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SIR, Quebec, 10th November 1864.

In reply to your letter of the 18th, containing several questions relating to the defence of Canada, upon which the Executive Council request my views in writing, I have the honour herewith to transmit a Report for the information of the Government of Canada, embodying the answers to those questions.

Annexed is a copy of the questions, and opposite each is noted the paragraph in the Report in which the answer to it may be found.

In a previous Report on the defence of Canada, dated February last, which has already been laid confidentially before the Council, the defensive measures proposed extended only as far westward as Montreal, whilst the present Report includes a scheme for the defence of the western districts.

It should, therefore, be observed that the circumstances under which the first Report was prepared differ from those which now exist.

Last year there appeared to be no probability that measures would be taken by which a Naval force could be placed on any of the lakes, and without such force it would be impossible to suggest any plan for the defence of Upper Canada.

Now, however, it is understood that the Government of Canada contemplate making provision for a fortified Harbour and Naval Establishment at Kingston, with a view to a Naval force being placed on Lake Ontario for the protection of the western districts,—a plan of defence for which is therefore included in the present Report.

I have the honour to be,
Sir,
Your most obedient servant,
(Signed) WM. F. DRUMMOND JERVOIS.

The Hon. Wm. McDougal,
Provincial Secretary.

Secretary's Office, Quebec,
18th October 1864.

SIR, REFERRING to the interview which took place on the 14th instant, between yourself and the members of the Executive Council, when the question of the Defences of Canada was discussed, I am directed to inform you that there are several important points connected with that question upon which the Government would be glad to be favoured with your views in writing. The principal points referred to are involved in the list of queries herewith submitted.

- 1. In the event of a war between Great Britain and the United States being seriously threatened, what preparatory steps for defence should be taken by the people of Canada? See par. 88.
- 2. What do you consider the principal points of strategic importance in Canada? See par. 4 to 10 inclusive.
- 3. You appear to consider Montreal as the key to the defence of Canada. Please state briefly your reasons for so regarding it. Par. 4 to 7.
- 4. At what point or points in Canada would the main attack of the enemy be probably directed? Par. 7.
- 5. What are the principal points at which defensive works should be erected in Lower Canada? Montreal, Kingston and Quebec.
- 6. State the nature and probable cost of the works required at each point, and the probable extent of land necessary at each? Par. 82 and 86.
- 7. What number of troops would be required to defend these works, and what proportion (if any) should be regular troops? Par. 68.
- 8. Under ordinary circumstances how long might Montreal (with the requisite works and a sufficient force) be expected to hold out against such force as the Americans would be likely to bring against it? Par. 15.
- 9. Is it probable that an attack would be made on Quebec before or at the same time with Montreal? If both cities were attacked at the same time what force would the enemy require for both operations? Par. 6, 7.
- 10. Would not the defence of Upper Canada depend mainly upon our having the Naval command of the Lakes? If so, what measures should be taken to secure that end? Par. 10, 21, 77 to 79, &c.

- Par. 46, and 56
&c. and 77 and
79. 11. What Naval Depôt or Depôts should be established on the Lakes? What works would be necessary at such Depôt or Depôts, and what would be their probable cost? What class and what number of vessels would be required, and what would be their probable cost?
- Par. 10, 19 &
20.
Par. 10. 12. Which are the principal points of strategic importance in Upper Canada?
- Par. 46 & 56,
and 77 & 79. 13. Do you not consider Kingston an important point in the defence of Upper Canada, both in a Military and Naval point of view?
- Par. 68. 14. Assuming the answer to the foregoing query to be in the affirmative, what additional works, if any, and what naval force would, in your opinion, be required to insure the command of Lake Ontario?
- Par. 19 & 20. 15. What number and description of troops would be required for the defence of Kingston with such additional works, &c.?
- Par. 50, &c.
Par. 15 & 16. 16. Assuming the necessary fortifications erected at Kingston, together with a sufficient naval force to command the Lake, what steps could be taken to defend the Western Peninsula, and to secure the safety of the forces engaged there in the event of their being compelled to retire on Hamilton or Toronto?
- Par. 15.
(certainly. 17. Would it be possible by holding Kingston to protect the naval force employed on Lake Ontario? And for what length of time might Kingston be expected to hold out, supposing communication to be cut off from Montreal, and Kingston itself invested?
- Par. 20. 18. Would an enemy be able to maintain himself in force, during the winter before Montreal or Kingston, or would he be compelled to retire? In the event of the enemy retiring, would the forces supposed to be in Montreal and Kingston be able unaided to re-open their communications between the two cities, either directly or by the Rideau Canal?
- Par. 20. 19. Should the enemy desire to prevent the forces at Montreal and Kingston from thus re-opening their communications, what probable amount of force would he be obliged to maintain in the district between those two cities?
- Par. 20. 20. Were an American army to cross the lines between Windsor or Amherstburg and Port Sarnia, what steps could be taken to oppose their advance into the country? Supposing a sufficient body of Militia to be available, where would be the best point for first offering resistance to the enemy, and what works would be required at that point?
- Par. 20. 21. If driven back from that point, in what direction should the Canadian force retire? And where ought its next rallying place to be? What defensive works would be required at that point?
- Par. 19. 22. Were an American army to cross the lines at Niagara, what steps could be taken to oppose their advance into the country? Where would be the best point for first offering resistance? What works should be erected there? On what place should the force, if defeated, fall back?
- Par. 19. 23. Would Hamilton be an important point of defence in Upper Canada? If so, what works would be required there, and what would be their probable cost?
- Par. 19. 24. Would Toronto be an important point of defence, and, if so, what works would be required there, and what would be their probable cost?
- Par. 19 and 20. 25. Would it be, in your opinion, possible with the troops and resources at the command of the Government of Canada, to devise a plan of defence for the Western Peninsula, by which the enemy could be met at the frontier, and by which the Canadian force, if defeated, could fall back from point to point on a concerted line of communication on its own base of supplies?
- This question
is dealt with
generally in the
1st and 2nd
parts of the
report. 26. If the defence of the whole Western Peninsula, as proposed in the last question, be impracticable, to what point should the defensive measures of the country be mainly confined?

I have the honour to be,
Sir,

Your most obedient servant,
(Signed) Wm. McDougall,
Secretary.

REPORT ON THE DEFENCE OF CANADA.

I.—PROBABLE NATURE OF THE MILITARY OPERATIONS OF AMERICANS AGAINST CANADA.

1. To arrive at a conclusion as to the measures which should be adopted for the defence of Canada, it is necessary first to consider what aggressive operations the enemy would most probably undertake.
 2. The frontier of Canada, from the point where it commences to run along the 45th parallel of latitude, (to the eastward of which the country bordering on the frontier is wild and but thinly settled,) extends over about 1,000 miles, divided approximately as follows;—viz: 167 miles of imaginary boundary along the 45th parallel of latitude to southward of Montreal and Quebec; 110 miles along the river St. Lawrence to eastward of Kingston; 25 miles along the Niagara Frontier, between Lake Ontario and Lake Erie; 105 miles along the Detroit Frontier, between Lake Erie and Lake Huron; the remaining 600 miles along the shores of Lake Ontario, Lake Erie and Lake Huron. Extent of Frontier.
 3. Attacks may be made upon any of these sections of the frontier; in the first four cases by land forces and in the last case either by vessels of war, or by the landing of troops on the shores of the Lakes. Attackable at all parts.
 4. The enemy's principal base of operations would no doubt be at Albany, a central point where there is an arsenal from whence his expeditions may be supplied, and to which there is access by the Hudson River for large steamers from New York, and by road and railway from all quarters. There is also a canal connecting the Hudson River with Lake Champlain, where under cover of the work at Rouse's Point, commanding the northern entrance to the Lake, the Americans could collect a large force within 40 miles of Montreal, and between that place and Rouse's Point the country is so flat and open that to the westward of the Richelieu River (which connects Lake Champlain with the St. Lawrence, at a point about 35 miles below Montreal) there is no obstacle to the advance of an enemy, in the summer season, over any part of it. Base of operations of enemy.
 5. Montreal being moreover at the head of the sea navigation of the St. Lawrence, and the focus of all communications by land and water between the Eastern and Western Districts, as well as between Upper Canada and the Maritime Provinces of British North America, is both the commercial and strategical capital of the country. If Montreal were taken, the whole of Western Canada would be cut off from support either from Lower Canada or from the Maritime Provinces. Montreal the strategical as well as commercial capital of Canada.
 6. The enemy holding that place, and in communication with Lake Champlain, would then on the one side proceed against any force that might be operating for the protection of the frontier, on the Upper St. Lawrence, whilst on the other side he would direct an attack against Quebec, with a view of obtaining possession of the key of the St. Lawrence, and of the expulsion from the country of the troops of Great Britain. On the supposition that Montreal were incapable of being defended, the enemy would most probably attack that place first and then proceed against Quebec, but in case Montreal were by any means enabled to hold out, he would probably attack both places simultaneously, in order that he might have the greater chance of taking one or the other, or both, before the winter season rendered it impossible for him to remain in the field. Attack on Montreal and Quebec.
 7. If both these places were put in a proper state of defence, the enemy would be obliged, in aiming at the severance of the communication between Canada and Great Britain, or between Canada and the Maritime Provinces, to carry on two extensive expeditions simultaneously, each of them involving the necessity of a protracted siege, and, considering the short period during which military operations on a large scale can be carried on in this country, there would be every probability of successful resistance to such attacks.
 - On the other hand, if no previous steps were taken for the effectual protection of Montreal and Quebec, and those places were left as at present without any efficient means of defence, there would be no possibility of holding them should a war occur with the Northern States. Then Upper Canada would have no communication with the sea; the trunk of the tree would be cut away, and the great branches—the Western Districts—must fall. There cannot be a doubt that upon Lower Canada, at Montreal and Quebec, the chief attack of the enemy would be directed.
 8. In connexion with the main direct operation from Lake Champlain against Lower Canada, he would most probably send a large corps by railway, either from Albany or Rouse's Point, or from both those places, to Ogdensburg, to cross the Upper St. Lawrence, at or near that place, and operate in the Peninsula between the Ottawa and St. Lawrence rivers either against Montreal, Kingston, or Ottawa. Attack on Kingston, &c.
 9. Ottawa, from its position and from its being the future seat of government, is an important point, but the chief attack of the enemy upon the centre of the country would most probably be directed against Kingston.
 10. Kingston, with its fine harbour, if effectually defended, would be the best point for a Naval Station on Lake Ontario. Such a station is necessary for the maintenance and protection of a Naval force on that Lake, the command of which is essential to the defence of Upper Canada: without it the troops employed in that portion of the country would be liable to be overwhelmed by the enemy's forces coming upon them from every side, and all possibility of retiring or of receiving succour might be cut off. Ottawa. Kingston important as naval station, &c.
- Irrespective of the value of Kingston as the head quarters of a Naval force on Lake Ontario, it is, from its position near the head of the St. Lawrence, and at the junction of the Rideau Canal, which connects the Ottawa with Lake Ontario, an important strategical point, both for the Naval and Military

defence of the central part of the country, and in this respect it has advantages that are not possessed by any other place on the Lake that could be selected as a Naval Station. Vessels of war issuing from the harbour would command the Upper St. Lawrence, whilst troops acting from Kingston as a support, would be available for the defence of a certain portion of the left bank of that river.

Next to Montreal and Quebec, Kingston is therefore the place of which the enemy would most desire to obtain possession.

Enemy might make a diversion on Niagara or Detroit frontiers.

11. At the same time that the enemy made an attack upon Lower Canada and upon Kingston, he might make a diversion upon the Niagara frontier (to which there is a communication both by railway and canal from Albany), or upon the Detroit frontier, with a view of drawing off a portion of the Canadian forces from the main scene of operations. It is more probable that he would make such diversion upon the former than the latter, as the Niagara frontier is so much nearer his base at Albany.

Or land troops on shores of Lakes.

12. In connexion with either of these attacks upon the Western Peninsula, the enemy, as before observed, might land troops from steam vessels upon the shores of the Lakes, and take in reverse the forces defending the land frontiers.

II.—GENERAL CONSIDERATIONS RESPECTING THE DEFENCE OF CANADA.

Attacks could not be resisted in open field.

13. In considering what forces would be necessary for the defence of the country to meet any of these attacks, it is obvious that it would be out of the question to resist with a hope of success in the open field the armies that might be employed by a State, whose population is about five times as great as that of the territory to be defended, and which, acting from the centre at Albany against a long straight line of frontier without any natural advantages for defence, might concentrate a large proportion of his forces upon any vital point.

Fortifications therefore necessary.

14. It is only by availing ourselves of the advantages of works of fortification that we can provide against the Canadian forces being overpowered.

Fortifications enable an inferior force to resist a greatly superior one, and, by their means, troops whose services would be of comparatively little value in the field, would be turned to good account. Once constructed, it costs little (not $\frac{1}{2}$ per cent.) to maintain them, and under the circumstances now under consideration they would afford a basis for the most economical and the only efficient system of defence.

Fortifications especially applicable in Canada.

15. Irrespective of other considerations, there is a special reason why fortifications in this country would fulfil the required object, and that is, that it would be impossible for an enemy to besiege them or to remain before them during the winter season.

When it is considered that he would have to go through many preliminary operations before he could commence a siege, and that if he had not been successful in such siege, he must retire before the winter set in, it will be seen that the period during which he could remain before a place would be comparatively short.

It should be borne in mind that a large force can only move and keep the field for about five months in the year, viz., from about the middle of May to the middle of October; during the latter part of October to the middle of December, the communications would be more or less difficult, according to the amount of rain or snow which falls; between the middle of December and the end of March, the intense cold forbids an army encamping, and the deep snows prevent the movement of troops except on beaten tracks, on which they could show no front, and numbers would consequently be of no use; from the beginning of April to about the middle of May the state of the roads owing to the thaw of the winter snows, is such that many are impassable for an army.

16. It is only then, for about half the year, that military operations on a large scale could be carried on, and it is submitted that by the aid of fortifications it is perfectly practicable to provide for the defence of the country during this period.

Vital points to be defended by fortifications.

17. It is proposed that the vital points of the country should be protected by works of fortification, chiefly earthworks, constructed in the form of extensive entrenched camps, each of which would form a focus of refuge and action for the troops employed in the defence of that section of the country in which it is situated.

Upon which forces would retire.

18. Upon these points respectively, our forces, if overpowered, would retire, after they had opposed the enemy as much as possible in the most favourable positions, which should be previously determined upon and strengthened with field works. The force for the defence of Quebec might oppose the enemy at Sherbrooke, near the Railway junction at Richmond, and at any other points that might be selected. A portion of that for the defence of Montreal, fit to take the field, might, in the first instance, take up a position at St. John's. The position between the junction of the Ottawa and Kingston, would be protected by troops acting respectively from Montreal and Kingston, and by a force near Prescott which could fall back upon Ottawa.

Toronto and Hamilton.

19. Assuming that the Canadian shores of Lake Ontario were protected by a naval force, troops acting in the Western Districts, if overpowered, should fall back upon some point on the Lake, where there is a harbour, which would enable them to act in conjunction with that force. There are two points which present themselves for selection, at both of which there are harbours and considerable towns, viz: Toronto and Hamilton. Both of them are capable of being formed into extensive fortified entrenched camps, and each has its advantages. The balance, however, appears decidedly in favour of Toronto. Hamilton occupies a good position, within which troops might fall back, either from the Detroit or Niagara frontiers; but its close proximity to the Niagara frontier, would afford comparative facility to the enemy for its attack. Toronto, on the other hand, being nearer Kingston, and further from the enemy, whilst it is also opposite Lake Simcoe, between it and which there is a narrow belt of country only about 30 miles in extent, being moreover the capital of Upper Canada, would appear without doubt to be the best place for selection as the centre to which troops should converge. It has further the advantage in that the ground in its vicinity is more favourable for the construction of earthworks than on a portion of the defensive line around Hamilton, where the site for a distance of four miles is of rock.

20. Supposing an attack to be made upon the Western Peninsula of Canada, the arrangement for the defence would be as follows. Troops should be placed so as to meet an attack from any quarter in which it could be expected. With this view the best distribution would appear to be to station the Central Reserve and Support in Camp, at or near Paris, and corps in advance at the Railway junctions at Stratford and London, as also near the Niagara frontier. The latter would detach forces to the mouth of the Grand River and Port Colborne, to prevent its being taken in reverse by a landing of the enemy on the shores of Lake Erie. The corps at London would also detach a force to Port Stanley, which is only 24 miles distant from that place. If the main attack developed itself by way of Detroit, troops would be thrown out to oppose such attack as far as consistent with the security of their flanks. If the enemy were in much superior force, they would fall back to London, where, with the aid, if necessary, of the main reserve, pushed on by railway from Paris, and the corps from Stratford, they might make a stand. Intrenchments would, of course, be thrown up to strengthen the position taken up by the force. Considering how liable a force in the advanced position of London would be to have its flank turned, it is not probable that it would be able to hold out there for any length of time. Consequently, after having made as much resistance as could safely be effected at this point, it should retire through Paris and Harrisburg to Guelph. Meanwhile the force from the Niagara frontier would have fallen back upon Hamilton.

General view of military operations for defence of Western Peninsula, supposing an attack were made on that portion of the country.

If the attack were made by way of Sarnia or Goderich in the direction of Stratford, the corps at that place would be reinforced by that from London, and, if desired, the main reserve from Paris. The force thus formed would make as much resistance to the enemy as possible and fall back upon Guelph, where temporary intrenchments would be constructed, and a determined resistance made. If driven from Guelph it would retire to the previously prepared position at Toronto, where it would be joined by the Niagara frontier force which had retired to Hamilton. If the numbers of the enemy rendered it necessary, the force from Hamilton should be moved through Toronto to take part in the action at Guelph.

Supposing the main attack developed itself on the Niagara frontier, the corps in that direction would, if necessary, be reinforced from London and Paris, and make what resistance it could. It would fall back to a fighting position near Hamilton, which should have been previously strengthened by field works, and where the main effort should be made to stop the further advance of the enemy. If overpowered it would retire on Toronto, where it would be joined by the corps retiring from Stratford through Guelph.

Supposing an attack by an army landed on the shores of Georgian Bay. A small force which should have been previously detached to Collingwood, should, if necessary, be reinforced from the Reserve at Paris and oppose step by step the advance of the enemy, fighting behind the Holland River, and falling back upon Toronto as in the other cases.

21. As regards the defence of the shores of Lake Erie and Lake Huron, it appears impossible, at all events at present, to enter into competition with the Americans in obtaining a naval command on these waters. In addition to the resources they possess on the borders of each, all the means of aggression which could be supplied from Lake Michigan could be directed on the Canadian shores of those waters. Moreover we have no communication to either of these Lakes except by the Welland Canal, which connects Lake Ontario and Lake Erie. Two great canals have certainly been projected, one to connect the Ottawa River with Lake Huron, and the other to connect Lake Ontario with that Lake. But many years must elapse before either of these works are executed. And as regards the Welland Canal it could only be protected by the presence of a large force which would be liable to attack both in front from the Niagara frontier, and in rear by a force landed on the shores of Lake Erie. Besides, even if it were considered advisable to set apart a large force for this object, the navigation of the Canal might be stopped by the destruction of one of the locks. We cannot therefore rely on being able to pass vessels from Lake Ontario into Lake Erie. Indeed in time of war the Canal should be rendered unserviceable in order to prevent the enemy passing vessels by it from Lake Erie to Lake Ontario.

Lake Erie, Lake Huron, and Lake Ontario.

Having then no sure communication, in time of war, either to Lake Erie or Lake Huron, it would be necessary, if it were intended to maintain a naval force thereon, to provide and fortify a naval establishment on each; and this in addition to the number of vessels of war which must be constructed and maintained in order to preserve anything like an equality with the force that the Americans could bring against us. It cannot therefore be recommended that at present any measures should be taken with a view of placing a naval force either on Lake Erie or Lake Huron; and it is submitted that the efforts of the Canadian Government should be directed to placing upon Lake Ontario the whole of any naval force they may provide. Better be strong on one Lake than weak on two or three. The command of Lake Ontario is far more important than that of either of the other two. It is on its shores that the principal towns of the Western Districts are situated, and, being in immediate connexion with the St. Lawrence, is more within the sphere of the defensive arrangements which could be made for the protection of the Peninsula.

Naval operations better be restricted to Lake Ontario.

22. To render the naval force as free as possible for the general protection of the coast, as also for the defence of the Upper St. Lawrence between the Lake and the Rapids, and for offensive operations against the enemy, it would be desirable to protect the important harbours of Toronto and Hamilton by permanent works of defence.

Forts for defence of Harbours of Toronto and Hamilton.

23. Temporary batteries should be established in time of war, for the local protection of the other harbours on the Lakes.

Temporary batteries at other Harbours.

24. It may here be observed that it has on different occasions been proposed that works should be constructed on the frontier of the western peninsula, at Sarnia and Amherstburg; the former to close the passage between Lake Huron and Lake Erie to an enemy's vessels, the latter to defend the harbour of Amherstburg. It is submitted, however, that, considering the isolated position of these works and the power that the enemy would possess of cutting them off from support, they would soon become untenable, and that it would not be advisable to incur expense in their construction. The principle of defence to be adopted in Canada should, as much as possible, be one of concentration and not of dispersion; and for this reason, as also because the use of the works would be neutralized by the landing of the enemy on the shores of Lake Erie, it appears, moreover, inadvisable to incur any

Not advisable to construct permanent defences on Niagara and Detroit frontiers.

outlay for the construction of permanent forts on the Niagara frontier, as has sometimes been suggested.

Permanent fortifications should be restricted to vital points.

25. It is submitted that excepting the sea defences of the harbours of Toronto and Hamilton, which are the most important places in the western peninsula, the fortifications in Canada should be restricted to those vital points of which an enemy must possess one before he could obtain any great military advantage, viz: Montreal, the chief strategical point in the country; Kingston, the key to the western districts; and Quebec, the point where connection must be maintained by sea with Great Britain and the Maritime Provinces.

Works at Toronto and Ottawa.

26. At Toronto, the ground is especially favourable for the construction of temporary works, and as the enemy would be much delayed before he could reach that place, there would be ample time for the erection of a line of earthworks covering the town, which would be defended by nearly the whole of the forces in the peninsula.

These defences, as well as those at Ottawa, should be carefully planned beforehand, and at each there should be a depôt for the armament and stores for the works.

Permanent works necessary at Montreal, Kingston, and Quebec.

27. It may, perhaps, be remarked that temporary works would also suffice at Montreal, Kingston, and Quebec. It would, however, be impossible to rely upon such works being constructed as would fulfil the required object at either of these places. At Kingston and Quebec the sites are on rock; and at Montreal, so close to the frontier, there would not be time for the construction of works capable of any but a very short resistance. Besides, these three places are infinitely more important than Toronto, as regards the general strategical defence of the country.

Difference between permanent and temporary fortifications.

28. It should be observed that there is a great difference in the power of resistance of temporary earthworks and of permanent fortifications with earthen ramparts. The former require many more men and a much better disciplined force to defend them than the latter. The case of Sebastopol is often quoted, to show that field works thrown up at the period of attack will suffice for any emergency; but that case is altogether different from that now under consideration. At Sebastopol there was an army behind the works, about equal in numbers and discipline to the allied forces by which it was assailed. In Canada, the problem is, how to enable a comparatively small force to resist one which will be superior to it in numbers, and, in the first instance at all events, to a large part of it, in efficiency. At Sebastopol, moreover, there was a large naval arsenal and a fleet, which afforded numerous facilities for the construction and arming of the works. How different might have been the result to Denmark, if, in the late war, there had been at Duppel a permanent line of forts with effectual flanked obstacles in their ditches and good bomb-proof cover, instead of a line of temporary works which offered no obstacle to assault, and in which the shelter for the garrison and ammunition was altogether insecure!

29. It is now proposed to consider the question of the defences of Montreal, Kingston, Quebec, &c.

III.—MONTREAL.

Existing defences.

30. The existing defences of Montreal consist of three or four decayed wooden platforms, and some obsolete guns on St. Helen's Island, opposite the city.

Attack from Southward.

31. At present there is nothing to prevent the enemy establishing himself on the right bank of the river, opposite Montreal, where, in possession of the southern end of the Victoria Bridge, he could prevent the passage of our forces to that side, and would be in a position from whence he could (from earthen batteries, thrown up at the moment) fire into Montreal and demand that the military occupation of the place should be given into his hands. Under present circumstances such a summons could not be resisted. The only means by which (considering all the circumstances of the case) we may be enabled to resist the demand is by the construction of a line of defensive works, covering Montreal on the south side of the St. Lawrence, and sufficiently extensive to prevent the enemy doing any effectual damage to the town, at the same time that it would cover the great Victoria Railway Bridge. The river, opposite Montreal, being about 2,400 yards wide, such a line would not exceed five miles in length, and it might be occupied by about six principal works, which would be connected by a line of parapet with a military road in rear of it. Gun-boats might also aid in the defence of the position, which might be further strengthened by earthworks constructed within the line during the period of attack.

Mode of resistance.

32. The Island of St. Helen's, upon which guns should be mounted, would form a keep to the entrenched Camp. On this island also should be the main Depôt for tools, stores, guns, arms, and munitions of war for Montreal and the neighbourhood.

Island of St. Helen's the keep and site for depôt.

Attack from Westward, and mode of resistance.

33. It is further necessary to provide against an attack upon Montreal, by a force advancing from the westward, supposing it to have crossed the St. Lawrence, between Lake Ontario and Lake St. Louis. This may best be effected by the construction of works covering the railway bridge near Vaudreuil, at the junction of the Ottawa River with the St. Lawrence. Such works would also act as a "tête-du-pont" from under cover of which troops might operate westward; they would, moreover, be on the flank of any force of the enemy advancing against Ottawa. In connection with the defensive position at Vaudreuil, temporary works would be constructed on Isle Perrot, which, if some of the spans of the railway bridge between it and the main land were removed, would form a second line of defence; again, by removing some of the spans of the bridge between Isle Perrot and Montreal Island, a third line might be taken up at St. Anne's.

Gun-boats in Lake St. Louis and Lake of the Two Mountains.

34. Between Vaudreuil and the works immediately covering Montreal, Lake St. Louis and the Lachine Rapids would be a sufficient defence; but if considered necessary, gun boats may be brought into the Lake by the Lachine Canal. Any vessels of war that were brought into Lake St. Louis would also be of assistance in the defence of the left flank of the works at Vaudreuil; and if the St. Anne's Lock and the passage near it, between Lake St. Louis and the Lake of the Two Mountains, were made sufficiently large to take such vessels through, they could also aid in the defence of the right flank of those works. They could, moreover, operate in the Ottawa and the channel on the north side of Montreal Island.

Works near terminus of

35. For the protection of communications by the Lachine Railway and Canal, works should be constructed on the right bank of the St. Lawrence, nearly opposite the junction of the Lachine Canal

with Lake St. Louis, and near the terminus of the railway from Plattsburg. These works would also afford the means of throwing a force across the river to act upon the left flank of the enemy operating against Montreal, should circumstances be favourable to such a movement. Plattsburg railway.

36. To prevent the enemy passing vessels down the Richelieu River from Lake Champlain for the transport of troops, stores and "materiel" for the attack on Montreal, obstructions should be placed in the River on either side of and flanked by the Fort at Isle aux Noix, which should be put into an efficient state of defence. This work and its garrison would, no doubt, being in such an advanced and isolated position, be liable to be captured at an early period; but it is considered that the delay that it would cause him would more than compensate for the loss that would thereby be occasioned. The co-operation of small class gun-boats which could pass the canals on the Richelieu, and which would aid generally in the defence of that river, would be a great advantage in the defence of the work at Isle aux Noix. If the fall of the fort appeared imminent, and there were no such vessels available, the locks and canal in the Richelieu River should be destroyed. Fort at Isle aux Noix.

37. Works should also be placed in time of war on the right bank of the St. Lawrence, near its junction with the Richelieu at Sorel, at a point where the St. Lawrence is only about half a mile wide, to prevent the enemy closing the passage of that River at that point. These works would be in the form of an entrenched camp from which a force might be enabled to act on the right flank of the enemy, if he were established on the peninsula between the St. Lawrence and the Richelieu, below Montreal. Sorel.

38. It is necessary now to consider whether, with the above arrangement for the defence of Montreal, it would be possible for the enemy to turn our flanks and approach the place from the rear. Can flanks be turned?

39. As regards an attempt to turn our right flank, it is necessary to suppose that the enemy had first brought a very large force to Ogdensburg; that he had crossed the St. Lawrence at or near that place,—had marched across the peninsula between the St. Lawrence and Ottawa Rivers, then had crossed the Ottawa as well as the two streams dividing Ile Jesus from the mainland and from the Island of Montreal,—and that, under such difficulties, he had made a successful march of 170 miles from Ogdensburg. It is submitted that this would be an impracticable operation, for, independently of his communications being taken in flank from the works at Vaudreuil, he could be opposed by our moveable force, at the Ottawa, at the streams before mentioned on either side of the Ile Jesus, and finally at the strong position of Montreal Mountain, on which temporary defences might be constructed. If by the construction of the permanent works previously recommended, the enemy were driven to undertake so lengthened an operation, there would be time to throw up temporary defences at each of the above positions, and nearly the whole of the men in Montreal, capable of bearing arms, would by this time be available for its defence.

40. During the period of the year when the St. Lawrence is navigable, the left would be secured by naval means. The same power that enables the command of the St. Lawrence from the sea to Montreal to be maintained would also prevent the enemy crossing that river below Montreal. It must, however, be considered whether it would be possible to turn the left flank or penetrate between any of the defensive positions at a time when the St. Lawrence is frozen over, and when, except, perhaps, in Lake St. Louis, naval means would not, therefore, be available for defence either above or below Montreal. On this point, however, it is to be observed that it is exceedingly difficult if not impossible, for a body of troops to cross the St. Lawrence when frozen over, except when roads over the ice are previously prepared, and that in the face of any opposition it would be absolutely impracticable for them to do so. The consideration before adverted to in Paragraph 15 respecting the impossibility of carrying on large military operations during the Winter season must also be borne in mind.

41. It is, however, possible that some exceptional season might occur when the enemy could make an attack on a large scale on Montreal, just at the termination of the Winter, and before the navigation of the St. Lawrence was opened. It is, therefore, for consideration, whether, in such a case, the enemy could not turn the left flank below Sorel, or cross the St. Lawrence between any of the fortified positions. It is submitted, however, that the breadth of the river, combined with the difficulty of transporting across country sufficient means for the passage of a large army over so great a stream, would render it impracticable for the enemy to advance and throw his forces across the St. Lawrence, either below or between the defences, during such short and uncertain critical period. This contingency might, however, if it were deemed requisite, be met by keeping some gun-boats at Montreal during the Winter. But, taking all circumstances into consideration, it is submitted that with the defensive arrangements above proposed, such precaution would be unnecessary.

IV.—QUEBEC.

To proceed now to consider the question of the defence of Quebec:

42. The existing fortifications of Quebec, which are entirely on the left bank of the St. Lawrence and the St. Charles rivers, consist of an enceinte round the old town, with a citadel at the south-west angle. The citadel, within which are plenty of bomb proof buildings, is a bastioned work, has its escarps tolerably well covered, and is, on the whole, in a good state of preservation. The western portion of the enceinte, which is of a bastion trace, with exposed escarps, is in many parts in a bad state of repair. The remainder of the lines is in a tolerable state of repair, and consists of a flanked loop-holed wall, on a portion of which are batteries bearing on the river, but of an obsolete character both as regards their construction and their armament. The enceinte encloses only a space of about 180 acres, almost covered by houses; and immediately outside the lines, on the north-west side, is the new town of Quebec, inhabited by a thickly studded population. The lines may, moreover, be taken in reverse from the north side of the St. Charles river, at a distance of about 2,000 yards. About 1,000 yards to the westward of the lines are four towers, each for one gun, and about 450 yards apart, which it has been proposed, should act as supports to temporary entrenchments to be thrown up in their front. As, however, the guns on the towers are quite exposed, being mounted "en barbette," their fire would be silenced almost immediately an enemy's batteries were opened against, unless they were covered by iron shields. It will be gathered from this statement that, excepting the citadel, the existing fortifications of Quebec are scarcely capable of defence. Existing fortifications.

Attack on left
bank of St.
Lawrence.

Proposed
Defences.

44. An attack upon Quebec, on the left bank of the St. Lawrence, is not however to be apprehended until after the enemy had obtained possession of Montreal (see Para. 42). It therefore appears unnecessary that any permanent additions should be made to the land fortifications of Quebec on the north side of the river; but the batteries bearing on the Harbour and channel should be remodelled and re-armed for the protection of the north of the river, and such repairs should be executed as may be necessary to the citadel and also to the land fronts, which form an enclosure for the protection of the river batteries against an assault on their rear. Plans should also be prepared for an entrenched position, (to be occupied, if necessary, by temporary works, which would be supported by the citadel and old works of Quebec,) with its left resting on the St. Lawrence about $1\frac{1}{2}$ miles to the westward of the citadel, and its right on the St. Charles River, so as to include the new town. There should likewise be a work on the left bank of the St. Charles River, to prevent this position, as well as the old works at Quebec, being taken in reverse from that quarter.

Attack on right
bank of St.
Lawrence.

Proposed
Defences.

45. The attack upon Quebec which is most to be feared is that of the enemy advancing from the direction of Richmond and establishing himself on the ground opposite the town, on the south side of the river at Point Levi, which he can reach without crossing the St. Lawrence. In possession of that point he would command the harbour and prevent reinforcements being thrown into Quebec thereby, or the retirement of the forces therefrom. A permanent defensive position should therefore be established at Point Levi, to prevent the enemy obtaining possession of that ground. This position, which is about three miles long, should be occupied by detached works, and within it, on the banks of the river, some heavy guns should be placed to co-operate with the batteries of the Town in the defence of the channel. The Citadel of Quebec will form a keep to the whole.

V.—KINGSTON.

Existing defences.

46. Kingston, the site of the naval establishment constructed during the War of 1812-15, is already fortified to some extent. The main work is Fort Henry, which occupies the high ground immediately to eastward of the dock-yard, and in connection with which is a battery bearing on the Lake. On the point immediately to southward of the dock-yard, and about 800 yards from Fort Henry, is Fort Frederick, an earthen battery bearing on the Lake and on the entrance to the Dock Yard creek and Cataraqui Bay respectively. This battery is secured at the gorge by a loop-holed wall and a good masonry tower with guns mounted on the roof which forms a keep to the enclosure. On the west side of Cataraqui Bay, in the town of Kingston, and crossing fire with Fort Frederick, is the market Battery; close to the latter is a tower for three guns placed on a shoal in the water, and called the Shoal Tower. There are two other towers of nearly similar construction in slightly advanced positions; one on Cedar Island, about 1,400 yards to eastward of Fort Frederick; the other, called the Murney Tower, on the shore about 1,600 yards to westward of that work. Except Fort Frederick all these works are constructed entirely of masonry; nearly all the guns are mounted "en barbette," and thus liable to be easily silenced by rifled ordnance.

Insufficient
either against
land or sea
attack.

47. Even in the days when rifled ordnance were unknown, these works of themselves could never have afforded efficient protection to a naval establishment at Kingston either from a naval or sea attack. An enemy with a temporary naval superiority at this point might land troops either to eastward or westward of Kingston, and proceed to one of the several positions from which he could destroy a naval establishment constructed under cover of the existing defences, or burn the town if he pleased. He might also fire into the dock-yard and town from the lake.

48. The insecurity of Kingston in its present state of defence against attack either by vessels of war or by troops landed for the purpose has at different times led to a proposal to remove the naval establishment to the Bay of Quinte. The object of such removal has been stated to be that at the latter site defence could be obtained with fewer works and a less number of men than would be required at Kingston.

49. Passing over the consideration that the plan of defence for a site not yet determined upon might, when entered into in detail, cost more and require a larger garrison than had been anticipated, it is submitted that, for the reasons stated in paragraph 10, it would be most unadvisable to abandon Kingston for a site not possessing the same strategical advantages, and that, unless it were impossible to devise and carry into effect a good plan of defence for Kingston, it is desirable that that place should be retained as the Head Quarter Station for the naval force on Lake Ontario. Whether the dock-yard were removed or not, it would still be requisite to retain Kingston as a military post, in order to prevent the enemy obtaining the entire command of the Upper St. Lawrence, as well as for defence at the junction of the Rideau with the Lake, and it would be necessary to incur a considerable expenditure for the improvement of the works there; there would thus be two stations to maintain instead of one, and a proportionate increase in the cost of administration, even supposing there were a saving upon that of works; whilst the forces in this part of the country would be divided, and not nearly so well placed for its defence.

50. The harbour of Kingston is a very fine one, and by means of fortifications manned by a sufficient garrison can be well protected against attack either by land or from the Lake.

Proposed
defences.

51. First as regards attack by land; three works should be placed about 3,000 yards in advance of Fort Henry, those on the right and left commanding respectively the road from Montreal, which runs along the left bank of the St. Lawrence, and that from Ganonoqui by Kingston Mills. The third about midway between those two. These Forts, which should be about 1,500 yards apart, would cut off the approaches along the peninsula between the St. Lawrence and the Cataraqui to the eastward. The line would be further strengthened by batteries of position placed on a central commanding knoll about 1,500 yards in advance of Fort Henry.

52. To the westward there is an admirable defensive position on an arc about three miles distant from the town, with its left flank resting on the Lake and its right on the Great Cataraqui River, co-operating with the position in advance of Fort Henry.

53. The little Cataraqui River should be dammed up at the bridge at its mouth, and a "tête-du-pont" established, covering the dam and bridge, and including Ferris Point. The little Cataraqui River thus dammed up and commanded by batteries of position, would suffice for the protection of the left of the line. On the centre and right two principal permanent works should be constructed, one on a knoll about a

mile to the eastward of the village of Waterloo, and another about a mile and a half from it, and half a mile to the north-west of the Railway station. Between these two last-named works a scarp should be formed, the ground being favourable for this purpose, and behind the scarp guns might be placed at intermediate points, while on the extreme right there should be an out-work which would be supported by the fort in front of the Railway station.

54. In front of this line there are fighting positions where an enemy advancing to the attack might be opposed with advantage. To the westward, about a mile in front of the "tête-du-pont," in the centre on the high ground above the village of Waterloo, and in advance of the right on the strong ground stretching in a north-easterly direction towards Kingston Mills. Further to the right, and on the east side of the locks on the Cataraqui River, an advanced position might be taken up, under cover of which a force might be thrown upon the right flank of an enemy advancing against Kingston from the eastward.

55. To the southward it would be necessary to protect the harbour and dockyard from being fired into from Wolfe Island. With this view, the enemy should be first opposed in his attempt to obtain a footing on the island. For this purpose it would be necessary to station a force at a central point to westward of Bayfield Bay, from whence roads should diverge to the most favourable points for flanking the beach, both with artillery and musketry fire, which should be directed from under cover of breast-works, thrown up in time of war. The road which already exists around the island should be improved, and if necessary altered, so as to give ready access between the points from which the shore would be defended.

56. Considering the narrowness of the channel between the American shore and Wolfe Island, it would not, however, be safe to trust entirely to this means of defence. Permanent works should, therefore, be constructed on the northern shore of the island, so that, in case the enemy succeeded in obtaining a footing and keeping up his communication with the States shore, he would be obliged to besiege and take them before he could command the harbour and anchorage. With this view three forts should be constructed on the bluff points between the northern entrance to the canal and the channel between Wolf Island and Simcoe Island. These sites being on the most commanding ground in the island, which slopes gradually towards the South, are especially favourable for defence.

57. In order to prevent the enemy establishing himself either on Ferguson's point or Abraham's head, a cut, the stone from which could be used in the construction of the works, should be made through the ground lying to the south of the latter, which would be a line of defence against the advance of a force landed on the eastern part of Wolfe Island. This cut might be flanked by field batteries established on the south-west side of the canal, and would be further strengthened by a parapet thrown up in its rear, and "abattis" and other obstructions placed in its front.

58. This portion of the defence on Wolfe Island would be supported by a fort on Abraham's head, which, in conjunction with the work on the right flank of the line in front of Fort Henry, will protect the eastern entrance to Kingston Harbour.

59. In the protection of the harbour against a naval attack from the westward, a battery should be constructed within the *tête du pont*, on Ferris point, and a casemated work should also be erected on Snake Island.

The approach from the westward would be further defended by a work near the north-west point of Simcoe Island, which would cross fire with that last mentioned, and, in conjunction with the western fort on Wolfe Island, (which would command the Batteau channel,) would also prevent an enemy establishing himself on Simcoe Island.

60. The defence at Simcoe Island and the Batteau channel might at a future day be improved by making a cut across the island, and using the excavation obtained therefrom for filling up the channel between Point Lucas and Wolfe Island, where it is only 500 yards broad.

61. It only remains to state, in regard to the defences of Kingston, that batteries, which would be supported in rear by the works on Wolfe Island, should be placed on Garden Island, a central position, from whence the harbour can be commanded, and the use of it denied to an enemy, supposing he passed the line of sea defences.

VI.—TORONTO AND HAMILTON.

62. At Toronto, the sea defences would consist of towers placed near the Southern and Eastern points of the island, covering the harbour, and a battery near the site of the new Barracks. The old fort might be destroyed. Defences of Harbours against naval attack.

63. At Hamilton, the harbour would also be protected by a casemated tower placed near the centre of the spit.

64. The land defences of Toronto would consist of a line of earthworks, occupying the rising ground running east and west, about three miles from the shores of the Lake, and connected with it to the eastward by works behind the Don River, and to the westward by a line running from near the village of Carlton to Humber Bay. Advanced positions might be taken up in front of this line, to eastward in connection with Scarboro' Heights, and to westward behind the Humber River. To the north there are many points where advanced works might be constructed, should the circumstances of the case at the time render it desirable to do so. Temporary batteries bearing on the Lake should be thrown up on either flank within the lines. Land defences.

65. The Dépôt for the armament and stores for the works, as well as of tools for their construction, should be placed in a central position behind the town. Dépôt.

66. The line of defence from Humber Bay by Carlton, and along the ridge to the mouth of the Don, is about 9 miles long; and the advanced line above referred to would be still more extensive. It must however be borne in mind that if the Western Peninsula became the scene of military operation, a large force would be concentrated upon Toronto by the time the enemy were before that place. It may be observed that the earthworks in the vicinity of Washington occupy an extent of 35 miles of country in length.

VII.—NUMBERS AND DESCRIPTION OF TROOPS.

67. To proceed now to consider the force necessary for the defence of Canada, supposing the works of Fortification above recommended to be constructed at Montreal, Kingston, and Quebec.

68. It is calculated that about 23,000 men would suffice to protect Quebec, Montreal, Kingston and Ottawa against a "coup-de-main," viz: 3,000 at Quebec, 10,000 at Montreal, 7,000 at Kingston, and 3,000 at Ottawa. When, however, the attack were fully developed along that portion of the frontier which includes the above named places, about 60,000 men would be required for their garrisons, say 7,000 at Quebec, 30,000 at Montreal, 20,000 at Kingston, and 3,000 at Ottawa. In addition to these there should be a moveable force of about 30,000 men, which manœuvring by the northern shores of the St. Lawrence and Ottawa Rivers might be directed against the enemy at any of these points. Thus 90,000 would be required for the defence of the country from Kingston to Quebec inclusive. The main requisities for the garrison troops would be a knowledge of gun drill and the use of fire-arms; but it would, of course, be advantageous that they should, as soon as possible, be rendered capable of going through military movements, so that they might become available for action with the field force, as circumstances rendered it necessary.

69. A force of 50,000 men would be required in the Western Peninsula if that were the point of attack, and if it were considered necessary to provide against such attack simultaneously with that upon Lower Canada, 140,000 men would be required in all.

70. If such a force were available for the defence of Canada, aided as they would be by the Fortifications above proposed, the attack could not be made in all quarters, with less than about 300,000 men. When it is considered that, in the event of a war with Great Britain, the States would have to maintain a large garrison at every important station on their sea-board, it is not likely that they would be able to send so large an army for the invasion of Canada; and the probability is that the main operations would, therefore, be confined to a descent on Montreal and Quebec, by an army amounting to about half that number in all. In that case the defensive force should be concentrated as much as possible on those points.

VIII.—COMMUNICATIONS.

71. It is necessary to consider the means of communication between the several parts of Canada, as well as of Canada with Great Britain and the Maritime Provinces. As regards the means of communicating by sea with Canada in time of war; with a defensive position established at Point Levi, troops and stores could always be thrown into Quebec by the St. Lawrence when that river is open. Even if the breadth of the St. Lawrence below Quebec were not sufficient to ensure to us the power of passing vessels up and down the main channel of the river by day, the passage thereby could be effected with certainty at night; besides, the channel on the northern side of the Island of Orleans, which would be entirely sheltered if Point Levi were occupied by defences, would be available for light draught vessels and boats. So long as Great Britain has a superiority at sea communication could be maintained with Quebec while the St. Lawrence was open.

72. The passing of *transports* up the St. Lawrence could not be relied on above Quebec if the enemy were established at some points on the right bank of the river; but, by means of iron-cased vessels, (see paragraph 42,) the enemy could be prevented from crossing the river. Thus the St. Lawrence would be a wide and deep ditch connecting Montreal and Quebec, and securing the communication with Montreal by the road along the left bank of the river. That road should therefore be kept in good order, so as to afford ready communication between Montreal and Quebec.

73. With respect to land communication above Montreal, the Grand Trunk Railway, after leaving Vaudreuil, passes along the left bank of the St. Lawrence, close to the river, and subsequently close along the northern shore of Lake Ontario; consequently no sure reliance could be placed on it as a means of communication in time of war. Roads from Montreal to Ottawa by the northern shore of the Ottawa River, as also from Ottawa to Toronto through Peterboro' and Perth, should therefore, be improved and maintained for purposes of military communication.

74. The water communications above Montreal will be adverted to in connexion with the question of "Naval force."

75. As regards the power of communication between Great Britain and Canada in time of war, during the winter season, when the St. Lawrence is closed, the route from St. John, New Brunswick, through Fredericton, and thence by Grand Falls, &c., usually called the Temiscouata route, runs for the most part so close to the boundary of the States, that after the commencement of hostilities it is exposed to be cut off; but the route from Halifax through Nova Scotia, and along the eastern shore of New Brunswick, commonly called the Metapodiac route, which is 75 miles shorter, would afford access to Canada during that period, and, except at the part where it runs along the southern shore of the St. Lawrence (where owing to the nature and position of the country in the adjacent part of the States it is scarcely liable to attack) at such a distance from the frontier that it would not be liable to interruption by the enemy—unless he had previously obtained possession of the Harbour of St. John. Troops would however, take about three weeks to proceed by it from Halifax to Quebec; and it would be of advantage, in a military point of view, to have more rapid means of sending reinforcements by land than this road would afford.

76. The intercolonial Railway from Halifax to Quebec, which has been proposed to follow nearly the line of the Metapodiac road, would supply such rapid communication. But, if the works of defence recommended in this paper were constructed, the necessity for such rapidity of communication by land would be greatly diminished, for the enemy would be forced to accomplish a successful siege before he could gain any advantage of moment; and in a short time the St. Lawrence would be open for the passage of reinforcements to Quebec.

IX.—NAVAL FORCE AT AND ABOVE MONTREAL.

77. As regards the Naval force that would be required to co-operate in the defence of Canada, at and above Montreal, it has already been pointed out that gun-boats might assist in the defence of Montreal, in connexion with the entrenched camp opposite that city, and on Lake St. Louis and the Lake of the Two Mountains in connexion with the approach by Vaudreuil. So far as Lake St. Louis there is difficulty in passing first-class wooden gun-boats, the Lachine Canal admitting of their transit from Montreal to that Lake; but to take such vessels into the Lake of the Two Mountains it would be necessary to enlarge the channel and the lock at St. Ann's, by which access is obtained thereto, which present will only admit of the passage of third-class gun-boats.

78. It would further be an advantage to place gun-boats on Lake St. Francis, to aid in the protection of that portion of the St. Lawrence. Unfortunately, however, the Beauharnois Canal, by which first-class gun-boats could be passed from Lake St. Louis to that lake, is on the south side of the river, and unless some arrangements were made for placing such vessels on it previously to the commencement of hostilities—it is probable that that communication might be cut off.

79. This circumstance, as well as the probability that the canals on the left bank of the St. Lawrence would not be available after the enemy had established himself on the opposite shore, would, moreover, render it unlikely that gun-boats could be passed by these canals into Lake Ontario. The Rideau Canal, as also the Carillon and Grenville Canals, on the Ottawa River, would be available for the transport of troops and stores, but they are only capable of passing third class wooden gun-boats at, in any case, wooden gun-boats could not now suffice to maintain a naval command on Lake Ontario. To obtain such command, it would be necessary to adopt some arrangement by which a few armour-plated gun-boats could readily be made available on the Lake. To this point, therefore, it is submitted that the Canadian Government should especially direct their attention. Probably about six such vessels might suffice at the commencement of a war. It must be observed that a great deal depends upon Canada taking the initiative in this matter. If armour-plated gun-boats could be brought into action on the Lake before the enemy had been able to launch any, his power of placing a naval force upon the Lake might be greatly diminished, if not destroyed.

80. In addition to any other vessel of war, it would be advisable to have some swift armed steamers upon the lake, and probably the steamers which ply on Lake Ontario might be made to answer as part of the flotilla.

X.—NATURE OF PROPOSED WORKS, &c.

81. It remains to be considered; 1st, the nature of the proposed works; 2nd, their armament; 3rd their probable cost.

82. As regards the land works, it is recommended that, considering the necessity of their being executed with rapidity, the shortness of the working season in Canada, and the advisability of rendering them as inexpensive as possible, they should be of a less permanent character than it would be desirable to adopt under other circumstances; with this view it is proposed that at Montreal the main part of the works should be of earth, with detached walls in the ditches, which should be flanked by caponieres of masonry. Bomb-proofs of wood and earth may be added behind the ramparts at a time of expected attack. The forts might further be strengthened by masonry keeps, from which a fire could be brought to bear over the whole of the interior of the work; these keeps would be well covered by the earthen ramparts of the main work, and they should be of an economical construction, with their roofs of timber and earth. At Kingston and Quebec, where the excavations would be chiefly in rock, a somewhat different construction would be adopted. The parapets would be of earth, but instead of detached walls in the ditches, there would be escarps cut out in the rock and faced with masonry where necessary. In these instances, perhaps it may be found more economical to have deeper ditches, in which case the keeps might be dispensed with and the permanent bomb-proofs placed behind the front rampart.

Nature of proposed works.

83. A good military road of communication, covered by a parapet, with openings at convenient points for sorties, should be established a short distance in rear of each of the lines of defensive works, and temporary batteries might be thrown up between the several forts.

84. As regards the sea defences; those at Kingston would consist partly of earthen batteries with masonry keeps affording accommodation for the garrison, ammunition, and stores, and partly of casemated works. The latter would be constructed of the stone obtained from the locality, strengthened with iron embrasures built into the masonry. Iron might also be applied in time of war to the embrasures in the earthen batteries. At Toronto and Hamilton the works on the island at the former place, and that on the spit at the latter, would be of the casemated description. The shore battery at Toronto would be of earth in connexion with a defensive enclosure of masonry.

85. With respect to the armament,—1st of the land works; it is proposed that a portion should consist of 40-pounder rifle guns, or other ordnance of about that size, mounted on travelling carriages, so that they might be easily withdrawn if necessary; and that, if desired, a great number of guns might be concentrated on any point. There should also be some heavier pieces of ordnance, both rifled and smooth bore, to bear on the enemy's trenches in the event of siege. The Keeps would be armed with barronades, small howitzers, or other light guns, to sweep the interior of the work. Much of the armament for the land works might, perhaps, consist of guns, which, since the introduction of armour-plated ships, are no longer applicable for coast fortifications. For the sea defences on Lake Ontario, considering the nature of vessels to which they would be opposed, 68-pounders and 8-inch shell guns might, at all events in the first instance, form the main portion of the armament. There should, however, be some 70-pounder rifled guns for long range, as also a few powerful pieces of ordnance, which would do effective damage to the armoured portion of iron-plated gun-boats.

Armament.

The probable number of pieces of ordnance for all the proposed works both land and sea would be 700.

Probable cost.

86. MONTREAL.—As regards the probable cost of the proposed defences, it is calculated that about 1,800 acres of land would be required opposite the City at Montreal, and about 1,400 at Caughnawaga and Vaudreuil; total 3,200 acres. Estimated to cost - £118,000
The cost of the works at Montreal is estimated at - - - - - 325,000

Total, Montreal - - - - - £443,000

KINGSTON.—At Kingston, about 2,100 acres of land would be required on the City side and in front of Fort Henry; about 1,200 acres on Wolfe Island and Simcoe Island; the cost of the whole is estimated at - - - - - £ 66,000

The cost of the works at Kingston is estimated at - - - - - 325,000

Total, Kingston - - - - - £391,000

The works at Toronto would cost about - - - - - 90,000

That at Hamilton about - - - - - 30,000

At Quebec, the purchase of land and cost of works is estimated at - - - - - 200,000

For Depôts at Toronto, Ottawa, Montreal, and Kingston, would probably be required - - - - - 100,000

For armaments, say - - - - - 200,000

For gun-boats - - - - - 301,000

Total - - - - - £1,754,000

Time required for execution.

87. It may be of advantage to state, as regards the time requisite for the construction of the fortifications, that the exterior ramparts of the works covering Montreal might be completed in one year, but that it would take two years to complete the forts at that place. The works at Kingston and Quebec would probably take three years to complete, but they would afford a means of defence to a certain extent from year to year in proportion to the amount of work executed.

Conclusion.

88. The foregoing proposals are submitted for consideration with an earnest recommendation that there should be no unnecessary delay in carrying them into effect. If preparation for war were postponed until a period when hostilities were seriously threatened, no steps that could then be taken either by Great Britain or by Canada herself could be of any avail. Effective resistance to the invasion either of Canada or of any other State by a powerful neighbour similarly situated with respect to it can alone be made by adopting a permanent basis for defence.

By means of the measures recommended in this paper, Canada, aided by Imperial troops, would be enabled to resist American aggression with success; and who shall say that, thus tiding over the time of her dependence and comparative weakness, she may not, united with the other provinces of British North America, at length become a great and powerful nation which may hold her own against the world!

WM. F. DRUMMOND JERVOIS.

Quebec, 10th November 1864.

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