70, 24-pr. .. .. .	..	71	71
{ 12-pr. .. .. .	..	300	300
{ Shot, O.P., 12-pr. .. .. .	..	525	525
{ 1-pr. .. .. .	..	12	12
{ Signal { ½-pr. .. .. .	..	..	..
Rockets	47	..	47
{ 8-inch gun	1	..	1
{ 56-pr. ,,	200	..	200
{ 32-pr. 9½ feet	80	..	80
{ Carronade	17	..	17
{ In frame, 7 pieces each.	3	..	3
{ Complete	2	..	2
{ 18-pr. gun	38	..	38
{ 32-pr. carronade, Hardy's patent	743	7,317	8,060
Swords, sea service, straight .. .. .	..	3,871	3,871
Scabbards, leather, sea service	128	..	128
Shot, iron, 32-pr. carronade, grape .. .. .	..	..	..

APPENDIX No. 7.

RETURN of Ordnance in charge of Officer Commanding Royal Artillery in Canada.

Head Quarters, Montreal, 6th September 1862.

STATIONS.	Guns.										Carriages.					Howitzers.			Mortars.		
	8-in.	56-pr.	32-pr.	24-pr.	18-pr.	12-pr.	9-pr.	68-pr.	32-pr.	24-pr.	18-pr.	12-pr.	8-in.	5½-in.	18-in.	10-in.	8-in.				
Toronto	7	..	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
St. Catherine's	8	..	..	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Kingston	1	1	19	28	4	..	..	..	14	2	5	..	..	4	1	2	2	..
Montreal	..	..	1	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..
Quebec	1	1	29	55	8	6	..	7	43	..	16	6	6	5	3	10	2	..			
Total	9	2	53	83	12	6	3	7	57	2	21	6	6	9	4	12	4	..			
General Total	21	2	56	98	13	8	3	9	57	4	21	6	6	9	4	16	4	..			

(Signed) C. WALLER, Brigade-Major, R.A.,
For Colonel Commanding Royal Artillery in Canada.

APPENDIX No. 8.

RETURN showing the Barrack Accommodation in Canada (permanent and the property of Provincial Government) on 1st September 1862.

Quartermaster-General's Office, Montreal.
5th September 1862.

Station.	Construction.								Remarks.	
	Commanding Officers.	Field Officers.	Officers.	Staff Serjeants.	Serjeants' separate rooms.	Married Soldiers.	Non-commissioned Officers and Rank and File.	Patients.		Horses.
Kingston, C. W. ..	1	3	45	11	13	208	1,046	63	86	} Belong to the Imperial Government.
Montreal, C. E. ..	..	4	15	26	..	..	1,285	47	224
William Henry, C. E. ..	..	..	..	..	..	..	245	..	12
Quebec, C. E. ..	2	2	62	13	15	..	2,055	177	41	
Total ..	3	9	122	50	28	208	4,631	287	363	
London, C. W.	2	24	2	16	..	515	83	6	} Transferred to Provincial Government. Occupied temporarily.
Niagara, " ..	..	1	8	6	4	..	355	33	32
Toronto, " ..	..	2	19	15	2	..	895	54	253
Chambly, C. E. ..	1	2	27	..	5	..	738	12	..	
St. John's, C. E. ..	..	3	27	10	..	..	418	57	8
Isle-aux-Noix, C. E. ..	..	2	23	3	4	..	303	34	4
Total ..	1	12	123	36	31	..	3,224	273	318	
Grand Total ..	4	21	250	86	59	208	7,855	560	681	

* This Barrack has not been occupied for the last eleven years.

N.B.—The rest of the accommodation for Troops in Canada is found in hired buildings.

(Signed)

D. LYSONS, Colonel,
Deputy-Quartermaster-General.

APPENDIX No. 9.

Proclamation by the President of the United States, dated 28th April 1818, with reference to the arrangement entered into with Great Britain, relative to the Naval Force on the Lakes in time of Peace.

Whereas an arrangement was entered into at the City of Washington, in the month of April, in the year of our Lord 1817, between Richard Rush, Esq., at that time acting as Secretary of State for the United States, for and in behalf of the Government of the United States, and the Right Hon. Charles Bagot, His Britannic Majesty's Envoy Extraordinary and Minister Plenipotentiary for and on behalf of His Britannic Majesty, which arrangement is in the words following, to wit :

The Naval Force to be maintained upon the American Lakes by His Majesty and the Government of the United States shall henceforth be confined to the following vessels on each side, that is :—

“On Lake Ontario, to one vessel not exceeding one hundred tons burden, and armed with one 18-pounder cannon.

“On the waters of Lake Champlain, to one vessel not exceeding like burden, and armed with like force.

“On the upper lakes, to two vessels not exceeding like burden each, and armed with like force.

“All other armed vessels on these lakes shall be forthwith dismantled, and no other vessels of war shall be there built or armed.

“If either party should hereafter be desirous of annulling this stipulation, and should give notice to that effect to the other party, it shall cease to be binding after the expiration of six months from the date of such notice.

“The Naval Force so to be limited shall be restricted to such services as will, in no other respect, interfere with the proper duties of the armed vessels of the other party.”

And whereas the Senate of the United States have approved of the said arrangement, and recommended that it should be carried into effect ; the same having also received the sanction of His Royal Highness the Prince Regent, acting in the name and on the behalf of His Britannic Majesty.

Now, therefore, I, James Monroe, President of the United States, do, by this my Proclamation, make known and declare that the arrangement aforesaid, and every stipulation thereof, has been duly entered into, concluded, and confirmed, and is of full force and effect.

Given under my hand, at the City of Washington, this 28th day of April, in the year of our Lord 1818, and of the Independence of the United States the 42nd.

By the President,
JAMES MONROE.

JOHN QUINCY ADAMS.
Secretary of State.

APPENDIX No. 10.

SUMMARY of Tonnage engaged in Commerce on the Lakes, 1861.

UNITED STATES.			CANADIAN.		
Number.	Rig.	Tonnage.	Number.	Rig.	Tonnage.
65	Paddle Steamers ..	42,683	63	Paddle Steamers ..	21,017
107	Screw Steamers ..	50,018	15	Screw Steamers ..	4,562
91	Tugs.. ..	9,155	22	Tugs.. ..	4,842
48	Barques	19,616	19	Barques	7,153
75	Brigs	22,124	15	Brigs	4,223
843	Schooners	180,357	222	Schooners	33,771
1,229		223,953	356		75,658

COMPARATIVE Number and Tonnage of Steam Vessels, between 1858 and 1861.

Year.	UNITED STATES.		CANADIAN.		Class.
	Number.	Tonnage.	Number.	Tonnage.	
1858	72	48,013	67	24,784	Paddle. Screw.
	113	56,994	14	4,197	
	185	105,007	81	28,981	
	In favour of United States ..	104	76,026		
1859	68	46,240	54	21,402	Paddle. Screw.
	118	55,657	16	4,127	
	186	101,897	70	25,529	
	In favour of United States ..	116	75,868		
1860	75	47,333	77	25,939	Paddle. Screw.
	190	57,210	27	7,289	
	265	104,543	104	32,228	
	In favour of United States ..	161	71,315		
1861	65	42,683	63	21,107	Paddle. Screw.
	107	50,018	15	4,562	
	172	92,701	78	25,669	
	In favour of United States ..	94	67,032		

COMPARISON of Total Tonnage on the Lakes, between 1858 and 1861.

Year.	UNITED STATES.		CANADIAN.	
	Number.	Tonnage.	Number.	Tonnage.
1858	1,213	331,153	335	73,148
In favour of United States ..	878	258,008		
1859	1,198	323,156	313	69,663
In favour of United States ..	885	253,493		
1860	1,216	316,503	360	76,717
In favour of United States ..	856	239,786		
1861	1,229	323,593	356	75,658
In favour of United States ..	873	248,295		

The United States steam-vessels have decreased, since 1858, 13 in number, representing 12,306 tons.

The Canadian steam-vessels have increased, during the same period, 3 in number, and 3,312 tons.

Of the total number of vessels on the Lakes, the United States count 16 more than in 1858, though the tonnage has decreased 7,200 tons.

The Canadian vessels have increased 21 in number, and 2,510 tons. About 23 per cent. of the above tonnage can pass through the Welland Canal.

Experience has proved that the cheapest and most expeditious means of carrying freight is by a large class of screw steamers, from 600 to 1,000 tons burden, a class too large to pass the Welland Canal, but greatly on the increase.

TABULAR STATEMENT of the Dimensions and Capacity of Canadian Canals.

Designation of Canal.		To connect or avoid.				Canal.				Locks.				Navigation.		Dimensions of Vessels which can pass, and time required.					Remarks.
General Name.	Special Name.					Length.	Breadth.	Depth.	Tim.	Number.	Length.	Breadth.	Depth.	Opens	Closes	Length.	Breadth.	Draught.	Steaming.	Towed or Sailing.	
		Miles.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	(average of 10 years)	Feet.	Feet.	Feet.	Hours.	Hours.	Hours.	
Welland	Main Line	27½	60	10	334	27	150	26½	10	26	10	26	140	26	26	10	12	24			
	Feeder	21	60	9½	..	2	150	26½	8½	8½	8½	8½	140	26	26	8½	10	20			
	Lateral Cut	3	60	9½	..	2	150	26½	8½	8½	8½	8½	140	26	26	8½	2	4			
St. Lawrence	Junction	5	90	12	14	3	200	45	9	44	45	9	9	Dec. 7	176	44	9	2½	5		
	West Williamsburg	4	90	12	11½	2	200	45	9	11½	45	9	9	Dec. 7	176	44	9	2	4		
	East Williamsburg	0½	90	12	4	1	200	45	9	4	45	9	9	Dec. 11	177	38	9	0¾	1½		
	Cornwall	11½	150	12	8	7	200	45	9	8	45	9	9	Dec. 29	181	30	9	4	8		
	Beauharnois	11½	120	9	82½	9	200	45	9	82½	45	9	9	Dec. 2	183	28	9	4	9		
Lachine	8	190	9	44½	5	200	45	9	44½	45	9	9	May 1	183	28	9	3	6			
Rideau	Rideau	127	75	6	457½	47	134	33	5	May 1	Nov. 28	122	32	5	30	60	60	30	60	60	Canal much out of repair.
Ottawa	Carillon	4½	75	6	8	3	134	33	5	May 1	Nov. 28	122	32	5	3	5	5	3	5	5	
	Blondeau	0½	75	6	4	1	134	33	5	4	33	5	5	Nov. 28	122	32	5	0¼	1	1	
	Grenline	6½	40	4½	35½	3	108	20	5	35½	20	5	5	Nov. 28	96	19	4½	5	10	10	
	St. Anne's	0½	45	9	3	1	190	45	9	3	45	9	9	Nov. 28	170	44	9	0¼	0¼	0¼	
Richelieu River	Chambly	11½	90	9	74	9	120	24	7	April 27	Dec. 2	110	22	6½	4	8	8	4	8	8	
	St. Ours	0¾	45	9	6	1	200	45	7	April 13	Dec. 2	176	44	6½	0½	0½	0½	0½	0½	0½	

APPENDIX No. 12.

Letter from Mr. Woodruff, Superintendent of the Welland Canal.

Welland Canal Office, St. Catharine's,

June 2nd, 1862.

Sir,

I submit my answers to the following questions, conveyed to me in your favour of the 7th, by direction of the Commission appointed to report on the Defence of Canada.

Question 1.—Which points on the Welland Canal do you consider the most vulnerable in the event of a war with the United States?

Answer.—Allanburgh, Port Robinson, the embankment of the Canal bordering on the Chippewa Creek, the Aqueduct, Port Colborne Lock, Port Maitland Lock, the dam at Dunnville, and the lock at Dalhousie.

Question 2.—How could the canal be most readily and easily rendered unserviceable?

Answer.—By destroying the works of the canal at either of the places mentioned in answer to Question 1.

Question 3.—What would be the expense of enlarging all the locks on the canal to the dimensions of the largest lock at the entrances? What time would it require to make such enlargement, and would there be any engineering difficulty or commercial objection in the way of making such enlargement?

Answer.—The enlargement of the canal to the size of the largest lock at the entrances would cost from \$2,500,000 to \$3,000,000.* The probable time occupied in making such enlargement, about two years. The first year would be occupied in preparing and delivering the materials. There are no engineering difficulties to contend with in making such enlargement; but great commercial objections to it, as it would be necessary to suspend the navigation at least one year during such enlargement. To obviate this, a partially independent canal should be made; the probable cost of such work would be near \$4,000,000.

Question 4.—How many men and horses are employed on an average daily on the canal, and how many of the same are paid by the Province?

Answer.—225 to 250 men; 350 to 400 horses. 150 of the men are paid by the Province and 8 horses.

Question 5.—What means would you suggest for organizing these men as police, or otherwise, for the protection of the canal, in event of war?

Answer.—In answering this question, I presume that the employment of the Staff connected with the canal, would be as a description of detection and watch-body; their limited number would prevent their being of much value as a military body in such a length of canal. I consider that their being furnished with suitable arms, enrolled and well instructed in the nature of their duty, and under an officer of the establishment, to whom they have been in the habits of obedience, would be the very best and most effective manner in which their services could be made use of.

Question 6.—Do you think the men on the canal, whether paid by Government, or in private employ, would readily fall into any scheme of organization that might be proposed.

Answer.—I have every reason to believe that they would, as their means of living is derived from the successful maintenance of the canal; and the readiness

with which they have joined some of the Volunteer Corps shews this to be so. At the same time, as may be inferred from my preceding answer, I think it would be highly injudicious that they should be taken away from the line of canal as Volunteers.

Question. 7.—What is the nature of the Chippewa Creek? What description of boats are generally used upon it? What is the nature of the mouth of the creek? and could gun-boats go in and out easily?

Answer.—The Chippewa Creek is a sluggish stream; its extreme level is not varied more than 3 feet by the spring freshets, or strong winds producing a great flow down the Niagara River, which causes the Chippewa to rise. Its depth from the mouth to the entrance of the canal at Port Robinson, is 16 feet and upwards.

Across the mouth of the creek, there is a bar, with but from 7 to 9 feet of water. The navigation entrance to the creek is by an artificial cut, through which large steamers easily pass, drawing 10 feet of water, and there would be no difficulty of gun boats passing in and out of it easily.

Question 8.—What is the shortest time in which a vessel of the largest size that the locks of the canal will admit, can be passed from lake to lake.

Answer.—From 10 to 12 hours.

The length of the Welland Canal, from its extreme north end at Lake Ontario, to its extreme south end at Lake Erie, is ...	27½ Miles.
The length from Port Dalhousie to "The Junction" is ...	20 "
The length of the Feeder from "The Junction" lock to the head of the canal at Dunnville, is	21 "

The navigation by the Feeder from lake to lake passes vessels drawing 8½ feet water, 26¼ feet breadth of beam, and 140 feet long.

The length of the canal from Port Dalhousie to the Grand River, <i>via</i> the Feeder and Broad Creek, or Port Maitland lock, is ...	38 Miles.
From the mouth of the canal at the Grand River to Dunnville, <i>via</i> the lock at Port Maitland, and the canal, it is ...	6½ "
Height of the canal above lake Ontario, is	328¼ Feet.
Same above Lake Erie	6 "

Vessels pass through the entire length of the main canal, from Dalhousie to Colborne, drawing 10 feet of water, 140 to 141 feet long, 26¼ feet beam.

From Dalhousie to St. Catharine's, the limits of the dimensions of vessels are 10 feet water, 179 feet long, and 44 feet beam.

Vessels can pass, from Colborne to Allanburgh, 200 feet long, 44 feet beam, 10 feet draught of water (with present height of Lake Erie, drawing 12 feet) a distance of 14¾ miles.

Vessels can pass through the Port Maitland lock, 163 feet long, 44 feet beam, and 10 feet draught of water.

I have, &c.,
 (Signed) S. D. WOODRUFF,
Superintendent.

To W. Crossman, Esq.,
 Captain, Royal Engineers, Secretary.

APPENDIX No. 13.

ENLARGEMENT OF CANALS.

EXTRACTS FROM THE REPORTS OF THE COMMISSIONERS OF PUBLIC WORKS
TO THE LEGISLATURE.REPORT FOR THE
YEAR 1859.

Page 6.

It is undoubted that a very large share not only of the Western foreign trade in grain, but of the Canadian, finds its way to the seaboard and eastern states through American channels.

It is equally certain that the best and cheapest channel of general commerce as regards transportation is natural navigation, such as by sea, lake, or river, in contradistinction to the artificial navigation by canals.

On the transport of bulky articles, the larger the vessel and the longer the voyage, the more cheaply in proportion to the distance will the freight be carried. Now, it is equally undeniable, that Canada possesses through her natural navigation, which (with the exception of 69 miles of canal) embrace the entire distance from Chicago to the ocean, the means of supplying these advantages in a degree which the United States, on account of their geographical position, cannot attain.

Page 7.

And yet the arrivals of grain at the two ports of Oswego and Buffalo alone have, during the last five years, averaged 1,313,277 barrels of flour, and 27,527,085 bushels of grain; while the average shipments from Canadian ports have been but 205,821 barrels of flour, and 972,625 bushels.

Welland Canal.

Page 9.

Three-fourths of the propellers of the upper lakes, being the class of vessels now chiefly used in the grain trade, are too large to pass into Lake Ontario.

Page 17.

The largest vessel that can pass through the Welland Canal is 423 tons.

The large propellers vary from 600 to 1,000 tons.

Page 9.

If the size of the Welland Canal be not sufficient to pass the vessels now plying on the great lakes which it connects, and which vessels would but for its inadequate size make use of it, it is manifest that the very object for which it is constructed is defeated.

Locks—
105 < 26½' × 10'.*St. Lawrence Canals.*

Page 33.

An estimate is furnished by the engineer for the *deepening only* of the St. Lawrence Canals for a draught of 10½ feet of water.

Locks—
200' × 45' × 9'.

In giving consideration, however, to the question of increasing the capacity of these canals, it appears to be of equal importance to their success that the locks besides being deepened, should be enlarged or lengthened, so as to pass the propellers of heavy burdens: 20 out of 36 of these vessels being from 185 to 240 feet in length, are too long to pass the locks; so that by merely deepening them, without adding to their length, only a partial improvement would be effected.

Provincial Canals.

It appears desirable, before embarking in any expenditure, to increase the efficiency of the provincial canals, that the dimensions of the locks, and the draught of water proper for this navigation should be carefully considered and decided on; and that being done, that surveys and estimates should be made for the enlargement of the Welland and St. Lawrence Canals to that scale.

The following are dimensions proposed for the locks by different gentlemen:—

Length.	Breadth.	Depth of water.	
225 feet.	40 feet.	12 feet.	Page 144.
235 „	36 „	11 „	„ 147.
250 „	45 „	12 „	„ 137, proposed for Ottawa Canal.

*Canal from Montreal to the Georgian Bay, by way of the Ottawa River,
Lake Nipissing, and the French River.*

The distance from the mouth of the French River to Montreal, by the route surveyed, is 431 miles, of which 352 miles is already a good navigation, requiring no improvement. Page 32.

Of the other 79 miles 29 will require to be canal navigation, and the remaining may be improved, so as to connect the whole with a first class navigation drawing 12 feet of water.

The estimated cost of this canal, exclusive of deepening the Lachine Canal and Lake St. Louis, apart from land damages and expenses, is \$12,000,000 or £2,400,000 sterling. The route would effect a saving in distance between Chicago and Montreal over the existing one by the Welland Canal of 343 miles, but with an increased lockage of 15 locks, and an additional rise and fall of 170 feet.

The lake navigation of the existing route is 1,145 miles in extent, and the inland river is 134, when by the Ottawa, the former is 575 miles, and the latter 401.

APPENDIX No. 14.

HARBOURS OF CANADIAN LAKES.

LAKE ONTARIO.

Kingston.—An excellent harbour, with from 18 to 20 feet water. There is also good anchorage north of Wolfe, Howe, and Amherst islands.

Weller's Bay.—Affords shelter for vessels of from 12 to 14 feet draught, with wind from north-west through east to south-east. The northern spit has been much washed away, and is fast disappearing.

Presqu' Ile.—A well sheltered and valuable harbour.

Cobourg.—A small pier-harbour with 8 feet 6 inches water would be difficult to enter in bad weather. It is proposed to deepen it to 12 feet. An inner basin, which is protected by a sand-spit, is being dredged out.

Port Hope.—A pier-harbour conveniently situated, and affording good shelter for vessels of light draught; a channel of 11 feet with an inner basin of the same depth has been opened, but is only kept free by constant dredging.

Toronto.—The peninsula which formed the harbour of Toronto has been partially washed away, leaving a breach from water's edge to water's edge of 10,517 feet, over 700 feet of which there are 7 feet of water, and over 300 in the centre the maximum depth of 8 feet to 8 feet 6 inches.

The western entrance has 11 feet, and the anchorage 12 feet, of water.

This was the only harbour in the western portion of Lake Ontario which could be safely entered in bad weather.

Burlington Bay.—The entrance into Burlington Bay is through a cribbed cut in the spit, which admits, in fine weather, a vessel drawing 12 feet.

Its approach during easterly gales is difficult and dangerous; a bar frequently forms at the outer end of the cut, which reduces the depth to 8 feet 6 inches. The swell during these gales is said to be very heavy.

Port Dalhousie.—At the northern entrance of the Welland Canal, will, in fine weather, admit a vessel drawing 12 feet; immediately inside is an extensive and well-protected basin; off it a dry dock for small vessels.

Niagara River.—An excellent harbour for any sized vessels which navigate the Lakes.

LAKE ERIE.

Port Colborne.—The principal entrance from Lake Erie to the Welland Canal affords shelter for a limited number of vessels; the navigation of the canal has frequently been retarded by the number of vessels seeking protection, and it has been proposed to increase the capacity of the port by erecting a breakwater on a circular reef extending from the shore to within 50 yards of the end of the pier.

Port Maitland.—At the mouth of the Grand River, and entrance to the feeder of the Welland Canal, has from 10 to 12 feet between the piers; from 14 to 16 feet will be found in the river as far as Dunnville, where it is dammed, and whence there is communication with the Welland Canal.

Port Dover is not available for vessels drawing more than 8 feet. The piers are in a most imperfect state, and if not soon repaired, the port will be more a trap than a shelter.

Port Ryerse, as a harbour, is useless: something has been done to enable small vessels to load and discharge their cargoes.

Long Point Bay.—Good shelter may be obtained here, and at *Spithead* where anchorage may be chosen for the largest sized vessels that navigate the lakes. The channel into *Inner Bay* has closed, and the floating light is no longer exhibited.

Roubeau is a fine natural harbour, with from 18 to 20 feet at its entrance, and an average of 11 feet over its area. It has been suffered to fill up at the entrance. The western spit has been partially washed in: shoals have been formed inside, and almost across the passage; and render it so difficult that, for the present, it is impracticable.

Port Burwill (Otter Creek).—A small pier-harbour, with 8 feet of water. The piers are much out of repair.

Port Rowan, in *Inner Long Point Bay*, said to be well protected from easterly gales. Vessels drawing 7 feet of water can load at a pier which has been run out.

Port Bruce (Catfish Creek) is in the hands of a private company, and much out of repair. A vessel was lost in 1861 on a shoal which had formed 300 feet south of the piers.

Port Stanley is important from being in direct railway communication with London. It is a well constructed small pier-harbour, with 10 feet of water.

Port Talbot was entirely closed when the Commission visited it. It is said that the bar is occasionally washed away after heavy rains, when the creek might afford shelter for boats.

Pelé Island.—The anchorage on either side of Point Peléo and off Peléo Island is resorted to during heavy gales in preference to the pier-harbours.

Amherst Bay is the best harbour in Lake Erie, with 20 feet of water.

LAKE HURON.

Bayfield has 6 feet of water at the entrance of the river. The piers are nearly destroyed.

Goderich.—The harbour is valuable, being at the terminus of the Buffalo and Lake Huron Railway. It is proposed to dredge away two low swampy islands, to deepen the basin to 12 feet, and carry the piers into deep water. The harbour is in the possession of the Railway Company, who are carrying on the improvements. At present it affords shelter to a limited number of vessels, of from 10 to 11 feet draught.

Port Bruce.—The channel into this port is about 100 yards wide; and if the port were generally used, would require to be buoyed and lighted. The anchorage is well protected by shoals, and has 13 feet of water.

Inverhuron.—At times a vessel drawing 16 feet may enter the river; but it is liable to be entirely closed in westerly gales by a bar forming across the mouth.

Port Elgin.—A breakwater is being constructed off this port to protect a T-headed pier, extending from the shore. When complete it will afford good shelter to vessels of 14 feet draught.

Chantry Island has been selected for the construction of a harbour of refuge: a breakwater has been thrown out in a north-east direction from the northern point of the island; another is to be extended in a south-easterly direction from the southern point.

A secure and well-sheltered anchorage will thus be afforded in a good position between Cape Hurd and Sarnia.

Loyal Island.—The anchorage in the bay, N.E. of this island, is perfectly sheltered. It shoals gradually from 20 feet.

Fishing Islands (Gheaheto Islands).—Good anchorage for vessels drawing from 10 to 12 feet may be found amongst these islands.

Collins Harbour, known on the coast as *Tober Murray*, is easy of entrance, deep and land-locked: there is 10 to 12 feet water alongside the rocks.

Rattlesnake Harbour.—A perfect harbour for small vessels, with 18 feet water.

Pentamquishim, formerly the naval arsenal, is a good harbour, easy of approach, and could easily be defended.

In the Georgian Bay and North of Cape Hurd, harbours are numerous for any sized vessels.

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