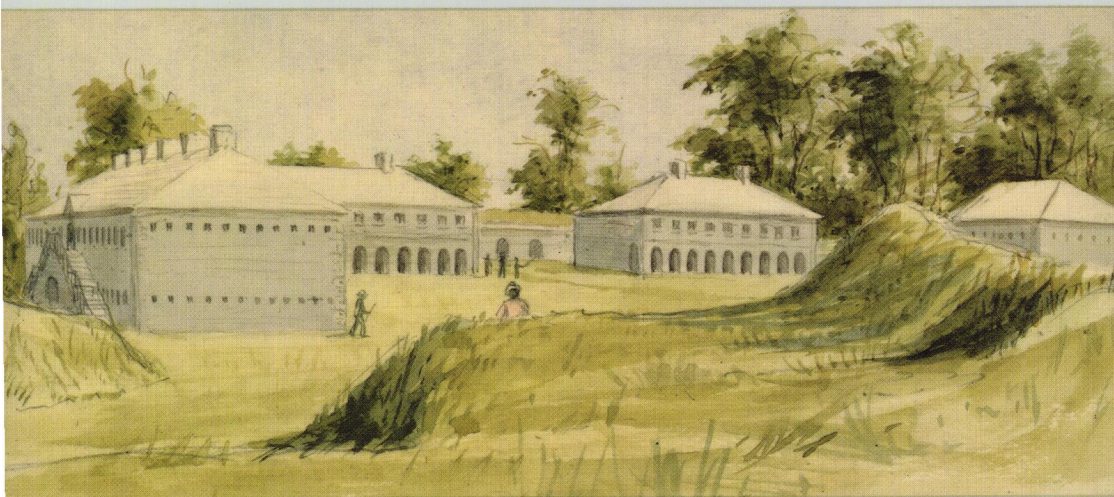

THE FORTIFICATIONS OF ÎLE AUX NOIX



André Charbonneau



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THE FORTIFICATIONS OF ÎLE AUX NOIX

A Portrait of the Defensive Strategy
on the Upper Richelieu Border
in the 18th and 19th Centuries

André Charbonneau

Translated from the original French

Studies in Archaeology,
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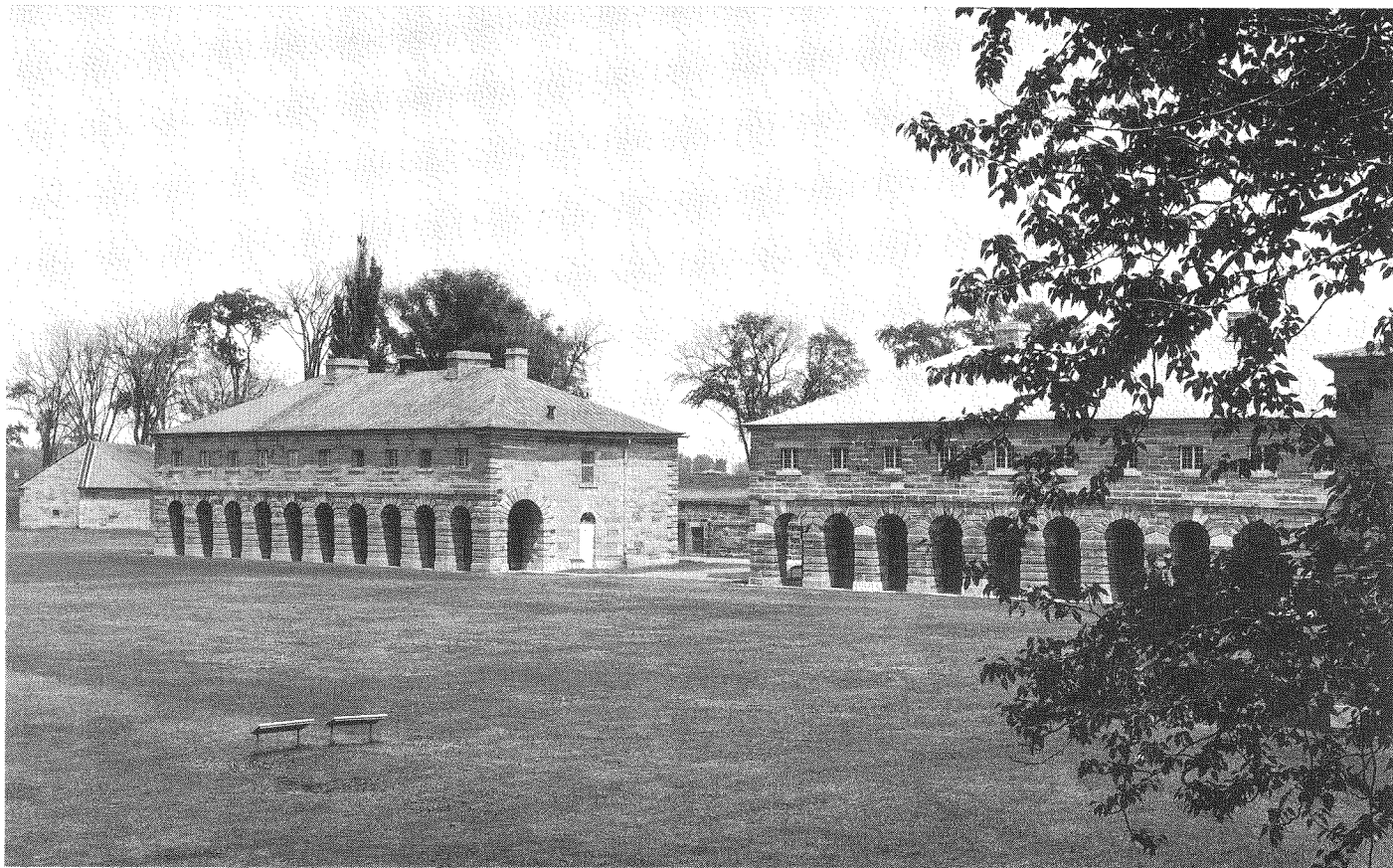
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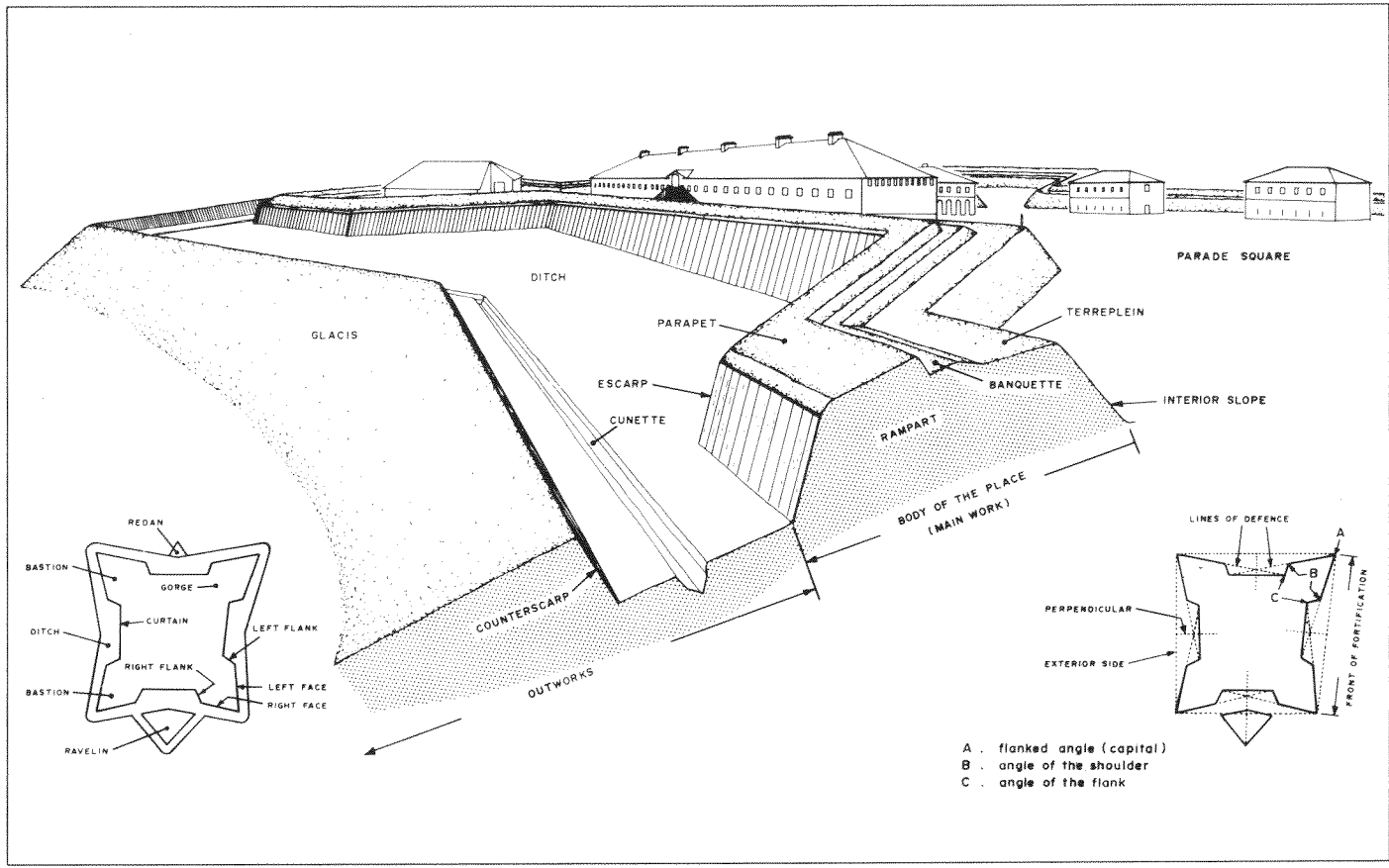
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ABBREVIATIONS, ACRONYMS, UNITS OF MEASUREMENT

Abbreviations and Acronyms

ANQM	Archives nationales du Quebec à Montréal
BL	British Library
<i>CHR</i>	<i>Canadian Historical Review</i>
DCB	<i>Dictionary of Canadian Biography</i>
MSRC	Mémoires de la Société royale du Canada
NA	National Archives of Canada
PRO	Public Record Office
RAC	<i>Rapport des Archives du Canada</i>
<i>RAPQ</i>	<i>Rapport de l'archiviste de la province de Québec</i>
<i>RHAF</i>	<i>Revue d'histoire de l'Amérique française</i>
PUL	Presses de l'université Laval
UTP	University of Toronto Press

Units of Measurement

Generally speaking, the units of measurement specific to each of the periods studied have been followed. However, on some occasions certain dimensions have been changed to a common unit for comparison.

1 French foot	=	1.06575 English feet
1 English foot	=	0.9383 French foot
1 metre	=	3.28 English feet
1 toise	=	6 French feet

INTRODUCTION

Since the beginning of Canadian history, the navigable corridor of the Richelieu River and Lake Champlain has always been fundamentally important for economic development. But this corridor was also recognized for its strategic value. As the main penetration route, the Richelieu River played an important role in most of the conflicts involving Canada from the 17th to the 19th centuries. Whether it was during the Iroquois wars, or during the conflicts between France and England on the North American continent, or again during the armed struggles between Canada and the United States, the Richelieu River and Lake Champlain have constantly been the theatre of prominent military operations.

From the last days of the French Régime, Île aux Noix held an important place in the defensive strategy and tactics developed for this sector. Several monographs on Canadian military history have given some definition of Île aux Noix's defensive role within the overall operational plans carried out by the home countries concerned. However, none of these has distinguished Île aux Noix from the other military positions on the Richelieu and Lake Champlain by taking into account the special geographical and tactical features of this piece of territory.

Île aux Noix has already been the subject of numerous studies which have been carried out within the framework of the historical and archaeological research program of Parks Canada to develop this national historic site. These works, especially those by David Lee, and several archaeological reports, give a general definition of military and civilian activity at Île aux Noix as a whole from the middle of the 18th century. They also provide a description of the fortifications and buildings erected during this same period in terms of events. However, these studies do not give an adequate understanding of the various fortifications which were built successively on Île aux Noix, nor of their relation to the objectives defined by the overall defensive strategy for Canada.

Far from calling into question the research carried out on the history of Île aux Noix until the present, this study attempts to cast a new look at the

island's defensive role and fortifications, in order to appreciate both their engineering value and their relationship to the defensive objectives previously set out.

The actual nature of the fortifications leads to a particular method of analysis frequently used by historians of technics, in which questions are asked not only about the nature of the defensive works but also about their reason for existence. Though it is important to be acquainted with the nature of these works and the techniques of construction, it is also necessary to understand why they were erected in the manner described. In other words, the history of the Île aux Noix fortifications not only underlies their technical description; it underlies even more a knowledge of the process which brought about their construction. This problem clearly goes beyond simple technical description and requires the historian to make a much deeper inquiry. I have tried to adopt the approach of those who planned these defensive entities, to enter the thought processes of the military engineers.

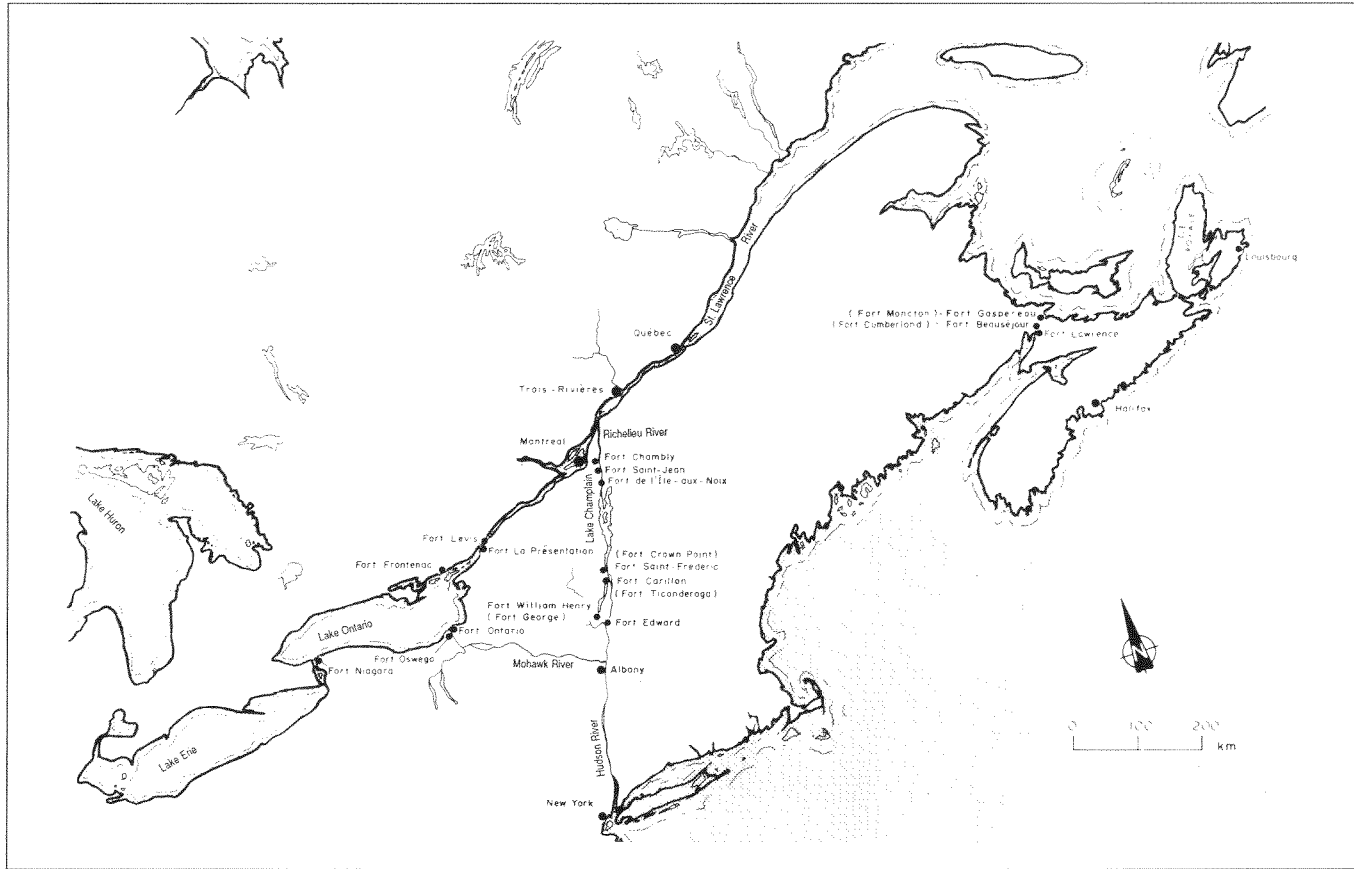
The construction of the fortifications did not result from simply applying appropriate fortification techniques as found in a treatise, nor did it rest solely on an elementary exercise in mathematics. The military engineer assigned to carrying out these works had to deal with a series of interrelated factors which were of considerable importance in determining the type of fortification, its location, the overall plan and technique of construction. The strategic importance of the site to be fortified, reconnaissance of the enemy, the type of warfare to be carried on and the state of resources, as well as the climate influencing the timing and duration of conflicts all figured among the main strategic factors. At the tactical level the surrounding topography and the number of defending troops would have considerable influence on the works constructed. Finally, the size of the budget allotted to the defence of a territory could influence the choice of construction techniques, as could the context of war or peace in which every project to construct defensive works took place.

Obviously the theoretical examples known to engineers were among the factors which influenced the choice of a defensive model. The historian must appreciate their main characteristics in order to be in a position to evaluate their application in a particular defensive context. This makes possible a much more critical perception of the work constructed; it contributes at the same time to placing the work and its planner, the

military engineer, within the setting of the scientific and contextual reality of the period.

To be in a position to evaluate the Île aux Noix fortifications appropriately then, the analysis must be based on these different factors which the engineer was faced with, hence the insistence in this study not only on a technical appreciation of the works, but also on an accurate assessment of the strategic and tactical contexts within which every defensive project was placed.

Given the various phases in the development of Île aux Noix's defensive role, I have in general adopted a chronological division for the order of chapters. Thus, roughly speaking, the first three coincide with the main conflicts in which Île aux Noix played a preponderant role: the Seven Years' War, the American War of Independence and the War of 1812. The three following chapters are more particularly concerned with Fort Lennox, which in a way was the end point of the island's defensive installations. After an assessment of the defensive situation which led to the construction of the fort, a complete chapter is devoted to its detailed technical analysis. Thus, space is given to the technical assessment of the fortification, and the implications for its defensive role are given particular attention. Chapter Six analyses the last occasions on which thought was given to Île aux Noix's defensive purpose and the modifications that this thinking produced.



1 Map of New France. (CPS: F. Pellerin, 87-G-D6)

CHAPTER 1

THE FRENCH FORTIFICATIONS

The population of New France during the last years of the Seven Years' War lived through difficult times, to say the least. It faced an appreciable reduction in support from the home country, at a time when France's resources were being stripped by the situation on the European continent. In the colony from year to year, civilians and soldiers saw their hopes crushed as they worked out strategies which were constantly deprived of the necessary royal support. The campaigns of 1759 and 1760 provide strong evidence of this situation, and it is in this context that the strategists decided to set up a post on Île aux Noix, on the Richelieu-Lake Champlain border.

Context and Strategy

At the end of the 1758 campaign, British Secretary of State William Pitt had clearly dictated his intentions to Major General Jeffrey Amherst. A large fleet, accompanied by at least 12 000 men and commanded by James Wolfe, would attack Québec during the following season.¹ Amherst would lead an expedition against Montréal and later join up with Wolfe's army either by the Lake Champlain-Richelieu route or via the St. Lawrence rapids from Lake Ontario (Fig. 1).

On their side, the Governor General of New France, Pierre de Rigaud de Vaudreuil and Field Commander Louis-Joseph Montcalm were feverishly preparing the 1759 campaign. As early as the fall of 1758, they had dispatched Colonel Louis-Antoine de Bougainville and two other officers to France to present a series of colonial requests to the Court, for reinforcements of troops or new supplies of ammunition and rations. Not knowing Pitt's intentions and watching Amherst's actions, who was

1 Guy Frégault, *Histoire de la Nouvelle-France* (Montréal: Fides, 1975), Vol. 9, "La guerre de la conquête 1754-1760," p. 326.

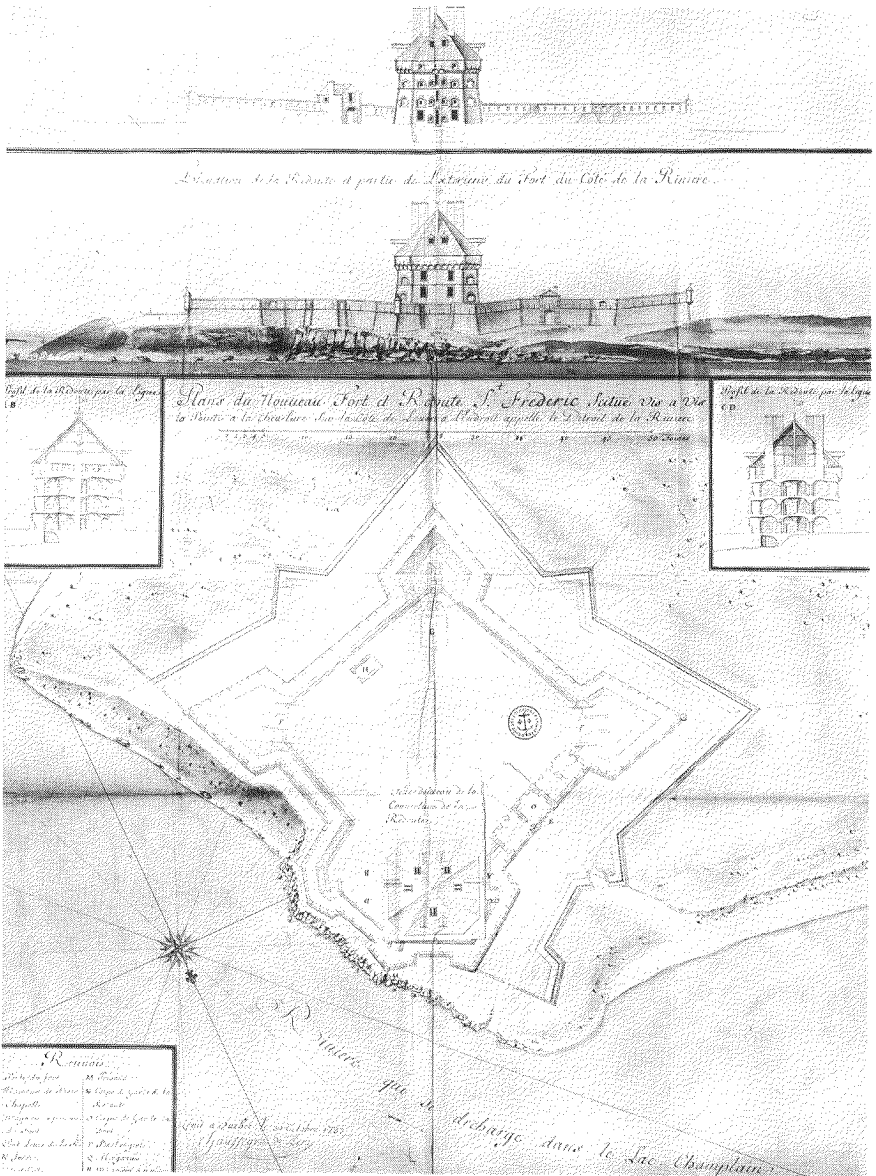
accumulating a large quantity of materiel, rations, artillery, and ammunition at Fort Edward (on the Hudson River, south of Lake Saint-Sacrement), Montcalm and Vaudreuil considered the Richelieu-Lake Champlain front, and therefore Fort Carillon, the most likely to be attacked at the start of the 1759 campaign. Further, Montcalm considered Québec to be less exposed than Carillon: "the only side where we can have some hope that they [the British] will not appear in force, without however daring to delude ourselves too much, is Quebec" [*translation*].²

In the light of this strategic fact, Vaudreuil, and even more Montcalm, decided to concentrate the forces available at the time in the Governmental District of Montréal on the Richelieu-Lake Champlain front. For the defence of Québec they counted on the reinforcements from the home country that were hoped for at the beginning of 1759. But Bougainville's return in May left the strategy they had adopted in question again since he did not bring with him the hoped-for relief. Therefore Québec became the point of concentration of the colony's forces and, somewhat against Vaudreuil's opinion, it was decided to draw in the colony's borders.³ On the Richelieu-Lake Champlain front, the strategy was largely worked out by Montcalm's second in command, the Chevalier de Lévis. It consisted of delaying the enemy as much as possible rather than confronting them. At the enemy's approach to Carillon and subsequently to Saint-Frédéric, Bourlamaque, who as colonel of the infantry commanded this border area in 1759, was to order the retreat of his army of some 3000 men, after showing some resistance, and then to blow up the two forts in question (Figs. 2 and 3). In the meantime, a site would be chosen closer to the centre of the colony, which would therefore be easier to resupply, and fortifications would be built there capable of halting the enemy's advance. This post would become the position of final resistance on this border.

The site chosen, Île aux Noix, is situated on the Richelieu a few kilometres above Saint-Jean. Because of its location, it could theoretically block the enemy's passage. Bourlamaque had been ordered to have an entrenchment built there as early as possible in 1759. This strategy was based on the small number of forces available and the lack of means for assuring the provisioning of the most distant border forts. Under these

2 H.R. Casgrain, ed., *Collection de manuscrits du maréchal Lévis* (Montréal: Beauchemin, 1889-95), 12 vols., Vol. 4: "Lettres et pièces militaires, 1756-1760" (1891), p. 144, *Mémoire sur la campagne prochaine, Montcalm et Vaudreuil, 21 March 1759*.

3 *RAPQ*, 1931-32, p. 90, "Journal de La Pause," May 1759.



2 Fort Saint-Frédéric on Pointe à la Chevelure (Crown Point). (Chaussegros de Léry, 1737; NA, C-21784)



3 Fort Carillon and the French forces in 1758. (NA, C-13277)

conditions, it was believed that Carillon could not hold out more than seven or eight days, and that Saint-Frédéric, because of its design, could offer even less resistance.⁴

Events unfolded as anticipated. Bourlamaque began his retreat from Carillon on 26 July, then from Saint-Frédéric on 31 July, and then retreated in August to Île aux Noix, where works of fortification had been under construction since May.⁵ Île aux Noix thus became the most important post on the Richelieu-Lake Champlain border in 1759. To Vaudreuil, who wanted to urge Bourlamaque to get everything under way quickly for the defence of the island, a defeat at Île aux Noix risked entailing a premature surrender of the whole colony:

Île aux Noix is the essential defensive point on this border, and we must hold it to the last, because if we had the misfortune to lose it the enemy would have no further obstacle to overcome to their penetrating into the interior of the Governmental District of Montréal, whence would follow the entire loss of the colony [translation].⁶

As well, Montcalm and then Major General François Lévis indicated to Bourlamaque to defend Île aux Noix to the end.⁷ The forts at Chambly and especially Saint-Jean would remain the key to communication with Île aux Noix in order to ensure the provisions and transport necessary for the defence of the island.

The loss of Québec in September 1759 and the preparations for the 1760 campaign had the effect of modifying the strategic role given to Île aux Noix the preceding year. The failure of artillery officer François Le Mercier, who had been sent to the Court to obtain relief from the home country, created a defeatist strain among the leaders of the colony and the French officers. Moreover, had not Montcalm in 1759 predicted the imminent loss of the colony?⁸ The raising of Lévis' siege of Québec in May 1760 only added to this sense of imminent defeat.

4 *Ibid.*

5 *Ibid.*, p. 94, July 1759; H.R. Casgrain, *Collection de manuscrits...*, Vol. 6, "Journal de Montcalm," p. 583, 28 July 1759; *ibid.*, Vol. 1, "Journal de campagne de Lévis," p. 191 ff.; *RAPQ*, 1928-29, p. 54, "Journal de Nicolas Renaud d'Avène des Meloïzes," 31 July 1759.

6 NA, MG18, K, 9, Vol. 5, pp. 219-20, Vaudreuil's Instructions to Bourlamaque, 20 May 1759.

7 *Ibid.*, Vol. 1, Montcalm to Bourlamaque, 4 June 1759; Vol. 3, pp. 95-97, Lévis to Bourlamaque, 12 August 1759.

8 NA, MG4, B, 1, A¹, Vol. 3540, Documents 41-42, 12 April 1759.

From this perspective, Bourlamaque's remarks at the beginning of 1760 indicate a different strategy for Île aux Noix. He stated that, in contrast to the situation in 1759, the 3000 or so men intended for the defence of Île aux Noix and the surrounding area would not be able to prevent the enemy from penetrating more deeply into the colony, but at most would contribute to halting them "long enough to await more substantial relief" [*translation*].⁹

Like Bourlamaque, Vaudreuil wrote in May 1760 to Michel Chartier de Lotbinière, who was then the engineer at Île aux Noix, that he was not to "work to make the post on Île aux Noix into a place capable of saving the colony. I am forced to lower my sights to the point of merely making this post secure against a coup de main" [*translation*].¹⁰

For Amherst, the match was much easier to play following the raising of Lévis' siege of Québec. Montréal became the sole objective to be reached in order to induce the colony to surrender. His tactics consisted of having three armies converge on Montréal, each one taking a different route and thus forcing the French troops to be divided among three fronts.¹¹ Murray, from Québec, would go upriver, gaining control of the Sorel area, at the mouth of the Richelieu River. Amherst would move on Montréal by the St. Lawrence rapids route. The Lake Champlain-Richelieu front would be commanded by Brigadier-General William, Haviland, who was to take Île aux Noix before proceeding to Montréal.

In such a context and in view of the scanty support from the home country, the French officers did not work out any further strategy; they no longer offered more than a passive defence. The surrender of Île aux Noix and the general capitulation of the colony were now only a matter of time.

Details of the Site

In 1759, topographical reasons among others militated in favour of Île aux Noix as the major defensive position on the Richelieu-Lake Champlain border. Barely 20 km separated the island from Saint-Jean, the centre for

9 NA, MG18, K, 10, Vol. 2, p. 216, Mémoire sur la frontière du lac Champlain, [Bourlamaque, 1760].

10 NA, MG18, K, 3, Vol. 2, pp. 455-56, Vaudreuil to Lotbinière, 26 May 1760. What a contrast with the tone of Vaudreuil's instructions to Bourlamaque the preceding year! (See Note 6). The description of Île aux Noix as a "post" contrasts strongly with that of "place" used by Lévis in August 1759 (NA, MG18, K, 9, Vol. 3, p. 95, Lévis to Bourlamaque, 12 August 1759).

11 PRO, WO34/52, fols. 48-51, Amherst to Haviland, 12 June 1760.

provisioning the forts on this front.¹² Further, communication between this point and the island was very easy since there were no obstacles to navigation on the Richelieu River above Saint-Jean.

The position of the island in the very middle of the Richelieu River made it possible to control all river traffic at this point. Two narrow channels separated the island from the adjacent shores; the western one was about 350 metres wide and the eastern one some 230 metres wide.¹³ The effective range of breaching guns (point blank fire) of the period varied from 600 to 650 metres and, at the beginning of the 18th century, the musket had a range of 200 to 300 metres.¹⁴ Thus in theory, because of its position, Île aux Noix controlled traffic on both banks (Fig. 4). On the other hand, it could be battered for breaching from both banks; whence the necessity of preventing the establishment of enemy batteries on each side. Another advantage of Île aux Noix was that its southern point facing upstream was directly lined up with a curve in the river only 100 metres away.¹⁵ As every ship sailing on the river must come around this curve, the effective range of the artillery installed on the island could easily reach the enemy targets as soon as they presented themselves at this spot.¹⁶

Île aux Noix is more than 1350 metres long on its north-south axis, and its southern part is nearly 400 metres wide;¹⁷ the northern point which widens toward the west is a little more. Its relief is similar to that of the surrounding area and presents no sizable geographical features. It lies very

12 NA, MG18, K, 9, Vol. 6, pp. 241-46, Extract of a letter from Desandrouins, 15 April 1759. The measurements of distance given here are taken from documents of the period and checked against more recent maps.

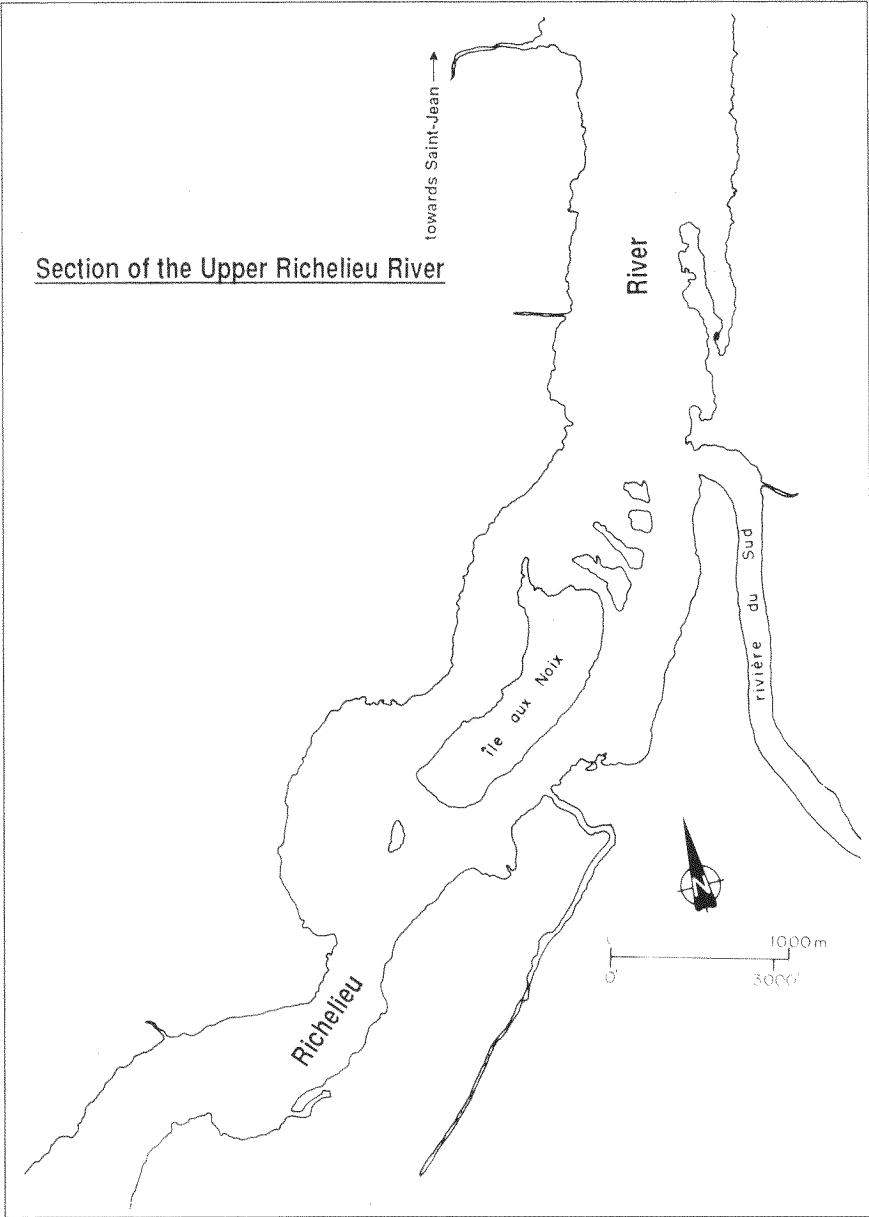
13 These dimensions come from an approximation in metres of the observations of Desandrouins, the engineer, in 1759. As far as the evidence from the period is concerned, they obviously vary somewhat because of the exact places where these measurements were taken. One should note that in making calculations on a modern map at the narrowest points of the south part of the island, the length of these two passages is reduced to 275 metres on the west and 225 metres on the east.

14 See the studies by B.P. Hughes, *Firepower: Weapons Effectiveness on the Battlefields, 1630-1850* (London: Arms and Armour Press, 1974), Chapter 2; *idem*, *British Smooth-Bore Artillery: The Muzzle Loading Artillery of the 18th and 19th Centuries* (Harrisburg: Stackpole Books, 1969), pp. 89-94; Abbé Dédier, *Le parfait ingénieur françois ou la fortification offensive et défensive* (Paris: C.A. Jombert, 1757), p. 14. La Pause also describes the geographical advantage of Île aux Noix in these terms: "The distance from the island to the mainland to the south (east) being only 2/3 of musket range, and that to the north (west) about musket range, we had constructed stockades to block off the river"[translation]. (*RAPQ*, 1931-32, p. 121, "Journal de La Pause," 23 August 1760).

15 Today it is known as Pointe à l'Esturgeon.

16 See the two previously cited studies by Hughes.

17 Here I must rely more on Bourlamaque's observations to determine the dimensions of Île aux Noix in 1759. Again, these measurements can be verified on current maps of the island. Though Desandrouins gives Île aux Noix a smaller surface (600 to 800 metres long and 300 wide), this is probably explained by the fact that one part of the island could have been flooded at the time of his reconnaissance at the beginning of April; see NA, MG18, K, 9, Vol. 6, pp. 241-46, Extract of a letter from Desandrouins, 15 April 1759 and H.R. Casgrain, ed., *Collection de manuscrits...*, Vol. 4, "Lettres et pièces militaires," pp. 61-64, Report on Mr. Desandrouins's observations on the positions to be taken up between Carillon and Saint-Jean.



4 Detail of the geography of the Upper Richelieu. (Parks Canada, L. Lavoie, 85-5G-D18)

low above water level with a few rises being visible in the south part. Thus where defence is concerned, this portion of the island, slightly higher and directly opposite a possible enemy, is more suitable for constructing fortification works.

At the end of the French Régime, the engineer Jean-Nicolas Desandrouins noted that the island was almost entirely covered with walnut trees or other sorts of "mature trees." He also pointed out that a small part of it, which had been cleared, was at the time covered "with fine copses suitable for making fascines" [*translation*], those bundles of branches widely used in the construction of field entrenchments.¹⁸

At the northern tip of the island four small islands emerged which were unequal in area; they were marshy and often flooded. Another small island was situated some metres from the southern point but its very low profile made it unusable for defence, Desandrouins wrote.

Observers of the period attributed other advantages to Île aux Noix, including the fact that the two river banks at this spot are very marshy, with ground unsuitable for portages and not readily suitable for rapid road construction.¹⁹ As a result, in their opinion, the enemy could only bypass the island with great difficulty and the nature of the ground would prevent the setting up of batteries. In fact, the two banks of the Richelieu at this point consist of a clayey soil strewn with peat-bogs, and so exhibit a morphology which is favourable to marshes.²⁰

The site of Île aux Noix, nonetheless, had a major disadvantage: the presence of the Rivière du Sud which emptied into the right bank of the Richelieu about 875 metres north of the island. This little river, navigable at the time over almost its whole length, made connection with Missisquoi Bay possible by means of a portage estimated at the time to be about four leagues (approximately 16 km) long.²¹ This little river thus provided the enemy with a means of access to the Richelieu River while avoiding Île aux Noix. This disadvantage concerned Vaudreuil and Bourlamaque since they had analysed the different possibilities open to an enemy who wished

18 NA, MG18, K, 9, Vol. 6, p. 241, Extract of a letter from Desandrouins, 15 April 1759. The engineer is probably referring to the beginnings of cultivation which the island's tenant had undertaken to carry out in 1753 (ANQM, Notarial file A. Foucher, No. 713, Farm lease between Pierre Jourdanet and Pierre Payen de Noyan, 6 April 1753).

19 The impracticability of a road is further stressed by Vaudreuil in his instructions to Bourlamaque in 1759. See NA, MG18, K, 9, Vol. 5, pp. 220-21, 20 May 1759; also Vol. 3, pp. 95-97, Lévis to Bourlamaque, 12 August 1759.

20 L. Beauregard, "La vallée du Richelieu," Ph.D. thesis, University of Montréal, 1957, pp. 46-49.

21 H. R. Casgrain, ed., *Collection de manuscrits...*, Vol. 5, pp. 29-36, Bourlamaque to Lévis, 13 August 1759.

to approach from this direction. Both men, however, stated that only in winter was the portage over the very marshy ground an easy one along its whole length.²² Even though they believed the arrival of the British was improbable from this direction, the military authorities were constantly concerned about the Rivière du Sud, and their tactics in 1759 and 1760 included a series of manoeuvres reflecting this. But despite the presence of the Rivière du Sud, the choice of Île aux Noix offered all the topographical advantages necessary to the planned defence. Easy to supply, the island could theoretically halt the enemy advance on this front – if it was well fortified and had the necessary garrison and arms.

The Defensive Works

The knowledge of the art of fortification means more than a simple description of each of its component parts, although that is necessary and useful. The establishment of the exact trace of a work, compared to the models used at the period, produces an evaluation of the type of defence planned and carried out. Further, a fortification's defensive effectiveness and power of resistance are to be measured by an examination of its profile. The study of the French fortification at Île aux Noix is susceptible of this model of analysis, even though it involves a so-called field fortification, that is, one erected during a period of active warfare. Though geometrical regularity and the stability of the revetments are not the primary concerns of an engineer tasked with erecting a temporary fortification, it remains true that the work should reflect the defensive theories being taught at the time as much as the so-called permanent fortification does.

The official correspondence of the two last military campaigns in New France enables one to develop an overall picture of the Île aux Noix fortification. The south part of the island, directly opposite the enemy, had a double entrenchment which was closed in the centre by a hornwork. Redoubts and a blockhouse, as well as abatis, prevented an enemy from establishing themselves on the low portion of the island to the north. Epaulments supported the entrenchments on both sides, and numerous

22 *Ibid.*; NA, MG18, K, 9, Vol. 5, pp. 63-66, Vaudreuil to Bourlamaque, 1 June 1759; *ibid.*, Vol. 3, pp. 91-94, Lévis to Bourlamaque, 2 June 1759.

pathways crossed the island and linked the various works to each other. Finally, there were several structures such as lodges, barracks, sheds, magazines, etc., for the use of the garrison. The exact traces and profiles of these works are difficult to establish, largely because of imprecise references and contradictions contained in the few illustrated documents produced at the time. I will begin with a critical evaluation of the five maps or plans illustrating the French fortifications of Île aux Noix.²³

First is Courville's plan (Fig. 5). Like all the other maps accompanying the Sieur de Courville's memoirs, this plan depicts the imagination of the artist more than it does historic reality.²⁴ A regular hexagon within an irregular entrenchment was never built on Île aux Noix. As for the actual drawing of the plan, it contains obvious errors so that the surface of one building is more extensive than a six-bastion fort!

The Chevalier de Johnstone, who was present at Île aux Noix during the 1760 campaign, drew up a plan of the siege and fortifications of the island (Fig. 6).²⁵ I believe that this document, as copied in 1912, takes more account of reality than does the preceding plan, although certain details are misrepresented.²⁶ For example, the demi-lune drawn in front of the hornwork was never constructed, although it was considered absolutely necessary by Bourlamaque in 1760.²⁷ Further, there is no confirmation of the fortified link between the redoubts as represented on the map. But this document of Johnstone's probably reflects the fortification's main elements. However, his use, for an exact point of reference, of the trace of the works is totally unsuitable precisely because of the lack of accuracy observed in the final rendering of the illustration, despite the author's added scale. The document is a sketch to scale rather than a detailed and accurate account. P.L. Morin reproduced Johnstone's plan in his atlas in 1852-53 (Fig. 7).²⁸

23 It should be noted that three of these five documents have come down to me in the form of copies made by employees of the National Archives of Canada. This raises certain questions as to their faithfulness to the original and consequently as to their accuracy as documents.

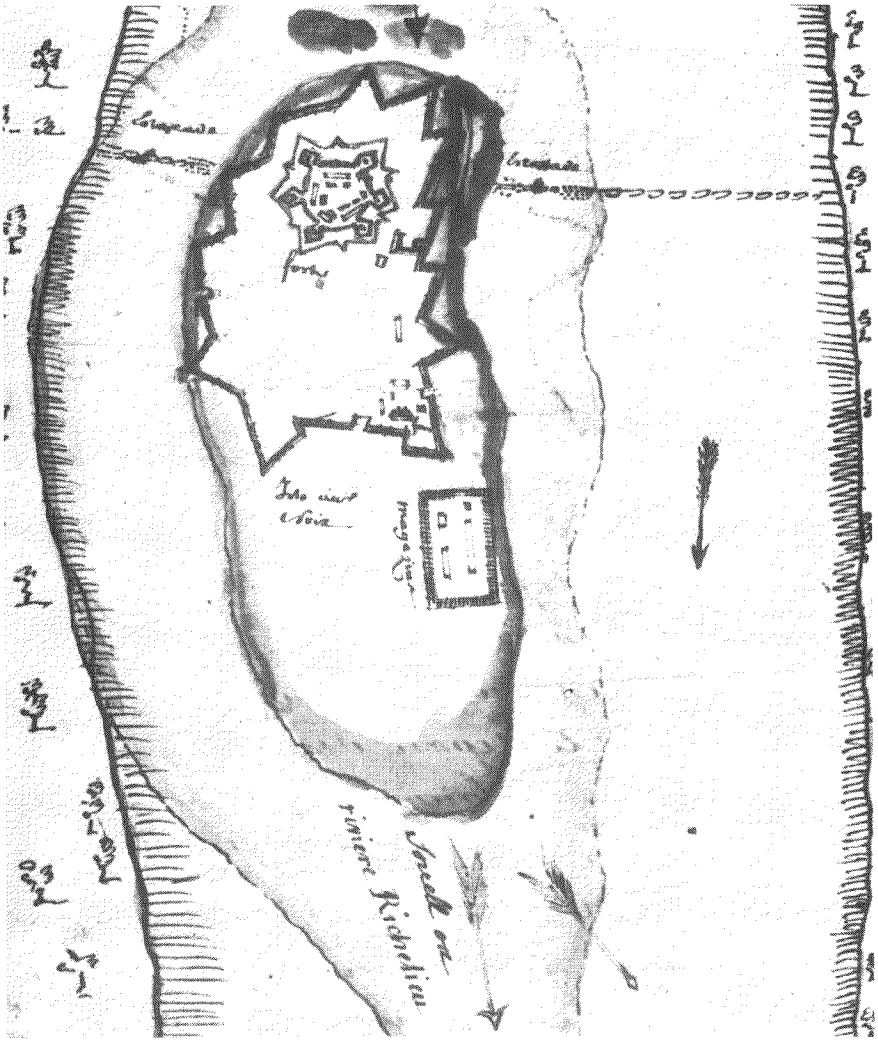
24 On Sieur de Courville and his reports, see his biography written by François Rousseau, in *DCB*, Vol. 4: "1771-1800," pp. 35-36; also Aegidius Fauteux, "Le S... de C... enfin démasqué" in *Cahiers des Dix*, Vol. 5 (1940), pp. 231-92.

25 See his biography written by T.A. Crowley in *DCB*, Vol. 4: "1771-1800," pp. 400-401.

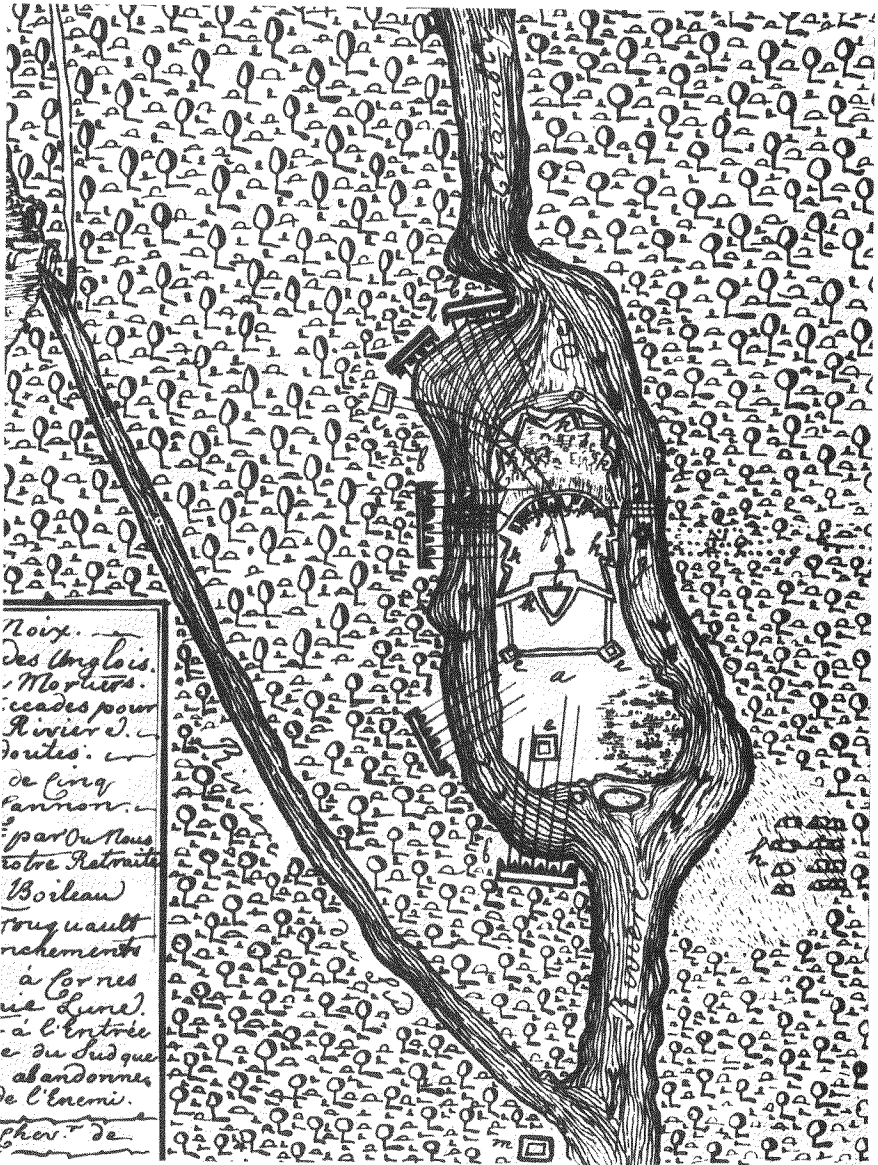
26 The reproduction of Johnstone's plan comes from the copy made by a certain Denison, in the employ of the National Archives of Canada, 1 September 1912 (NA, MG18, J, 10, Vol. 3, p. 26).

27 *Ibid.*, K, 10, Vol. 2, pp. 287-91, Bourlamaque to Bougainville, 3 May 1760.

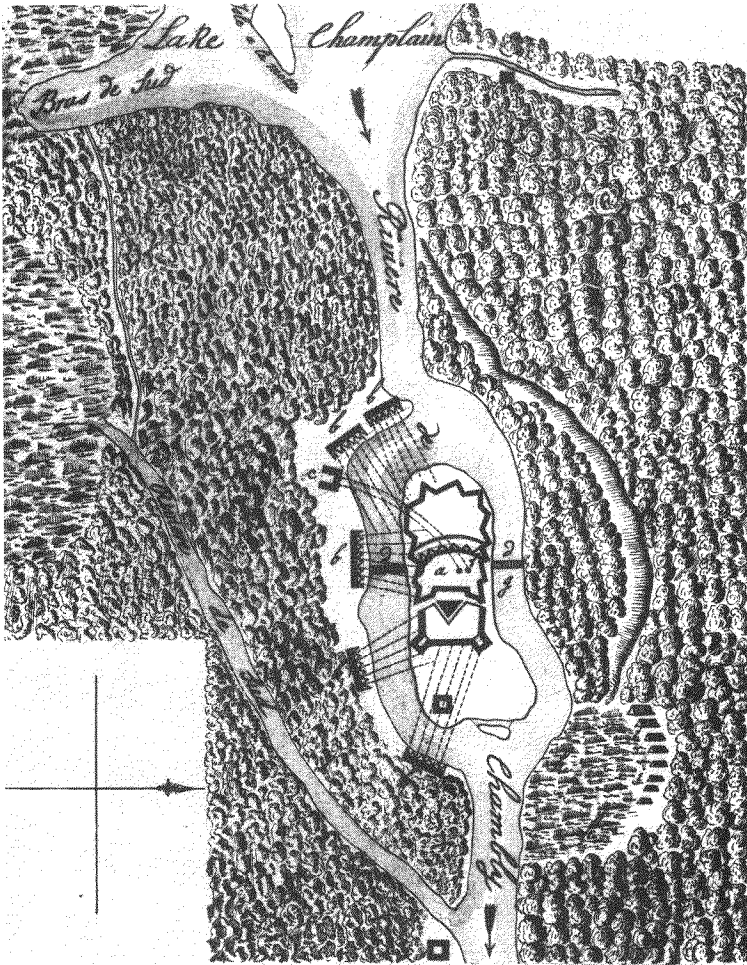
28 In his atlas P.L. Morin reproduced this plan in 1852-53 (Fig. 7). As is not the case with most copyists, the liberties Morin takes in his reproduction work cancel out the documentary value of his drawing. This judgement is valid for other Morin reproductions, especially for the plans of Québec and Montréal (NA, National Collection of Maps and Plans, P.L. Morin, "Plans, Maps, Views and Drawings Relating to the History of New France").



5 The fortifications of Île aux Noix according to Courville. This plan is more a reflection of the artist's than of historical reality. (NA, C-132147)



6 The siege of Île aux Noix in 1760 as illustrated by the Chevalier de Johnstone. This map is a fairly close depiction of the Île aux Noix fortifications as they really were. However, certain elements shown, including the demilune and the link between the redoubts, were never built. (NA, MG18, J, 10, Vol. 3, p. 26)



7 Reproduction by P.L. Morin in 1852 of the map of Île aux Noix by the Chevalier de Johnstone. Morin's maps must always be used with caution because of the liberties this copyist took in his work. (NA, NMC-18292)

- a) Île aux Noix
- b) The British batteries
- c) British bomb battery
- d) Two staccados
- f) The French battery
- g) Passage of the French when they retired
- h) Prairie de Boileau
- i) Camp for the English

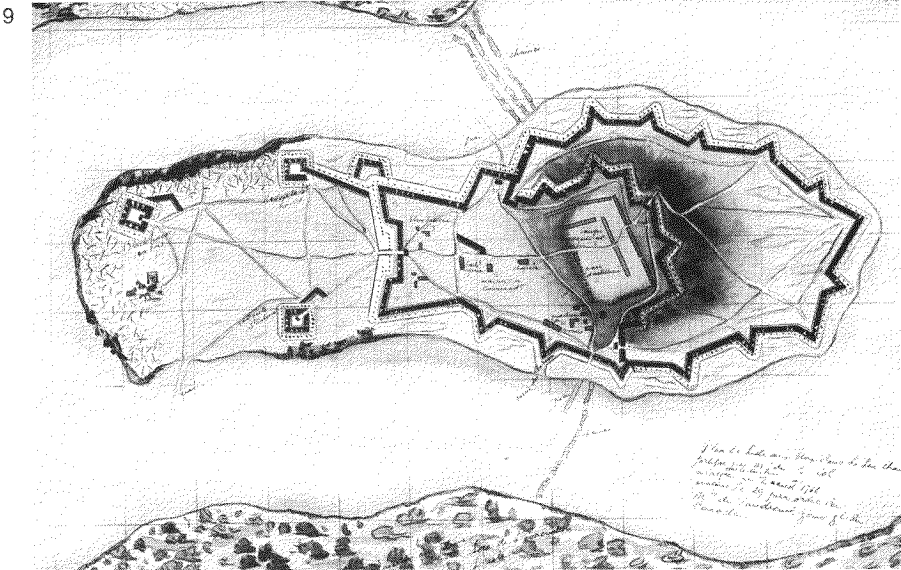
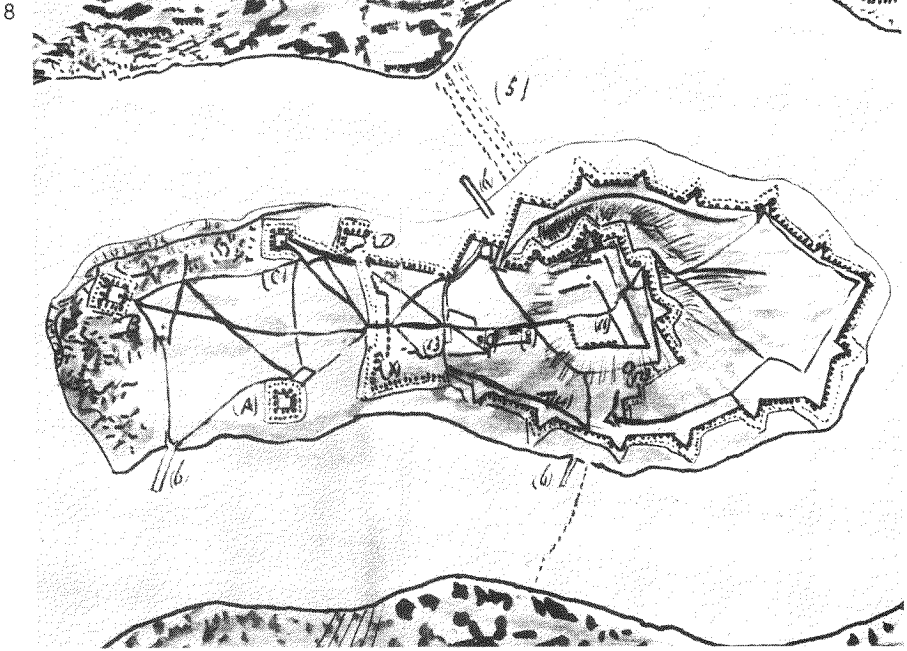
Like Johnstone's plan and even more so, Bougainville's plan reflects the description of the Île aux Noix works, as it is conveyed by the manuscript documentation (Figs. 8 and 9).²⁹ It can even be established that all the elements of the fortification appear on it, from the entrenchment at the south to the abatis at the north and the redoubt at the mouth of the Rivière du Sud, even though the outline of the island and the topographical details are wrong. However, despite the correctness of his illustration, Bougainville's document raises certain questions. The trace of the entrenchment with redans shows a geometric regularity whose nearly perfect symmetry creates doubt as to the accuracy of the trace shown, the opposite case being more usual in field fortifications. Finally, the use of this plan is complicated by the absence of scales.

Murray's map, drawn up by British engineers under his command in 1761, confirms my doubts as to the accuracy of the trace shown on the preceding plan (Fig. 10). However, this map exhibits certain incongruities such as the entrenchment, which never existed, surrounding the north part of the island. Contrary to Bougainville's plan, Murray's map gives the entrenchment a very irregular zigzag outline, a trace that also shows up on a plan of the first British fort in 1778. As for the rest of the fortification, the Murray document identifies appreciably the same elements as the preceding one: a double entrenchment to the south, the hornwork, etc. Finally, if Murray's map is lacking the profile elements shown in the plan, such as the parapet, ditch, palisade, etc., the explanation perhaps lies in that Murray's engineers had reconstructed a fortification which, it seems, was razed on Amherst's orders in 1760.³⁰

The 1778 plan, drawn up when the first British fort on Île aux Noix was constructed, gives the exact trace of the French entrenchment, at least of the portions of the ditch still present (Fig. 11). Considering that the British probably razed the French works in 1760, or at least began their demolition, and that the Americans occupied the island for some months in 1775 and 1776, this 1778 document should reflect these situations. The credibility of this plan becomes further evident since, on one hand, it agrees with Murray's and on the other, that the British used a part of the horn-

29 Two copies of this plan were found. The first one made by Holmden in 1914 has been used. The second one, the work of Simone Routhier in 1931, shows some divergences from the earlier one: lines of communication become epaulements and the trace of the parapet of the enceinte is now provided with several embrasures, which are not visible on the first copy.

30 PRO, WO34/85, fol. 137, Amherst's Order to McLeod, 13 October 1760.



8 and 9 Copies of the plan of Île aux Noix by Bougainville illustrating practically all the elements of the fortifications built in 1759 and 1760. The regularity of the trace of the enceinte raises doubts as to the faithfulness of the representation. No original of this plan has been found and the two copies contain some differences. (NA, C-131660 and C-44000)

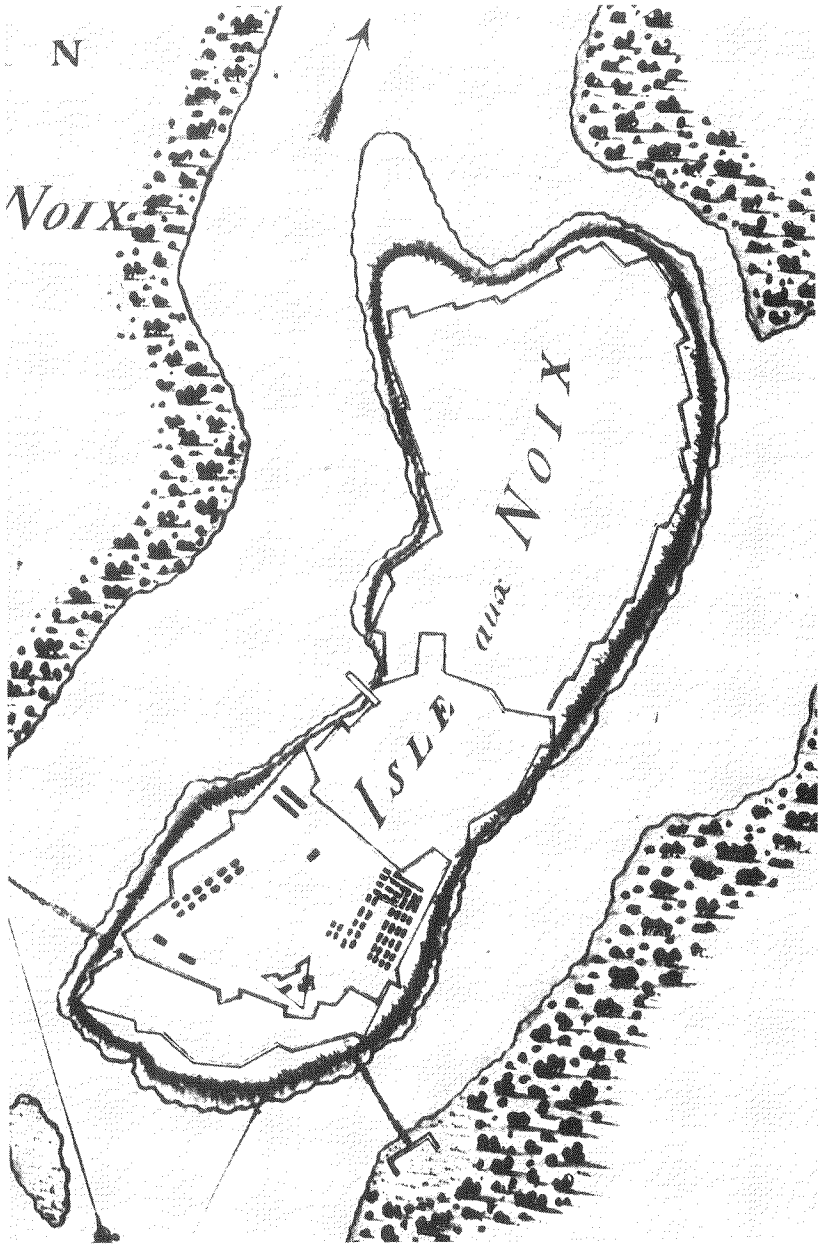
work's ditch and the adjacent French entrenchment in the construction of the new fortification.³¹ This salvaging of part of the French works also explains the unusual shape of the new fort.³² In spite of the presumed razing of 1760 and the American presence on the island in 1775-76, the 1778 plan therefore remains the most accurate one for the trace of the French entrenchment of 1759-60. The outline of these works was characterized by its zigzag line, with redan projections at certain places; it surrounded the whole south part of the island, ending at the centre with a hornwork (Fig. 12). There was a redan on three sides, on the south, east and west of the work. Its total perimeter extended some 2000 metres, including the 400 metres of the front of the hornwork. A second retrenchment, facing southeast, ran to the centre of and inside the first work and on this side formed a second firing line. Towards the middle of its perimeter of more than 460 metres was a small front of fortification (two half-bastions and a curtain) nearly 200 metres in extent.

On the north side of the island, the fortification was completed by two redoubts and the 1778 plan indicates that their surface was about 2500 square metres. The first redoubt, called Saint-Louis, situated to the north-east, was joined to the hornwork behind it by a broken-line retrenchment about 200 metres long. The 1778 plan does not illustrate the blockhouse erected at the northeast tip of the island, facing the mouth of the Rivière du Sud; nor were the abatis installed in this sector in 1760 still visible in 1778.

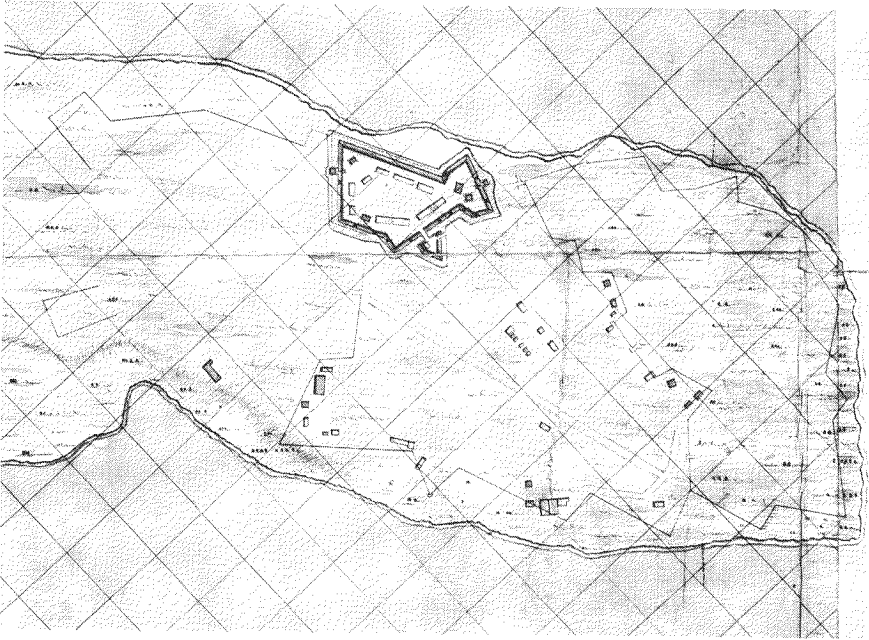
The construction of this defensive complex was carried out over two seasons and supervised by different engineers. First, in 1759, François Fournier, a new recruit in New France, was given his first posting at Île aux Noix and laid out the first line of entrenchment circling the southern

31 An archeological dig carried out in 1966 tended to confirm this reuse. See R.T. Grange Jr., "Early Fortification Ditches at Île aux Noix, Québec," *History and Archaeology*, No. 18A (1977), pp. 25-26.

32 Another British plan dating from 1785 confirms this same trace of the entrenchment in the south part of the island (see Fig. 29).



10 James Murray's map. In this representation of Île aux Noix, the irregularity of the trace of the fortifications seems to reflect the temporary enceinte built in 1759 and 1760 as it really was. However, the entrenchment girdling the north part of the island never existed. (NA, C-17560)



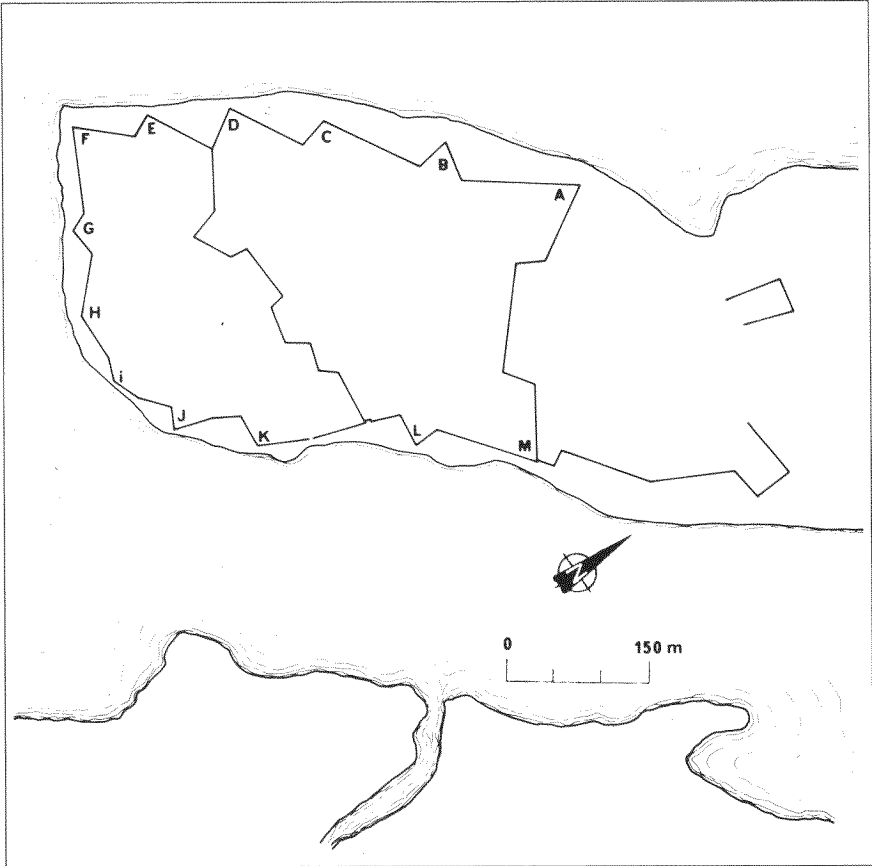
11 The first British fort (1778). The traces of the French entrenchment of 1759 and 1760 can be very clearly made out, in particular the trace of the ditches. The new fort assumed a part of this ditch configuration. It is not known whether the structures shown inside the old entrenchment but outside the new fort date from the French period. (NA, NMC-8989-1/2)

part of the island.³³ A volunteer engineer, a captain in the Régiment de la Reine, Guillaume Germain, assisted him in the course of the same season.³⁴ In 1760, Lotbinière was the next one to be employed there as engineer,³⁵ directing the construction of the second retrenchment in the centre of the island, the two redoubts, and the blockhouse.

33 A. Blanchard, *Dictionnaire des ingénieurs militaires, 1691-1791* (Montpellier: Université Paul-Valéry, 1981), p. 301.

34 *Ibid.*, p. 322. Rigaud de Vaudreuil informed Bourlamaque in June 1759 that Fournier and Germain did not get along (NA, MG18, K, 9, Vol. 4, p. 27, 23 June 1759).

35 One should remember that in 1755 Michel Chartier de Lotbinière had drawn up the plans of Fort Carillon at the source of Lake Champlain.



12 Representation of the French entrenchment according to the 1778 plan. (Parks Canada, F. Pellerin, 86-5G-D10)

Geometry of the Angles of Fire

As opposed to permanent fortifications, where the regularity of angles and lines is obvious, it is much more difficult to make a geometrical analysis of the component parts of a field fortification. However, the trace is governed by the same theoretical considerations, especially with reference to the fixing of flanking fire.³⁶ In the case of Île aux Noix, the proposed

36 Flanking is defined as the art of "battering the enemy from the flank." In flanking one ensures that every

analysis is harder to carry out since the only accurate plan of the trace of the French entrenchment plotted a vestige that had presumably been razed and reused. All the same, the 1778 document is accurate enough to make it possible to assess the trace of the French entrenchment in relation to the theoretical ideas being taught at the time and passed on, for example, by the treatise of the engineer Clairac, *L'ingénieur de campagne ou traité de la fortification passagère*.³⁷ The Chevalier de Clairac may be considered a contemporary of Fournier, the engineer responsible for the greatest part of the Île aux Noix entrenchment, since both of them took part in several campaigns of the War of the Austrian Succession.³⁸ A brief theoretical review is necessary for a better understanding of the French fortifications on Île aux Noix.

Since one of the purposes of a line of entrenchment was to mitigate somewhat the weakness of the defending army in relation to those of the enemy, Clairac suggested that the flanking of the entrenchment should be organized in accordance with the firing habits of the soldiers. According to Clairac, experience showed that a soldier in position on the banquette behind the parapet "almost always fires mechanically, and in consequence directly, to his front" [translation].³⁹ In other words, the infantryman instinctively lined up his musket at an angle of 90° to the parapet and did not have enough time, in action, to aim his musket at a target which was oblique to him. Clairac also established the range of the musket at 120 toises.⁴⁰ As a result, according to ideas based on experience, the organization of the flanking of any entrenchment must extend perpendicular to the plane of the defensive work and the field of fire must extend a maximum length of 120 toises.

single point of an enceinte is visible from another spot so that no space is left unprotected. See B.F. de Béliidor, *Dictionnaire portatif de l'ingénieur* (Paris: C.A. Jombert, 1755), p. 130.

37 In the 18th century, some engineers published works or treatises whose purpose was to offer reference texts to their contemporaries on areas less discussed by the official texts. As Béliidor had for the revetments of fortifications, Clairac formulated the fruits of his experience in a treatise to provide his colleagues with a work on field fortifications. Up to that point most treatises mainly discussed fortifications described as permanent. See A. Blanchard, *Les ingénieurs du "Roy" de Louis XIV à Louis XVI* (Montpellier: Université Paul-Valéry, 1979), p. 318. Clairac's treatise written in 1746 was first published in 1750. This work was found in the libraries of several of his contemporaries, including that of the engineer Franquet, who was present at Québec in 1752 (P. Mayrand, "La culture et les souvenirs de voyage de l'ingénieur Louis Franquet" in *RHAF*, Vol. 24, No. 1 [June 1971], pp. 91-94).

38 A. Blanchard, *Dictionnaire...*, pp. 301 and 414-15.

39 Chevalier de Clairac, *L'ingénieur de campagne ou traité de la fortification passagère* (Paris: C.A. Jombert, 1757), p. 7. See also p. 90 ff. where the author deals with the various lines of entrenchments.

40 *Ibid.*, p. 103. Here it is interesting to note how a practitioner such as Clairac describes the range of a musket conservatively at a maximum of 120 toises, while Abbé Déidier, who was the fortification theoretician at the school of artillery at La Fère, gave the figures of 120 to 150 toises (Abbé Déidier, *op. cit.*, p. 14).

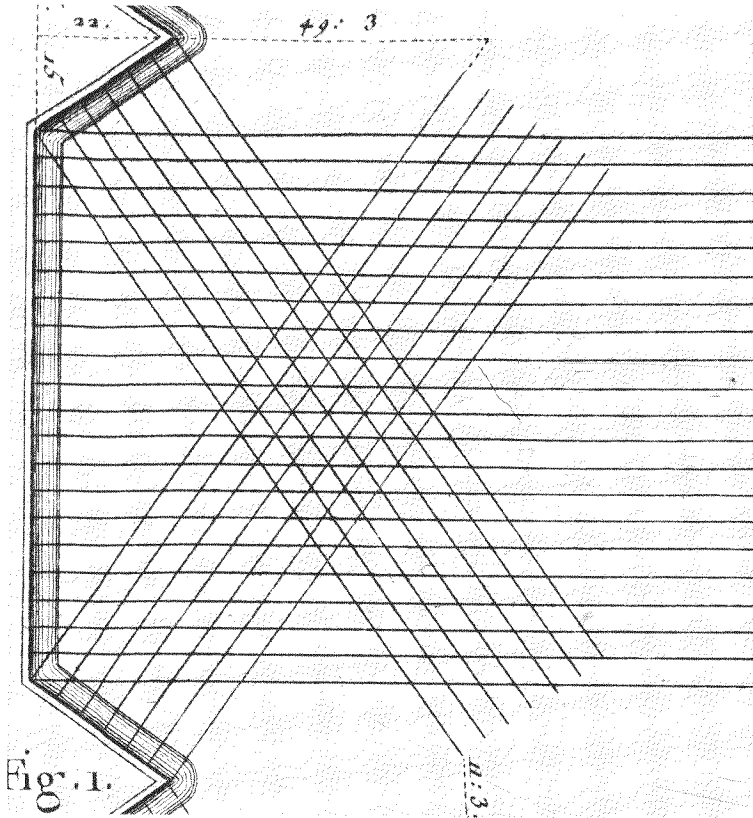
At the beginning of the 18th century, most lines of entrenchments took the form of the trace widely used by Sébastien Le Prestre de Vauban. He had projections in the form of redans, placed obliquely at more or less regular intervals along an enceinte (Fig. 13). But based on the principle of musketry firing at 90° to the parapet, Vauban's trace with redans, even if represented an adequate geometry, offered certain difficulties with the flanking. An entrenchment with redans such as Bougainville's plan of Île aux Noix seemed to indicate (Figs. 8 and 9), constructed in Vauban's manner with 120 toises' distance between two points,⁴¹ would include several dead angles. First, the centre of the curtain would only be flanked beyond 30 toises' distance (see Fig. 13). The flanking fire, over a maximum distance of 120 toises, would not intersect in front of the projection of the redans, and as a result would create a dead angle in front of each redan. Finally the obliqueness of the redan to the curtain would prevent the ditch from being properly defended.⁴² In short, in establishing the trace of an entrenchment, Clairac staked a great deal on the action of the soldiers at a time when a fortification with redans required the use of major artillery.

By way of solution, Clairac suggested among other measures laying out zigzag entrenchments whose turns at the external angles would be placed every 60 toises (Fig. 14). Further, at maximum intervals of about 400 toises, a larger work such as a redan or a bastion, equipped with artillery pieces, would offer a first line of advanced flanking, in front of the line of musketry. Various advantages flowed from such an arrangement.⁴³ First, the double alignment of the columns of fire at half range produced

41 Vauban's redans measured 30 toises at the gorge and their capital attained 22 toises (Clairac, *op. cit.*, pp. 102-3; Sébastien Le Prestre de Vauban, *Traité de l'attaque des places*, new ed. by F.P. Foissac [Paris: Magimel, Year III of the Republic], p. 74 ff.).

42 The flanking faults brought out by Clairac are in fact not trace errors, since the soldier could direct his fire obliquely if necessary. It was the experience of various sieges which led Clairac to organize the trace of revetments in relation to the perpendicular fire of the infantry. In his treatise, Clairac shows great caution in criticizing the trace of Vauban's redan, since at the time when he was writing such attempts were proving disastrous for all those who wanted to innovate. Clairac's language leaves no doubt: "No one is to presume from the frankness with which I express myself that I am aiming to make myself into a censor: it is a title which would be the more unsuitable since I detest it. I search, I examine in good faith: it is for the judicious Reader to decide. In a word, my own instruction and that of some of my confrères is, as I believe I have said, the only goal I set myself in discussions of this nature. Far from totally rejecting here a method adopted by so great a master and so universally received, I would even have no trouble in agreeing that it is sufficient, provided that one assumes plenty of artillery [*translation*]" (Clairac, *op. cit.*, p. 104). On the subject of the conservatism of the theoreticians of fortification during the middle of the 18th century, see A. Charbonneau, Y. Desloges and M. Lafrance, *Québec the Fortified City: from the 17th to the 19th century* (Ottawa: Parks Canada, 1982), pp. 107-9.

43 Clairac, *op. cit.*, pp. 112-15.



13 Entrenchment with redans recommended by Vauban at the beginning of the 18th century. (*Chevalier de Clairac, L'ingénieur de campagne ou traité de la fortification passagère, 2nd edition [Paris: C.A. Jombert, 1757], Pl. 17*)

better flanking. Since the projections or zigzags only projected from one-quarter of the length of the exterior side (60 toises \div 4 = 15 toises), they projected only slightly and were less exposed to the enemy and their enfilade fire. Finally, this layout of the entrenchment, since it left no dead angle in front of the salient angles, made it possible to adapt better to the often irregular perimeter of the place to be fortified and so assured an equal distribution of firepower.

All this theoretical discussion leads to a better understanding of the French entrenchment on Île aux Noix, as illustrated on the 1778 plan. It is logical to think that Fournier drew his inspiration from the principles

14 Zigzag line suggested by Clairac. (L'ingénieur de campagne ou traité de la fortification passagère, 2nd edition [Paris: C.A. Jombert, 1757], Pl. 19)

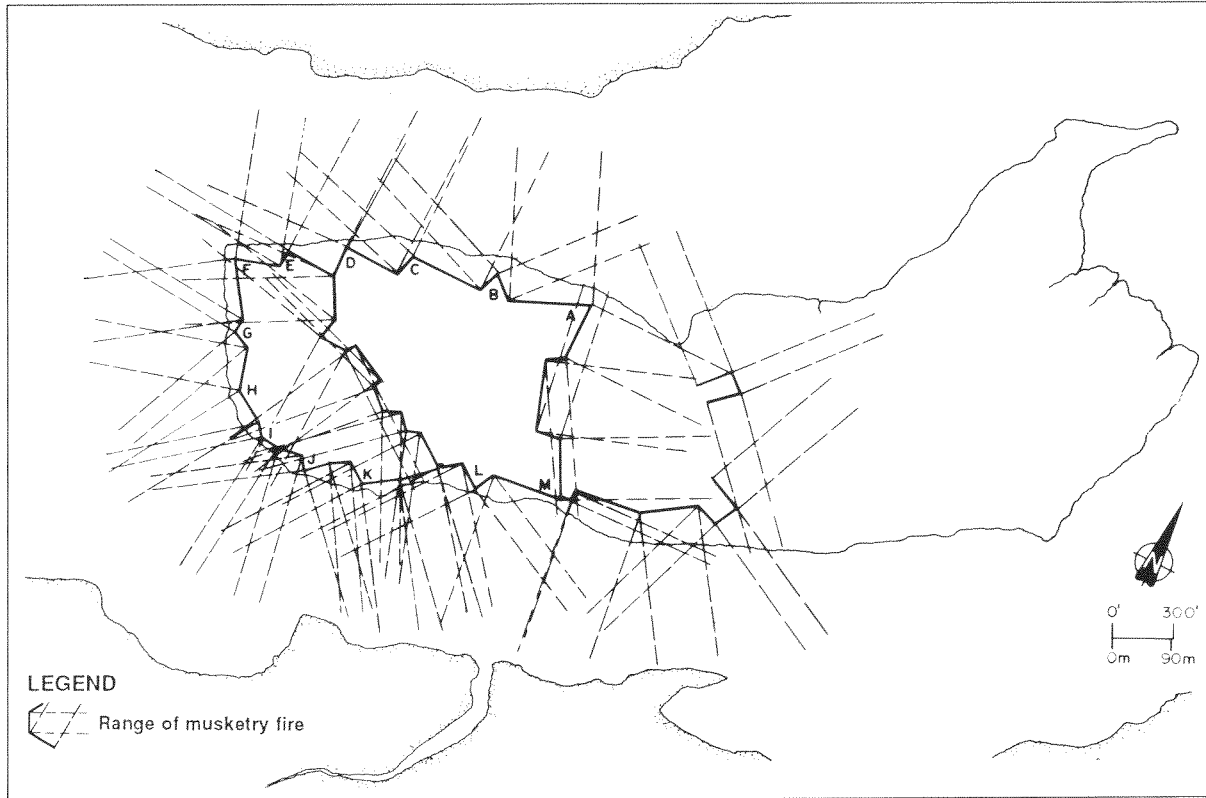
set out above in laying out the entrenchment of Île aux Noix by using precisely this alternation of zigzags and redans (Fig. 12). Indeed, from the branch of the hornwork on the west (A), one can observe to the south first a redan (B) then four zigzags (C, D, E, F), to the south a redan (G), to the east other zigzags (H, I, J, K), to the east another redan (L), and finally the abutment at the branch of the hornwork (M). Some small recesses and projections break up the “faces” of the zigzags from H to I, I to J, J to K, and K to L.⁴⁴

The general plan shows an irregularity which could be explained by the particular conditions of the ground on Île aux Noix and the difficulties encountered when the retrenchment was constructed in 1759. Speaking of the latter in 1760, Bourlamaque admitted certain difficulties: “It is true that there are faults, especially in the lower parts of the entrenchments. But right from the start, Fournier was lost in the bushes ...” [translation].⁴⁵

In the light of Clairac’s recommendations, one notes that all the salient angles of the French entrenchment were situated within the 120-toise limit, the maximum musket range (Fig. 15). Further, most of these angles had an interval of less than 60 toises between them, which as Clairac suggested produced a double advantage in terms of flanking. The siting of the three redans at less than 400 toises from one another followed Clairac’s recommendation; they were thus capable of offering the defenders a first line of flanking, if they were provided with artillery pieces. The salient angles of the zigzags were on the average placed nearly one-third of the way along the exterior side, while Clairac suggested a proportion approaching one-quarter. Despite this discrepancy, the branches of the retrenchment were not too exposed to enemy enfilade fire. However, the alignment of the columns of fire perpendicular to the parapet showed that certain portions of the entrenchment were less well defended by the flanking of the musketry. Particularly in the south part, the layout of the projections on each side of the redan did not allow adequate lateral

44 It is difficult to establish the precise reason for these breaks. Either they were an adaptation to the topography of the perimeter of Île aux Noix or else they are to be explained by the nature of the 1778 document itself that was describing 25 years later, a fortification which had presumably been razed and reused!

45 NA, MG18, K, 10, Vol. 3, p. 66, Bourlamaque to Bougainville, 2 June 1760.



15 Representation of flanking fire in the French entrenchment at Île aux Noix. (Parks Canada, L. Lavoie, 85-5G-D16)

flanking. At certain places, the musketry fire intersected at too great a distance (in G and I), or as in F and H, did not intersect at all. Some difficulties of the same nature are observed to the north of lateral redans B and L, in the direction of the branches of the hornworks A and M, as these two latter points were only covered beyond some tens of metres. This weakness is perhaps explained by the difficulty encountered by Fournier when the work was being laid out in 1759.

Here I must, however, qualify my judgement on these weaknesses of the Île aux Noix fortification of 1759-60. In contrast to a fortification opening onto a plain, Île aux Noix to a certain extent enjoyed a natural defence since it was surrounded by water. To gain control of it an enemy must have at their disposal some sort of navy and must disembark on the island; only then could they attempt to reduce the garrison and take the fortification. In the case of the entrenchment which was almost immediately at the water's edge on three sides (west, south and east), certainly flanking the adjoining ground was necessary and required, but the priority in these sectors remained the defence of the approach by water. To accomplish this, in addition to the entrenchment the engineer made use of other defensive devices such as stockades, the navy, etc.⁴⁶ In short, for the sectors involved, it seems that Fournier first laid out the trace of the entrenchment so as to include the whole south end of the island inside the fortification to prevent an enemy from landing on that side. Then he proceeded with the "proper" geometric layout to determine the angles of fire and flanking, with the "faults" already noted.

The choice of a hornwork to close off the entrenchment on the north appears to have been judicious. First, because of the configuration of the island with its perimeter narrowing in the centre, the hornwork made it possible to face the enemy with a regular fortification front, while covering the entire surface of the island in this sector. It is worth noting that this front should theoretically have stood in the way of an enemy who had disembarked on the north part of the island and then laid siege to the entrenchment. The trace of this work plotted on the 1778 plan allows one to suppose that Fournier took his inspiration from the usual proportions of this type of defensive works. Even if it cannot be established whether at first the flanks of the hornwork were grazing or plunging, it is evident that the faces of each of the demi-bastions extended about 95 metres,

⁴⁶ I will return to these other defensive elements below.

which nearly corresponds to the proportion of two-sevenths of the outer side (here measuring 320 metres) usually applied to the faces.⁴⁷

As the hornwork presented a regular front of fortification, the flanking by the musketry worked perfectly, and the alignment of the columns of fire perpendicular to the parapet shows that all the ground in front of the work was covered by this defensive firepower.

To complete the fortification on this side, Bourlamaque considered it necessary to construct a ravelin in front of the hornwork: "It is the first of the exterior works to construct, without which this front is worthless and does not provide the firepower which is necessary in the face of a serious attack" [*translation*].⁴⁸ In fact, the demi-lune proposed would never be built. Although like Bourlamaque he considered this work indispensable, in 1760 Bougainville preferred to concentrate his energy first on the construction of the two redoubts.⁴⁹

If Bougainville chose to undertake these redoubts first it was because he believed they would "shelter" the hornwork to a greater extent "from an assault" [*translation*]. At the same time, their position about 225 metres from the main area, at the limit of the columns of musket fire, had the effect of extending the firepower towards the northern part of the island and made the digging of trenches by the enemy "almost impossible."⁵⁰ The rectangular outline of these redoubts offered the advantage of a direct defence against the enemy and at the same time facilitated the manoeuvring of troops inside. In the 18th century, several advantages were attributed to this square trace:

In the square redoubt the troop is assembled; if it sees itself attacked on all sides and forced to abandon its parapet, it can unite and form up, a square batallion in the interior of the terreplein of the redoubt, and fire at the attackers as they clear the parapet; and do so with greater advantage in that this body of soldiers is totally covered and is at no risk of fire from the open country; it can even drive back the enemy and regain its parapet [*translation*].⁵¹

47 On the usual method of tracing a hornwork in the Vauban manner, see Abbé Dédier, *op. cit.*, pp. 38-40.

48 NA, MG18, K, 10, Vol. 2, pp. 287-91, Bourlamaque to Bougainville, 3 May 1760.

49 *Ibid.*, K, 9, Vol. 3, pp. 231-33, Bougainville to Bourlamaque, 5 April 1760.

50 *Ibid.*

51 M. Trincano, *Éléments [sic] de fortification, de l'attaque et de la défense des places* (Paris: Musier, 1768), p. 244. On the redoubt used as a field fortification, see A. Charbonneau, "La redoute en Nouvelle-France: contribution à l'étude de la fortification et essai de typologie," Manuscript on file, National Historic Sites, Parks Canada, Québec, 1983, pp. 209-32.

Finally, the positioning of the redoubts diagonally to the main structures ensured a more complete covering of the ground surrounding them. The Saint-Louis redoubt, facing to the east, was more exposed to an area that the French considered likely to be occupied by the enemy, that is the right bank of the river. It was joined to the hornwork by a broken line, formed by two small 50-metre-long fronts.

To complete the Île aux Noix fortification, the French erected a second retrenchment in 1760 which crossed the south part of the island diagonally, and was right inside the first entrenchment described above. It occupied a higher position, capable of offering a second level of fire towards the enemy.⁵² This work, attributed to Lotbinière, who held the appointment of engineer in 1760, extended roughly along the southwest-northeast axis and directly faced the southeast of the island, a place where it was considered that the enemy could set up their main batteries.⁵³ This second retrenchment consisted of a small, regular front of fortification linked to the main fortification on both sides by small segments of entrenchments. For the trace, it seems that Lotbinière chose the usual method set forth by Vauban for a small front, since the faces, measuring about 45 metres in length, equalled two-sevenths of the outer side, which is estimated to have been 160 metres long.⁵⁴

It should be noted that the second retrenchment was situated in the same location as a small stake fort, erected in the fall of 1759.⁵⁵ The French had built this fort at the end of the campaign with a view to quartering the garrison, by then reduced to some 300 or 400 men, so as to ensure the defence of the island during the winter.⁵⁶

Hypothesis on the Profile

Reconstituting the profile of the French entrenchment on Île aux Noix proves to be a more conjectural exercise than the analysis of the traces since no cross-sectional drawing of the rampart has been found. Once

52 NA, MG18, K, 10, Vol. 3, pp. 145-46, Bourlamaque to Bougainville, 2 July 1760. Bougainville's drawing in 1760 (Figs. 8 or 9) leaves no doubt as to the location of this second entrenchment on the top of a small hill.

53 This would in fact be the case in light of the Chevalier de Johnstone's plan (Fig. 6).

54 Abbé Dédier, *op. cit.*, p. 18.

55 NA, MG18, K, 9, Vol. 3, pp. 315-17, Bougainville to Bourlamaque, 28 June 1760.

56 H.R. Casgrain, ed., *Collection de manuscrits...*, Vol. 5, pp. 40-42, Bourlamaque to Vaudreuil, 5 September 1759.

again, the few pieces of information drawn from the correspondence, when placed beside the theoretical models of the period, will contribute to forming a hypothesis of the typical profile for the French fortification complex on the island.

To draw up the profile of a fortification, the military engineer first asks himself about the extent of command and therefore about the height of the work to be constructed. Bourlamaque's remarks in his 1760 report leads one to believe that the entrenchment built in 1759 was raised only slightly above the general level of the island. He writes: "As several parts of the entrenchment are enfiladed, those which will be seen by the enemy's guns must be raised and epaulments made" [*translation*].⁵⁷ This piece of evidence encourages one to presume that Fournier chose a simple entrenchment profile, which was very typical in field fortifications and rapidly built. This retrenchment would consist of a simple parapet, without terreplein, with a banquette behind, and a ditch in front (Fig. 16).⁵⁸

This hypothesis seems to be corroborated by the fact that Fournier had very little time to carry out this work. Further, in 1760 Bougainville confirmed the non-existence of a terreplein when he noted that a road 18 feet wide ran beside the banquette on the inside.⁵⁹

In most of the treatises of the period, for this type of entrenchment the height of the parapet was generally fixed at 7.5 feet at the highest portion, the crest. This height ensured a minimum of cover for the activity of the defenders inside the entrenchment, while allowing a grazing fire to be brought to bear on an enemy who ventured onto the glacis in front of the fortification. The nature of the danger to be faced was the determining factor for the width of the parapet. Once again Clairac states that a "width of three feet is sufficient if the parapet is not exposed to guns"; he gives 4.5 feet for those exposed from a distance of six, eight, or 12 feet if the enemy were able to install themselves closer.⁶⁰

At Île aux Noix, the enemy could approach and set up their batteries relatively close to the island at about 230 metres,⁶¹ which suggests the width of the parapet was eight feet. The eight-foot hypothesis is further verified by calculating the volume of the earth coming from the excavation

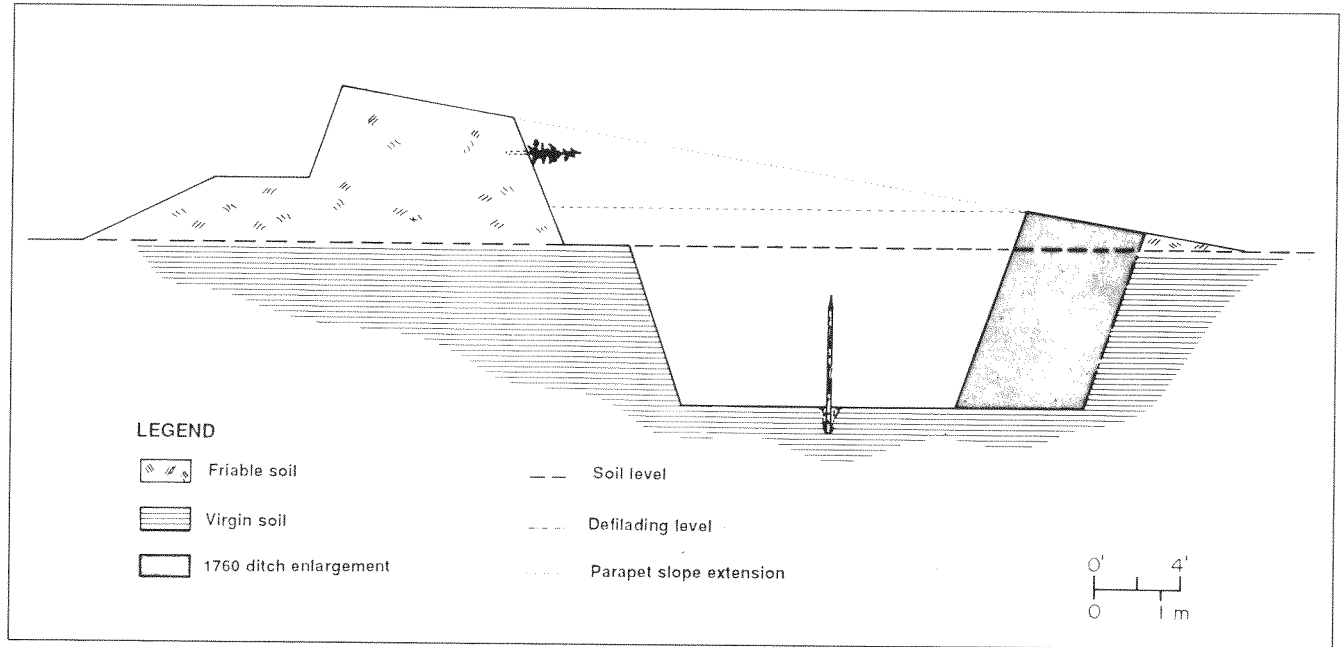
57 NA, MG18, K, 10, Vol. 3, p. 215, Report on the Lake Champlain Border [Bourlamaque, 1760].

58 On the theoretical models of this type of entrenchment, see Clairac, *op. cit.*, p. 235.

59 NA, MG18, K, 9, Vol. 3, pp. 269-70, Bougainville to Bourlamaque, 17 May 1760.

60 Clairac, *op. cit.*, p. 237.

61 It is the distance separating the island from the right bank of the Richelieu River, at the spot where the British would actually set up their batteries.



16 Hypothetical elevation of the French entrenchment at Île aux Noix. (Parks Canada, L. Lavoie, 85-5G-D15)

of the ditch, which served to form the parapet and its banquette. According to an officer working at Île aux Noix in 1759, La Grandville, the ditch was 18 feet in width.⁶² And the calculation of the volume of excavated earth for such a ditch is equivalent to that of the earthbank formed by the parapet (7.5 feet high and eight feet wide), its banquette, and the crest of the glacis.⁶³

The presence of the banquette was confirmed on several occasions by French officers in 1759-60.⁶⁴ Estimating the height at the conventional three feet, this left the soldiers the 4.5 feet necessary for sheltering themselves behind the parapet. The ascent of the banquette had a very gentle slope, twice its height. The parapet was punctuated with embrasures for artillery fire; however, neither how many there were nor how they were distributed are known.⁶⁵ The artillery pieces mounted on naval and field gun-carriages rested on platforms which were probably fixed at parade ground level at the base of the banquette.⁶⁶ Since these two types of gun-carriages did not have the same aiming level, Bougainville remedied the problem by having "flying platforms" built so that the naval gun-carriages could be used at all the embrasures.⁶⁷ This probably involved small movable platforms suitable for installation under the naval gun-carriages so that their aiming level would harmonize with that of the field gun-carriages and consequently with the parapet's. Finally, Bourlamaque suggested keeping gabions and earth near the unarmed embrasures, to close them up when the enemy arrived, if enough pieces were still not available to arm these embrasures.⁶⁸

The superior slope of the parapet had the maximum slope that was possible without weakening the upper part too much, namely nearly 10°

62 NA, MG18, L, 7, La Grandville to this father, 26 August 1759.

63 The estimation of this volume of earth assumes, as did Béliidor, a theoretician of fortification in the 18th century, that a fortification's profile is a series of vertical surfaces juxtaposed over the whole extent of the perimeter of the enceinte (B.F. de Béliidor, *La science des ingénieurs dans la conduite des travaux de fortifications et d'architecture civile* [Paris: C.A. Jombert, 1729], Book I, p. 12). At Île aux Noix, a ditch dug 18 feet wide produced 120 square feet of possible fill (vertical surface), while the parapet, estimated at 7.5 feet high by 8 wide, the banquette and the top of the glacis required 110 square feet fill.

64 See among other sources NA, MG18, K, 9, Vol. 3, pp. 231-33, Bougainville to Bourlamaque, 5 April 1760.

65 H.R. Casgrain, ed., *Collection de manuscrits...*, Vol. 5, pp. 19-22, Bourlamaque to Vaudreuil, 7 August 1759.

66 NA, MG18, K, 9, Vol. 3, pp. 241-44, Bougainville to Bourlamaque, 16 April 1760; *ibid.*, pp. 269-70, Bougainville to Bourlamaque, 17 May 1760. Bougainville further indicates that 29 of the 40 artillery pieces which were mounted as a battery rested on field gun-carriages.

67 *Ibid.*

68 NA, MG18, K, 10, Vol. 2, p. 225, Mémoire sur la frontière du lac Champlain [Bourlamaque, 1760], Bourlamaque notes further: "They should be left open to that point so as to hide from the enemy the weakness of the artillery [*translation*]."

(6-in-1).⁶⁹ I have fixed the slope of the escarp and the counterscarp as Vauban did, at one-third of its height or 33 percent. On Île aux Noix, the very clayey soil has a structure which, once compacted, holds together more easily than sandy soil. References were also made on several occasions around 1759 and 1760 to the use of fascines and saucissons to retain the earth in the various slopes of an entrenchment.⁷⁰ In this connection, therefore, a slope of 33 percent does not seem at all exaggerated.

The entrenchment of Île aux Noix also included a fraise, composed of tree branches placed horizontally half way up the parapet.⁷¹ Bougainville wrote about a berm, which has been located on the profile (Fig. 16), level with the parade ground, as was generally the case.⁷² The berm contributed to better retention of the earth of a parapet which was not revetted.

According to a contemporary, the ditch measured 18 feet in width; this dimension obviously being taken at parade ground level. Its depth was equal to the height of the parapet, namely 7.5 feet. I suspect that a palisade stood in the centre as Bourlamaque implied in 1759.⁷³ The presence of this palisade raises certain questions since it suggests that the ditch was dry. But on Bougainville's plan in 1760 (Figs. 8 and 9), even if such a palisade appeared, the ditch was connected to the river, which therefore supposes that the water level of the ditch was the same as the water level in the river. Further, in April 1760, Bougainville noted that the water came up to the level of the berm.⁷⁴ Was it the spring flood which had not been reabsorbed at the time? Or was he saying that the ditch was filled with water permanently? In 1760, the ditch was widened by six feet over nearly all the perimeter of the entrenchment in order to extract the earth neces-

69 Several treatises discuss this maximum slope of the top of the parapet, fixed at 10°, or a rise of 1 foot for each 6 feet of width. Too steep a slope makes the upper part of the parapet vulnerable to enemy projectiles. Further, since the slope of the top of the parapet determines the angle of musketry fire, too sharp an angle makes this fire too plunging, while for greater effectiveness it must graze the enemy position as possible (see Clairac, *op. cit.*, pp. 238-39).

70 NA, MG18, L, 7, La Grandville to his father, 26 August 1759, and K, 10, Vol. 3, pp. 63-67, Bourlamaque to Bougainville, 2 June 1760.

71 NA, MG18, K, 10, Vol. 2, pp. 205-28, Mémoire sur la frontière du lac Champlain [Bourlamaque, 1760]. The fraise played a double role in fortification: it made scaling more difficult and it helped to prevent desertions (see M. Le Blond, *Éléments de fortifications, contenant la construction raisonnée de tous les ouvrages de la fortification*, 5th ed. [Paris: C.A. Jombert, 1763], p. 371).

72 NA, MG18, K, 9, Vol. 3, pp. 231-33, Bougainville to Bourlamaque, 5 April 1760.

73 H.R. Casgrain, ed., *Collection de manuscrits...*, Vol. 5, pp. 29-36, Bourlamaque to Lévis, 13 August 1759. Bougainville's plan in 1760 also shows such a palisade in the middle of the ditch.

74 NA, MG18, K, 9, Vol. 3, pp. 231-33, Bougainville to Bourlamaque, 5 April 1760.

sary for the repair of the banquettes which the winter and frequent rainfall had eroded.⁷⁵

As the fortification hugged the shores of the island very closely over the whole southern part, the glacis was non-existent except for its crest, probably formed by the earth excavated from the ditch, in alignment with the superior slope of the parapet. In any case, taking into account this superior slope of the parapet the very slight height of the entrenchment did not allow for a glacis to be raised over a very long distance.

I believe that the redoubts constructed to the north of the entrenchment made use of the same construction technique: an entrenched parapet with a ditch in front. As for the blockhouse in the northeast part of the island, even if Bougainville's plan suggests a construction similar to the entrenchment and the redoubts, I rather think that it was built up with horizontal hewn logs with a machicolated storey.⁷⁶ Otherwise, why would one make a distinction between "redoubts" and "blockhouse" in the correspondence and on Bougainville's plan?⁷⁷

Finally, at the time of the siege, Bougainville ordered the construction of abatis along the length of the shoreline of the island to the north and east on both sides of the blockhouse.⁷⁸ From the start of the 1760 campaign, Bougainville had given notice that he would construct these abatis at the time of the siege in the sector which was not defended by an entrenchment. He wrote: "As soon as the enemy appears I will be satisfied with a simple trench along the whole shoreline on which a landing is possible and with providing it with a fraise by pushing all the nearby trees into the water and sharpening their branches. I will also try to place [brushwood] wherever it is needed" [*translation*].⁷⁹

In summary, the fortification constructed on Île aux Noix, while conforming to topographical necessity, assumed the main characteristics of a field fortification. Its trace, very irregular and with zigzags, produced

75 *Ibid.*, pp. 269-70, Bougainville to Bourlamaque, 17 May 1760.

76 This is what some draft sketches pencilled on the back of a letter from Vaudreuil to Lotbinière in March 1760 imply. Since they have no connection with the contents of the letter, these drawings were probably made by the addressee, Lotbinière, who was the engineer responsible for the construction of this work on Île aux Noix in 1760. See NA, MG18, K, 3, Vol. 2, pp. 447-48, Vaudreuil to Lotbinière, 16 March 1760.

77 See also H.R. Casgrain, ed., *Collection de manuscrits...*, Vol. 10, pp. 145-46, Bougainville to Lévis, 23 August 1760. Unlike the redoubt, the term "blockhouse" generally referred to a very well-defined construction technique. Under the French Régime, however, the term "redoubt" on certain occasions described a work built like a blockhouse; but we believe the reverse was not true. On this subject, see A. Charbonneau, "La redoute en Nouvelle-France..." Chapters 1 and 2.

78 H.R. Casgrain, ed., *Collection de manuscrits...*, Vol. 10, pp. 145-46, Bougainville to Lévis, 22 August 1760.

79 NA, MG18, K, 9, Vol. 3, pp. 231-33, Bougainville to Bourlamaque, 5 April 1760.

adequate flanking of each portion of the entrenchment overall, despite certain faults observed at the southern tip. Though the rampart was low and was somewhat vulnerable to enfilading fire, the hypothesis formulated on the basis of the historical data allows one to suppose it was a structure which was capable of resisting enemy artillery. Curiously, the change of strategy in 1760 from what had prevailed the preceding year did not produce any tangible modifications in the fortification constructed on Île aux Noix. Bougainville merely completed and finished the defensive complex begun by Bourtoulamaque in 1759. This complex required a garrison and resources of ammunition, arms, etc., capable of enabling it to fulfil the purposes for which the fortification had been constructed. Probably these tactical considerations were among those which dominated, and above all reflected, the strategic revision of 1760.

Defensive Tactics at Île aux Noix

Though tactics generally flow from the overall strategy adopted for a battlefield, tactical factors can also influence strategic decisions. The choice of Île aux Noix in 1759 as the final defence post on the Richelieu-Lake Champlain border reflects this interdependence between strategy and tactics. It was as a result of available human resources and for logistical and topographical reasons that the French decided in favour of Île aux Noix.

Subsequently, construction of the entrenchments and the various defensive works was the first element of the French defensive tactics in the face of an army superior in strength, ammunition, and artillery. Other elements were added as the campaign plans of 1759 and 1760 allowed.

Beginning with the retreat of his field army to Île aux Noix at the start of August 1759, a primary defensive objective obsessed Bourtoulamaque: he had to try to slow the enemy's advance as much as possible by harassing raids to give himself time to finish the construction of fortifications which would be capable of fulfilling the strategic role assigned to Île aux Noix.⁸⁰ At the same time that they counted on stopping the enemy at Île aux Noix by means of the fortifications, Bourtoulamaque and the other French officers were pursuing an equally important second objective: preventing the

⁸⁰ NA, MG18, K, 9 Vol. 6, pp. 249-55, Bourtoulamaque to the Minister [1759].

enemy from bypassing the island.⁸¹ Hence the tactical necessity of an exact knowledge of the adversary's movements.

The 1760 campaign had a somewhat different aspect since, this time, confrontation was absolutely inevitable. It should be remembered that different circumstances then caused the French officers to question the strategic importance assigned to Île aux Noix. This post no longer was to stop the enemy at all costs as in 1759, but instead had to help delay them for a certain length of time while awaiting more considerable relief from the home country.⁸² In 1760 the defensive objective became much more passive. Certainly the fortifications begun in 1759 had to be completed and improved, but it was with a much reduced garrison that Bougainville had to await the enemy and be aware of their movements, whether on the Richelieu River or on its tributaries such as the Rivière du Sud. In fact, the seeding that had to be done at all costs due to the lack of relief from the home country and, later, the lack of foodstocks available at Île aux Noix delayed the sending of a large field garrison until enemy's movement was announced.⁸³

In 1759, as in 1760 therefore, apart from the construction of entrenchments, French tactics developed around three main focuses: reconnaissance of the enemy, the role of the navy, and finally the defence of the Rivière du Sud. During these two years, the weakness of the French resources, especially in terms of troops, limited Bourlamaque and Bougainville's tactical activities.

A Word on the Opposing Forces

From the beginning of the 1759 campaign, the inequality of the forces was very clear. To oppose the British army of at least 11 000 men assembled at Fort George on Lake Saint-Sacrement, the French had available at Carillon barely 3000 "soldiers."⁸⁴ Having avoided confrontation at Carillon and at Saint-Frédéric, Bourlamaque found himself at Île aux Noix in August 1759 with essentially the same strength.⁸⁵ But as more than a

81 *Ibid.*, Vol. 2, pp. 393-400, Vaudreuil to Bourlamaque, 3 October 1759.

82 *Ibid.*, K, 10, Vol. 2, p. 216, Mémoires sur la frontière du lac Champlain [Bourlamaque, 1760].

83 *Ibid.*, pp. 201-4, Instructions from Vaudreuil to Bougainville, 29 March 1760; *ibid.*, Vol. 3, p. 141, Lévis to Bougainville, 27 June 1760.

84 PRO, CO5/55, f. 109, 19 June 1759; NA, MG4, B, 1, A¹, Vol. 3540, Document 56, Montcalm to the Minister, 8 May 1757.

third were militia, a good number of them had to be released for the harvest as early as September, even if they would have to be recalled in case of enemy movement toward the island.⁸⁶

Late in the fall of 1759, when it appeared the enemy were no longer likely to appear, the French troops went into winter quarters and the island's garrison was reduced to 300 soldiers.⁸⁷ Since the entrenchments were too spread out to quarter this small body of troops, Broulmaque ordered the construction of a small stake fort.

The 1760 campaign further increased the numerical inferiority of the French in relation to the British army. Until the siege, because of the men needed for seeding and the lack of food on the island, the number of French forces remained very weak. In spite of this, work on the fortifications had to be speeded up and patrols to reconnoitre enemy movements had to be provided for. At the time of the siege, the French troops amounted to 1453 men while the British army had about 3400.⁸⁸

The problem of French strength in 1760 went beyond simple numerical inferiority in relation to the enemy. While the extent of the fortification, whose main elements were planned and set in place in 1759, required a garrison of 3000 soldiers just to defend the entrenchments, as early as the beginning of 1760 Broulmaque in his report on the Lake Champlain front was forced to reduce this number to 1200.⁸⁹ At the same time, he estimated that 1700 soldiers were necessary for the various tactical manoeuvres which were to delay the enemy advance on Montréal. At the time of the siege, Bougainville had to work with a strength which was half what Broulmaque had intended. The regular troops amounted to an even smaller proportion since the du Berry and du Guyenne pickets had to be augmented by militiamen.⁹⁰ Further, Bougainville complained about the quality of his garrison. On the subject of the gunners he noted:

85 H.R. Casgrain, ed., *Collection de manuscrits...*, Vol. 5, Letters from Broulmaque to Lévis, pp. 16-17, 6 August 1759.

86 *Ibid.*, p. 42, Broulmaque to Vaudreuil, 6 September 1759; NA, MG19, K. 9, Vol. 2, pp. 441-44, Vaudreuil to Broulmaque, 18 October 1759.

87 H.R. Casgrain, ed., *Collection de manuscrits...*, Vol. 5, pp. 79-81, Broulmaque to Lévis, 18 November 1759.

88 *Ibid.*, Vol. 10, p. 147, 21 August 1760; G. Frégault, *op. cit.*, p. 382. Certain French documents estimated the British troops before Île aux Noix at about 8000 or 9000 men! (See *Collection de manuscrits contenant lettres, mémoires, et autres documents historiques relatifs à la Nouvelle-France*, Vol. 4 [Québec: A. Côté, 1885], pp. 300-302).

89 NA, MG18, K, 10, Vol. 2, p. 216, Mémoire sur la frontière du lac Champlain [Broulmaque, 1760].

90 *Ibid.*, Vol. 3, p. 264, 11 August 1760; H.R. Casgrain, ed., *Collection de manuscrits...*, Vol. 10, p. 147, 21 August 1760.

... there is no gunner here who knows how to aim. At the time of the siege of Quebec, this task was given only to rejects, and they have not become skilful at it. At least some gunners are needed who can be gun-detachment commanders [translation].⁹¹

In such a situation, he could not hope to turn his artillery to much advantage!

In fact, during this entire last year of campaigning in New France, the French simply no longer had the necessary resources to offer the slightest resistance. For example, in August on the Île aux Noix front, Vaudreuil had no success in raising even a detachment of 1000 volunteers (militia, Canadians and Indians) to attack the vanguard of the British army which was established on the right bank, facing the island.⁹²

To augment their strength, both in 1759 and 1760 the French counted on the contribution of the Indian allies, who were a very useful force for scouting or reconnaissance parties, provided, it was added, that there was an officer at their head!⁹³ The defection of some of them and of several Canadians during the siege added to the disarray of the officers responsible for defending Île aux Noix.⁹⁴

It remains difficult to draw a meaningful picture of the belligerents' artillery at Île aux Noix. Though during the 1759 campaign several witnesses affirmed that the French had some 100 pieces available, the inventory of pieces taken by the British at Île aux Noix after the surrender counted 77, of which 14 were iron swivel-guns.⁹⁵ Three 16-pound guns were the largest pieces. On the British side, 40 pieces were listed including guns (among them six 24-pounders), mortars, and howitzers;⁹⁶ this total does not include the artillery mounted on the navy ships.

91 *Ibid.*, p. 144, Bougainville to Lévis, 21 August 1760.

92 NA, MG18, K, 10, Vol. 3, pp. 305-7, Vaudreuil to Bougainville, 20 August 1760; H.R. Casgrain, ed., *Collection de manuscrits...*, Vol. 10, pp. 127-29, Roquemaure to Lévis, 24 August 1760.

93 NA, MG18, K, 9, Vol. 2, pp. 191-94, Vaudreuil to Bourlamaque, 10 November 1759; *ibid.*, K, 10, Vol. 2, p. 205, Mémoire sur la frontière du lac Champlain, [Bourlamaque, 1760].

94 *Ibid.*, K, 9, Vol. 3, pp. 377-79, Lévis to Bourlamaque, 19 August 1760; H.R. Casgrain, ed., *Collection de manuscrits...*, Vol. 10, pp. 127-29, Roquemaure to Lévis, 24 August 1760.

95 H.R. Casgrain, ed., *Collection de manuscrits...*, Vol. 5, pp. 358-59, Bourlamaque to Bernetz, 22 September 1759; J.C. Webster, *Journal of Jeffrey Amherst Recording the Military Career of General Amherst in America from 1758-1763* (Toronto: Ryerson Press, 1931), p. 157, 16 August 1759; PRO, WO34/85, fols. 68-69, "Return of Ordnance and Stores taken at Île aux Noix on August 28th 1760," 28 August 1760.

96 *Ibid.*, Vol. 52, fol. 56, "Abstract of Guns, Mortars and Howitzers for Service of the Campaign by way of Crown Point," 19 May 1760.

Reconnaissance of the Enemy

In the type of defensive war adopted by the French in 1759 and more so in 1760, the strategists tried to mitigate the inferiority of their resources by accurate knowledge of the enemy's movements. At Île aux Noix, French tactics were largely dependent on this factor. Thus Bourlamaque, and then Bougainville, at the constant urging of Vaudreuil, Montcalm, and Lévis, were always involved in sending out small reconnaissance detachments over the whole Richelieu-Lake Champlain border territory.⁹⁷ By this means, they came to know the enemy's position, then their naval strength, their artillery, their strength in garrison or on the move, their changes of location, etc. Sometimes the scouting even caused skirmishes which resulted in the taking of prisoners on both sides. (Prisoners also proved to be another source of information on the enemy.⁹⁸) Finally, the French officers also counted on British deserters to provide information.⁹⁹

Not only was it necessary to be aware of enemy movements and enemy strength, Bourlamaque and Bougainville had to transmit this information as quickly as possible to their superiors as well as to the commanders of the other posts on the same border, such as Saint-Jean and Chambly. The courier made use of the land or water routes established between Saint-Jean and Île aux Noix, and the security of this network remained a constant concern to the officers in charge. Its efficiency depended on quick action to counter the tactics of the British.

As well, to speed up transmission of information from one post to another, the artillery was put to use, such as in establishing a signal code between Île aux Noix, Chambly, and Saint-Jean during the winter of 1759-60.¹⁰⁰ Where an enemy detachment was coming from and its course, the presence of deserters, etc., could be rapidly communicated to the officers involved.

97 See also, NA, MG18, K, 9, Vol. 2, pp. 445-48, Vaudreuil to Bourlamaque, 19 October 1759; *ibid.*, K, 10, Vol. 2, pp. 201-4, Vaudreuil's Instructions to Bourlamaque; *ibid.*, pp. 205-27, Mémoire sur la frontière du lac Champlain [Bourlamaque, 1760].

98 H.R. Casgrain, ed., *Collection de manuscrits...*, Vol. 8, pp. 97-100, Vaudreuil to Lévis, 4 September 1759.

99 *Ibid.*, pp. 93-95, Vaudreuil to Lévis, 28 August 1759.

100 NA, MG18, K, 9, Vol. 6, pp. 311, 321, 323-27, Bourlamaque's instructions to Lusignan, [Fall 1759].

The Role of the Navy

The position of Île aux Noix in the middle of the river and its role as a resistance post following the two strategic withdrawals from Carillon and Saint-Frédéric gave the navy an essential role in the French tactics.¹⁰¹ Even if it was only to secure the retreat or communications with Saint-Jean, the navy was absolutely necessary to the defence of Île aux Noix (Fig. 17). Its defensive contribution was part of the general thinking of the French officers on the importance of the navy in the war waged in Canada. The Chevalier de La Pause's memoirs on this point was very revealing:

We could not wage war in Canada without boats, particularly the defensive. The largest possible number would have to be built, without which all our defence plans would miscarry and if relief arrives from Europe, we could not employ it usefully, nor enable our armies to remain in being[translation].¹⁰²

The defence of the approach to Île aux Noix and especially control of navigation on Lake Champlain and at the entry to the Richelieu River were part of the responsibility of the little fleet sailing at this location. As early as his retreat to Île aux Noix, Bourlamaque instructed the officers of the schooner and the three xebecs¹⁰³ to "cruise continuously at the entry of the Lake to deny the passage to the British army" [translation].¹⁰⁴ All the same, Bourlamaque remained aware that this little "squadron" would not be able to prevent the advance of the enemy. At most, it would hinder the British on Lake Champlain and thereby delay their arrival at Île aux Noix somewhat, the respite gained by the work of these four ships being necessary for the construction of the entrenchments which was then under way.¹⁰⁵ It must be added that the loss of the three xebecs in 1759 as a result of successful British manoeuvres created a certain disarray among the French; Amherst was believed to be marching toward Île aux Noix and

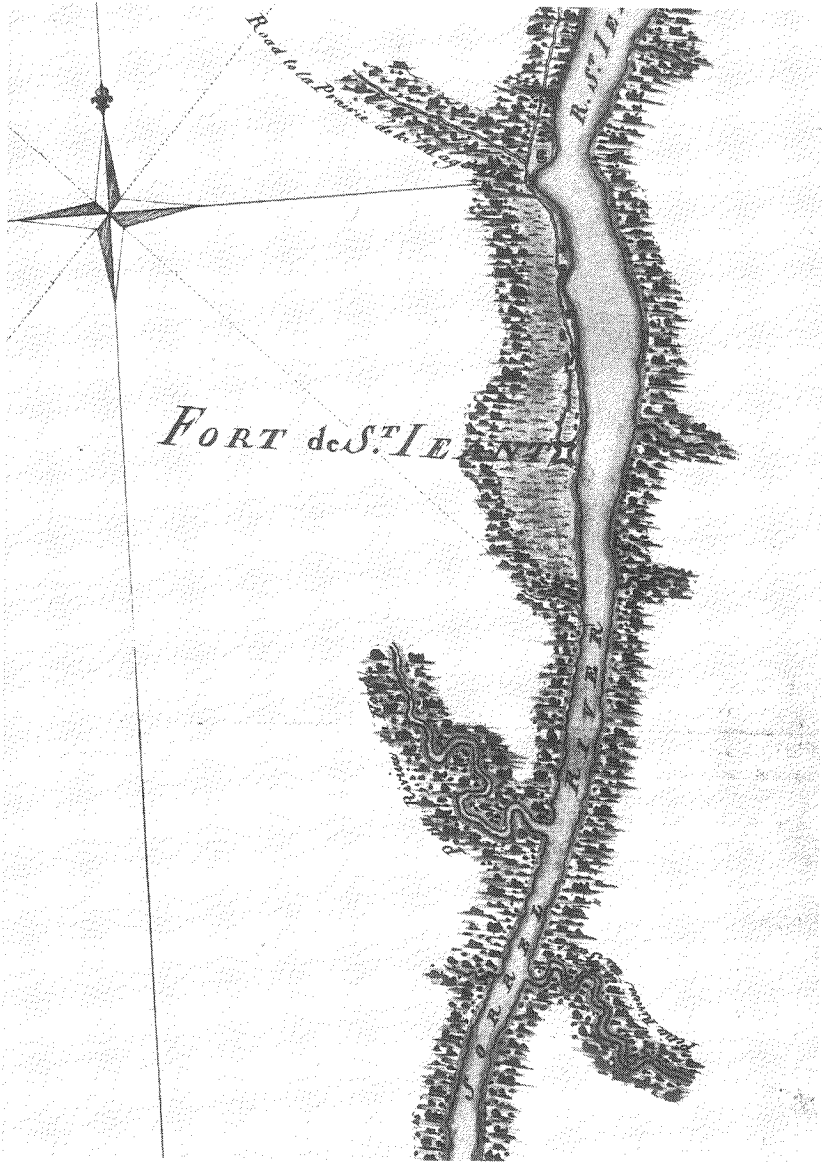
101 *Ibid.*, Vol. 5, pp. 207-12, Montcalm's instructions to Bourlamaque, 10 May 1759.

102 RAPQ, 1933-34, p. 135, "Mémoire fait au mois de septembre 1759," La Pause.

103 See Appendix A for the description of these ships which are discussed below.

104 NA, MG18, K, 9, Vol. 6, p. 251, Bourlamaque to the Minister, [1759].

105 H.R. Casgrain, ed., *Collection de manuscrits...*, Vol. 5, pp. 19-22, Bourlamaque to Vaudreuil, 7 August 1759. Furthermore, Bourlamaque did not show particular confidence in the xebecs since in the Richelieu River, especially from Point au Fer to Saint-Jean, he said, "These ships cannot be much help. The channel is narrow and they cannot run from boarding; they cannot be rowed" [translation].



17 Fort Saint-Jean of 1748 and its entrenchments which were added in 1759 and 1760. (NA, NMC-17560)

the whole Governmental District of Montréal became alarmed, despite the fact that it was late in the year.¹⁰⁶

During the 1760 campaign, though there was no longer any question of sailing on Lake Champlain, the French were counting on two tartans which could cruise on the Richelieu River beyond the Foucault mill, with orders to withdraw on sight of the enemy so as not to be cut off.¹⁰⁷ These two "galleys," sailing at the entrance of the Richelieu River, would have the mission of assuring a minimum of protection for the scouts who were moving about in canoes or for any other small craft on the lake.¹⁰⁸

Closer to Île aux Noix, the defence of the passages on each side of the island was assured largely by the navy or by floating material. Chains, formed of pieces of floating cedar bound together by ironwork or a cable and anchored to stone coffers resting on the bottom of the river, blocked the two channels on each side of the island. Bourlamaque constructed one on each side in August 1759; in 1760, Bougainville, assisted by Lotbinière, added two across the eastern channel; as for the western one, it did not allow the passage of the enemy fleet since it was not deep enough.¹⁰⁹ The initial plan, as expressed by Lévis and Bourlamaque, assumed instead that stockades would be constructed in the middle of the river. Bourlamaque also wished to use this work "to drive back the waters of the lake so as to flood the woods which are above the island" [*translation*].¹¹⁰ But this plan was not successful since the river bottom was of rock and Bourlamaque's workers were not able to plant the required stakes in it.¹¹¹

The defence of the river passage on each side of the island also rested on other naval factors. Despite the fact that the xebecs had difficulty navigating in the river, Vaudreuil envisaged using them along with the schooner for the immediate defence of Île aux Noix. Bourlamaque even added that once the enemy was in view, he would moor these ships fore and aft "by the channel" to keep the passage free for his own batteries.¹¹²

106 RAPQ, 1931-32, p. 100, "Journal de La Pause," October 1759. Furthermore, Amherst had given instructions to his officers to try to isolate the French ships from Île aux Noix and create a diversion by appearing to attack the island (PRO, WO34/64, fol. 225, Amherst's Instructions, 10 October 1759; J.C. Webster, *op. cit.*, p. 177, 9 October 1759).

107 NA, MG18, K, 10, Vol. 2, pp. 205-28, Mémoire sur la frontière du lac Champlain, [Bourlamaque, 1760].

108 *Ibid.*, and Vol. 3, pp. 94-95, Bigot to Bougainville, 9 June 1760.

109 NA, MG18, K, 9, Vol. 3, pp. 231-33, Bougainville to Bourlamaque, 5 April 1760; *ibid.*, pp. 269-70, Bougainville to Bourlamaque, 17 May 1760; *ibid.*, K, 10, Vol. 2, pp. 231-34, Bourlamaque to Bougainville, 7 April 1760; PRO, WO34/51, fol. 97, Benzell to Amherst, 30 October 1760. C. Winchester, *Memoirs of the Chevalier of Johnstone* (Aberdeen: D. Wyllie & Son, 1870-71), Vol. 3, p. 69.

110 H.R. Casgrain, ed., *Collection de manuscrits...*, Vol. 5, p. 20, Bourlamaque to Vaudreuil, 7 August 1759; NA, MG18, K, 9, Vol. 3, pp. 83-86, Lévis to Bourlamaque, 23 May 1759.

111 H.R. Casgrain, ed., *Collection de manuscrits...*, Vol. 5, p. 30, Bourlamaque to Lévis, 13 August 1759.

Another naval defence element was the floating redoubt, which it is difficult to identify clearly. As early as the spring of 1759, Lévis suggested to Bourlamaque that on each side of the planned stockades “redoubts or blockhouses” should be placed “on boats or rafts, provided the two sides of the mainland are sufficiently flooded” [*translation*].¹¹³

A floating redoubt was built and it is assumed that it served as a floating battery below the chains of the eastern channel. Further, Bourlamaque made use of a barge which he transformed, as he said, into a “redoubt” by placing five guns on the same side, and which he placed in the middle of the eastern passage of the island.¹¹⁴ It also seems that it was integrated into one of the chains, according to believe by the testimony of an British scout in September 1759:

*... she is laid across the Channell with six guns run out on one side with two Portholes shut up. Pickets Drove in the Channel from the Island & opposite shore (at the Bow and Stern of the Vessel).*¹¹⁵

The defence of the mouth of the Rivière du Sud, a subject of constant concern to the French officers, also was based to a great degree on the manoeuvres of the navy. Among other matters, in his report on the Lake Champlain border, Bourlamaque advised Bougainville to have the schooner moor fore and aft facing the mouth of the Rivière du Sud, near the entrenchment which had already been constructed, in order to prevent any enemy breakout from this direction.¹¹⁶ The tartans and the small gunboats (jacaubites) could sail close to this spot as well to block any sortie from the Rivière du Sud (App. A).

Finally the navy assured a ferry service between Saint-Jean and Île aux Noix. Whether for provisions, troop transport or communications, Île aux Noix's fate remained constantly dependent on mastery of the waters

112 NA, MG18, K, 9, Vol. 5, pp. 215-25, Instructions from Vaudreuil to Bourlamaque, 20 May 1759; H.R. Casgrain, ed., *Collection de manuscrits...*, Vol. 5, pp. 29-36, Bourlamaque to Lévis, 13 August 1759.

113 NA, MG18, K, 9, Vol. 3, pp. 83-86, Lévis to Bourlamaque, 23 May 1759.

114 H.R. Casgrain, ed., *Collection de manuscrits...*, Vol. 5, pp. 29-36, Bourlamaque to Lévis, 13 August 1759.

115 PRO, WO34/64, fols. 212-13, Amherst to Loring, 15 September 1759. This testimony by the British deserter makes Bourlamaque's description of the chain in the east channel, which was built in 1759, incomprehensible: “The south [east] chain was double last year, one taut and one slack” [*translation*]. The use of the barge integrated into one chain probably was the “slack” part described by Bourlamaque (NA, MG18, K, 10, Vol. 2, p. 231, Bourlamaque to Bougainville, 7 April 1760). And finally, the floating redoubt and the barge were moved to Saint-Jean in the winter of 1759-60 and placed at each end of the stockade built at this location (NA, MG18, K, 9, Vol. 6, pp. 129-32, Bourlamaque's Instructions to La Valette, 24 November 1759).

116 *Ibid.*, K, 10, Vol. 2, p. 210, Mémoire sur la frontière du lac Champlain [Bourlamaque, 1760].

between these two locations. Barques and large and small “boats” fulfilled this double purpose of defence and logistics.¹¹⁷ The concern over a secure link between Saint-Jean and Île aux Noix became more intense when the enemy succeeded in gaining possession of the main elements of the little French fleet during the siege. This success now allowed them to isolate Île aux Noix from its provisioning post, and to continue their advance towards Montréal.¹¹⁸ It also caused bitter disappointment on the French side.

Another function of the navy during the siege of 1760 was that the main ships; the two tartans, schooner, four gunboats, floating redoubt and barge were to help prevent the enemy from landing on the island, and thereby dispute their ability to set up a proper siege.¹¹⁹

Convincing evidence to the importance of the navy to the French tactics: as soon as the schooner, one tartan, and the barge were lost to the enemy during the siege, Bougainville assembled his Council of War and decided on withdrawal.¹²⁰ No hope of further resistance remained.

Defence of the Rivière du Sud

Though the French strategy in 1759 designated Île aux Noix as the final post of resistance on the Richelieu-Lake Champlain front, the officers had to forestall, or at the very least be aware of, any enemy attempt to bypass the island. Several possibilities were open to the enemy in this regard and Bourlamaque examined the most important of them.

On the left bank, the British could try to moor opposite Langevin Island (Île aux Têtes or Ash Island), where they would find “a high, dry knoll which would [bring] them, by means of a portage of six short leagues, to Fort Saint-Jean.”¹²¹ On the same bank, Bourlamaque was apprehensive about another hillock situated opposite Point au Fer which would enable

117 *RAPQ*, 1933-34, pp. 139-40, “Mémoire fait au mois de septembre 1759,” La Pause; NA, MG18, K, 9, Vol. 5, pp. 199-206, Vaudreuil’s Instructions to Bourlamaque, 5 May 1759.

118 See also, *RAPQ*, 1931-32, pp. 121-22, “Journal de La Pause,” August 1760; NA, MG18, K, 10, Vol. 3, pp. 318-19, Vaudreuil to Bougainville, 26 August 1760; H.R. Casgrain, ed., *Collection de manuscrits...*, Vol. 10, pp. 148-49, Bougainville to Roquemaure, 25 August 1760.

119 NA, MG18, K, 10, Vol. 3, pp. 305-7, Vaudreuil to Bougainville, 20 August 1760; *ibid.*, pp. 310-12, Vaudreuil to Bougainville, 21 August 1760.

120 *Ibid.*, pp. 322-25, Council of War held at Île aux Noix 27 August 1760.

121 H.R. Casgrain, ed., *Collection de manuscrits...*, Vol. 5, pp. 19-22, Bourlamaque to Vaudreuil, 7 August 1759.

the enemy to make use of the Lacolle River to emerge ultimately at La Prairie.

On the right bank, the Rivière du Sud was the tributary most likely to attract an enemy intending to bypass Île aux Noix. In 1759 and 1760 most of the French officers shared this fear. (This river flows into the Richelieu a few metres below Île aux Noix.) The British could also disembark “an eighth of a league above the entrenchments” [*translation*], probably opposite Pointe à Margot. Dry ground here would lead them directly to the Rivière du Sud. Another possibility, considered the “easiest” one by Broulramaque, was that the enemy would only have to take the portage leading from Missisquoi Bay to the Rivière du Sud.

The bypass route by the Rivière du Sud seemed the most probable hypothesis for a British manoeuvre. As well, British prisoners alarmed the French officers in the fall of 1759. They reported to Broulramaque that Amherst would try to bypass Île aux Noix by the Missisquoi Bay portage, while the British navy would cover this move by a powerful cannonade against the island’s fortifications.¹²²

Though there is no doubt about the possibility of navigating on the Rivière du Sud, the ease with which it may be done varies with the seasons and climatic conditions. This portage is situated in a marshy area and the frequency of rain affects the difficulty of getting over it. In August 1759, Broulramaque explained to Lévis that the portage (which was four leagues or 16 km long) was impassable over a distance of three-quarters of a league because of the continuous rain at the time.¹²³ *In the fall, Vaudreuil reported that there were only one and a half leagues of good road on that portage.*¹²⁴ *Bougainville made the same observation in the spring of 1760.*¹²⁵

To lessen the danger presented by this river, the French tactics required the officers to ensure a presence on this tributary by sending out numerous and frequent patrols. Their objectives were to dispute the ground with the enemy or simply to signal the enemy’s presence to the commanding officers.¹²⁶

122 NA, MG18, K, 9, Vol. 2, pp. 449-52, Vaudreuil to Broulramaque, 21 October 1759.

123 H.R. Casgrain, ed., *Collection de manuscrits...*, Vol. 5, pp. 29-36, Broulramaque to Lévis, 13 August 1759.

124 *Ibid.*, Vol. 8, pp. 111-14, Vaudreuil to Lévis, 3 October 1759.

125 NA, MG18, K, 9, Vol. 3, pp. 241-44, Bougainville to Broulramaque, 16 April 1760.

126 *Ibid.*, Vol. 7, Vaudreuil to Broulramaque, 17 August 1759; *ibid.*, K, 10, Vol. 2, pp. 205-28, Mémoire sur la frontière du lac Champlain [Broulramaque, 1760]; *ibid.*, Vol. 3, p. 178, Vaudreuil to Bougainville, 16 July 1760; H.R. Casgrain, ed., *Collection de manuscrits...*, Vol. 5, pp. 29-30, Broulramaque to Lévis, 13 August 1759; *ibid.*, pp. 65-67, Broulramaque to Vaudreuil, 23 October 1759; *RAPQ*, 1928-29, p. 73, “Journal de Nicolas Renaud d’Avène des Meloizes,” 16 September 1759.

The French tactics on the Rivière du Sud also included construction of works of fortification. In October 1759, Bourlamaque indicated that they were removing a “poor entrenchment which was under water up to half way up one’s leg” [*translation*] which was at the mouth. Not being able to place guns there, he believed it was more effective to use the navy to dispute the passage of this river with the enemy.¹²⁷ As well, Bourlamaque intended to set up small defence posts at various spots to hinder the enemy advance along the whole course of the river, and thereby delay their subsequent advance on Île aux Noix or Saint-Jean.¹²⁸ The entrenchment at the mouth was worked on once again at the beginning of 1760, when Bourlamaque decided to place “branches there as a fraise” and to mount artillery pieces on platforms.

In the end, at the time of the siege, the enemy did not make use of the portage from the Bay. Sailing on the Richelieu, they opted rather to disembark on the right bank at Pointe à Margot.¹²⁹ From there, they approached the island by the point of land which borders the mouth of the Rivière du Sud and the Richelieu River, then they installed their batteries opposite the French fortifications. Paradoxically, it was on this ground which the French considered too swampy that the British turned up, despite the need for frequent bridging. Far from serving to bypass the Île aux Noix post, the Rivière du Sud now offered a natural protection for the enemy camp, by making an attack on their batteries from the rear more difficult!

As a whole, then, the French tactics worked out at Île aux Noix on one hand reflected the details of the site, especially with respect to the defence of the passages on each side of the island and the Richelieu River. On the other hand, they reflected the general situation of the colony both in 1759 and in 1760, and in this regard they were proof, as was the case on the other fronts, of the inferiority of the available resources.

127 H.R. Casgrain, ed., *Collection de manuscrits...*, Vol. 8, pp. 111-14, Vaudreuil to Lévis, 3 October 1759.

128 *Ibid.*, Vol. 5, pp. 65-67, Bourlamaque to Vaudreuil, 23 October 1759; NA, MG16, K, 10, Vol. 2, pp. 211-13, *Mémoire sur la frontière du lac Champlain* [Bourlamaque, 1760].

129 *Ibid.*, Vol. 3, pp. 373-75, Lévis to Bourlamaque, 18 August 1760.

At Île aux Noix, more particularly, the preponderant role of the navy could be seen. The navy was the basis of the French tactics on the Richelieu-Lake Champlain front at the logistical level, but it was especially so on the defensive level. To be convinced of this, one need only recall the effect caused by the losses of ships, both in 1759 and during the siege in 1760.

In the light of the siege of Île aux Noix which took place from 16-20 August 1760, it is difficult to pass comprehensive judgement on the fortifications which were constructed at the end of the French Régime. On the one hand, these entrenchments had been planned in 1759 with the very precise objective of halting the enemy's advance on Montréal. The extent of these works required a strength of at least 3000 soldiers. In 1760 the situation had completely changed. In the face of the lack of support from the home country, the French strategists had no other choice but to modify the defensive role of Île aux Noix. With less than half the strength necessary, Île aux Noix was no longer to halt the enemy advance, but rather to delay it as long as possible.

At the time of the siege, therefore, the Île aux Noix entrenchments entered into action in a scenario which was somewhat different from the one originally planned. In other words, the reduction of Île aux Noix's defensive role did not produce any noticeable reduction or contraction of the perimeter of the enceinte, so as to adjust to the diminishing human resources of 1760. In this context one even wonders about the validity of the fortifications, not because of their trace or their design, but rather because of the lack of resources to operate them. The course of the siege tends to confirm this judgement.

For some, the French defeat is attributable to the island's fortifications, but the reality seems to be quite otherwise. Though during the siege some officers complained that the fortifications were not sheltering the defenders from enemy bombardments, that obviously was due to the small area the rampart commanded or its low height. However, that is not where to look for the reason for the rapid surrender of the French on Île aux Noix. Several factors can be cited. Throughout the first stage of the siege, when the British were busy setting up their batteries, it was only with very weak firepower that the French tried to hinder their work. The French inefficiency is explained by the lack of experienced gunners, as Bougainville stressed, and perhaps also by a desire to husband limited ammunition.¹³⁰

The rapid surrender of Île aux Noix can be explained by the defeatism that reigned among the French officers during the 1760 campaign. The loss of the little French fleet at the time of the siege created more anxiety among the island's garrison, and especially among the officers, than the state of the fortifications after some days or some hours of bombardment. As soon as this fleet was lost Bougainville summoned his Council of War to decide on the evacuation of Île aux Noix, again without the fortifications really being involved. Now the enemy could freely proceed to Saint-Jean or Montréal, or again they could disembark on the north part of the island and attack the entrenchments in this sector, namely the hornwork. In both cases, the garrison would be isolated from the rest of the French army and could no longer evacuate the island at leisure. And in these conditions the officers no longer believed that "the simple hornwork on poor ground, attacked from the rear, obliquely, and by enfilade by three batteries which had already been established" [*translation*] could long offer any resistance.¹³¹

The Chevalier de Johnstone estimated that when it surrendered the garrison had only enough provisions and ammunition left for 40 hours. However, the testimony of British officers contradicts Johnstone's observations somewhat.¹³²

Noting the state of the works and provisions at Île aux Noix the day after their victory, they considered that the French would have been able to hold on a little longer. In short, the French officers considered the situation to be desperate and because of that state of mind had absolutely no confidence in the Île aux Noix works once the little fleet was in enemy hands. In this context the navy was not only the main element in the defence of Île aux Noix in 1760, but also was regarded as the instrument of survival much more than were the fortifications. Because of these circumstances, the siege of Île aux Noix did not make it possible for the entrenchments to be really seen in action.

130 H.R. Casgrain, ed., *Collection de manuscrits...*, Vol. 10, pp. 144-45, Bougainville to Lévis, 21 August 1760.

131 NA, MG18, K, 10, Vol. 3, Council of War held at Île aux Noix 27 August 1760.

132 *Ibid.*, J, 10, Mémoires du Chevalier de Johnstone, pp. 387-91; S. Jenks, "Journal of Capt. Samuel Jenks," *Proceedings of the Massachusetts Historical Society*, Vol. 5, (1889), pp. 384-89; PRO, WO34/85, fols. 68-69, "Return of Ordnance and stores taken at Isle aux Noix, August 28th 1760."

CHAPTER 2

THE FIRST BRITISH FORTIFICATIONS

The strategic importance of Île aux Noix decreased as soon as the conquest of Canada was complete in 1760. Amherst had not thought it wise to preserve the French fortifications on Île aux Noix and therefore he ordered the razing of the entrenchments to salvage the construction materials which might be reused at Crown Point.¹ Some soldiers remained posted on the island during the year 1761 to ensure a relay for communications between Saint-Jean and Crown Point, now the military headquarters for all the Lake Champlain and Richelieu posts above Saint-Jean.²

Subsequently Île aux Noix received its civilian occupants back. Before the military occupation, the island had been part of the Seigneurie of Noyan, granted in 1733 by Governor Beauharnois to Pierre Payen de Chavoy et de Noyan.³ In 1753, Île aux Noix had been leased to Pierre Jourdanet, a soldier in de Lorimier's company,⁴ for farming. In 1761, a John Macomb requested permission from the military authorities to settle there.⁵ However, as soon as the British troops left, Seigneur de Noyan retook possession of the island. He sold his seigneurie to John Campbell and Lieutenant-Colonel Gabriel Christie in 1764.⁶ The same year, a new tenant, Peter Stanley, farmed the island and occupied a house and some wooden structures.⁷

1 PRO, WO34/85, fols. 142-142v, Amherst's Order to Benzell, 15 October 1760.

2 *Ibid.*, Vol. 52, fols. 90-91, Amherst to Haviland, 24 October 1760.

3 P.G. Roy, *Inventaire des concessions en fief et seigneuries, foies et hommages, et aveux et dénombremments, conservés aux archives de la province de Québec* (Beauceville: L'Éclaireur, 1927-29), Vol. 4, pp. 244-45.

4 ANQM, Notarial file of Antoine Foucher, Farm lease by Mr. de Noyan to Pierre Jourdanet, 6 April 1753.

5 PRO, WO34/51, fol. 144, Haviland to Amherst, 22 June 1761.

6 ANQM, Notarial file of Pierre Panet, Sale by Catherine d'Ailleboust de Manthet, wife and proxy of Pierre Payen de Noyan, to Gabriel Christie and John Campbell, 27 March 1764.

7 NA, MG8, F, 99-9, Vol. 21, pp. 18100-2, Act of fealty and homage, G. Christie and J. Campbell, 2 April 1764; pp. 18108-9, Rental agreement between G. Christie, J. Campbell and Peter Stanley, 7 May 1764; p. 18111, Eviction notice, 28 November 1764.

Île-aux-Noix in the British Defence Plans, 1763-83

The peace which followed the transfer of Canada to Great Britain in 1763 soon began to crumble. The growing tensions between Britain and its old colonies to the south quickly became apparent. During the Seven Years' War, Great Britain had swallowed up enormous sums, especially in the military operations in America. It was believed by the political leaders that it was therefore no longer in a position to be the sole guarantor of the costs involved in the defence of the new British "Empire" in North America. Therefore it wished to involve its American colonies in the financing of necessary military expenses by the levying of taxes. The introduction of the Stamp Act and the repeal of the former international trade arrangements were among the measures which displeased the populations of the colonies to the south.⁸ Being used to a certain amount of autonomy in politics and defence developed over many years of war against the former French colony, they reacted immediately. The celebrated question of "no taxation without representation"⁹ was now raised.

In this context of growing tensions with its long-standing American subjects, Great Britain had to concern itself more especially with the defence for its new colony, Canada. It was apprehensive that a French squadron wishing to retake Canada might sail up the St. Lawrence. Besides, the attitude of the French-speaking population in the face of such a possibility gave the new occupants of the colony cause for concern.

In light of this the new governor, Guy Carleton, worked out a plan of defence for Canada as early as 1767. He first wished to establish a secure communications corridor between Quebec and New York by the Richelieu-Lake Champlain route. By this means troops and ammunition would be quickly directed to the scene of hostilities, whatever its source might be.¹⁰ In the Quebec-New York corridor, Carleton identified three places which already had a defensive infrastructure but which needed major

8 The Stamp Act made it compulsory to use stamped paper for official documents. The re-enforcement of the former Navigation Laws restricted the American colonies to trading exclusively with the home country.

9 This was a matter of principle which was part of the British tradition of the population of the Thirteen Colonies. Taxes levied by the home country were not acceptable unless in return it was possible to be represented in Parliament, where these taxes were imposed.

10 PRO, CO42/34, fol. 295, Carleton to Gage, 15 February 1767.

improvements: Crown Point (formerly Saint-Frédéric), Ticonderoga (formerly Carillon) and Fort George (formerly William Henry) situated south of Lake George.

Carleton therefore asked John Marr, the engineer, to work out the measures required for defending the portion of the desired corridor which was situated within the boundaries of the "Province of Quebec." After receiving the Governor's mandate, Marr presented various plans of a citadel for Québec, and he took a great deal of time in defining the strategic parameters for the defence of the Richelieu River.¹¹ After noting sailing conditions on the river and the state of Fort Chambly, which was considered unsuitable for resisting an attack using guns, Marr thought that Île aux Noix offered major advantages, especially because of its geographic location. He further concluded that it was the best spot on the Richelieu for British troops to resist an enemy.

On one hand, if the enemy came from Europe in superior strength and forced the defenders to withdraw from Québec, and then from Montréal and Chambly, the force gathered at Île aux Noix would enable them to put up a sufficiently strong defence while waiting for reinforcements from New York and the colonies to the south. On the other hand, if the attack came from the south, that is, from the former colonies, Île aux Noix would offer the same advantages while awaiting reinforcements in this case coming from the home country and Québec. Further, a fortification erected on Île aux Noix would ensure control of navigation on the river, whatever direction the enemy came from.

Another advantage of Île aux Noix according to Marr was that the topography of the island and the neighbouring region made it possible to construct a large-scale fortification at little cost. Among other considerations, the flat relief and the slight profile of the ground of the island only called for low works. Moreover, construction materials were readily available on the island and in the immediate vicinity. However, the engineer did not present any concrete plan for defensive works.

To prevent the passage of an enemy fleet, whether it came from Saint-Jean or from Lake Champlain, Marr suggested arranging several rows of palisades across the channels on each side of Île aux Noix.¹² They would

11 NA, MG23, A, 1, Series 1, Vol. 9, "A few Remarks on the Province of Quebec," John Marr, [1768]. On Marr's various citadel projects for Québec, see A. Charbonneau, Y. Desloges and M. Lafrance, *op. cit.*, pp. 157-60.

12 Marr suggests a very particular way of assembling these palisades: "I shall plant cross the Chennal of the River five or Six Ranges of palissades of not less than twelve Inches Diameter, cheequer Fashion giving

be flanked by batteries of large guns, set up on the island in such a way as to provide fire at water level.

If they wished to continue on their route, the enemy would therefore first have to lay siege to Île aux Noix and capture the fortification. If they chose to bypass the island, they would then have to open a road across the woods, and such an enterprise would obviously slow down their advance. The defenders would then be able to dispute their advance over the ground at their leisure. In short, in the mind of the engineer, Île aux Noix was one of the most important posts to establish in order to meet the objectives of Carleton's plan of defence. It took into account two possible enemies coming from different directions. And Marr added, "From what has been said, in my humble Opinion, the Isle of Nuts is an Important Post and one of the Keys of Canada."¹³

The British authorities did not accept Marr's proposals nor Carleton's plan of defence. The home country's financial situation did not allow such a large investment to be made in Canada.¹⁴ Île aux Noix therefore remained without a garrison.

The first manoeuvres of the American War of Independence brought military action back to Île aux Noix in a concrete manner. At that time the Americans used the island not as a military location of primary importance, but rather as a base for their operations against Saint-Jean, the access route to Montréal and to the centre of the colony.

In May 1775, Arnold, some days after he rapidly captured forts Ticonderoga, George and Crown Point, and being impatient to invade Canada, seems to have occupied Île aux Noix before proceeding to attack Saint-Jean.¹⁵ This was a personal initiative on Arnold's part, since Congress, which was hoping for a speedy settlement with Great Britain, did not approve of his adventure.¹⁶ However, in the fall of the same year, this time with the support of Congress, generals Philip Schuyler and Richard Mont-

them a Slope towards his [Enemy] Ships, and all their Tops shall be some Inches below the Surface of the River; The Ranges to be Six feet Distant from each other, and the palissades in the same Range four or five feet assunder." He adds that this assembly is aimed at stopping the largest boats. For the rowboats or other small craft which had succeeded in clearing these obstacles because of their shallow draught, Marr suggested an additional arrangement: "... Several Ranges of a smaller Size will be placed across the River from Side to Side three or four feet of whose Tops shall be above Water, the Distances such that one of these Vessels cannot pass between them." NA, MG23, A, 1, Series 1, Vol. 9, "A Few Remarks...." John Marr, [1768].

13 *Ibid.*

14 J.M. Hitsman, *Safeguarding Canada, 1763-1871* (Toronto: University of Toronto Press, 1968), p. 24.

15 J. Castonguay, *Le fort Saint-Jean* (Montréal: Éditions du Lévrier, 1965), p. 45.

16 D. Lee, "The Americans on Île-aux-Noix, 1775-1776," in D. Lee, *et al.* "Theme Papers, Île-aux-Noix," Manuscript Report Series No. 47 (Parks Canada, Ottawa, 1967), pp. 90-99.

gomery returned to Île aux Noix, heading for Saint-Jean and then Montréal and Québec.

During the summer, the British had restored the fortifications of Saint-Jean (Fig. 18) though the "Americans" did not make any major restorations at Île aux Noix. All Schuyler did was rehabilitate certain defensive elements. Among these was stretching chains across the channels on both sides of the island to prevent British ships from proceeding to Lake Champlain.¹⁷

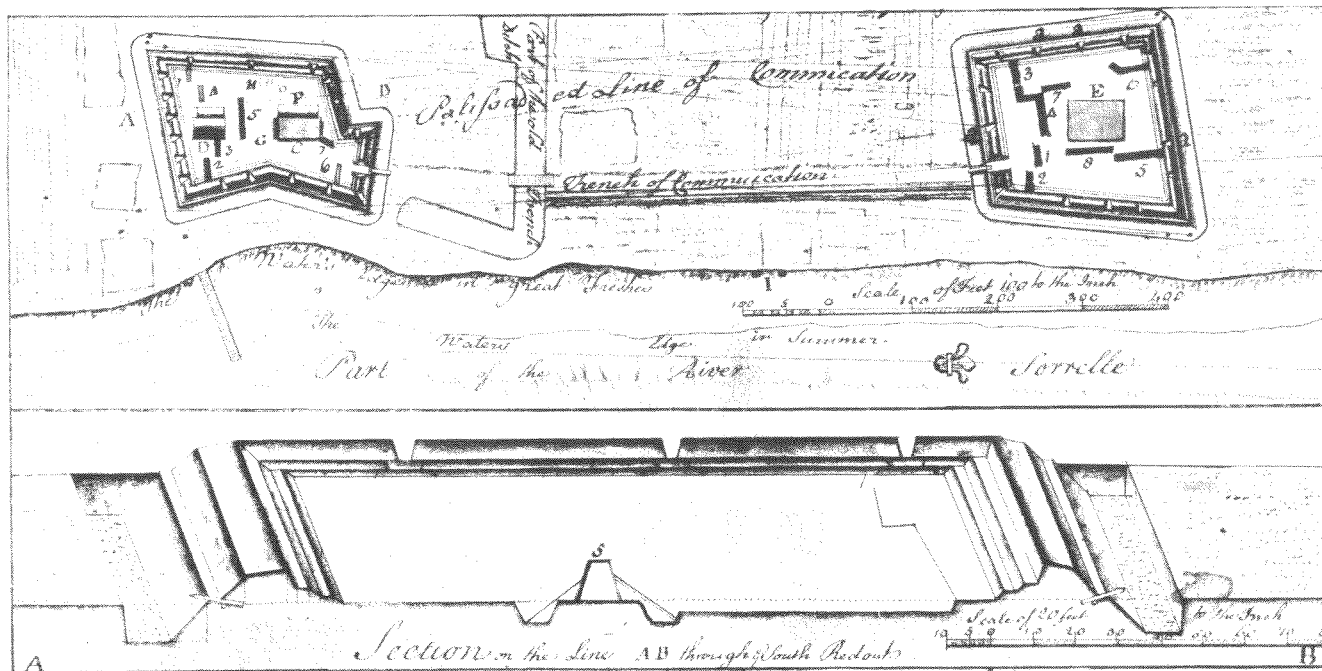
After the American siege of Québec in the fall of 1775 and following the American army's bad luck during the winter, the British reassumed the offensive in the spring of 1776 with the support of freshly arrived troops under the command of Guy Carleton and John Burgoyne. The objective: to push the Americans back out of the territory of the province. However, Carleton remained cautious in his pursuit of the enemy. The Governor's initiative was always based on the fact that the Richelieu-Lake Champlain route remained the main American access route to the heart of the province, and therefore it was in this theatre that the energies of the counter-offensive would be focused. However, rather than rushing into the immediate recapture of Crown Point and Ticonderoga which remained crucial for the control of Lake Champlain, just as they had been in 1759 and 1760, Carleton chose instead to provide himself with the means of gaining mastery of navigation in the corridor by building an adequate fleet:

*The next operation of importance was to establish a naval Force on Lake Champlain to command the navigation of that Lake, and render the passage for the Troops in Batteaux secure, in order to pursue the Rebels into their own Provinces.*¹⁸

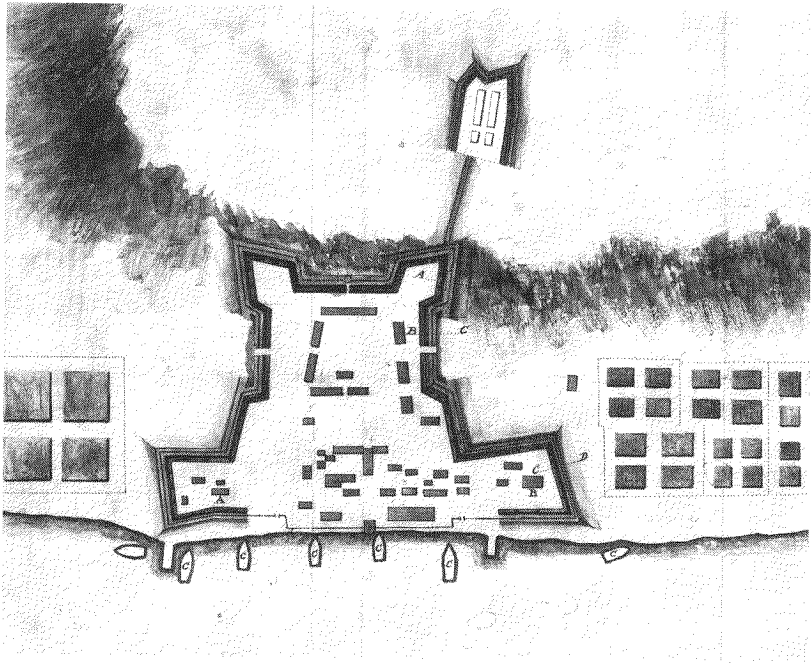
So during the summer of 1776 Fort Saint-Jean experienced feverish activity (Fig. 19). Besides restoring and enlarging the fortification, several craftsmen were working on the construction of the ships necessary to proceed with the British counter-offensive.

17 P. Force, ed., *American Archives...* (Washington: Published under authority of an act of Congress, 1837-1853), Series 4, Vol. III, P. Schuyler to J. Hancock, 8 September 1775; NA, MG23, B, 8, Vol. 1, pp. 11-14, Official report by Congress on intelligence received from Gen. Schuyler, 18 September 1775.

18 PRO, CO42/35, fols. 171-77, Carleton to Germain, 28 September 1776. For the context of the period, see G.F.G. Stanley, *Canada Invaded, 1775-1776* (Toronto: Hakkert, 1973), pp. 133-34.



18 Plan of the works erected at Saint-Jean in the summer of 1775 in anticipation of an American attack. There are two redoubts with very irregular traces; probably the result of reusing existing works. (J. Marr, 1775; NA, NMC-2773)



19 Fort Saint-Jean by Gother Mann (1791). In 1776 after the American retreat, the fort was completely rebuilt and the two 1775 redoubts were integrated into the new complex. (NA, NMC-16455)

During this time, Île aux Noix again became a major post in the British tactics, but remained subordinate to the role of Saint-Jean, which had priority. While waiting to proceed with his advance, Burgoyne established his headquarters there in the fall of 1776.¹⁹ In Carleton's mind, Île aux Noix was a support location, a base for military operations on Lake Champlain. This new task brought about a reworking of the island's defensive infrastructure. Warehouses and stores were built in order to create a depot for the ammunition and provisions necessary for Burgoyne's future operations. Certain defensive elements were added as well.

The selection of Frederick Haldimand as the new governor of the colony in 1778 brought about a restructuring of British strategy. From the beginning, Haldimand saw that he was in a situation similar to the one expe-

¹⁹ W.L. Stone, trans. and ed., *Memoirs and Letters and Journal of Major General Riedesel* (Albany: J. Munsell, 1868), Vol. 1, pp. 67-69.

rienced by the French officers some twenty years before: a large border to defend with few available resources. This combination induced the Governor to set certain defensive priorities. On one hand, he quickly understood that efforts should be concentrated in the inhabited part of the province, the St. Lawrence plain. On the other hand, Haldimand based his new plan of defence on the idea of making any American incursion into the interior of the territory of the province more and more difficult. In short, the time factor became the most important tactical element in Haldimand's strategy. Every delay to the enemy's advance meant an increased consumption of provisions; this delay would disturb the enemy's timetable proportionately and would give the defenders more time to organize their counterattack. Finally, Governor Haldimand's program counted on the participation of the navy as well, which is why there was a constant pursuit of mastery in this matter.²⁰

Haldimand's defence plan was articulated around three clearly defined focuses: the establishment of a major fortification on the border which was supported by a series of defensive relay stations, the setting up of an entrenched camp at Sorel, and the construction of a citadel at Québec.²¹ This plan complied with an order of priorities established by the Governor. Haldimand considered it more urgent to close the various gates of entry into the colony than to build the citadel at Québec.²² First the Richelieu River and then the St. Lawrence were the two main penetration routes that could be used by the Americans coming from the south.²³ As early as 1778 Haldimand asked his engineers, commanded by William Twiss, to set up a post on each of these borders (this means the borders of the inhabited area), suited to opposing enemy penetration. The location of these posts would also enable the Governor to organize and support patrols whose purpose would be to reconnoitre and hinder the enemy. At the head of the St. Lawrence, Fort Haldimand would be built on Deer Island (later to become Carleton Island). On the Richelieu, Fort Saint-Jean, already consi-

20 At the end of 1782, Haldimand could count on 10 warships on Lake Champlain carrying from five to 26 guns. On the Great Lakes, in particular lakes Ontario and Erie, there were 16 ships carrying from two to 18 guns. Other ships belonging to the provincial navy were patrolling the St. Lawrence: in 1782 there were eight of them, armed with 12 and 14 guns; PRO, CO42/87, fols. 232-49 and 352. See Appendix B for details of the ships on Lake Champlain.

21 J.O. Dendy, "Frederick Haldimand and the Defence of Canada, 1778-1784," Ph.D. thesis, Duke University, 1972, p. 36.

22 PRO, CO42/38, fol. 133v, "Sketch of the Military State of the Province of Quebec," F. Haldimand, 25 July 1778.

23 BL, Add. MSS. 21714, fol. 12, Haldimand to Germain, 15 October 1778.

dered of value because of the naval force concentrated there to control Lake Champlain, became the defensive headquarters for that border. In addition to the improvements suggested by Twiss, it should be remembered that reconstruction of the Saint-Jean fortification had been begun in 1776.²⁴

As the Richelieu River was the main penetration route into the colony, Haldimand decided to provide Saint-Jean with an advanced post, taking advantage of Île aux Noix's geographic position, "... the Île aux Noix serving as an advanced post, and, being Fortified, which need not to be with great works, makes the difficulty of penetrating into Canada next to Insurmountable to the Rebels, with only their own resources."²⁵ Therefore, beginning in 1778 construction of additional and more substantial defensive works was undertaken on Île aux Noix.

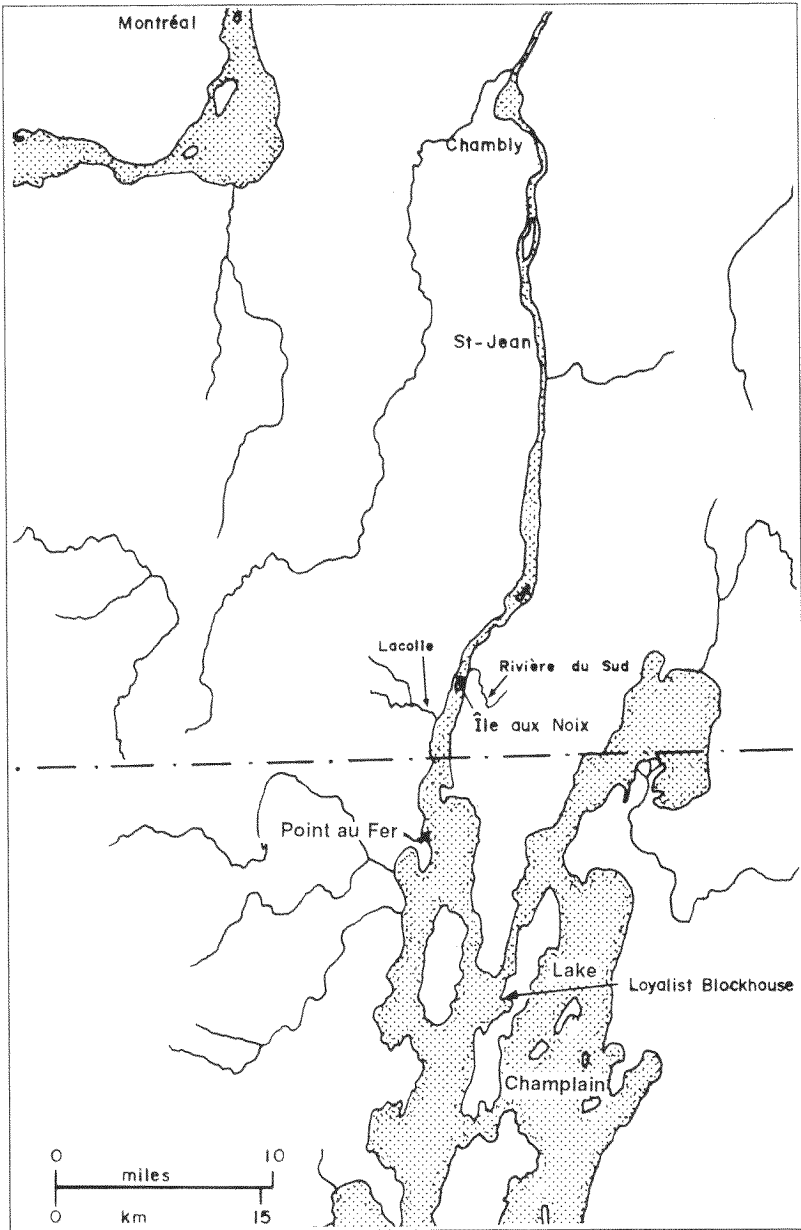
Haldimand's defensive tactics also counted on the contribution of small posts established above Île aux Noix on both sides of the Richelieu River (Fig. 20) as well as along other secondary penetration routes (the Yamaska and Saint-François rivers). A few kilometres to the south of Île aux Noix, a guardhouse was located at the mouth of the Lacolle River. Further on, at the entrance to Lake Champlain, the British fortified Point au Fer on the left bank; facing it they built Loyalist Blockhouse on Long Island (Contrecoeur Island). Manned by small garrisons, most often made up of an officer supported by at least ten or so soldiers, these small forts generally were in the form of a blockhouse. Their function was to hinder the advance of the enemy over the territory of the province and to make it possible to reconnoitre their movements.²⁶ They also served as support points for the reconnaissance and fighting patrols which operated all over the neighbouring area.²⁷ Finally, they contributed to discouraging desertions from the British army. Basically, the arrangement of these small posts, in relation to Saint-Jean and Île aux Noix, formed an arc extending

24 See Appendix B for a description of the British fleet on Lake Champlain.

25 BL, Add. MSS. 21703, fols. 21-24v, Foy, Haldimand's secretary, to Knox, 10 March 1778. Foy had earlier discussed Saint-Jean in these terms: "... St. Johns demands more attention being the place where the naval works for the Lake Champlain must be carried on, and where the vessels must be laid up in Winter."

26 *Ibid.*, 21796, fols. 245-47v, Riedesel to Haldimand, 19 December 1781. The Point au Fer post, however, had a more elaborate structure. It was a two-storey stone building with walls pierced with loopholes. At each corner of the building, a horizontal hewn log work ensured flanking. A palisade made up of a double row of stakes surrounded the whole work (see Fig. 37).

27 A code composed of graphic signals made it possible to communicate the manoeuvres of these reconnaissance patrols quickly. Also, to avoid any confusion with enemy scouts, a system of passwords governed contacts between the various patrols and the garrisons of the small posts (see BL, Add. MSS. 21796, fols. 273-74, "Scouting Marks to be observed by the Scouts from Sorel, Yamaska, St. John, Isle-aux-Noix, Point au Fer, St. François and Loyalist Blockhouse" [1781-82]).



20 British posts on the Upper Richelieu and north of Lake Champlain at the end of the 18th century. (*Parks Canada, L. Lavoie, 85-5G-D25*)

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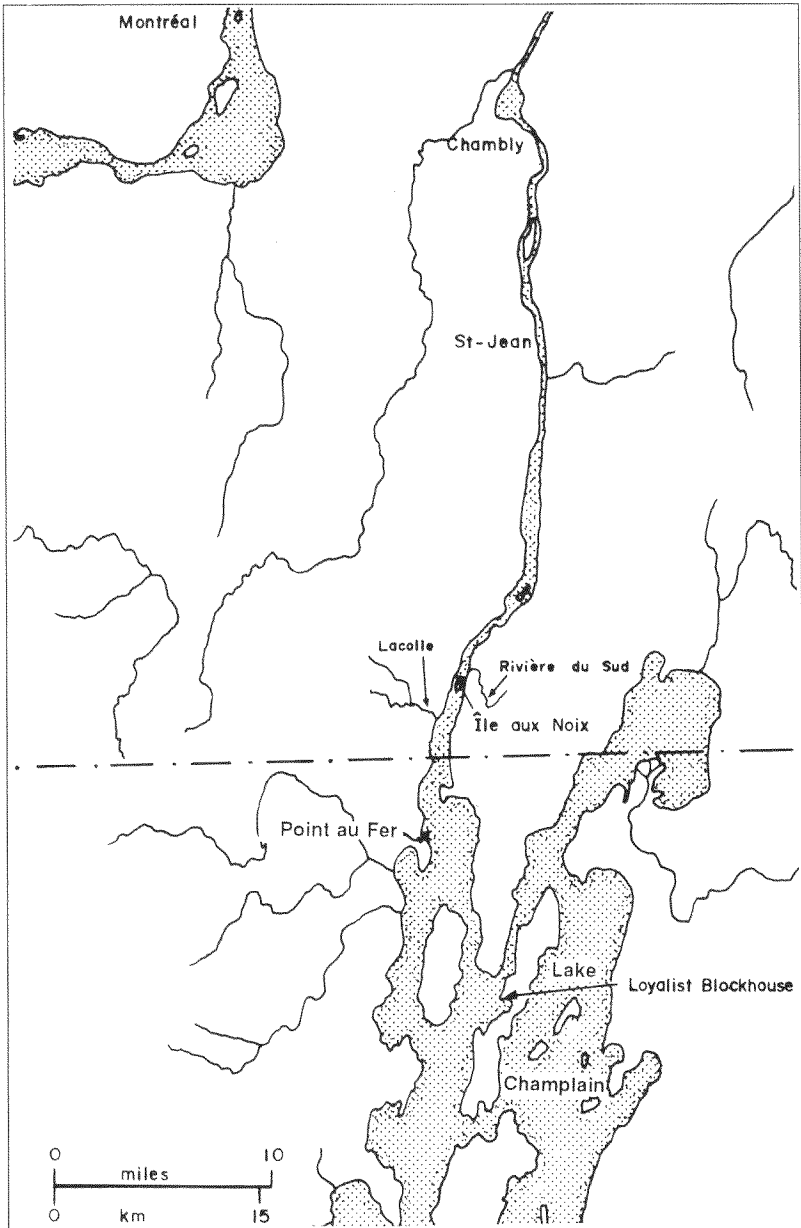
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from the Châteauguay River to the Nicolet River, around which a network of information on enemy movements was organized.

All these measures were insufficient, however, if the troops necessary to defend the territory of the province were not available, and in this regard Haldimand remained aware of his weakness. Therefore he did not wish to weaken himself further by dispersing his troops all along the border. The Governor preferred to leave only small garrisons in the forts and defensive posts and to concentrate the greater part of his men in an entrenched camp at Sorel.²⁸ That was the second major component of his defensive program which he put into effect as early as 1778. Sorel's geographic position, where the St. Lawrence River and the Richelieu, Saint-François and Yamaska rivers met, and therefore at the junction of the main penetration routes, made it possible to hope for a rapid deployment of the troops to the various possible theatres of conflict (Fig. 21). Moreover, Sorel could easily be resupplied from Québec, which still remained the route of entry for any reinforcements from the home country.

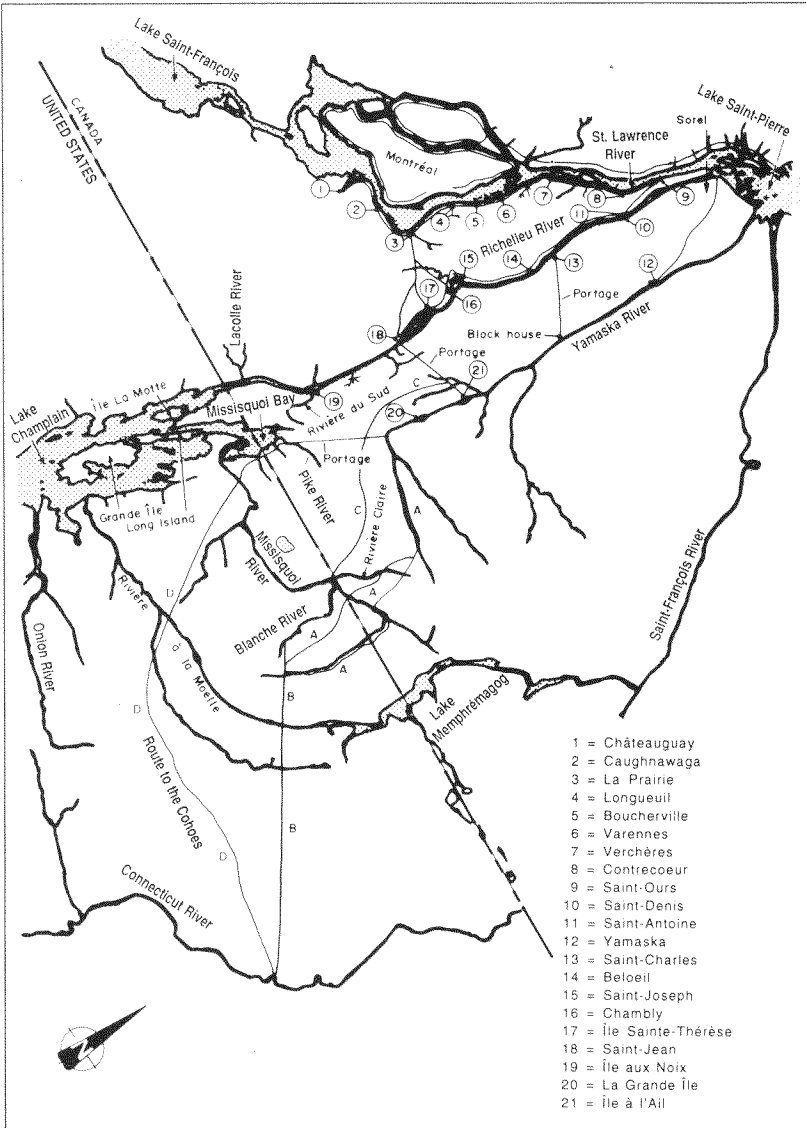
However, Haldimand's plan of defence, though it took into consideration all the possible penetration routes into the province, left Montréal unprotected, although keeping it safe remained essential to the fur trade interests. But to the Governor, Montréal did not offer Sorel's strategic advantages. If the enemy took control of Saint-Jean or if they penetrated by the secondary access routes, they could easily cut off the troops concentrated at Montréal. This could not happen at Sorel. In short, for Haldimand the road to safeguarding British interests in the fur trade lay in affirming a solid presence in the Province of Quebec. Therefore, because of the strategic situation in 1778, it was necessary to neglect the immediate defence of Montréal in favour of a more strategic location and one which was easier to defend, Sorel.²⁹

After starting the construction of the border forts and setting certain elements of the Sorel camp in position, Haldimand believed he was able to undertake the realization of the third element in his plan, the construction of a citadel at Québec in 1779.³⁰ It was not so much that he feared a direct attack by the French by sea as Carleton did, but rather, in the light on the events of 1775, the Governor wanted to be able to count on a

28 *Ibid.*, 21714, fols. 12-16, Haldimand to Germain, 15 October 1778.

29 PRO, CO42/38, fol. 131v, "Sketch of the Military State of the Province of Quebec," F. Haldimand, 25 July 1778.

30 BL, Add. MSS. 21714, fols. 68-70, Haldimand to Germain, 24 October 1779.



21 The Upper Richelieu border in 1778-79. Sorel was situated at the junction of several penetration routes: St. Lawrence, Richelieu, Yamaska and Saint-François rivers. The British posts were established on these waterways. The connecting links between them (A, B, C, D) and portages were likely to be used by an enemy in order to reach the Montréal area. (*Parks Canada, F. Pellerin, 95-5G-3, adapted from NA, NMC-1035*)

fortress which would be able to resist a large-scale enterprise and from which a counter-offensive could be mounted, as was the case in 1776. Therefore, and it must be stated explicitly, Québec continued to be the vital link with the home country, and on these grounds alone the city required a fortification of major importance.³¹

As for Île aux Noix, where it had been decided as of 1778 to augment the fortifications to provide Saint-Jean with a major advanced post, the sequence of events caused its defensive role to be modified. Starting in 1780, negotiations with the Province of Vermont, which had not joined the states of the Union, had been carried on with a view to its being reunited with the British crown.³² These discussions were not bearing fruit and were dragging on. In the spring of 1782, at the request of the Colonial Secretary, Haldimand sent a large number of troops to the Upper Richelieu and Lake Champlain border, the majority of whom were posted to Île aux Noix. To justify this action he used the pretext of an imminent attack by the rebels on this border. This gesture gave further expression to the Colonial Secretary's wish to speed up negotiations with Vermont, hoping that an increased military presence would prompt the population of that province to feel greater loyalty.³³ Besides, these troops would assure the protection of the inhabitants of Vermont in the event of a gesture of reprisal from the American towns such as New York. From this point of view then, Île aux Noix as Saint-Jean's advanced post, acquired more importance in 1782 than Haldimand's plan of defence had given it.

The operation which was ordered by the Colonial Secretary did not achieved the hoped-for results. The Île aux Noix fortifications were augmented notwithstanding, and the British officers, including Governor Haldimand and Friedrich Riedesel, who at the time were in command on this border, now considered the island to be an essential post for the defence of the province against the bordering States. The rumours of approaching peace and the fear of losing most of the furthest-off posts increased this feeling for Île aux Noix among the British.³⁴ In the spring

31 For a detailed analysis of the Citadel built at Québec, see A. Charbonneau, Y. Desloges and M. Lafrance, *op. cit.*, pp. 160-62.

32 D. Lee, "Île-aux-Noix, Vermont and the Allens," in D. Lee, *et al.*, *op. cit.*, pp. 127-29.

33 Haldimand informed Riedesel of the real reason for this gesture in a private letter; BL, Add. MSS. 21799, fols. 230-30v, 29 April 1782. In his official letter of the same date, Haldimand did not show the same frankness concerning the Colonial Secretary's true intentions; see *ibid.*, fols. 232-32v.

34 *Ibid.*, 21797, fol. 268, Riedesel to Haldimand, 12 September 1782; PRO, CO42/43, fol. 216, Haldimand to Townshend, 25 October 1782.

of 1783, work on the island continued despite imminent peace between Great Britain and the United States.³⁵

Roads: Tactical Advantage or Defensive Weakness?

From the defensive point of view, ease of communications from one post to another was a major element in any effective tactics. Whether these communications were by road or water, they presupposed assiduous control by the defenders in order to prevent the enemy from using them. Otherwise, if secondary routes developed around these same posts without defensive control as the settlement of a tract of land made them possible or because of commercial needs, they could quickly become major factors of strategic weakness. The defenders had also to control the roadways or other communication routes constructed and made use of by the enemy on the defenders' territory.

The strategic defensive developed for the Richelieu-Lake Champlain border during the American War of Independence was subject to these considerations. The major military posts which were developed, that is Saint-Jean and Île aux Noix, were situated in the very heart of a territory which was scarcely settled in 1783. Situated near the rebel colonies, this area of the province did, however, offer advantages which attracted many Loyalists after the war.³⁶

Just as during the Seven Years' War, secure and rapid communications between Saint-Jean and Île aux Noix, and between Île aux Noix and the other military posts located upriver in 1778, such as the Lacolle River, Point au Fer and Dutchman's Point (Loyalist Blockhouse) still remained vital for each of these posts. In these cases, navigation was the main way of liaising, although in winter the ice and temporary roads were used. At this period, a road network with a branch to La Prairie linked Saint-Jean to all the villages on the left bank of the Lower Richelieu from Chambly

35 W.L. Stone, trans. and ed., *Memoirs and Letters...*, Vol. 2, p. 168, Haldimand to Riedesel, 26 April 1783. Again in February there was fear of a rebel action on the Richelieu-Lake Champlain border, especially against the small posts of Point au Fer and Loyalist Blockhouse. BL, Add. MSS. 21798, fols. 60-61v, Riedesel to Haldimand, 9 February 1783.

36 At the time, the Upper Richelieu area included extensive tracts of wood suitable for construction. The first occupants quickly recognized the soil quality of this region was good for agriculture. Finally, the proximity of the Richelieu River trade route offered substantial trade facilities.

to Sorel (Fig. 21) Portage roads ensured connections between the blockhouses on the Yamaska River and Saint-Charles on the Richelieu and Saint-Jean. Closer to Île aux Noix, the defenders could easily reach Missisquoi Bay by using the Rivière du Sud and the portage road linking it to the bay.³⁷ It must be added that this area was an important target for each of the belligerents since it was located at the heart of their scouting and harassing activities on this border.

In short, around 1780 a network existed which made communications possible from one post to another over the whole Richelieu-Lake Champlain front.³⁸ This link was the major element in Haldimand's defence system. Whatever its origin, information concerning enemy movements had to reach Saint-Jean, the main military position on the border, quickly and then be forwarded to General Headquarters at Sorel. Reciprocally, it had to be easy to forward commanding officers' decisions as well as supply to the posts concerned. The effectiveness of Haldimand's strategy rested on such a network.

If the British created a communications network with various branches in the form of small forts established on both sides of the Richelieu River and Lake Champlain, the explanation lies in the existence of secondary penetration routes by which a small formation of the rebel army could reach the heart of the colony. The area to the east of the Upper Richelieu and Lake Champlain caused the greatest concern to the British, mainly because of its location closer to the population centres of the provinces to the south. Furthermore, the "Americans" were very active there.

As early as 1776, a Loyalist informed Carleton that the American rebels were building a road leading to the heart of the New England provinces, "and found to be by far the shortest and easiest way of entering Canada."³⁹ It seemed that this new road, whose construction had been ordered by George Washington and the rebel Congress, made it possible to get to Montréal from Cambridge, Massachusetts, in only nine days. Its route first made use of the Connecticut River for a good part of the way as far as Cohoes, a small village situated near the northern end of the river (Fig.

37 Riedesel described this road in 1781 as "Metcalf's Road" (BL, Add. MSS. 21796, fol. 247, Riedesel to Haldimand, [1781]).

38 It is not the purpose here to discuss other ways to communicate such as signal telegraphs or sound and light codes produced by the artillery and lighthouses for the rapid communication of information from one post to another. For example, a system of light signals existed between Point au Fer, the Lacolle River and Île aux Noix in 1781. See M. Filion, *Le blockhaus de Lacolle* (Québec, Affaires culturelles, 1983), p. 25.

39 BL, Add. MSS. 21841, fols. 11-12, [A Loyalist] to Carleton, 11 July 1776.

21). From that point, the road described an arc across forests and small villages, ending at Missisquoi Bay, at the mouth of the Rivière aux Brochets (Pike River), and whose highest point crossed one fork of the Rivière à la Moelle.

According to Carleton's informant, the rebel leaders wanted this road to be suitable for wheeled traffic. In July 1776, this road was passable on horseback over at least two-thirds of its length to the fork of the Rivière à la Moelle. Along its course, trees were cut and the terrain levelled to a width of 33 feet, which allowed gun-carriages to use it. The last portion of the road, from the Rivière aux Brochets to Saint-Jean, was only marked out on the ground.

On the same occasion, Carleton learned that another enemy road ran along the right shore of Lake Champlain, with its northern end at the mouth of the Onion River. This river, however, could only be crossed with the help of Indian guides or Canadians who were friendly to the rebel cause.

Thus, it became evident as early as 1776 that a return in force by a rebel army could take place by a secondary penetration route rather than by the Richelieu-Lake Champlain one; by a road which was closer to the centre of population of the colonies to the south. The advanced post of Île aux Noix, well known for its ability to control navigation on the Richelieu River, would thus be bypassed. To mitigate the danger that these new roads ending at Missisquoi Bay represented, the British had no other choice but to take measures to control all that part of Lake Champlain. To do that, still according to Carleton's Loyalist informant, it would be enough to build a road which would allow gun-carriages to be transported over the portage of about five kilometres which linked Missisquoi Bay to the Rivière du Sud.⁴⁰

In 1778 and 1779, the British scouts told Haldimand that the rebels were pushing through a new road leading to the head of Missisquoi Bay and a large part of the route once again made use of the Connecticut River (Fig. 21).⁴¹ Colonel Hazen, in the pay of the rebels, was directing the construction of the portion that ran over land.⁴² As with the previous road, this

40 As a result, "Metcalfe's Road," identified by Riedesel in 1781, was built after July 1776. The author of the letter to Carleton adds (*ibid.*): "... which Road a Hundred Canadians would make it fit for carriages in two days if diligent."

41 *Ibid.*, 21795, fols. 1-1v, Haldimand to Powell, 22 September 1778; *ibid.*, 21714, fol. 54v, 14 September 1779.

42 With Gabriel Christie he was co-proprietor of the seigneuries of Bleury and Sabrevois, as well as of

new one began at Cohoes on the Connecticut River and headed in a straight line for the Blanche River, one of the tributaries of the Missisquoi. This road opened up several possibilities for an enemy who wished to penetrate the heart of the Province of Quebec. When they reached the Blanche River, they had a choice of two courses. On one side they could continue on to Missisquoi Bay by following the river of the same name. Their other option was to reach the Yamaska River by land. Finally, careful observation of the geography of this area allowed one to predict a third connection for the new road, known as the "Hazen Road," this time with Lake Memphrémagog, some kilometres to the north at the source of the Saint-François River.

The whole area to the east of the Richelieu River and the northern part of Lake Champlain remained a key area for both belligerents. The possibility of bypassing the British position on Île aux Noix by the road linking Missisquoi Bay to the Rivière du Sud, and the various enemy roads which gave access to Missisquoi Bay and the Yamaska and Saint-François rivers - all this amply justified Haldimand's choice of Sorel for the establishment of his entrenched camp at the expense of Montréal. In 1778, Lake Saint-Pierre was the funnel into which ran the lower parts of the most probable penetration routes, and the ones closest to the heart of New England.

The engineer Twiss, in turn analysed the danger that the Hazen Road created for the defence of that border, especially during winter.⁴³ He considered that only two routes were open to the enemy during the hard season. The first, the traditional Lake Champlain route, involved several hindrances including the irregularity of the presence of ice on the lake and the long distance to be covered in order to accumulate ammunition and supplies at Ticonderoga. The other corridor, made up of the Connecticut River (the Hazen Road), and the Blanche and Missisquoi rivers, offered more advantages despite all the problems involved in a winter expedition.⁴⁴

In such an event, an enemy reaching Missisquoi Bay could choose between various moves. If they continued advancing by the Rivière du Sud, they had the choice of attacking Île aux Noix or proceeding directly to Saint-Jean. Another possibility for the enemy was to take the portage leading from the Rivière aux Brochets to the Yamaska. Then they had the

numerous parcels of land at Saint-Jean in the Barony of Longueuil.

43 *Ibid.*, 21814, fols. 257-61v, Twiss to Haldimand, 4 February 1781.

44 Besides, Twiss did not particularly believe there would be an enemy winter expedition.

choice of connecting with the Saint-François or Richelieu rivers. According to Twiss, to avoid any danger from this quarter, it would be enough to control the Rivière du Sud, the portage road, and the shores of Missisquoi Bay with "a very inferior number of Fresh Troops."⁴⁵

During the years of the Revolutionary War, the British were less afraid of a penetration from the interior of the territory to the west of Lake Champlain and the Richelieu, obviously because of its distance from provision centres, since this area was much less populated. However, to provide for all contingencies from this quarter, Haldimand ordered his scouts to patrol the axis formed by Point du Fer and the Chazy and Châteauguay rivers constantly.⁴⁶

British strategy and tactics during the American War of Independence were largely dependent on the particular geography of the Richelieu-Lake Champlain border, the main penetration route into the province at the time. The existence of several secondary routes, notably in the area to the east, caused Haldimand to draw up a defensive system founded on timely knowledge of enemy movements in whatever theatre they might occur. On the other hand, the small number of forces he had available, in relation to the wide border area to be defended, drove him to concentrate his forces at one point which was easily accessible at the junction of the various routes which opened onto the enemy. The tactics of the American rebels, dependent on small formations necessarily supported by a more reduced artillery train, rather favoured manoeuvres on the secondary routes, which were more difficult but less under the control of the defenders.

On these grounds, Île aux Noix, although still strategically placed for controlling navigation on the Richelieu River, no longer was, as in 1759, the single defensive location past which an enemy must proceed to reach the heart of the colony. Communication routes certainly contribute to the effectiveness of any defensive system; in the case of Île aux Noix, they brought about a reduction of the strategic importance it had acquired during the previous conflict, and this was to Saint-Jean's advantage.

45 *Ibid.*

46 *Ibid.*, 21797, fol. 74, Riedesel to Haldimand, 5 April 1782.

Works Constructed at the End of the 18th Century

When the counter-offensive led by Burgoyne and Carleton in 1776 brought the British troops back to Île aux Noix, the island then became a base for operations on Lake Champlain. But its strategic role only gave it a transitory and very temporary importance. Its services were henceforth only required for the duration of Burgoyne's operations. In this context, there was no question of constructing a large-scale fortification on Île aux Noix such as could stop or hinder the possible progress of an enemy.

Setting up a base for military manoeuvres first entailed the construction of buildings able to meet the need to accommodate the troops and to store ammunition and provisions. It was also advisable to lay out some defensive works of a temporary nature, so as to be able to confront any surprise attack on the depot. In the case of the 1776 campaign, where the navy played a leading role, the base of operations had to include in addition the infrastructure necessary for receiving ships. The construction of wharves was even more indispensable when the depot was located on an island. It was as part of this context that the construction of the first British defensive works on Île aux Noix took place.

The First Blockhouses

Amherst's orders about razing the French fortifications in 1760 had not been entirely complied with. Various pieces of testimony confirmed this in 1776: "... there is on this island, a large entrenchment built by the French during the late war, which is yet in good condition and of good service"⁴⁷ Even if all the witnesses did not present such an optimistic view of the state of the remains, it is still a fact that the French entrenchments benefited the British when they arrived at Île aux Noix in August 1776.

At this time then, a part of the French fortifications was restored.⁴⁸ In September, a battery of 12-pounders and howitzers defended the western passage. On the east four guns mounted as a battery guarded the channel.

47 W.L. Stone, trans. and ed., *Memoirs and Letters...*, Vol. 1, p. 245, Riedesel to the Duke of Brunswick.

48 J.P. Baxtery, ed., *The British Invasion from the North. Digby's Journal of the Campaigns of Generals Carleton and Burgoyne from Canada, 1776-1777* (New York: Da Capo Press, 1970), pp. 134-35, 141-42, 14 August-3 September 1776.

As well, four 6-pounders were installed in one of the bastions of the hornwork built by the French. Finally, according to a Lieutenant Digby, who was present at the time on Île aux Noix, the officers saw to it that the soldiers "are well covered by the works from the fire of shipping."⁴⁹

The British erected several blockhouses for the accommodation of troops in the fall of 1776.⁵⁰ Each two-storey building could house 100 to 120 soldiers (Fig. 22).⁵¹ The ground floor had an area of 600 square feet (20 x 30) and the upper storey, taking into account the overhang, was more than 800 square feet (24 x 34). On each level two guns could be fired from the embrasures in each of the walls. All faces of the blockhouse, on both levels, were equipped with loopholes for musket fire.

The construction of the blockhouses showed a judicious choice by the military officers. Not only did this type of structure ensure the necessary shelter for the troops gathered on the island for Burgoyne's expedition, at the same time it answered the defensive needs of the military depot that was being established there (Fig. 23). Besides the embrasures and loopholes by which a defence of the more or less distant surroundings could be carried out, the piece-on-piece construction offered adequate resistance to musket fire, the weapon most likely to be used by the enemy in a surprise attack on the depot. Moreover, the way a blockhouse was planned made a defence of its immediate perimeter possible thanks to its machicolations. Finally, another feature of the Île aux Noix blockhouses was that the floors of the upper storey were holed so as to allow the defenders, if they had fallen back to this level, a final action against an enemy who had gained possession of the ground floor!

The construction of blockhouses on Île aux Noix confirms the popularity of this type of work in many 18th-century military posts. It has already been noted elsewhere that the blockhouse technique reflected a long tradition of defensive works built to protect military depots, both during the New France period and during the British 18th century.⁵²

49 *Ibid.*, p. 141.

50 The exact number of blockhouses built on Île aux Noix in 1776 is not known. Hadden in his diary used the term "Several." I also suspect that the three blockhouses located outside the redoubts on a 1785 plan of Île aux Noix really date from 1776. Lt. J.M. Hadden, *Hadden's Journal and Orderly Books: a Journal Kept in Canada and upon Burgoyne's Campaign in 1776 and 1777* (Albany, N.Y.: J. Munsell's Sons, 1884), pp. 53-54, 16 June 1777.

51 T. Anbury, *Travels through the Interior Parts of America in a Series of Letters (by an officer)* (New York: New York Times & Arno Press, 1969), Vol. 1, pp. 137-39, Letter XIII.

52 During the French Régime they were associated with the more general term of "redoubt." A. Charbonneau, "La redoute en Nouvelle-France..." Chapter 3.

The Section and Plan of a Blockhouse?

REFERENCE.

Fig. 1.

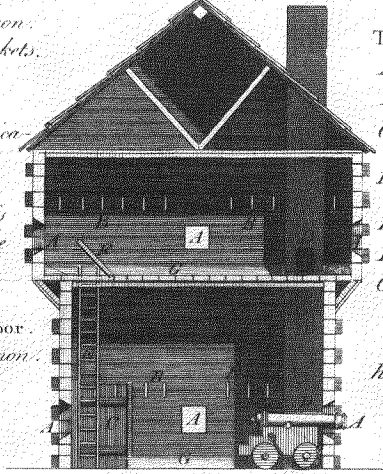
- A The port holes for Cannon.
- B The loop holes for Muskets.
- C The Door.
- D The fire places.
- E The Ladder of Communication to the upper Story.
- F The Trap Door.
- G The platform that serves as a parapet, and for the Men to step on.

Fig. 2.

The Plan of the Ground Floor.

- A The Port holes for Cannon.
- B The fire place.
- C The Door.
- D The platforms.

Fig. 1.



REFERENCE.

Fig. 3.

The Plan of the upper Story.

- A The port holes for Cannon.
- B The fire place.
- C The trap Door.
- D The platform as in the lower Apartment.
- E The Officers Apartment.
- F The Door leading to it.
- G The Window.

Holes made in the floor to fire upon the Enemy if they gain possession of the lower Apartment.

Fig. 3.

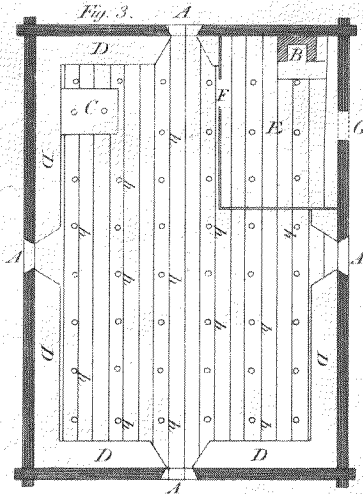
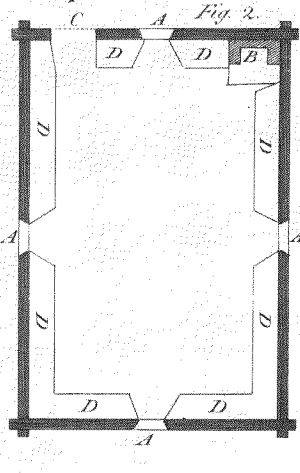


Fig. 2.



Scale of Feet

22 Plan and cross sections of one of the blockhouses built by the British on Île aux Noix in the fall of 1776. (NA, C-10088)



23 View of Île aux Noix at the end of the 18th century; two blockhouses built in 1776 can be seen. (NA, C-40335)

Construction of the First British Fort

With Haldimand's arrival, the working out of a new plan of defence conferred a more substantial role on Île aux Noix. At first a base of operations, the island became an advanced border post for Saint-Jean. The few defensive works erected in 1776 to protect the military depot which was then established on the island had to be augmented to make Île aux Noix able to block to some extent the advance of an enemy who had used the navigable Lake Champlain route to penetrate into the province.

The few troops available did not justify restoring the whole extent of the French entrenchment. Therefore they had to limit themselves to a particular area of the former fortification and set up a fort of much smaller dimensions (Fig. 11).⁵³ The area chosen, the right bastion of the former French hornwork, to the northeast of the entrenchment, had the advantage of concentrating the defensive infrastructure on the east channel, the busier of the two passages.⁵⁴

Assisted by Rudyard in 1778, the engineer Twiss drew up the plans for a new fort which one presumes would include the necessary elements for resisting any enemy attempt, with the exception of a siege.⁵⁵ Besides the defensive components such as the rampart, parapet, ditch, covered way and glacis, it had inside the fort two barrack blocks with a capacity of 200 soldiers each, warehouses for provisions and ammunition, two small bombproof powder magazines, and a well which would serve both as a water supply and to fight possible fires.⁵⁶

The new fort therefore covered only a very small surface in the centre-east part of the island. It took the form of an irregular ten-sided polygon (App. D), of which six sides on the north, east and south were the result of reusing the French entrenchment.⁵⁷ The western sector was the only really new part of the fort of which Twiss fixed the trace. The engineer

53 BL, Add. MSS. 21814, fols. 16-17, Twiss to Haldimand, 27 July 1778; PRO, CO42/38, fols. 203-7, Haldimand to Germain, 15 October 1778.

54 I do not know, however, if the state of the French fortification remains in 1778 to some extent motivated the British engineers to choose this site rather than another.

55 BL, Add. MSS. 21814, fol. 177, Twiss to Haldimand, 21 December 1779. Haldimand, however, does not use the same language to the Colonial Secretary: "During the summer, the attention of the Engineers have been chiefly engaged in strengthening the Posts on the Isle aux Noix and at St. John's and I think they are now in Such a State as not to be taken without a regular Siege"; PRO, CO42/39, fol. 398, Haldimand to Germain, 24 October 1779.

56 BL, Add. MSS. 21814, fol. 95, Twiss to Haldimand, 9 December 1778.

57 The reuse was confirmed by archaeological digs in 1966. See R.T. Grange, Jr., "Early Fortification Ditches...." *History and Archaeology*, No. 18 (1977), 2 vols.

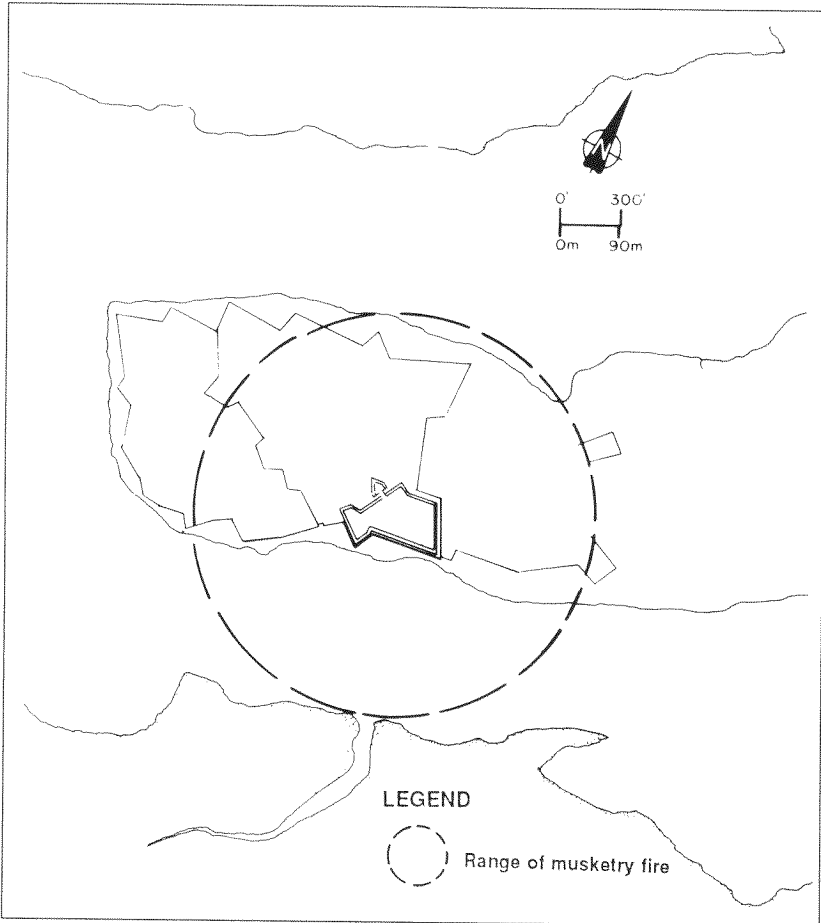
thus obtained a defensive whole which was, to say the least, unusual, but which generally complied with the fundamental principles of fortification including flanking. As the north and south sides could not be flanked in the usual manner or by the neighbouring fronts, Twiss decided to set up there, at the bottom of the ditch, small musket-proof guardhouses from which it would be possible to sweep the ground on both sides in front of these two fronts. The engineer also suggested arming them with swivel-guns, those easily manoeuvrable artillery pieces which were well suited for this type of exercise. Access to these guardhouses was from the inside of the fort, by posterns running under the rampart.

The usual outer features, the ditch, covered way and glacis completed the fortification. Their trace extended parallel to the rampart. Twiss added a small advanced work in the form of a ravelin, in front of the new west front both to cover the entrance to the fort which was located on this front and to provide the nearby ground with additional flanking elements. Its size and its trace made it more similar to a place of arms.⁵⁸

In spite of a very irregular trace, the magistral line of the new fort also complied with some major maxims of fortification. Besides the flanking planned for each side of the fort, none of the sides of the enceinte exceeded the maximum range of musket fire, the small surface of the fort here being a determining factor. This same maximum musket range fixed the new fortification's minimum field of action as opposed to artillery fire (Fig. 24). The musketry fire from the fort covered both the whole width of the island and the breadth of the channel to the east. Finally, the new angles of the fort created by Twiss on the west were all greater than 60°, the limit for having the minimum amount of room needed to manoeuvre inside a bastion.⁵⁹

58 Generally the faces of the ravelin line up with the shoulder angles of the bastions situated behind. Now, here Twiss traced these faces in the direction of the curtain, a short distance from the entrance to the fort on each side; see John Muller, *A Treatise Containing the Elementary Part of Fortification, Regular and Irregular...* (London: J. Nourse, 1746), pp. 31-32.

59 Abbé Déidier, *op. cit.*, p. 15. Certain theoreticians called for a flanked angle greater than 75°, which the new fort also complied with.



24 The first British fort on Île aux Noix. To produce the trace of their first fort, the British reused the northeast corner of the French entrenchment. The field of musketry fire of this new fortification made it possible to sweep the east channel (the more important one) and the whole width of the island. (*Parks Canada, L. Lavoie, 85-5G-D17*)

Profile of the Fort

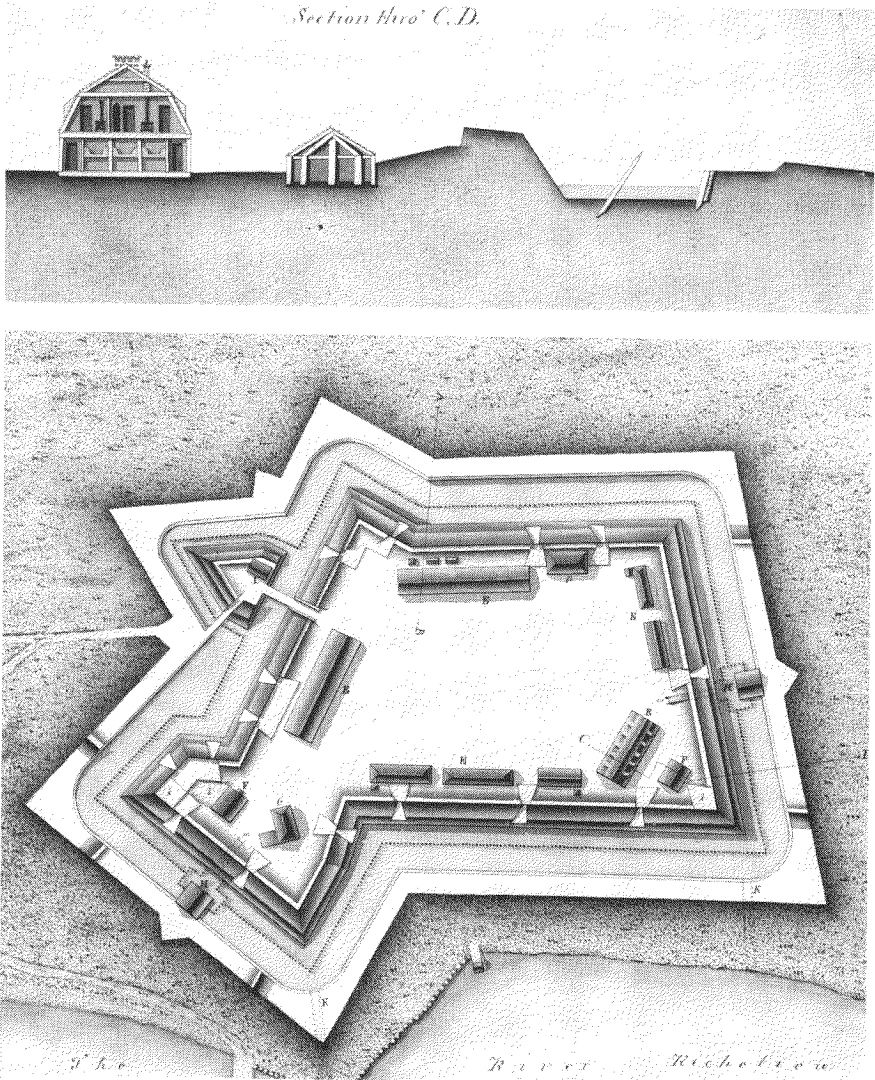
The profile of the first British fort is known thanks in part to a sectional drawing produced by Gother Mann, the commanding engineer, in 1789 (Fig. 32). Another illustration of the profile in 1785 shows only an approximation since it has no scale (Fig. 25). Just as in 1759 and 1760, this new fort was a field fortification because it was erected during an actual period of warfare. As well, its dimensions and the technique of construction used gave ample proof of this.

Even if the new fort used certain elements of the French entrenchment, the extent of its defensive structure (i.e., the rampart, ditch and glacis) in profile took up double the space of the preceding fortification (Fig. 26). From the ascent of the banquette to the top of the slope of the glacis, the various components of the fort extended over a distance of about 110 feet.⁶⁰ As in 1759 and 1760, the level of command of the 1778 fort was very low in relation to the occupation level of the ground; the rampart was formed only of the parapet, without terreplein, with a banquette behind. About 12 feet wide, to which four feet were added for the slope in front, and one foot for the talus behind, the parapet rose only to a height of nine feet at its highest part. Taking into account a superior slope of about 10°, the height of the parapet was set at 7.5 feet at the part opposite the enemy to the west. Behind, a banquette five feet wide rose halfway up, which provided the conventional 4.5 feet necessary for the protection of the infantryman standing behind the parapet. The ascent of the banquette, 14 feet wide, had a very gentle slope of barely 20°. Thus Twiss worked out a profile which, even if it did not provide much command, remained suitable for confronting large-calibre artillery. By its thickness, it ranked among the largest ones built at the time as field fortifications.⁶¹

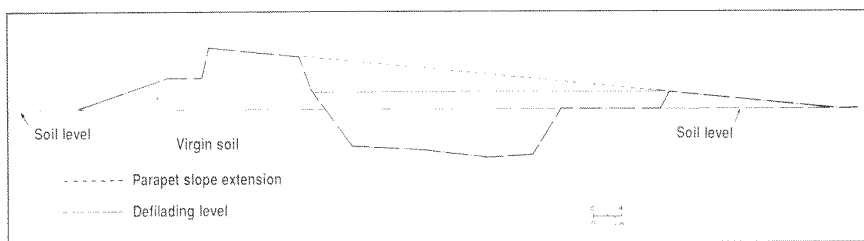
The width of the ditch, taken at parade ground level, was measured at 33 feet, which gave a dimension of 26 feet at the base, taking into account the taluses of the escarp and counterscarp in the order of 35°. Its depth varied from five to seven feet and a palisade rose towards the middle. This

60 This measurement, like the following ones as well, was taken at ground level, that is, at the occupation level inside the fort.

61 At least, that is what the Chevalier de Clairac believed (*op. cit.*, p. 237). If I have again chosen this author as a reference point for this period, it is justified by his popularity in England. John Muller, professor at the Woolwich Academy, published an English translation of him in 1773.



25 Plan of the first British fort. This 1785 illustration gives a general idea of the different buildings built in its enceinte: barracks, warehouses, guardhouses, magazines, blockhouses. The cross section (top) shows that the ditch contained a certain depth of water. (*Library of Congress, Washington, G3454.F6 1760.W3, Vault*)



26 Profile of the first British fort. (*Parks Canada, L. Lavoie, 85-5G-D31*)

palisade, which was slightly oriented towards the enemy, augmented the defence of the ditch which also contained a few feet of water.

Among the outer features of the first British fort on Île aux Noix were also a covered way and a glacis. The covered way was 16 feet wide, from which the engineer cut two feet to form the talus of the parapet of the glacis. It should be noted that the glacis only rose to a height of two feet. Therefore it was not a covered way properly speaking, since a slight profile of two feet was obviously not enough to place the infantry under cover from the projectiles of enemy artillery installed at the foot of the glacis.

I believe that Twiss did this simply to lower the defilading level (*défilament*), from the top of the counterscarp.⁶² If he had constructed the glacis in the usual manner, without a covered way, and with a slope located in the extension of the superior slope of the parapet, the defilading level, calculated at the top of the counterscarp, would have been only a few feet below the crest of the parapet. One should remember that Twiss had only chosen a very gentle superior slope of the parapet, which raised the top of the counterscarp proportionately when the slope of the glacis formed the extension of the parapet's slope.⁶³

If the principle of defilading called for hiding a good part of the escarp from the enemy's view by constructing outer works (the glacis), it was

62 Defilading the works, along with flanking, was one of the fundamental principles of the bastioned fortification, including the first British fort on Île aux Noix. According to this principle, the outworks, in this case the glacis, must be high enough to mask the rampart so that the enemy could not see the base of the main work. On the other hand, the main parapet must command, and therefore must be higher than the works situated in front of it. On this subject, see A. Charbonneau, Y. Desloges and M. Lafrance, *op. cit.*, p. 88.

63 For parapets nine feet in height, Clairac suggested exceeding the superior slope of 10° somewhat, up to 15 inches height per toise (6 feet) of width, so as to clear the top of the counterscarp as much as possible (Clairac, *op. cit.*, pp. 238-39). See also Chapter 1, note 69.

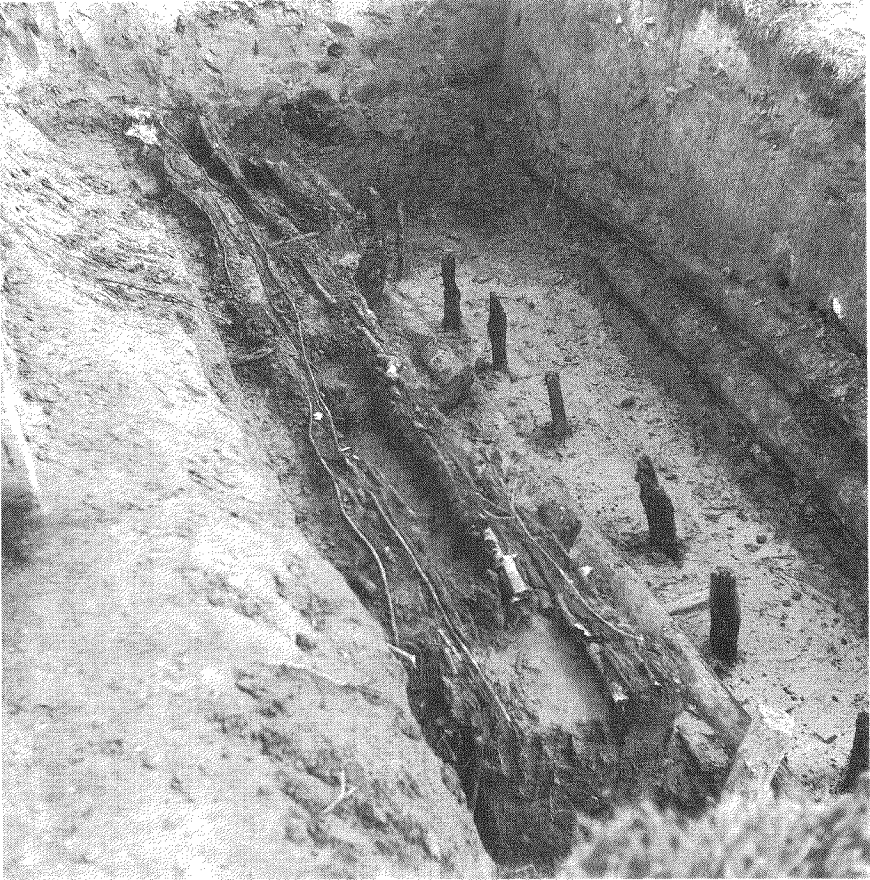
also necessary that the top of the glacis should not be too high, so that the enemy could not make use of it. If the top of the glacis was too high, once the enemy gained control of this position, they could install a battery whose guns could batter the interior of the main fortification more easily.⁶⁴ By constructing a sort of covered way here, Twiss tried to prevent such a possibility; he simply lowered the level of the top of the counterscarp by two feet in relation to the crest of the parapet. Thus he obtained a defilading level which was related to the level of the ground in the parade square inside the fort. At the same time, the top of the glacis, at a distance of 16 feet from the counterscarp, still hid the greater part of the escarp.

This unusual method made this sector of the fortification vulnerable, however, once control was gained of it by the enemy, since the whole width of the covered way was not defended directly from the main parapet. This ground, like the ditch, was defended only by flanking fire. Twiss could have corrected the situation by lowering the level of the parapet or by increasing the angle of the superior slope of the parapet, or again by widening the ditch. It must be remembered, in Twiss's defence, that the 1778 fort was reusing remains of the French fort for most of its periphery. Because of this, and taking into account the current context of war, the engineer surely did not have the option of planning a defensive complex which would be free from all criticism.

The construction of the 1788 fort looks like it was based on field fortification techniques. The 1785 and 1789 cross-sectional drawings of the first British fort do not show any revetment for the escarp, while the counterscarp seems to be retained by a wooden retaining structure (Figs. 25 and 32). This was composed of wooden logs placed horizontally on top of each other along the longitudinal axis of the counterscarp. These logs were held in position by large stakes placed vertically with a slight batter towards the glacis. The whole revetment was attached to the top by wooden cross-pieces fixed inside the earth fill.

The lack of a revetment on the escarp could be explained by either the reuse of the French entrenchment or by the less abrupt slope of the escarp (about 60°). As a field work and so one built for a short duration, a rampart whose escarp had such a slope could theoretically hold up by itself over a short period of time, obviously taking into account the type of soil (clayey on Île aux Noix). The use of fascines became appropriate in this

64 *Ibid.*, pp. 246-47.



27 View of the fascines used on the north face of the first British fort and excavated in 1966. (*Parks Canada, R.T. Grange, Jr., 5G44F: 40Y7*)

case. Those found by the archaeologist R.T. Grange in 1966 could be associated with this first state of the 1778 fort (Fig. 27).⁶⁵

Another possible hypothesis is that Twiss could have used a sod revetment for the escarp. This involved rectangles of turf whose grassy side is placed in the manner of a masonry wall, alternating stretchers and headers, with the joints of each row overlapping.⁶⁶ This hypothesis is the more

65 R.T. Grange, Jr., "Early fortification Ditches...", *No. 18A*, p. 32 ff. Grange notes, however, that these fascines could also be attached to the French entrenchment.

66 D.H. Mahan, *A Complete Treatise on Field Fortification, with the General Outlines of the Principles*

plausible since Twiss probably used this technique for the counterscarp facing the angles of the fort. As the counterscarp always exhibited a rounded surface at the angles, a support made up of horizontal wooden logs was not suitable for its construction. Grange's excavations in 1966 confirmed the use of a sod revetment for the counterscarp at the northwest angle of the fort (Fig. 28).⁶⁷

The Redoubts

From 1778 on, even if the main defensive elements on Île aux Noix were concentrated inside the new fort, the troops did not abandon the other works, which were mainly scattered over the southern part of the island. In 1780, two of the blockhouses erected in 1776 were still being used, and an abatis was set up on the nearby surface.⁶⁸

A change in British strategy in 1782, brought about an augmentation of the Île aux Noix fortifications. Engineer Twiss worked out a plan for the construction of five redoubts distributed on both sides of the 1778 fort. When work stopped at the end of the summer of 1783, the three to the north, south and west of the fort were nearly finished; the two others had only been laid out on the ground (Fig. 29).⁶⁹

Contrary to the fort which was already built, the layout and trace of these new works did not take into account the remains of the French fortification.⁷⁰ Nor did the arrangement of the redoubts meet the objec-

Regulating the Arrangement, the Attack, and the Defence of Permanent Works (New York: Greenwood, 1968), pp. 54-55. The construction of such a revetment required particular attention. Mahan adds: "When cut from a wet Soil, the Sods should not be laid until they are partially dried; otherwise they will shrink, and the revetment should be watered frequently, until the grass puts forth. The Sods are cut rather larger than required for use; and are trimmed to a proper size from a model sod."

67 R.T. Grange, Jr., "Early Fortification Ditches...", No. 18A, p. 47 ff. In a dig further to the east, still facing the north side of the fort, Grange did not find such a sod revetment, but rather some pieces of wood which could have been associated with the wooden revetment of the counterscarp, and as were shown on the 1785 and 1789 plans.

68 BL, Add. MSS. 21793, fol. 212, Carleton to Haldimand, 31 February 1780; *ibid.*, 21792, fol. 131, Dundas to Mathews, 6 July 1781. It should be added that certain portions of the French entrenchment were levelled in accordance with the new arrangements (NA, MG21, B, 133, Powell to Haldimand, 17 September 1778). A 1785 plan, however, indicates the remains of the French entrenchment at the south end of Île aux Noix (Fig. 29).

69 Mann confirmed this state in 1790. PRO, CO42/73, fols. 218-26, "Report Concerning the Defences of Isle aux Noix..." G. Mann, 12 May 1790. See also BL, Add. MSS. 21741, fol. 93, Lernout to Saint-Léger, 19 May 1782; *ibid.*, 21797, fols. 312-13, Riedesel to Haldimand, 30 October 1782.

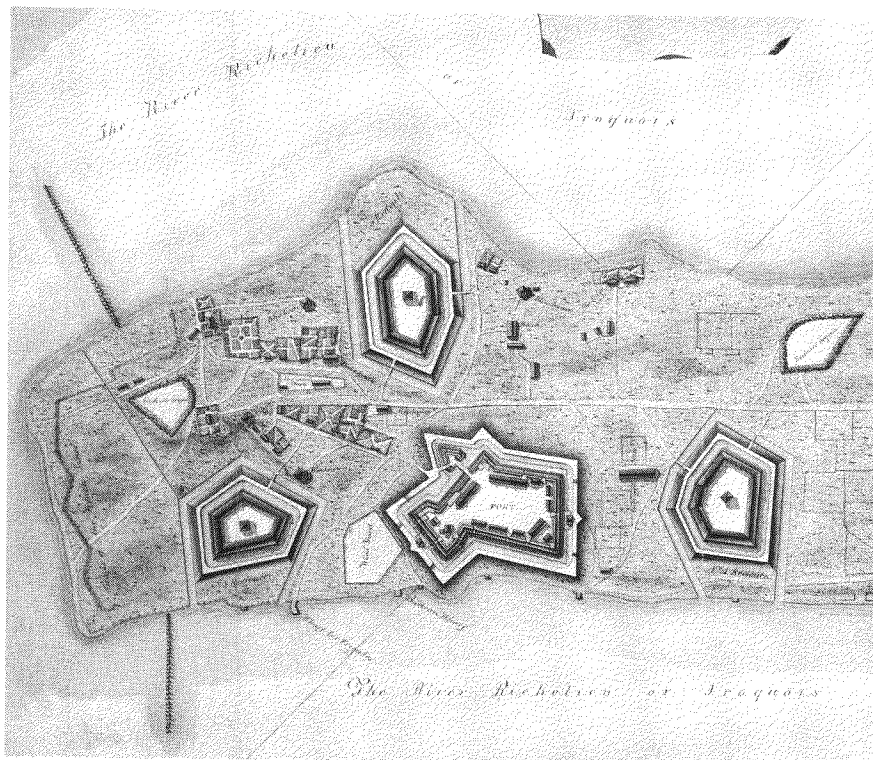
70 Grange's archaeological digs in 1966 imply that an angle of the redoubt, located west of the fort, was connected with the 1759 entrenchment; see R.T. Grange, Jr., "Early Fortification Ditches..." No. 18A, pp. 53-57.



28 Sodded revetment of the northwest corner of the counterscarp, excavated in 1966. (*Parks Canada, R.T. Grange, Jr., 5G48, C, D: 33Y3*)

tives of geometric symmetry, any more than did the distance between them or their various shapes.

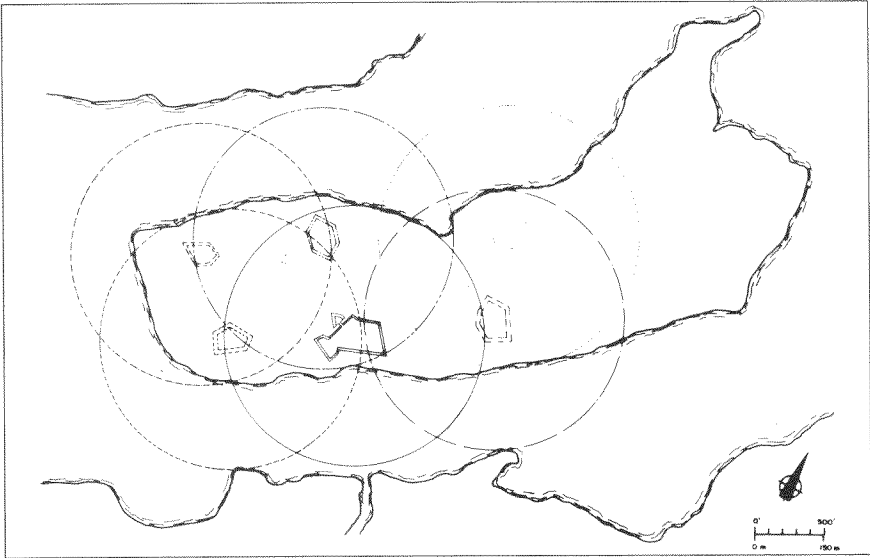
To understand the arrangement of these redoubts and their possible correlation with the 1778 fort, an evaluation of the fields of action of these works in accordance with the maximum range of musket fire must be made. This exercise is justified by the fact that, in general, since the end of the 17th century, the arrangement of fortification works was developed in conformity with the maximum range of musket fire, which, compared to the range of the artillery, was the minimum intervention capability of



29 The fort and redoubts of Île aux Noix. In 1782, the British decided to erect five redoubts around the already constructed fort. Three of these would be nearly finished, the two others would only be outlined on the ground. (*T. Walker, 1785; Library of Congress, Washington, G3452.I4R4 1760.W3, Vault*)

the defensive work.⁷¹ By virtue of the radius of musket fire, the redoubts planned or built in 1782 each covered the whole width of the island as well as the channel which was adjacent to them, as did the fort (Fig. 30). Besides, the redoubts were generally mutually flanking, being supported by the adjacent works. With the exception of the redoubt planned for the northwest, the surface of the island situated behind each of these works was swept from the neighbouring redoubts.

⁷¹ Because of this general principle of fortification, if an enemy succeeded in neutralizing the defenders' artillery, the defenders could always continue their efforts by using musketry. As was customary, a range of 120 toises was used.



30 Range of musketry fire from the redoubts and the fort of Île aux Noix. (*Parks Canada, L. Lavoie, 85-5G-D19*)

Taken as a whole, then, the combined radius of action of each of the Île aux Noix defensive works assured complete coverage of the island in its southern part. The surface which was not covered was lying in the north, in the low and marshy part of the island, and so less directly exposed to a possible enemy. The new fortification produced by Twiss relied on the individual and concurrent action of a series of detached works, each of which defended a specific section of the river, while covering the surface of the south part of the island with their fire. On these grounds, the 1778 fort could not be considered a main fortification to which were added, in 1782 and 1783, a series of advanced works connected with each other by a continuous ditch, and whose trace and arrangements were the result of a geometric exercise. The defensive system put in place by Twiss on Île aux Noix in 1782 was widely different from this model. Each detached work, whether it was the redoubts or the fort, remained a separate entity capable of an isolated defence. Thus each work contained the infrastructure necessary for that purpose. They were completely self-contained geometric entities, each one including the classical arrangement of a rampart equipped with a ditch and a glacis. Just as with the fort, in each

of the redoubts were structures to accommodate the garrison and the storage of powder, ammunition and provisions. For these purposes, Twiss set up blockhouses in the centre of the redoubts and casemates under the ramparts. The engineer also planned a well within each work.⁷²

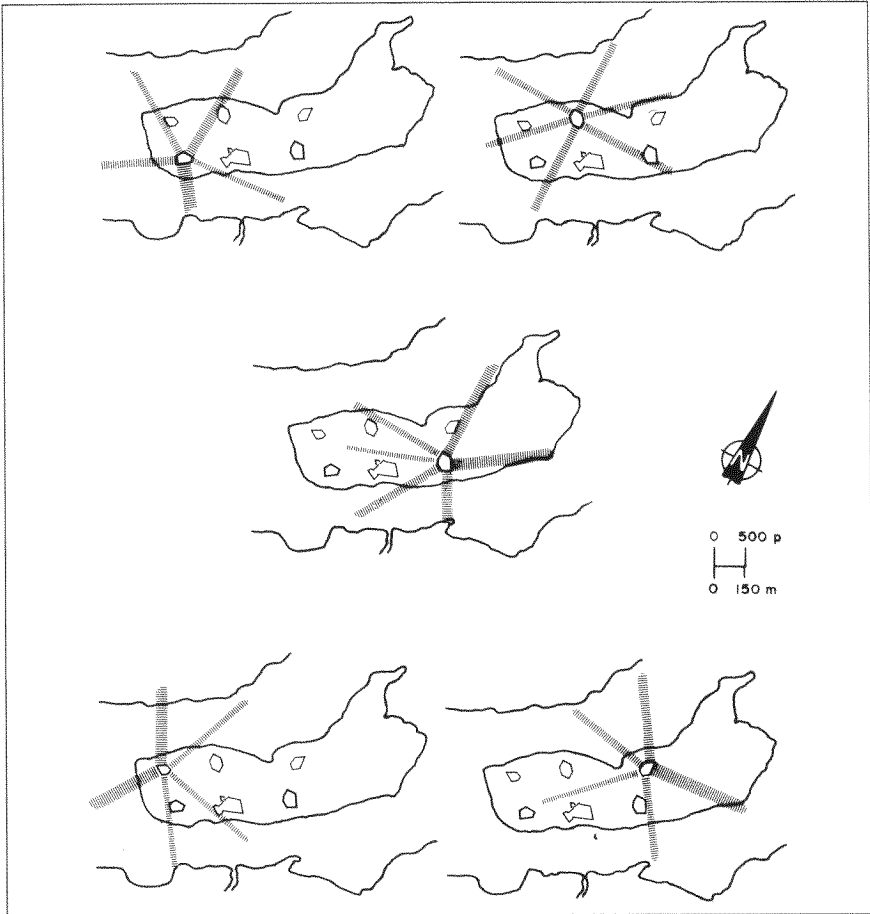
Finally the order of priority chosen for the construction of the redoubts in 1782 reflected the tactical necessities inherent at Île aux Noix. The two redoubts erected to the east supported the action of the fort in defending the more important channel of the river. To the west, the new redoubt defended the side which was not covered by the 1778 fort or at least by its musketry fire. Finally, the engineer did not begin the construction (ground trace) of the two last redoubts on the least exposed side until the three others, which were considered more fundamental, reached a state where they could be used effectively.

Another peculiarity of Twiss's defensive system was that each redoubt had a different trace; taking the shape of an irregular pentagon or an irregular hexagon. This is probably explained by the alignment of the artillery fire on each of the fronts of these redoubts (Fig. 31). If one notes the orientation of perpendicular lines drawn from each of the faces of the redoubts, lines which project the alignment of the artillery fire, it becomes obvious that the particular shape of each work and its orientation follow from this desire to retain complete freedom of action for each one, despite the proximity of the adjacent works. In my opinion this confirms the isolated character of each redoubt within Twiss's defensive system. Twiss succeeded in this arrangement by giving the redoubt sufficiently open angles to ensure a minimum ease of manoeuvre inside each work. There are two exceptions to be noted, however: one angle of each of the two planned redoubts has an opening near the acceptable limit of 60°.

Essentially then, the 1782 additions appreciably modified the fortifications which were begun in 1778 and were concentrated in one area of the old French entrenchment. The new works greatly increased the defensive capacity of Île aux Noix and reflected the new strategic importance attributed to it on the eve of the peace treaty.

The profile chosen by Twiss for the redoubts differed widely from the one adopted for the main fort (Fig. 33). The presence of casemates involved the construction of a rampart as such, higher than the simple parapet of the fort. Another characteristic was that the ditch was not dug

72 BL, Add. MSS. 21814, fol. 384, Twiss to Haldimand, 17 March 1783.



31 The particular geometry of a redoubt is probably determined by the alignment of the artillery fire of each of its neighbours. (*Parks Canada, L. Lavoie, 86-5G-D1*)

out but rather formed by the building of the escarp and counterscarp, which obviously made necessary carting earth from other places than the ditch.⁷³ It is the plan to rehabilitate the Île aux Noix defences, drawn up

73 The archaeological digs carried out by M.J. Ashworth and R.T. Grange, Jr., in 1965 and 1966 respectively, confirm the fact that the ditch was not dug. Vestiges of the casemates' foundations were found only a few inches below ground (M.J. Ashworth, "Fort Lennox Final Report - 1965 Season," Manuscript Report Series No. 34 [Parks Canada, Ottawa, 1967], pp. 91-112; R.T. Grange, Jr., "Excavation of the Right Redoubt and Blockhouse, British Fortifications and Île aux Noix," *History and Archaeology*, No. 36 [1982]).

by engineer Gother Mann in 1790, which is our main source of information for the profile of the redoubts as defined by Twiss (Fig. 33).⁷⁴

Taking into account the width of the casemates, the rampart was some fifty feet thick measured at ground level. It was surmounted by a parapet 22 feet wide, offering sufficient resistance to large-calibre artillery projectiles. At the highest point of the parapet, the full height of the rampart reached 23 feet, but to the front it reached only 18 feet, taking into account a superior slope of 10°, the maximum slope allowed. Behind the parapet, Twiss set up a banquette five feet wide, 4.5 feet lower than the parapet. Behind the banquette and above the casemates, the terreplein was about nine feet wide. The wooden casemates were nearly 18 feet wide at the base and ten or so feet high under the roof.

The ditch, bordered by a scarp whose batter is set at about 25° and a perpendicular counterscarp, was 40 feet wide and had a banquette arrangement. Furthermore, the top of this banquette was 4.5 feet below the top of the counterscarp or the parapet of the glacis, which was the regulation level. The glacis, whose slope continued as the extension of the superior slope of the parapet, was 65 feet in width, which supposes that its edge was dug deeper than the level of the ground inside the redoubts.

Such an arrangement, taking into account the height of the rampart and of the narrowness of the ditch, indicates a very high defilading level about 10 feet lower than the upper slope of the parapet. Though the profile of the redoubts assured better cover for the interior space of the works by their height, but if the arrangement of the outworks is taken into account, the enemy could see a large part of the escarp.

As for the revetment of the escarp and counterscarp, it is logical to suppose than Mann's proposal picked up the technique used by Twiss in 1782.⁷⁵ His cross section shows a revetment composed of pieces of

74 We are assuming from the actual facts that Mann, in his proposal, did not modify the passageway and the proportions of the profile of the redoubts originally built by Twiss. It is not known, however, whether Twiss constructed casemates on each of the fronts of the works; it seems unlikely that he did. Mann suggested a much lower profile in his 1790 plan though, with only a simple parapet for the sides of the redoubts without casemates. Such an arrangement could not have existed in 1782. The archaeological digs mentioned above have confirmed the presence of casemates in the northeast redoubt, on one of the sides oriented toward the interior of the island. I cannot imagine a higher profile on this side of the redoubt, when elsewhere on fronts more directly exposed to the enemy the profile of the work was lower. It is possible that Mann's plan in 1790 suggests that, in his projected rehabilitation of the redoubts, he intended to reconstruct the casemates on the sides which were directly opposite the enemy, while on the fronts which were located towards the middle of the island he considered a simple parapet to be sufficient. Mann's comments on Twiss's works at least implied such an arrangement; see PRO, CO42/73, fols. 218-26, "Report Concerning the Defences of Isle aux Noix...", G. Mann, 12 May 1790.

squared timber placed on top of each other and held on the inside of the rampart by tie-beams placed transversely approximately every three feet. At the base, it seems that a small masonry wall served as a foundation for the revetment, as was the case with the casemates.

In summary, Twiss built a defence system on Île aux Noix from 1778 to 1783 which was at least unusual. In the context of the American War of Independence, in the first stage in 1778 he arranged a portion of the old French entrenchment to create a fort which had a very small surface and which reflected the smallness of the garrison intended to be stationed there. In 1782, the situation evolved and the fortification of Île aux Noix had to be augmented. To the existing fort, Twiss added a series of detached works, each of which offered an isolated defence and was capable of self-sufficiency over a short period of time. The shape and position of each of the redoubts bore witness to this. On the other hand, the arrangement of these new works also reflected Twiss's desire to assure the mutual defence of each of the works by the organisation of the flanking fire. On this score, however, certain weaknesses are noted, especially regarding the redoubt planned for the northwest. As well, the space situated immediately in front of each of the redoubts is not necessarily defended by the fire of the neighbouring works. This would have been corrected if in 1782 Twiss had chosen to build advanced works for the 1778 fort, and if he had linked them to each other by segments of curtain.

Twiss's successor in Canada, Gother Mann, noted other weaknesses in this defensive system. He considered the fort to be completely ineffective because its surface was too small and its profile inadequate.⁷⁶ On the redoubts, even if they were not entirely finished, Mann passed a more favourable judgement:

The Redouts though for the most part well constructed as far as they were executed, and respectable individually as Redouts, yet their proximity, their Strength, and their Gorges closed, might have been the means / instead of insuring their co-operation in a mutual defence / of rendering them liable of being perverted to the

75 The sectional drawing of the fort, done by Mann in 1789 (Fig. 32), implies the choice of a similar revetment technique for the fort's counterscarp.

76 It is clear that here Mann is not taking into account the context of wartime in which Twiss constructed this fort. PRO, CO42/73, fols. 218v-19, "Report Concerning the Defences of Isle aux Noix....," G. Mann, 12 May 1790.

*annoyance of each other, as soon as any of them were forced by an enemy [sic].*⁷⁷

Thus, according to Mann, the Île aux Noix redoubts could not afford a mutual defence despite their nearness to each other because their gorges were as fortified as the other fronts. If one of them fell into enemy hands, the individual nature of each redoubt would become more advantageous for the attackers and to the disadvantage of the defenders.

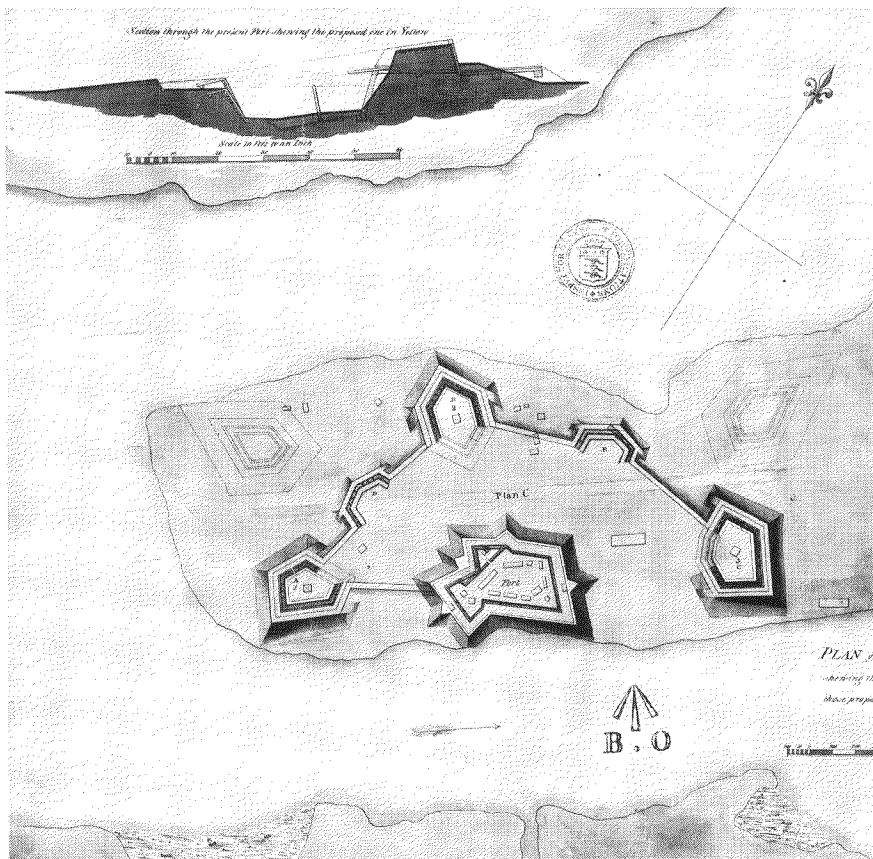
To remedy this problem, Mann suggested linking the redoubts by segments of curtain with the necessary projections for flanking the ground in front of each of the redoubts. The gorges of the redoubts facing the interior of the island should not, according to Mann, have as strong a profile as the fronts directly facing the enemy. Consequently, the defenders could more easily dislodge the enemy from the fort in the event that he occupied one of these advanced works. The engineer therefore drew up two plans along these lines in 1789 and 1790. In the first one, he simply linked the three nearly completed redoubts by placing flat bastions in the intervals (Fig. 32). The second plan took into account the other two redoubts planned by Twiss, which were linked to one another by segments of curtain (Fig. 33).

Lastly, Mann did not believe that the system worked out by Twiss on Île aux Noix was the one which was best adapted to the topography when considering the defensive objectives. He believed rather that a fort with square bastions would be more appropriate to the configuration of the south part of the island (Fig. 34). While achieving flanking of all parts of the fortification, such a fort would make available the interior space necessary for military manoeuvres and the arrangement of barracks and storehouses. Although Mann would retain the northeast redoubt, which he would link to the new fort in order to protect the Île aux Noix naval establishment.⁷⁸

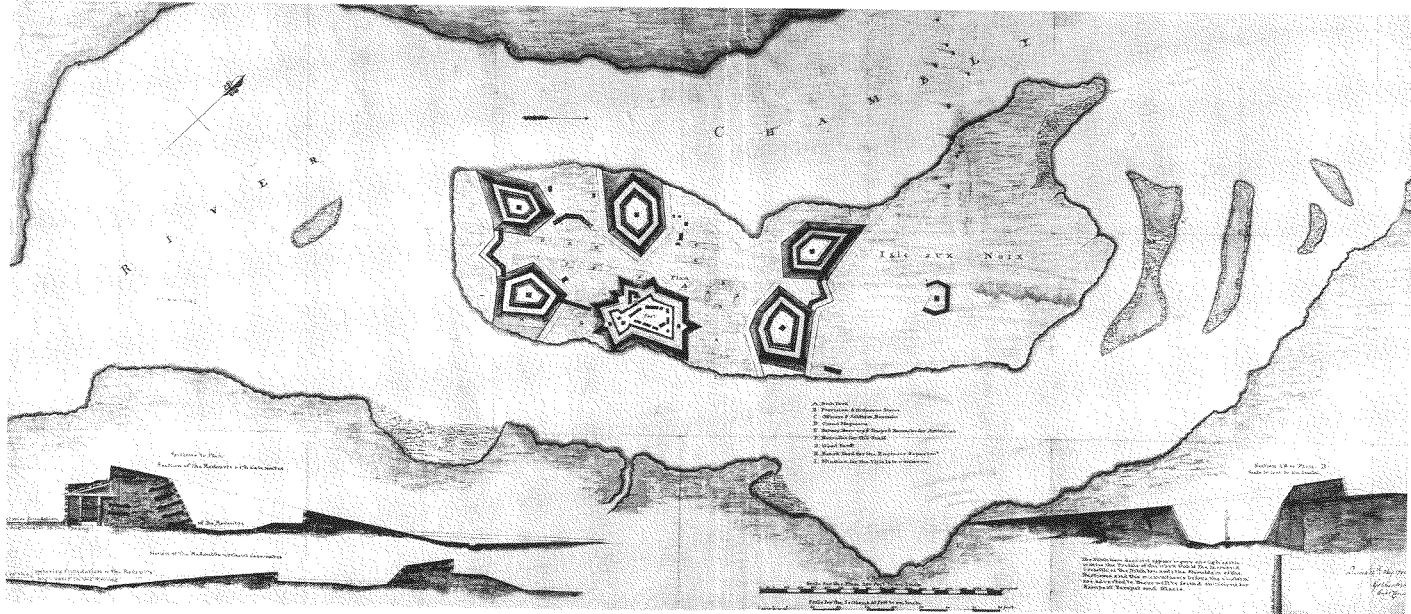
The simplicity of Mann's plan was in great contrast to the system put in place by Twiss, which allows us to presume that there were advantages to the plan of 1789 and 1790. However, in Twiss's defence, the first British fortification on Île aux Noix was the product of an arrangement made in haste, during a period of military action, and it attempted to turn to

⁷⁷ *Ibid.*, fol. 219.

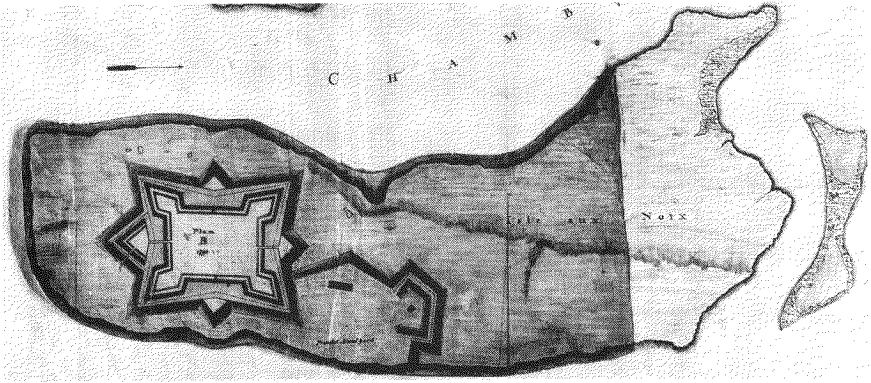
⁷⁸ Furthermore, Mann (*ibid.*, fol. 221) insists on the usefulness of the "gun boats" at Île aux Noix for the purpose of hampering the enemy advance.



32 Gother Mann's plan in 1789 to link the three redoubts of Île aux Noix by curtains punctuated by small flat bastions. The cross section (upper left corner) superimposes the original state of the rampart on the plan submitted by Mann at that time. (NA, NMC-21150)



33 Mann's plan in 1790 modifying his project of the year before. The redoubts, whether constructed or traced on the ground, would be linked together by segments of broken curtains which were able to provide additional flanking for the works. The profile of the redoubts (lower left corner) is the only illustration of the rampart of these works which had been built some years before. Note the presence of casemates in several of the faces. (NA, NMC-11218)



34 Mann's bastioned enceinte in 1790. He noted that a square fortification with four bastions would suit the perimeter of the south portion of Île aux Noix better. (NA, NMC-11217)

account the existing defensive elements, constraints that Mann did not have to face. Like him though, I have certain reservations as to the type of defence advocated by Twiss with the construction of redoubts of an isolated nature. These works, which were very close to one another, could be an advantage to an enemy who gained control of one of them.

Strategy on the Richelieu at the End of the 18th Century

The American victory over Cornwallis at Yorktown in 1781 quickly brought about the setting up of a process to negotiate a peace treaty. From this date, recognition of American independence was no longer a matter of doubt in the minds of the leaders of the home country. Therefore they quickly attended to the business of negotiating a peace which would safeguard commercial relations between Great Britain and the United States by means of a reciprocity agreement.⁷⁹

The Treaty of Paris in 1783 gave effect to this desire. The new official border detached the whole rich fur territory south of the Great Lakes from

79 W.L. Morton, *The Kingdom of Canada. A General History from Earliest Times*, 2nd ed. (Montréal and Toronto: McClelland and Stewart, 1969), p. 172 ff.

Canada; elsewhere the boundary followed the line of the 45th parallel. There was no military basis for this boundary. On the eve of the Treaty, British troops still held a large number of posts which would now be situated in American territory. Such an agreement can only be explained by the British desire to safeguard the American market for the benefit of its trade.

The hoped-for commercial reciprocity did not materialize. With the help of a political change in Great Britain, the Montréal merchants had quickly shown that their commercial interests, especially in the area of furs, had been sacrificed for the benefit of the trade of the home country. Their main spokesman, Governor Haldimand, laid out the situation before the new Colonial Secretary Sydney, and his remarks were well received in the home country. Moreover, the new British government was supported by a strong mercantilist current which not only disapproved of the reciprocity which had earlier been envisaged, but also wished that the products of the British North American colonies, such as wood, fish and flour should replace those coming from the American colonies in trade exchanges with the West Indies.⁸⁰

As well, the British "interior" posts were not handed over to the Americans on the pretext of non-fulfilment of various clauses of the 1783 treaty. Haldimand refused to do so because of the difficulty the Loyalists encountered in recovering their property and possessions which were now situated in American territory, or in obtaining compensation for their losses. The Indian question was also becoming more and more pressing. They had been excluded from the negotiations; thus in order to retain their alliance the British found a further reason to hold onto their former interior posts.⁸¹

On the Richelieu-Lake Champlain front, Haldimand refused, as early as May 1784, to give up the posts at Dutchman's Point (Loyalist Blockhouse) and Point au Fer (Fig. 20). The Governor hoped that the clauses of the 1783 treaty concerning the Loyalists would first be ratified by each of the American States, in this case New York and Vermont.⁸² (Vermont had not yet joined the confederation of the United States of America). Keeping the post at Dutchman's Point was one indication that the Governor wished to

80 *Ibid.*, p. 174.

81 J.M. Hitsman, *Safeguarding Canada...*, p. 49.

82 BL, Add. MSS. 21716, fol. 79v, Haldimand to North, 12 May 1784.

increase pressure on the population so Vermont would join the British North American colonies instead.

In short, though the Treaty of Paris (Versailles) put a temporary end to hostilities in North America by recognizing the independence of the United States, it did not thereby wipe out the tensions between the belligerents. The rate of strategic and tactical thinking accelerated, the more so since the officially defined border was called into question again by the British maintaining their posts which were now in American territory (Fig. 35). The lack of border security at the junction of the Richelieu and Lake Champlain concerned Haldimand greatly. In the Governor's eyes Île aux Noix became the post *par excellence* to hold on to this border, at the expense of Saint-Jean, whose evacuation he suggested.⁸³

This new strategy of Haldimand's, in apparent contradiction to the defensive system which was unfolded in 1778, was founded on the possibility that the border established by the 1783 treaty would be recognized in actual fact. In this context, Île aux Noix was the most southerly of the posts on this border, and its geographic situation made it able to block or prevent a possible entry by an American fleet into Canada. For Haldimand, Saint-Jean was no longer the main defensive location in this sector.

Carleton's (Lord Dorchester) return in 1786 as head of the British North American colonies began the working out of a new defence plan which would see its culmination at the beginning of the 19th century. Carleton's strategy, which took into account the imperatives of the Peace of Versailles (several of whose clauses were being contested), was based on close co-operation between the various British colonies. Fearing that groups of the population who were still undecided as to their allegiance would note the advantages that the peace of 1783 granted Congress and go over to the side of the rebels, the Governor tried to see to it that in the negotiations currently in progress these advantages would be difficult to obtain or to keep.⁸⁴ From the defensive point of view, the Governor noted once again the unequal proportion of population between the American states and the British colonies, to the latter's disadvantage. The border, which was still very spread out, remained difficult to reach from the population centres of the colonies. Consequently, the lack of troops added further to the weakness of the British colonies' defensive position.

83 PRO, CO42/48, fol. 251, "Memorandum respecting Public Matters in the Province of Quebec, submitted to the consideration of Sydney," Haldimand, 16 March 1785.

84 *Ibid.*, Vol. 87, fols. 293-96, Carleton's Report, 20 February 1786.

Facing this situation, Dorchester hoped first for a considerable augmentation of troops, a large proportion of whom would come from establishing a permanent militia. He noted that because of the particular conditions of war in America, militiamen, recruited from among the local population, performed their mission more easily than did the soldiers who came from the European continent. Dorchester concentrated his defensive efforts in the colony in Lower Canada, that is, the St. Lawrence valley. He thus supposed that the Americans would take Lake Champlain and then the Richelieu, which was still the main penetration route, as they had in 1775. This choice also reflected the danger represented by the roads inside Lower Canada, which would favour enemy movements: "Lower Canada is much more exposed to inroads since the Peace, by the increase of population and mutual intercourse on all sides."⁸⁵ Obviously the ultimate objective of any American attempt would remain the surrender of Québec, which could equally become the target of a French squadron sailing up the St. Lawrence to support a possible American venture. Such a possibility was always present in Dorchester's mind.⁸⁶

The two strategic poles of Lower Canada, Québec and the Upper Richelieu, thus became once again the main preoccupation of Dorchester and his commanding engineer, Gother Mann, who was tasked with working out the plans for defensive works. For both the engineer and the Governor, the defence of Canada was based on a fundamental tactical factor — time. As long as the British fleet controlled the North Atlantic, and therefore the St. Lawrence, it would be advantageous to concentrate the colony's main defensive works at Québec. Once provided with the necessary fortifications and an appropriate garrison, Québec would put up such a defence that an enemy would not be able to gain control of the capital and therefore of the whole province in the course of the same season.⁸⁷ The lessons drawn from the American adventure of 1775-76 persuaded the engineer and the Governor of the difficulty of a military enterprise on Canadian soil during the winter. On the other hand, as in 1776, if Québec resisted

85 Dorchester is obviously referring to the many Loyalists who were settling in Lower Canada after the American War of Independence and who retained and developed relationships with the people living in American territory (PRO, CO42/98, fol. 59v, Dorchester to Dundas, 26 April 1794).

86 *Ibid.*, Vol. 100, fols. 1-2, Dorchester to Dundas, 7 June 1794.

87 PRO, WO55/1551, "Report on the Defence of the City of Quebec." G. Mann, 3 August 1791; NA, RG8, II, Vol. 8, "Considerations on the manner and expediency of occupying the Heights of Abraham; on the formation of a Fortification Camp for better Defence of the City of Quebec." G. Mann, 30 April 1799; *ibid.*, I, Vol. 383, pp. 172-88, "Report on the Defence of the City of Quebec." G. Mann, 1 August 1804; see also J.M. Hitsman, *Safeguarding Canada...*, pp. 58-63.

the enemy attack until the arrival of frost and the snow, the attackers would have to break off their siege for the winter and the defenders could always count on naval reinforcements at the beginning of the following spring.⁸⁸ The defensive system worked out by Mann for Québec between 1785 and 1805 forms part of this perspective, which explains the construction of many works at this location at the turn of the century.⁸⁹

With respect to the Richelieu-Lake Champlain front, the engineer's observations were based on the consequences of the 1783 treaty for the officially demarcated border.⁹⁰ He noted that the line of the 45th parallel became very prejudicial to the defence of Canada, especially in the Upper Richelieu area. Mann noted that such a line separating two provinces of the same country (New York and Quebec), as was the case before the American War of Independence, posed no problem. But because the demarcation of 1783 had no longer divided two provinces but states and colonies with different allegiances, the defence of Canada became more precarious. This border now placed the Americans in an advantageous position, a few steps from the centre of the colony of Canada.⁹¹

*The British Government would certainly by this Line, which presses to close upon the heart of the Province of Canada, whilst it is far removed from that of New York, the advantage of Security from Invasion is therefore proportionally on the side of the latter.*⁹²

This situation was the more advantageous to the Americans because they controlled navigation on Lake Champlain, and consequently right into Missisquoi Bay, only a small part of which was on the Canadian side. Canada's loss of the territories on both sides of the lake also opened to the enemy the possibility of reaching Canada by secondary corridors, the main ones being the Chazy River and Missisquoi Bay. Routes which

88 I can establish the same defensive fact for Québec based on the example of the siege of the city carried out by Lévis in 1760 and the arrival of the British fleet in the spring, which brought Murray the hoped-for reinforcements.

89 A. Charbonneau, Y. Desloges and M. Lafrance, *op. cit.*, pp. 67-70, 162-68.

90 PRO, CO42/85, fols. 375-81v, "A short description of the Military Posts on the Frontiers of Canada towards Lake Champlain; with some observations on the Boundary Line of the Province," G. Mann, 23 November 1791.

91 The treaty of 1783 had been negotiated, at least on the British side, from a perspective of trade reciprocity and not of defence against an enemy. Therefore they did not consider defence problems resulting from the location of the new border, especially in the Upper Richelieu area.

92 PRO, CO42/85, fol. 377v, "A short description....," G. Mann, 23 November 1791.

bypassed the main border post at Île aux Noix became more and more likely.

The growing Loyalist population established on the banks of the Chazy River in the State of New York would quickly reach the built-up areas located along the Montréal and Châteauguay rivers in Canadian territory,⁹³ according to Mann. Although these rivers were not navigable to the extent of allowing the entry of an invading army with the necessary artillery equipment, the engineer added, the settlement routes established along these watercourses favoured the possibility of the enemy's penetrating into the colony by secondary routes. Consequently, the British forces would be split up and the defence weakened.⁹⁴

On the other side, east of the Richelieu, Mann noted the same possibility for the enemy. The American territory around Missisquoi Bay was rapidly being settled at the end of the 18th century. On the Canadian side, Loyalists were becoming established, despite the reservations of the governors, north and east of Missisquoi Bay and in the seigneuries of Noyan (Christie Manor) and Foucault (Caldwell Manor).⁹⁵ As the Americans controlled the channel leading from Missisquoi Bay to Lake Champlain, it became difficult for the inhabitants established on the Canadian side of the bay to use this route to reach Saint-Jean, the commercial headquarters of the area. Very quickly a road approximately six kilometres in length replaced the portage linking the northwest shore of Missisquoi Bay to the Rivière du Sud. Thus the enemy had another route to bypass Île aux Noix. The Rivière du Sud was sufficiently deep in the spring and fall to allow navigation by boats. Another difficulty from the defensive viewpoint, Mann thought, was that not only Missisquoi Bay and the Rivière du Sud made it possible to bypass Île aux Noix:

... but if he [the enemy] should still think it not prudent to advance and leave the Post of Île aux Noix behind him; a naval Force sent down from the Lake against that Island on the other side, and cooperating with the Armement from the Missisqui [sic] Bay, which latter could prevent succours being sent up from St. Johns; this I

93 Beginning in 1783, the authorities settled Loyalists on these lands which were divided into townships to the west of the seigneuries along the Richelieu.

94 It is interesting to note that Wilkinson in 1812 more or less used this approach route described by Mann.

95 NA, MG8, F, 13, X, fol. 1, Mathews to [Ween], 8 March 1784; BL, Add. MSS, 21794, fols. 287-88, Buckley to Campbell, 31 March 1784; *ibid.*, fol. 289, Campbell to Mathews, 2 April 1784.

*think would be such a powerfull combination of force against the Island as would greatly endanger the safety of it.*⁹⁶

In any case, the engineer added, the enemy could proceed directly to Saint-Jean by road as soon as the area was more settled.⁹⁷ There was already at the end of the 18th century a road which directly linked Missisquoi Bay to the Richelieu River, from the mouth of the Rivière aux Brochets to the north of the mouth of the Rivière du Sud (Fig. 36).

In summary, the more extensive settlement became in the immediate border area on both sides of the Richelieu, the more difficult it became to defend this area. These areas which were newly settled by the Loyalists were progressively provided with new roads which were not under military control. Moreover, for the enemy they became a reservoir able to provide them with the means of subsistence necessary for the success of their operations. These circumstances called into question the strategic importance of Île aux Noix and Saint-Jean again and consequently influenced the type of defence to be adopted.

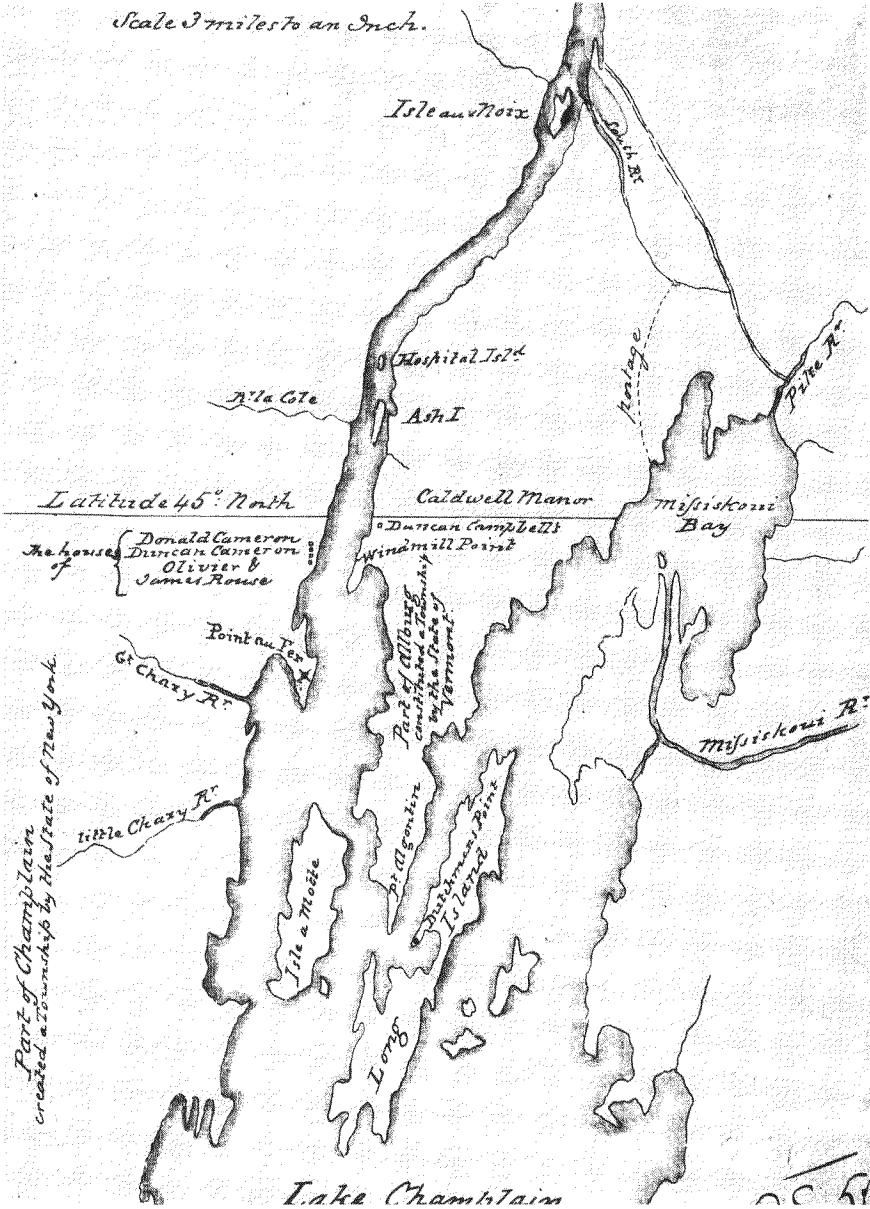
To remedy the situation, according to Mann, more advanced positions on Lake Champlain, other than Point au Fer (Fig. 37) and Dutchman's Point, would ideally have to be occupied. These posts did not control the lake's navigation corridors.⁹⁸ Consequently, it would be desirable to have the border pushed further to the south, above Grand Island. To the west, it would be at the Oswegatchie River, thus recovering all the lands bordering the St. Lawrence. To the east, the border suggested by Mann would join the line of the 45th parallel south of Lake Memphrémagog, the source of the Saint-François River. With such a border, the British would be able to set up a post on Grand Island to control the eastern channel of Lake Champlain. Another post on Lamotte Island would command the lake's main passage. Finally, he considered that the lands recovered by the new boundary line would eliminate any danger of penetration by the secondary roads in this area.

Taking into account the border situation right after the treaty of 1783, Île aux Noix could no longer be considered the strategic post *par excel-*

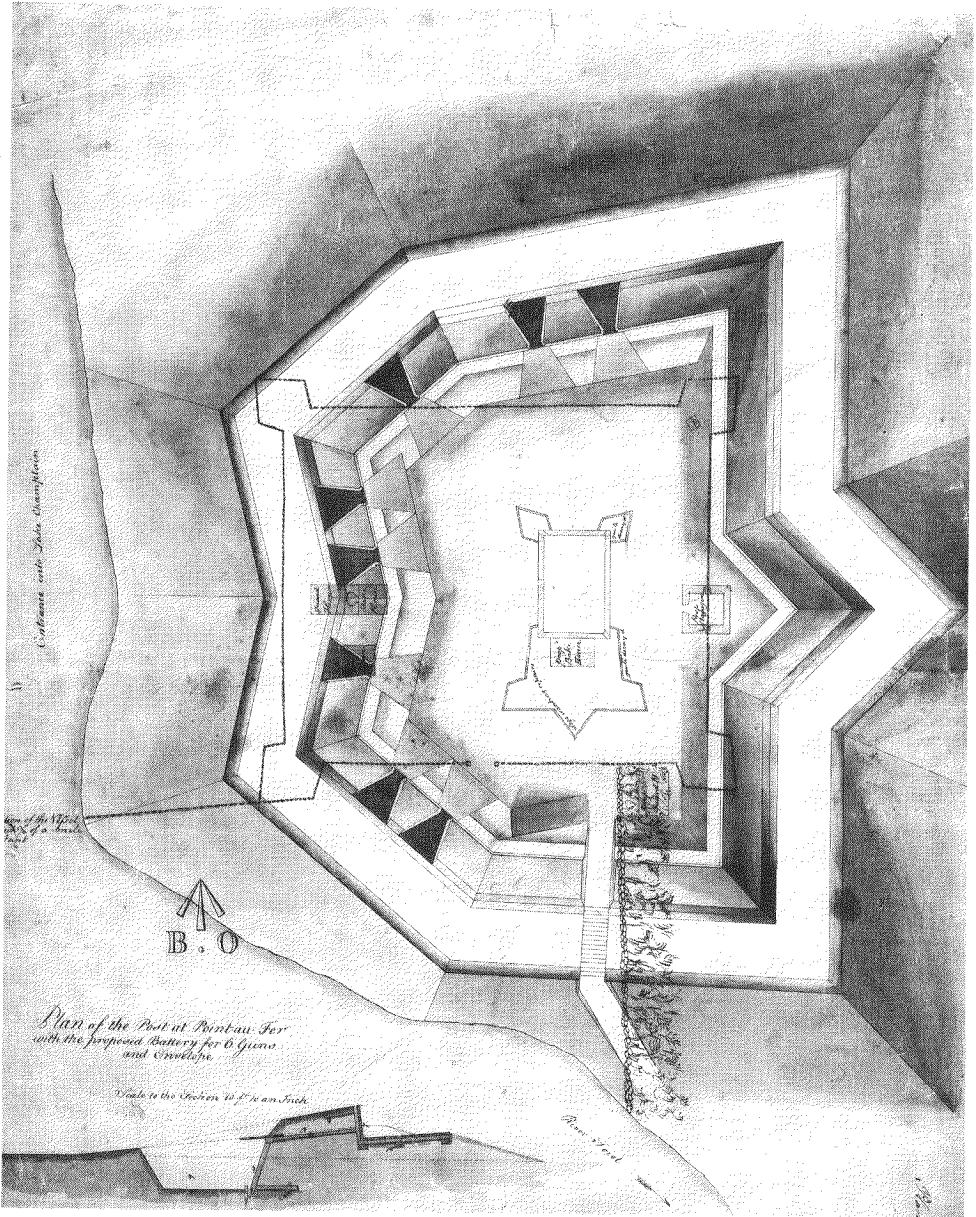
96 PRO, CO42/85, fol. 378v, "A short description...." G. Mann, 23 November 1791.

97 This was the case with the seigneuries of Noyan, Sabrevois and Bleury, which developed rapidly at the beginning of the 19th century.

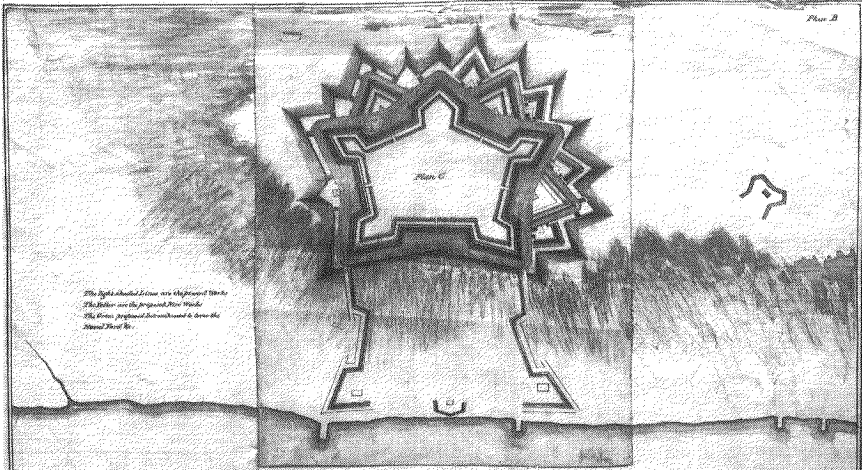
98 They had been built rather to provide support for the scouting patrols established as part of Haldimand's defence plan in 1778. However, Mann suggested additions to the fortifications of Point au Fer in 1791 (Fig. 37).



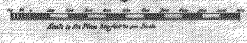
36 The Upper Richelieu border. The settlement of Loyalists around Missisquoi Bay and in the neighbouring seigneuries after the peace of 1783 quickly resulted in the construction of a road linking the Rivière aux Brochets (Pike River) to the Richelieu River below Île aux Noix. (NA, NMC-22501)



37 Plan to improve the fort at Point au Fer. Even though this small fortification found itself in American territory in 1783, in 1791 Gother Mann proposed adding a battery made up of an earth rampart and a ditch. (Gother Mann, 1791; NA, NMC-12807)



R I V E R C H A N B L Y



PLAN and SECTIONS of the *NEW WORKS* proposed for S' IOHNS

John C. Bayly
John C. Bayly
John C. Bayly

Section through AB



Section through CD



- Height of Wall 12
- Height of Bastion 12
- Height of Rampart 12
- Height of Parapet 12
- Height of Bastion from Center to Center 12
- Height of Bastion from Edge to Edge 12
- Height of Bastion from Edge to Edge 12



952

38 Detail of Gother Mann's fortification project for Saint-Jean. He proposed an imposing work, overhanging the earlier fortification [see Fig. 19]. (*Gother Mann, 1791; NA, NMC-15057*)

lence, even though it was the one closest to the enemy; the possibilities of bypassing it were too numerous. However, if the enemy decided to penetrate into the colony by water, the site of the island would still ensure a command of the river. Thus the engineer suggested making Île aux Noix a "frontier post" by working out a fortification which had more regard for its topography, and where the navy would play an important role:

*I think Gun Boats might by employed to great advantage to retard the progress of an Enemy or to co-operate in the defence of the Place.*⁹⁹

On the other hand, according to Mann, Saint-Jean became the ideal location to establish a fortress on this border which could sustain a siege and stop the enemy. Saint-Jean's location, at the head of the Chambly Rapids, forced all boats to stop there to take the road to Montréal. Moreover, several secondary roads in the area led to Saint-Jean since this town was the area's economic centre. Mann proposed constructing a fortification there which would occupy a higher position than the existing fort, and which would protect the naval establishment (Fig. 38). The engineer also planned a defensive work on the right bank of the river, opposite Saint-Jean. These plans for Saint-Jean and Île aux Noix, which were formulated in 1789 and 1790, were not immediately followed up.

Added to the problem of defending the territory, whose borders as stipulated in the 1783 treaty the British did not recognize, was that of relations with Vermont. This state did not enter the Union of the United States until 1791 and thereafter tended to preserve its neutrality. Several of Dorchester's actions expressed his desire to demonstrate to the population of Vermont the advantages of an alliance with the British colonies. Also, he did not object to presenting a canal project to the Colonial Secretary which had been worked out by the Americans and the Montréal

99 PRO, CO42/73, fol. 221, "Report Concerning the Defences of Isle aux Noix..." G. Mann, 12 May 1790. Mann also considered that stripping the banks of trees on both sides of the river facing Île aux Noix would contribute to a better defence and would make the area less humid for the troops.

merchants to allow navigation by vessels of heavy tonnage from Lake Champlain to the St. Lawrence.¹⁰⁰ Moreover, it was only on the Richelieu front that Carleton opened the way to imports of wheat from Lake Champlain to the Port of Saint-Jean at the time of the bad harvest of 1788.¹⁰¹ This clearly showed his desire to attract Vermont.

Jay's Treaty

The retention by the British of the posts at Dutchman's Point and Point au Fer was a major subject of tension on the border. On the British side, the desire to have a zone of influence respected around these posts underlay the challenge to the border recognized in the treaty. On the other hand, the administrations of the bordering American states tried to enforce the clauses of the treaty by affirming their judicial prerogative over the whole territory. The population, not used to such a rigid border, experienced the repercussions and ups and downs of this jurisdictional guerrilla warfare. Several incidents starting in 1783 are proof of this.¹⁰²

The signing of Jay's Treaty in 1794 smoothed over these problems somewhat since the interior posts were handed over to the Americans. However, from a defensive point of view, the confirmation of the 1783 border added to the apprehension in view of the weaknesses identified by Mann, the more so since the posts of Saint-Jean and Île aux Noix were in a state of total ruin. Therefore, on the orders of Dorchester, the engineer suggested in 1796 building a blockhouse surrounded by a battery at each of these two locations, while waiting for a decision by the authorities in the home country concerning the fortification plans put forward in 1789 and 1790.¹⁰³ Rumours of French intrigues against Canada from Vermont were circulating at the time in the colony.¹⁰⁴

100 *Ibid.*, Vol. 51, fols. 184-85v, Dorchester to Sydney, 24 October 1787. Adam Lymburner, the representative of the merchants, thought that such a canal would facilitate commercial exchanges with the states of New York and Vermont, and would help reduce tensions on this border where the population was increasing rapidly. See *ibid.*, Vol. 88, fols. 68-69, Lymburner's Opinion, 1791; H. Neatby, *Quebec: the Revolutionary Age 1760-1791* (Toronto: McClelland and Stewart, 1966), p. 250 ff.

101 NA, MG11, Series Q, 40, p. 212, Dorchester to Sydney, 14 February 1789.

102 PRO, CO42/61, fols. 14v-17, Minutes of the Council, July 1788; *ibid.*, Vol. 82, fols. 302-11, Dorchester to Grenville, 23 June 1791; *ibid.*, Vol. 83, fol. 98, Dorchester to Grenville, 27 July 1791; *ibid.*, Vol. 98, fols. 102-3, Dorchester to Hammond, 17 February 1794; *ibid.*, Vol. 100, fols. 210-24, Dorchester to Howard, September 1794; *ibid.*, fols. 272-75v, Portland to Dorchester, 25 December 1794; PRO, WO1/14, fols. 73-92, Dorchester to Dundas, 20 September 1794.

103 At Saint-Jean, the blockhouse would be able to quarter 100 soldiers and at Île aux Noix, 50. PRO, CO42/105, fols. 152-54v, Dorchester to Portland, 16 April 1796; *ibid.*, Vol. 108, fols. 60-63, "Some

Dorchester's replacement, Governor Robert Prescott, arrived in Québec in 1796, and in turn recognized the defensive weakness of the Richelieu border. He lost no time in asking Portland, the Home Secretary, to lend an attentive ear to the recommendations of Mann on this subject.¹⁰⁵ While waiting for an answer from the Board of Ordnance, Portland authorized Prescott to build the temporary works proposed by Mann in 1796 and 1797.¹⁰⁶

At the dawn of renewed hostilities in Europe between France and Great Britain at the beginning of the 19th century and the recrudescence of tensions between Americans and the British in America, the Richelieu border posts remained as vulnerable as they had been ten years before. Once again the engineer presented his plan for the fortification of Saint-Jean.¹⁰⁷ However, he noted that circumstances had changed somewhat since 1791, when he had first presented his plans. The population of the area, especially in the townships, had grown considerably, opening new roads and increasing relations with the American population near the border proportionally. This growth of settlement thus contributed to diminishing the importance of Saint-Jean, although that post remained just as vital for confronting an American invasion supported by a large fleet.

Consequently, Mann no longer hoped to create "a sustaining point" at Saint-Jean which would be able to hold up under siege. He envisaged rather a place which would be able to resist a raid, making access to the interior of the colony more difficult for the enemy, by forcing them to set up batteries in order to gain control of it. The time thus gained would allow the assembling of troops at the scene of conflict. Mann added:

And even supposing (on the most unfavorable view of things) that this force should not at first be equal to act immediately against the Enemy to drive him out of the Province or to relieve St. Johns, it may at least have time to fall back so as to cover Quebec and throw reinforcement into that Garrison, where alone if in a proper state of

observations concerning the Quarters for Troops in Upper and Lower Canada," G. Mann, 3 November 1796.

104 *Ibid.*, Vol. 108, fols. 105-34, Prescott to Portland, November and December 1796.

105 *Ibid.*, fols. 181-82v, Prescott to Portland, 21 January 1797. On this occasion, Mann reiterated his blockhouse projects with the addition of some redoubts at Saint-Jean. *Ibid.*, fols. 187-88, "Some further Remarks on the Frontier towards Lake Champlain; and on the Posts of Isle aux Noix and St. Johns," G. Mann, 19 January 1797.

106 *Ibid.*, fol. 272v, Extract of a letter from the King to Prescott, 13 July 1797.

107 NA, RG8, I, Vol. 513, 148-55, Mann to Hunter, 1 July 1804.

*defence the great stand for the preservation of the Country must be made.*¹⁰⁸

From then on the engineer, took up again the 1791 proposal except that he reduced the advanced works and the profile of the works, since a siege was no longer the defensive objective being pursued. This time, the whole plan was submitted by the Board of Ordnance to be examined by a committee composed of four engineers in Great Britain, on which sat William Twiss, Mann's predecessor in Canada and the person responsible for the fortifications erected on Île aux Noix from 1778 to 1783.¹⁰⁹

Disagreeing with Mann, the committee was of the opinion that it would be more advantageous to make Île aux Noix the main post rather than Saint-Jean, where a simple fortification consisting of a circular battery would suffice to command navigation and would be built at less cost. Mann retorted that he did not doubt that Île aux Noix had to be fortified; he recalled in this regard his 1790 proposal, which was taken up again in 1796. The engineer again observed that since Île aux Noix could be bypassed, the border could only be held securely by establishing a more fortified post at Saint-Jean.¹¹⁰ There was no follow-up to Mann's proposals for the Upper Richelieu border. Master-General Chatham of the Board of Ordnance diluted the problem somewhat without resolving it when he pointed out to Colonial Secretary Camden, in 1805 that the choice between Saint-Jean and Île aux Noix as the major point of defence on this border exceeded the immediate competence of the engineers and was rather dependent on a larger-scale military decision.¹¹¹

Such was the situation in Canada and particularly on the Richelieu-Lake Champlain border at the start of the 19th century, a border which was grudgingly accepted by the British strategists and whose positioning assured a possible enemy direct entry to the heart of the Canadian colony. The recrudescence of tensions between Americans and the British during the Napoleonic wars increased the problem of defence in this area, especially since fortifications were non-existent or at least were not in a serviceable state.

108 *Ibid.*, p. 151.

109 PRO, WO55/857, fols. 431-32v, R. Morse, W. D'Aubant, W. Twiss and T. Nepean to Chatham, 14 March 1805. Robert Morse was Commanding Royal Engineer in North America from 1775 to 1779.

110 NA, RG8, I, Vol. 384, 19, Mann to Chatham, 22 March 1805.

111 PRO, WO55/857, fols. 427-28v, Chatham to Camden, 5 July 1805.

CHAPTER 3

THE WAR OF 1812 AND THE DEFENCE OF THE LOWER CANADIAN BORDER

The politico-military scene in North America at the beginning of the 19th century was marked by increasing tension between the British and the Americans, largely resulting from the utopian character of the peace of 1783. The 1812-14 conflict was in fact only a continuation or rather the outcome of struggles unresolved by the American War of Independence (1775-83). It put the protagonists back in a situation similar to that of some 30 years before. Affirmation by one group of an identity appropriate to a nation in the process of being born confronted the humiliation of the other, who still had not accepted the outcome and consequences of the defeat at Yorktown in 1783.

At the same time, the protagonists found themselves in the context of the Napoleonic Wars, which brought France and Great Britain as well as other countries into opposition to each other, and in the course of which divergent economic interests clashed and ignited American-British sensitivities.

The peace of 1814 gave the British an opportunity to begin to think out their colonial policy in depth. They then developed a defensive strategy which prevailed, it must be added, for a good part of the 19th century. During that whole century, the Richelieu-Lake Champlain front retained its military and economic importance. As a result, it was the scene of much activity including the construction of Fort Lennox.

An Explosive Decade

James Henry Craig's arrival in 1807 as Governor-in-Chief of British North America coincided with the outbreak of incidents which would precipitate the 1812 conflict. The commercial blockades which France and Great

Britain mutually imposed on each other had the result of poisoning relations between the British and the Americans. The blockade by the British fleet of French ports to all ships, even those flying a neutral flag as did the Americans, created a certain public unrest among the neighbours to the south who saw themselves deprived of a lucrative trade.¹

Being somewhat hesitant to react, President Thomas Jefferson imposed an embargo on all foreign ships in American ports. The embargo on trade even extended to the interior borders adjacent to the British colonies to the north. The American population in the areas bordering on these colonies, seeing themselves forbidden to have any commercial dealings with their neighbours, took their president's gesture badly. Several border incidents were noted at this time on both sides of the border where customs officers confronted smugglers. The Upper Richelieu area and the northern part of Lake Champlain became particularly active in this respect.²

Another major element contributing to the tension was the arrogance of British naval officers who were looking for their many deserters on American merchant ships. The affair of the *Chesapeake*, which was stopped and examined under the guns of the British ship *Leopard*, was a good illustration of the situation and marked a culminating point in the rivalries that brought the British and the Americans into opposition with each other in North America. The offhand attitude of a British naval lieutenant quickly became symbolic of a supreme insult made to the American nation.

Finally, as George Stanley notes most pertinently, the 1812-14 conflict was also an expression of the obstacles which the new American imperialism was meeting in appropriating the vast western territories which belonged to the Indians.³ This problem appeared very clearly at the beginning of the 19th century. A large number of Americans, among whom were the fiercest supporters of an Anglo-American war (War Hawks), were increasingly convinced that the British were mainly responsible for

1 G.F.G. Stanley, *The War of 1812. Land Operations* (Ottawa: Macmillan and National Museums of Canada, 1983). The second chapter of this study mainly deals with the years preceding the War of 1812.

2 Several authors have addressed the question. See among others, R. McSheffrey, "Smuggling in Vermont," *Vermont History*, Vol. 30, No. 4 (Oct. 1962), pp. 291-96; H.N. Muller, "Smuggling into Canada: How the Champlain Valley Defied Jefferson's Embargo," *Vermont History*, Vol. 38 (Winter 1970), pp. 5-21; E. Brynn, "Pattern of Dissent: Vermont's Opposition to the War of 1812," *Vermont History*, Vol. 40, No. 1 (Winter 1972), pp. 10-27; H.N. Muller, III, "A Traitorous and Diabolic Traffic: the Commerce of the Champlain-Richelieu Corridor During the War of 1812," *Vermont History*, Vol. 44, No. 2 (Spring 1976), pp. 78-96.

3 G.F.G. Stanley, *The War of 1812...*, p. 21 ff.

their problems of western expansion. Because the British were providing the Indians with arms, ammunition and other socio-economic benefits, it was believed that they were stimulating opposition by the different native groups to any appropriation of territory by the American Congress.

In short, the politico-military situation degenerated to such a point that in 1807 it stirred lively fears on the part of the Colonial Secretary Castlereagh. He warned Governor Craig that the Americans, seeing themselves in a position of weakness in relation to the British fleet, would react to the tense situation in the Atlantic by an attack on the British provinces:

*From the inferiority of the Americans in Naval Power & impossibility they must find of contending with His Majesty's Arms at sea, it may naturally be their hope to make some compensation for the Maritime Losses they may experience by attacking His Majesty's American Provinces.*⁴

The impossibility of bringing to Canada the troops necessary to ward off American attempts in the colonies led Castlereagh to the single defensive strategy, the one often adopted, which consisted of making Québec the ultimate point of resistance in Canada. Therefore as soon as he arrived in Québec, Craig busied himself with speeding up the works then in progress to put the city in a state where it could provide adequate resistance.⁵

The Governor was also anxious about the situation elsewhere in the province.⁶ He counted on the militia to ensure a first defensive effort in the various built-up areas of Lower and Upper Canada. In Upper Canada Craig considered the Great Lakes an important defensive asset. He considered that, for the moment at least, the provincial navy did not have to confront a really threatening adversary. As for the main route of entry into Lower Canada, Lake Champlain and the Richelieu River, the Governor could not count on the benefits of a small navy since the posts on that border were unsuitable bases because they were in ruins:

Reverting to the principal and certainly most probable Route which an Enemy could take, viz^t that of Lake Champlain, it must be

4 PRO, CO43/22, Castlereagh to Craig, 1 September 1807.

5 See A. Charbonneau, Y. Desloges and M. Lafrance, *op. cit.*, pp. 69-70.

6 PRO, CO42/138, fols. 13-17v, Craig to Castlereagh, 13 February 1809.

*remark'd and it is much to be lamented, that we are totally cut off from the Lake, on which we have not a single vessel of any description nor could we now venture to build because having no Fort under cover of which they could be constructed and not having any body of troops which could be posted there for their protection. The proximity of the American settlements would furnish them with every facility for interrupting the work and destroying the vessels of materials that might be collected.*⁷

Saint-Jean and Île aux Noix still were not in a serviceable state and Mann's proposals, made at the beginning of the 19th century, had not been followed up.

New roads opened since the last conflict added to the defensive problems on that border. However, the Governor's observations did not produce any reaction by the Colonial Secretary. On the eve of the declaration of war in 1812, the Richelieu posts were still in very bad shape and, according to the engineer, Ralph Bruyères, the fortifications of Saint-Jean and Île aux Noix were not even worth the trouble of repairing.⁸

A Further Tactical Concern: Settlement of the Border Area and Development of the Communications Network

The roads which crossed the area on both sides of Lake Champlain and the Richelieu River at the beginning of the 19th century reflected the major settlement efforts made since the end of the American War of Independence, especially on the American side. In this matter, the fears expressed by Mann some years before quickly assumed concrete form.

Vermont experienced its golden age of settlement at the end of the 18th century. Its population increased by 150 percent between 1781 and 1791, when it numbered more than 85 000 inhabitants.⁹ This activity continued,

⁷ *Ibid.*, fol. 15.

⁸ NA, RG8, I, Vol. 1706, pp. 161-62, "Report on the State of Fortified Military Posts in both the Canadas," R. Bruyères, 24 August 1811. One of his predecessors, the engineer Hughes, believed rather the opposite where Île aux Noix was concerned in 1807: "At Isle aux Noix the Works are also in ruins. There are Detached Redoubts & Blockhouses which were never completed, but may be easily improved to form a Strong defence" (*ibid.*, 1705, p. 93, Hughes to Prevost, [16 December 1808]).

⁹ R.D. Hodgson, "The Champlain - Richelieu Lowland: a Study in Historical Geography," Ph.D. thesis,

although at a less rapid pace, during the first decade of the 19th century. The after-war period also unleashed large movements of population in the adjacent state of New York on the western shore of Lake Champlain. With more restrained growth than in Vermont, the population of New York was concentrated in eight main towns, including Plattsburg, Champlain and Chateaugay (Four Corners) situated a few kilometres from the border.¹⁰

The Upper Richelieu on the Canadian side, which was until then the exclusive domain of the lumber industry, experienced the first efforts of settlement. It was largely due to the arrival of Loyalists following the Peace of Versailles. To the east in particular, they settled along the border in the seigneuries of Foucault (Caldwell Manor) and Noyan (Christie Manor) as well as on the shores of Missisquoi Bay, specifically in the Seigneurie of Saint-Armand and the new Township of Stanbridge.¹¹ On the left bank, some Loyalist families settled in Odeltown and Lacolle, while the seigneurial backcountry, transformed into townships such as Sherrington and Huntington, became host to some rudimentary settled areas.

However, efforts at settlement on the Canadian side stopped at that point at the end of the 18th century. The remaining portion of the Upper Richelieu territory as far as Saint-Jean retained its undeveloped appearance, characterized by its reserves of timber and its many marshes, until after the War of 1812.¹²

The massive arrival of settlers, especially in the Lake Champlain district and on a lesser scale on the banks of the Richelieu, inevitably brought about the creation of close links between the different built-up areas on both sides of the border. Onto the family and social links that united the populations of the border states was grafted a network of commercial

University of Michigan, 1951, p. 120.

10 H.N. Muller, III, "The Commercial History of the Lake Champlain - Richelieu River Route 1760-1815," Ph.D. thesis, University of Rochester, 1968, pp. 69 and 149.

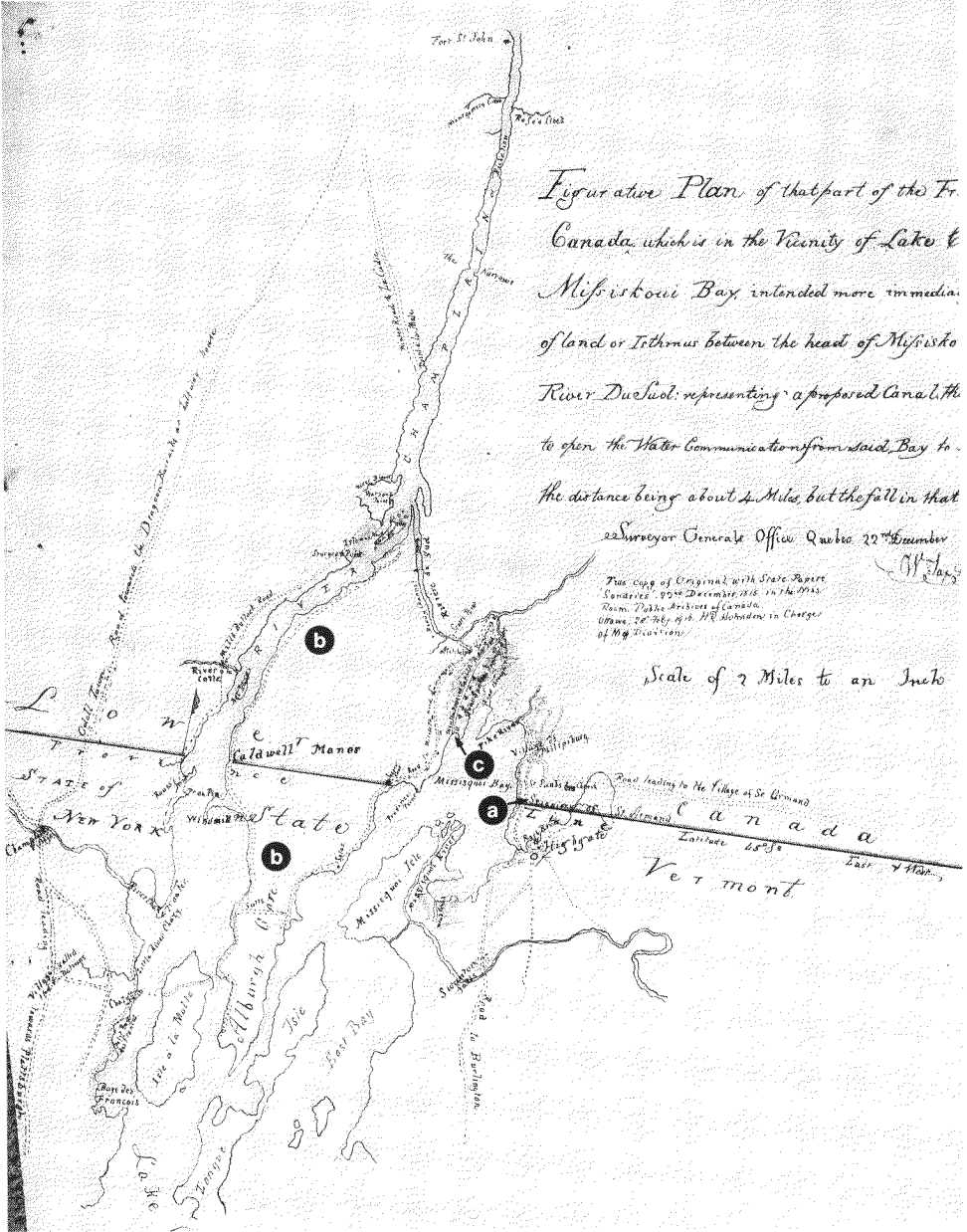
11 L. Beaugregard, "Le peuplement du Richelieu," *Revue de géographie de Montréal* (1965), pp. 43-74. Governor Haldimand had objected, though without success, to the settlement of Loyalists on these lands because he preferred to create a buffer zone on this border, populated essentially by French-Canadians, so as to avoid the formation of too close bonds between the new Loyalist arrivals on one hand and the populations of the neighbouring American states on the other. Despite the Governor's prohibition, seigneurs Christie and Caldwell saw in the arrival of the Loyalists an opportunity to increase their revenues through the settlement of their seigneuries which were situated immediately along the border. See also the article by T.C. Lampee, "The Missisquoi Loyalists," *Proceedings of the Vermont Historical Society, New Series*, Vol. 6, No. 2 (June 1938), pp. 81-139.

12 In this stretch of territory, west of the river are the seigneuries of Lacolle and Léry; on the other side are the seigneuries of Noyan (north part), Sabrevois and Bleury. At the end of the 18th century they all belonged to the Christie family. They would not really be developed until after the War of 1812. See F. Noël, "Gabriel Christie's Seigneuries: Settlement and Seigneurial Administration in the Upper Richelieu Valley, 1764-1854," Ph.D. thesis, McGill University, 1985.

*Figurative Plan of that part of the Fr
Canada, which is in the Vicinity of Lake &
Mistoukou Bay intended more immedi-
ately of land or Isthmus between the head of Mistouko
River Due Sud: representing a proposed Canal, thro
to open the Water Communication from said Bay to
the distance being about 4 Miles but the fall in that*

*See Surveyor Generals Office Quebec 22nd December
1775
This Copy of Original with State Papers
Sentaries 25th December 1775 in the 1775
Room Public Archives of Canada.
Ottawa 20th July 1910. J. H. Schadow in Charge
of Map Division.*

Scale of 7 Miles to an Inch



39 Even in the area east of the Richelieu, the border was crossed by several roads. This was the case with the one connecting Highgate to Philipsburg east of Missisquoi Bay (a), or with the other one which ran along the Richelieu from Alburg to the mouth of the Rivière du Sud (b). Also to be noted was the proposed canalization (c) between Missisquoi Bay and the Rivière du Sud, a project which aroused lively opposition on the part of the military. (*W. Sax, 1815; NA, C-31171*)

exchanges. These developed thanks partly to the proximity of an attractive outlet for these new occupants.¹³ Montréal and the neighbouring area rapidly came to be a population pool to which the various products were channelled. Even during the subsequent War of 1812, this trade remained vital to the population of Lower Canada. The British army had to count on smuggled commodities for the subsistence of its troops!¹⁴

As a result, a secondary communications network developed on both sides of the border parallel to the navigable Richelieu-Lake Champlain axis. The road network in place on the eve of the 1812 conflict added to the defence problems in this area, since it was not under military control. Apart from the various concession roads which led to the many individual locations, as early as the beginning of the 19th century larger roads crossed the area as a whole. On the American side, east of Lake Champlain at least three main roads linked Albany to the Lower Canadian border, from which it was then possible to go on to Montréal.¹⁵ These roads joined towns situated a few kilometres from the border: St. Albans, Swanton and Highgate on the Rivière des Roches. They further connected with the toll road (turnpike) which linked Boston to Burlington.

The border was crossed in several spots. For example, a road linked Highgate to Philipsburg on the eastern edge of Missisquoi Bay (Fig. 39). From there one could reach the Rivière du Sud, either by crossing the bay or by using the road which led from the mouth of the Rivière aux Brochets (Pike River) to the mouth of the Rivière du Sud. West of Missisquoi Bay, various roads also ran to the Rivière du Sud, among others was one which followed the right bank of the Richelieu River from Alburg Point on the American side. Once at the mouth of the Rivière du Sud, the traditional

13 The Ph.D. thesis by Muller, III (*op. cit.*), gives a good illustration of this situation. It helps explain the reticence of this population confronted by the embargo decreed by Jefferson in 1807.

14 G.F.G. Stanley, *The War of 1812...*, p. 68; PRO, CO42/157, fols. 156-58v, Prevost to Bathurst, 27 August 1814.

15 R.D. Hodgson, *op. cit.*, p. 133 ff.

way to bypass Île aux Noix, the traveller could take the ferry and continue on his way along the left bank of the Richelieu.¹⁶

Contrary to the military authorities, the Lower Canadian government wanted to improve travel in this part of the border further, since in 1808 it authorized the formation of a corporation interested in planning a toll road from Saint-Armand, east of Missisquoi Bay, to Saint-Jean.¹⁷

The seigneurial backcountry east of the Richelieu River was also crossed by some roads which connected with the border. This not only made it possible to bypass Île aux Noix, but also to avoid Saint-Jean. Such was the case with the road linking Saint-Armand and the source of the Yamaska River. From the left-hand shore of Lake Memphrémagog, part of whose waters wash against American territory, another road linked the various newly formed townships, such as Bolton, Brome and Dunham as well as Stukely, Shefford and Granby.¹⁸

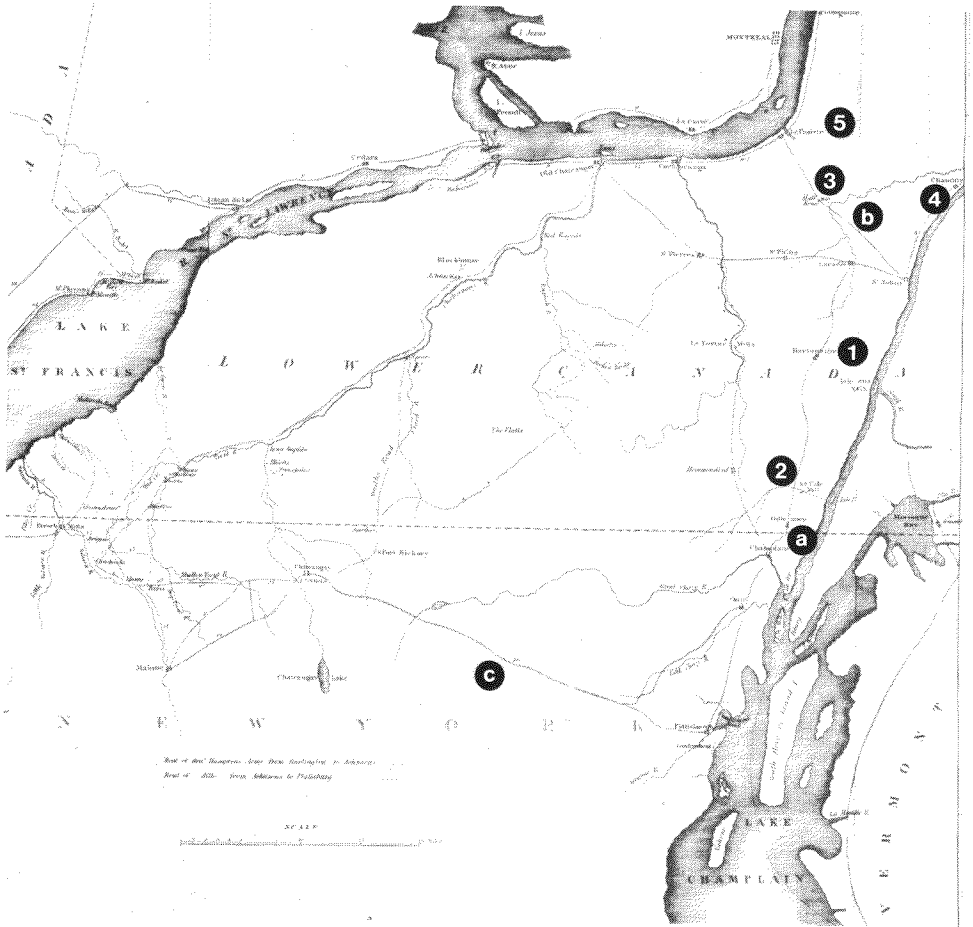
Closer to Lake Champlain and the Richelieu River, the main road leading north linked Albany with the towns on the western shore of the lake including Plattsburg (Fig. 40) and the village of Champlain beside the Chazy River. From there, it crossed the border at Odeltown and, following the little Montréal (or L'Acadie) River, joined the road which linked Saint-Jean to La Prairie, opposite Montréal. At Plattsburg, a secondary road forked to the west to Chateaugay (Four Corners), still in American territory; once across the border, this road ran along the Châteauguay River in Canadian territory, and came to the town of the same name beside the St. Lawrence River.

The roads to the west of the Richelieu thus offered the Americans new ways to bypass the border posts of Île aux Noix and Saint-Jean. Furthermore the road network, spread out on both sides of Lake Champlain and

16 As early as 1805, Seigneur Napier Christie Burton proceeded to survey the first row of concessions in the Seigneurie of Sabrevois. A first concession road crossed this area at that time, going from the mouth of the Rivière du Sud to Saint-Jean. NA, MG8, F. 99-9, Vol. 25, pp. 20588-601, Various surveys in the first concession of the Seigneurie of Sabrevois.

17 Lower Canada, *Statuts*, 48 Geo III, c. 33, 14 April 1808, pp. 507-31, "Acte pour incorporer certaines personnes y mentionnées et leurs associés à l'effet d'ouvrir, faire et entretenir un Chemin de Barrière depuis la ligne Méridionale de la Seigneurie de Saint-Armand, jusqu'à la Ville de Saint-Jean, dans le District de Montréal; et pour ériger et construire des Ponts sur la Rivière au Brochet et la Rivière Richelieu, ou pour établir un Passage sur la Rivière Richelieu" [An Act to incorporate certain persons mentioned therein and their associates for the purpose of opening, building and maintaining a Toll Road from the southern boundary of the Seigneurie of Saint-Armand to the Town of Saint-Jean, in the District of Montréal; and to erect and build bridges over the Rivière au Brochet and the Richelieu River or establish a passage over the Richelieu River].

18 NA, RG8, I, Vol. 1705, pp. 93-94, Hughes to Prevost, "Extract taken from my report dated 16th December 1808 respecting the Roads of Communication thro' this District to the States of New York & Vermont, with the State of our Military Posts, &c."



40 A map of the numerous roads crossing the area between the Richelieu and the St. Lawrence rivers. During the War of 1812, American land operations were concentrated in this sector. A first road (a) crossed the border at Odeltown and joined the one (b) which linked Saint-Jean and La Prairie. Another road (c), the one used by Hampton in 1813, went from Plattsburg to Châteaugay (Four Corners) and then ran along the Châteaugay River to Montréal. From 1813 on, this whole vulnerable area was dotted with military posts able to quarter a large number of soldiers: Burtonville (1), Lacolle (2), Halfway House (3), Chambly (4) and La Prairie (5) [1815]. (NA, NMC-10149)

the Richelieu River, provided several choices of connections which could prove to be important tactical assets for a future invader on this border. The itinerary of traveller Lambert in 1808 gave a good illustration of this possibility.¹⁹

These many roads did not all provide the same ease or difficulty of connection. Although they made it possible for a small number of troops equipped with field artillery to penetrate into the heart of the colony, Governor Craig believed instead that an army of invasion, with all the materiel and the artillery train necessary for its operations, would still have to take the traditional navigable route. The eastern roads were deemed more difficult to use because of the topographical difficulties to be overcome:

*The accessions of the northern part of Vermont, and the command of the navigation of Lake Champlain, would be an effectual barrier to any inroad that might be attempted by the usual and most practicable route into Canada. Nature has so fortified Vermont, that it could be maintained even by Militia, against any Army the United States could supply.*²⁰

To ward off the possibilities of access on the left bank, which were considered more feasible, the engineer Hughes, suggested in 1808 marking off the road between La Prairie and Saint-Jean with a series of redoubts equipped with abatis in front.²¹

In summary, despite the difficulties of movement on several of these new roads on the Richelieu-Lake Champlain border, the presence of these secondary penetration roads constantly attracted the military's attention. The land operations in the War of 1812 would confirm the need for military control of these various roads in order to ensure an adequate defence of the whole border.

19 On his return voyage from Boston to Montréal, Lambert took various roads to St. Albans Bay. Then he crossed the lake to the mouth of the Chazy River and took the road overland to La Prairie. However, he indicated the difficulty of travelling over certain stretches, especially the east shore of Lake Champlain. J. Lambert, *Travels Through Lower Canada and the United States of North America in the Years 1806, 1807, and 1808. To Which are Added Biographical Notices and Anecdotes of Some of the Leading Characters...* (London: R. Philipps, 1810), Vol. 3, pp. 498-503.

20 PRO, CO42/136, fols. 102-3v, J. Henry to Ryland, 25 April 1808. Henry adds: "The road from Burlington to the Connecticut River, is alternately over mountains and through defiles." See also CO42/138, fols. 13-17v, Craig to Castlereagh, 13 February 1809.

21 NA, RG8, I, Vol. 1705, 93, Hughes to Prevost, [16 December 1808].

The War Years: A Renewal of Île aux Noix's Military Role

The belligerents' respective naval forces determined the actual nature of operations throughout the War of 1812. From the outset, the superiority of the British on the Atlantic forced the American strategists to wage their offensive on land towards the British colonies to the north. The nearness of a large pool of American population gave the invaders a major advantage on this front. They could count on the proximity of their resources in launching their military operations. This was not the case for the much less populous British colonies, where logistics demanded importing several products from England.

The actual nature of the borders between the American and British territories, a long section of which followed the Great Lakes and the St. Lawrence River, once again gave the navy a determining role in the development of the respective strategies. Alfred T. Mahan, the American naval theoretician, said, "From Lake Superior to the head of the first rapid of the St. Lawrence, therefore, the control of water was the decisive factor in the general military situation."²² That also proved true on the Richelieu-Lake Champlain front, where the pursuit of naval superiority was the primary objective of both the American and British strategists.

Governor George Prevost also established his strategy, at least for the first year of the conflict, in relation to the superiority of the British naval forces, both on the lakes of the North American continent and on the Atlantic. He concentrated the majority of his available forces in Lower Canada. In this regard, Québec was always the ultimate point of defence where the enemy's advance had to be halted to allow the navy to bring the support necessary for a counter-offensive, if need be. On the other hand, in the interior of the colony, the weakness of the American navy on the lakes and the impassability of several border roads made the situation less alarming for the British.²³

22 A.T. Mahan, *Sea Power in its Relations to the War of 1812* (Boston: Little, Brown, 1905), Vol. 1, p. 302. The whole of Chapter 5 deals with determining the theatre of operations as a function of the naval forces present.

23 Once again Mahan insisted on this point: "The importance of the lakes to military operations must always be great, but it was much enhanced in 1812 by the undeveloped condition of land communications"; *ibid.*, p. 301.

Though Québec retained its strategic value, Montréal, as the colony's main commercial centre, became the prime American objective. To provide a good defence of this area, Prevost pointed out to the Colonial Secretary:

*Its security depends upon our being able to maintain an impenetrable line on the South Shore, extending from La Prairie to Chambly, with a Sufficient Flotilla to command the Rivers St. Lawrence and the Richelieu.*²⁴

For the Governor, the Richelieu-Lake Champlain front remained the main penetration route. Sorel, situated at the mouth of this route, became the ideal position at which to establish an ammunition and supplies depot as well as a base for the ships intended for the defence of the St. Lawrence. Saint-Jean, then considered a border post, remained out of service. Its fortifications, still in ruins, were not worth the trouble of restoring since the enemy could bypass this post thanks to the many roads which led to Montréal from the states of New York and Vermont.²⁵

The possible bypassing of Saint-Jean and the almost non-existence of an American navy, at least in the spring of 1812, made the position of Île aux Noix unimportant in military terms. As well, the Governor did not even consider this post in his report to the Colonial Secretary. For Prevost, the defence of this border would be based almost essentially on the cordon of troops he would assign to the tongue of land between the St. Lawrence River and the Richelieu River in order, he said, to prevent the enemy from reaching Montréal.²⁶

The American efforts to remedy their naval inferiority on the lakes quickly modified Prevost's defensive policy, at least on the Lower Canadian border. Despite a slow beginning, the Americans succeeded by the end of the summer of 1812 in rigging some warships which to that point had not existed on Lake Champlain.²⁷ Despite having only a small number

24 NA, RG8, I, Vol. 1707, p. 7-8, Prevost to Liverpool, 18 May 1812; this report is published in J.M. Hitsman, *The Incredible War of 1812. A Military History* (Toronto: University of Toronto Press, 1965), pp. 243-49.

25 Chambly, which the Governor considered to be of no defensive importance, could if necessary serve as a depot.

26 PRO, CO42/147, fol. 19, Prevost to Liverpool, 15 July 1812.

27 A.S. Everest, *The War of 1812 in the Champlain Valley* (Syracuse: Syracuse University Press, 1981), pp. 63-66. The appointment of the zealous and energetic Lieutenant Macdonough to the naval command of Lake Champlain, with the task of establishing a superior naval force for the Americans, began the naval race on this front.

of units, they quickly dominated the British who at the time had only a few gunboats.²⁸ British reaction was swift. Within the space of a few months, Prevost revised his strategy and declared Île aux Noix "a most important position, as it commands the navigation on the River Richelieu."²⁹ He decided to establish a base and a naval dockyard there.

Thus the race for naval superiority on the Richelieu and Lake Champlain re-established the military importance of Île aux Noix. The island became the main support point for the British navy on this border. Prevost's decision consequently justified the restoration of the defensive works so as to prevent any enemy attempt to penetrate to the interior of the colony by water. Taking into account the slight resources at his disposal, the Governor decided to quarter a large garrison at Île aux Noix for the defence of the naval base and the adjacent border area. A small advanced post set up on Ash Island, level with the Lacolle River, was also added (Fig. 41).³⁰ Finally, Prevost hoped for troop reinforcements, since the forces then available did not enable him to consider carrying the offensive into American territory.

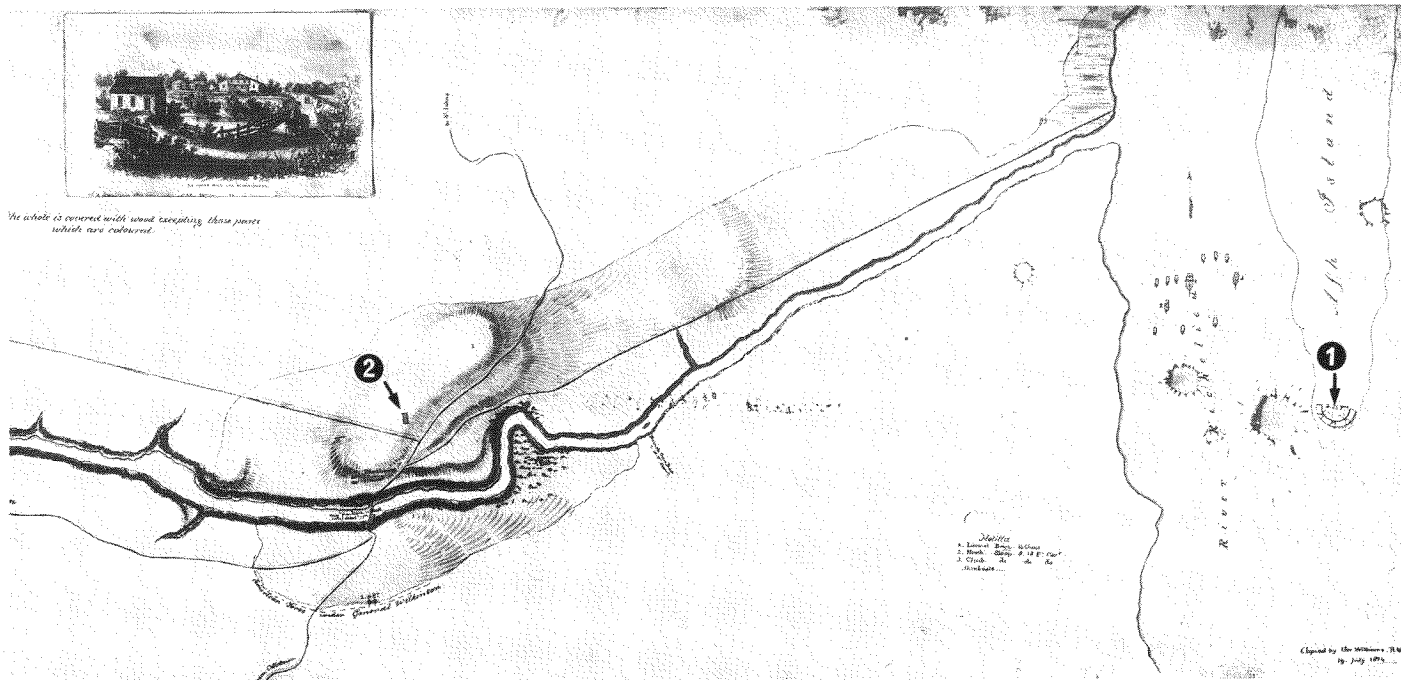
The dockyard on Île aux Noix grew at the pace of the race the Americans and the British were engaged in for naval supremacy on Lake Champlain. Construction activity reached its height in the summer of 1814 with the launching of the brigantine *Confiance*, displacing 1200 tons and equipped with 36 guns (Fig. 42). It was barely finished when it took part in the major naval battle of Plattsburg Bay in September 1814 (Fig. 43).³¹

28 T. Hooper, "The Royal Navy Station at Isle-aux-Noix (1812-1839)" in "Miscellaneous Historical Reports (1965-1970)," Manuscript Report Series No. 167 (Parks Canada, Ottawa, 1967), p. 51.

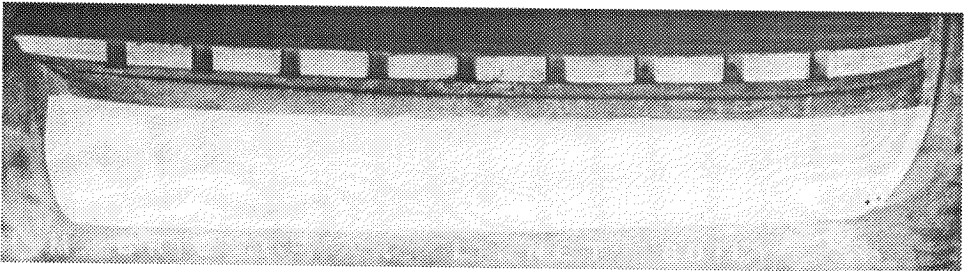
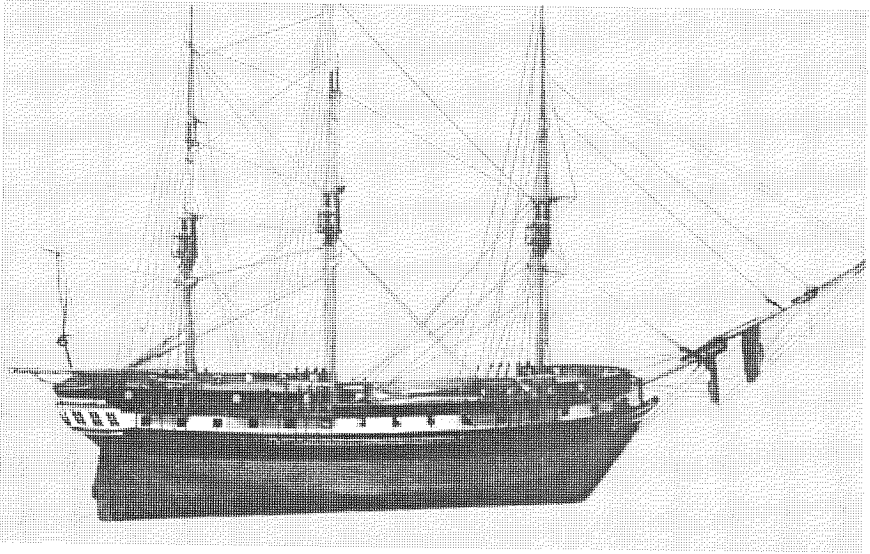
29 The Richelieu River being "the most frequented and easy entrance by water into Lower Canada," PRO, CO42/147, fol. 195, Prevost to Bathurst, 22 September 1812.

30 Besides a small blockhouse sheltering the Ash Island garrison, the British set up two batteries there which commanded the passage on each side. As the eastern channel was not deep and consequently could only be used by gun boats, a chain blocked access to it. Another battery installed on the west bank of the Richelieu River at the mouth of the Lacolle River added to the defence of the main channel by producing a crossfire with one of the Ash Island batteries. NA, RG8, I, Vol. 388, pp. 175-76, Payne to Freer, 20 September 1814; *ibid.*, pp. 212-13, Nicolls to Prevost, 27 November 1814.

31 On naval construction at Île aux Noix, T. Hooper's article (*op. cit.*) must be consulted. The author sketches the development of this shipyard until it was closed in 1834. Among other details, he notes that the construction of ships continued during the year following the peace treaty.



41 View of the advanced post (1) built on Ash Island during the War of 1812 to block the passage of boats on the western channel of the river. The blockhouse at Lacolle (2) once again formed part of the British defensive tactics against enemy incursions on the numerous concession roads. (NA, NMC-19787-2/2)



42 Replicas of the *Confiance* (top) and the *Linnet*, built at Île aux Noix in the summer of 1814. Replicas are conserved at the Museum of Transport, Glasgow. (Parks Canada, Jean Bélisle; photos computer corrected by Richard Paquet, Parks Canada)

Defence of the Road Network

Although the importance of the navy was the dominant factor during the whole of the War of 1812, the land penetration routes increasingly required the attention of the military despite the difficulty of movement on some of them. In a wider context, the development of the art of war had to a certain extent contributed to facilitating the movement of armies

43 View of the naval battle of Plattsburg Bay (14 Sept. 1814). (*Mystic Seaport Museum*, 43.1128)

on these new routes. Encouraged by the development of lighter artillery,³² the art of war had undergone major changes in the second half of the 18th century and at the beginning of the 19th century. Rapid and sudden manoeuvres gradually replaced the slow, motionless siege; they presented the most effective means of destroying the forces of the enemy as opposed to simply trying to hold positions:

*The significant innovation concerned the constitution and the utilization of armies, i.e. man power and strategy. Citizen armies replaced professional armies. Aggressive, mobile, combative strategy replaced the Slow strategy of Siege craft.*³³

During this period there was the proliferation of the Light Infantry, of detachments of Horse Artillery and the increasingly great mobilization of lightly equipped militias; all this contributed to a greater mobility of armies.³⁴ The British forces during the War of 1812 would to a great extent be composed of these troops.³⁵

The action of the British strategists during the 1812-14 conflict reflected this development. From the start of hostilities, they were greatly preoccupied with enemy movement on the roads of the Upper Richelieu border region. They developed tactics based on the mobility of the defensive troops and on their speed in getting to the scene of confrontation.

The tongue of land between the Richelieu River and the St. Lawrence was the sector which worried the British the most, since an enemy land operation against this tract could serve as support for a large-scale naval manoeuvre directed at one or other of the bordering waterways (Fig. 40). As well, the main roads crossing this sector and running along the Richelieu River led directly to Montréal. Again, it was at the northern end of this area on the road between La Prairie and Saint-Jean that Craig in

32 See especially Chapter 6 of B.P. Hughes's study, *British Smooth-Bore Artillery*, pp. 65-84.

33 R.R. Palmer, "Frederick the Great, Guibert, Bülow: from Dynastic to National War," in E.M. Earle, ed., *Makers of Modern Strategy: Military Thought from Machiavelli to Hitler* (Princeton: Princeton University Press, 1943), p. 49.

34 See on this subject, B.H. Liddell Hart, *Strategy*, 2nd revised ed. (New York: F.A. Praeger, 1967), pp. 113-41.

35 G.F.G. Stanley, *The War of 1812...*, pp. 416-19 and 429-31.

1808 and Prevost some years later considered that the enemy had to be stopped. They concentrated a good part of their strength there. The three land operations by the American army against the Upper Richelieu border; Henry Dearborn's invasion in 1812, Wade Hampton's expedition against Châteauguay in 1813, and James Wilkinson's march in 1814, were concentrated in this area lying between the Richelieu and the St. Lawrence. All three operations made use of the main road running along Lake Champlain and the Richelieu River, and all crossed the border at Odeltown.³⁶

Thus the intention of reactivating Île aux Noix's military role during the War of 1812 coincided with an intention to ward off any possible enemy movement on the road network, particularly in the area west of the Richelieu River. As with many barracks set up on Île aux Noix, this whole area was dotted during the course of the war with small military works. The objectives were to block traffic on the different roads, to assure necessary accommodation to troops on a mission in this territory, and ultimately to support an offensive against American territory. Several structures were erected in 1814 because of the arrival of massive reinforcements at that time.

The first defensive tactic aimed at obstructing the roads near the border was to build abatis and destroy bridges.³⁷ The Lacolle River contributed in this way to the defensive action of the British. Besides the outposts of Île aux Noix set up at the mouth of the Lacolle River and on Ash Island with the particular aim of defending navigation on the Richelieu River, the blockhouse located beside a secondary road was reactivated (Fig. 41).³⁸ The structure of the blockhouse built in 1782 was then repaired and some artillery pieces were mounted as a battery. A sawmill located a few feet from the blockhouse became an integral part of the defensive arrangement.³⁹ Further to the west at Burtonville, where the main road leading from the border to Montréal crossed the Lacolle River, two barrack blocks were erected with a capacity of 400 men each (Fig. 44).⁴⁰

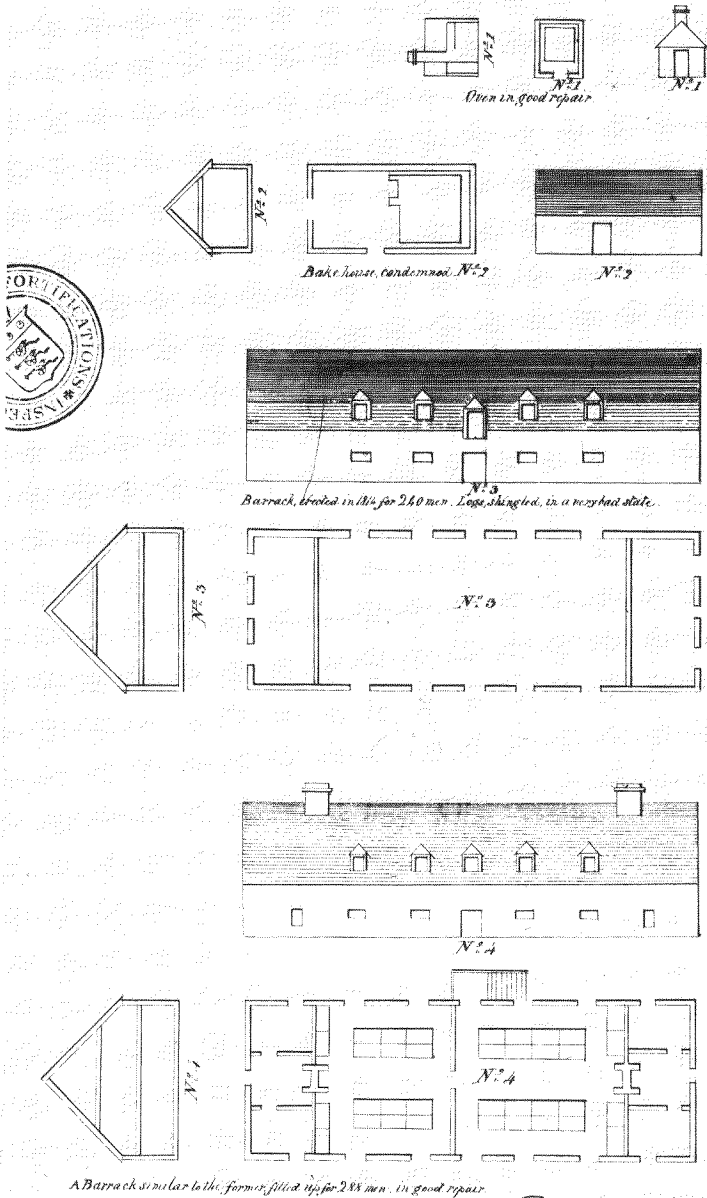
36 This was true of Hampton's expedition as well, which first used this road, then advanced along the Châteauguay River. See G.F.G. Stanley, *The War of 1812...*, pp. 246-59.

37 E.A. Cruikshank, "From Isle aux Noix to Chateauguay. A Study of the Military Operations on the Frontier of Lower Canada in 1812 and 1813," Part I, *MSRC*, (Section II, 1913), pp. 147-48.

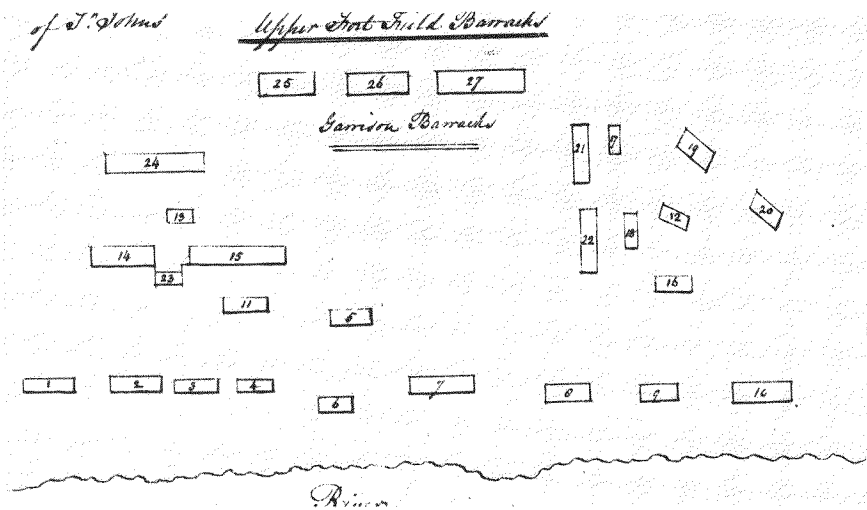
38 M. Fillion, *op. cit.*, pp. 27-35; NA, RG8, I, Vol. 388, p. 122, "Report of Artificers and Labourers..." P. Hughes, 23 May 1814.

39 *Ibid.*, pp. 175-77, Payne to Freer, 20 September 1814; *ibid.*, pp. 178-79, "A report upon the Defence required to the position at La Colle," Payne, 22 September 1814.

40 *Ibid.*, p. 211, Nicolls to Prevost, 22 November 1814. Durnford's 1823 plan indicates rather a capacity of



44 The Burtonville barracks. Contrary to the 1818 manuscript data, this plan indicates the quartering capacity of the two barracks at 240 and 288 soldiers respectively. (E.W. Durnford, 1823; NA, NMC-2114)



45 Saint-Jean military camp in 1815. (NA, NMC-2774)

- Government House (1)
- Storehouses (2, 20)
- Officers quarters (3, 7, 8, 9, 10, 14, 25)
- Men's barracks (4, 15, 19, 22, 24, 27)
- Workshops (5, 26)
- Guardhouse (6)
- Cooking and baking houses (11, 12, 13, 16)
- Privies (17, 18, 23)
- Hospital (21)

A second defensive line between Saint-Jean and La Prairie ran across the various roads which crossed the territory between the St. Lawrence and the Richelieu. First, the barracks were repaired at Saint-Jean and large contingents of troops lived in them for the duration of the war. More than 1000 soldiers were quartered there in January 1814 (Fig. 45).⁴¹

240 and 280 men respectively. A later document speaks of a single barracks able to quarter 600 men; see RG8, I, Vol. 514, p. 175, "Report on the State of the Fortifications and Military Buildings in Upper and Lower Canada..." E.W. Durnford, 20 November 1816.

41 NA, RG8, I, Vol. 1709, p. 21, "Weekly distribution state of the Left Division under the Command of Major General De Rottenburg, Montréal," 22 January 1814. The previous September, to increase Saint-Jean's quartering capacity to 952 soldiers, two disused warehouses had been converted into barracks. *Ibid.*, Vol. 1708, pp. 75-76, "Returns of Barracks Accommodations at the undermentioned Posts in the Lower Province," Wm. Armstrong [Sept. 1813].

At the other end of the corridor, at La Prairie, opposite Montréal, barracks could house nearly 450 soldiers in 1813 (Fig. 46). The troops there were brought up to a strength of 800 at the start of the next year, and barracks were added for the cavalry. Quarters capacity at La Prairie reached 1300 men in 1815.⁴²

The Halfway House relay station was also transformed into an accommodation area for the cavalry (Fig. 47). This establishment, also called "Blairfindie Barracks," occupied a strategic position between Saint-Jean and La Prairie. Here the roads crossed linking the main villages of the area, one of these was the road leading to the border. The location also had the necessary shelter for 90 soldiers and a hundred horses.⁴³

The British also set up a veritable military complex at Chambly to serve as a provision post and as a "headquarters" for the other posts in the area (Fig. 48).⁴⁴ Several services of the British army including commissary, ordinance and quartering officers were housed there. Similarly, the Royal Artillery, the Infantry and the Cavalry were placed side by side. Obviously the old fort built under the French régime did not have the necessary infrastructure for Chambly's new defensive function. From 1812 to 1814, more than forty buildings were constructed for this purpose in the immediate vicinity of the fort. More than 950 soldiers could be housed in the Chambly camp.⁴⁵

Finally, the secondary penetration road on this border, the one which ran along the Châteauguay River, was also provided with two blockhouses right after Hampton's expedition.⁴⁶ Moreover, more than 550 soldiers were billeted right in Châteauguay in January 1814.

Even if the British did not fear any large-scale American action on the right bank of the Richelieu, they did not leave this sector unprotected. They built a blockhouse at Philipsburg on the eastern edge of Missisquoi Bay. Philipsburg was the main terminus of the area's road network coming from Highgate on the American side.⁴⁷ On the Yamaska River, where

42 *Ibid.*, Vol. 1709, p. 21, "Weekly distribution....," 22 January 1814; Vol. 388, p. 123, "Report of Artificers and Labourers....," P. Hughes, 23 May 1814; Vol. 514, pp. 153-85a, "Report on the State of the Fortifications....," E.W. Durnford, 20 November 1816.

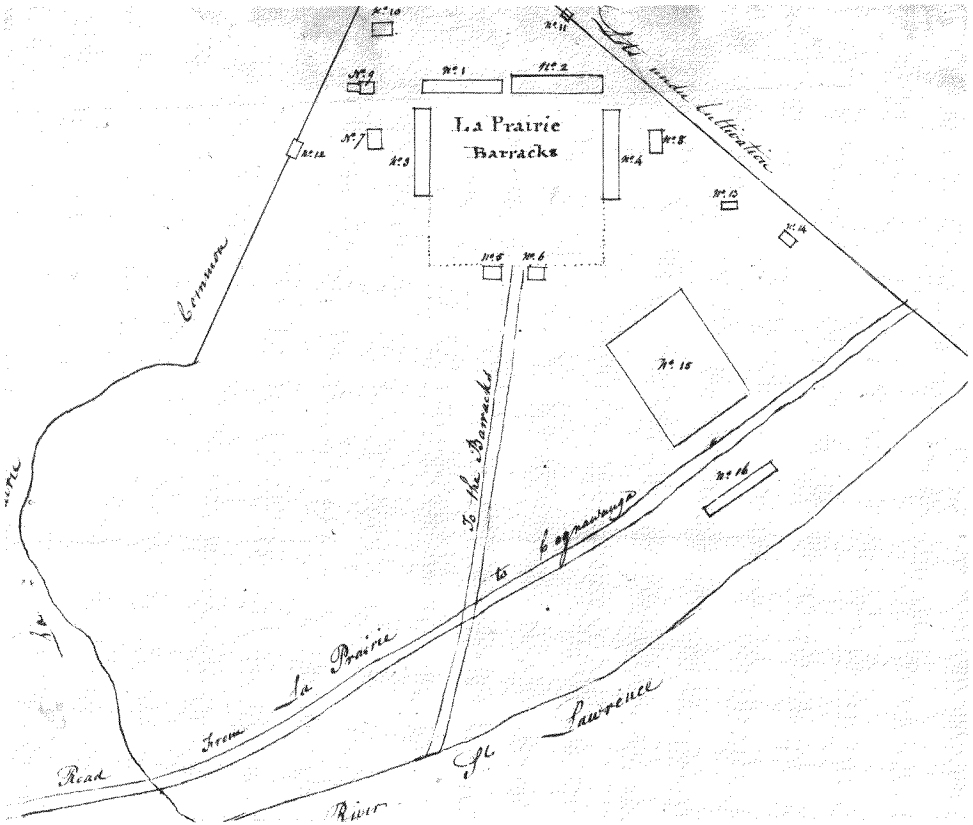
43 *Ibid.*, Vol. 388, p. 123, "Report of Artificers and Labourers....," P. Hughes, 23 May 1814.

44 See M. Guitard's study, "Le camp militaire de Chambly (1812-1869)," Manuscript Report Series No. 416 (Parks Canada, Ottawa, 1980).

45 NA, RG8, I, Vol. 1708, pp. 75-76, "Return of Barracks Accommodations....," Wm. Armstrong, [Sept. 1813].

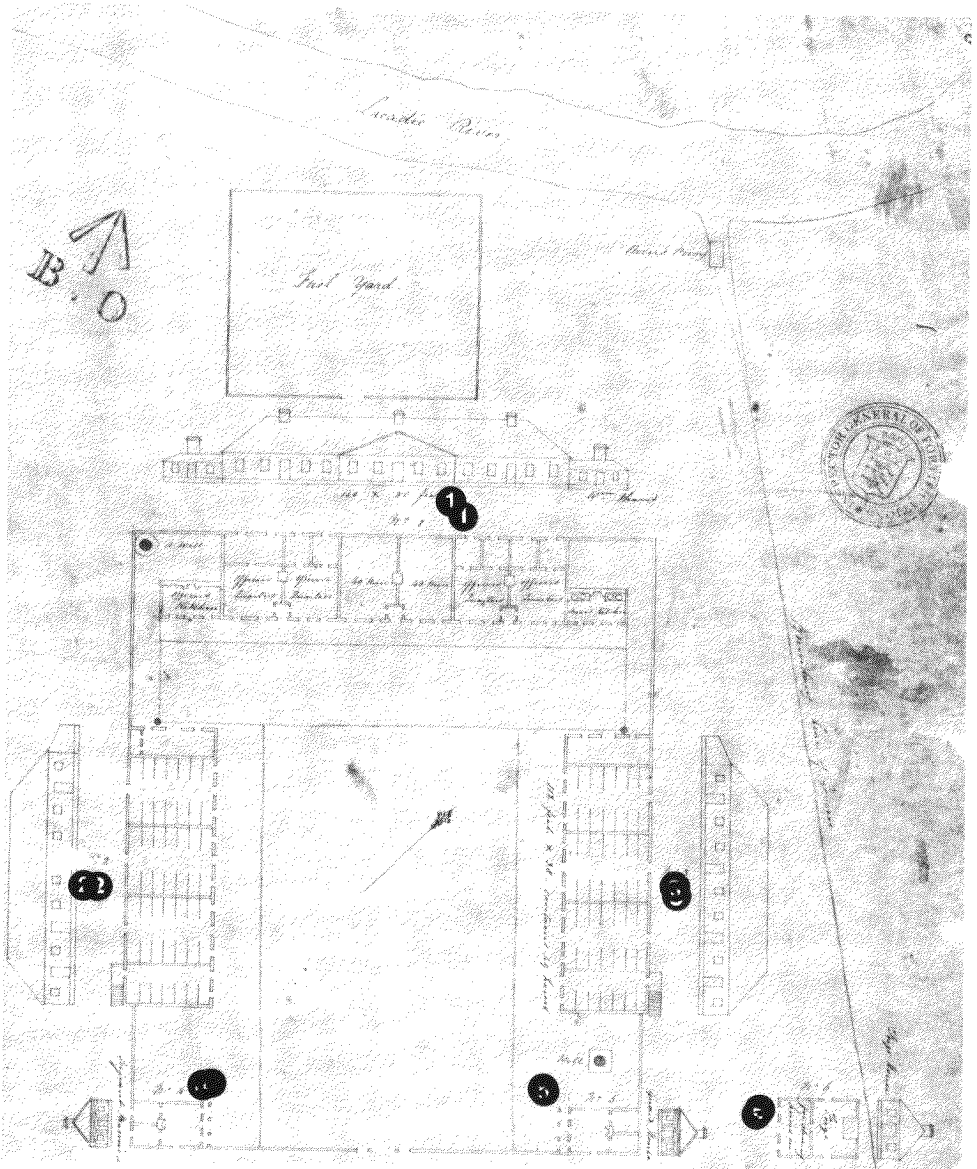
46 *Ibid.*, Vol. 388, p. 123, "Report of Artificers and Labourers....," P. Hughes, 23 May 1814.

47 It was towards Philipsburg that Hampton ordered a diversion in October 1813 before directing his offensive along the Châteauguay River. See G.F.G. Stanley, *The War of 1812*...., p. 249.



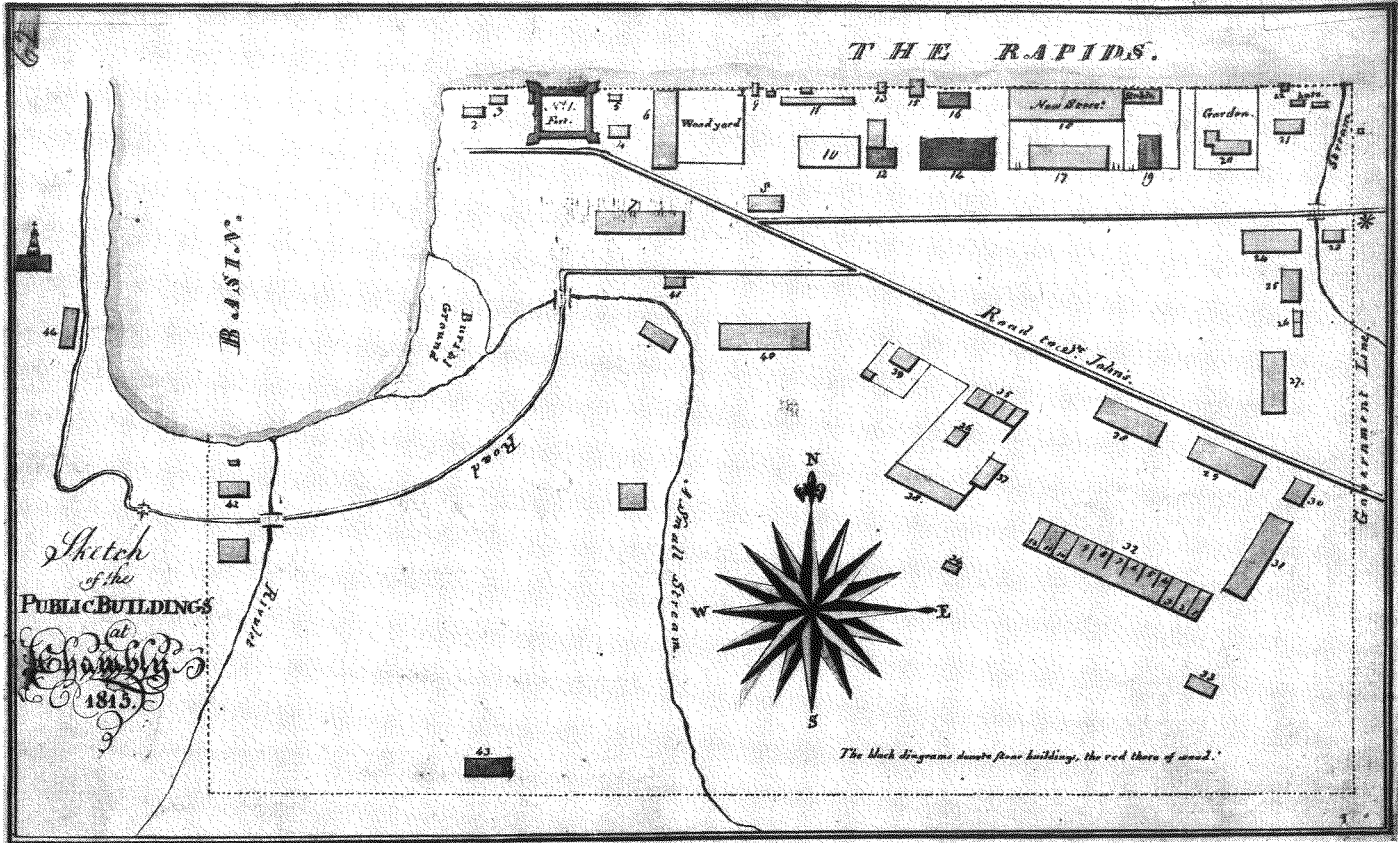
46 La Prairie military camp in 1815. (NAC, NMC-2117)

- Storehouses (10, 16)
- Officers quarters (1, 2, 6)
- Men's barracks (3, 4)
- Guardhouse (5)
- Cooking and baking houses (7, 8, 9)
- Privies (11, 12, 13)
- Stable (14),
- Wood yard (15)



47 Blairfindie or Halfway House Barracks. On the road between Saint-Jean and La Prairie the British erected quarters for the cavalry during the War of 1812. (E.W. Durnford, 1817; NA, NMC-2037)

- Officers' quarters and men's barracks, kitchens (1)
- Stables (2, 3)
- Sergeant's quarters (4)
- Guardhouse (5)
- Forge (6)



48 Chambly military camp in 1815. (NA, NMC-52199)

- Fort (1)
- Storehouses (7, 11, 17, 18, 23, 27, 40)
- Officers quarters (8, 10, 20, 24, 39, 42, 43)
- Men's barracks (14)
- Cavalry barracks (32)
- Workshops (2, 4, 30, 35, 37, 38)
- Guardhouse (12)
- Cooking and baking houses (3, 16, 25, 41)
- Privies (5, 9, 13, 15, 22, 26, 33, 34)
- Stables (6, 28, 29, 31, 36)
- Hospital (19, 20)
- Offices

several roads gave access to the new Eastern Townships, the presence of more than 550 soldiers was noted in January 1814.⁴⁸

In summary, the distribution of the barracks, and especially their concentration in the area to the west of the Richelieu River, confirmed the strategic importance of this area immediately bordering Montréal during the course of the War of 1812. This area would be the primary objective of any American attempt on Lower Canada. Its road network also assured a possible invader direct access to Montréal. This was not the case with the territory east of the Richelieu which, although covered with roads, presented more difficulties. Finally, the concentration of American land operations on the same stretch of border throughout the conflict reinforced the fears of the British concerning the area between the Richelieu River and the St. Lawrence River.

This fact, which was strategic for the defence of the Lower Canadian border against the enemy's land operations, remained the same throughout the conflict, even if the means at the disposal of Governor Prevost regarding the matter of troops varied between 1812 and 1814. In July 1812, more than a third of the 1481 soldiers available in the district of Montréal were concentrated in this sector. In January 1814, including the troops stationed on Île aux Noix, more than half of the strength of the Western Division (including Cornwall) was assigned to the area west of the Richelieu.⁴⁹

48 NA, RG8, I, Vol. 1709, p. 21, "Weekly distribution...", 22 January 1814.

49 *Ibid.*, Vol. 1707, p. 16, "Return of the Troops in the Montréal District," 4 July 1812; 1709, 21, "Weekly distribution...", 22 January 1814.

Finally, the actual nature of the structures showed some of the new war techniques then being worked out in Europe. The military works erected on the Upper Richelieu border were mainly structures for accommodation and storage, but provided with some very elementary defensive elements, such as palisades, blockhouses, field batteries, etc. Their pattern of distribution at the intersections of connecting routes and the concentration of troops at each location was staked more on the offensive by troops ready to intervene in the theatre of conflict than on the passive defence which the larger forts had imposed on the art of war. On a reduced scale, the tactics developed in the Upper Richelieu area between 1812-14 were an aspect of this developing perspective of the art of war, where mobility became the dominant tactical factor.⁵⁰

From this perspective, if the British with the support of large reinforcements of troops did not seek to take the initiative on American territory in 1814, perhaps it was because of Governor Prevost's timidity as a strategist, as several historians have stated.⁵¹ In 1814, the infrastructure for such an offensive in the Upper Richelieu was available. Had not Bathurst, the Colonial Secretary, strong in the knowledge that a large contingent of troops had been sent, instructed Prevost to go onto the offensive against the Americans?

When this force shall have been placed under your command, His Majesty's Government conceive that the Canadas will not only be protected for the time against any attacks which the enemy may have the means of making, but it will enable you to commence offensive operation on the Enemy's Frontier before the close of this Campaign. At the same time it is by no means the intention of His Majesty's Government to encourage such forward movements into the Interior of the American Territory as might commit the safety of the Force placed under your command. The objects of your operations will be: first, to give immediate protection; secondly, to

50 Even though sedentary militia or those formed into regiments made up the majority of British troops, they were commanded by several regular army officers. Theoretically up to date on the various techniques of warfare, these officers were the ones mainly responsible for working out the tactical defensive. See G.F.G. Stanley, *The War of 1812...*, pp. 416-17.

51 *Ibid.*, p. 416. Prevost's conduct, especially during the 1814 campaign, was also the subject of a later inquiry; see J.M. Hitsman, *The Incredible War of 1812...*, pp. 238-39; PRO, CO42/164, fols. 51-56, Barrow to Bunbury, 8 September 1815; *ibid.*, fols. 57-65v, Barrow to Bunbury, 9 September 1815; *ibid.*, Vol. 168, fols. 170-89v, Duke of York to Bathurst.

*obtain if possible ultimate security to His Majesty's Possessions in America.*⁵²

The restoration of the Île aux Noix fortifications was an aspect of the larger, overall context of tactics developed for the defence of the Upper Richelieu.

Restoration of the Île aux Noix Fortifications

Despite the expertise of several engineers and other officers who stressed the inappropriateness of reusing the works on Île aux Noix that had been erected at the time of the American War of Independence, the decision was made as early as the fall of 1812 to restore them. With the exception of the redoubt located to the northeast that was demolished in order to set up the naval base and dockyard, the fort and the two redoubts situated at the south and west of the island were refitted, keeping the same geometrical figure on the whole (Fig. 49).⁵³

There was one major change though. The two redoubts were not finished at the gorge, that is to say, on the side facing the fort, as they had been in 1782; only one palisade closed these works on this front.⁵⁴ Because of this modification, the redoubts no longer were the isolated works they had been in 1782, but rather simple advanced works to add to the defence effected by the main fortification situated to the rear. In 1812, the fort would therefore be in a position of command in relation to the redoubts, in case the enemy gained control of one of these advanced works. Another important modification to the fort itself was that the ravelin which had been set up in front of one of the fronts was replaced by a simple redan integrated into the main rampart of the fort. These transformations of the defensive system bring to mind the proposals of the same order which had been expressed by Mann in 1789 and 1791.⁵⁵

The reconstruction of the works also transformed the original profile of the fort and the redoubts (Fig. 50). For the fort, though the total width of

52 J.M. Hitsman, *The Incredible War of 1812...*, p. 250, Letter from Bathurst to Prevost, 3 June 1814.

53 J. Bouchette, *A Topographical Description of the Province of Lower Canada with Remarks upon Upper Canada, and on the Relative Connexion of Both Provinces with the United States of America* (London: W. Faden, 1815), pp. 177-78.

54 NA, RG8, I, Vol. 388, p. 122, "Report of Artificers and Labourers...", P. Hughes, 23 May 1814.

55 See Chapter 2.

1. *Quarter-master's Office*
 2. *Quarters and Store*
 3. *Stable for Cattle in the Engineer Dept.*
 4. *Blacksmiths workshop in the Artillery*
 5. *Engineers Department*
 6. *Blacksmiths*
 7. *Private Shop*
 8. *Two Bread ovens*
 9. *Magazine (powder)*
 10. *Store Blacksmiths barracks*
 11. *D. D.*



Point of Reference of the Blacksmiths workshop and the Forge

49 Plan of the restoration of Fort Lennox and its south and west redoubts in the fall of 1812. The third redoubt, on the north, was demolished earlier to allow the naval base to be set up. (*Hughes, 1814; NA, C-17708*)

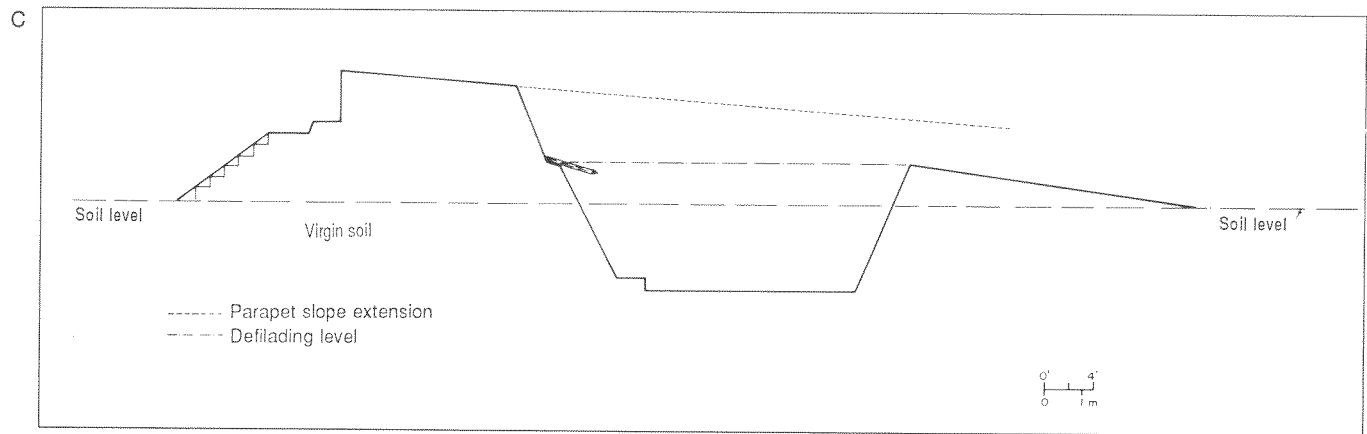
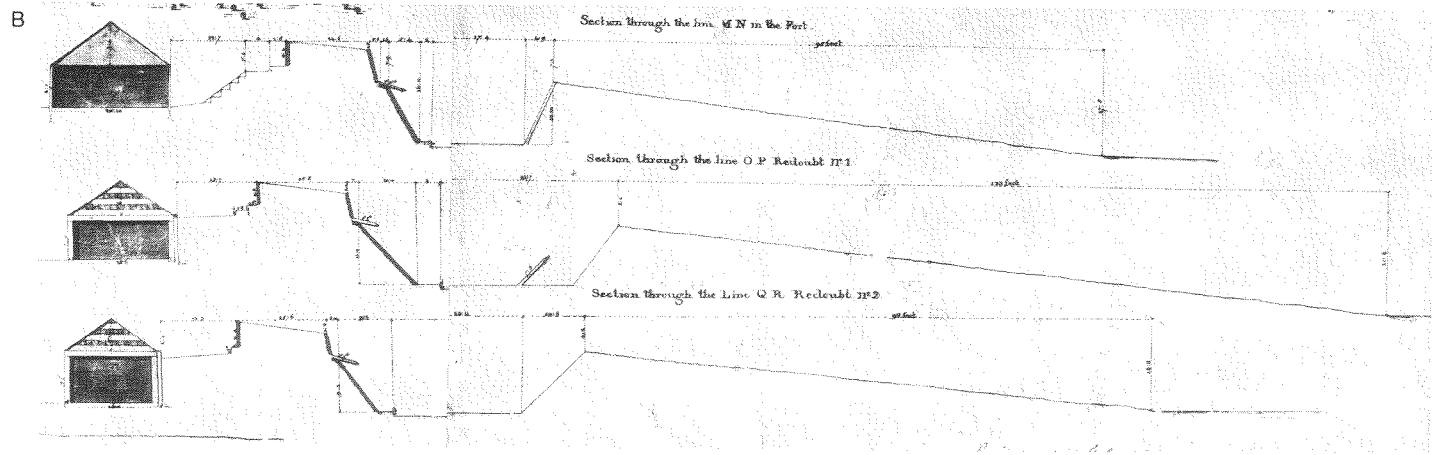
the rampart at ground level remained appreciably the same at a little more than 30 feet, its height in 1812 provided more command than at the beginning. The fort's rampart was now made up of a terreplein surmounted by a parapet whose crest rose to a level overhanging the line of the ground by more than 10 feet. The thickness of the parapet was increased to 14.5 feet, and it was given a revetment inside and outside, as was the escarp. The superior slope of the parapet was very gentle at a bare 6° .

The considerably narrowed ditch was only 20 feet wide at the base. The counterscarp, which was not revetted, rose to a height of 11 feet as did the escarp. The glacis extended into a slight slope more pronounced than the superior slope of the parapet, so that at its tip the enemy could barely discern the top of the parapet. On the other hand, the superior slope of the latter did not allow the defenders to provide adequate coverage of the slope of the glacis, since the superior slope's alignment was situated a few feet above the counterscarp.

The revetments built in 1812 resemble the one used by engineer Twiss for the counterscarp of the fort in 1778. For the most part they were made of large hemlock logs which could reach 18 feet in length; they were placed horizontally, along the longitudinal axis of the rampart and according to the batter desired (Fig. 51).⁵⁶ These logs were retained by large stakes set up every 15 feet. Finally, at the top of the escarp, a fraise was added in 1812 that was slightly pointed towards the base of the ditch.

The restoration of the ramparts of the two redoubts in 1812 reflected the same spirit: the same revetment technique supported the earth of the parapet and the escarp; the escarp like the fort was topped by a fraise (Fig. 50). The two redoubts, however, did not have the same profile as in the beginning. They differed in the height of the rampart and the depth of the ditch which varied by a few feet. In contrast to this state of the redoubts in 1782, the floors of the redoubt ditches were no longer situated at ground level inside the works, but some feet lower, which meant that the ditches were excavated to some extent. This was probably done to obtain additio-

56 R.T. Grange, Jr., "Early Fortification Ditches...." No. 18A, p. 38. See also Appendix C, my hypothesis of interpretation of the archaeological digs in correlation with the manuscript data on the fort's profiles.



nal earth necessary to create the parapet. The defilading level of each redoubt made it possible to hide, if not all, at least the greater part of the escarp. In contrast to the fort, the alignment of the superior slope of their parapets completely exposed the whole slope of the glacis.

In the two redoubts, the total width of the rampart was reduced a few feet in 1812, since the original casemates constructed under the terreplein were no longer present. Besides, the new buildings that were set up inside the redoubts hugged the terreplein very closely.

The defence of the dockyard and the central part of the island along the north-south axis was the subject of a new proposal formulated by engineer Hughes (Fig. 49).⁵⁷ He suggested closing off this sector of the island by a palisade line broken in two spots. At the two angles obtained, he proposed adding blockhouses so as to ensure the cross-fire necessary for flanking this new defensive line. Even though a notarized document promised the provision of 2000 cedar stakes for Île aux Noix in December 1814, whether this palisade was constructed remains somewhat in doubt since no subsequent survey revealed its existence.⁵⁸ Perhaps the signing of the peace treaty at the end of 1814 marked the end to the work.

Defensive works were also set up in the channels on both sides of the island.⁵⁹ On the east, a chain was reinstalled across the river facing the first redoubt. At the same point on the west the channel was closed off by floating chevaux de frise. Finally the banks on each side of the river were cleared so as to ensure an unencumbered field of vision for the artillery mounted on the island's fortifications.

The decision to reactivate Île aux Noix in 1812 went with the intention to place a large garrison there both to defend the area and to operate the naval base.⁶⁰ For this purpose, several buildings such as barracks, blockhouses, warehouses, powder magazines, workshops, etc., were built or refitted inside and outside the defence works. Speaking of the accommo-

57 On the 1814 plan, a note refers to Hughes's letter of 16 August to Mann, at the time Inspector-General of Fortifications. This document has not been found.

58 ANQM, Notarial file of R. Boileau, agreement between Louis Papineau and Joseph Courtemanche, 15 December 1814. The document stipulates that the 2000 stakes must be 12 feet long and 5 inches in diameter at their smaller end. A calculation of the distribution of these 2000 stakes placed side by side, with each piece taking up at least 6 inches' width, totals a palisade at least 1200 feet long. Now the new front proposed by Hughes is about 1200 to 1300 feet long!

59 E. A. Cruikshank, "From Isle aux Noix to Chateauguay. A Study of Military Operations on the Frontier of Lower Canada in 1812 and 1813." Part I, *MSRC* (Section II, 1913), p. 160.

60 For example on Île aux Noix in September 1813, there were over 1200 men including the militia and some sixty officers. D. Lee, "Regiments and their Commanding Officers at Isle aux Noix," in D. Lee, *et al.*, *op. cit.*, p. 188.



51 Wooden logs found in the ditch of the north face of the first British fort. These pieces belong to the original revetment of the escarp. (*Parks Canada, R.T. Grange, Jr., 5G44: 19Y6*)

dations alone, at least six new barrack blocks and four officers' quarters were erected inside the fort and the redoubts. In 1813, about 20 officers and nearly 900 soldiers could be accommodated, without counting the temporary arrangements made in time of war.⁶¹ In 1814, according to the engineer, just one of the barracks which had been built could hold 16 officers and 800 soldiers!⁶²

In the fall of 1814, the overall picture of the Île aux Noix works raised some questions by Nicolls, the commanding engineer, who was on an inspection visit in the Montréal district at the time. The large number of buildings erected along the ramparts of the different works created a cluttered situation. Moreover, certain barrack blocks rose above the rampart to such an extent that they became totally exposed to the view of the enemy. He added:

*... it will be for your Excellency to determine whether the Island is to be considered merely a depot for troops & more buildings are to be erected to the prejudice of defences; the troops and accommodations to be proportioned to the Work of defence; or additions to be made to those works to afford cover to the Buildings required.*⁶³

As an example, Nicolls pointed out that one of the barracks built too close to the rampart inside the fort was exerting too much pressure on the adjacent earth, causing the revetment to collapse.

The defensive works of 1812-14 to a great extent reflected the sudden decision in 1812 to establish a naval base and dockyard on Île aux Noix, given the importance of control of navigation on the different borders. The large number of buildings that overburdened and surrounded the defensive works, to the detriment of their efficiency in some cases, were proof of the intention of making it a first-rate depot for border defence rather than a place of war which could stand any test. Moreover, the fact that the defensive works, ones which had long been considered irreparable, were hastily reconstructed confirms this previous observation. The fort and the redoubts on Île aux Noix in 1812-14 only offered the support necessary for troop movements and for naval operations on the Richelieu-Lake Champlain border.

61 NA, RG8, I, Vol. 1708, pp. 75-76, "Return of Barracks Accommodations...." [Sept. 1813].

62 *Ibid.*, Vol. 388, p. 213, Nicolls to Prevost, 22 November 1814.

63 *Ibid.*, p. 214.

CHAPTER 4

THE ARTICULATION OF A NEW DEFENSIVE STRATEGY

The Peace of Ghent did not really solve the quarrels that had brought about the armed struggle between the Americans and the British. Signed at the end of December 1814 and subsequently ratified by the two governments concerned, the treaty restored the opponents to the pre-war situation: the “conquests” on both sides were not retained; each of the parties was to cease hostilities, and the question of boundaries was to be referred to future negotiations.¹

On the ground, the respective failures of the two belligerents imposed a status quo on each party which was difficult to accept. The Americans had failed in their objective of severing British communications on the St. Lawrence River between Lower and Upper Canada. The British, having the advantage of an increased number of regular troops following Napoleon’s defeat, had no more success when they decided to carry the offensive into American territory in 1814.² There was no doubt that in this sort of situation the resumption of hostilities would be expected on both sides. Thus the strategists busied themselves with rethinking the defence of their territory in the light of the experience of 1812-14.

A New Defence Plan

On the British side, an initial investigation was indispensable as to what communication was necessary between Lower and Upper Canada, in order to be in a position to put up an adequate defence in each of the parts of

1 J.M. Hitsman, *The Incredible War of 1812...*, pp. 232-37.

2 In fact, in a secret despatch dated 3 June 1814, Colonial Secretary Bathurst ordered Prevost to carry the offensive into American territory. (This letter is published in J.M. Hitsman, *The Incredible War of 1812...*, pp. 249-51). This operation had been made possible thanks to the arrival of a massive reinforcement of troops in the British colonies after Wellington’s victory over Napoléon.

the colony. As early as the summer of 1815, some months after the ratification of the peace treaty, Commodore William Owen, at the time Naval Commissioner on the lakes of Canada, was asked to study the problems and security of communication between Montréal and Kingston. It must be added that he lost no time in stressing to his superiors the fundamental importance of this link for the defence of Upper Canada, in particular:

*The means of forwarding supplies for Upper Canada forms so important a feature in its defence that every improvement in it which can be suggested claims immediate attention.*³

Besides, it was one of the major lessons drawn from the experience of the latest conflict.

Though the primary British objective was to achieve naval superiority on the river and the Great Lakes, the difficulties of navigation led Owen to conclude that between Montréal and Kingston "our naval means can give but little assistance: a land defence can be alone relied on."⁴ He suggested the construction of a series of fortification works to this end whose distribution would aim to prevent the enemy from controlling the corridor between Montréal and Kingston, whether they made use of the river, the roads, or both. However, the Lake Champlain-Richelieu River corridor and the territory on either side was still one of the main routes open to the Americans to reach Montréal and so severed the vital link between the two parts of the province.

Within the boundaries of Lower Canada, besides fortifying the Richelieu border, Owen proposed to fortify the Île des Soeurs (Saint-Bernard Island) at the mouth of the Châteauguay River in the immediate vicinity of Montréal so as to prevent any enemy attempt from that direction. He then pointed out that the Châteauguay River was navigable for 16 to 20 kilometres and that the settlements spread out on both sides of it could serve profitably as logistical support for the enemy plans.⁵

Owen also noted the necessity of canalizing the section of the river between Montréal and Lachine, so as to facilitate the transportation of

3 PRO, CO42/171, fols. 15-41, Owen to Crocker, 30 June 1815.

4 *Ibid.*, fols. 42-53, Owen to Crocker, 3 July 1815.

5 Owen added: "Boats could not in its present state be brought that way; but the Settlements are numerous and good affording Horses and Cattle in considerable manner" (*ibid.*, fol. 46v).

merchandise and munitions. He added that a merchandise depot should be set up in the immediate area of Montréal.⁶

Commodore Owen's opinion on the limitations of naval power in the defence of Canada led certain officers to question themselves once again on the defensive profitability of naval superiority on the lakes, a superiority which had been so sought after in the course of the 1812-14 conflict. The naval construction race during that conflict had demonstrated precisely the net advantage the Americans had in that field because of the nearness of their resources. The Rush-Bagot Agreement, signed in April 1817, which limited the number of ships on the Great Lakes, resolved the British dilemma to some extent.⁷

Colonial Secretary Bathurst, reacted quickly to Owen's various proposals. He understood the fundamental importance of effectively assuring the navigable link between Lower and Upper Canada. To this end he ordered Governor Drummond to produce the necessary estimates, not only for the canal between Montréal and Lachine, but also for an alternative to the St. Lawrence River via the Ottawa and Rideau rivers.⁸ As for the various proposals for defensive works, the Secretary of State decided to suspend work on them while he awaited the conclusions of the commission tasked, by virtue of the Treaty of Ghent, with studying the problems of the border.⁹ As the only door open to the colonial authorities in this matter, the Secretary of State said that in the case of an absolute need for defensive works, the relevant plans and estimates could be submitted to him.

In accordance with the Secretary of State's wishes, all construction or major repairs to the colony's defensive works was halted in 1816. The engineers lost no time, however, in stressing the indispensability of setting up new fortifications at Québec, "The Key of the Whole Country," and at Kingston, "The Key of the Navigation on the Lakes and the Site of our Naval Arsenal."¹⁰ Île aux Noix and Niagara were quickly added to the priority locations because of the construction of defensive works by the Americans on each of these borders.¹¹

6 Owen identified three possible sites for setting up this depot: Saint-Ignace Island at the mouth of the Richelieu, a site which was obviously favoured by his proposal to canalize the Richelieu River; Sainte-Thérèse Island, situated in the St. Lawrence River opposite Bout-de-l'île in the east; and finally, Sainte-Hélène Island, opposite Montréal's "south shore."

7 J.M. Hitsman, *Safeguarding Canada...*, pp. 114-15.

8 PRO, CO42/169, fol. 96-96v, Bathurst to Drummond, 10 October 1815.

9 *Ibid.*, fols. 92-93, Extract of a letter from Bathurst to Drummond, 10 October 1815.

10 *Ibid.*, fols. 86-87, Mann to Mulgrave, 27 April 1816; fols. 88-89, Nicolls to Mann, 5 January 1816.

11 Drummond then indicated to the Colonial Secretary that the Americans were getting ready to build "a

In the fall of 1816, the new Commanding Royal Engineer in Canada, E.W. Durnford, supported by Governor-in-Chief John Sherbrooke, took up again on his own account the various proposals which were at the time considered indispensable.¹² He stressed as well the deplorable state of the defence of Montréal, which was in no position to resist any attack in force, while that city and its immediate surrounding area was the communications link between Lower and Upper Canada. Among other locations, Sainte-Hélène Island, which commanded the passage between the Island of Montréal and the south shore, must be fortified:

*The Defence of Montréal must rest upon Distant operations as much as possible & to ensure the cooperation of the Forces a Central post ought to be established to secure the passage across the river almost opposite the Town is a favourable Site for a Tete de Pont on a Large Scale which can be tolerably well flanked on either Side by erecting Suitable Batteries on the Islands most contiguous to that Shore.*¹³

Thus, at the beginning of 1817, most of the major elements of a new defensive system, considered indispensable by several officers right after the War of 1812, were clearly identified. However, it would be necessary to await the arrival of the Duke of Richmond as Governor General in 1818 for these various proposals to be clearly formulated in an overall defensive strategy for the Canadas as a whole.¹⁴ His activity would lead to the adoption of a position by the British authorities as to the opportuneness of investing large sums for the construction of defensive works in Canada. Richmond's defence plan was thus broadly inspired by the numerous proposals that had been formulated since 1815 and that were generally accepted among the officers of the colony:

In the defence of Canada, the primary objects appear to be the preservation of Quebec, Kingston and Montréal, the two first as being the Keys of their respective Provinces, and the last, as the

Bombproof Fort" at Rouses Point right beside the Richelieu-Lake Champlain border, and thus only a few kilometres from Île aux Noix (*ibid.*, Vol. 166, fols. 153-57 and 212-12v, Drummond to Bathurst, 12 April and 6 May 1816).

12 *Ibid.*, Vol. 167, fols. 350-77, Sherbrooke to Bathurst, 16 December 1816.

13 NA, RG8, I, Vol. 514, pp. 153-85a, "Report on the State of the Fortifications....," E.W. Durnford, 20 November 1816.

14 A general in the British army and a veteran of Waterloo, Richmond busied himself as soon as he arrived by making a reconnaissance voyage to the various parts of the colony.

*Depôt of the Arms and Ammunition for the Militia of that part of the Country, of those Stores which must be sent to Upper Canada, and as absolutely necessary to preserve the Communication between the Provinces.*¹⁵

Richmond's statement forecast enlarged fortifications for Québec and Kingston, Canada's two defensive poles. Besides, he reaffirmed the fundamental importance of good communication between the two parts of the colony by forging a navigable link on the Ottawa and Rideau rivers. The traditional St. Lawrence route, particularly above Cornwall where one of the river's banks was in American territory, became too dangerous in wartime. The Governor also thought that the canal planned between Montréal and Lachine would speed up the transportation of goods.

Another major point in the plan formulated by Richmond was that Montréal became the logistic pivot of the Canadian defensive strategy. To Richmond, a final attack on Québec, combined with a larger- or smaller-scale operation against Montréal, was the essential objective of any American campaign against Canada. The main obstacle which would then confront the invaders would lie in the difficulty of transporting a sufficiently bulky train of artillery, ammunition and provisions all the way to Québec, the ultimate target. Richmond added, "the capture of that town [Montréal], with all its warlike Stores of every description, would remove this obstacle and render the attack on Quebec an easy undertaking."¹⁶

By way of solution Richmond, as had his predecessors, believed that if the ammunition and military materiel depot concentrated at Montréal was set up on Sainte-Hélène Island, it would be better protected and easier to defend.¹⁷ Richmond thought that the new depot, so moved, would have the effect of inciting the Americans to invade Canada by the Richelieu-Lake Champlain border, a route which would enable them to proceed both against Montréal and Québec. Moreover, the Governor concluded that the Americans were preparing for such a scenario. His evidence was the construction of new fortifications at Rouses Point right on the border as well as the building of new roads over the neighbouring area. As a result, the defence of the Richelieu was in the forefront of the Governor's defensive program.

15 PRO, CO42/179, fols. 119-23, Richmond to Bathurst, 10 November 1818.

16 *Ibid.*

17 *Ibid.*, fols. 114-16, Richmond to Bathurst, 5 November 1818.

This new strategy was submitted to Wellington, the victor of Waterloo, who corroborated Richmond's argument without hesitation.¹⁸ At that time Wellington was Master-General of the Ordnance, a key post which at the time held a vote in Cabinet, where all decisions concerning expenditures for military construction were made.¹⁹

Wellington's approval brought about acceptance by the British authorities of a new strategy for Canada. The effect of the decision would be to make large sums available during the second quarter of the 19th century for the construction of defensive works at Québec, Montréal (Sainte-Hélène Island) and Kingston, for the Rideau Canal and for Fort Lennox on Île aux Noix.

Île aux Noix or Saint-Jean: An Endless Debate

The War of 1812 had demonstrated once more the strategic interest of the Richelieu-Lake Champlain border for the defence of Canada. Beside penetration by the waterway there was now very definite penetration by the land routes. American Major General Hampton's operation gave ample evidence of this. The thinking which began with the signing of the Treaty of Ghent reactivated discussions on how to defend this area of the colony most effectively.

Though the need to fortify this corridor adequately met with unanimous assent of the officers concerned, the choice of the site for setting up the main defensive works was once again up for discussion. The endless debate over Saint-Jean or Île aux Noix surfaced again, even though during the War of 1812 the strategists had preferred Île aux Noix, partly because of the navy's contribution in that conflict. However, profound changes drastically altered the image of the Upper Richelieu beginning in 1815 and influenced the tactical approach on that border.

18 *Ibid.*, Vol. 183, fols. 142-60, Wellington to Bathurst, 1 March 1819.

19 Wellington would even form a cabinet in 1828.

Intensive Settlement on the Upper Richelieu

The year 1815 marked an important stage in the history of the settlement of the Upper Richelieu. From that date, Napier Christie Burton, the heir of the seigneurial lands of General Gabriel Christie, gave notary Edme Henry of Longueuil responsibility for developing his lands.²⁰ Henry spared no effort to attract large numbers of settlers. Furthermore, he took advantage of the large population movements taking place in Canada during this period. Underemployment in English industrial towns as well as famine raging in Ireland gave rise to a strong increase in British immigration to Canada. Then again, the French Canadians, who were too cramped in the old seigneuries of the Lower Richelieu and the St. Lawrence, were another possible source for Henry.²¹

Thus the first Loyalist families, established in particular along Missisquoi Bay and in the immediate vicinity of the border on the Richelieu River, were quickly joined by many tenants who were drawn by the promise of soil suitable for prosperous farming and the perspective of an easily accessible commercial outlet.²² For example in the seigneurie of Noyan alone, on the right bank of the Richelieu facing Île aux Noix, nearly 200 land grants were made between 1815 and 1825.²³ The paths and roads that were scattered over this Upper Richelieu area, which was scarcely inhabited till then, progressively linked together small villages, some of which were experiencing very rapid growth. Seigneur Christie Burton's land agent increased his settlement efforts as well by the creation of seigneurial villages in 1815-17, including Henryville in the Seigneurie of Noyan, Christieville (Iberville) in Bleury and Napierville in Léry. These villages were all located at the intersection of various concession roads which were opening at the same pace as the distribution of these seigneurial lands (Fig. 52).

To this was added improvement of the main roads, especially east of the river. Until that time reaching Saint-Jean by these roads was much more difficult than on the opposite shore. The intensive settlement in the

20 In fact, Henry became Napier Christie Burton's official agent and signed all the land concessions which were granted during this period in Burton's name. This is what transpires in the seigneurial documents preserved at the National Archives of Canada (MG8, F, 99-9, McGinnis papers).

21 L. Beaugard, "Le peuplement du Richelieu," pp. 43-74.

22 *Idem*, "La vallée du Richelieu," p. 70.

23 More than half were registered before 1820 (Saint-Hyacinthe, Archives du diocèse, I. Desnoyers, "Histoire de la paroisse St-George de Noyan," Manuscript, November 1884). In pages 13-19 of his manuscript, Abbé Desnoyers draws up a table of the first concessions registered in this seigneurie.



52 The Lower Canadian border by the Richelieu River and Lake Champlain was still a focus of defensive concerns immediately after the War of 1812. From 1815 on, the settlement of the Upper Richelieu flourished considerably due to the efforts of the seigneurial agent of Napier Christie Burton, the owner of the seigneuries on both sides of the river. Three villages were created at that time at the intersections of the various concession roads: Henryville (1) and Christieville (2) [Iberville] on the east, and Napierville (3) on the west. (NA, NMC-97796-3/3)

Seigneurie of Noyan caused Commodore Owen in 1815 not to look too favourably on the road network developing in the area between the Richelieu River and Missisquoi Bay (Fig. 53). At least three roads in this area provided a link between Burlington in the State of Vermont and the Rivière du Sud, which would permit the enemy to bypass Île aux Noix.²⁴

The anxiety of the military increased in 1817 with the official construction of a main road from the point on Missisquoi Bay to Christieville opposite Saint-Jean. Approved in 1818, this new 36-foot-wide road "is considered detrimental to the defence of the country. Isle-aux-Noix can be completely turned."²⁵ There was no doubt that in such a context the debate would be joined anew on the advisability of building a fortification of primary importance, either at Île aux Noix or at Saint-Jean.

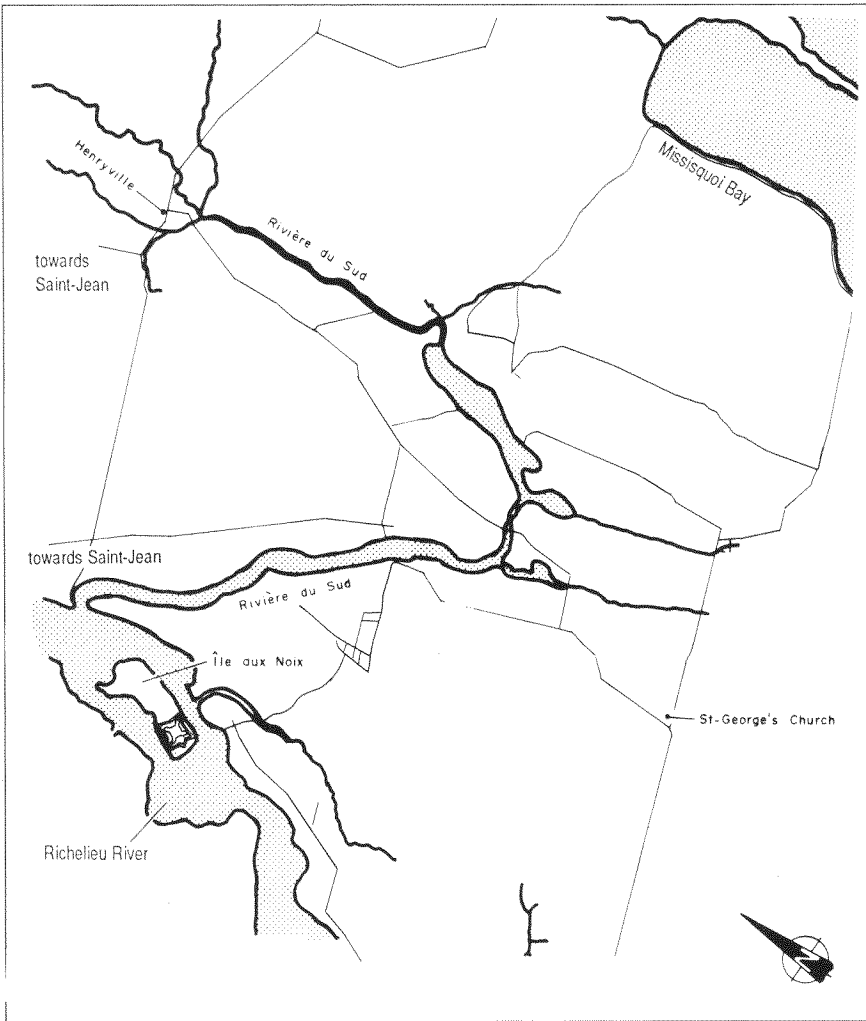
The military could not control the development of the Upper Richelieu because of the seigneurial system, where private interests confronted military necessity.²⁶ As for the backcountry, divided into townships on both sides of the river, the governors tried to exercise a certain control there to meet the defensive imperatives on this border. So in May 1814, Prevost suggested to the Colonial Secretary rewarding the Glengarry Fencibles and the Voltigeurs for their contribution at the Battle of Châteauguay by granting them lands west of the Richelieu in Sherrington Township. The Governor saw a defensive advantage in this:

... this particular Township was that being situated near the lines it might be settled by those, who having served during the present war would by that service be the better enabled to defend that part of the

24 PRO, CO42/171, fol. 55v, Owen to Crocker, 3 July 1815.

25 NA, RG8, I, Vol. 515, pp. 141-44, Romilly to Henderson, 17 March 1817; MG8, F, 99-9, Vol. 25, pp. 20748-57, "Procès verbal of several front and by-roads through the Seignories of Noyan & Sabrevois," L.R. Chaussegros de Léry, 30 September 1818. On the same occasion, L.R. Chaussegros de Léry, Chief Road Offices for the Montréal District, sanctioned some secondary roads.

26 One should remember in this connection Haldimand's failure to block the settlement of Loyalists along Missisquoi Bay from 1783, in opposition to seigneurs Christie and Caldwell, who continued to grant them land to increase their income.



53 The area situated immediately east of Île aux Noix along the Rivière du Sud developed at an accelerated rate as early as 1815. The road network grafted onto these seigneurial concessions made the military more apprehensive since this area was contiguous with Missisquoi Bay, which the enemy could use to bypass Île aux Noix. As well, a main road from Missisquoi Bay to Christieville [Iberville], opposite Saint-Jean, was approved as early as 1818. (*Parks Canada, L. Lavoie, 92-5G-4*)

*Country which in case of any future contest with America would be first exposed to the Attacks of the Enemy.*²⁷

In March 1815, even if the right bank of the Richelieu River was still relatively thinly populated, Prevost objected to the settlement of retired soldiers in the six townships next to the border east of the seigneuries.²⁸ He preferred to direct them further to the east along the Saint-François River or again to the west in the townships of Hemmingford, Hinchinbrooke and Sherrington, between the seigneuries on the left bank of the Richelieu and the St. Lawrence River.²⁹ Prevost believed that "the experience of the war with the United States lately terminated, has in more than one instance shewn that an unsettled country immediately on the Frontier affords a better defence than any population that could be placed there."³⁰

However, in the fall of 1815 the authorities did a turnabout and Bathurst, at the time Secretary of State for War and for the Colonies, ordered as an additional defensive measure the closing the whole territory between the St. Lawrence and the Richelieu River to settlement, from the border to Montréal (Fig. 54).³¹ This decision probably stemmed from the experience of 1812-14 when this area had been the hottest sector of the Richelieu border, where the Americans attempted several operations including Hampton's.³² In the summer of 1815, Commodore Owen had once again insisted on the importance of the sector for any American attempt on Montréal with a view to cutting communications between Upper and Lower Canada.³³ In accordance with the Colonial Secretary's instructions, Governor Sherbrooke announced that he would grant no more land in this sector and that he would prevent the extension of roads as much as possible.³⁴ The hesitation of the authorities in their policy of settling the border area reappear in the choice of a site for the construction of fortifications.

27 PRO, CO42/156, fol. 252v, Prevost to Bathurst, 9 May 1814.

28 These were the townships of Sutton, Potton, Stanstead, Barnston, Barford and Hereford.

29 The Governor used the pretext at the time that ease of communication with the St. Lawrence would draw more retired soldiers to these new sites.

30 PRO, CO42/161, fol. 85, Prevost to Bathurst, 18 March 1815.

31 *Ibid.*, Vol. 166, fols. 173-77, Drummond to Bathurst, 21 April 1816; *ibid.*, Vol. 167, fols. 183-84, Sherbrooke to Bathurst, 23 September 1816. This ban was still in effect in 1821 (*ibid.*, Vol. 187, fols. 108-9, Dalhousie to Bathurst, 24 April 1821).

32 The government's direct control over settlement in this area was concentrated in the strip of land divided into townships along the border. The rest of the land was to some extent free of government control since it was divided into seigneuries.

33 PRO, CO42/171, fol. 42, Owen to Crocker, 3 July 1815.

34 *Ibid.*, Vol. 167, fols. 183-84, Sherbrooke to Bathurst, 23 September 1816.

In Favour of Île aux Noix

Contrary to 1784, the signing of the peace treaty in 1814 did not cause the military of the colony to neglect, let alone abandon, the defensive posts which had been reactivated during the conflict. Fearing an impending resumption of hostilities, they did not wish to be caught unprepared as in 1812 when most of the fortified works, especially on the Richelieu, were in a state of advanced ruin. Governor Drummond insisted to the Colonial Secretary that he should approve the costs of maintaining the fortifications, including the ones on Île aux Noix:

*... they must constantly be kept in due repair, to prevent the enormous expense attending it, were they to fall too far to decay; independant on the necessity of being well upon our guard, against a Neighbour, whose dearest object is the possession of these Provinces.*³⁵

During the year 1815, several work estimates approved by the authorities were in fact for the maintenance of the Île aux Noix fortifications as well as for the construction of various warehouses.³⁶

On Île aux Noix again, shipbuilding activity continued at the pace of 1814; the 12 gunboats laid down before the end of the war were finished in 1815 (Figs. 55 and 56). Besides, in order to recover the naval superiority on Lake Champlain that had been lost at the Battle of Plattsburg Bay, the construction of three frigates and two brigantines was planned.³⁷ The naval base was improved with the construction of new barracks for the sailors in the fall of 1815. This was an imposing wooden building, clad in clapboard, three stories high, each of which covered nearly 4000 square feet (Fig. 99).³⁸ Finally, the commissary service did not fall behind the other military services since it ordered ten new small ferry boats in 1815,

35 *Ibid.*, Vol. 63, fol.10-10v, Drummond to Bathurst, 15 August 1815.

36 *Ibid.*, Vol. 169, fol. 104, "Abstract of Services for which Estimates have been approved and which have been ordered to be performed by the Engineer Department in the Canadas during the year 1815"; NA, RG8, I, Vol. 554, pp. 20-24, Letter from S. Beckwith, 5 February 1815.

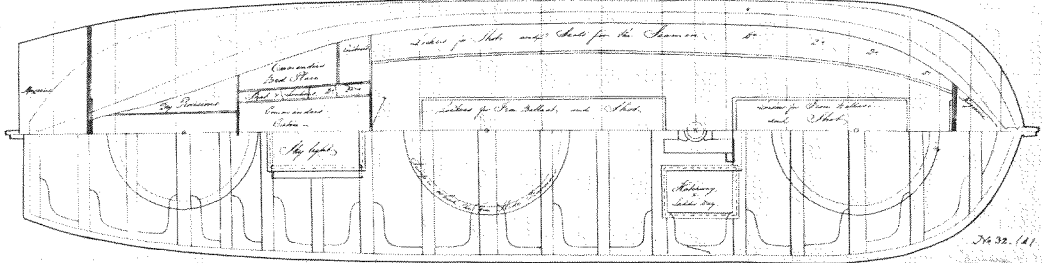
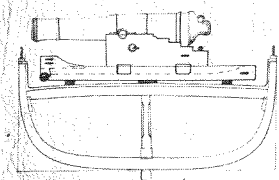
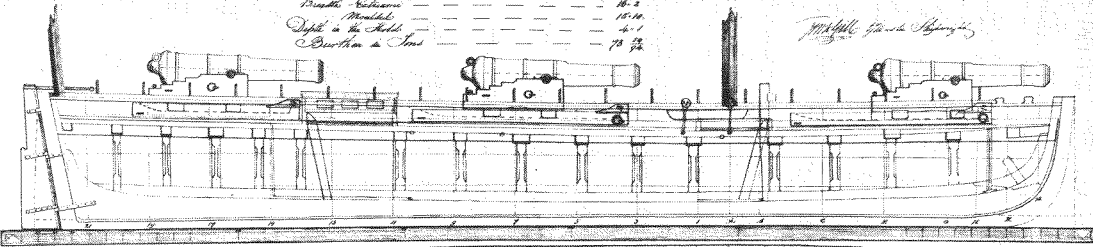
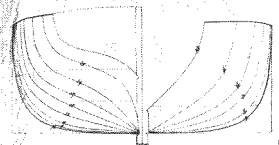
37 *Ibid.*, Vol. 734, pp. 119-20, Owen to Drummond, 10 May 1815; PRO, CO42/161, fols. 3-8, Prevost to Bathurst, 15 January 1815; PRO, Adml, Vol. 2262, pp. 198-204, Owen to Crocker, 17 May 1815. To support the gunboats which were very well adapted to the difficult navigating conditions on the Richelieu River and Lake Champlain, Commodore Owen suggested building specially designed brigantines which would draw only eight to nine feet of water.

38 ANQM, Notarial file of H. Griffin, No. 1096, Contract and Agreement between Wm. Griffin and R. Dent, 15 August 1815.

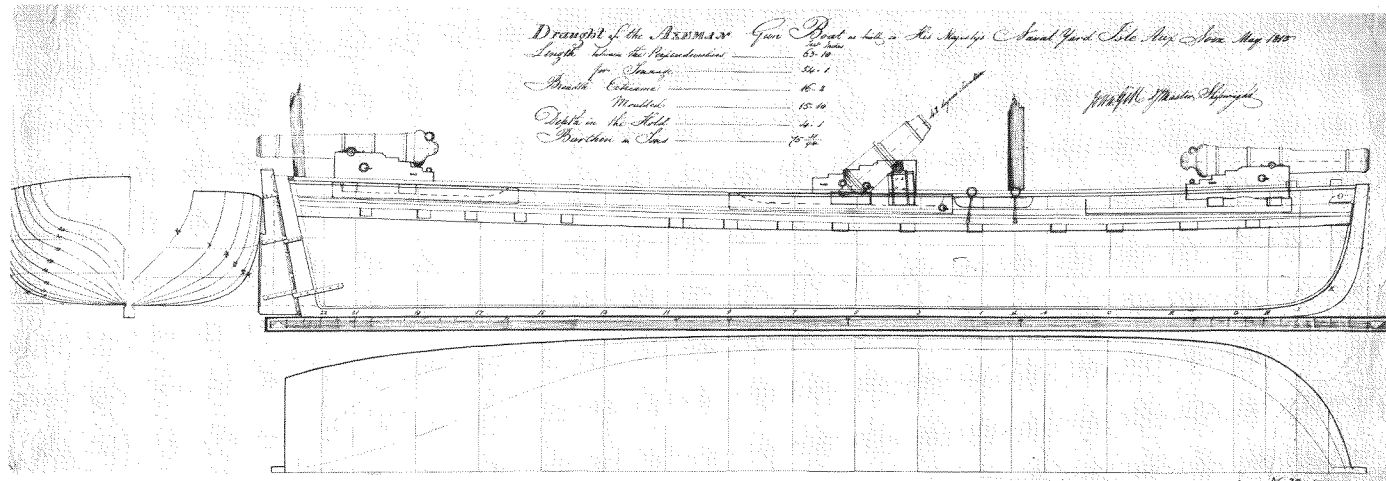
Draught of the Corvette Gun Boat as built at the King's Dock, Dept. of the Navy, April 1867.

Length between the perpendiculars	61.5
for Stowage	58.6 7/8
Breadth between	16.2
Beams	15.10
Depth in the Hold	4.1
Displacement	73 1/2

J. M. Hill, Jr. & Co. Engineers



3432. 1/1



55 and 56 Plan and profile of the gunboats *Caustic* and *Axeman* built at Île aux Noix in 1815. (NA, C-44003 and 44002)

probably dedicated to the transport of goods between Saint-Jean and Île aux Noix.³⁹

It should be remembered that a ministerial decision in the fall of 1815 put an end to construction activities in Canada while a settlement of the border problem was awaited. This suspension of work obviously flowed from the elementary logic of avoiding the investment of large sums on posts that might subsequently be ceded to the Americans. The decision, however, did not take into account the particular context of the Richelieu border where the posts occupied by the British, such as Île aux Noix, were not at risk of being ceded to the Americans. It is hard to imagine that the British authorities would want to move that border closer to Montréal, the heart of the colony.

Everywhere in the Canadas, use was made of this down time to reconsider defence plans. Engineers, staff and naval officers and governors in Lower Canada studied the Upper Richelieu border situation in turn and adopted positions which, in some cases, widely contradicted each other.

As early as the spring of 1815, the Commanding Royal Engineer of the Montréal district, Baron de Gaugreben, had again questioned the role of Île aux Noix as a major defensive element on that border.⁴⁰ He noted, as did several of his contemporaries, that from the viewpoint of an enemy aiming at Montréal in order to cut the vital link between Lower and Upper Canada, the Lake Champlain-Richelieu route and the roads on both sides of it were one of the main invasion possibilities for several if not all components of the American army. In such a context the role of Île aux Noix should be limited to protecting and supporting a naval establishment. On the other hand, a major fortification at Saint-Jean would ensure not only the maintenance of the naval base at Île aux Noix, but would provide further opposition to any American attempt to get past the Richelieu River rapids located downstream. Besides, Saint-Jean would support "the operations of our troops towards the line, and towards the right and left flank of our forces acting against the Enemy."⁴¹

39 ANQM, Notarial file of R. Boileau, No. 3137, Contract between J.B. Tetreau, A. Meunier and A. Kuper, 4 February 1815. These ferry boats were to be delivered onto the bank at Fort Saint-Jean. Each one would be 40 feet long by 12 feet wide.

40 NA, RG8, II, Vol. 11, "Memoir on the Places which ought to be fortified for the Defence of Lower Canada against the Americans," de Gaugreben, 2 June 1815.

41 *Ibid.*; apart from Québec, de Gaugreben also insisted on the necessity of occupying some strategically placed posts along the St. Lawrence, such as Châteauguay and Cascades, Bout-de-l'Île, east of Montréal, and Sorel.

In opposition to this viewpoint, for Commodore Owen, some months later, the Île aux Noix base clearly remained the major defensive element in this sector. The geography of the Upper Richelieu, especially with respect to Île aux Noix and its advanced post on Ash Island where the navigation channels are very narrow, assured the British control of the waterway obviously with the help of suitable defensive works.⁴² Consequently, the role of the navy of this border was limited to conducting the offensive on enemy territory on Lake Champlain.⁴³ On these grounds as well Île aux Noix had to be fortified to protect the naval establishment on that border. However, as the enemy could cut Île aux Noix off from Saint-Jean, its provisions post, particularly by the Rivière du Sud and the various roads of the area to the east, it was necessary to build a fortification of the first importance on the island. It should be equipped with a very large capacity for storing ammunition and goods, the naval officer added. Such an accumulation of provisions would make it possible for the navy to continue the offensive, in case control of the supply corridor was lost.

Owen's position indicated two essential components of Île aux Noix's defensive function. On one hand, the presence of a major fortification contributed to discouraging the enemy from undertaking an operation on this border; the prospect of being blocked might even cause them to take the land roads in order to penetrate into the colony. On the other hand, Île aux Noix was the base or pivot from which the British offensive into American territory would start, even if the island could be bypassed by the enemy. This concept of isolated defence contrasted widely with the one held especially by the engineers and even more so by the infantry officers, for whom a border post equipped with major fortifications presupposed its ability to stop or at least delay the enemy's advance towards a further objective. There could not then be any question of the enemy's being able to penetrate the defensive lines, thus isolating a section of the border and the defender's forces from the heart of the colony.

For Owen then, it was not essential to fortify Saint-Jean, although he suggested constructing "a small but strong and tenable work" there to defend the depot and maintain communications with Île aux Noix. Other

42 Near the border at the northern end of Lake Champlain, Owen also identified two other posts which, if they were equipped with adequate defensive works, would make it possible to command the entrance to the Richelieu River. These were Windmill Point and Rouses Point, both situated on the American side, on each side of the lake (PRO, CO42/171, fol. 57v, Owen to Crocker, 3 July 1815).

43 On this subject Owen suggested organizing the eventual little Île aux Noix fleet into various subdivisions: "A Brig with 3 gunboats would form a subdivision, & 3 Brigs with 9 gunboats a Division" (PRO, Adml, Vol. 2262, fols. 198-204, Owen to Crocker, 17 May 1815).

defensive advantages on this border would result from canalizing the river (Fig. 57). This would facilitate logistics and reduce transport costs.⁴⁴

Owen judged the island's existing fortifications, reconstructed in 1812-14, as inadequate, at least for assuring the anticipated defence.⁴⁵ One of the faces of the fort, the north one, had its field of vision completely obstructed by the various buildings of the naval base. If the enemy arrived by the roads linking Burlington to the Rivière du Sud and disembarked in the extreme north part of the island, Owen believed with reason that the garrison would have no other choice but to destroy the naval installations in order to offer an adequate defence.⁴⁶

The development of the military situation on the border contributed to giving the Île aux Noix position an advantage over the Saint-Jean one despite the ever-growing possibilities of bypassing the island. The initiative of the Americans in the spring of 1816 in starting a large "bombproof" fortification at Rouses Point, a short distance from the border, and their intention to set up a battery on the other shore of the lake at Windmill Point, sowed panic among the officers of the colony (Fig. 58). On one hand, these works occupied positions, strategically placed to control navigation at the entrance to Lake Champlain, which compromised the chances of a British naval offensive on the lake. On the other hand, the construction of defensive works at Rouses Point added to fears of an American penetration by water. Governor Drummond saw in the possible fortification of Rouses Point "one of the strongest position possible by Land," even though it was situated several kilometres from the main road which crossed that area.⁴⁷

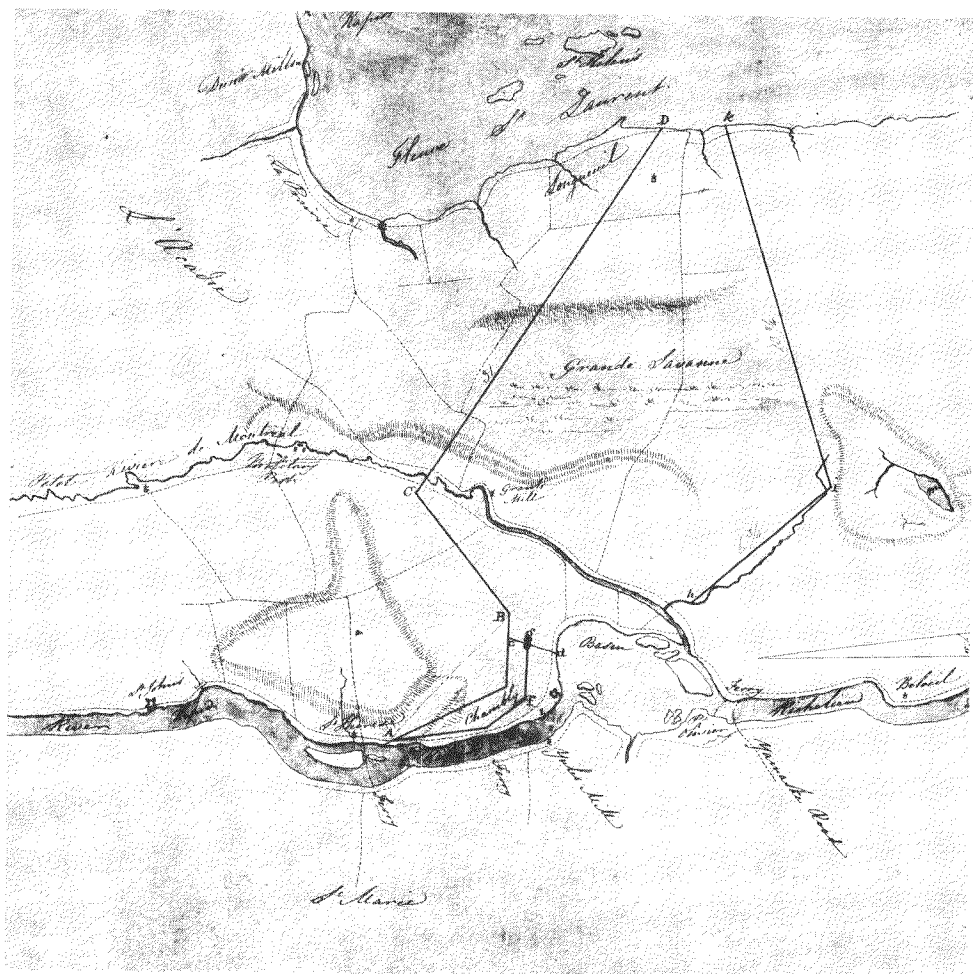
In such a context, the defence of Île aux Noix suddenly became a major preoccupation which justified the proposal of special measures to the Colonial Secretary, despite his decree to halt all fortification work. The construction of an American fortification at Rouses Point thus became the pretext to justify working out a new fortification plan by Gustavus Nicolls,

44 Such a canalization, Owen added, would produce major commercial benefits for the colony (PRO, CO42/171, fol. 49, Owen to Crocker, 3 July 1815). Owen, however, could not opt for either of the two possible traces planned at the time (Fig. 57; PRO, Adm1, Vol. 2262, fols. 178-204, Owen to Crocker, 17 May 1815). It is shown below that a possible canalization of the Richelieu River would, in the minds of several engineers, turn out to be prejudicial to the defence of this border.

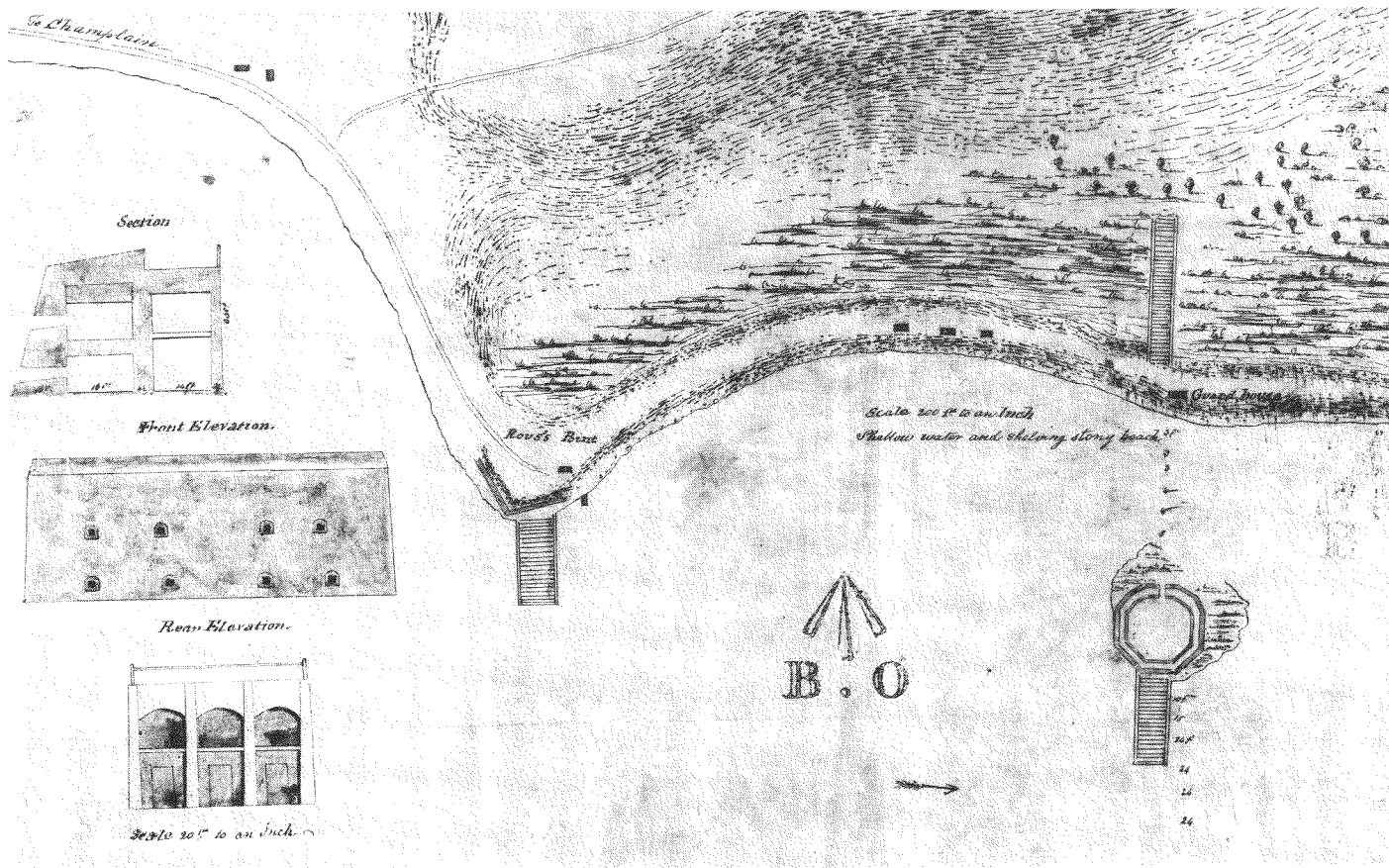
45 PRO, CO42/168, fols. 50-51, Owen to Drummond, 16 June 1815.

46 Even though Commodore Owen did not venture to specify which changes would be appropriate to the Île aux Noix fortifications, he did believe that a battery set up north of the naval dockyard would contribute to the defence of the mouth of Rivière du Sud.

47 PRO, CO42/166, fol. 154v, Drummond to Bathurst, 12 April 1816; see also PRO, Adm1, Vol. 2266, pp. 166-167, Baumgardt to Queen, March 1816.



57 The two projects of the civilian authorities in 1816 to link the navigable waters of the Richelieu with those of the St. Lawrence. A canal (A-D) would begin at the head of the Richelieu Rapids, cut across land and meet the St. Lawrence below Longueuil and Sainte-Hélène Island. The second trace would canalize the Richelieu Rapids to Chamblé Basin (d), then would branch off towards the St. Lawrence and Montréal (h-k). [A. Stevenson, 1816; NA, NMC-1130]



St. Champlain

Section

Front Elevation.

Rear Elevation.

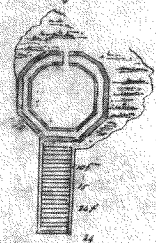
Scale 20 ft to an Inch

Rou's Base

Grand Tower

Scale 200 ft to an Inch
Shadows water and shelving strong beach

B. O.



58 The fortification at Rouses Point. Begun by the Americans in 1816, it was a masonry fort with firing rooms and casemated quarters on two levels. (*H.P. Bruyères, 1818; NA, NMC-7722*)

Commanding Royal Engineer in Canada at the time. In doing this, Nicolls was obeying a request by his superior, the Governor, but contrary to some of his predecessors, he concurred in the idea that the Île aux Noix post had become absolutely indispensable for the support of the navy on that border. Further,

*The Situation of this Island has always been considered as the most favorable for the Dock Yard of the British Vessels of War, to be employed on Lake Champlain and I am of this opinion; to remove it, further up the River, would be to expose it so much more to the Enemy, further down, there is not sufficient depth of water.*⁴⁸

All the same, Nicolls remained aware that the works proposed for the island would not totally shelter the base from any enemy attempt. He added that works distributed along the banks on both sides of the island and at the mouth of the Rivière du Sud would make a further contribution to keeping the enemy away from the naval installations.

Nicolls' successor, Durnford, accepted the idea of building the fortification planned in 1816 on Île aux Noix. But since he was aware that the enemy could always bypass the island, particularly during the winter, Durnford suggested restoring the fortifications of Saint-Jean as well "as troops posted here would be [a] great check upon the Flank of an invading force, penetrating the country on either side of the river."⁴⁹

In 1818 Richmond, the new Governor, established the predominance of Île aux Noix over Saint-Jean.⁵⁰ The works which the Americans were carrying out at Rouses Point gave a good indication of their intentions, according to the Governor. In contrast to his predecessors, Richmond did not believe that the Americans would try to bypass Île aux Noix by land; at least, he considered any large-scale operation by the enemy on this border would use the waterway. Once Île aux Noix was adequately forti-

48 PRO, CO42/166, fol. 214-214v, Nicolls to Drummond, 27 April 1816.

49 NA, RG8, I, Vol. 514, pp. 153-85, "Report on the State of the Fortifications...", E.W. Durnford, 20 November 1816.

50 PRO, CO42/179, fols. 119-123, Richmond to Bathurst, 10 November 1818.

fied, the enemy could not penetrate more deeply into the colony without previously mastering this position which Richmond considered to be Québec's main advanced post. Saint-Jean, like Chambly and Sorel, would only serve to gain time to allow an ultimate defence at Québec to be organized in the event of an enemy advance beyond Île aux Noix.

Richmond accepted and recommended the project submitted by Nicolls, since he theorized that for the sum of £10 000, the new fortification would contribute to raising Île aux Noix to the rank of "Fortress worthy of respect." The Governor was grossly mistaken here about the sum to be invested, since Nicolls had himself estimated the total cost of his project at more than £85 000.⁵¹ Without waiting for an answer from London, the Governor authorized the drawing up of a supply contract for cedar stakes. He further suggested to the British government that it should acquire the marshy land on both sides of the island so that it could be preserved intact. This would be an additional defensive advantage.

As with the general plan for the defence of the colony, the Governor's views harmonized with Wellington's on the defence of the Richelieu River.⁵² As long as the British controlled the Richelieu River, in Wellington's opinion, it would remain difficult for the Americans to penetrate into the colony with a large army that had to be equipped with the provisions and artillery necessary to make an attack on Québec. Wellington approved the idea of fortifying Île aux Noix in accordance with Nicolls' plan, and suggested setting up supplementary works in the north part of the island and on one of the islets facing the mouth of the Rivière du Sud so as to oppose a possible bypass on that side.⁵³ The celebrated general believed that the fortifications of the posts at Saint-Jean and Chambly should be repaired so as to be in a state to hinder an enemy advance on the Richelieu River.

Thus Wellington did not totally follow the expertise of his subordinate, Mann, who had become Inspector-General of Fortifications, and who had provided him with advice on the defence of Île aux Noix and the Richelieu River which contained more nuances:

51 NA, RG8, I, Vol. 394. "Estimate of the Expense of levelling the present works on Isle aux Noix in the River Sorel and erecting a new Fort with works on the Island to enclose the Dock Yard," G. Nicolls, 27 April 1816.

52 PRO, CO42/183, fols. 142-59v, Wellington to Bathurst, 1 March 1819.

53 Note here that Wellington was unfamiliar with the topography of Île aux Noix, or at least he was badly informed, since the northern end of the island and the offshore islets are composed of marshy ground and flooded for the greater part of the year, which makes the setting up of defensive works in these spots fairly difficult.

*... respecting Isle aux Noix, it is essential that it should be fortified to a certain extent, being our Frontier upon Lake Champlain, and the only cover and protection for naval operations in that quarter, commanding that part of the navigation, but as a military position it may be turned by a land Force. The Strengthening of St-John's and Chambly will also further impede an Enemy's progress by water, the only mode by which he could with any degree of facility transport heavy artillery.*⁵⁴

It is interesting to note that Mann insists less strongly than he did in 1804-5, when as Commanding Royal Engineer in Canada he had argued strongly in favour of Saint-Jean.

Remembering that Wellington's recommendations to the Colonial Secretary, Lord Bathurst, involved releasing the funds necessary to construct the new Île aux Noix fortifications, it was in the summer of 1819 that the works were started. Thus at the end of this period of considering the defence of the Upper Richelieu, Île aux Noix kept its status of main defensive post on this border. Even though several arguments favoured Saint-Jean, especially because of the ever-growing possibilities open to the enemy to avoid Île aux Noix, the decision in large part reflected the fear caused by the construction of an American fortification a short distance from the border. To the colonial staff, supported by Wellington, Rouses Point meant a desire on the part of the Americans to undertake a naval operation against the colony. In this context, all the players agreed in confirming Île aux Noix as the ideal site to ward off such an operation. Rouses Point thus became a factor in the choosing of Île aux Noix; this choice tended to play down the possibility that the enemy might use the numerous roads which crossed the territory on both sides of the Richelieu River. Therefore it is not surprising that this decision came up for discussion again even before the construction work on Île aux Noix was finished.

The Carmichaël-Smyth Commission

The carrying out of Richmond and Wellington's defensive policy involved the investment of fairly large sums in the British provinces. At the same

⁵⁴ PRO, WO55/863, fol. 345, "Extract from Gen. Mann's Memoranda and Observations to the Duke of Wellington...." G. Mann, 1819.

time, the British budget was undergoing draconian cuts in military expenditures: from 1815 to 1819 the military portion of total government expenditures dropped from 58 to 16 million pounds.⁵⁵ Even though the overall Canadian defensive strategy had been accepted and the document submitted by Wellington to Bathurst in 1819 had become the basis of all British military involvement in its Canadian colonies, several of its recommendations were postponed mainly because of budgetary restrictions. Funds were only made available for the works considered to be the most indispensable.

At the same time, military investment in the colonies was a very unpopular subject in English political circles. Thus colonial governors were constantly asked to slash the budgetary plans for the colony's posts. In 1822, for example, Dalhousie retorted to Bathurst that he could not reduce expenditures in the main Lower Canadian worksites without raising doubts about the efficiency of these works.⁵⁶

It was in this context that in 1825 Wellington entrusted the task of inquiring into the defence problems of the British North American provinces to an extraordinary commission composed of three military engineers, based on the program he had himself submitted to Colonial Secretary Bathurst in 1819. To direct this mission, Wellington called on the engineer who was with him at Waterloo, Colonel Sir James Carmichaël-Smyth.⁵⁷ The investigators' original mandate was to improve the 1819 document, to examine in detail to what point it remained feasible, and finally to judge whether the works carried out since that date complied with the spirit of the program. In short, Smyth and his assistants were to take Richmond's and Wellington's proposals and pronounce for or against. They were also to consider the defence of the Atlantic provinces as well as communications between New Brunswick and Canada.

In its report submitted in September 1825, the Carmichaël-Smyth Commission brought a different expertise to the problem of defending Lower Canada, especially on the Richelieu border.⁵⁸ For the members of the commission, the Richelieu-Lake Champlain route remained not only the main one for American penetration into Canadian territory, but also their

55 J.J. Greenough, "The Halifax Citadel, 1825-1860: A Narrative and Structural History," *Canadian Historic Sites: Occasional Papers in Archaeology and History*, No. 17 (1977), p. 14.

56 PRO, CO42/191, fols. 310-13, Dalhousie to Bathurst, 16 December 1822.

57 He was supported by Major George C. Hoste and Captain John B. Harris (PRO, WO55/862, fols. 75-84, Wellington's instructions to the members of the commission, 14 April 1825).

58 NA, RG8, II, Vol. 6 (2), Report of the Carmichaël-Smyth Commission, 9 September 1825.

frontline of operations, the more so since a canal now linked the waters of the Hudson to Lake Champlain. This offered the enemy direct passage between New York and the border. On the other hand, it was by this same corridor that the main British operation into American territory would occur.

The position of Rouses Point on the border offered a first obstacle for opposing an American enterprise coming from Lake Champlain. The fortification begun by the Americans at this spot in 1816 was now considered to be located in British territory.⁵⁹ Of course the members of the Commission suggested that this position should never be given up to the Americans, since in enemy hands it would contribute to spoiling the chances for success of a British naval operation on Lake Champlain. As for the possibility of setting up defensive works there, Smyth and his associates considered that ultimately a political rather than military decision was involved:

*... the military occupation of Rouses' Point may be termed a sort of offensive as well of defensive measure, which can have no object but to give us the power of entering Lake Champlain at a future opportunity. It cannot be wanted for the protection of our Gun-Boats, which are already secured by the works at Isle aux Noix...*⁶⁰

In wartime, however, temporary structures could be built there.

As had several engineers before them, the members of the Commission noted that Île aux Noix lost much of its defensive value mainly because of the many population centres that were developing on both sides of the river. A main road on each side of the river offered a possible enemy a direct link between Missisquoi Bay and Saint-Jean on one side and on the other from Plattsburg and Odeltown heading in the direction of La Prairie, with a branch to Saint-Jean and Chambly. Since the enemy could choose

59 The Americans' mistake in siting their new fortification at Rouses Point came from an error in surveying the 45th parallel border; this line had been first established in 1766 and later confirmed between 1771 and 1774 by John Collins and Thomas Valentine. During the negotiations on the borders following the Treaty of Ghent, it was noticed that the line of the 45th parallel, as previously surveyed, ran three-quarters of a mile too far north. As a result, Rouses Point, situated one-quarter mile from this line, was in Canadian territory or at least within this disputed area. The negotiations which concluded in 1842 would end in favour of the Americans. See L.J. Burpee, "The Vicissitudes of Fort Montgomery," *MSRC*, 3rd Series, 35 (May 1941), pp. 57-67.

60 NA, RG8, II, Vol. 6 (2), Report of the Carmichaël-Smyth Commission, 9 September 1825, item 7.

to bypass and avoid Île aux Noix, the latter became solely a rallying point and a depot for the navy on Lake Champlain, and then only in time of war. The commissioners added:

*We have been induced to enlarge more on the subject of the Isle aux Noix from having observed that there is a prevailing opinion in the Country, but as we respectfully submit, a mistaken one, not only as to the importance but as to the strength of the Isle aux Noix.*⁶¹

Among other considerations, the fort as constructed was not sheltered from projectiles that the enemy could hurl from a distance of less than 500 metres. Besides, during the winter since the water in the ditch and the river were frozen, the new fortification was hardly protected even from a raid.

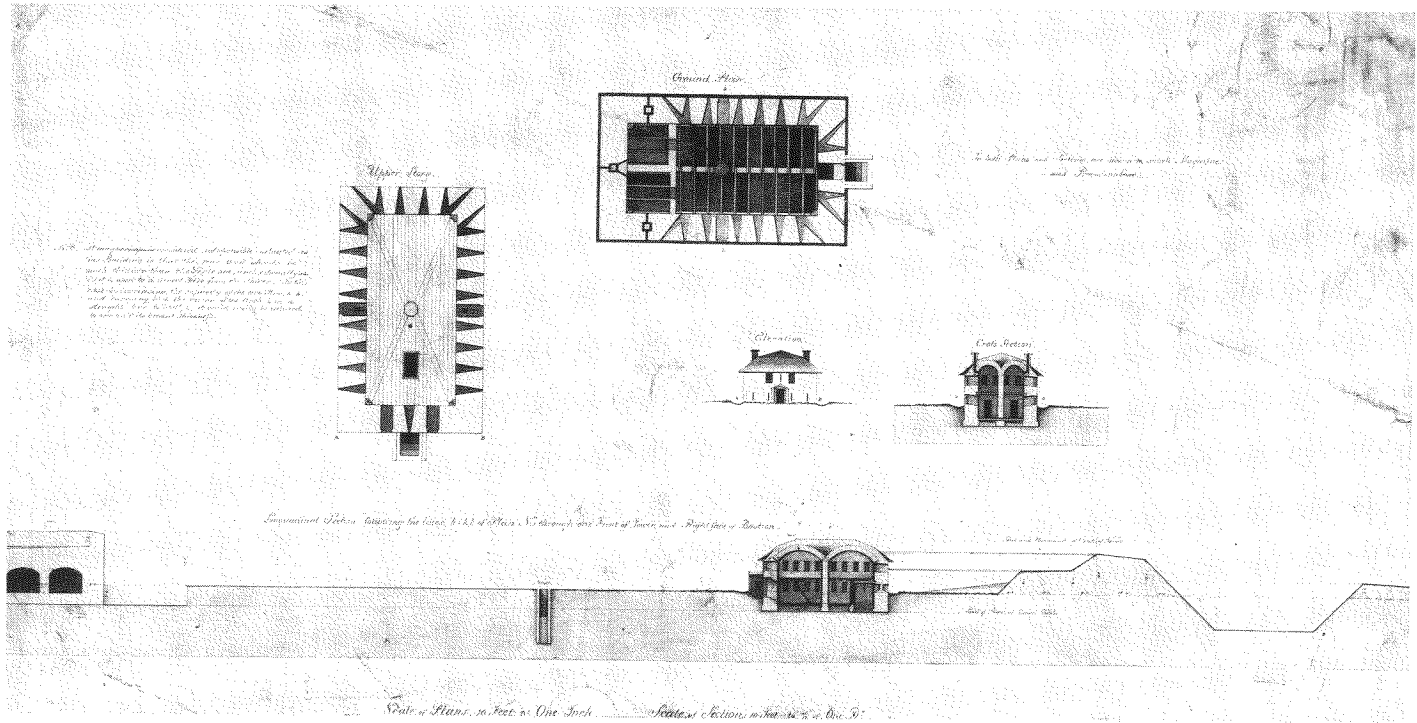
As to the defence of Missisquoi Bay, from where the enemy could reach the Rivière du Sud, the commissioners recognized the difficulty of dotting it with small defensive works because of the possibilities of bypassing provided by the many roads which crossed this territory. They did recommend though that the village of Henryville, situated at the source of the navigable portion of the Rivière du Sud, should be defensively occupied by the troops quartered on Missisquoi Bay.

In the light of its observations on Île aux Noix, the Carmichaël-Smyth Commission gave more importance to Saint-Jean, which was the end point of any naval operation by an enemy who had gained control of Rouses Point and Île aux Noix. Besides, if the Americans ever used the road west of the river from Plattsburg to La Prairie, they could not leave a position such as Saint-Jean behind them in the hands of the British. As the place of primary importance on this border, the commissioners suggested rebuilding the existing works at Saint-Jean which in their opinion had been laid out judiciously by Twiss in 1776 (Fig. 59).⁶²

Following up their reflection, the engineers on the Commission stated that if the enemy took Saint-Jean, they would decide either to continue on their way to Québec along the Richelieu via Chambly or to march on Montréal. In case they opted for continuing towards Chambly (the wiser choice according to the members of the Commission), the British strategists then would have to work out tactics with the help of the local

61 *Ibid.*, item 8.

62 The original trace of the fortifications of Saint-Jean dated from the reconstruction of those defensive works by the engineer William Twiss, in 1776.

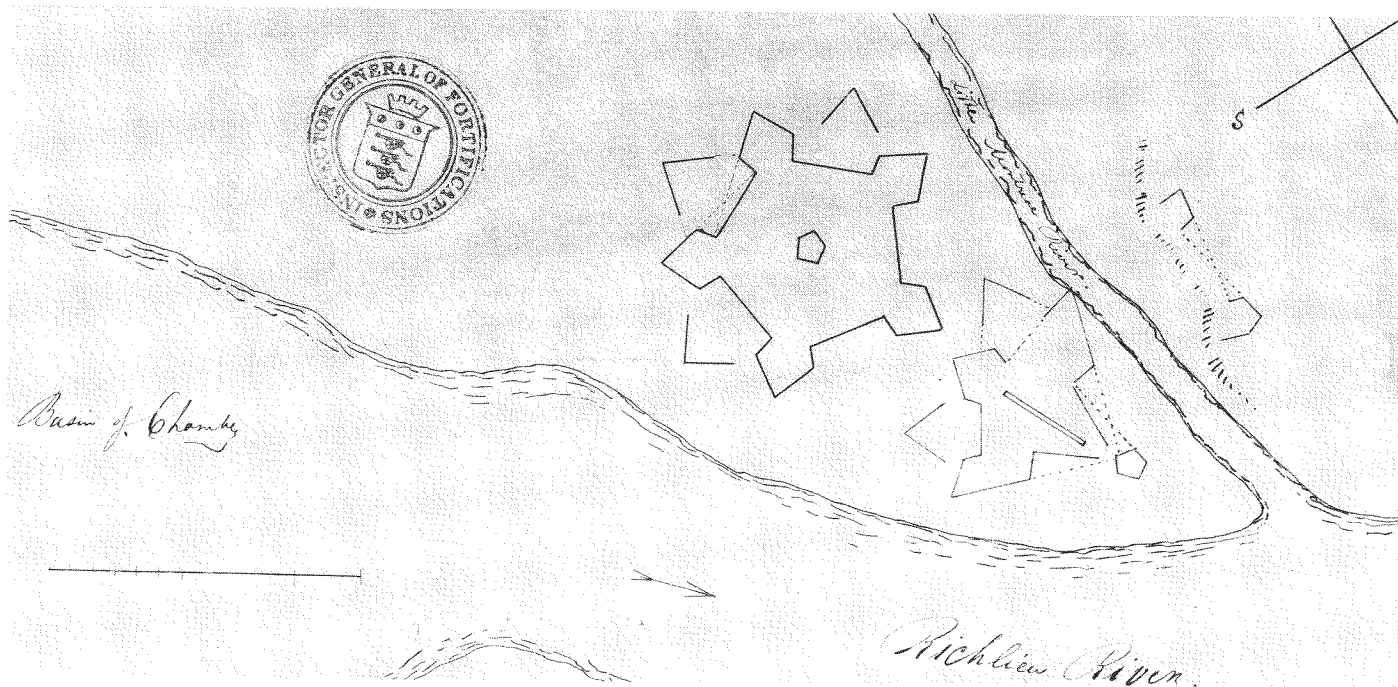


59 New guardhouse that the Carmichaël-Smyth Commission proposed building in one of the bastions of Fort Saint-Jean. (R.S. Piper, 1828; NA, NMC-30697)

population. They would have to cause damage to American supply train, since it could not be transported by water because of the rapids between Saint-Jean and Chambly. On the other hand, the commissioners proposed to erect a small fort on Grande Island (Île Goyer) in the north part of Chambly Basin (Fig. 60). This position, situated at the confluence of the Richelieu and L'Acadie (Montréal) rivers, commanded the navigation channel which ran beside this island at the outlet from the basin on the Sorel side.

The position of the commissioners on the defence of the Richelieu, and above all their preference for Saint-Jean as opposed to Île aux Noix, brings us to the very heart of the debate between military engineers and naval officers over the defence of this border. This difference in point of view is obvious when comparing the position of Commodore Owen in 1815, who thought the canalization of the Richelieu would be a defensive asset, with that of the engineers on the Carmichaël-Smyth Commission, who considered the rapids between Saint-Jean and Chambly to be an advantageous natural defence.⁶³ Without completely setting aside the point of view adopted by Richmond and Wellington, the Carmichaël-Smyth Commission corroborated many of Mann's ideas about the defence of this border a quarter of a century earlier! After the Rush-Bagot Agreement in 1817 and even more in 1825, the importance of naval supremacy, so sought after during the War of 1812, was no longer the major preoccupation of British strategists and politicians, who had correctly ascertained the enormous costs of such a course of action in the face of the American advantages in this field. In this sense, the 1825 Commission returned the British strategic defensive on the Richelieu border to a perspective similar to the one established during the period before the 1812-14 conflict; where a navy composed essentially of gunboats had only a secondary role to play. The defence of the Richelieu was now based on a series of forts which would make American penetration on this border difficult, if not impossible, whatever the route taken:

63 The only discordant voice on this subject among the engineers, John By, who was responsible for the construction of the Rideau Canal, approved of the canalization between Saint-Jean and Chambly. Against his colleagues on the Carmichaël-Smyth Commission, he said in 1828: "I have also examined the works at Isle aux Noix and think them sufficient to deter the American to destroy the Locks I propose on the Richelieu!" (PRO, WO55/863, fols. 230-31v, By to Mann, 1 August 1826; *ibid.*, fols. 242-46v, By to Mann, 3 July 1826). To By's suggestions for canalizing the Richelieu, James Carmichaël-Smyth would answer: "It does not appear to me that Lt. Col. By has taken a judicious view of the Military Features of Defences of Canada in proposing to improve the navigation of the River from Lake Champlain to the St. Lawrence. If he could add to the impediments, it would in my opinion be more advantageous to His Majesty's Service" (NA, RG8, I, Vol. 43, pp. 42-48, J. Carmichaël-Smyth to G. Mann, 23 August 1826).



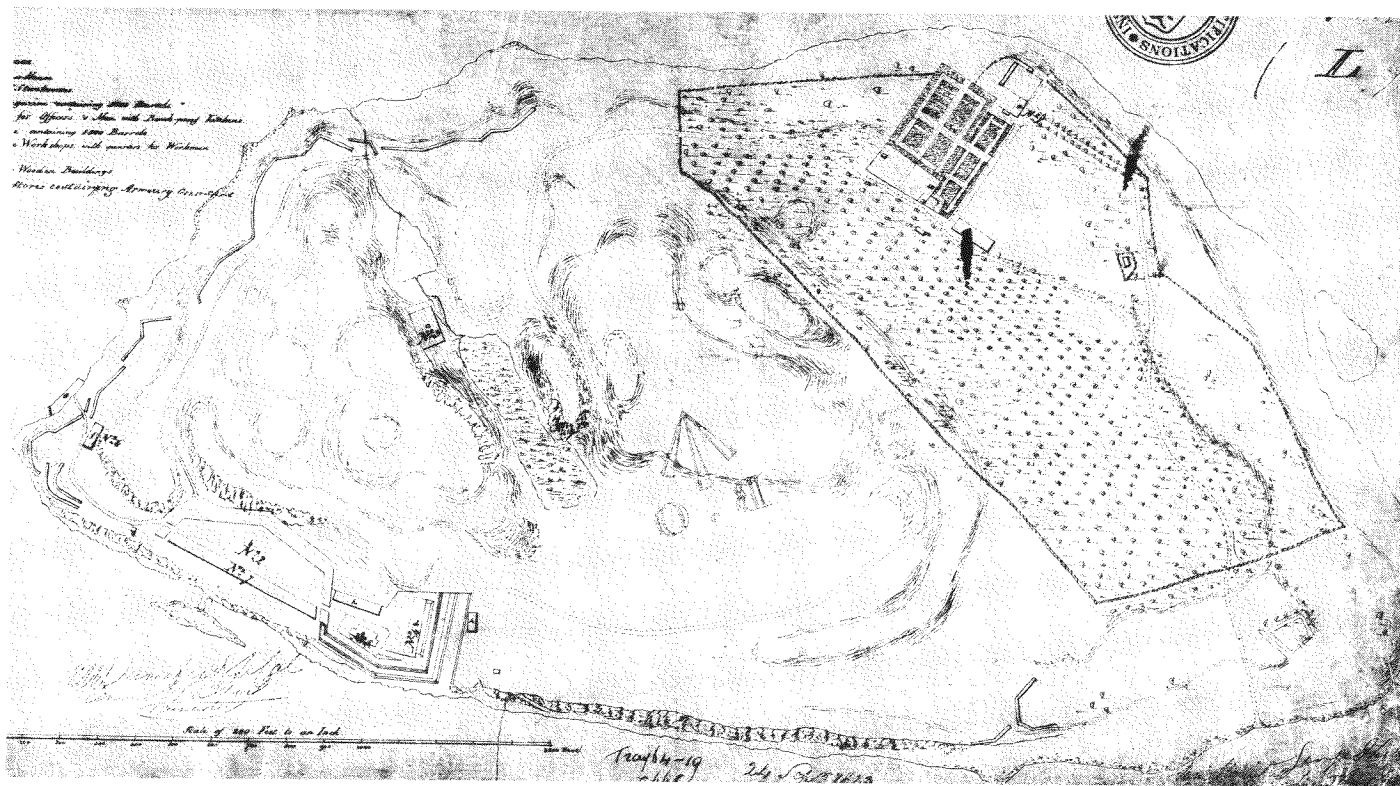
60 A fortification for Goyer Island. Following the proposal of the Carmichaël-Smyth Commission in 1825, E.W. Durnford, the engineer, planned a five-bastion fort (left) for the north point of Grande Île (Goyer Island) which would command navigation on the Richelieu at the exit from Chambly Basin. In 1828 a second committee of inquiry suggested a fortification smaller in size (right) on the same site. (NA, C-17470)

We think we may venture to predict that your Grace will come to the conclusion that if, in addition to the works now constructing at the Isle aux Noix, Fort St. John is repaired, and the work at Chambly we have proposed, executed: an Enemy would not advance by the Richelieu River - Independent of the Isle aux Noix he would have two Sieges to undertake - Previous to engaging in the last, he must have means of land Transport, which he could only acquire by the negligence of those concerned in opposing him; and even if successful in this operation, his further progress towards Quebec from which he is still distant 180 miles, must entirely depend upon his being able to acquire craft in the St. Lawrence, Sufficient if not for the conveyance of his Troops, at least for the Artillery and Stores required for the operations against Quebec.⁶⁴

Elsewhere in the colony, and especially where Montréal was concerned, the Carmichaël-Smyth Commission reaffirmed in great detail the proposals put forward since 1815. Such was the case with the proposed works at the mouth of the Châteauguay River on Île des Soeurs (Saint-Bernard), and on Sainte-Hélène Island (Fig. 61). The engineers on the Commission also suggested building a citadel at Montréal on Mount Royal, which would force the enemy, even if they penetrated into the colony by the Lake Champlain-Richelieu route, to attack Montréal before continuing their advance to Québec, the ultimate objective. The Commission also insisted on the necessity of assuring a secure alternative between Montréal and Kingston by canalizing the Ottawa and Rideau rivers.

The report of the Carmichaël-Smyth Commission created more problems than it solved within the English cabinet. The summary estimate of the construction costs of the Commission's various proposals came to £1 646 218, a figure that had to be increased to £2 335 544 following the detailed estimates provided by the engineers responsible for each of the

64 NA, RG8, II, Vol. 6 (2), Report of the Carmichaël-Smyth Commission, 9 September 1825, item 10. In 1828, Carmichaël-Smyth specified the ideal distribution of troops for the Richelieu forts. Each work proposed would in peacetime need a garrison composed of a company of infantry (60 men) and a detachment of artillery (15 men). In wartime, besides a company of artillery (70 men) present in each of the posts, Carmichaël-Smyth proposed placing three companies of infantry (210 men) at Chambly and Saint-Jean and four at Île aux Noix. To these figures would be added 250 militiamen at each post (PRO, WO55/865, fols. 171-83, J. Carmichaël-Smyth to Mann, 28 March 1828).



61 Fortification on Sainte-Hélène Island. The Carmichaël-Smyth Commission reaffirmed the importance of this position for the defence of Montréal and the Canadas. Several casemates and warehouses of all sorts were then erected on the northwest shore of the island. These structures as a whole took the form of two juxtapsed bastions placed head to tail. (E.W. Durnford, 1823; NA, NMC-2762)

military districts visited by the Commission.⁶⁵ It was not likely that such a sum invested in the colonies would pacify the ire of British politicians who were confronted with enormous problems of public finance. Therefore when Wellington presented the Commission's report to Bathurst, his cabinet colleague and the minister responsible for the colonies, he insisted on the political character of a decision to make a necessary investment for the defence of the colony rather than on the well-foundedness of the proposals put forward, to which he entirely subscribed.⁶⁶ Wellington was of the opinion that the British government could not abdicate its responsibility to defend its North American provinces, and the Commission provided an opportunity to agree to do so "at the least possible burthen to the Military Resources of this Empire in time of war."

Wellington's precautions did not bear fruit and the Commission's report was far from creating unanimity within the cabinets succeeding each other in Great Britain between 1820 and 1828.⁶⁷ Even Wellington, who became Prime Minister in 1828, did not succeed in achieving a consensus among his ministers. The discussions in the British Parliament on the subject of the expenses of the Ordnance Department in the colonies raised numerous doubts as to the advisability of continuing the link with the North American provinces. Even the economic interest in lumber, as a source for import, was called into question again!⁶⁸

In 1828, the new person responsible for the Ordnance Department, Viscount Beresford, formed a new commission of inquiry to provoke further thought on various points in the Carmichaël-Smyth Report, including the Rideau Canal, the fortifications at Kingston, and the defences planned along the Richelieu.⁶⁹ The study committee, directed by the former Governor General of Canada, Sir James Kempt, assisted by Royal Engineers E.W. Fanshawe and G.G. Lewis, was also to revise the temporary estimates provided by Durnford for all the works of fortification recommended by the Carmichaël-Smyth Commission in Canada. The Committee's report, signed

65 NA, RG8, II, Vol. 6 (1) and J.J. Greenough, "The Halifax Citadel...", p. 16. These figures obviously do not relate to expenses for the Richelieu proposals only, but to the whole of the defensive program. After the visit of the members of the Commission, each engineer responsible for the district concerned had to provide the Board of Ordnance with a detailed estimate of the project set out by the commissioners.

66 PRO, CO42/205, fols. 193-200v, Wellington to Bathurst, 6 December 1825.

67 See J.J. Greenough, "The Halifax Citadel...", pp. 16-20.

68 G.A. Stepler, "Quebec, the Gibraltar of North America?" Manuscript Report Series No. 224 (Parks Canada, Ottawa, 1976), p. 110; On the political bargaining relating to the Carmichaël-Smyth Commission, see Chapters 4 and 5.

69 PRO, CO42/219, fols. 277-80v, "Additional Instructions for the Committee appointed to assemble in Canada, respecting the Rideau Canal, and on other matters," R. Byham, 26 March 1828.

by the two engineers, confirmed the observations of the 1825 commission on the defence of the Richelieu-Lake Champlain frontier.⁷⁰

Because of the development of the area on both sides of Île aux Noix and consequently of the roads that had been built, Fanshawe and Lewis stated that Île aux Noix no longer had the importance that had been attributed to it. At the very most it could be considered as an advanced post which the enemy could easily avoid, and whose defensive advantages were limited to the control of navigation. The authors regretted that this post was still the supply depot for the navy on this border since it was at the mercy of the first enemy movement. As a result, Saint-Jean, situated at the limit of the navigable waterway and the end of the roads along both banks of the river, became the most important defensive position on this border and deserved adequate fortification works, worthy of one of the most important "fortresses" in the colony (Fig. 62).

*The Committee are therefore disposed to view the occupation of St. Johns as essential, not only from the Protection of the Communication by the Richelieu towards Quebec, but also as regards the operations on the Montreal Frontier, in supporting the movements of our Troops, and in checking those of an Enemy who might attempt to advance by either of the roads from Champlain.*⁷¹

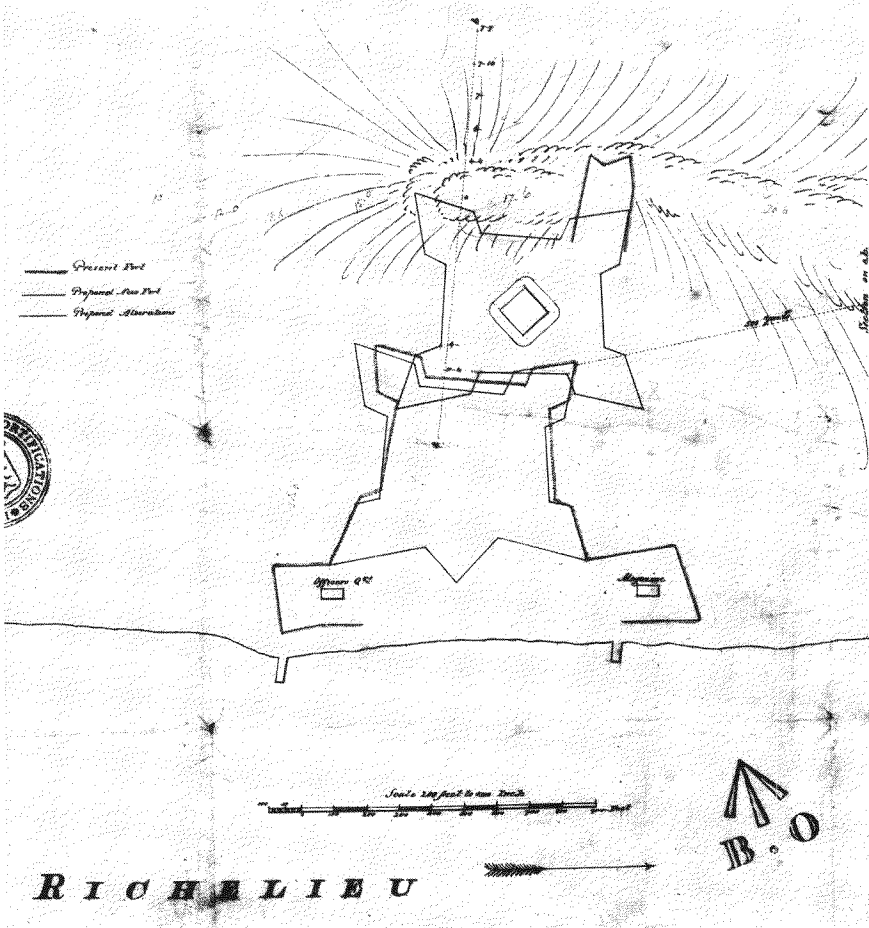
As for the planned construction on Grande Island at Chambly (Fig. 60), Fanshawe and Lewis noted that a fortification smaller in scale would suffice to fulfil the planned objective, namely command of navigation in the channel of the river north of the basin.⁷² Finally, the Committee considered it advantageous to erect a bridgehead at Sorel which would be capable of ensuring a safe retreat, if need be, or again of supporting a counter-offensive.

The conclusions of the 1828 Committee of Inquiry on the cost estimates of defensive works in Canada did not reduce the political problems of the British cabinet since the total of the required expenditures was revised

70 *Ibid.*, fols. 252-76v, E.W. Fanshawe and G.G. Lewis to Beresford, 23 July 1828.

71 *Ibid.*, fol. 268v.

72 Following the recommendation of the Smyth Commission, the engineer Durnford, had submitted a project for a fort with a pentagonal layout which would require a garrison of 1600 men and with a warehousing capacity for a forty-day siege.



62 Sketch of a fort for Saint-Jean. This is the location which the 1828 committee of inquiry chose as the most important defensive position on the Upper Richelieu border. At the time it was proposed to erect a new four-bastion fort with a central reduit including casemated quarters. (NA, NMC-15059)

upward.⁷³ After much administrative hesitation, the British Parliament finally approved certain expenditures which were judged the most essential, such as the Rideau Canal and the fortifications at Kingston and Halifax. These works were in addition to those already in progress at Île aux Noix, Sainte-Hélène Island and Québec.⁷⁴ The fortifications planned for Saint-Jean, Chambly and Sorel would never be built.

Though most of the recommendations for the defence of the Richelieu remained a dead issue, the Carmichaël-Smyth Commission document, as well as the later reflections of the Committee of Inquiry of 1828, were serious efforts to rationalize strategy and defensive tactics on that border.⁷⁵ The new fortification at Île aux Noix was involved in a background of intense discussion which, from 1825, directly called its existence into question. Two defensive concepts had confronted each other. Each one dominated by two of the giants of the administrative infrastructure of the British forces, the Navy and the Ordnance Department, and the main strategists such as Richmond and Wellington had to deal with these concepts. The navy, encouraged by the experiences of the War of 1812, succeeded in having Île aux Noix accepted as the defensive pivot of the most important American entry route into Canada. The engineers regained the leadership which they lost in the course of the War of 1812, thanks, among other reasons, to the desire of the authorities to remove the interior lakes of Canada from the naval race. The remarkable development of the Upper Richelieu area right after the 1812-14 conflict, and the road network which became grafted onto it in consequence, justified the engineers' argument in favour of Saint-Jean and contributed to relegating Île aux Noix to a secondary role, further dependent on that of the navy in this area.

The start of construction of an American fort at Rouses Point had set in motion the commencement of the works on Île aux Noix. The linking of

73 PRO, CO42/219, fols. 275-76. For example, the project of fortifying Grande Île at Chambly had originally been estimated at £50 000 by the Carmichaël-Smyth Commission. The more detailed estimates, provided by Durnford, amounted to £198 289. Finally the committee of engineers, after suggesting a less ambitious project, arrived at a figure of £250 171 in 1828.

74 To obtain the release of these funds, the various fortification projects had been divided into several categories, depending on how necessary they were and on the urgency in building them to defend the provinces. Because of the massive investment already swallowed up at Île aux Noix, the other projects on the Richelieu River obviously fell into the least urgent category, despite Île aux Noix's loss of importance in favour of Saint-Jean. See on this subject the above-mentioned works by Greenough and Stepler.

75 Moreover, it was one of the recommendations of the Carmichaël-Smyth Commission that brought about the abandonment of the Lacolle defensive position in 1827. This site, first activated in 1776 and more substantially so in 1812-14, no longer figured in the defensive program of the Richelieu-Lake Champlain border (PRO, CO42/213, fols. 177-83v, Darling to Durnford, 25 October 1826).

the waters of the Hudson with those of Lake Champlain by a canal had justified continuing its construction. Would the opening of a canal between Chambly and Saint-Jean some years later give new vigour to the defensive role of Île aux Noix?

CHAPTER 5

THE CONSTRUCTION OF FORT LENNOX

The fortification plan submitted by Commanding Royal Engineer Nicolls in April 1816 was the basic plan for the construction of Fort Lennox which was started in 1819 (Fig. 63a).¹ As Mann had at the end of the 18th century, Nicolls noted that a fortification adopting the classic plan of a square fort with four bastions suited the topography of the southern part of Ile aux Noix perfectly. Moreover its perimeter had the shape of a more or less rectangular polygon.

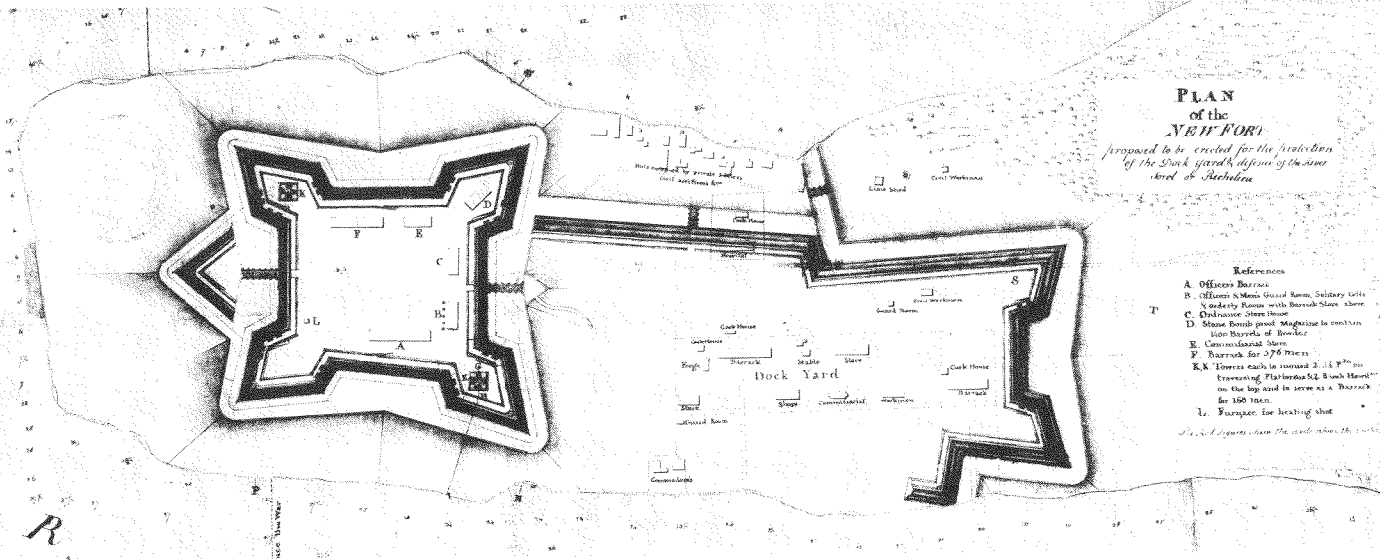
Next to the conventional rampart equipped with a terreplein and a parapet, Nicolls placed a dry ditch with a palisade in the centre. On the south front, which was the most exposed to the enemy, Nicolls (like Mann in 1789) planned the construction of a ravelin also equipped with a ditch and palisade (Fig. 63b). The remaining portion of the terrain around the fort, except for the sector to the north sheltering the naval base, was made into a glacis.

Nicolls planned other defensive works inside the fort, such as the two masonry towers in the southwest and northeast bastions. Three stories high, each of these towers would offer casemated accommodation for 168 soldiers besides providing space for artillery pieces in the upper storey. By their arrangement, they would assure command of the area surrounding the fort on both sides of the river as well as the parade ground inside it. The towers also would function as an ultimate redoubt if necessary.

Nicolls intended to arrange the various barracks and storage buildings necessary to maintain the garrison along the curtain walls: a guardhouse, an officers' quarters, a barracks with capacity for 576 soldiers and two warehouses assigned to the Ordnance Department and the Commissariat. Nicolls also planned a vaulted bombproof ground floor for all the buildings. He thus complied with the current practice for small fortifications

¹ NA, RG8, I, Vol. 394, p. 96, Nicolls to Drummond, 27 April 1816. The name Lennox honours Charles Lennox, Duke of Richmond, who died in Canada in 1819 while he was Governor General of Canada.

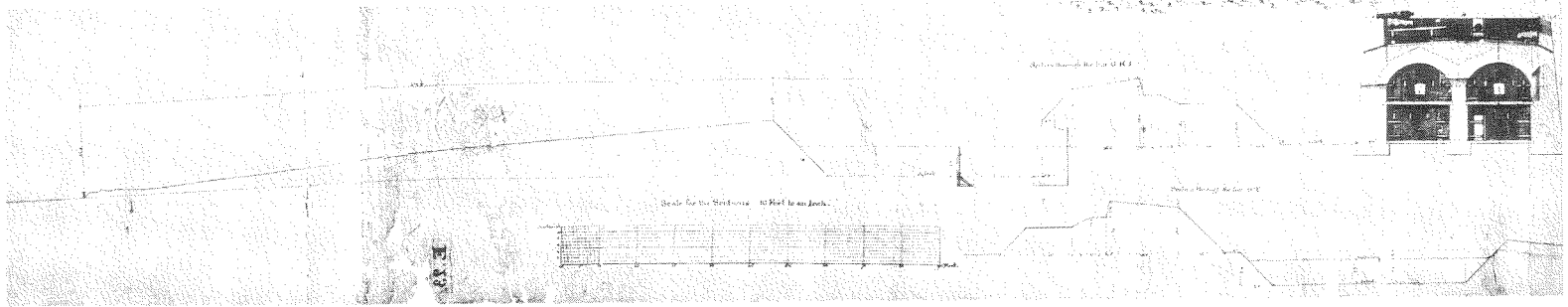
A



PLAN
of the
NEW FORT
proposed to be erected for the protection
of the Dock yard & depots of the
Isle of St. Helena

- References**
- A. Officers Barracks
 - B. Officers Mess, Guard Room, Solitary cells, Variety Room with Barrack Store above
 - C. Dedicated Store House
 - D. Stone Bomb proof Magazine to contain 1000 Barrels of Powder
 - E. Commissariat Store
 - F. Barracks for 576 Men
 - K, K' Towers each to raised 2.5 ft on traversing Platforms 5 ft 8 inch high on the top and to serve as a Barrack for 150 Men
 - l. Furnace for heating shot
- See A & B figures when the walls above the water*

B



63 (A) he first trace of Fort Lennox. Submitted by Nicolls, the engineer, in 1816, it was a square fort with four bastions with a dry palisaded ditch. A ravelin completed the fortification on the south, the front which was most exposed to the enemy. On the north side, a hornwork surrounded the naval base. The southwest and northeast bastions each had a masonry tower with casemated quarters. (B) The cross-sectional drawings show the rampart of the fort with a tower as well as the profile of the hornwork. (*G. Nicolls, 1816; NA, NMC-17056 and C-131725*)

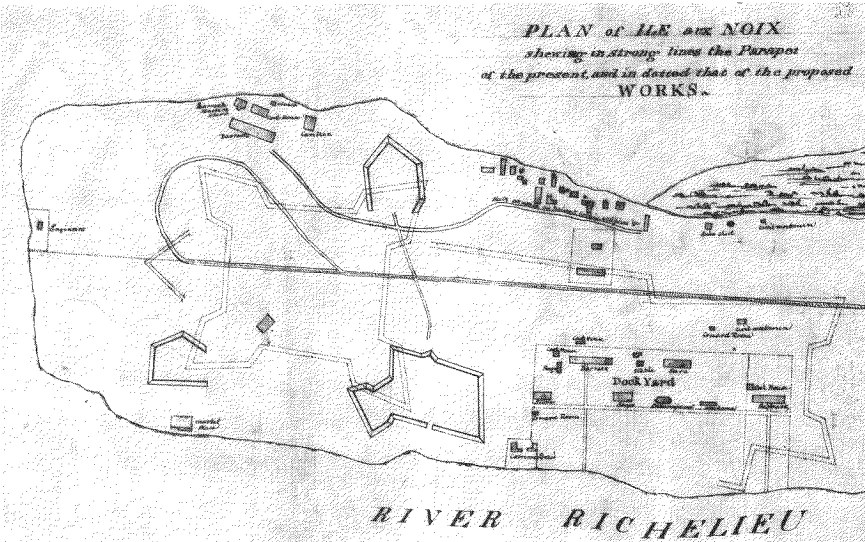
whose interior surface was more exposed to enemy bombardment.² Finally, the engineer proposed the construction of a powder magazine, with a total capacity of 1400 barrels of powder, in the gorge of the northwest bastion, which was the one least exposed.

Nicolls' project also included works of fortification for the immediate defence of the naval base.³ In addition to the tower planned for the northwest bastion which directly commanded the whole base sector, the engineer chose to set up a hornwork there. Its western branch completely closed the naval installations on that side; it was lined up with the right face of the northwest bastion of the fort. The eastern side remained unprotected because of the opening onto the river which was necessary for the operation of the base. Since the island's ground level was lower in this sector, Nicolls considered it advisable to create a water-filled ditch there which would connect with the river on both sides of the island; this way the ditch could serve as a way of entry for boats. Nicolls was aware that these measures were not the best solution for the defence of the naval base. He envisaged instead that more distant positions on each bank as well as at the mouth of the Rivière du Sud would be occupied later, so as to keep the enemy at a greater distance from the naval establishment.

In short, Nicolls submitted a plan which when taken as a whole complied with the essence of Mann's proposal at the end of the 18th century (Fig. 34). Mann had later become Inspector-General of Fortifications and thus Nicolls' superior in the chain of command. Without underestimating the fear aroused in the colony by the construction of the fort at Rouses Point, this agreement in defensive concepts could only facilitate the acceptance

2 In this, Nicolls is following a theoretical prescription in wide use among military engineers: "Powder magazines should always be bombproof; in addition to which, it is in all fortresses proper, but in small fortresses absolutely necessary, that the principal hospitals, barracks, and storehouses, should be built in the same manner; otherwise the garrison and stores, being continually exposed to the enemy's shells night and day without intermission, no effectual resistance for any length of time could be expected" (C.W. Pasley, *Course of Military Instruction Originally Composed for the Use of the Royal Engineer Department* [London: J. Murray, 1817], Vol. 3, pp. 362-63, 377).

3 PRO, WO55/860, fols. 172-78, Nicolls to Mann, 27 April 1816.

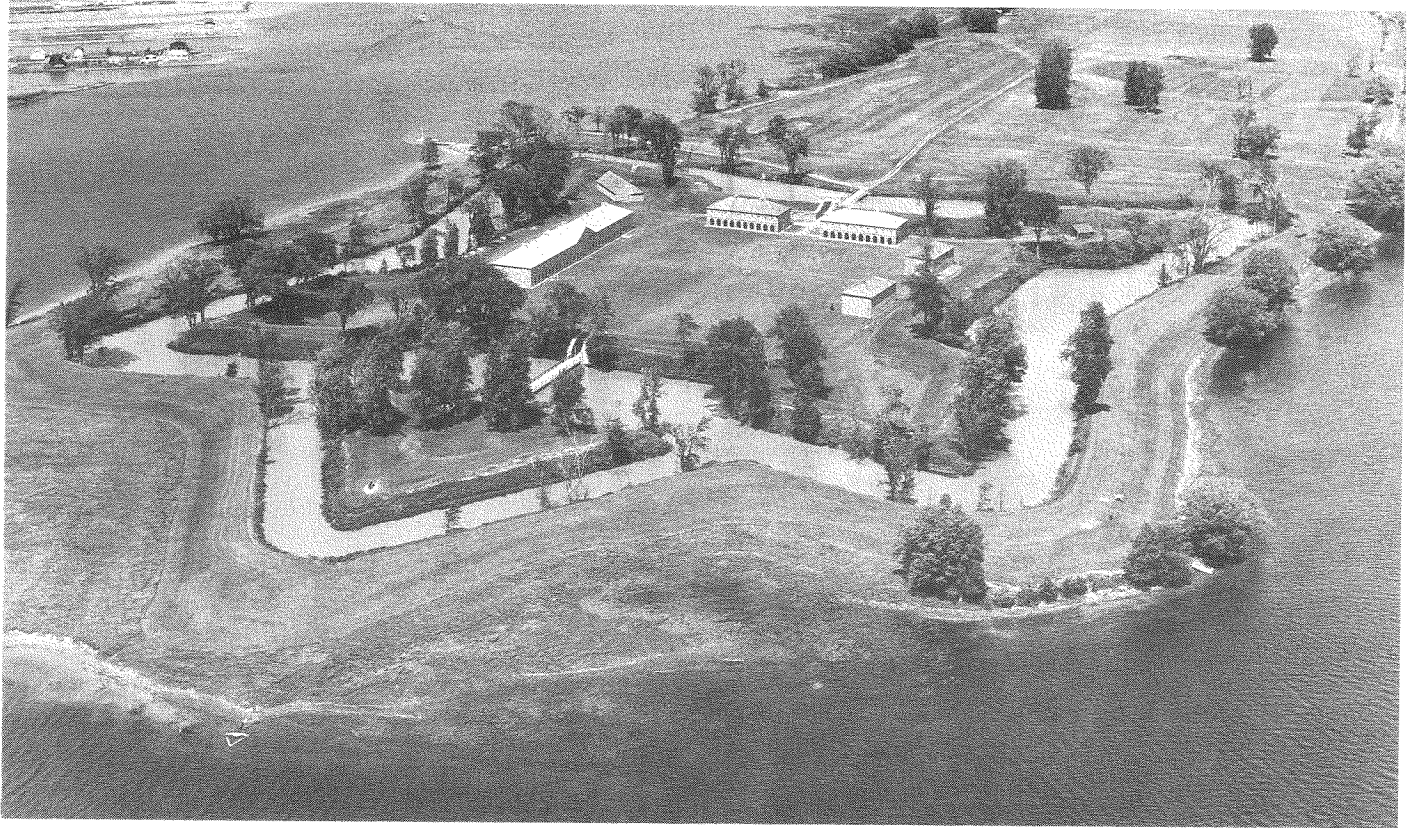


64 Plan of Fort Lennox superimposed on the first British fortifications. The construction of Fort Lennox would completely alter the defences of the island. At the dockyard opened in 1819, it was first necessary to raise the earlier works to produce the earth fill for the new fortification. (*S. Romilly, 1819; NA, NMC-21153*)

of Nicolls' plan in a context where any new defensive construction had been suspended by the British authorities. From this point of view, perhaps Mann had no other choice but to recommend the acceptance of the plan to his superior, Wellington, despite his preference for Saint-Jean as the main location on this border.

The construction of Fort Lennox began in the summer of 1819 and was spread over some ten years (Fig. 64). Efforts were centred first on erecting the rampart, and then most of the buildings initially planned by Nicolls were constructed (Figs. 65-72).⁴ Except for the officers' quarters, they all

4 The magazine was the first building to be finished at Fort Lennox in 1820, obviously because of the defensive imperatives inherent in this type of building. Soon after, the guardhouse was built in 1821 and the two warehouses from 1821 to 1823. The construction of the casemates on the west lasted from 1822 to 1825, while those on the north were only finished in 1827. The officers' quarters, although begun in 1821, were only finished in 1828 as the emphasis on the work on the rampart delayed the completion of this building. Finally, the barracks were the last building to be finished at Fort Lennox and their construction took place from 1825 to 1829. ANQM, Notarial file of N.B. Doucet, No. 7605, T. McKay - J.B. Duchesnay Contract, 24 May 1820; No. 12955, T. Thompson and J. Hislop - Government Protest, 17 November 1825. *Ibid.*, Notarial file of H. Griffin, No. 3102, B.J. Duchesnay - S. Romilly Contract, 20 April 1820; No. 3653, P. Rutherford - S. Romilly Contract, 24 March 1821; No. 3668, E. Thurber, M. Sax and A.B. Smith - T.



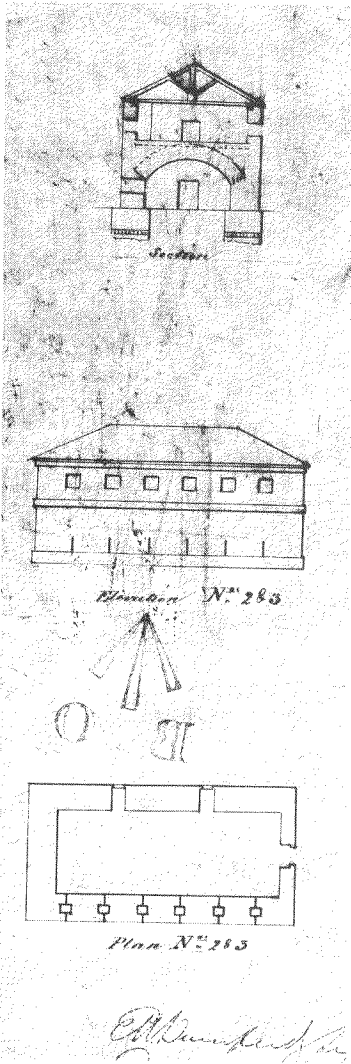
65 Fort Lennox today. (*Parks Canada, Jean Audet, 1976, 114/PA/PR-6/S-03-8*)

had a vaulted ground floor of sufficient thickness to resist bombs and shells.⁵ Small bombproof casemates were erected as well: 11 under the west rampart and six under the north one. They were mostly intended for storing provisions.

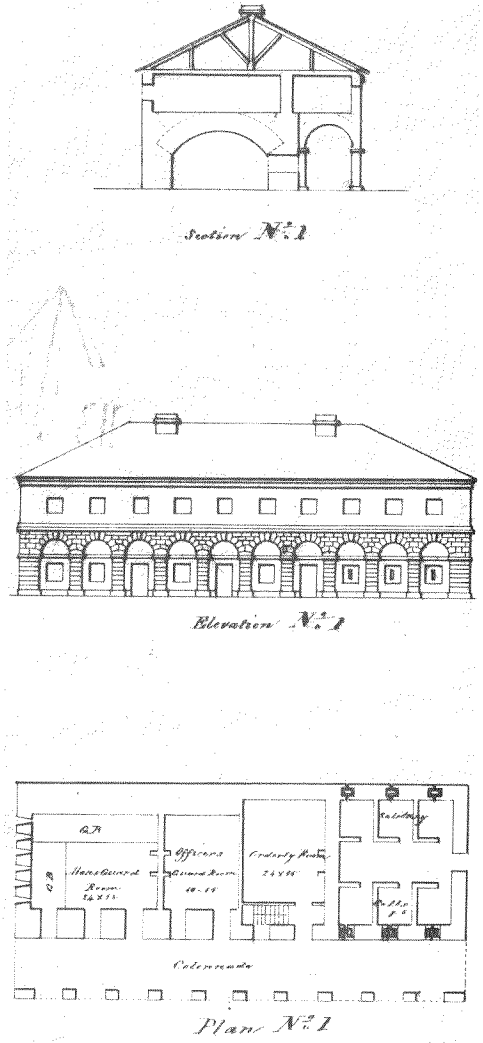
Some buildings had additional defensive elements. Thus the gabled walls and the west façade of the barracks had loopholes at ground floor level so as to provide additional defence against an assault. Also, those on the west wall of the guardhouse added to the defence at the entrance to the fort. However, the arrangement of these loopholes as well as their type of construction raise many questions as to their real effectiveness.⁶ The powder magazine and the entrance gate also incorporated the defensive details which were usual in these types of structure (Figs. 71, 72 and 97).⁷ As an additional measure for the safety and control of the powder magazine, located in the least exposed bastion, a stake fence closed at the gorge

McKay and P. Rutherford Contract, 31 March 1821; No. 3670, A. Cartier and T. Béchard - T. McKay and P. Rutherford Contract, 2 April 1821; No. 3680, J. Bowman, J. Tindale and J. Stephenson - A.B. Smith, M. Sax and E. Thurber Contract, 9 April 1821. *Ibid.*, Notarial file of A. Jobin, No. 4132, C. Poltras - R. Dent Contract, 11 October 1826. *Ibid.*, Notarial file of J.M. Mondelet (concession), No. 484, R. Edwards - J. Hislop and T. Thompson Contract, 5 November 1824; No. 487, R. Edwards - R. Dent and R. Webster Contract, 1 December 1824; No. 488, R. Edwards - R. Drummond Contract, 2 December 1824; No. 613, C.J. Forbes - G. Hay and J. Shand Contract, 3 August 1827. On the construction and development of the various Fort Lennox buildings, see also G. Piédaloue, "Inventaire des ressources archéologiques de l'île-aux-Noix," document on computer, National Historic Sites, Parks Canada, Québec (1987); and D. Lee, "Structural History of Fort Lennox," Manuscript Report Series No. 108 (Parks Canada, Ottawa, 1973).

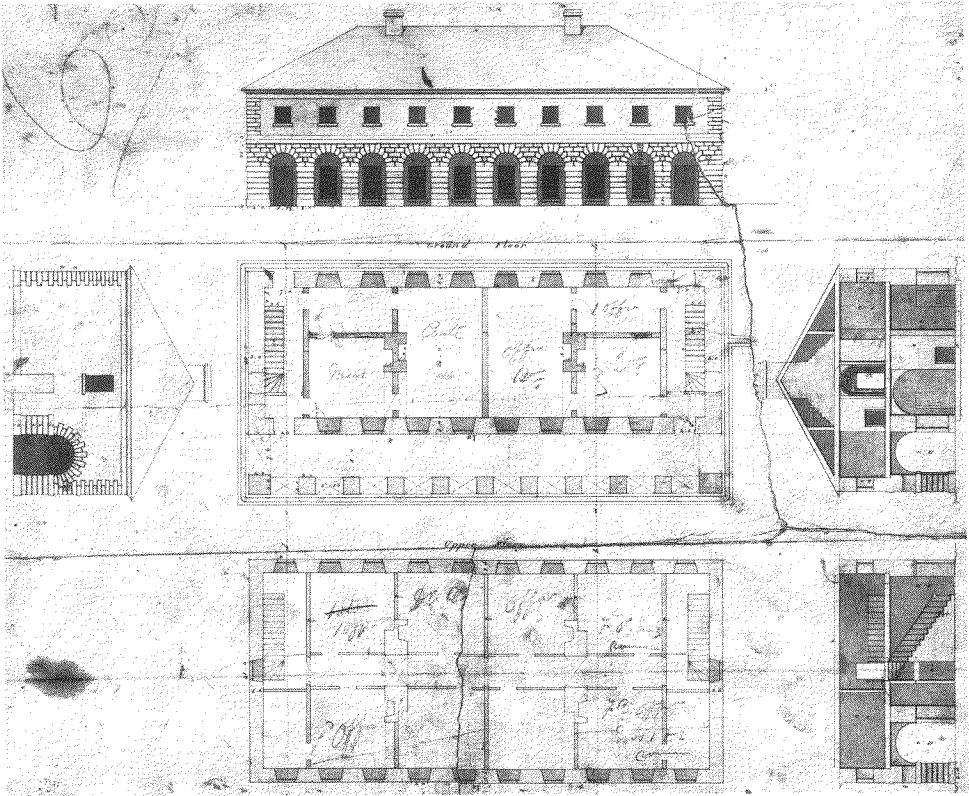
- 5 Three feet is considered to be the minimum thickness for this purpose. C.W. Pasley, *Course of Military Instruction...*, pp. 362 and 377.
- 6 In fact the ground floor loopholes in both of the barracks and the guardhouse had very little defensive value. Ideally, such defensive elements were placed as low as possible in relation to the ground outside the buildings so as to make them difficult for the enemy to use against the defenders, by forcing them either to stoop down or to crawl first. But this was not the case at Fort Lennox, since the loopholes were placed four feet from the ground and thus were as useful to the attackers as to the defenders. Furthermore, these same loopholes, located on the west wall of the barracks, did not expose the enemy since the restricted space between this wall and the rampart did not allow sufficient backing up for the angles of fire to cross, these angles being fixed by the sides of each loophole. As a result, the enemy could move about in this area with almost complete freedom and easily use these loopholes against the defenders inside the barracks. In 1864, the poor planning of these loopholes was commented on in no uncertain terms: "... what these loopholes are intended for is not obvious, as they do not command the terreplein, or serve in any way to overlook the interior of the Fort. They are moreover, easy of access from the outside, and would form convenient apertures through which an enemy, having gained access to the Fort, might harass the garrison who had taken refuge in the Barracks" (NA, RG8, II, Vol. 34, p. 82, "Report on Barracks in Canada," Harrison, 1864).
- 7 The construction of the magazine in the least exposed bastion to the northwest conformed to the defensive requirements of the period. In the event that this building was destroyed or blew up, the bastion could quickly be closed off at the gorge by a temporary entrenchment to make defence possible against the assault, which would become much more difficult if the magazine was located along a curtain. The English theoretician Pasley noted: "Formerly the gunpowder of fortresses was generally placed in towers or casemates, near or under the ramparts of the main enclosure. But it being found that in cases of explosion, a magazine, so situated, occasioned practicable breaches in the body of the place, and thereby rendered the fortress untenable, a rule has since been adapted, either to remove the principal magazines from the vicinity of the ramparts altogether, or to place them in the center of empty bastions, where, if accidents take place, their destruction will not lay open the fortress to an assault." (C.W. Pasley, *Course of Military Instruction...*, p. 378).



66 Fort Lennox: the commissariat store. (NA, NMC-6191)



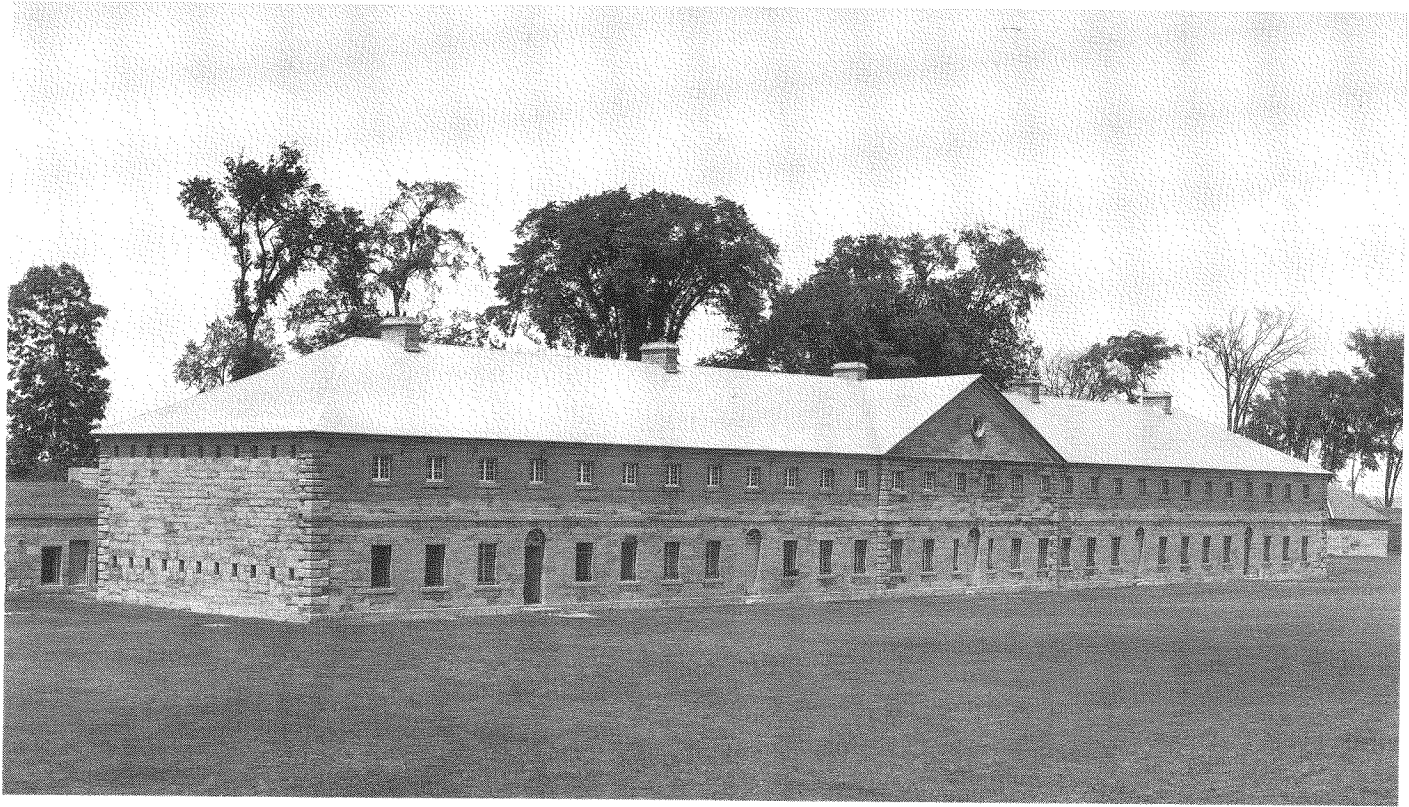
67 Fort Lennox: the guardhouse, (NA, NMC-6190)



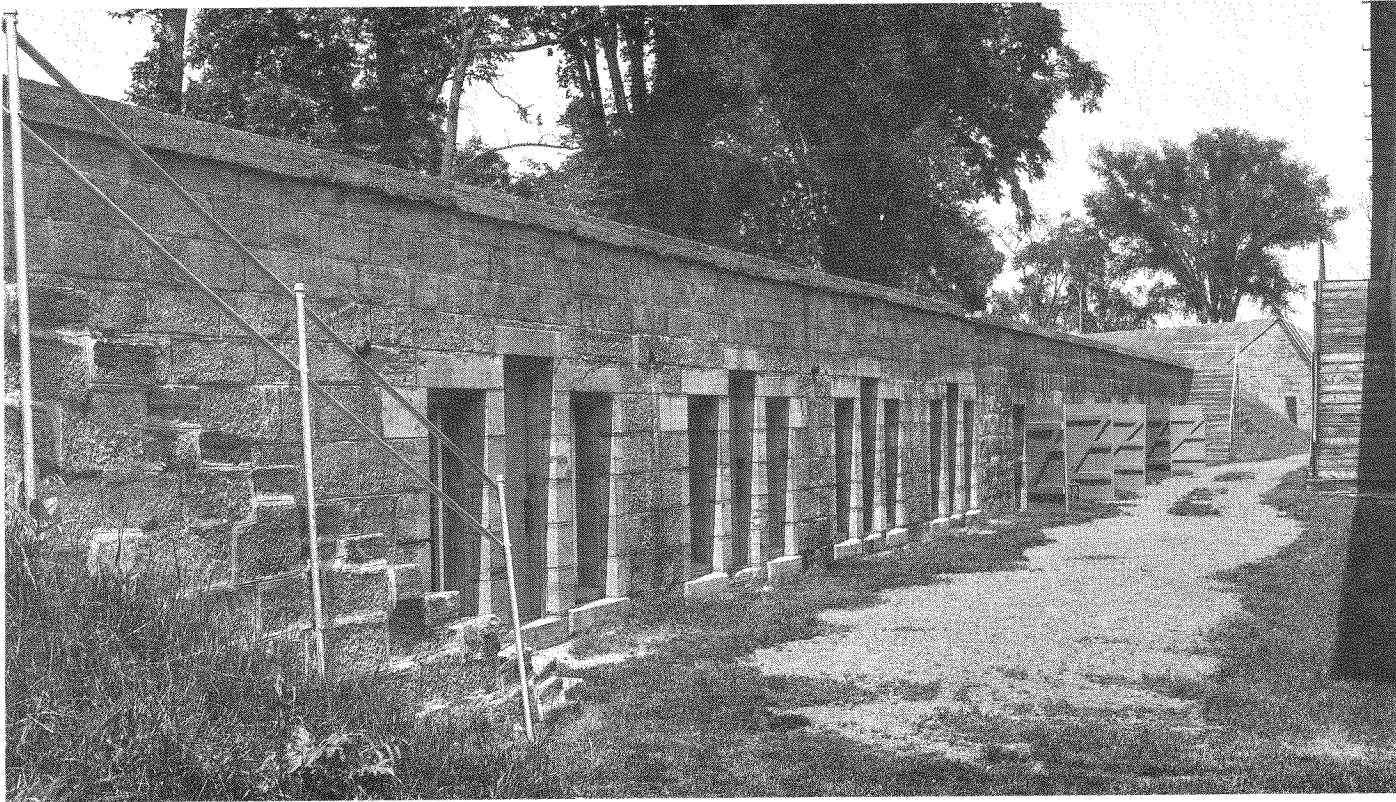
68 Fort Lennox: the officers' quarters. (*Parks Canada, NMC-2289*)

by a masonry wall was set up around the building. The entrance to the fort, which was obviously necessary, was in itself a defensive weakness which the engineer had to lessen. At Fort Lennox, the entrance was equipped with a bascule drawbridge with a counterweight. The floor of the bridge when raised, along with the counterweight, formed a double closing which was additional to the two series of folding doors at each end of the passage. A similar defensive arrangement closed off access to the ravelin on the south front. Only the two towers would not be erected because of alleged difficulties in firming up the foundations in the unstable soil of the island.⁸

⁸ NA, RG8, I, Vol. 410, pp. 114-15, "Engineer Estimates approved for the year 1821"; Vol. 1599, p. 85, "Project for reconstructing Fort Lennox, Isle aux Noix," Capt. Maquay, 20 June 1864; RG8, II, Vol. 6 (2), p. 10, item 8, Report of the Carmichael-Smyth Commission, 1825.

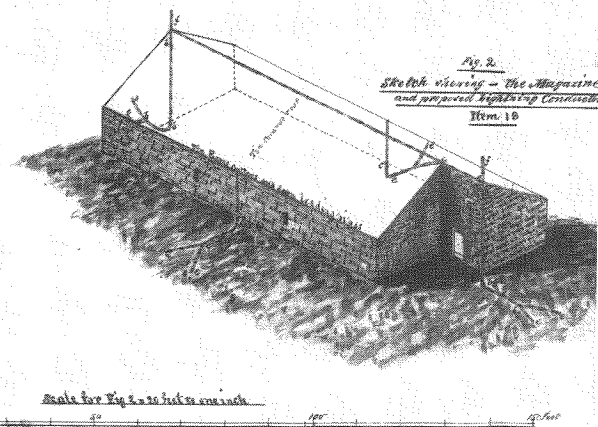
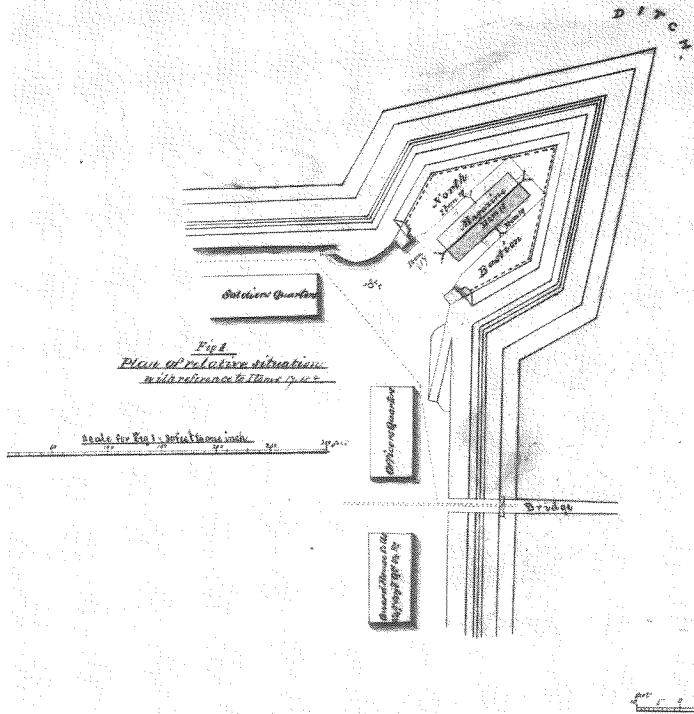


69 Fort Lennox: the barracks. (*Parks Canada, Jean Audet, 1976, 114/03/PR-6/A-62*)



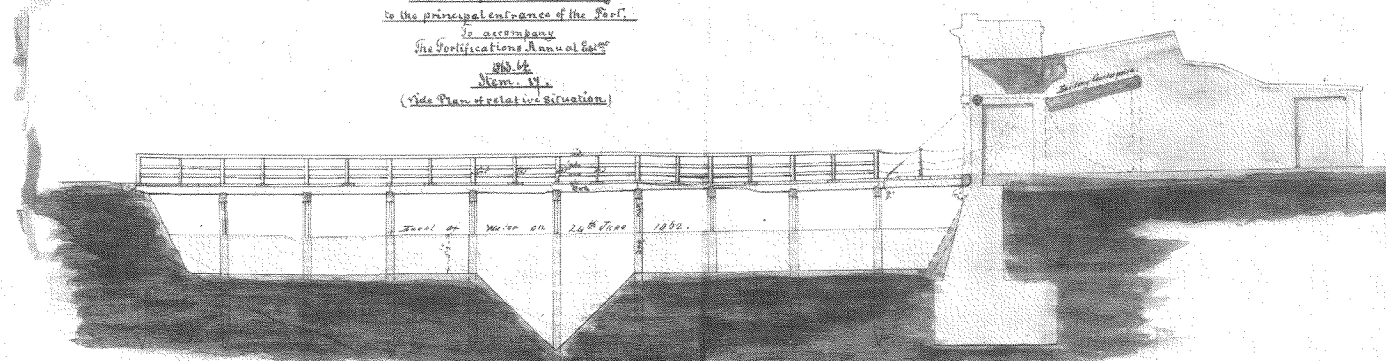
70 Fort Lennox: the casemates on the west front. (Parks Canada, Jean Audet, 1976, 114/07.3/PR-6/A-113)

Plan and Isometrical
Sketch
 To accompany the Fort Buildings
Annual Report
1866-7.
 With reference to Items 17, 18 & 19.

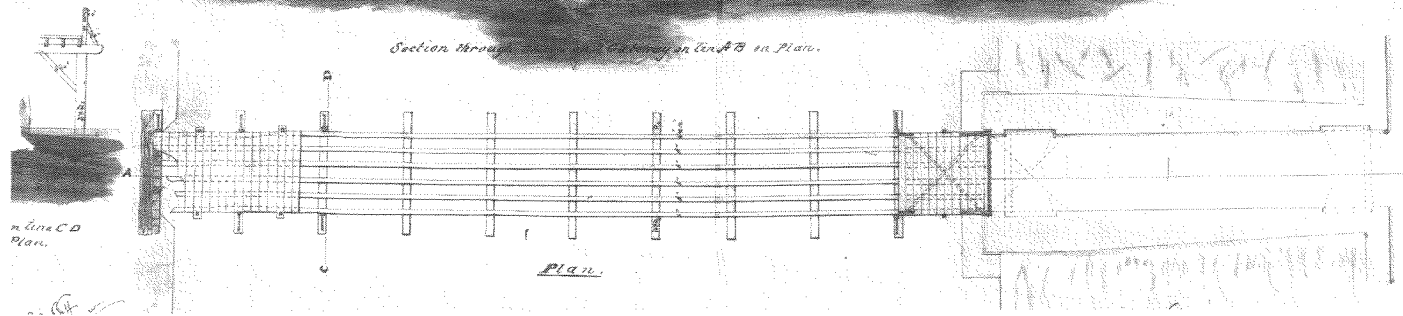


22

Montreal District
Fort Lennox Isle Aux Noix C.E.
 Plan and Sections showing the proposed
 Renewal of the Northeast Bridge
 to the principal entrance of the Fort.
 To accompany
 the Fortifications Annual Report
 1864
 Item 14.
 (See Plan relative situation)



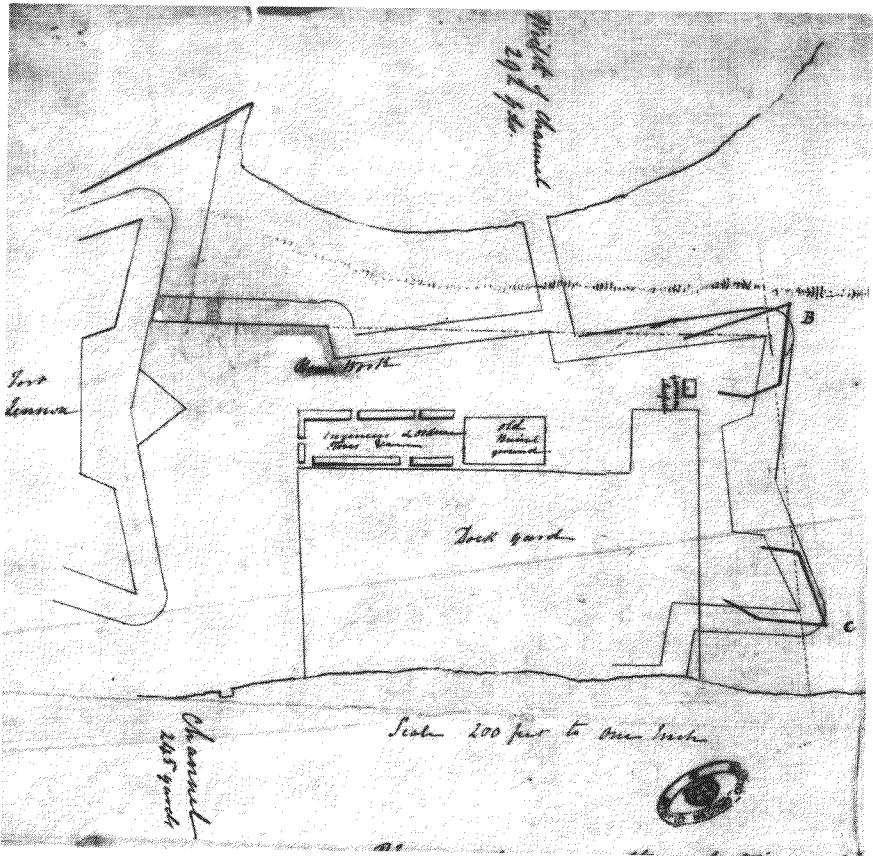
Section through the bridge on line B in Plan.



in line C D
 Plan.

Plan.

72 Fort Lennox: the drawbridge (NA, C-122979)



73 The naval base on Île aux Noix. To fortify this sector, Cole, the engineer, suggested replacing the proposed hornwork with two redoubts with musketry firing galleries at their gorge. This project would not be followed up. (*P. Cole, 1827; PRO, London, WO55/865, fol. 236*)

The works at the naval base would never be begun, except for the ditch on the west branch of the hornwork near the fort (Fig. 74).⁹ Budgetary restrictions and the fact that maritime activity lost importance beginning right after the War of 1812 probably were the reasons for these deletions from the project. Furthermore, several engineers had cast doubts on the

⁹ Apart from indications on the 1823 plan, the archaeologist Ashworth, identified an artificial depression in this area beside which he found certain artifacts dating from the period when Fort Lennox was constructed; M.J. Ashworth, *op. cit.*, pp. 153-74. See also G. Piédalue, "Inventaire des ressources archéologiques...."

effectiveness of Nicolls' plan for the defence of this sector, among other reasons because it would not guarantee any protection against an attack coming from enemy batteries installed on the right bank of the river. Moreover, the fortification provided no defence against a possible assault from the east side. Finally, the hornwork could have provided the enemy with the necessary cover from which to direct their attack on the fort.¹⁰

A Royal Engineer resident at Île aux Noix, P. Cole, tried to reactivate the project in 1827 by suggesting the construction at the northern edge of the naval base of two redoubts with ditches which would be closed at the gorge by musketry firing galleries (Fig. 73). The project was not followed up and the 1828 Committee of Inquiry put a definite end to any desire to fortify the island's naval base by simply recommending moving the base to a more secure location, as Île aux Noix had become vulnerable to the slightest enemy movement:

*Isle aux Noix is the advanced Post on the Richelieu River within a few miles of the American Territory and Resources; the River on either Side is less than 300 yards in Breadth; therefore the Naval Arsenal is liable to destruction by a few Howitzer Shells at the first movement of an Enemy; Neither the works proposed nor any others on the Island could prevent this except [if a] Bombproof storehouse were provided.*¹¹

Thus at the very moment when Fort Lennox was finished, the strategic justification which had decreed the approval of the initial plan was no longer valid. Apart from strategic and tactical considerations, the construction of Fort Lennox should be analysed in the larger context of the development of fortification techniques in which Vauban's model was gradually replaced by new defensive concepts.¹² The analysis of the trace and profile of Fort Lennox must therefore take into account the theoretical models known to the engineers concerned. This will make it possible to grasp the relevance of the models used for Île aux Noix, and their effect both on the defensive objective for the island and on the overall strategy for the colony. The nature of the works carried out and the techniques of

10 PRO, WO55/865, fols. 239-40, "Report to accompany Plans and Estimates dated Royal Engineers Office, Fort Lennox," P. Cole, 8 March 1827.

11 Ibid., fols. 230-30v, Fanshawe and Lewis to Mann, 23 July 1828.

12 See also P.P.F.M. Rocolle, 2000 ans de fortification française (Limoges: Charles Lavauzelle, 1973). 2 vols.

construction used, especially for the revetments, raised several problems during the construction of the fort and in the years afterward. The reflections of Royal Engineers on the subject allow us to place their level of knowledge with respect to the development of fortification techniques. One wonders, however, about the nature of the solutions envisaged or adopted, which in certain cases appreciably modified the original defensive objective of Fort Lennox.

Analysis of the Trace

The geometric trace of Nicolls' plan for Fort Lennox took its inspiration largely from Vauban's model defined two centuries earlier! In this sense the engineer's proposal reflects the conservative tradition passed on in the various military schools at the end of the 18th century in both England and France, at a time when Vauban still enjoyed very great popularity among the theoreticians.¹³ Thus Nicolls reproduced the models he learned while at the Royal Military Academy, Woolwich, on Île aux Noix. Nicolls had graduated from this school of artillery and engineering in 1794,¹⁴ and at the time the precepts of the great French practitioner formed the basis of theoretical instruction.¹⁵ The similarity between the geometry of Nicolls' plan and Mann's, put forth some 30 years earlier, reflected the slow pace of the development of theory in this field.

13 A. Charbonneau, M. Lafrance and Y. Desloges, *op. cit.*, Chapter 3.

14 Born about 1776, Gustavus Nicolls entered Woolwich in 1793. In 1794, he became second lieutenant in the Royal Artillery. The next year he transferred to the Engineers. From 1804 to 1807, he served in different places in Canada, but during the War of 1812 he was stationed in Halifax. He became Commanding Royal Engineer in Canada from 1815 to 1816 and from 1832 to 1838. Between these two postings he held the same appointment in Halifax. His long career in the British North American colonies gave him an opportunity to work on several major fortification projects. He was responsible for the construction of the Halifax Citadel and he drew up the first plans for Fort Lennox on Île aux Noix. He was also interested in the fortifications at Kingston and proposed several military works at York. He died at Southampton in 1860. He had been promoted Colonel Commandant of the Royal Engineers in 1851 and general in 1854. (PRO, WO55/860, fols. 175-76, Nicolls to Drummond, 27 April 1816; R.F. Edwards, ed., *Roll of Officers of the Corps of Royal Engineers from 1660 to 1898. Compiled from the Ms Rolls of the Late Captain T.W.J. Connolly, R.E. and Brought to Date in the Office of the R.E. Institute* (Chatham: Royal Engineers Institute, 1898).

15 For an idea of the body of theoretical knowledge taught to British engineers at the end of the 18th century, see the following treatises: J. Muller, *A Treatise Containing the Elementary Part of Fortification...*; C.W. Rudyerd, *Course of Fortification at the Royal Military Academy as Established by his Grace the Duke of Richmond, Master General of his Majesty's Ordnance & &* (N.p.: Royal Military Academy, 1793). Other treatises which were much consulted by engineers because they were written by their professors insisted on the superiority of Vauban's plan as a model of bastioned fortification, even at the beginning of the 19th century. See also I. Landmann, *The Principles of Fortification; Reduced into Questions and Answers for the Use of the Royal Military Academy, at Woolwich*, 5th ed. (London: T. Egerton, 1821). Finally, the great British fortification specialist at the beginning of the 19th century, C.W. Pasley, published a certain number of treatises, including his *Course of Military Instruction...*

Nicolls' choice of the square plan, like Mann's before him, suited the configuration of the south part of Île aux Noix, whose perimeter is more or less rectangular in shape. He therefore chose the square as the basic polygon, although the geography of the island forced him to make it irregular (Fig. 63). The outline of Île aux Noix and its low relief forced Nicolls to shorten the south part a little. As well, the engineer was using the remaining portions of the island's perimeter outside the fortification to make them into a glacis, that is to say, with gentle slopes. It must be added that this glacis required a minimum width to give the defenders the necessary room to fire directly at an enemy who might try to disembark on the island.

The orientation and the length of the faces corresponded exactly to Vauban's model (App. E and F). As well the angles of the bastions and more particularly the capitals were all greater than the minimum limit of 60° . It should be remembered that a bastion angle of less than 60° made the inside surface too narrow for moving about efficiently. As well, the sharper the angle became, the more vulnerable the edge of the rampart at the capital or the shoulders became: it was easier then for an enemy to breach it with their artillery.¹⁶

The position of the flank reflected a geometric adaptation by Nicolls to the particular conditions of the Île aux Noix site. Since he had to make the square irregular for topographical reasons, one of the angles of the polygon became less than 90° . A right angle is the minimum angle of the polygon on which the geometry of bastions is based, at least in "regular" fortification.¹⁷ At less than 90° , the angle of the polygon inevitably produces a bastion whose gorge is too narrow to function adequately in the defence if the rampart is wide enough to resist large-calibre artillery. Therefore, precisely because of his irregular square, Nicolls modified Vauban's usual method so as to orient the flanks to produce bastions whose gorges would be sufficiently open (App. F). This is why the engineer designed flanks at Fort Lennox with angles which were slightly obtuse to the line of defence, while Vauban's formed an angle somewhat smaller than 90° .

It should be remembered that the ideal orientation of a flank to the line of defence remained 90° , by virtue of the principle that the right-angle position contributed to greater effectiveness of artillery or musketry fire.

16 I. Landmann, *op. cit.*, p. 56 and C.W. Pasley, *Course of Military Instruction...*, Vol. 2, p. 320.

17 *Ibid.*, p. 40; Abbé Déidier, *op. cit.*, p. 15.

It was then said that the flank directly defended the ditch opposite. On the other hand, if the flank, being perpendicular to the line of defence, could see the enemy directly, then the latter in turn could batter the flank directly once they had mastered the ditch. By placing the flank at a slightly acute angle to the line of defence, Vauban kept the advantage of direct fire and denied this possibility to the enemy.

The solution adopted by Nicolls thus tended to expose the flanks more openly to enemy artillery, but it produced bastions which offered a sufficient opening for the defensive movement inside, thus complying with another general rule of fortification.¹⁸ As for the greater exposure of the flank, it can be said in Nicolls' defence that an attacker of Île aux Noix would always have to cross the river before taking up a position on the glacis and finally battering the rampart directly.

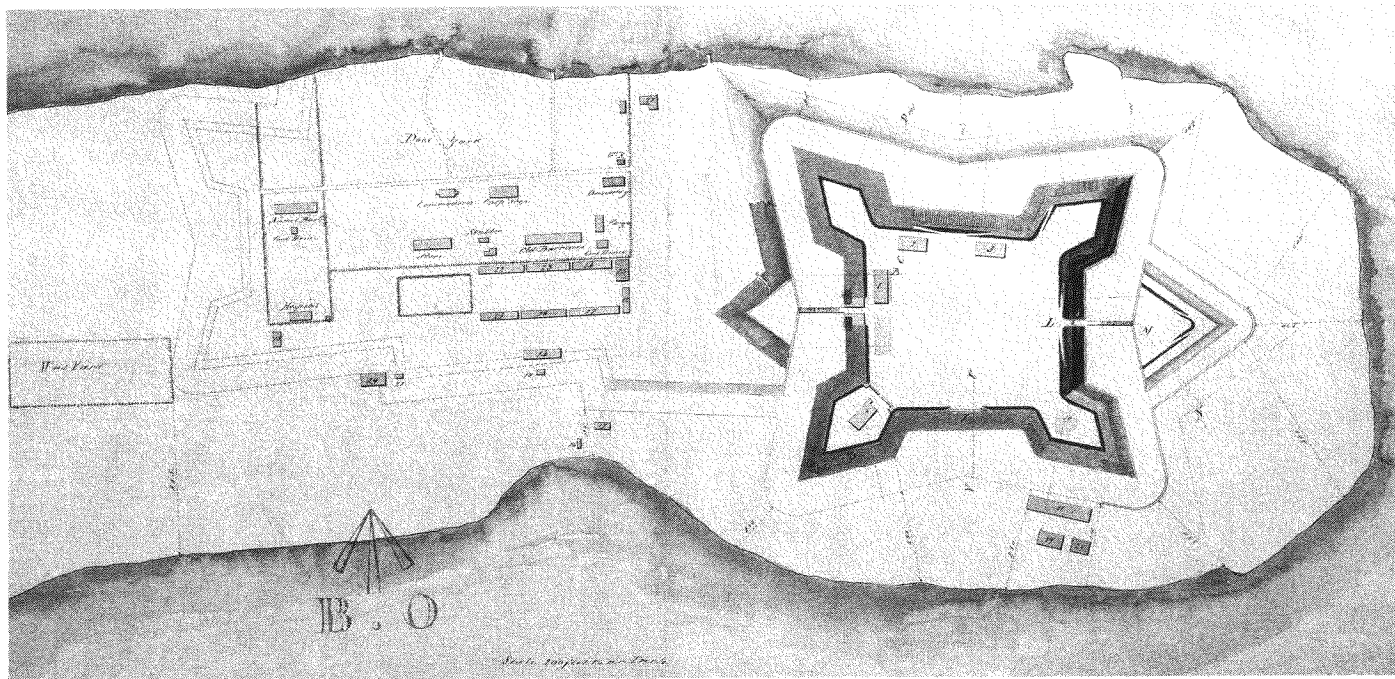
The flanks established by Nicolls for Fort Lennox also satisfied that other principle, namely they were equal in length to or longer than the width of the ditch so as to provide the defenders with simultaneous flanking fire on the enemy, whatever his position might be in front of the bastion opposite.¹⁹ Finally, all the flankings on each side of the fort were well within the range of musket fire because of the small dimension of each of its fronts.

Between the drawing board and progress at the worksite, the plan of Fort Lennox underwent few modifications (Fig. 74). The ditch was widened and an 1823 plan showed a redesigned glacis which extended parallel to the counterscarp. As well, the ravelin presented an salient angle which projected further toward the south. The place of arms to the north had also been enlarged. The demi-gorges extended twice the planned length so that the faces were now lined up with the flanks of the bastions behind, and no longer with the curtains. As was the case with the ravelin, the capital of the place of arms carried the defence closer to the enemy.

In short, Nicolls submitted a plan of fortification whose geometry generally complied with the spirit of Vauban's model, which he became familiar with when he was in training. The particular conditions of the site caused the engineer to distance himself somewhat from the theoretical

18 Pasley indicates in this regard: "The interior of the bastion should be spacious in order to allow sufficient room, for the movement of guns, carriages and troops, in various direction without interfering with the guns placed in battery upon the ramparts; as also for the formation of traverses and splinter proofs, in convenient situation for a protection against the effect of the enemy's enfilading batteries and shells" (*Course of Military Instruction...*, Vol. 2, p. 317). In fact, in Nicolls's project, the smallest gorge extends more than forty feet, which creates bastions which are sufficiently open to provide plenty of room to manoeuvre.

19 I. Landmann, *op. cit.*, pp. 55-56.



74 Start of the work at Fort Lennox. The construction of Nicolls's project was carried out without much modification of the original plan. The ditch was narrowed somewhat, and a clearly defined glacis surrounded the whole perimeter of the enceinte. The beginnings of the hornwork which was never finished are to be noted in front of the northwest bastion. (E.W. Durnford, 1823; NA, NMC-2285)

model for the trace of the flanks so as better to organize the defence of Île aux Noix. In this sense, he applied an essential principle on which Vauban so insisted — adaptation to topography.

Profile of the Rampart

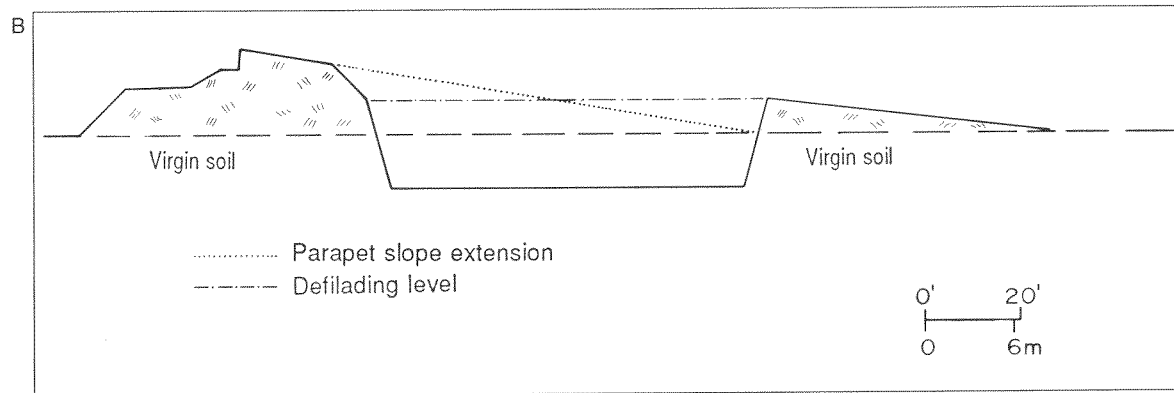
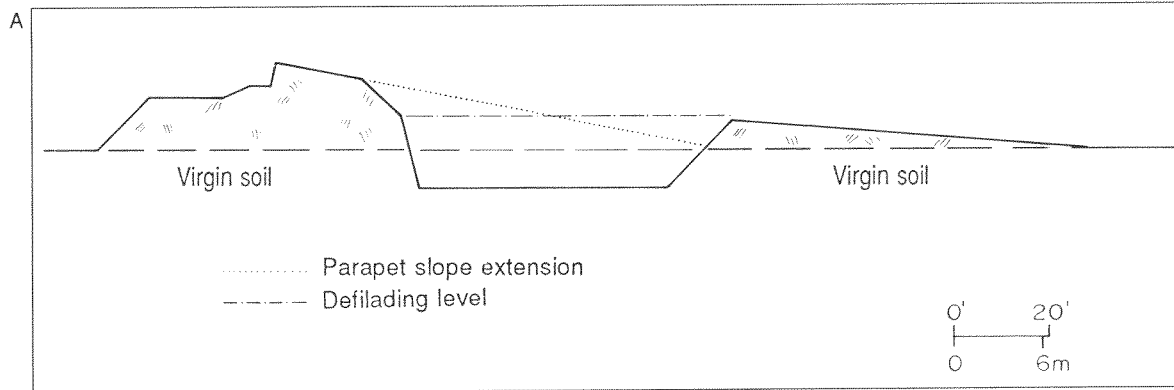
Like the trace of Fort Lennox, the profile submitted by Nicolls took its inspiration largely from Vauban's model. In 1816, the engineer proposed a conventional rampart 62 feet wide at parade ground level, a dimension which included the inner talus; the rampart was also half revetted by a masonry wall (Figs. 63 and 75). The height of the work from the bottom of the ditch to the top of the parapet was set at 26 feet, 18 feet of which rose above the level of the parade ground; the remaining eight feet were dug into the virgin soil. The escarp, which here was bounded by the masonry revetment, rose to a height of 15 feet and had a batter of 1-in-6. It was six feet wide at the base and 3.5 feet at the top. Behind the revetment a buttress 3.5 feet thick rose vertically.²⁰

The rampart was surmounted by a parapet 18 feet wide whose top or superior slope had a pitch of about 10° (6-in-1). Contrary to the rampart, the parapet was revetted neither inside nor outside. On the side facing the open country or the enemy, it ended with a natural slope of 45° . Inside Nicolls made use of a much more abrupt slope (1-in-3), which obviously required the support of devices such as fascines to retain the earth on that side.

Behind the parapet, Nicolls provided a banquette for the soldiers, 4.3 feet lower than the top of the parapet. It was four feet wide and its gently sloping ascent (2-in-1) extended 5.5 feet. The rampart planned by Nicolls also had a terreplein about 15 feet wide, which sloped very slightly toward the parade ground to facilitate water run-off. Finally on the inner side of the fort, the rampart ended in a talus with a natural slope of 45° .

In front of the rampart, Nicolls had planned a dry ditch 50 feet wide, in the centre of which would be a palisade eight feet high. The counterscarp, which was not faced with stone, rose to a height of 15 feet with a slope of 45° ; being this high, it completely hid the masonry escarp of the main rampart from the enemy. Finally, the profile suggested by Nicolls also

²⁰ However, I do not know their planned width and spacing.



75 (A) Profile of the Fort Lennox planned by Nicolls in 1816; (B) Sample profile taken from the face of a bastion, near the salient exterior angle. (Drawings: L. Lavoie, 86-5G-D5 and 86-5G-D4)

included a glacis composed of the remaining portion of the perimeter of the island with a gentle slope (about 1-in-10).

The documents are silent on the profile of the ravelin and its height in relation to the main rampart. One may suppose that it included the same type of rampart with a somewhat reduced height to allow it to be commanded from the main rampart.

The profile of the hornwork encircling the naval base exhibited smaller dimensions than the rampart of the fort (Fig. 63). Neither the parapet, nor the escarp, nor the counterscarp was revetted with masonry; all the slopes had an angle of 45°. The escarp was cut into two equal parts with a berm placed at the level of the parade ground. Finally, Nicolls planned to dig a ditch in this area which would be filled with water to a depth of eight feet.

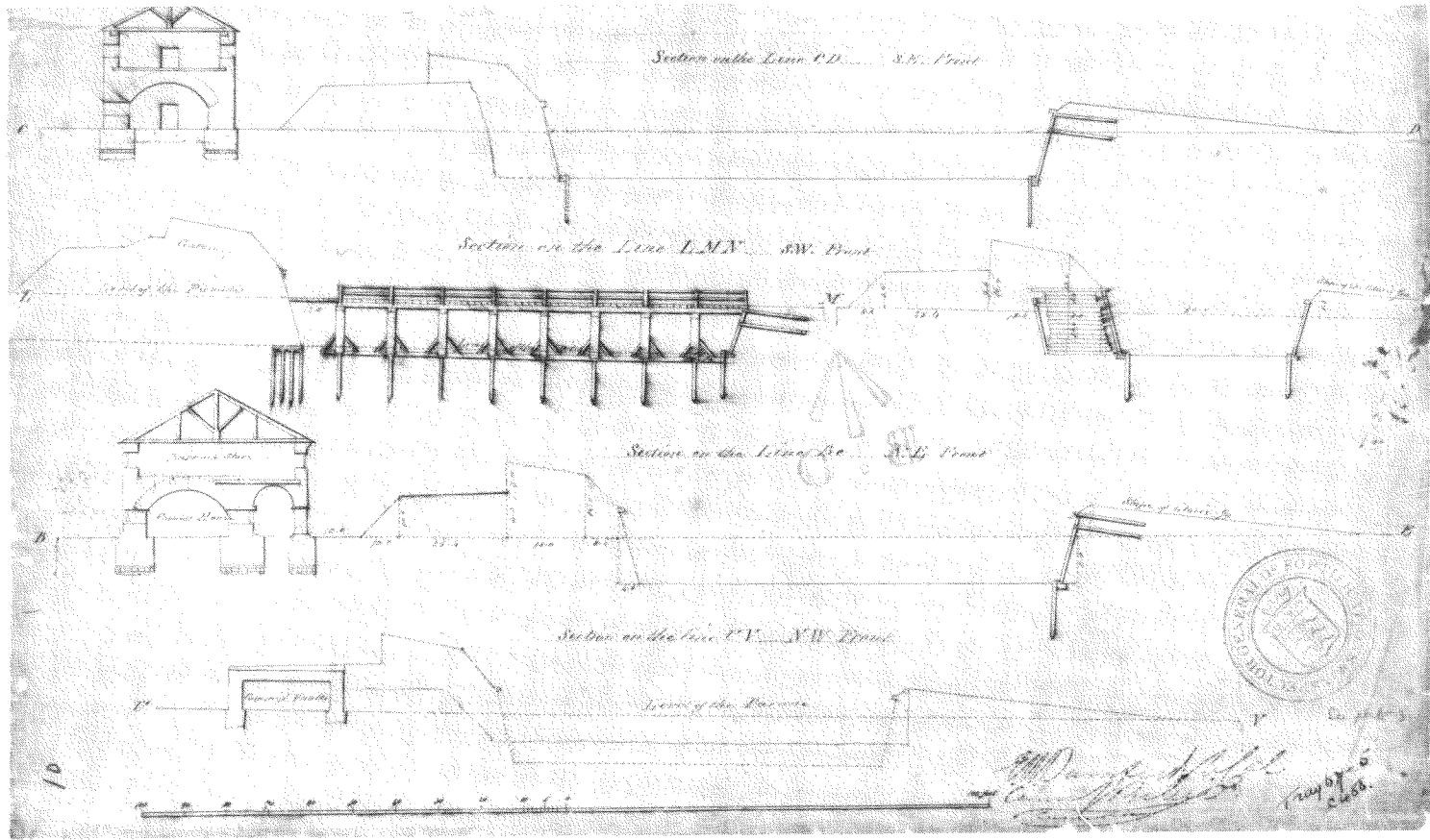
The process of construction, even though it generally complied with Nicolls' initial plan, produced certain major modifications (Figs. 75 and 76). Not only was the ditch widened by 25 feet (it now measured 75 feet near the capital angles of the bastions), but it was deepened by three feet, which gave the rampart a total height of 29 feet as opposed to the 26 feet initially planned in 1816. These modifications made by Samuel Romilly, the engineer in charge of construction, were no doubt required because of the need for a larger volume of earth to build up the terreplein and the glacis.²¹

The construction of the elements of the rampart which were above the level of the parade ground complied with the 1816 profile, and were still nearly 62 feet wide. The interior talus, terreplein, banquette and parapet as well as the interior, upper and lower slopes had the same height and the same slopes.

With this design, the Fort Lennox rampart was in keeping with the various rules which governed the construction of this type of work, rules which were formulated on the basis of experience in war and its strategic and tactical requirements. First, the total width of the rampart and its parapet was within the limits suggested by Vauban's model for ensuring effective resistance to siege artillery.²² The terreplein was wide enough for the defenders' manoeuvres and for transporting ammunition. The ban-

21 The lack of earth to create fill for Fort Lennox rampart was very real since as early as November 1819 it was wondered "whether it would not be feasible & advisable to procure... a considerable quantity of rough timber and brush wood for the formation of it" (NA, RG8, I, Vol. 404, pp. 128-29, Durnford to Bowles, 12 November 1819).

22 See on this subject A. Charbonneau, Y. Desloges and M. Lafrance, *op. cit.*, pp. 187-88; I. Landmann, *op. cit.*, pp. 6-9.



76 Various cross sections of Fort Lennox in 1823 (see Fig. 74). The profile of the ravelin (*LMN*) gives a general idea of the rampart's wooden support structure. It is to be noted that the structural elements of the guardhouse in Section *BE* appear inverted (*E.W. Durnford, 1823; NA, NMC-6189*).

quette, about 4.5 feet from the top of the superior slope of the parapet, was at the conventional height, proportionate to the average height of a soldier standing in position on the banquette with his arms leaning on the top of the parapet. This height assured him at the same time of the necessary protection against enemy projectiles.

The superior slope of the Fort Lennox parapet also obeyed the rules which determined its orientation and its height. On one hand, this superior slope of the parapet had to be arranged so as to allow the infantryman who was behind it to see the top of the counterscarp in order to prevent the enemy from advancing over the glacis.²³ On the other hand, the slope of 10° (6-in-1) was the maximum angle allowed for the superior slope of the parapet, since beyond that pitch the upper part of the parapet towards the crest, would no longer be thick enough to resist enemy projectiles. At Fort Lennox, the engineers used this maximum angle of 10° , which lined up with the top of the counterscarp at the point where it met the level of the parade ground.²⁴

As for the escarp, the 1823 survey showed that Romilly did not build the masonry revetment initially suggested by Nicolls. It seems that considerations of economy, warranted by the particularly unstable nature of the soil on Île aux Noix, probably motivated this change. The earth of the rampart was retained by a wooden structure instead.²⁵

The deepening of the ditch when the fort was built certainly had various repercussions on the structure, and it also affected the type of defence offered. Despite the fact that the island's surface rose very little above the level of the river, Nicolls originally planned a dry ditch equipped with a palisade eight feet high in the middle; this palisade was designed to give accurate coverage of the lower part of the ditch below parade ground level.

23 In the case where there was a covered way, the alignment of the superior slope of the parapet towards the top of the counterscarp still assured a defensive coverage of this work in the event that it was occupied by an enemy.

24 To check the application of this rule to Fort Lennox, the profile must be studied at the spot where the ditch was narrowest, towards the exterior or salient angle of the bastions.

25 I will return below to the description of the Île aux Noix soils and the analysis of the wooden revetment constructed at the time.

The changes made by Romilly now made the base of the ditch 11 feet below the parade ground, two feet below the low-water mark as defined in 1828.²⁶ This dimension risked causing the accumulation of a small amount of water in the ditch and making it difficult, if not impossible, to dry it out.²⁷ To this water must be added the fort's surface water that drained into the ditch and the spring floods, which raised the average level of the water in the ditch to five feet below the parade ground.²⁸

To change the ditch water and to regularize its level with that of the river, drains were constructed at the time of the initial excavation which linked the two.²⁹ This was not sufficient to dry up the bottom of the ditch completely, since in 1828 the military engineers decided to build in the centre of the ditch a flattened V-shaped cunette which was 10 feet wide at the top and nine feet deep to drain off the surplus water (Fig. 86).³⁰

In short, Romilly, like Nicolls, did not plan a ditch which could be emptied and refilled with water at will as an additional defensive element. In the 19th century the Fort Lennox ditch, because of the particular topo-

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- 26 The 1828 proposed plan of advanced works to defend the naval base shows the low water mark as nine feet lower than the level of the fort's parade ground (PRO, WO55/865, fol. 244).
- 27 During the work on the ramparts, a steam pump was used to empty the water from the ditch so as to be able to work on the revetments. Romilly indicated to Durnford, his superior, "I have the honor to represent to you that from the nature of the soil and the little difference of level between the surface of Isle aux Noix and that of the River; it is of the greatest importance that the excavation of the ditch should be carried as speedily as possible, when the river is the lowest. I beg to state at the present period the river has fallen as much as it will during the season, and as the works are so much advanced, if the earth is not now dug out of the ditches; it will not be possible to employ any men in them 'till the river is as low again next year; which probably may be later than this; I am of opinion that it will be necessary to have a Steam Engine next year to pump out the water from the ditches" (NA, RG8, I, Vols. 407, p. 123, S. Romilly to E.W. Durnford, 7 August 1820).
- 28 Various plans in 1828 and 1863 showed this highwater mark at 4.5 and 5.5 feet below the level of the parade ground: NA, RG8, I, Vol. 1422, pp. 22 and 24; PRO, WO55/865, fols. 105, 232 and 244; Figs. 77 and 86.
- 29 NA, RG8, I, Vol. 407, p. 134, S. Romilly to E.W. Durnford, 28 September 1820.
- 30 PRO, WO55/865, fols. 248-49, R.S. Piper, E. Figg and P. Cole to E.W. Durnford, 17 March 1828. The cunette in the 19th century essentially had only one drainage function unlike the 18th century, which being larger in size, it was an additional obstacle for defending the ditch (See B.F. de Béliidor, *Dictionnaire...*, p. 88; C.W. Pasley, *Course of Military Instruction...*, Vol. 2, p. 123). In the 19th century, it seemed almost impossible to completely dry out the ditch of Fort Lennox despite the devices set up for this purpose. The accumulation of mud in the cunette and at the bottom of the ditch increased the presence of stagnant water, which was disastrous to the health and hygiene of the garrison (NA, RG8, I, Vol. 297, p. 218, "Special Report on the Post of Isle aux Noix," A. Baxter, 6 August 1828). The engineers were constantly stressing the problem to the authorities. In 1842 they succeeded in having a clean-up of the water which had then accumulated approved (*ibid.*, Vol. 460, pp. 215-17, Holloway to the Secretary at War, 3 October 1848). In 1851, the bad state of the ditch water was deplored once again; the machinery which could regulate the flow was completely out of service (PRO, WO55/886, fols. 240-47, Sheatfield to J.F. Burgoyne, 3 January 1852). In the end it would be necessary to wait until 1863 for the problem of stagnant water at Fort Lennox to be remedied, by the construction of drains and sluices for the water to enter and exit at the south of the island facing the ravelin and at the west, facing the capital of the northwest bastion (Fig. 77). The ditch was then cleaned again and the suggestion was made to set up a pump near the exit to completely dry up the water not moved by the exit drain (NA, RG8, I, Vol. 1422, pp. 23c-28, Annual works estimate for 1863-64, item 19 and 20).

graphy of Île aux Noix, almost always contained water which varied in depth from one to six feet according to the river's seasonal changes in level.³¹

The proportions of the profile of the rampart also had to be in keeping with the plan of the enceinte which had been previously defined. To understand this notion, which calls for both fields of analysis of a fortification (the plan and the profile) at once, certain explanations are needed before one can examine its application to Fort Lennox.

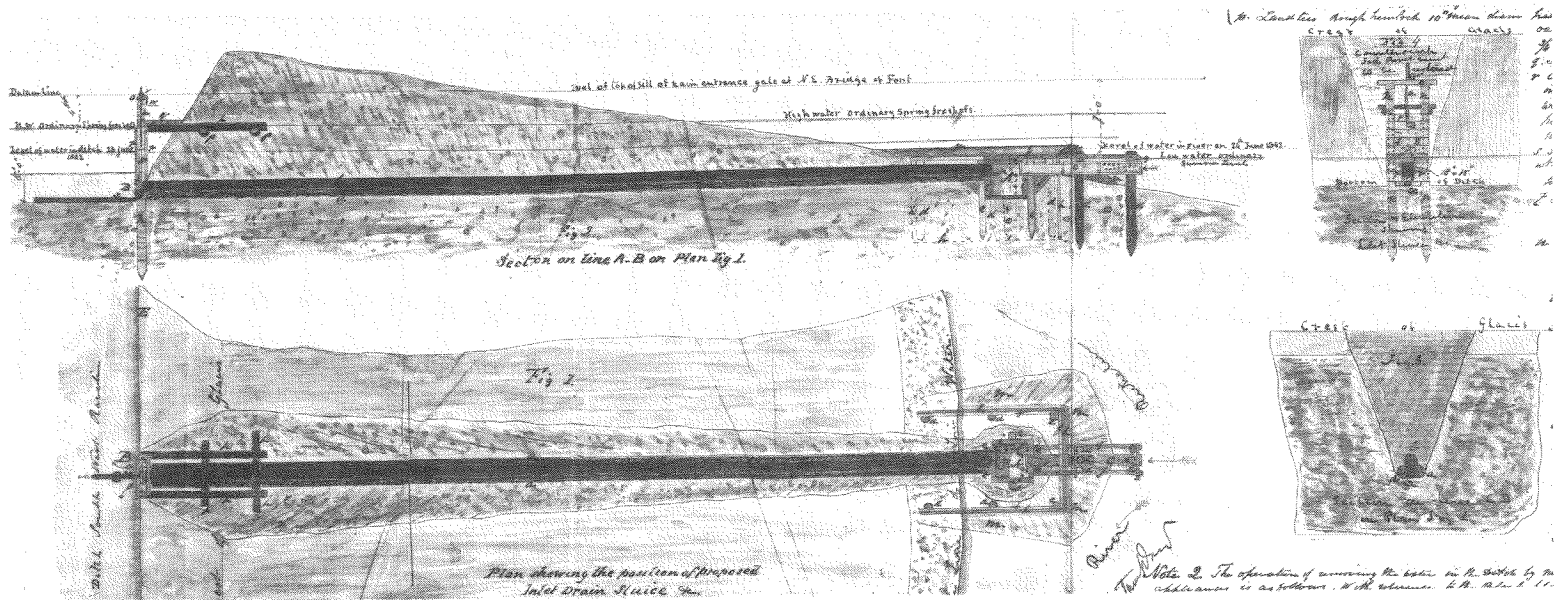
Unlike an enceinte, which is essentially composed of a palisade or a masonry wall, the earth rampart of the type constructed at Fort Lennox, with a parapet of a minimum thickness of 18 feet, heightened in relation to the bottom of the ditch, does not allow the soldier posted on the banquette to see the foot of the enceinte below his position. This situation is corrected by juxtaposing two opposite flanks on the same front of fortification to assure the covering of the terrain over the whole width of the ditch. For the flank to function adequately, being the driving element of the bastioned fortification, each of the two flanks of the same front of the fortification must be able to see at least half the distance that separates them; whence there is an obvious relationship between the height of the rampart, including the parapet and its superior angle on one hand and the length of the demi-curtain on the other:

*... as the perpendicular depression of the superior slope of the parapet of the flank is to its horizontal thickness, so is the height of the rampart, including the parapet, to the distance of half the curtain.*³²

Applied to Fort Lennox, this calculation is performed as follows (Fig. 79). The total height of the rampart from the bottom of the ditch to the top of the parapet, 29 feet, must be multiplied by a factor of six, which is the perpendicular drop of the superior slope of the parapet (three feet over 18 feet, 10°), which gives a distance of 174 feet, from which has to be deducted the width of the rampart from the interior angle of the parapet,

31 PRO, WO55/880, fol. 762, Holloway to Mulcaster, 26 July 1844; WO1/552, p. 449, "Report on the Richelieu River," Holloway and Boxer, 17 February 1845; NA, RG8, I, Vol. 1599, p. 85, "Project for reconstructing Fort Lennox," Capt. Maquay, 20 June 1864. This variable water level invalidated the observations of the Carmichael-Smyth Commission in 1825 to the effect that during the winter the freezing of the water of the ditch to a constant depth of six feet made Fort Lennox incapable of defence against a raid. This was not the case, since the water in the ditch was at its lowest late in the fall and at the beginning of winter.

32 C.W. Pasley, *Course of Military Instruction...*, Vol. 2, p. 278; I. Landmann, op. cit., p. 57.



77 New gates and pump installed in 1863 south of the ravelin and near the northwest bastion to regulate the water flow from the ditch and to drain the accumulation of stagnant water. (NA, C-122976)

30.5 feet. We obtain a demi-curtain which must have a minimum length of 143.5 feet.

The 1823 plan (Fig. 74), enables one to calculate that this relationship was applied faithfully to Fort Lennox, since on the smallest front, the south one, the demi-curtain was 145 feet long. Since the profile of the rampart was the same over the whole perimeter of the fort, the curtains on the three other, longer fronts were more than long enough in relation to the total height of the rampart.

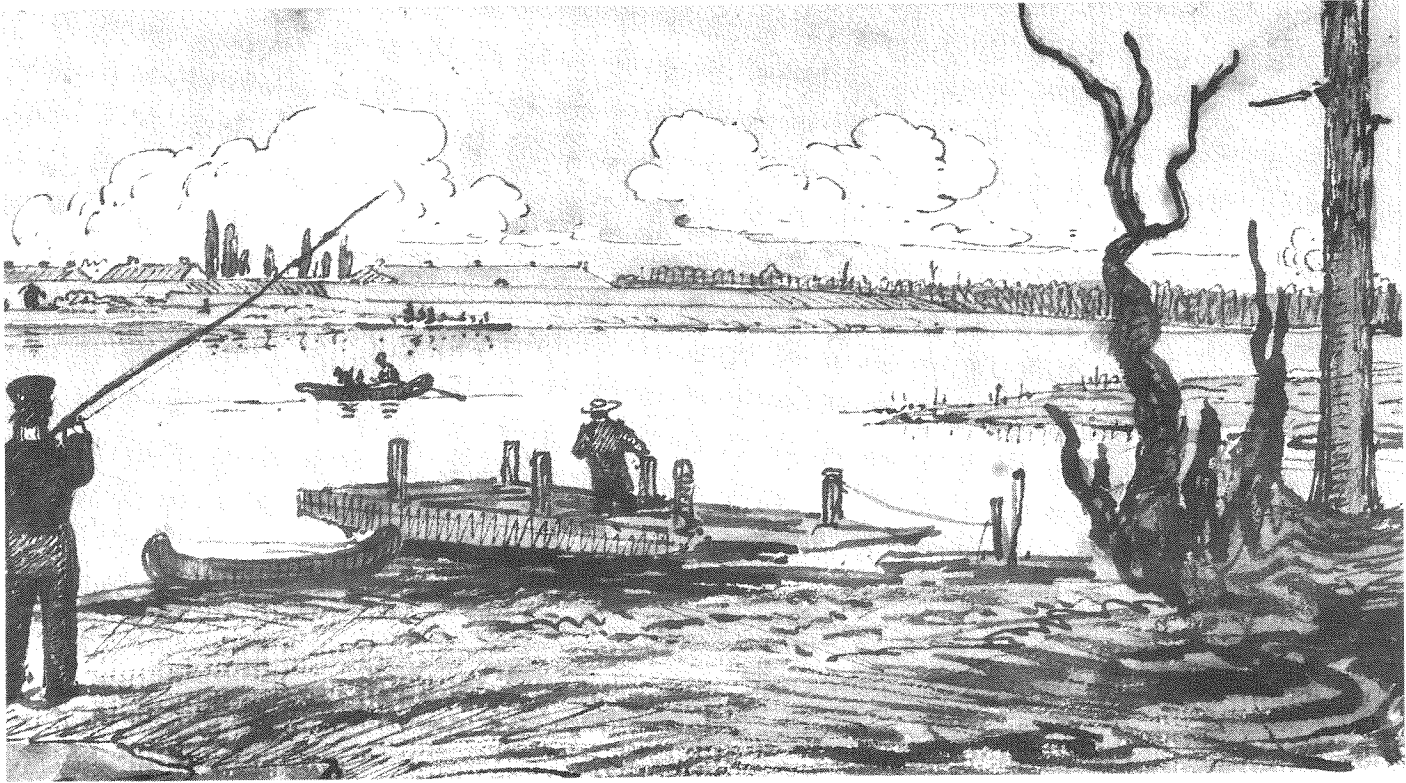
By virtue of this principle, the increase of three feet in the depth of the ditch, carried out by Romilly at the time of construction, was the maximum deepening he was allowed as a function of the length of the curtains. An additional increment of one foot to make a rampart 30 feet high instead of 29, surmounted by the same parapet, would have called for a demi-curtain 150 feet long ($30 \times 6 - 30.5 = 149.5$), which would have been impossible on the south front without creating a dead angle in the centre of that front. On these grounds, the construction of Fort Lennox registers in favour of Romilly, who was tasked with the construction of Nicolls' plan.

This relationship between the height of the rampart and the length of the curtains shows clearly the links that existed between the different parts of a bastioned front. As a result, a change made in the course of construction must necessarily give rise to an analysis of its repercussions on the other elements of the enceinte. Such a link was also to be noted with the principle of defilading the works.

The defilading principle governed the arrangement of the profile of the various defensive works. Taking the surrounding topography into account, the defilading principle led the engineer to lay out the various works so that the main rampart (or the one furthest to the rear) commanded the preceding one by a few feet, and so on to the glacis.³³ On the other hand, the arrangement of the outworks needed to be such that it veiled most of the successive ramparts from the enemy as much as possible so that when they were in position at the foot of the glacis, they would not suspect the succession of works and ditches awaiting them in the inclined plane rising above them (Fig. 78).

Romilly complied with this defilading principle in the construction of Fort Lennox. The counterscarp, rising to a height of 18 feet, assured

33 *Ibid.*, pp. 59 and 62. In short, command is defined here by the greatest height of one work in relation to another, so that a soldier, posted on the higher work, could "command" or see and then fire on the lower one in front.



78 Fort Lennox seen from the left bank. This watercolour gives a good illustration of the defilading principle: from a distance the bastioned rampart appears as a continuous inclined plane in which it is difficult to distinguish the various works. (*Bainbrigge, 1838; NA, C-17067*)

complete covering of the escarp, also 18 feet high, thus leaving the enemy only the view of the upper part of the exterior slope of the parapet (Figs. 75 and 80). On the other hand, the arrangement of the main rampart in relation to the top of the counterscarp gave the defenders a command of 11 feet over an enemy who might gain control of the crest of the glacis. This arrangement amply complied with the models taught to military engineers.³⁴

In constructing the ravelin on the south front, the same defilading principle (Fig. 80) should prevail for the arrangement of the profiles. Therefore Romilly made the gorge of the ravelin level with the parade ground inside the fort, giving a command of 18 feet from the top of the main parapet. In relation to the top of the parapet of the ravelin, which was situated 16.5 feet above the level of the parade ground, the command of the ravelin or the defilading level by the main rampart was reduced to 1.5 feet, a little less than the proportions set out in the theoretical models (Fig. 86).³⁵

Still by virtue of the defilading principle the ravelin was in turn arranged in a position of command in relation to the surrounding glacis. Thus the rampart of the ravelin was as wide as the main rampart and had a total height of 26.5 feet from the bottom of the ditch.³⁶ The escarp of the ravelin, like its counterscarp, rose 15.5 feet, giving a command of 11 feet, determined in accordance with the difference between the top of the ravelin and the top of the glacis (Fig. 86).

As for the profile of the place of arms, the top of its parapet was a couple feet lower than the ravelin's, since it rose only about eight feet above the level of the parade ground. These dimensions gave the main rampart a height of command of some 10 feet over the place of arms.³⁷

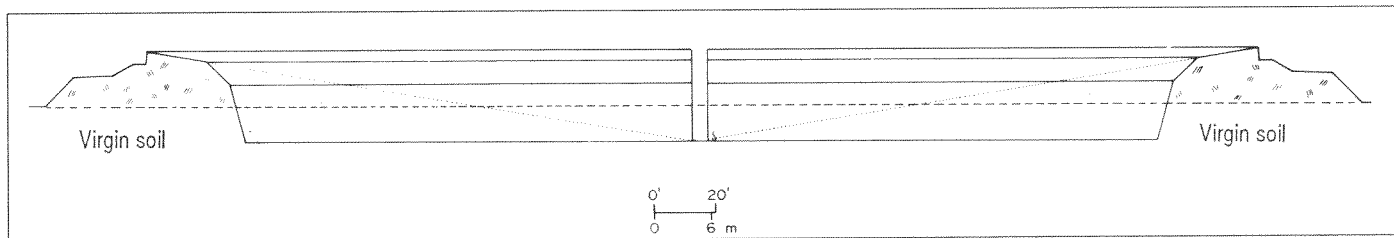
The profile of Fort Lennox, whether of the main rampart or the outworks, thus was integrated into a complex which complied with the

34 See C.W. Rudyerd, *op. cit.*, and C.W. Pasley, *Course of Military Instruction...*, Vol. 2, p. 100.

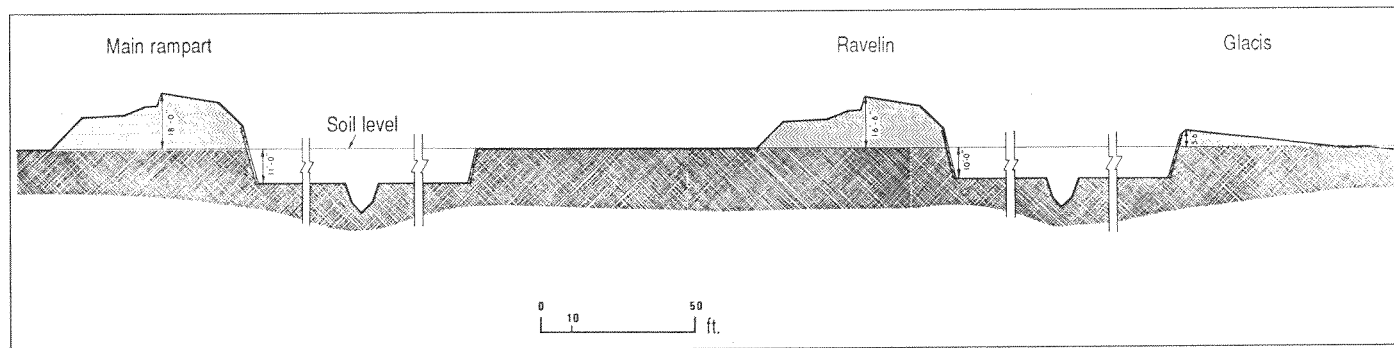
35 In the treatises, the level of command of the main work over the outwork is usually set between three and six feet. It is interesting to note that the further one advances into the 19th century, the more treatises illustrating Vauban's model tend to reduce this level of command. See J. Muller, *A Treatise Containing the Elementary Part of Fortification...*, p. 46 and C.W. Pasley, *Course of Military Instruction...*, Vol. 2, p. 108.

36 At least that is what the various cross-sectional drawings of Fort Lennox suggest. As a result, taking into account a level of command of the main parapet over the ravelin of 1.5 feet, the level of the bottom of the ditch of the ravelin would be one foot higher than the main ditch.

37 These data concerning the profile of the parade ground are based on an approximation from an 1845 plan showing, among other details, the projected construction of a *reduit* inside the place of arms (PRO, WO55/880, fol. 371). Another projected reconstruction of the masonry revetment of the rampart in 1829 places the level of the top of the parapet of the place of arms seven feet above the parade ground (*ibid.*, Vol. 868, fol. 225; Figs. 87, 111 and 112).



79 Relationship between the height of the rampart and the length of the curtain. (*Parks Canada, L. Lavoie, 86-5G-D3*)



80 Profile of the works on the south front of Fort Lennox. (*Parks Canada, F. Pellerin, 87-5G-D3*)

majority of the theoretical maxims governing angles of fire and hence their design. As with the trace, an analysis of the profile shows once again the great popularity of Vauban's model with the British engineers at the beginning of the 19th century who were planning and constructing the Île aux Noix fortification.

On this score, Samuel Romilly belonged to the same generation as his predecessor Nicolls. Although not involved in the geometric design of the fort, Romilly directed the construction of a profile which combined perfectly with the bastioned trace as defined by Nicolls. The modifications which were made, especially to the level of the ditch, bear witness to his excellent knowledge of the rules of the art.

From the scientific point of view and taking into account the choice of a bastioned fortification model, Fort Lennox corresponded exactly to the defensive objectives laid down for Île aux Noix. Its trace and profile made it capable of resisting, at least in theory, any operation by an enemy who appeared in front of the island with heavy-calibre artillery. From an engineering point of view, abandoning a masonry revetment in favour of a wooden supporting structure meant a shorter life for the ramparts. However, the many problems in supporting the rampart of Fort Lennox, noted at the time of construction and in the following years, have raised several questions as to its real defensive effectiveness. It is important at this point to give further scrutiny to this element of the Fort Lennox fortification.

Revetment Techniques

From the 17th century at least, earth became the main material used in the construction of ramparts, precisely because of its properties in breaking the force of and resisting artillery projectiles. As well, to shelter works from a surprise attack or a raid, where an enemy could gain control of the fortification without a great effort, the strategists opted for obstacles or profiles with fairly steep slopes. As a result, an attacker could not take the work by means of a simple scaling operation. He was forced to undertake the laborious work of capturing the fortification by a siege.

These concepts applied particularly to the construction of the escarp and the counterscarp which delimited the ditch and generally had steep slopes. Unlike masonry or wood, earth was a material which could not be piled

up at an angle greater than the natural one of 45° , or so they believed at the time, without using retaining devices such as fascines, gabions or wooden or masonry revetment walls. The revetment thus became an integral part of the rampart and was its exterior element.

The retaining of earth was a major problem confronting military engineers during the construction of defensive works. Moreover, the retaining method chosen influenced the type of defence offered. The engineer needed to have an adequate knowledge of the soil structure beforehand to be in a position to make a mathematical calculation of the thrust of the earth of the ramparts and the top of the glacis. He closely examined the subsoil of the site to be fortified as well, so as to find out what its components were and adopt the type of foundation best suited for the revetment chosen and which would give the best guarantee of stability.

The revetment was obviously defined by the amount of money that was to be spent on it, but it also had to resist and even exceed by way of counteraction the thrust of the earth to be retained. So, when the rampart was being constructed, various imperatives governed the military engineer's choice. On one hand he was obliged to abide by the tactical requirements governing the dimensions of the ditch, the height and angle of profile of the escarp (and the counterscarp), the width of the rampart, etc. On the other hand, the engineer was confronted with the physical and mathematical rules, which were then known, relating to the thrust of earth and its retention.³⁸ Because of this double constraint, and because of budgetary limits imposed by the authorities, the choice of a revetment model had an obvious effect not only on the stability of the rampart but also on the defensive objective and the type of defence offered to the enemy. For example, a rampart that had a revetment with too gentle a slope did not provide the necessary protection against scaling or a surprise attack, even if the thickness of the parapet was amply sufficient to resist enemy artillery.

A study of the Fort Lennox rampart provides an opportunity to analyse several revetment models planned or constructed in the course of the 19th century and to note their effect on the defence offered. One of the main

38 Many engineers were not able to make the necessary calculations relating to the thrust of earth and the resistance of revetments. Therefore they mechanically referred to tables of dimensions or to proportions defined by the engineers who taught in the military schools and published in the form of treatises. This is especially the case with B.F. de Bélidor, *La science des ingénieurs...*, Book 1, and C.W. Pasley, *Course of Military Instruction...*, Vol. 3, Chapters 24 to 27.

modifications made in 1819 to Nicolls' initial plan concerned the revetments of the escarp and the counterscarp.

The 1816 plan called for a masonry revetment for the escarp 18 feet high (Fig. 63). Nicolls adopted the classical revetment model whose exterior face had a slope of 1-in-6, the escarp wall being thicker at the base (six feet) than at the top (3.5 feet). In comparison with Vauban's model as taught in English schools at the end of the 18th century, the revetment planned by Nicolls fell short of the proportions suggested in order to exceed the thrust of the earth of the rampart,³⁹ although the interior talus was in exact conformity to it. Behind the revetment, Nicolls placed vertical buttresses 3.5 feet thick, a few feet below the top of the escarp.⁴⁰ For the counterscarp, Nicolls did not plan a revetment since the work had a slope of 45°, sufficient to retain the earth naturally.

This model of revetment with an exterior batter recommended by Vauban and planned for Île aux Noix by Nicolls corresponded to a very particular idea of the action of earth on its retaining device. It was an idea largely circulated in the middle of the 18th century by the theoretician, Bélidor. He noted that the earth of the rampart with an angle greater than 45° exercised a lateral thrust on the revetment, tending to make it bulge toward the ditch, the pivot point being the exterior base of the escarp.⁴¹ By calculating the pressure of this earth against the upper part of the revetment, Bélidor then defined the minimum thickness at the top of the revetment to counter the thrust of the rampart and even exceed it. The construction of the revetment with an exterior slope and the addition of buttresses varying in dimensions and distribution increased the resistance since the sustaining wall's centre of gravity wall was displaced to its interior half.

When the overall plan for Fort Lennox was submitted to Wellington, he agreed to masonry support although he considered a semi-revetment more

39 At the time a thickness of five feet at the top was mentioned (I. Landmann, *op. cit.*, p. 9).

40 It is not possible to pursue further the study of the buttresses Nicolls suggested, since neither their shape nor their spacing is known. Nicolls could have mitigated the lack of thickness at the top of his revetment by bulkier buttresses which would be closer to each other.

41 B. F. de Bélidor, *La science des ingénieurs...*, Book 1. On the various types of fortification revetment in relation to the development of the understanding of soil mechanics, see A. Charbonneau, "La construction des soutènements de fortification: contribution à l'histoire du génie," Manuscript on file, National Historic Sites, Parks Canada, Québec, 1987.

suitable.⁴² On the other hand, he recommended revetting the counterscarp with masonry with a view to setting up a reverse firing gallery to provide the ditch with additional flanking.⁴³

When Fort Lennox was constructed the engineers abandoned the idea of a masonry revetment. Wellington's recommendations were not followed either, since the rampart of Fort Lennox is revetted with a wooden structure (Fig. 76). This did not actually provide a lesser sustaining force, but a masonry revetment would have been more permanent.⁴⁴ The true reasons for abandoning this revetment are not known, although several hypotheses can be formulated. Among them is an obvious wish to reduce construction costs since a wooden revetment required less money.

The soil structure of Île aux Noix could have justified the change of revetment technique or been the pretext for doing so. The island's soil is mainly composed of silty clay about 40 feet deep sitting on compacted layers of stony gravel and rock (Fig. 81).⁴⁵ Archaeological excavating has also revealed the presence of sandbanks of unequal volume across the clay layers, especially on the southeast side of the island.⁴⁶ Another detail is that the water table is only a few feet below the soil surface. This contributes to the instability of the island's soil, giving it a marshy character in some places, as several 19th-century engineers noted. The construction of a masonry revetment has the effect of concentrating heavy loads on a small base surface, which are increased by the thrust of the earth. Such construction on an unstable soil was perhaps the reason for abandoning masonry revetment at Fort Lennox, taking into account the limited funds available for the construction of the whole fort. If so, it was a poor excuse, just look at the relative stability of the Fort Lennox buildings, which were all built of masonry!

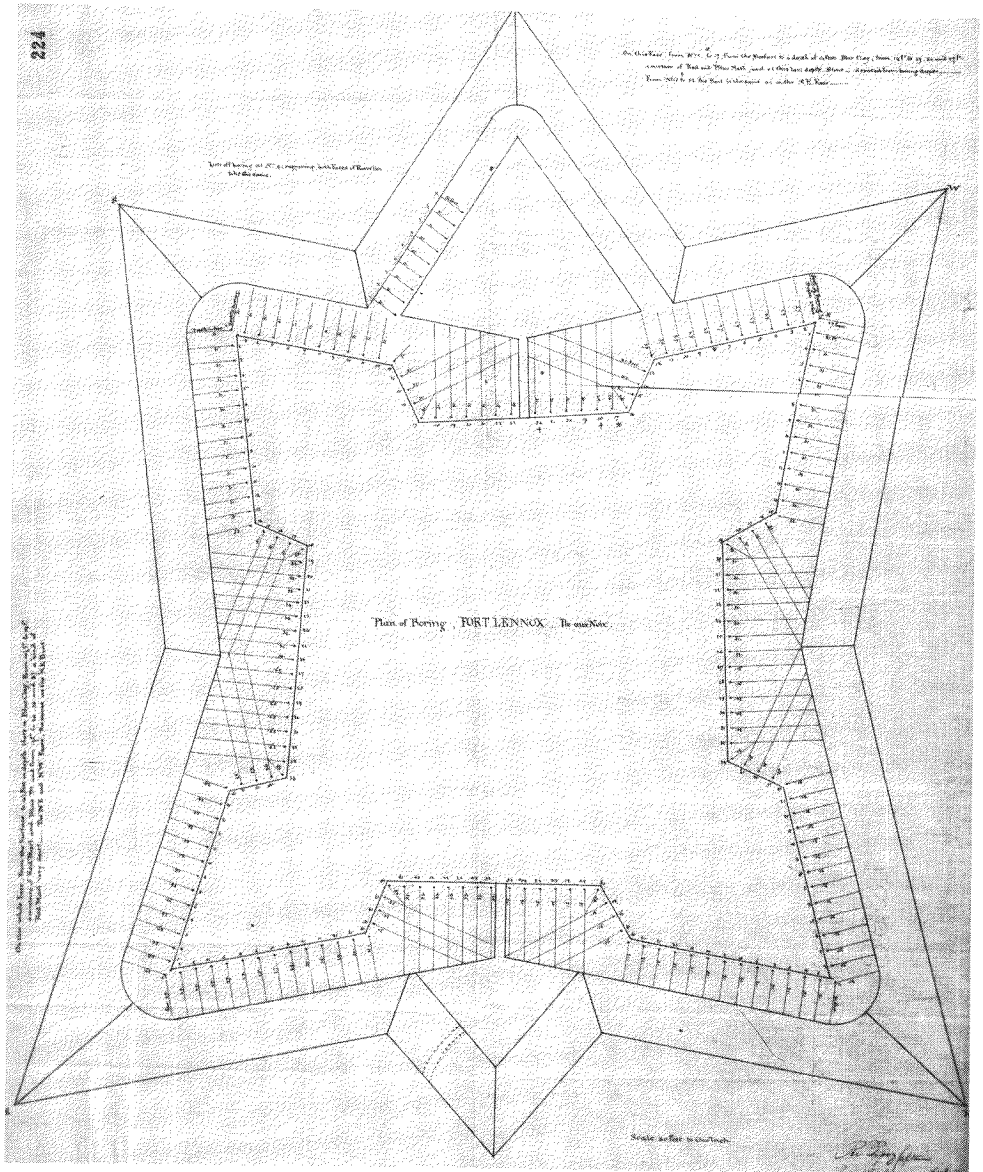
42 PRO, CO42/183, fols. 142-60, Wellington to Bathurst, 1 March 1819. A half-revetment implies that the earth of the rampart is supported by a masonry wall only in the lower part of the escarp up to ground level or the level of the parade ground. The top of the escarp then has a gentler slope, merging into the exterior slope of the parapet.

43 These galleries are generally located opposite the salient angles of the bastions; access to them is by a vaulted passage under the ditch from the gorge of the facing bastion.

44 The various construction techniques and the numerous arrangements which were possible for the wooden and masonry revetments qualified this statement somewhat. More limited funds often caused a less resistant revetment to be chosen.

45 S.N.C., "Étude sur la stabilisation des ouvrages du fort Lennox," Manuscript on file, National Historic Sites, Parks Canada, Québec, 1978, pp. 2-4; Terratech, "Étude géo-technique - Fort Lennox," Manuscript on file, National Historic Sites, Parks Canada, Montréal, 1977, pp. 1-16.

46 Information provided by my archaeological colleague Gisèle Piédalue.



81 Details of boring carried out at Île aux Noix in 1831. Before reaching the more solid layers of the subsoil, Piper, the engineer, noted various thicknesses of blue clay and blue marl. An engineer relies on knowledge of the soil in choosing the appropriate foundation technique and revetment model. (*R. Piper, 1831; PRO, London, WO55/868, fol. 224*)

A masonry revetment, as suggested by Nicolls, on a clay soil made unstable by the presence of a great deal of sand and water, would have made it necessary to give particular care to the foundations. Generally in this type of situation, military engineers had recourse to a foundation built on piles made of large-diameter pieces of wood, distributed in a square pattern every three or four feet beneath the lower surface of the wall.⁴⁷ Driven in vertically or at a slightly oblique angle, these pieces were long enough to transfer the mass of the revetment onto the harder and more stable layer of the soil. At Île aux Noix, geotechnical borings place this layer at 50 feet below the surface of the soil, hence it was impossible to use such a foundation technique effectively in 1819 and consequently it was probably impossible to use a masonry revetment.⁴⁸

The report of the Carmichaël-Smyth Commission in 1825 gives some support to this hypothesis. In the light of observations on the composition of the soil on Île aux Noix, the commissioners concluded that the two towers planned for the northeast and southwest bastions should not be built because of the danger of the subsidence of the ground under their weight:

*From a careful consideration of the nature of the soil of which the Isle aux Noix is composed, we have strongly recommended to Colonel Durnford that the construction of these heavy and massive Towers should be delayed until your Grace's orders with respect to them can be received - we conceive that the Towers, in question, must sink and that however desirable an Interior keep to the Fort may be: no precaution which can be adopted will guarantee such an accident.*⁴⁹

47 These square, rectangular or circular pieces generally have sides or diameters one foot in length, and their lower pointed end is covered with metal. For a detailed explanation of this type of foundation used under masonry revetments, see the treatise by C.W. Pasley, *Course of Military Instruction...*, Vol. 3, pp. 669-74.

48 Besides carrying the mass of construction on a more solid base, the technique of using piles was also based on another principle derived from the mechanical equipment used for driving piles: "By the laws of Mechanics the force of percussion greatly exceeds that of simple pressure by dead weight; and in the pile Engines used in this Country, the ram (sometimes termed the Monkey), that is the weight by which the pile is driven, falls upon the head of it from a considerable height, which greatly increases, the effect, as compared with the old system of pile driving, still used abroad, in which the ram is not raised more than four or five feet. Now the momentum of 10 or 12 Cwt. a common weight for the ram of a pile Engine falling from the height of 15 or 20 to 30 feet produces a greater effect than the dead weight in any common mass of building. Hence if a pile be driven by such an Engine until it can go no further, there can be little risk of the foundation giving way afterwards, in consequence of the mere pressure of the walls" (PRO, WO44/732, p. 33, *Outline of a Course of Practical Architecture, compiled for the Use of the Junior Officers of Royal Engineers*, Chatham: 1826). Obviously such machinery did not exist at Île aux Noix in 1819.

49 NA, RG8, II, Vol. 6 (2), p. 10, item 8, Report of the Carmichaël-Smyth Commission, 1825. In fact, following the expert judgement of the commissioners, the work on the foundation on piles of the southwest bastion

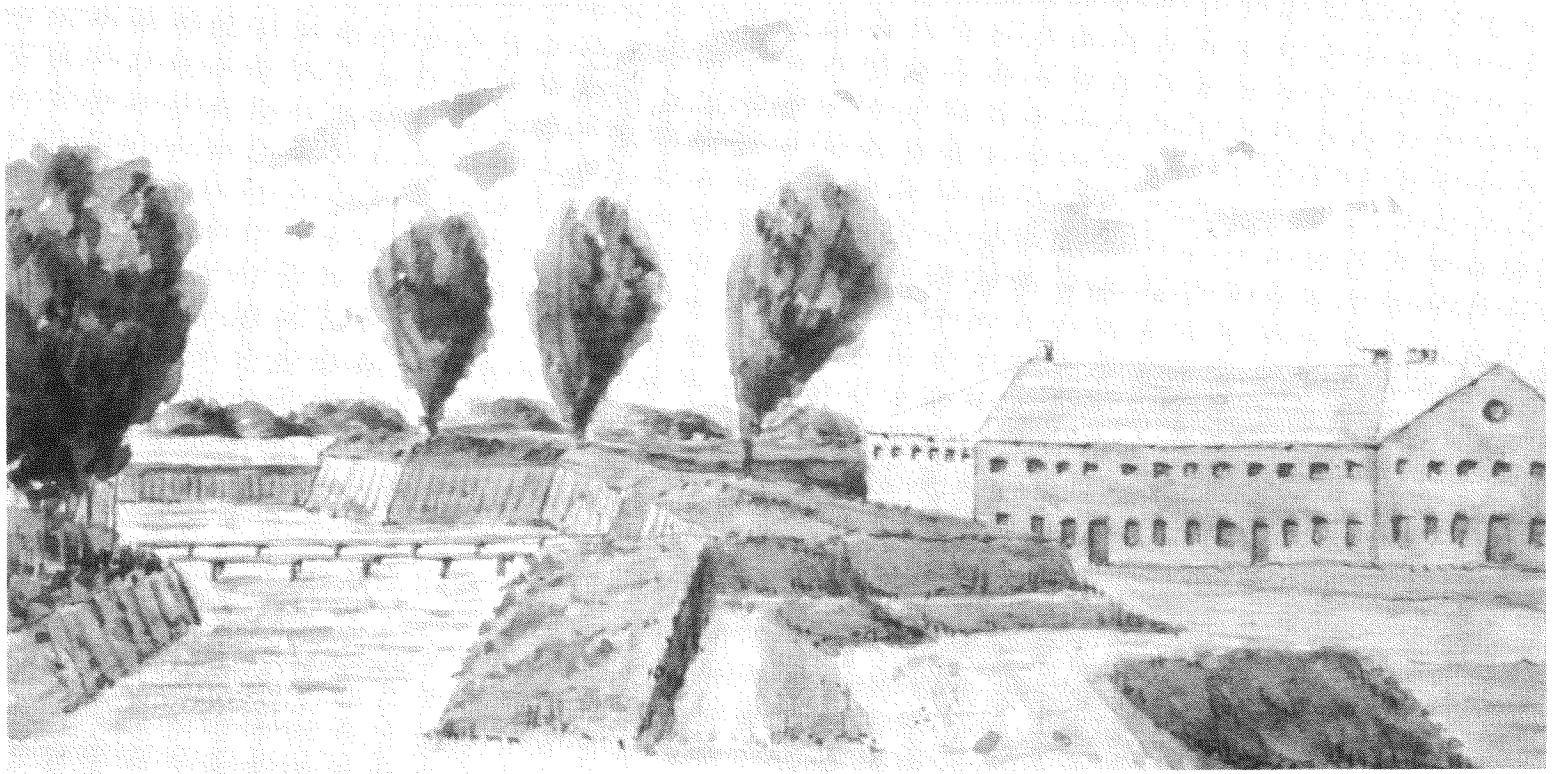
Romilly, the Commanding Royal Engineer of the District of Montréal, and his lieutenants, T. Luxmore and J. Walpole, posted to Île aux Noix therefore opted for a wooden revetment with an unusual design (Fig. 76).⁵⁰ The structure of the revetment was composed of pieces of squared hemlock placed horizontally along the transverse axis of the rampart. In section, the assembly of these pieces took the form of a lozenge whose base was equal to the height of the escarp. The outer face was made of cedar pickets placed vertically, side by side, 18 feet high with a batter in the order of 1-in-4 (Fig. 82). These pickets were joined at the top and bottom to a saddle-backed coping and a threshold of squared lumber, placed horizontally along the length of the rampart. At the base, a continuous line of piles also served to retain the sliding thrust of the revetment and the fill toward the ditch. This outer face was fixed to the structure behind and to the rampart by two series of sleepers. The first, at the top of the escarp, was made of oak, and the second, five feet lower, formed an integral part of the structure of the revetment; this structure was in turn anchored to the ground by other piles placed to the rear.⁵¹

With the exception of the structure of horizontal pieces, the revetment of the counterscarp used the same construction technique as did the escarp. This too was essentially a facing of vertical pickets with a batter, held at the base by a line of piles and at the top by two levels of sleepers, projecting slightly obliquely under the earth of the glacis.⁵²

In short, the profile of Fort Lennox, as constructed with its wooden revetment, had all the properties required in a conventional rampart. It

tower was stopped. It is also true that the recommendation of the Smyth Commission was made after a section of the rampart had collapsed in the summer of 1824.

- 50 From 1819 to 1820, Lieutenant J. Smyth was in charge of the Île aux Noix dockyard. H.P. Bruyère succeeded him in 1820 and 1821, and in turn was succeeded by J.P. Cotty.
- 51 A contract to provide wood needed for the Fort Lennox works makes it possible to state the size of certain pieces of the revetment with precision. The piles were probably rough hemlock 10 to 12 inches in diameter. The cedar stakes also had a diameter of 10 to 12 inches. The horizontal pieces behind the facing of stakes were 8 to 11 inches wide by 14 high (ANQM, Notarial file of H. Griffin, No. 3499, N. Moore - I. Clarke Contract, 30 January 1821). A further description (1828), mentions instead an average diameter of 9 inches for the cedar stakes. The pieces of the revetment structure measured 15 by 15 inches on average (WO55/865, fol. 248, R. Piper, E. Figg and P. Cole to E.W. Durnford, 17 March 1828). Such a variation was completely plausible because of the various contracts for supplying materials (ANQM, Notarial file of J.M. Mondelet (concession), No. 216, P. Rutherford - I. Clarke Contract, 26 December 1821).
- 52 The estimate of the cost of building the counterscarp revetment included the following items: 6000 cedar stakes 16 inches in diameter and 20 feet long; 1200 others 6 inches in diameter and 12 feet long; 6000 feet of rough hemlock and an equal number of pieces of the same wood 10 by 10 inches, 6000 pieces of 10 by 10 squared pine, and finally 6000 4-by-8 pine planks (NA, RG8, I, Vol. 407, pp. 61-64, 4 December 1819). The Montréal merchant O. Wait would provide 3000 cedar stakes. An agreement signed 11 March 1820 confirmed this contract. Paradoxically, as early as December 1819 he had subcontracted a similar quantity of cedar stakes for Île aux Noix! (ANQM, Notarial file of H. Griffin, No. 2865, E. Hamilton - O. Wait Contract, 9 December 1819; No. 3013, O. Wait - S. Romilly Contract, 11 March 1820).



82 Fort Lennox ca. 1860. This superb view shows, among other details, the vertical wooden pieces of the revetment of the rampart. (*J. Elgee, ca. 1860; National Army Museum, London, ACC. No. 7108-6-3*)

was sufficiently thick to stand up to large-calibre artillery and the revetments, though of a temporary nature, had slopes which were adequate to oppose a raid.

The Carmichaël-Smyth Commission of 1825 did not approve of the revetment technique used at Fort Lennox, but did not suggest alternative solutions.⁵³ However, the commission made its judgement after a whole section of the profile on the east curtain of the fort collapsed in the summer of 1824, less than a year after being built. This event caused a great deal of agitation among the military engineers involved.⁵⁴

The accident which happened to the rampart in 1824 was essentially caused by the subsidence of the ground under the weight of the fill, and not by a weakness in the revetment as such; at least that was the explanation given by the engineers at the time. In light of a sectional drawing of the rampart made for this purpose (Fig. 83), one can see that a whole section of the rampart had slid toward the ditch, a slide brought on by the subsidence and the pivoting of the revetment structure. Romilly, Luxmore and Walpole explained this subsidence by an increased overload of the rampart caused by the construction of the parapet. This produced additional pressure behind the revetment structure, which was combined at the same time with a drop in water pressure in the ditch.⁵⁵ These interactions on an unstable soil in this part of the island caused the subsidence of the earth fill.⁵⁶

As a solution, Luxmore and Walpole suggested slight modifications to the existing revetment, with a view to producing "an equal pression on its [the rampart's] whole surface from the superincumbent parapet."⁵⁷ Thus the revetment structure, which was made up of horizontal pieces, was lengthened towards the interior of the rampart and now rested on a sleeper made of a cribwork of wood pieces (Fig. 84). It was believed that these

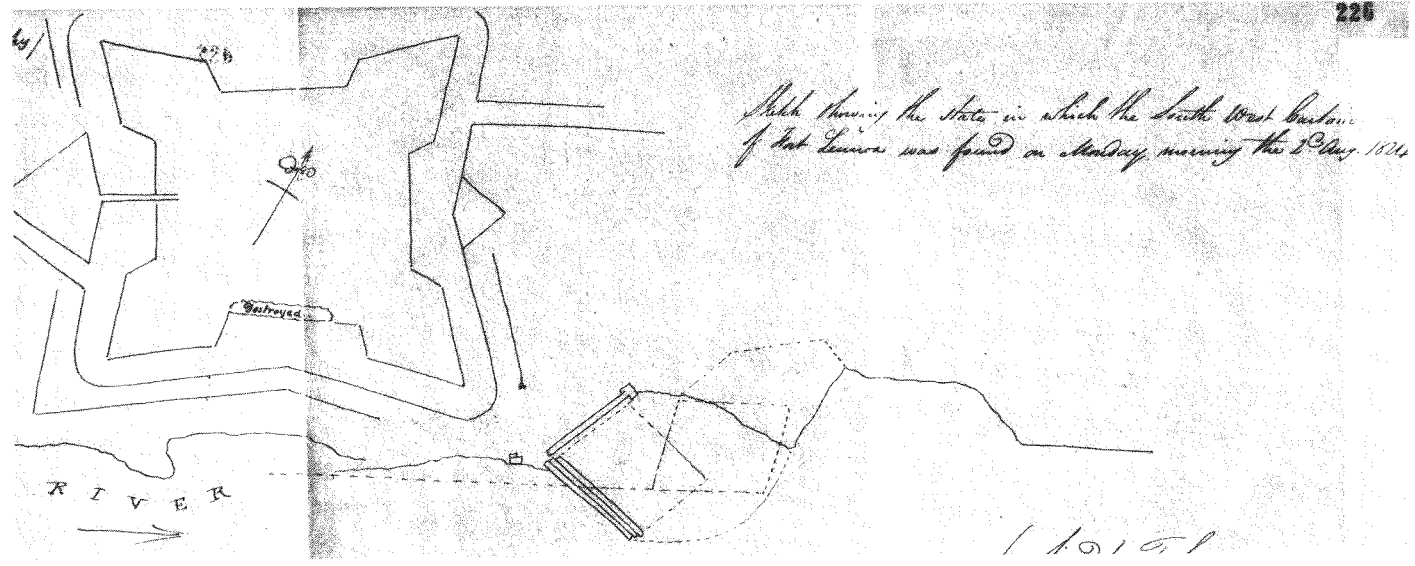
53 NA, RG8, II, Vol. 6 (2), p. 9, item 8, Report of the Carmichaël-Smyth Commission, 1825.

54 E.W. Durnford, at the time Commanding Royal Engineer in Canada, wrote to his superior in England on this subject: "I feel this occurrence very much as I do not recollect that in the course of my service I never had the mortification to make a report of such a nature before" (PRO, WO55/862, fol. 64v, E.W. Durnford to G. Mann, 15 November 1824).

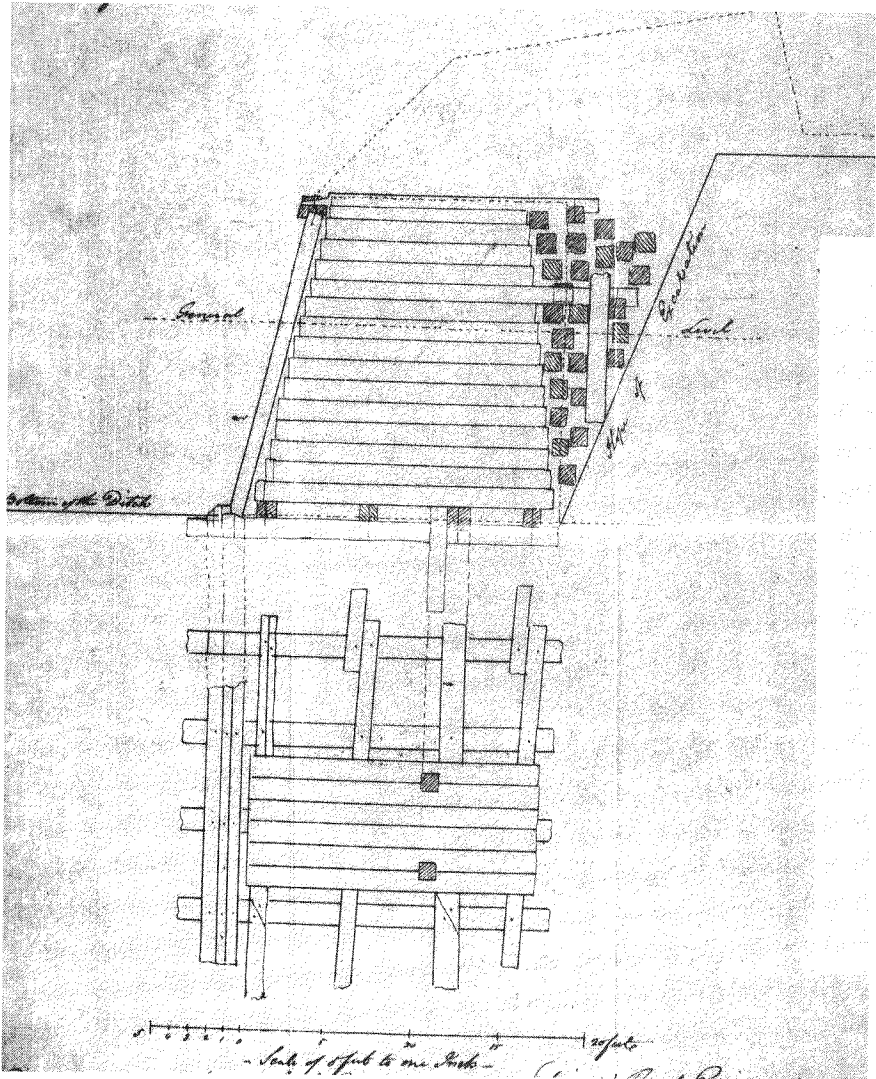
55 The drop in water pressure is explained by the fact that in each working season the ditch was emptied to allow construction of the escarp and the counterscarp (NA, RG8, I, Vol. 407, p. 123, S. Romilly to E.W. Durnford, 7 August 1820; *ibid.*, Vol. 410, pp. 105-07, E.W. Durnford to the Secretary at War, 14 December 1821).

56 At this spot a particularly unfavourable soil structure was noted: "a morass having formally existed in the spot" (PRO, WO55/862, fol. 66-66v, "Report on the causes of the failure of the South East curtain of Fort Lennox Isle aux Noix; and the method proposed for repairing it," T. Luxmore and J. Walpole, 18 September 1824).

57 *Ibid.*



83 In the summer of 1824, a whole section of the rampart on the east side of the fort collapsed. This accident caused a great stir among the engineers since this part of the rampart had only been finished the year before. (S. Romilly, 1824; PRO, London, WO55/862, fol. 226)



84 Modifications made to the wooden revetment. Following the collapse in the summer of 1824, the structure was lengthened inside the rampart, under the earth. It now rested on a sleeper made up of crossed pieces of wood. It was also planned to set up a second row of piles to reduce lateral movement towards the ditch. (T. Luxmore and J. Walpole, 1824; PRO, London, WO55/862, fol. 62)

modifications would help to stabilize the thrusts of the fill over the whole revetment foundation surface. As well, the engineers wished to add a second row of piles, not to transfer the weight of the revetment onto more solid foundations, but to contain the lateral thrust of the fill toward the ditch⁵⁸ and anchor the rampart more securely to the structure. Lastly, Luxmore and Walpole placed another series of wood pieces behind the revetment structure, piled on top of one another longitudinally to the rampart; this also, it was thought, to make the thrust of the parapet on the revetment uniform.⁵⁹

The restoration of the collapsed section of the Fort Lennox rampart involved additional expenses of about £1000.⁶⁰ Despite the modifications which were made, the engineers tasked with the work had not seen the last of their troubles. As early as 1828, there was a new cry of alarm as the revetment of the rampart was no longer holding in several places, particularly on the south face and at the ravelin (Fig. 85).⁶¹

Contrary to 1824, the problems which arose in 1828 concerned the weaknesses noted at the top of the wooden revetment and were largely the result of its temporary nature. In fact, the join uniting the upper part of the picket facing and the adjacent structure of horizontal pieces had completely disintegrated in many places. As a result, with the help of erosion, the cedar pickets were becoming detached from the retaining structure and were gradually tilting into the ditch.

A committee of engineers, tasked with inquiring into the problem, was formed of the Commanding Royal Engineer for the Montréal District, E. Figg, and his assistants at Île aux Noix, R. Piper and P. Cole. They further noted that the weight of the parapet increased the phenomenon once the pickets of the exterior facing became detached from the interior pieces of the revetment:

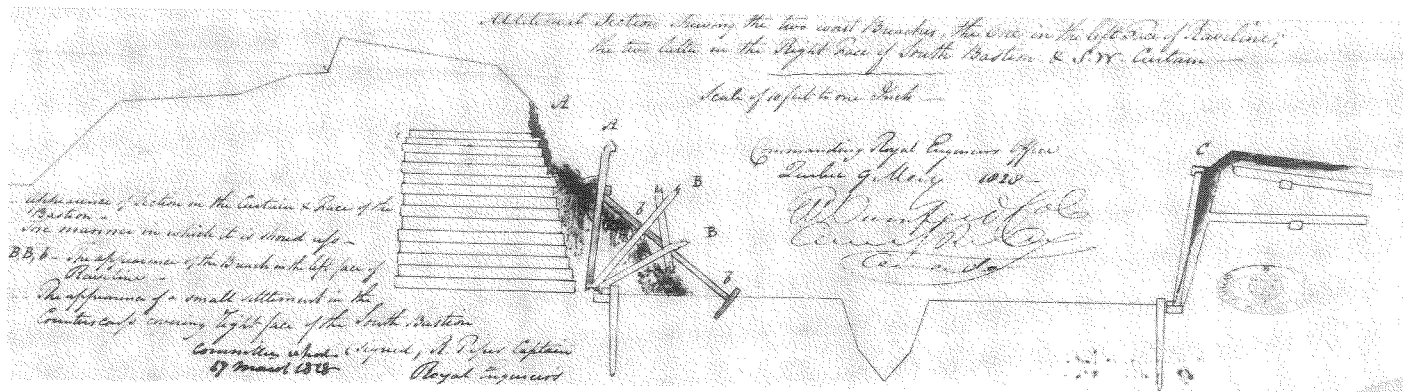
Unless therefore some counterpressure shall be brought against the scarp on the outside, the weight of the Parapet acting on the Upper

58 On this subject they noted: "The blue mud was ascertained by boring to exist at the depth of fifty feet under the center of the failure, through which the mud could at times force the Cover several feet at a time; It is therefore considered useless to drive piles with a view to support (the only use of which is to prevent the work from slipping forward)" (*ibid.*).

59 In cross section, the new revetment therefore took on the appearance of a parallelogram instead of the original diamond-shape.

60 Because of the reasons for the collapse, Durnford in no way held Romilly and his associates responsible for the accident which had occurred (PRO, WO55/862, fols. 64-65, E.W. Durnford to G. Mann, 15 November 1824).

61 *Ibid.*, Vol. 865, fol. 247, E.W. Durnford to Mann, 9 May 1828.



85 Section of the south front of Fort Lennox. This cross-sectional drawing shows by superimposition the constant deterioration of the Fort Lennox rampart as noted in 1828. The southwest bastion as well as the south curtain and the right face of the ravelin are the sectors in the worst condition. (*R. Piper, 1828; PRO, London, WO55/865, fol. 106*)

*part of the Pickets will cause these to be continually carried farther out of their proper direction, and the more especially as there is every reason to apprehend that the ends of the Hemlock will prove to be unsound, and in a mouldering state to as to cause additional lateral pressure against the scarp tending always to its destruction.*⁶²

Figg and his associates were asked to think of a solution that could be put into effect quickly, “contemplating the necessity of ultimately making a uniform of the scarp and Counterscarp throughout the whole extent of the work.”⁶³ As a result, they suggested remedying the situation by constructing a new escarp made essentially of sod, which would have a gentle slope of 45° and would be an extension of the exterior slope of the parapet (Fig. 86). The engineers proposed the same solution for the counterscarp. The necessary earth would come from the enlargement of the cunette which was then being built. The works would necessitate expenditures in the order of £8500, while a complete, large-scale reconstruction of the wooden revetment would call for much larger expenditures.⁶⁴

In view of the urgency of the situation, Durnford, who was Commanding Royal Engineer in Canada at the time, authorized the suggested repairs, not to exceed one-third of the amount estimated.⁶⁵ The Board of Ordnance, however, even though it approved of Durnford’s action, ordered the work stopped while awaiting an additional report on the matter.⁶⁶

For this reason the solution proposed by Figg, Piper and Cole was submitted to the 1828 study commission, which was composed of the engineers Fanshawe and Lewis, and chaired by Sir James Kempt who, it should be remembered, was conducting an inquiry into various questions regarding the defence of Canada as a whole. Pointing out the urgency of action with regard to the Fort Lennox revetments, Fanshawe and Lewis noted that whatever decision might be made in this matter, the authorities’ decision must be made in accordance with the minimum defensive objective of Île aux Noix, defence against a raid:

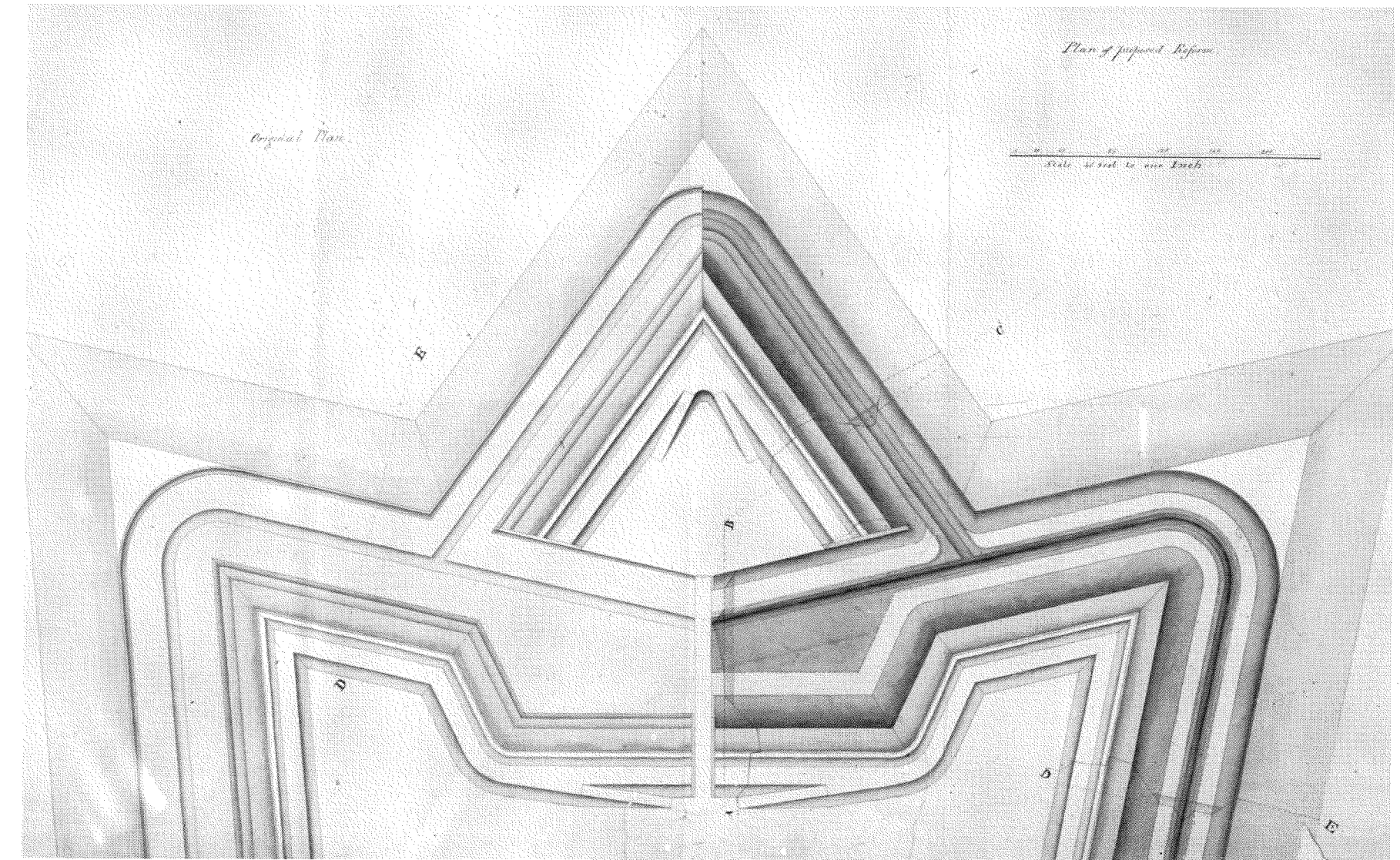
62 *Ibid.*, fol. 248v, R. Piper, E. Figg and P. Cole to E.W. Durnford, 17 March 1828.

63 *Ibid.*, fol. 247, E.W. Durnford to Mann, 9 May 1828.

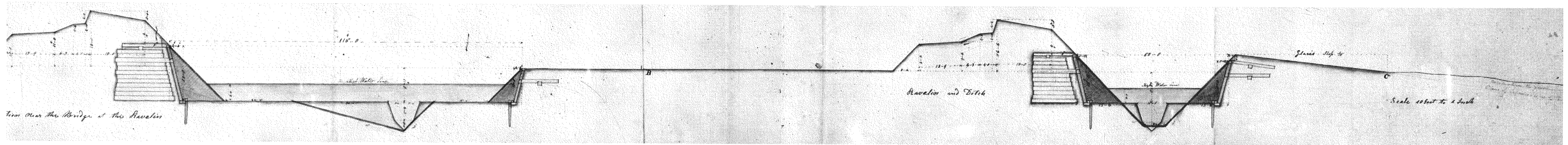
64 A proposal to modify the existing wooden revetment was drawn up in September 1828 (Fig. 86). It consisted of placing a wooden superstructure every nine feet, composed of a sleeper arranged under the parapet and therefore at the top of the escarp, and attached to each end with long piles. Each piece of wood was 15 by 18 inches. PRO, WO55/865, fol. 235.

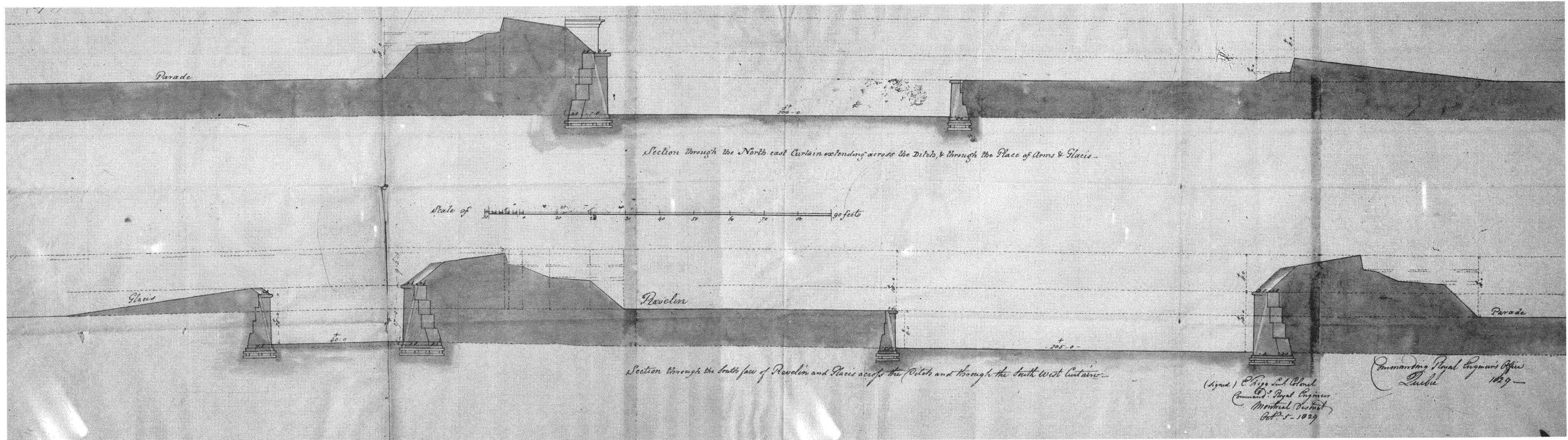
65 *Ibid.*, fol. 217-17v, Durnford to Mann, 9 May 1828.

66 *Ibid.*, fol. 102, Butler to Mann, 20 August 1828.



86 Plan and cross section of the Fort Lennox rampart in 1828. By way of a solution to the revetment problems, engineers Figg, Piper and Cole suggested covering the escarp and counterscarp with sod and reducing their slope to 45°. The V-shaped cunette dug in the centre of the ditch is to be noted. Drawn from the south front, the cross-section shows, from left to right, the main rampart, the ravelin and the glacis; it also shows the level of command of each of the works. (PRO, London, WO55/865, fols. 243 and 233).





87 Masonry revetment suggested for Fort Lennox in 1829. Figg, the engineer, chose a model with a counterslope characterized by its vertical profile on the ditch side and its reverse slope on the terreplein side. This new structure would rest on a stone-filled box sleeper. These cross-sectional drawings show the defilading of the various Fort Lennox works. (PRO, London, WO 55/868, fol. 227)

*Viewing the character of the neighbouring Power; the description of Attack which it seems most calculated successfully to carry into effect, and on the other hand, the extensive Canadian Frontier to be defended by probably a very Inferior Force; we cannot too strongly express our opinion that whatever troops stationed in an advanced work such as Fort Lennox should be effectively secured against a Coup de Main.*⁶⁷

In the light of these considerations, Fanshawe and Lewis concluded that the project put forward by the engineers on the spot did not meet this basic defensive assumption. Even if the repairs called for by Figg and his associates solved the problem of sustaining the rampart, the escarp would now lend itself too easily to scaling, as its slope had become too gentle. Besides, these works would require considerable expenditures without making the Fort Lennox rampart more resistant to enemy artillery projectiles. On the other hand, Fanshawe and Lewis concluded that a masonry revetment would permanently solve the problems involved in supporting the earth of the rampart, as the solidness of the Fort Lennox buildings built some years earlier showed. Fanshawe and Lewis warned, however, that a masonry revetment required additional precautions because of the unstable nature of the island's soil.

The 1828 commission's comments did not remain a dead letter. At the beginning of the next year, Gother Mann, the Inspector General of Fortifications, asked Durnford to study the costs involved in a masonry revetment for Fort Lennox.⁶⁸ He made inquiries at the same time whether the main revetment structure, which was made up of pieces of squared wood placed horizontally, would not by itself be sufficient support for the Fort Lennox rampart; once the vertical pickets and the earth that had accumulated at the bottom were removed.⁶⁹

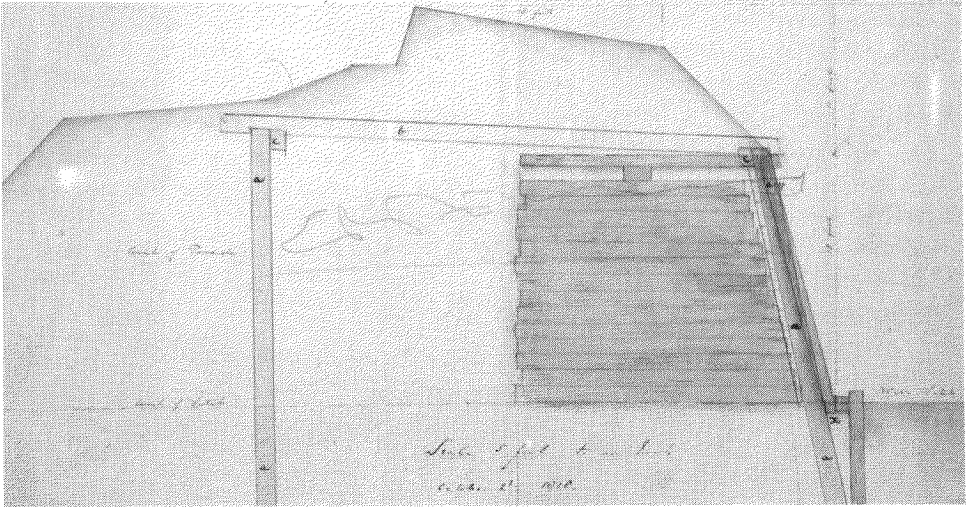
As early as the fall of 1829, E. Figg, CRE, produced the requested estimate for a masonry revetment.⁷⁰ *Contrary to the revetment initially planned by Nicolls, Figg suggested another type of retaining wall rising straight from the side of the ditch and having on its inner side a counterslope which thickened*

67 *Ibid.*, fol. 229, Fanshawe and Lewis to Mann, 27 July 1828.

68 *Ibid.*, Vol. 866, fol. 210, Durnford to Figg, 8 September 1829. Mann also specified a foundation on piles or a wooden sleeper as a platform.

69 *Ibid.*, fol. 233, Durnford to Ellicombe, 8 February 1830, and fol. 236, Figg to Durnford, 5 October 1829.

70 *Ibid.*, fol. 236-36v, Figg to Durnford, 5 October 1829.



88 A plan for reinforcing the revetment of the Fort Lennox rampart. Inserting a wooden superstructure under the parapet every nine feet was suggested. (*PRO, London, WO55/865, fol. 235*)

toward the bottom (Figs. 87 and 88). A detail to be noted was that this counterslope was not continuous, as it was made up of several insets. Behind this support, Figg distributed rectangular buttresses every 16 feet which had the same formation breaks as the interior face of the escarp.

This popular 19th-century revetment model reflected, as Figg pointed out, the new principles established by Pasley, Professor at the Chatham School of Engineering, for calculating the thrust of earth on a retaining wall.⁷¹ Contrary to Bélidor, Pasley thought that the earth fill of the rampart did not exert just a lateral thrust against a wall which supported it, even beyond the natural slope of 45° . In light of several experiments performed at Chatham and by virtue of the laws of gravity, the British theoretician believed rather that the earth fill above the natural angle produced, apart from lateral thrust, vertical pressures which had a stabilizing effect on the revetment:

71 G. Philips noted in 1874 in his course on fortification that the revetment with counterslope "is the most usual form of revetment now used." G. Philips, *Elementary Course of Fortification* (London and Sandhurst: Royal Engineers Military College and Pardon and Sons, 1874), p. 149. See A. Charbonneau, "La construction des soutènements...." The ramparts of the citadel at Québec, built between 1820 and 1830, are supported by this type of revetment.

*... the whole of the pressure, exerted by the particle of earth ... upon the portion of the supporting mass ..., acts upon the stabiliating mass of earth, and in all probability adds to its power of strengthening the revetment.*⁷²

In these circumstances, Pasley added, the revetment with a counterslope offered a slight advantage over traditional supports as built by Vauban, since the vertical pressures of the earth fill brought more weight to bear on the base of the wall, thus producing an additional supporting force directed towards the interior. Since it rose vertically on the exterior, the escarp or the counterscarp also suffered less damage from the infiltration of water. Finally, as the whole revetment was relatively easy to construct, it was therefore this model which, according to Pasley, best suited fill used for fortification.⁷³

Figg noted once again that it was impossible to seat the proposed revetment on a foundation of piles at Île aux Noix. He preferred instead a sleeper with a caisson filled with stones:

Under the consideration that the soil on which the Revetment must be built (altho [sic] bad) is generally of the same nature. I have inserted nothing for Pile Work; but propose to rest the wall on an uniform frame of timber ...

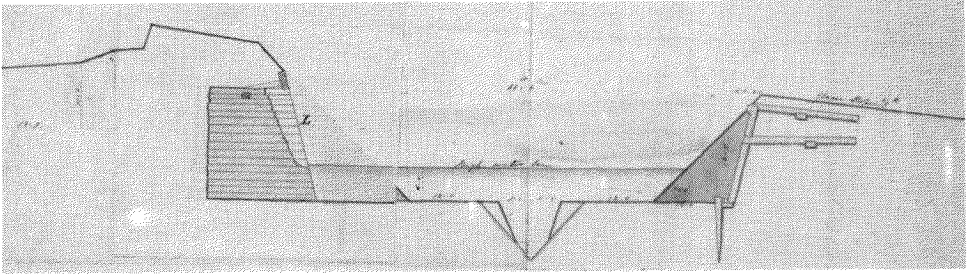
*By this means the vertical pressure would be equally transfused horizontally through the whole length of the wall, and consequently would leave no cause for having a partial settlement.*⁷⁴

As requested by the engineer Mann, the revetment proposed by Figg did not modify the profile of the Fort Lennox rampart. The outer portion of the parapet was widened though by about four feet, in other words, by the thickness of the escarp wall at the top. These works assumed a total

⁷² C.W. Pasley, *Course of Military Instruction...*, Vol. 3, p. 550.

⁷³ *Ibid.*, p. 612; Pasley did not invent the revetment with counter slope since it had existed at least since the beginning of the 19th century. In the 18th century, several engineers including Bédidor, had noted that revetments as set forth by Vauban had too steep an exterior batter and facilitated the infiltration of water into the inside of the face. As a result, vegetation accumulated on the walls and this situation required frequent and costly repointing. Freezing and thawing caused more serious problems. By way of solution, revetments with a gentler slope were constructed, and gradually the vertical escarp came to be favoured. See A. Charbonneau, Y. Desloges, and M. Lafrance *op. cit.*, p. 195.

⁷⁴ PRO, WO55/868, fol. 236, Figg to Durnford, 5 October 1829.



89 Cross section of the rampart of Fort Lennox. Even the horizontal structure of the original wooden revetment, without the facing of vertical stakes, could not retain the earth for a prolonged period. Besides, the deterioration of the exposed ends (L) did not lend itself to the construction of an escarp which would be difficult for assault troops to scale. (*R.W. Durnford, 1830; PRO, London, WO55/868, fol. 235*)

investment of £89 000, of which £47 000 was for the main works, £33 500 for the counterscarp and £8500 for the ravelin.⁷⁵

Durnford, who did not submit the plan to London until the end of 1830, supported his subordinate⁷⁶ even though he had approved the 1828 solution. As the latter solution had not pleased the officers in London, Durnford recommended making a gradual start on the masonry revetment, as proposed by Figg in 1829, by means of an annual expenditure of £5000 for supplies and the preparation of materials easily gathered on Île aux Noix. To protect against a sudden attack, and to repair the ramparts so that they were capable of opposing scaling and raids, the Commanding Royal Engineer thought it was possible to make a temporary restoration of the fill with the necessary slopes by using fascines, gabions and other support devices common in the construction of temporary fortifications. Durnford also noted that a palisade could quickly be set up in the ditch.

As for the possibility raised by Mann of keeping only the structure of horizontal pieces of wood as the sole supporting element, Durnford and Figg did not consider it appropriate. The state of advanced deterioration of the outer extremities of these pieces did not make it possible to create an escarp inaccessible to assault troops (Fig. 89). Further, “the mass of timber Logs does not remain in an upright position, but from the action of the air & at all seasons, is gradually decomposing and settling, and cannot

75 This figure exceeded the original estimate for building the whole of Fort Lennox, including the buildings (*ibid.*, fol. 237, Estimates of 5 October 1829; and fol. 214, Estimates of 23 February 1831).

76 *ibid.*, fols. 233-34v, Durnford to Ellicombe, 8 February 1830.

continue of itself to form a sufficient support & revetment for the work.”⁷⁷ Durnford noted, however, that removing the vertical pickets that had become detached from the rampart or had crumbled, as well as removing the earth accumulated at its base, all of which reduced the original width of the ditch, would temporarily prevent the deterioration of the horizontal revetment structure. This action would further encourage a subsequent construction of masonry support.

Once again the Board of Ordnance pushed back its decision and called for a fresh opinion as well as a more detailed cost estimate. Captain R.L. Piper, who had become Commanding Royal Engineer for the Montréal District replacing Figg, provided the expertise requested in 1831. In doing so, however, he restated his reservations as to the importance of Île aux Noix. This merely added to the hesitations of the Board of Ordnance with respect to the large expenditures required for repairing the Fort Lennox revetments.⁷⁸ In any case, he did not approve the revetment model suggested by his predecessor because of the nature of the island’s subsoil:

*The Profile recommended by the late Lt. Col. Figg, and which I again transmit, is much heavier and more expensive than the one I now submit; and as the greater part of its dead weight is immediately transferred to its Base, the chances of Non-Stability and frequent settlement in this peculiarly treacherous soil are against it.*⁷⁹

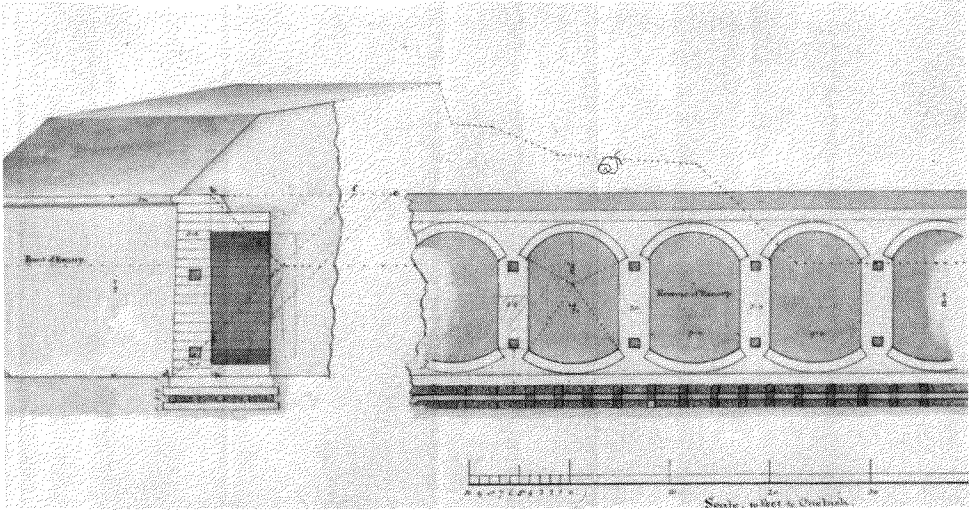
Piper preferred a counterarched revetment made up of a masonry escarp rising with a slight exterior batter. Its rectangular buttresses, placed at the rear every 18 feet, would be used as an abutment which would be linked together by a vault, at the top (Fig. 90). The whole rested on a sleeper with a caisson, lined with a reversed arch between the buttresses or engaged piers, so as to spread the weight evenly over the whole foundation surface. To increase this uniform distribution of the revetment load, Piper added two series of “tie beams” in the masonry, made of large pieces of oak placed along the longitudinal axis of the wall.

The great advantage of this support model comes from the fact that the vaults relieve the escarp wall of part of the thrust of the earth exerted behind and above: “... These arches support the earth above them, and

⁷⁷ *Ibid.*

⁷⁸ PRO, WO55/868, fols. 216-18v, “Report, Project and Estimate for the Revetment of Fort Lennox, Isle aux Noix,” R. Piper, 23 February 1831.

⁷⁹ *Ibid.*, fol. 218.



90 R. Piper's masonry revetment project in 1831. To this engineer officer, a counterarched revetment would be better adapted to the conditions of retaining earth on Île aux Noix. In that type of revetment, a curve or arch rose above the upper parts of the buttresses, turning them into abutments. This masonry support rested on a box sleeper with an inverted arch between each pair of buttresses. Note the two pieces of wood (tie-beams), anchored in each engaged pier perpendicular to the rampart to help equalize the pressure. (*R. Piper, 1831; PRO, London, WO55/868, fol. 220*)

relieve the front wall from all, or nearly all pressure!"⁸⁰ As a result, the counterarched revetment allows the volume of the masonry of the escarp wall to be reduced.

This type of revetment makes it harder for the enemy to breach the escarp. Piper states correctly:

The thickness of each Counterforts to a distance of 3 feet may be averaged at 9 feet 6 in; and although the intermediate space as will be seen on reference by the section does not overaverage 3 feet 9 in with a batter of 1/24th part of its entire height; yet, in case of a Battering Gun being applied to it, it is clear no part of the Parapet can possibly be thrown down until the Crown of the upper arch is

80 G. Philips, *op. cit.*, p. 150; A. Charbonneau, "La construction des soutènements...."

*destroyed; and even then supported as the Soil would be by the intermediate counterforts, and which would also have to be destroyed, the space perforated would be so narrow, that a passage up or through them would be nearly impracticable: therefore independant of any other circumstance, the benefit of Retaining Rampart in this way must be evident.*⁸¹

The origin of this model of revetment goes back to the 16th century and was adopted by certain Italian and German engineers, especially for very high escarps. Pasley noted the quality of the counterarched revetment, particularly for ramparts over 20 feet high, but left the choice of determining what circumstances justified constructing it to each engineer. He insisted, however, that the exterior face should be raised perpendicularly, which Piper neglected to do for his plan at Île aux Noix.⁸²

Piper finally arrived at a construction cost lower than for the traditional revetments, such as the one presented by Figg in 1829. For the ramparts of the main works and the ravelin, the counterarched revetment would cost £49 640, and the counterscarp's one would cost £31 429.⁸³ When he presented the plan to London in November 1831, Durnford again supported his subordinate and now opted for the solution advocated by Piper!⁸⁴

Meanwhile the state of the Fort Lennox revetment had deteriorated considerably, especially on the south front (Fig. 91). Durnford, however, remained optimistic and believed that the wooden revetment would hold for a few years more — enough time to spread out the cost of constructing a new support.

The new Inspector General of Fortifications, Alexander Bryce, also opted for Piper's plan, although he did not consider it necessary torevet the counterscarp. However, he wondered about Île aux Noix's strategic importance, which perhaps no longer justified the investment necessary to rebuild the Fort's revetments.⁸⁵ Giving the matter some new strategic thought, he noted that the numerous roads crossing the area on both sides of the island would allow an enemy to avoid Fort Lennox. Bryce believed,

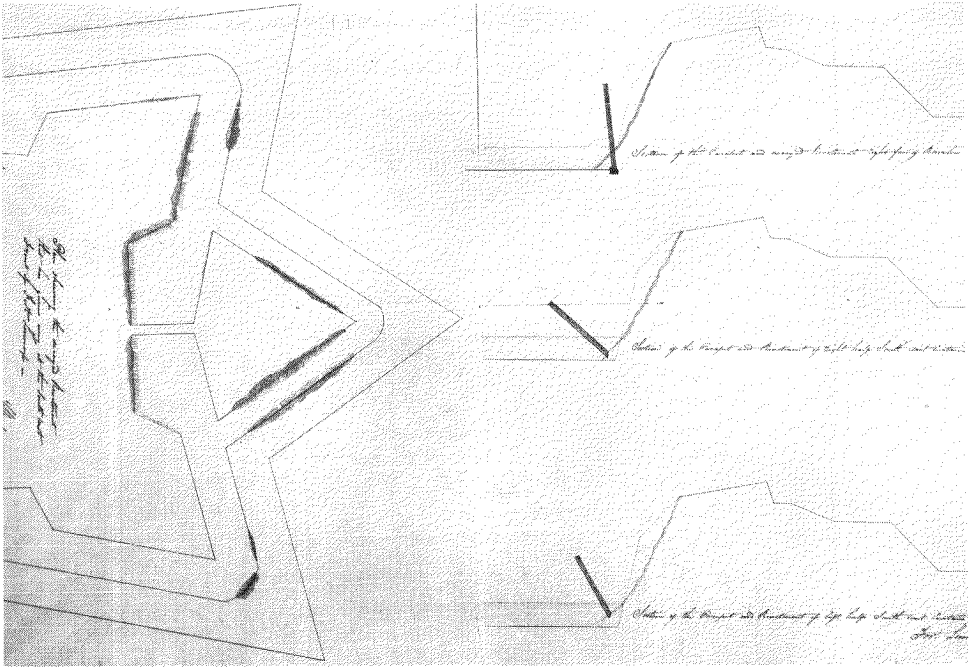
81 PRO, WO55/868, fol. 216v, "Report, Project and Estimate....," 23 February 1831; see also W.C. Pasley, *Course of Military Instruction...*, Vol. 3, p. 653.

82 *Ibid.*, pp. 648-54.

83 PRO, WO55/868, fol. 238v, Estimate of the Piper project, 23 February 1831.

84 *Ibid.*, fols. 210-11, Durnford to Ellicombe, 11 November 1831.

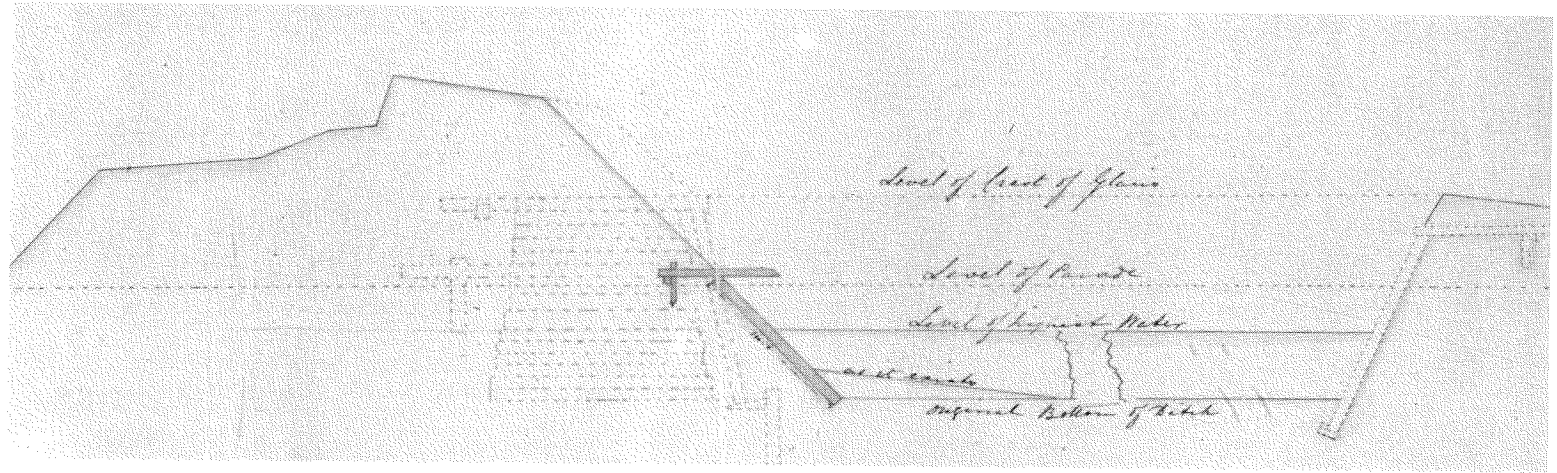
85 *Ibid.*, Notes by the Inspector-General of Fortifications in the margin of Durnford's letter to Ellicombe, 11 November 1831.



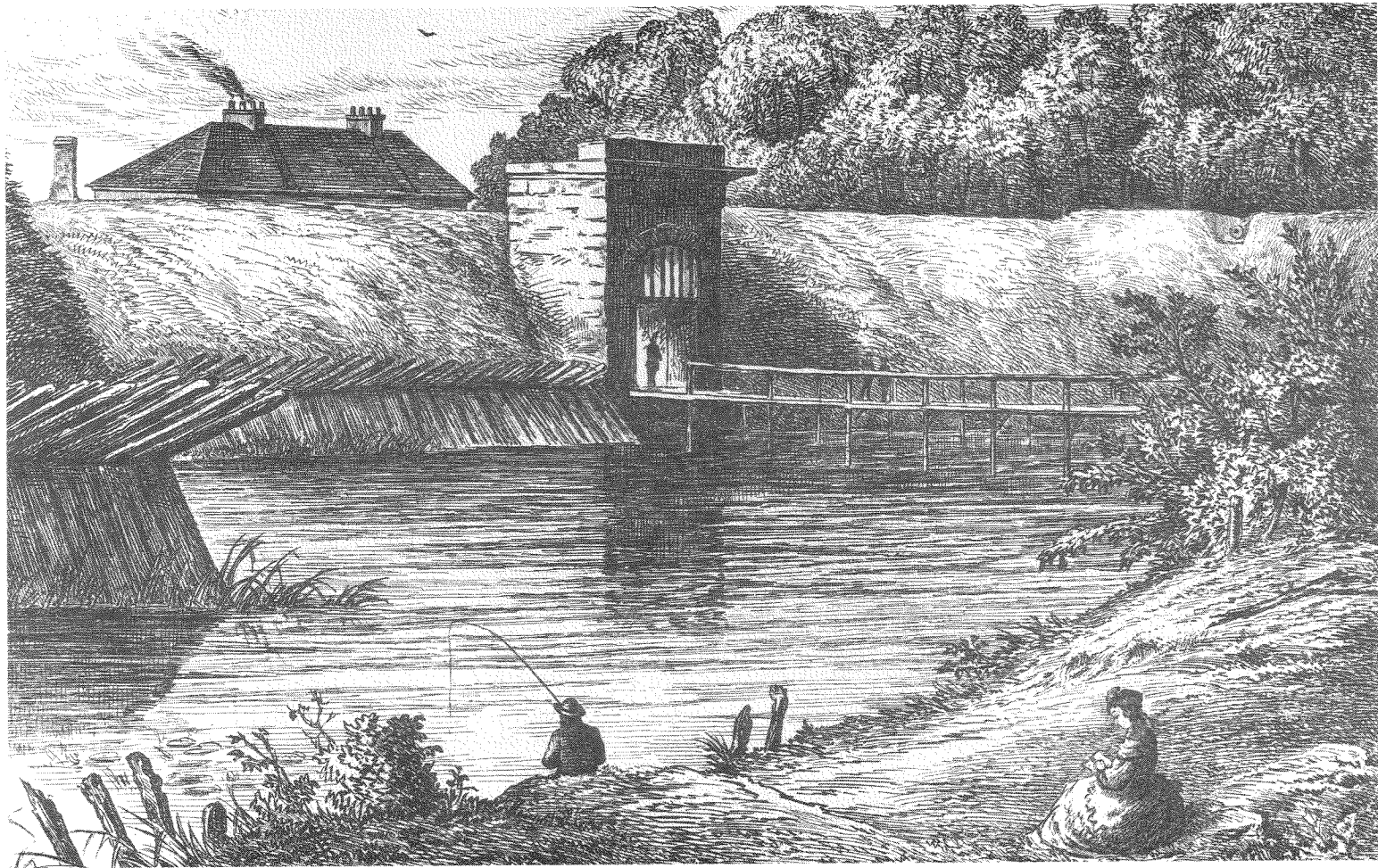
91 State of the fortifications on Île aux Noix in 1831. The revetments of the south front and the ravelin have deteriorated a great deal from lack of maintenance, which has caused the erosion of part of the escarp and the exterior slope of the parapet. The revetment is also deteriorating on the west front. (PRO, London, WO55/868, fol. 231)

though, that the subsequent opening of the canal between Saint-Jean and Chambly would give Île aux Noix back its defensive value, and then Fort Lennox would be the only defensive obstacle to oppose the descent of an enemy all the way to the St. Lawrence River by the Lake Champlain-Richelieu route. It seemed essential to him, at least to bring Fort Lennox to a state where it could resist a raid. With such a defensive objective, the complete restoration of the Fort Lennox revetments was no longer justified:

It has occurred to me that a [Partial] Revetment including the Flanks and Shoulders, and connecting them by means of a loopholed wall with each other and the existing casemate Building, [would] at a



92 Repairs to the Fort Lennox rampart (1842 and 1843). These measures drew their inspiration from the temporary solution worked out in 1829: the slope of the earth escarp was reduced to 45° and it was revetted with pieces of wood. As the rampart now lent itself to scaling more easily, a horizontal fraise was set up at parade ground level. Finally, one should note that these works had the effect of somewhat reducing the thickness of the parapet. (PRO, London, WO55/880, fol. 768)



93 Fort Lennox in 1871. This drawing gives a good illustration of the works undertaken on the revetment of the rampart in 1842-43. The section to the east of the entrance gate (left) was repaired in 1843; the 45° facing and the horizontal fraise can be recognized. To the west (right) the state of the rampart shows the effects of the sudden cessation of work in 1844. (NA, C-14776)

*reduced expence of £26 000 form revetment secure from [a coup de main at this post].*⁸⁶

Again there was no immediate follow-up to this latest suggestion. It would be necessary to wait until the fears aroused by the border negotiations and the division of the Oregon Territory justified releasing some funds to remedy the problems of the revetments at Fort Lennox.

The south face was repaired in the summer of 1842.⁸⁷ The work carried out, taking its inspiration from the solution worked out in 1828, appreciably modified the exterior profile of the escarp (Fig. 92). This now had a slope of 45° and merged with the exterior slope of the parapet. Below the level of the parade ground, a wooden facing with the same slope covered the earth of the escarp. To prevent scaling, which was made easier by the gentler slope, a horizontal fraise was set up level with the parade ground. Thus remodelled, the Fort Lennox rampart had a parapet whose thickness was somewhat reduced, since the trouble was not taken to rebuild the eroded part. In 1843 similar works were carried out on the east face and part of the north face (Figs. 93 and 94).⁸⁸ The next year, it was planned to finish the same type of construction on the west, but the works were not pursued because the authorities were then considering reducing Fort Lennox's defensive objective: now the intention was only to oppose a raid or an assault. Several proposals to this effect were forwarded to London.⁸⁹ In such a context there was no need to rehabilitate the fort's ramparts. The settlement of the Oregon question put an end to the work undertaken in 1842, without the west face and part of the rampart on the north's being repaired (Fig. 95).⁹⁰

As a partial solution to the problem of the revetments at Fort Lennox, which had become as much a question of economics as of military engin-

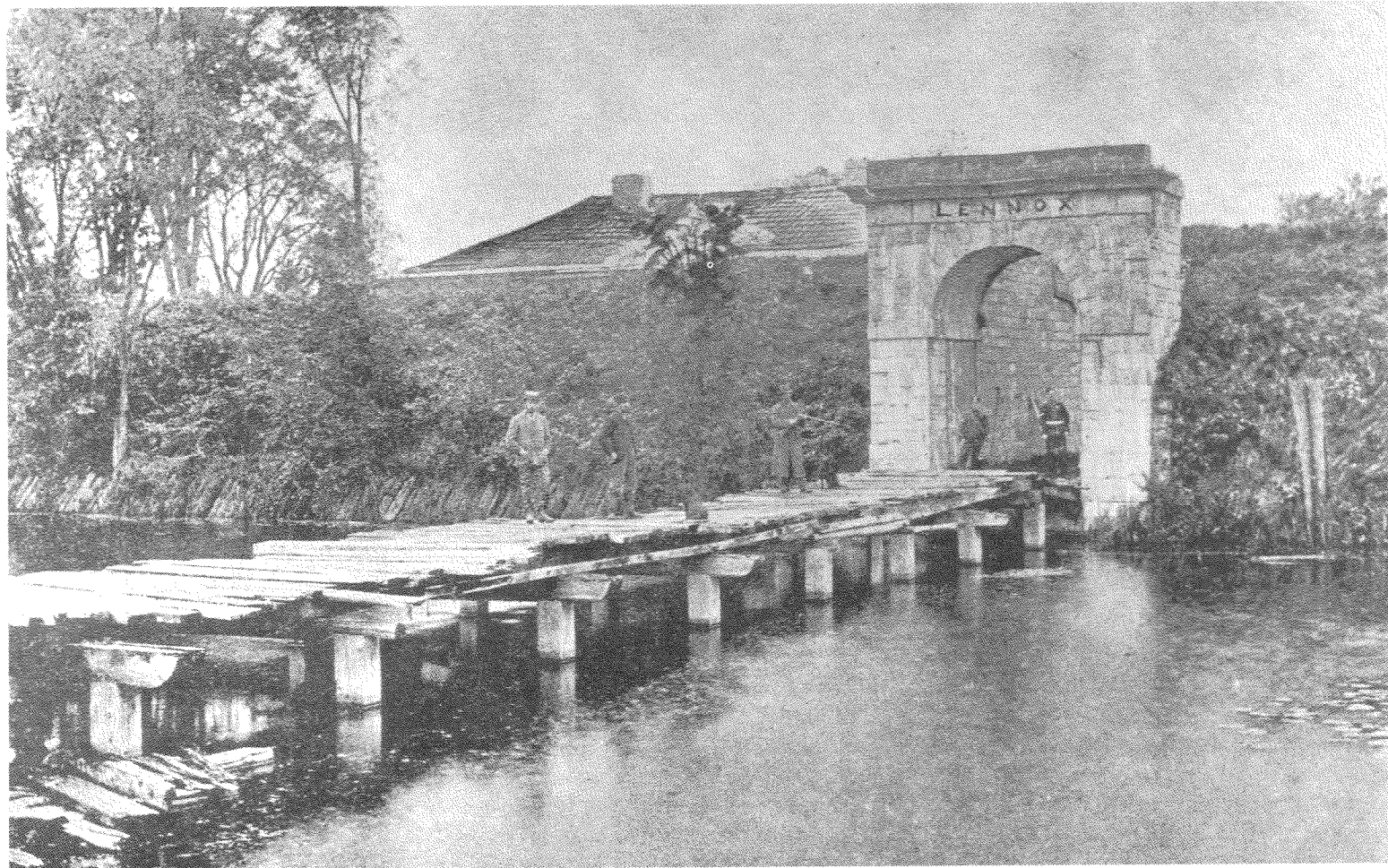
86 *Ibid.*

87 PRO, WO1/561, fol. 138, Holloway to Burgoyne, 14 October 1848.

88 PRO, WO55/880, fol. 762, Holloway to Mulcaster, 26 July 1844; NA, RG8, I, Vol. 1635, pp. 5a-5f, "Inspectional Report," 1853.

89 See Chapter 6.

90 PRO, WO55/881, fol. 94, Notes included in Byham's letter to the Inspector-General of Fortifications, 11 May 1847.

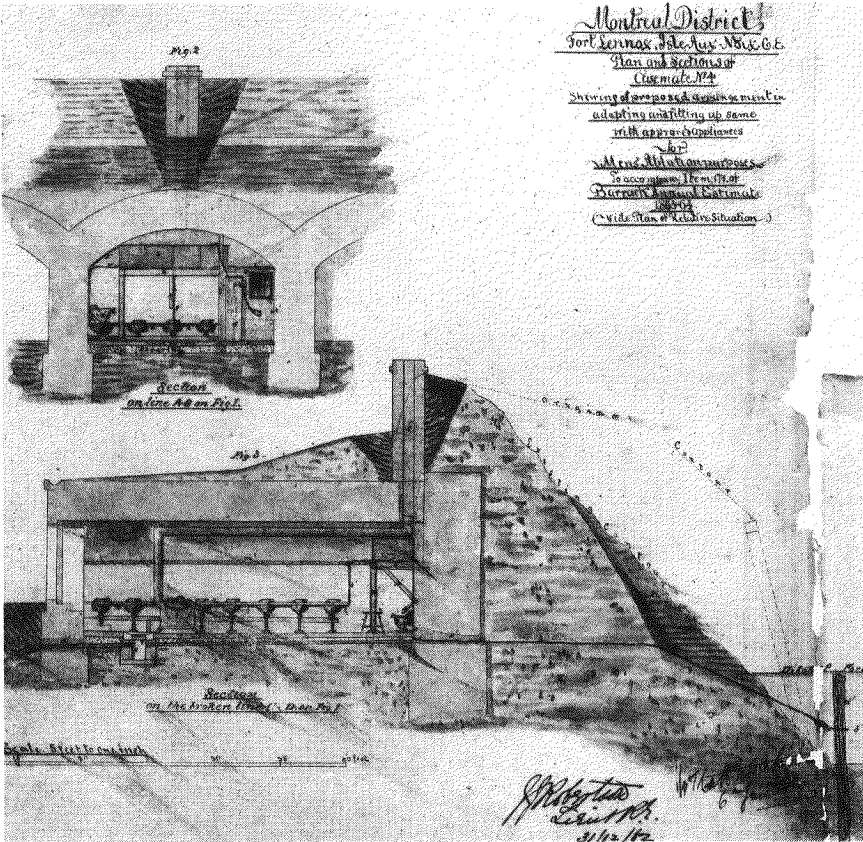


94 The entrance to Fort Lennox in 1890. To the right of the gate some vertical pieces of wood can be distinguished which probably belonged to the original revetment of Fort Lennox. (NA, C-11527)

earing, the original defensive objective of the fort had been modified. At first planned to resist a traditional attack by an enemy who could transport an imposing artillery train, the ramparts of Fort Lennox corresponded to the classical model of a fortification able to withstand a siege. Besides, the height of the escarp and counterscarp with steep slopes made the new fortification able to ward off a surprise attack or a raid. When the politico-military context allowed no further delays in repairing the revetments, budgetary constraints caused the authorities to prefer less costly solutions which deprived the Île aux Noix fortification of some of its defensive characteristics. Towards 1840, the ramparts of Fort Lennox no longer had the same defensive qualities. The rapid deterioration of the revetments was not the main cause of this, rather it was the choice of a different retaining wall that modified Île aux Noix's defensive objective.

The study of Fort Lennox's revetments leads to interesting observations not only on the defensive efficiency of the fortification, but also on the very nature of the profession of the military engineer. They were obviously given tasks which today may seem foreign to their field of activity but which, in the 18th and 19th centuries, were an integral part of their area of competence. Considerations which were "civilian" in nature as to the choice and calculation of retaining walls for the works were subordinated to the maxims of the art of fortification and the art of war in general.

The solutions considered and discussed by the military engineers during this period also reveal a great deal concerning the extent of their knowledge. Though engineers like Nicolls and Romilly were of the conservative school (still popular in military engineering teaching circles at the end of the 18th century, where fortifications were concerned), their successors, when called on to consider Fort Lennox's revetment problems, showed a perfect grasp of the new principles governing the construction of these walls. These principles were worked out by the well-known British theoretician, Pasley, a military engineer. The revetment with counterslope became particularly popular in the various military structures of the 19th



95 The rampart of Fort Lennox in 1862. Drawn for the purpose of turning a casemate into a bathroom, this cross section shows clearly the eroded state of the west rampart. This front had not been affected by the work of 1842 and 1843. (NA, NMC-2293)

century contemporary with Fort Lennox, such as the Citadel of Québec and Fort Henry at Kingston.

As a whole, the construction of Fort Lennox is part of a wider context of transition both of the defensive strategy for the colony and of the

development of fortifications in general and their construction techniques. Hardly had the Fort Lennox construction project begun when several British strategists questioned whether this defensive work, on which so many hopes had rested just a few years before, was justified. The construction of Fort Lennox was placed, therefore, in a sort of contradiction between the intention of strengthening the defensive infrastructure of the Upper Richelieu with the choice of Île aux Noix as the site *par excellence* and, on the other hand, the almost immediate calling of this site into question in favour of Saint-Jean, at a time when very large sums of money had already been invested in Fort Lennox. Despite the existing situation, the military engineers, who had pronounced in favour of Saint-Jean, drew up plans and built on Île aux Noix a fortification of the classic type, which was able to meet precisely the defensive objectives established as part of the overall strategy for the colony. Both in its flanking geometry and in its profile, the bastioned rampart constructed at Île aux Noix complied with the major maxims which governed this type of fortification. Further, and this is also to the credit of the engineers responsible, Fort Lennox was very well adapted to the requirements of the topography.

However, one has to wonder about the choice of a classical model of a bastioned fortification for Île aux Noix, at the same time that there was a move in contemporary Europe towards new types of works, where the bastioned enceinte was replaced by polygons using new flanking mechanisms. One type was the perpendicular fortification, where works called "caponiers" were substituted for the flanks of the bastions and placed perpendicular to the body of the work. This would then allow flanking functions by intersecting fire.⁹¹ An analysis of Fort Lennox allows one to note that Nicolls and Romilly were not familiar with these new concepts in fortification and that they simply transposed models to Île aux Noix that they had learned during their academic training some years before. In their defence, one could cite that in Europe at the time that Fort Lennox was built the new type of fortification had not completely established itself. Besides, as these engineers were operating in a distant theatre, scientific information only made its way into the colony after a lag of some years. An analysis of the revetments planned or carried out at Île aux Noix allows one to qualify these remarks since, as early as 1828, the engineers are applying ideas which had recently been worked out in the schools of

91 See P.P.F.M. Rocolle, *op. cit.*

engineering. Engineers like Figg and Piper, the successors to Nicolls and Romilly at Île aux Noix, were part of a new generation of military engineers who were up to date on new developments in the art of fortification.⁹²

The next chapter shows that other engineers were proposing works for Île aux Noix and elsewhere in the colony which corresponded more to the new European developments in fortifications.

92 I cannot really speak of a new generation of engineers in Figg's case, since he studied at the Woolwich Academy at about the same time as Romilly. See R.F. Edwards, ed., *op. cit.*

CHAPTER 6

THE DEFENCE OF THE UPPER RICHELIEU IN THE MIDDLE OF THE 19TH CENTURY

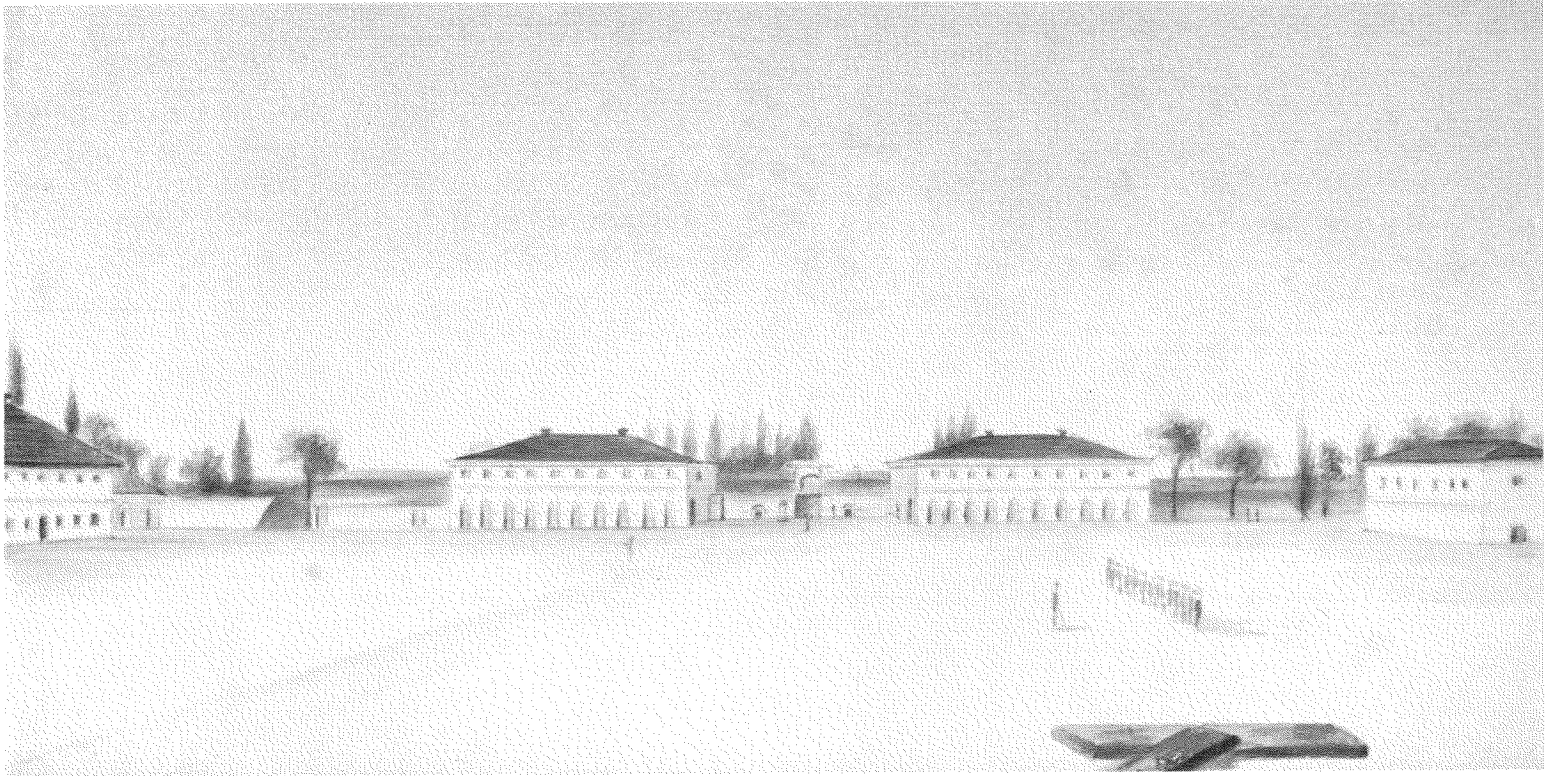
During the second quarter of the 19th century, relations between the United States on one hand and Great Britain and its North American colonies on the other were characterized by relative calm. After the Peace of Ghent, each of the protagonists avoided confrontations, at least officially, by finding a way around the difficulties that arose in the matter of defining boundaries. In reality, however, each was strengthening its positions: strategies were being revised, defensive works were being built.

The situation became somewhat nastier beginning in 1825-30, when the American press restated vigorously the old dream of unifying all of North America under the American flag. As one American historian expressed it, "For some ten years after the Treaty of Ghent expansionist sentiment in the United States was comparatively dormant, but after 1825, it awoke to new life."¹

On the Canadian side, the nationalist party confronted the British establishment more and more directly with its demands for democratic institutions in the American image. This resulted in the nationalists later associating with the annexationist movement to join the United States.² The rebellion of 1837-38, an event internal to the Canadian colonies, had the consequence of poisoning north-south relationships, mainly because of the sympathy and asylum the revolutionary leaders enjoyed in the United States.

1 A.B. Corey, *The Crisis of 1830-1842 in Canadian-American Relations* (New Haven: Yale University Press, 1941), p. 15. The author notes that this dream was always latent in the hearts of Americans: "For many decades after 1783 the beacon of annexation glowed, at times at white heat, at times very dimly, but it was never completely snuffed out; for despite lulls in American expansionist sentiment, there continued until the 1840s to be a widespread belief in the United States that some day by war a settlement of all outstanding disputes with Great Britain would eventuate in the acquisition of all British North America" (*ibid.*, p. 12).

2 According to Fernand Ouellet, Papineau's ideas after 1837 suggested that he supported annexation, although he fundamentally believed in preserving certain institutions of a conservative nature, such as the seigneurial system, which really did not square with the values of American society. See F. Ouellet, *Papineau, textes choisis et présentés*, 2nd ed. (Québec: PUL, 1970), pp. 85-86. See also his biography of Papineau in the *DCB* (Toronto: U. of T. Press, 1972), Vol. 10 pp. 564-77.



96 Fort Lennox in 1840. Strongly called into question even before it was finished, Fort Lennox, unlike the island's earlier fortifications, would never have to confront an enemy. (*J.D. MacDiarmid, ca. 1840; ROM, Toronto, 68CAN211*)

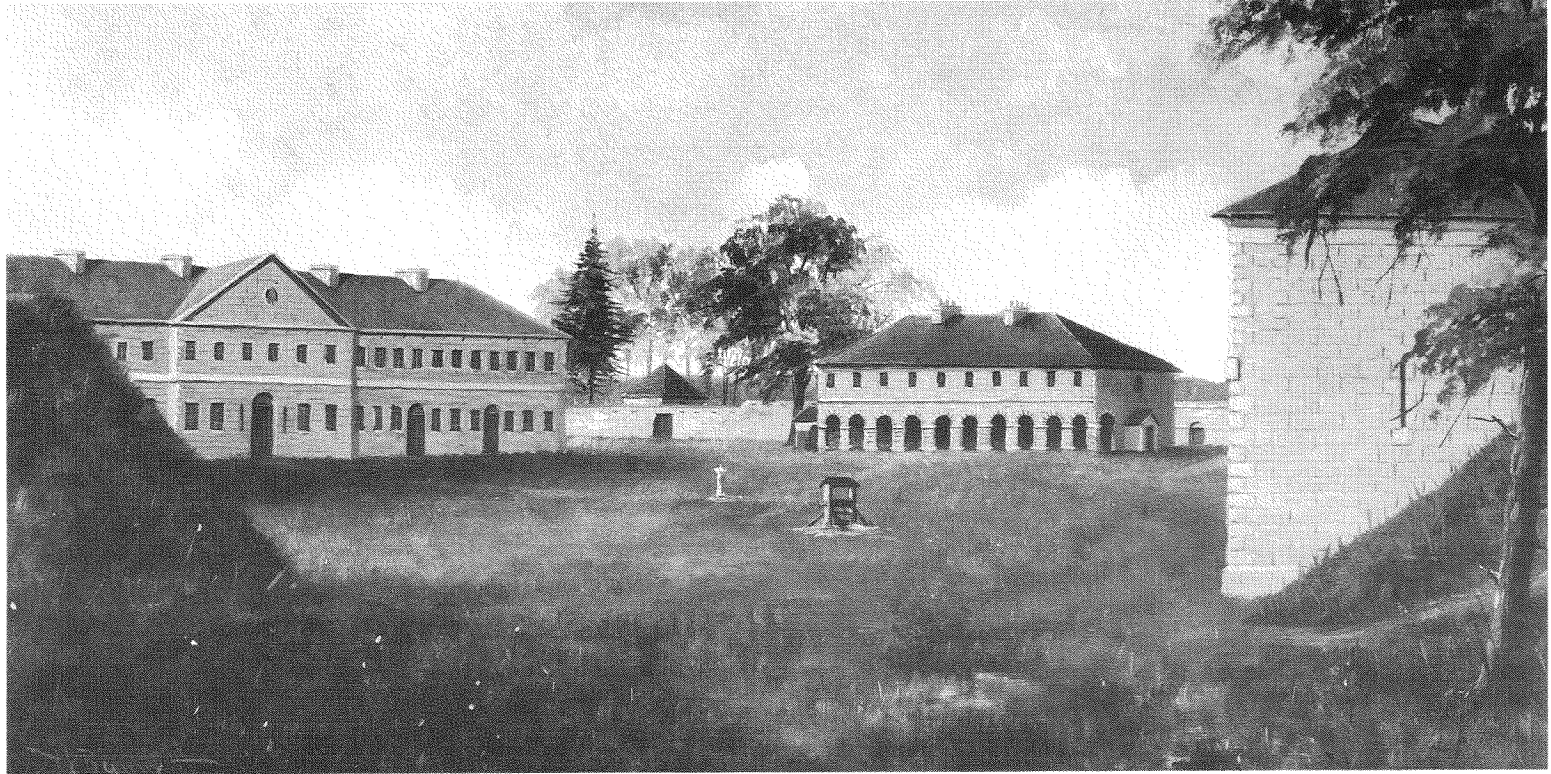
The endless question of establishing the boundaries, which was not settled in 1814, troubled relations between the British and the Americans to the point of arousing fear towards 1840. "Manifest Destiny" was an increasingly popular idea among the neighbours to the south, and it worried British politicians and strategists who saw in it a fresh opportunity to reconsider the defence plan for the North American colonies. These tensions tapered off in the middle of the century, but grew again a decade later at the time of the American Civil War.

Canada's military situation had developed considerably since 1814. The working out of a new defensive strategy and in particular the investment of large sums with a view to establishing the necessary infrastructure had made it possible to show the home country's intention of strengthening its interests and its hold on the North American continent, and to do so in a context where colonial expenditures were causing lively opposition among the members of Parliament in London.

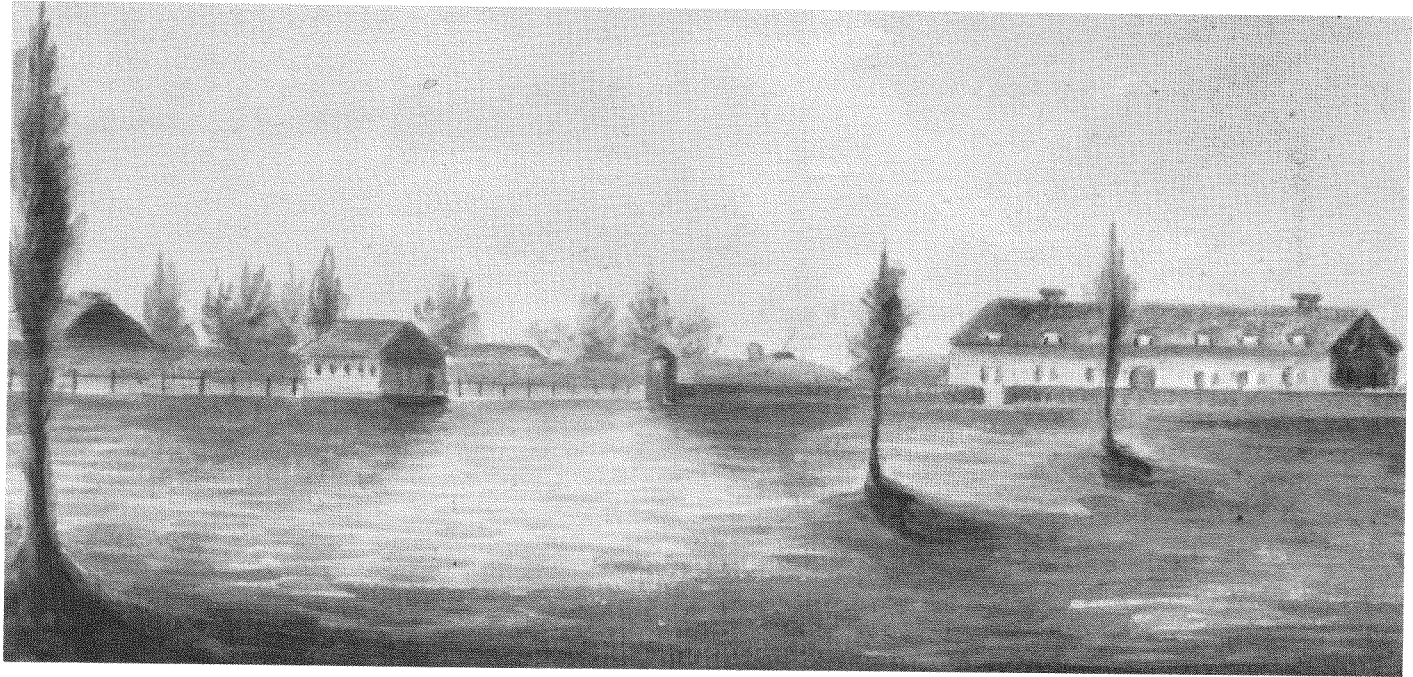
Towards 1830, several elements of this defensive program had taken concrete form or were in the process of doing so: the Québec Citadel was completed; in a few years the canalization of the Ottawa and Rideau rivers would be finished; the military depot was set up on Sainte-Hélène Island, and Fort Lennox on Île aux Noix had been completed since 1829 (Figs. 96, 97 and 98). In 1832 the construction of Fort Henry at Kingston was begun.³

At the same time, there were questions about the advisability of preserving the naval establishments on the interior lakes of Canada, or at least it was being asked whether the funds invested in the construction of fortifications still justified the maintenance of these naval bases and their garrisons. In 1831 the question was submitted by the Admiralty to Wellington, and to Sir James Kempt, who had recently been promoted to the headship of the Board of Ordnance. Obviously their answer expressed the defensive strategy that Wellington had helped to work out and that Kempt had supported as president of the 1828 Committee of Inquiry. At that time the minor role of the navy in the defence of Canada had been established because the Americans enjoyed too great an advantage in that field. The most that was visualized was the support of a small fleet rapidly rigged out at the time of a conflict, which would serve to transport troops, ammunition and provisions. The adoption of such a position had also justified the canalization of the Rideau and Ottawa rivers. Since 1819

³ It should also be mentioned that the construction of the Halifax citadel had begun in 1828.



97 The interior of Fort Lennox. The buildings are placed along the curtains, except for the magazine. It is located in the gorge of the northwest bastion, and one can glimpse the protective wall surrounding it between the barracks at the left and the officers' quarters at the right. (*H. Bunnett, 1886; McCord Museum of Canadian History, Montréal, M872*)



98 The exterior of Fort Lennox ca. 1840. In addition to the structures of the naval base, other buildings for the use of the garrison troops can be seen, such as the hospital at the right. (*J.D. MacDiarmid, ca. 1840; ROM, Toronto, 73CAN509*)

there had no longer been any question of carrying out offensive naval operations. All the same, in 1831 Kempt envisaged retaining a small naval establishment at Kingston for the purpose of seeing to the maintenance of the materiel necessary to create a small fleet of gunboats in case of necessity.⁴ A naval officer was also to be posted there permanently. The Admiralty accepted Kempt's recommendations, happy to recover some funds from its defence budget.

Greatly reduced on the first occasion, the naval establishments in Canada, including the one on Île aux Noix, were definitively closed in 1834 (Fig. 99). The Admiralty justified its decision at the time by the fact that the main elements of the defence plan of 1819, such as the Citadel in Québec, the Rideau Canal and the fortifications in Kingston, were finished or well on the way to being so.⁵

Balance Sheet of the Situation at Île aux Noix and at the Border

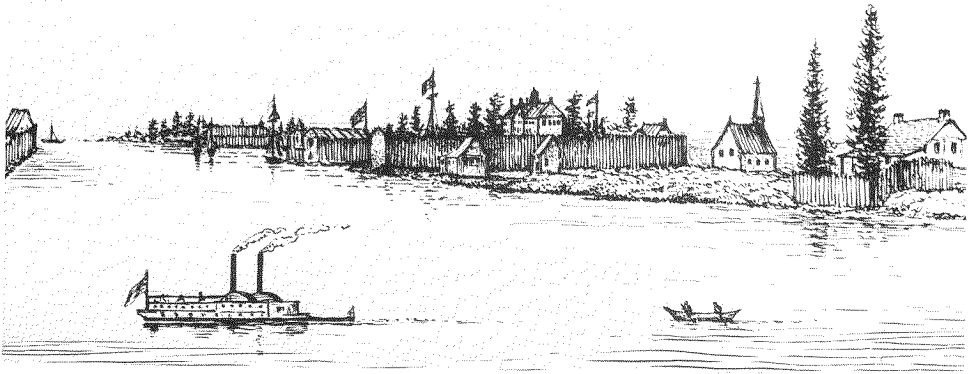
In the Upper Richelieu, the construction of Fort Lennox had been decided on at a time when the advisability of fortifying Île aux Noix was being strongly questioned (Fig. 100). The sums invested on this border had prevented the building of new fortifications at Saint-Jean, even though the town had in the meantime become the main strategic position, largely due to the many roads that intersected there.

Another hitch in the defensive strategy on the Upper Richelieu border was that steps were taken in 1829 and 1831 to canalize the river between Saint-Jean and Chambly Basin. Though long favoured by the politicians and the colonial merchants, this project still raised as many objections from the military. They maintained, like Wellington, that any navigable link between the border and the St. Lawrence River, "affording both to Canada and the United States mutual facility of offensive operations should not be sanctioned without the fullest confidence in the superiority of our own resources."⁶ Despite the contradiction between such a project and Canada's defensive interests, London sanctioned the Lower Canadian

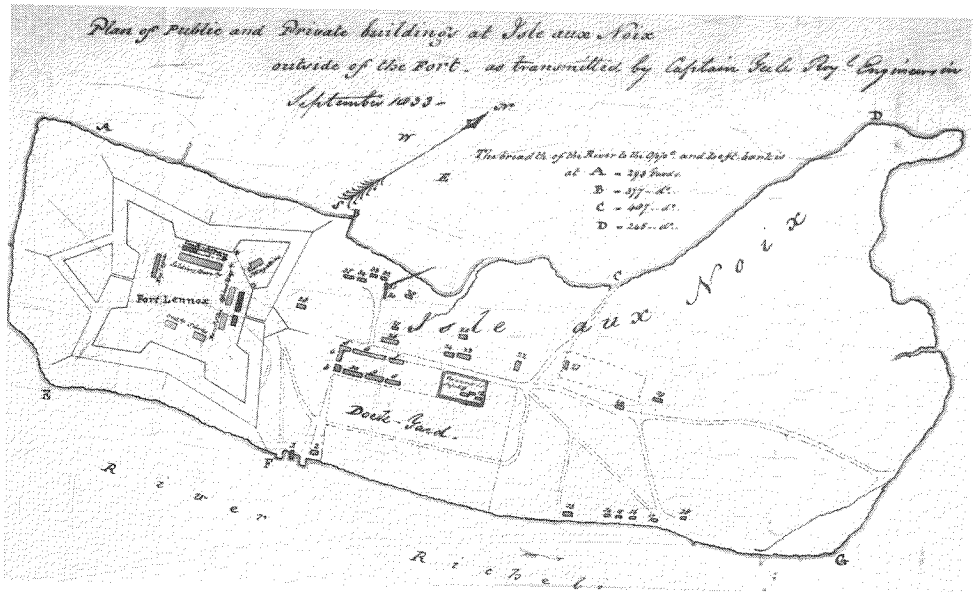
4 J.M. Hitsman, *Safeguarding Canada...*, p. 127. Hitsman adds that the little naval establishment at Kingston would have as its object "to look after the naval stores that would be needed to equip gunboats in an emergency and to assemble the frames of vessels shipped from Quebec via the Rideau waterway."

5 *Ibid.*, p. 129.

6 PRO, CO42/239, fols. 161v-62, "Memorandum on the Chambly Canal," R. Byham, 24 September 1832.



99 The naval barracks, in the centre, built in 1815. Despite its brief existence and few years of intense activity, the Île aux Noix naval base and dockyard had several buildings. (*Anonymous, 1830; NA, RG84, FLE 2, Vol. 5, No. 5*)



100 Structures on Île aux Noix in 1833. No additional defensive work had been added to the island between 1830 and 1840. Though strongly controversial, Fort Lennox was all the same the only military post on the Upper Richelieu border during this period. Its garrison, very much reduced after the work was completed, would be appreciably increased during the rebellion years. (*PRO, London, WO44/42, fol. 451*)

legislature's act of authorization; the military authorities had no other choice but to submit. Paradoxically, when the military lands needed for the construction of the canal at Chambly were transferred in 1832, an attempt was made to negotiate free circulation of military transport in this area!⁷

The canalization of the Richelieu was a hard blow to the defensive strategy of Canada in the eyes of the Board of Ordnance. Now the Americans could undertake a large operation from New York to Québec with Île aux Noix as the sole obstacle. The use of steamboats, known for their speed, removed the obstacle of the long distance for the enemy. Consequently, the Board of Ordnance warned Colonial Secretary Goderich that it would order the destruction pure and simple of the canal locks in the event of an American invasion of Canadian territory by the Richelieu River.⁸

There was the same wariness among the military when the first Canadian railway line was built between La Prairie and Saint-Jean. Then the Board of Ordnance recommended to its engineers to warn the company that the soldiers would destroy the track in the event of a conflict with the Americans.⁹ Again, once the construction of the railway had been approved by the civilian authorities, the military tried to negotiate an agreement with the company for the logistical needs of the troops.¹⁰

The rebellion of 1837-38, which concentrated a good part of its operations in the Richelieu Valley, revived military interest in this border. Posts like Chambly and Saint-Jean, which were almost closed down towards 1830, were substantially reactivated at the end of 1837 and at the beginning of 1838.¹¹ At Île aux Noix, the number of troops which had been greatly reduced as soon as the ramparts were finished climbed to

7 PRO, WO55/871, fols. 139-42, Nicolls to Pilkington, 19 April 1834.

8 PRO, CO42/239, fols. 161-65, "Memorandum on the Chambly Canal," R. Byham, 24 September 1832.

9 PRO, WO55/873, fols. 64-65, Byham to the Inspector-General of Fortifications, 18 July 1836. At this period, the Board of Ordnance systematically opposed every project for improving communications on Montréal's south shore. This was so with the suggestion to include Sainte-Hélène Island in the shuttle circuit between Montréal Island and the south shore; a project much wished for by the engineer officers at Montréal, but disapproved of by the Commanding Royal Engineer in Canada and the authorities of the Board of Ordnance (PRO, WO44/41, fols. 374-86, file 1827-33).

10 PRO, WO55/873, fol. 89-89v, Byham to the Inspector-General of Fortifications, 25 November 1836. An officer in charge of the Commissariat could at the time state to the Secretary at War, "...subsequently to the opening of the Railroad the Troops on every occasion of a change of Garrison have, without any exception whatever, been conveyed to and from Laprairie and St. Johns by Railroad..." (NA, RG8, I, Vol. 151, p. 336 [W. Filder] to B. Taylor, 28 April 1843).

11 C. Rioux, "L'armée britannique au fort Lennox de 1819 à 1870: organisation et effectifs," Manuscript on file, National Historic Sites, Parks Canada, Québec, 1985, pp. 12-20 and Appendix B.

nearly 500 men in 1839.¹² The fort was also used to imprison certain rebels.

Even though the problems of the revetment of the rampart were constantly brought up by the engineers, no new defensive construction was undertaken at Fort Lennox between 1830 and 1840. On the other hand, faced with the size of the cost of replacing the wooden revetment by a masonry support, the Inspector-General of Fortifications, Sir Alexander Bryce, had finally made up his mind in 1831 to give preference to a less costly solution involving the amount of masonry needed. However, that reduced the original defensive role of Fort Lennox to simple resistance to a raid, that type of sudden attack carried out by a body of troops unsupported by an artillery train.¹³ Bryce's solution, which was supported by Durnford, ex-Commanding Royal Engineer in Canada,¹⁴ consisted of revetting only the flanks and a portion of the faces of the bastions with masonry in order to form vaulted galleries pierced by loopholes. Access to these galleries would be by a vaulted corridor situated facing the shoulder angles and leading to the gorges of the bastions, and from there to the buildings of the fort. For the Inspector General of Fortifications, it remained urgent to carry out these works from the perspective of the opening of the canal between Saint-Jean and Chambly and its consequences both for an enemy offensive and the British defence. This plan was not immediately followed up, even though the eroded state of the rampart of the fort made defence against even a simple raid difficult; the escarp and the counterscarp no longer had their original slopes and it had become very easy to scale them.

At Saint-Jean, the rebellion resulted in the erection of barracks with a capacity of more than 800 men (Fig. 101).¹⁵ These barracks were built inside the old fortification, which was still threatened with ruin. The massive arrival of British troops in 1837-38 and during the following years made some construction also necessary at Chambly and La Prairie (Figs. 102 and 103).¹⁶ Finally, a blockhouse was erected at Philipsburg on the right-hand shore of Missisquoi Bay (Fig. 104).

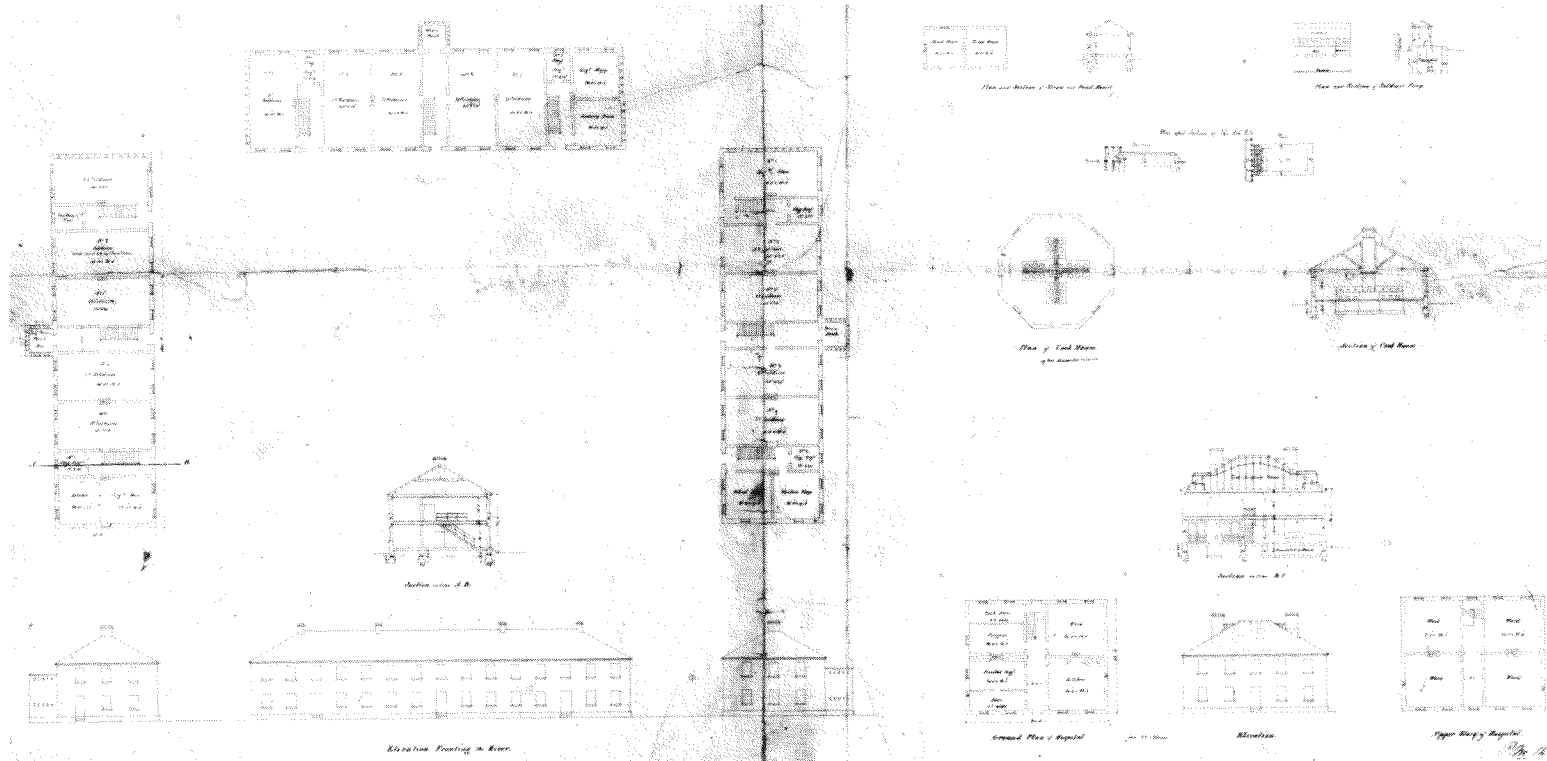
12 *Ibid.*, pp. 12-20 and Appendix A. The large Île aux Noix garrisons were reduced as early as 1822 to about one hundred soldiers. This date corresponds to the end of the construction of the Fort Lennox ramparts. For the construction of the various buildings of the fort, civilian manpower was then called on.

13 PRO, WO55/868, fol. 210, Notes in the margin of Durnford's letter to Ellicombe, 11 November 1831; *ibid.*, fols. 263-64, [?] to Durnford, 11 January 1832; *ibid.*, fols. 265-66, Durnford to Bryce, 18 January 1832.

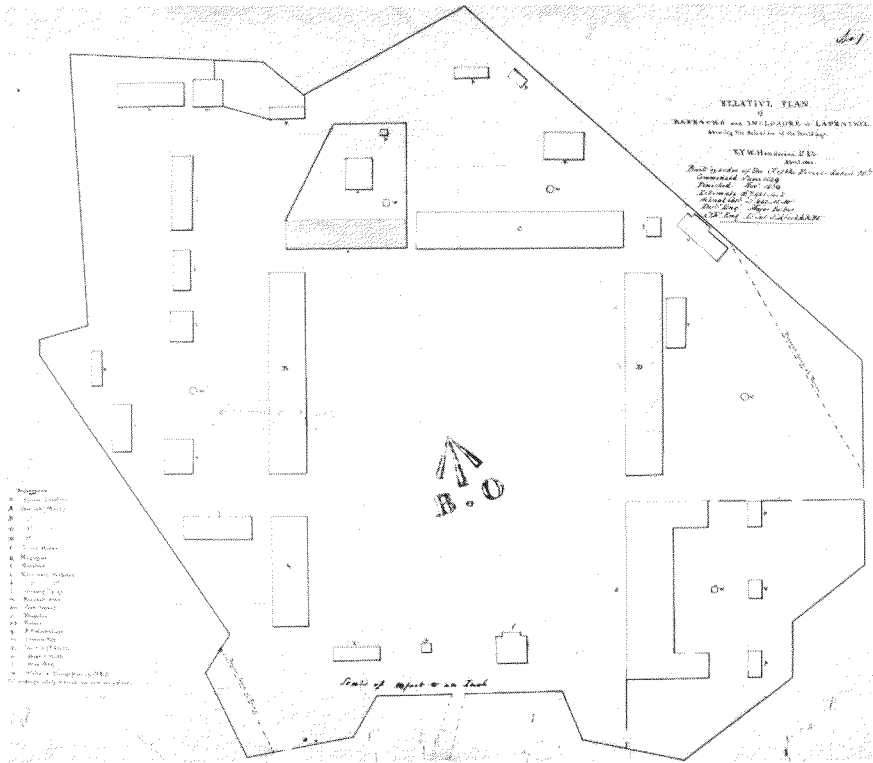
14 In 1831, Durnford had been transferred to Portsmouth as Commanding Engineer of the Southern District.

15 PRO, WO1/536, p. 262, Report on the Defence of Upper and Lower Canada, Sir John Colborne, 30 December 1839.

16 *Ibid.*, p. 264, H. Vivian to J. Russell, 4 March 1840.



101 Barracks and outbuildings for 200 men at Saint-Jean. The Rebellion of 1837-38 saw the return of a large number of troops to the Upper Richelieu border. Large barrack blocks were built at Saint-Jean (above), Chambly (Fig. 102) and La Prairie (Fig. 103) at that time, as well as a blockhouse at Philipsburg (Fig. 104). [NA, NMC-30696]

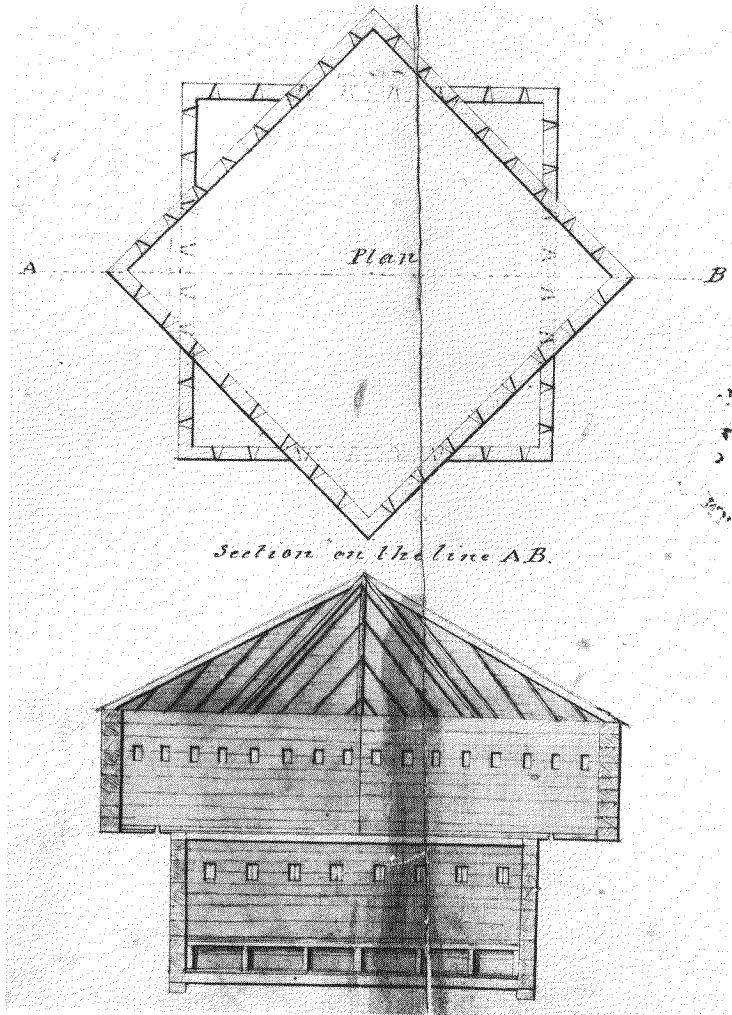


103 The La Prairie barracks, 1839. (NA, NMC-2125)

Colonial Tensions and Home Country Reactions

Colborne's Compromise

The Rebellion of 1837-38 and especially the anti-British demonstrations at the borders had shown once again the insufficiency of the defensive infrastructure in Canada despite the large investments that had been made for twenty-some years. Certainly the construction of the Citadel at Québec, the fortifications at Kingston and the building of the Rideau Canal were the main defensive measures identified by the strategy of Wellington and his contemporaries to counter a large-scale American manoeuvre. These positions did not, however, assure the desired



104 The Philipsburg blockhouse, 1839. (NA, NMC-25362)

protection in the face of a popular uprising; nor were they sufficient to check harassing operations along the long Canadian border. Therefore, in 1839 the Commander-in-Chief of the forces in Canada, Sir John Colborne, suggested building new defensive works on the positions which had been temporarily occupied in 1838 precisely to ward off this type of danger:

The encouragement given by the American patriots to the disaffected in Upper Canada cannot fail to create alarms occasionally. Under these circumstances and in the present state of Canadian affairs, public confidence will be much increased by establishing strong posts on the parts of the frontier most exposed to the incursions of the Americans, and thus rendering nearly the whole regular force disposable on any emergency, without incurring any risk by leaving depôts of arms and stores in charge of the militia.¹⁷

Colborne proposed the building of permanent fortifications at Saint-Jean, Amherstburg and Niagara as well as the erection of barracks at Chambly, Saint-Jean, La Prairie and Amherstburg.¹⁸ Thus in Colborne's eyes Saint-Jean was a position of the greatest importance for the defence of Lower Canada. Saint-Jean commanded navigation on Lake Champlain and the Richelieu since it was at the head and it hung over the entrance to the canal then being built. Saint-Jean also controlled access to the only bridge (built in 1826) crossing the Richelieu River, a bridge where several roads converged, some of which led to the United States.

Apart from the barracks built in 1839 and the old powder magazine that had been transformed into a defensive work, Colborne believed that a new, permanent fortification would meet the double objective of blocking an American invasion army and confronting any movement of rebellion along the Richelieu. And it would require an investment of only £40 000.¹⁹ Colborne's report was silent on Île aux Noix, which once again confirms the loss of interest in this site on the part of the military in favour of Saint-Jean.

The proposals of the Commander-in-Chief, who had become Lord Seaton on his recall to England in October 1839, pleased certain officials in the home country. Because these recommendations were modest in scope and involved a restrained investment, Sir Hussey Vivian and Lord John Russell, respectively Master-General of the Board of Ordnance and Sec-

17 *Ibid.*, p. 261, Seaton to J. Russell, 30 December 1839.

18 Of the total estimate of £60 000 for the construction of barracks, £40 000 had already been spent on these various places in 1839. The Commander-in-Chief had authorized these works because of the urgency of the situation (*ibid.*, p. 264, H. Vivian to J. Russell, 4 March 1840).

19 PRO, WO1/536, p. 262-63, Report on the Defence of Upper and Lower Canada, 30 December 1839; *ibid.*, p. 263, J. Stephen to R. Byham, 13 January 1840.

retary of State for the Colonies and for War, saw in them an opportunity to put an end to the notorious problem of the defence of the colony. The British cabinet had been worrying for a very long time about the enormous sums that setting up the Canadian defence system required. Firstly, in Russell and Vivian's view, Colborne's proposals were consistent with the defensive system established by Wellington and the Carmichaël-Smyth Commission; they did not provoke serious questioning. With the massive investments then taking place at Québec, Kingston and Halifax, acceptance of Colborne's project would end any other considerations. The development of the colonial situation could even make all the other works planned since 1814 obsolete.

So that London could approve Colborne's plan, the Commanding Royal Engineer in Canada had to forward the plans and detailed sketches of the new works.²⁰ North American diplomacy and the arrival of a new Commander-in-Chief in Canada would appreciably modify the parameters of the problem.

The Defence of Montréal as Seen by Jackson and Oldfield

The colonial situation disturbed Vivian and Russell's hopes somewhat in the matter of fortifications for the American colonies. The political climate in the United States developed in the 1840s in the direction of a more official expression of the famous Manifest Destiny, which took the form of a recrudescence of the expansionist movement dedicated to an "extension of the area of freedom."²¹ At the same time, the question of the definition of the boundaries between the United States and the British colonies entered a crucial phase with more intense negotiations.

The American Congress was busy with a complete revision of the defensive system of its borders. The report submitted to it in May 1840 detailed certain objectives of the American strategy, namely the proposed works of fortification aimed to protect the main border towns and ensure rallying points for the naval and land forces.²² On the northern border, the works planned left no doubt as to the American intention to conquer the

20 *Ibid.*, pp. 263-64, H. Vivian to J. Russell, 4 March 1840 and J. Stephen to R. Byham, 11 March 1840.

21 On the different facets of "Manifest Destiny" in the United States, see A.K. Weinberg, "Extension of the Area of Freedom," in S.A. Fine and G.S. Brown, eds., *The American Past, Conflicting Interpretations of Great Issues*, 3rd ed. (New York: Macmillan, 1970), Vol. 1, pp. 507-32.

22 PRO, WO55/1551 (7b), "National Defence and National Foundries" File, J.R. Poinsette to R.M.T. Hunter, 15 May 1840.

British colonies. For example, the suggestion of erecting a fortification facing the St. Lawrence rapids downriver from Ogdensburg belonged more to the desire of the American strategists to launch an offensive operation against Canada by cutting communications by the St. Lawrence between Montréal and Kingston than to an objective of defending territory that was properly American.²³

Lake Champlain was the major point of interest on the Canadian-American border. The American strategists noted correctly that the geographical position of Lake Champlain gave the United States several defensive advantages. Contrary to the Great Lakes which defined the border, Lake Champlain was an avenue leading directly to the heart of the Canadian colony and the main invasion route to the ultimate objectives of a war against Canada — Montréal and Québec. The American officers also realized that the Richelieu-Lake Champlain corridor could equally be used by the British to carry an offensive operation into American territory, if they achieved naval supremacy.²⁴

Therefore they suggested erecting permanent fortifications on Lake Champlain near the source of the Richelieu. The sites chosen were Stoney Point on the west shore and Windmill Point on the east (Fig. 105).²⁵ The Americans also planned the establishment of a depot and a barracks centre at Plattsburg.

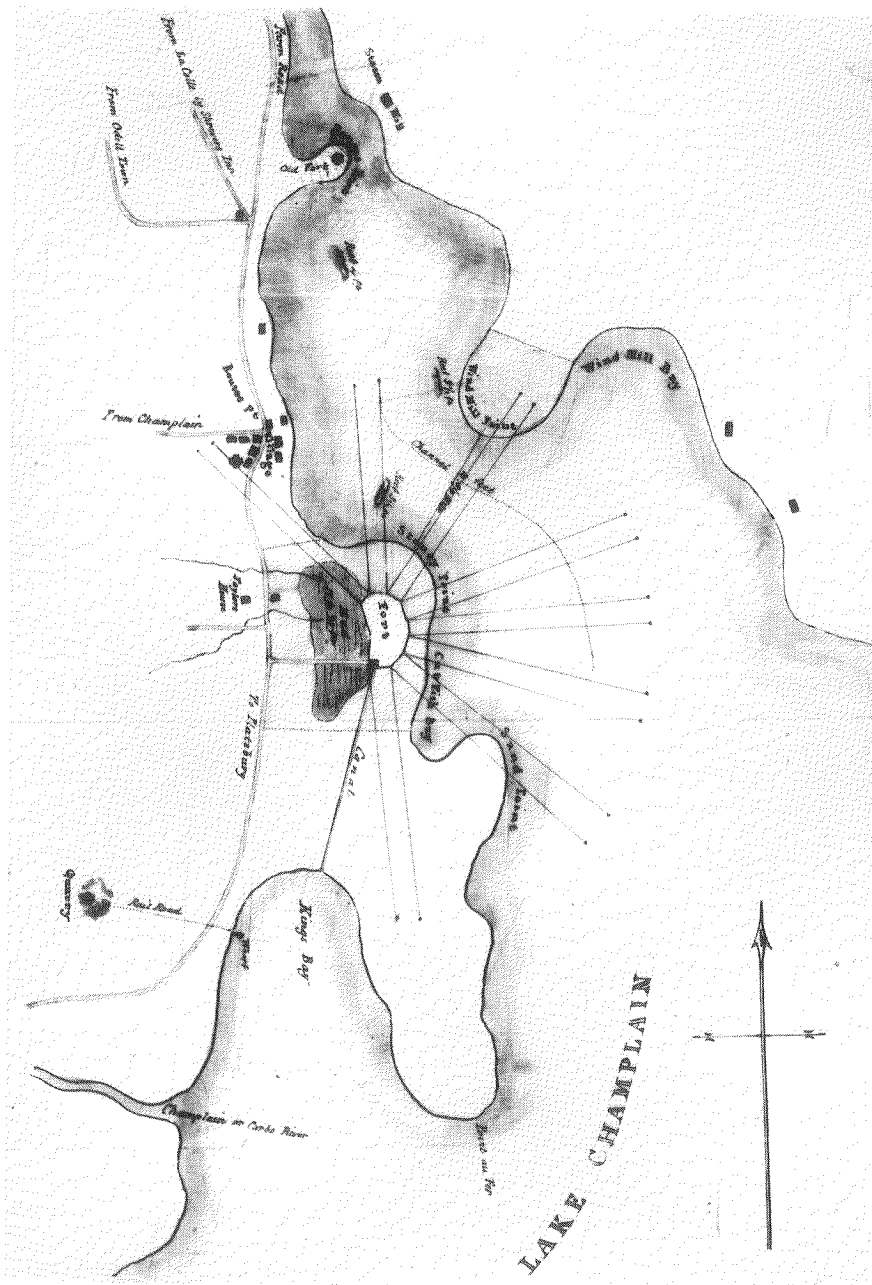
This backdrop to the North American situation caused the greatest anxiety to the new Commander-in-Chief of the forces in Canada, Sir Richard Jackson. He knew that the Montréal border was almost unprotected apart from "the Small bad fort at the Île aux Noix."²⁶ Aware of the American intentions for the whole border near Montréal, especially at Plattsburg and near Saint-Régis, Jackson noted once again the particular importance for the defence of Canada of the tongue of land bounded by

23 The American side was very explicit: "The chief object of a works here would be to cut off the enemy's communication, by the river, between Montréal and Kingston... This would also be another point from which the enemy might be menaced, and from which auxiliary movements might be made, in aid of a chief attack" (*ibid.*, "Report on the Northern Frontier," pp. 102-3).

24 *Ibid.*, p. 103. The text of the report on the strategic evaluation of the Lake Champlain border reads as follows: "The position of Lake Champlain is somewhat peculiar. While Ontario, Erie, Huron and Superior, stretch their whole length directly along the border (forming in fact the boundary), Champlain extends deeply in our territory, at right angles with the line of the frontier; and, while its southern extremity reaches almost to the Hudson, it finds its outlet to the north, in the St. Lawrence nearly midway between Montréal and Quebec the two great objects of attack."

25 Although the Americans still claimed possession of Rouses Point, the same mistake as in 1816 could not be made again since in 1840 negotiations on settling the boundary had not yet begun: hence the choice of Stoney Point.

26 PRO, WO1/536, p. 266, "Memorandum upon Montréal and its immediate frontier," R. Jackson, [March] 1840.



105 American plan (1840) for permanent fortifications at Stoney Point and Windmill Point, on the two shores of a narrows on Lake Champlain near its outlet. (NA, NMC-51426)

the St. Lawrence River, the Richelieu River and the 45th parallel. Although he subscribed to the proposals of the Carmichaël-Smyth Commission, especially as regarded the mouth of the Châteauguay River and Montréal Island, he noted that the costs of carrying them out always remained the main obstacle to their approval by London. Jackson therefore submitted a series of new works, smaller in scope and more likely to be approved by the authorities concerned. Along with John Oldfield, the Commanding Royal Engineer in Canada, Jackson suggested replacing the project for a citadel at Montréal with setting up on the island a series of small defensive posts to support the work of the troops.²⁷ From the same perspective, other small works of a temporary nature could be added to the existing buildings at La Prairie, Longueuil, Sorel, Cascades, Sainte-Hélène Island and at Bout-de-l'Île at Montréal (Fig. 106). On Île des Soeurs, at the mouth of the Châteauguay River, Jackson and Oldfield proposed abandoning the work planned in 1825 and instead building two redoubts there, one of which would be topped by a cavalier with quarters for 200 soldiers.

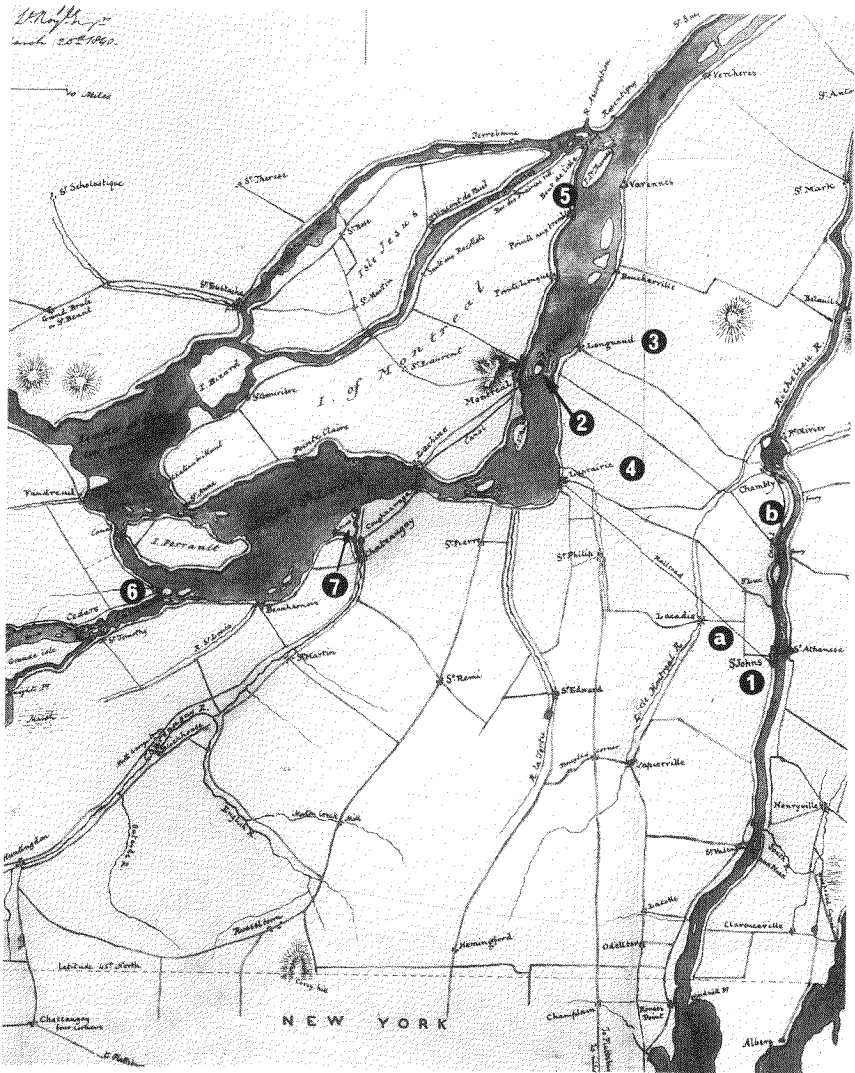
On the other hand the Commander-in-Chief insisted on the need to fortify Saint-Jean which, by its situation as terminus of the railway from La Prairie, had become a "place of utmost importance to us to hold strongly."²⁸ Thought was given at the time to restoring the old fortifications to which would be added three ravelins and a cavalier with casemated quarters for 300 soldiers (Fig. 107). At Saint-Athanase (Iberville), on the other side of the river, a bridgehead could be set up even with the existing stone structures. Once again nothing was planned for Île aux Noix. Finally, Jackson noted the helpful contribution to the defence of "armed steam Vessels" sailing on the St. Lawrence and the Richelieu.

Though Jackson's report received good press from Colonial Secretary Russell, the same was not true of the Board of Ordnance. It did not much appreciate the initiative of the Commander-in-Chief.²⁹ As far as the Board was concerned, Jackson's report gave no new information on the importance of Montréal for the defence of Canada. The suggestions for defensive works such as were presented by Oldfield should rather have been considered as an engineer's professional advice on the type of temporary

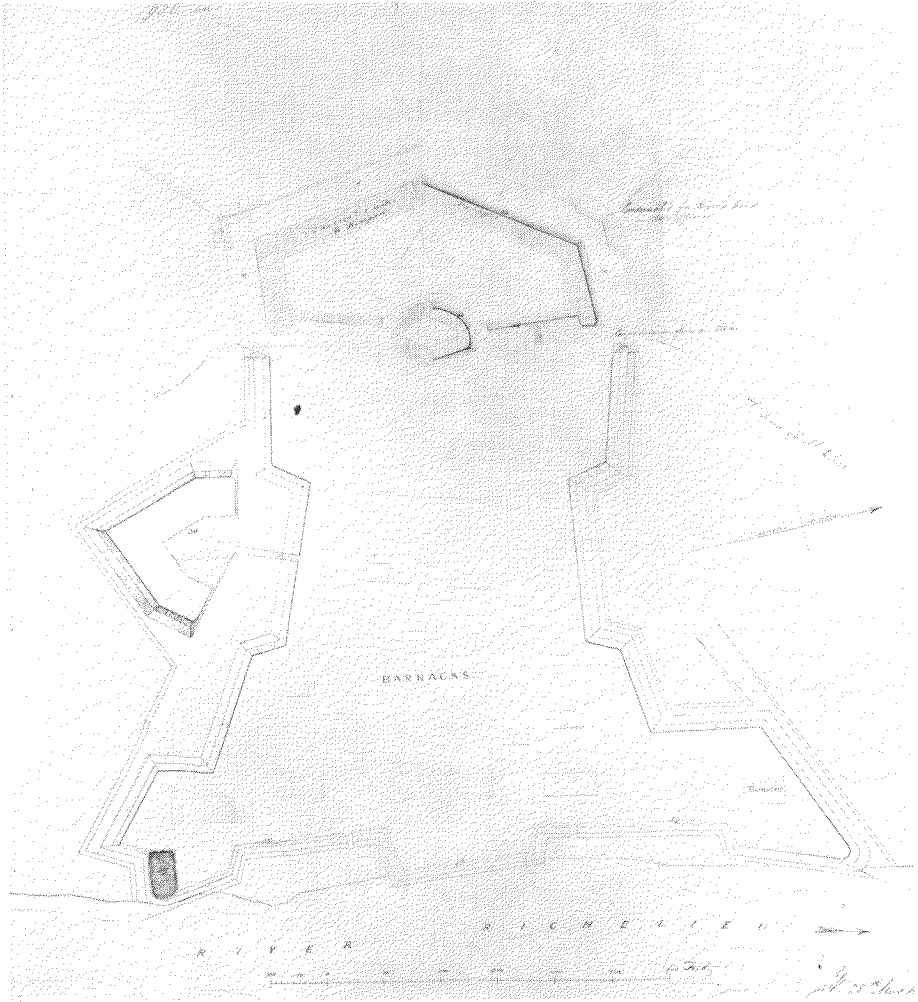
27 *Ibid.*, p. 269, "Memoranda of the probable expense of defences for Montréal and the Frontier between the Richelieu and the St. Lawrence, having the Line of 45° for Base and Sorel for the Apex of the Triangle," J. Oldfield, 24 March 1840.

28 *Ibid.*, p. 268, "Memorandum upon Montréal and its immediate frontier," R. Jackson, [March] 1840.

29 *Ibid.*, p. 269, J. Stephen to R. Byham, 24 April 1840; *ibid.*, pp. 270-71, R. Byham to J. Stephen, 4 May 1840.



106 The south shore of Montréal in 1840. In addition to a larger-scale fortification which had become necessary at Saint-Jean (1), John Oldfield, the engineer, and the Commander-in-Chief, R.D. Jackson, planned to set up small temporary defensive works on Sainte-Hélène Island (2), at Longueuil (3), La Prairie (4), Bout-de-l'île (5) and Cascades (6) and on Île des Soeurs (Saint-Bernard Island) (7). The map shows the trace of the first railway line between La Prairie and Saint-Jean (a), as well as that of the canal being constructed between Saint-Jean and Chambly (b), two enterprises which had aroused the opposition of the military authorities. (*P. Bainbrigge, 1840; NA, NMC-51426*)



107 Fort Saint-Jean. In 1840 Jackson and Oldfield suggested restoring the earlier works to which two ravelins and a cavalier with casemated quarters for 300 soldiers would be added. (NA, NMC-2797)

works that the Commander-in-Chief could authorize in the event of an emergency. The Board of Ordnance concluded in a peremptory style that to approve the construction of defensive works, "the Master General and Board will require a very different degree of information; a project exhibiting in all the details of the several works the adaptation of engineering science to a well considered system of defence."³⁰

As for the more detailed proposal for Saint-Jean, the Board of Ordnance authorities did not believe that the proposed restoration of the old fortifications met the defensive objectives that had been set. In accordance with Colborne's plan, approved in 1840, Oldfield was asked rather to prepare the plans and sketches required for a new fortification of a permanent nature to be built on the best site possible.³¹

Jackson did not despair of being able to fortify Canada further. As early as the fall of 1840, he submitted a new, very detailed report on the whole Canadian border so as to answer the "desire" of the Board of Ordnance at great length.³² However, he stressed to the Board that any defensive project, even if it was well articulated within a coherent overall strategy, could still give rise to innumerable objections, taking into account the rapid development of the situation in North America.³³

Obviously, the defence of Montréal and its immediate border particularly concerned Jackson. He took up appreciably the same proposals which had been formulated some months earlier (at least he wanted to occupy the same positions), except that the works envisaged were more permanent in nature and involved higher costs. However, the total bill remained considerably smaller than the estimates of the works suggested by the Carmichaël-Smyth Commission.³⁴ At Saint-Jean, it was now a question of a fortress valued at £80 000. Île aux Noix figured in his plans once more, and it was estimated that the necessary repairs to the fort and the construction of additional bombproof quarters for the soldiers and officers would cost about £16 000. For Jackson, the defence of the Richelieu was the main point for the whole Montréal border. The works proposed for Sorel, Saint-Jean and Île aux Noix would not only be able to assure command of the area surrounding the Richelieu River, they would also help maintain free movement of defensive troops on the St. Lawrence.³⁵ In the absence

30 *Ibid.*, p. 270.

31 PRO, WO55/875, fol. 41-41V, R. Byham to the Inspector-General of Fortifications, 16 March 1840.

32 PRO, WO1/536, pp. 274-86, "Memorandum upon the Canadian Frontier," R.D. Jackson, November 1840.

33 *Ibid.*, p. 272, R.D. Jackson to C. Poulett Thomson, 16 June 1840.

34 *Ibid.*, pp. 286-96, J. Oldfield to R.D. Jackson, 14 November 1840, Appendices 1 and 2.

of these new works or of those proposed by the 1825 commission, Jackson noted that the defence would then rest on efficiency and the availability of troops, two areas where it would be risky to make a comparison with the United States.

At the request of Colonial Secretary Russell, several officers in London studied this new report of Jackson's and the works proposed by Oldfield. To the Inspector General of Fortifications, Sir F.W. Mulcaster, Jackson's strategic thought was an excellent updating of the many reports on defence that had been presented over a good number of years.³⁶ On the defence of Montréal and its border, he approved most of Jackson and Oldfield's recommendations and insisted on the absolute need to fortify Saint-Jean. He subscribed to the idea of repairing the Île aux Noix fortifications and establishing permanent works at Sorel as well as at the mouth of the Châteauguay River. In the same vein, Mulcaster supported the defensive positions planned at Longueuil, Sainte-Hélène Island and Cascades. He objected, however, to providing Montréal with a ring of small detached posts.

His immediate superior as head of the Board of Ordnance, Sir Vivian, did not receive Jackson's new thoughts so readily.³⁷ Though he agreed with the principle which had been in circulation for a long time that the British Crown could not abandon its moral obligation to provide for the defence of Canada, he was opposed to invoking the same principle to justify the granting of additional sums to construct defensive works in Canada. Certainly, he stated, the works identified by the Carmichaël-Smyth Commission or those recently planned by Jackson and Oldfield could contribute to a better defence of Canada, but the success of that operation rested more on the support of the local population than on British troops. As to the new fortification works, Vivian thought it was wiser to limit construction to finishing the works already undertaken at great expense at Québec and Kingston and to add to them the works suggested by Colborne in 1839 at Saint-Jean, Niagara and Amherstburg. As for the other proposals, Vivian added, only temporary works should be constructed instead in the event of an emergency. With respect to the American intentions of fortifying their border to support offensive operations, he preferred to wait for a concrete move on their part, as he did not

35 *Ibid.*, p. 284, "Memorandum upon the Canadian Frontier," R.D. Jackson, November 1840.

36 *Ibid.*, pp. 306-9, F.W. Mulcaster to H. Vivian, 8 February 1841.

37 *Ibid.*, pp. 301-2, H. Vivian to J. Russell, 18 February 1841.

believe Congress was in a position to give immediate approval to the funds required for such construction.

Through the mediation of the Commander-in-Chief of the forces in Britain, Lord Hill, Wellington was consulted once again and reiterated his defensive principles of 1819 and reaffirmed by the Carmichaël-Smyth Commission in 1825.³⁸ Hill shared Wellington's opinion especially concerning the construction of a citadel at Montréal. However, he considered Jackson and Oldfield's recommendations concerning Île aux Noix, Saint-Jean and the other small posts on this border to be more appropriate.³⁹

In the face of such a divergence of opinion, Lord Russell, the Secretary of State for War and the Colonies, was still not in a position to settle definitively the question of the defensive works to be built in Canada. In May 1841, he informed Lord Sydenham, the Governor General of Canada, that the British cabinet was applying the principle stated previously by Jackson that:

*no dependence upon the decided superiority of our troops, and arrangements made for defence connected with them, should lead us to neglect the construction and completion of permanent works calculated for the protection of the points of most importance to us.*⁴⁰

However, because of financial constraints, there was still no question of sinking all the funds required into the current proposals. Russell saw a possible compromise in assigning the greater part of the £100 000 annually granted for maintaining the militia to the construction of fortifications in Canada. Perhaps the Colonial Secretary wished in this way to persuade the local government to share in the colony's defensive effort.

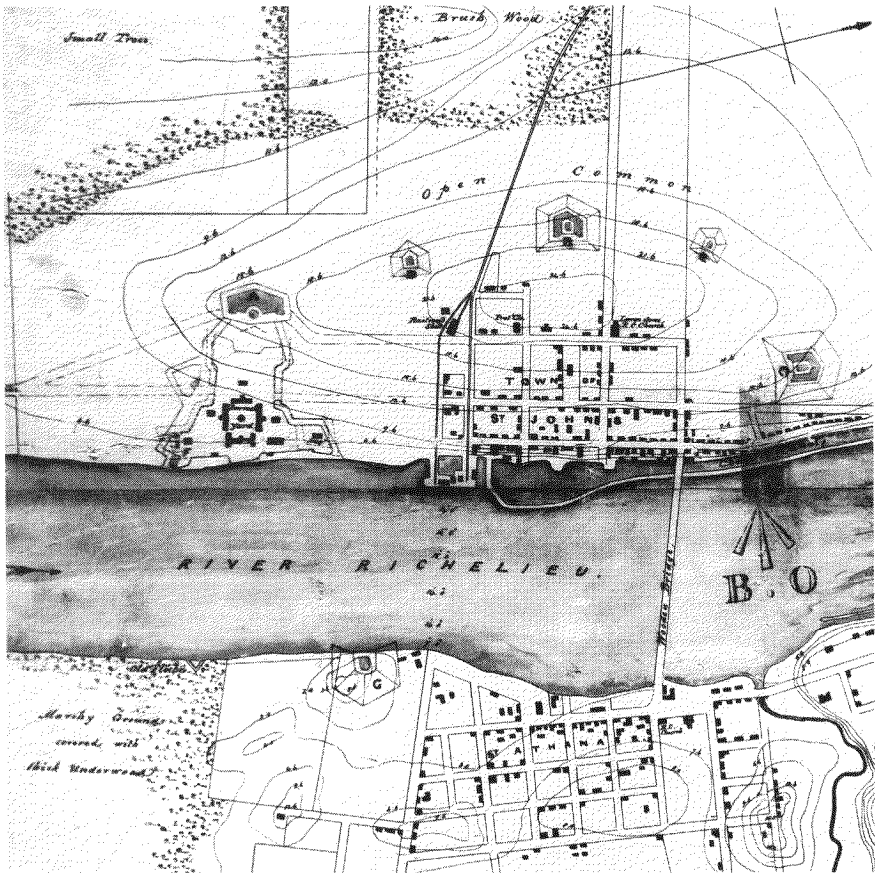
Since Saint-Jean received the support of all those involved who were consulted by Russell, construction of its new fortification was approved in 1841 (Figs. 108 and 109). To avoid speculation, the funds were immediately committed to buy the necessary land.⁴¹ Despite this move, how-

38 *Ibid.*, pp. 311-30, "Memorandum by the Duke of Wellington," 31 March 1841, forwarded to Hill 7 April 1841.

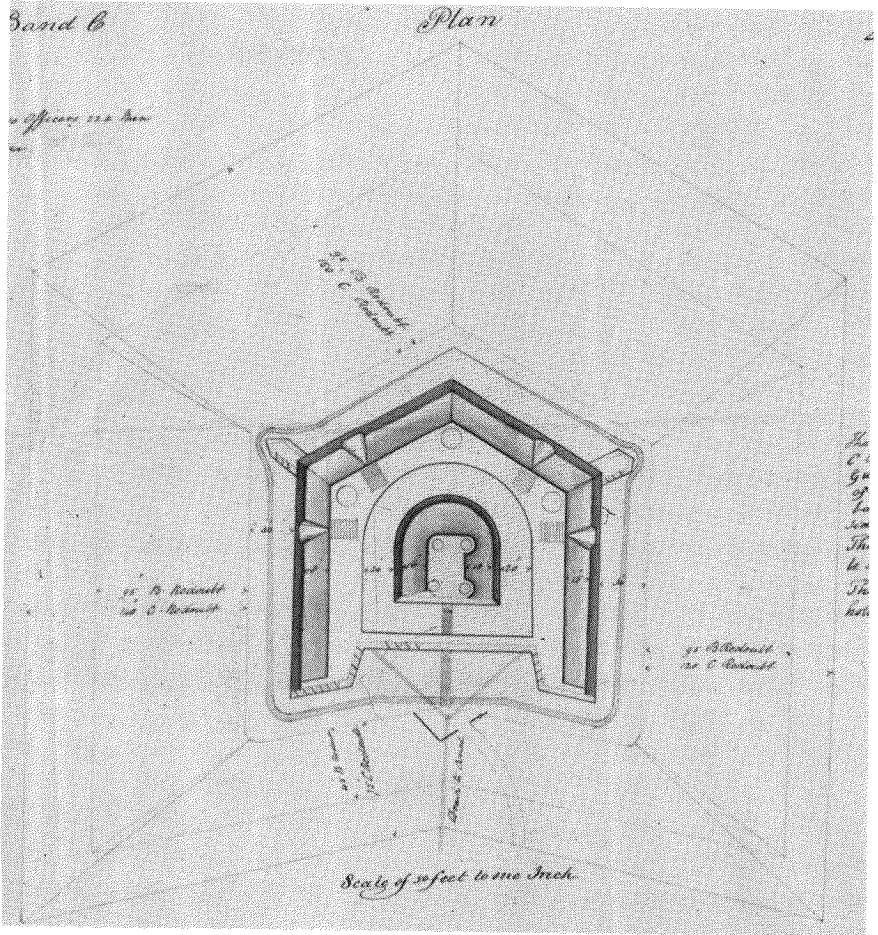
39 *Ibid.*, pp. 332-34, "Considerations on the Defence of Canada," Hill, 5 March 1841.

40 PRO, WO80/11, John Russell to Lord Sydenham, 3 May 1841.

41 PRO, WO1/536, pp. 339-40, Report of the Inspector-General of Fortifications to the Board of Ordnance, 25 May 1841; *ibid.*, R. Byham to J. Stephen, 9 June 1841; WO55/876, fols. 446-50, Report on the Saint-Jean fortification project, J. Oldfield, 12 August 1841. Amherstburg and Niagara also received the Colonial Secretary's endorsement, who thus seemed to favour Vivian's opinion and the propositions expressed by Colborne in 1839 (*ibid.*, pp. 337-38, R. Byham to J. Stephen, 3 May 1841; R. Vernon Smyth to C.E. Trevelyan, 14 May 1841).



108 The new fortification approved for Saint-Jean in 1841. Taking its inspiration from the new defence theories, it had a string of five detached fortifications (redoubts and towers) which ringed the built-up area. Each unit had an infrastructure (rampart, barracks and magazine) which enabled it to offer resistance in isolation for a short period of time. The redoubts were provided with small caponiers at the shoulder angles for flanking the ditches of the adjacent sides. A redoubt was also planned for Saint-Athanase (Iberville) on the other side of the river. (NA, NMC-20727)



109 Plan of one of the redoubts planned for Saint-Jean. (PRO, London, WO55/876, fol. 448)

ever, the works were not started, and the new government in London and a change of command at the Board of Ordnance resulted in a revision of priorities.⁴² New studies were called for!

Murray's Defensive Scheme

The new Secretary of State for War and the Colonies, Lord Stanley, brought new thinking to Canada's strategic defensive, but on an entirely new basis. There was no longer any question of making the defence of Canada subject to the large sums which would have to be invested to carry out the works proposed by the Carmichaël-Smyth Commission. Thus he wished to call into question the old defensive scheme established by Wellington 20 years earlier, according to which the defence of Canada could not be based on the support of naval supremacy on the interior lakes. The arrival and in particular the growing popularity of steam navigation at least enabled this option to be restored. It was in accordance with these terms of reference, therefore, that Stanley asked the Board of Ordnance to reconsider Canada's whole defensive program.⁴³ In doing so he was basing himself on the observations of Sir George Arthur, ex-Lieutenant-Governor of Upper Canada, whom Russell, the former Colonial Secretary, had consulted before leaving office.⁴⁴

Sir George Murray, once again appointed to head the Board of Ordnance in 1841, immediately rethought the whole defensive strategy of Canada.⁴⁵ He reaffirmed, but from a different perspective, the primary importance of Québec, Montréal and Kingston for the defence of Canada. Though Québec still remained the colony's fundamental link with its mother

42 PRO, WO55/877, fols. 386-87, J. Stephen to R. Byham, 31 October 1842; fols. 384-85, R. Byham to F.W. Mulcaster, 9 November 1842; fols. 405-6v, R. Byham to F.W. Mulcaster, 23 December 1842.

43 PRO, WO80/11, Stanley to G. Murray, 29 September 1841.

44 To Arthur, it was necessary to stop the great declarations of principle by the British on the defence and preservation of Canada, which could be considered a demonstration of its weakness. It was therefore a time for action and a first gesture would consist of affirming British superiority on the interior bodies of water. He believed that the Americans did not have such a great advantage in this respect: "The American Trading Steamers, altho' large and swift, are very weakly constructed vessels, and would fall an easy prey to a small squadron of War Steamers, which might be kept in ordinary, and rapidly got, ready for service, provided, their Engines were prepared before hand. These can be constructed perfectly well at Niagara and Montréal, with the exception of the wrought iron shafts which must be sent from England, the necessary machinery for making them not having yet been imported into Canada" (PRO, WO80/11, "Memorandum upon the defence of Canada," G. Arthur, September 1841). Obviously Arthur, because of his previous posting in Canada, also stressed the defence of the western portion of the colony.

45 PRO, WO80/11, "Military Memorandum upon the defence of the Province of Canada," G. Murray, 8 January 1842.

country and with the Atlantic provinces as a way of entry for reinforcements, its location contributed (and this was the first time this was expressed so clearly) to the safe withdrawal of British troops. As well, it became absolutely necessary to keep Kingston if naval ascendancy was to be maintained on Lake Ontario. As for Montréal, the colony's commercial centre, its loss would divide Canada and paralyse all efforts at defence.

Contrary to several of his colleagues or predecessors, Murray did not believe that the main elements of Montréal's defensive infrastructure should be concentrated on the south shore with Saint-Jean as the major defence point. Even if they entered by the Richelieu route, the enemy could not consider pursuing their advance on Québec without first taking Montréal Island. Therefore it was better to try to repel the Americans at Montréal rather than at Saint-Jean, as the St. Lawrence River would make the enemy retreat to their point of origin more difficult. On the other hand, Murray added, if the British decided to construct major fortification works at Saint-Jean and if these were lost to the enemy, they would have the benefit of a very well-set-up depot. It would also make the retreat of the British troops towards Montréal more difficult because of the obstacle the St. Lawrence represented. He added later:

... the country on the right bank of the St. Lawrence should be made, as long as possible, the seat of a desultory warfare, it would not be prudent to risk a [battle] upon that side of the river 1st Because of the danger on engaging in a general action with such a river as the St. Lawrence immediately in rear of the army - and 2dly Because the loss of a battle there, should it occur, would be exceedingly apt to produce a moral effect very detrimental to the defence of the Island of Montréal itself.⁴⁶

Thus Murray preferred to set up the main defensive works on Montréal Island or in its immediate periphery at the edge of the river. On the Richelieu, he realized that Île aux Noix's position commanded navigation from Lake Champlain, but its fort "is a place of no strength and it is also constructed of perishable materials."⁴⁷ He formulated no suggestion for improving the island's fortifications, wishing rather to build a fort at Sorel at the mouth of the Richelieu River to prevent enemy ships from entering

46 *Ibid.*, "Memorandum about the Defences of Canada," G. Murray, 8 September 1845.

47 *Ibid.*, "Military memorandum upon the defence of the Province of Canada," G. Murray, 8 January 1842.

the St. Lawrence. To facilitate communications with the south shore, Murray thought in any case of setting up a bridgehead opposite Montréal, either at La Prairie or another more appropriate spot (see Fig. 106). It was also necessary to improve the defence of the military depot on Sainte-Hélène Island. Lastly, another work at the mouth of the Châteauguay River would help to prevent an enemy flotilla from advancing further on the St. Lawrence River.

Colonial Secretary Stanley seemed satisfied with Murray's expertise, and as Saint-Jean completely lost its importance, he quickly reversed the decision of his predecessor, who had approved the construction of major fortifications.⁴⁸ Île aux Noix with its relatively recent works did not figure in the British strategy. Since the priority had once again been concentrated on Québec, Kingston and Montréal, thought was given to providing corresponding sums in the Board of Ordnance budget for 1843.⁴⁹ But the signing of the Webster-Ashburton Treaty at the end of the summer of 1842, subsequently ratified by Parliament, made expenditures for fortifications useless. In protracted dispute since 1814, the determination of the boundaries between the United States and the British colonies at last became the subject of an agreement.

Holloway's Inquiry and the Reactions of the Board of Ordnance

No sooner were the border problems settled than North American diplomacy found a new source of tensions. The question of the Oregon Territory and the expansionist philosophy of the new American President J.K. Polk revived the concerns of the Secretary of State for War and the Colonies and those of his representatives in Canada. After barely a few months of respite the problem of the defence of Canada surfaced again. It was fuelled by some incidents on the Great Lakes where warships on both sides were rigged, thus contravening the Rush-Bagot Agreement of 1817.⁵⁰ On the Richelieu-Lake Champlain front, the consequences of the 1842 treaty caused the military new concerns. The cession of the Rouses Point area to the Americans and their intention to reconstruct its defensive

48 PRO, WO55/877, fols. 386-87, J. Stephen to R. Byham, 31 October 1842.

49 In fact, sums of £5000 for Québec and Montréal Island, and £10 000 for Kingston, were approved by the Board of Ordnance (*ibid.*, fols. 405-6v, R. Byham, F.W. Mulcaster, 23 December 1842).

50 J.M. Hitsman, *Safeguarding Canada...*, p. 144.

works revived the fears of 1817.⁵¹ Should the role of Île aux Noix or Saint-Jean be reconsidered within the defence plan?

Lord Stanley, who considered it urgent to agree to certain efforts for the defence of Canada without, however, returning to Wellington's expensive plans, first had to overcome the opposition of his Prime Minister:

*A great expenditure as fortifications and Military defences by land might be a protective measure against the hostile disposition and hostile preparations on the Lakes, of the Americans. But the cost of them is not only useless but money thrown away so far as Canadian feeling is concerned. The progress of such defences too is slow - that which is done is so liable to be questioned by Military Men - may perhaps be so inapplicable to purposes of defence, some years hence, against novel methods of attack - that I do not see much prospect of controlling effectually the American tendencies to hostility by costly outlays on land fortifications.*⁵²

Despite the apathy of the government in this matter, Stanley, supported by George Murray, the Master-General of the Board of Ordnance, tried to find a way to solve the problem of the defence of Canada. Lieutenant-Colonel W.C.E. Holloway, who replaced Oldfield as Commanding Royal Engineer in Canada, was asked in 1844 to provide an in-depth examination of the Canadian defensive system within the framework of the major guidelines set out beforehand by Murray.⁵³ The engineer also was to give particular attention to the defence of Montréal Island.

At the same time, the Commander-in-Chief Jackson, concerned himself anew with the defence of the province despite the rejection of his plan in 1840. He created a new commission to reconsider Canada's whole military situation and entrusted this job to Colonel Holloway, who was assisted by Captain Edward Boxer of the Royal Navy.⁵⁴

With these new commissioners, Holloway set rapidly about the task and in the summer of 1844 presented a first draft of his defensive proposals for Montréal Island to Murray. Some months later, he submitted various

51 On the definitive cession of the Rouses Point area, see L.J. Burpee, *op. cit.*

52 Peel to Stanley, 7 September 1844, quoted in J.M. Hitsman, *Safeguarding Canada...*, p. 145.

53 PRO, WO55/880, fols. 748-50, "Confidential Memorandum for the Inspector general of Fortifications," G. Murray, 18 March 1844.

54 Boxer was then in the employ of the civilian government at the Port of Québec. David Taylor, an ex-employee of the Kingston naval base and Lieutenant H.B. Moody, R.E., were also members of the commission (J.M. Hitsman, *Safeguarding Canada...*, p. 144).

reports to Jackson on the defence of Canada as a whole. The situation on the Richelieu was given close scrutiny in these documents.⁵⁵

Holloway and his colleagues agreed with Murray on the importance of Montréal for the defence of Canada. This city was the primary objective of any American attempt. Montréal was the main link to the western part of the province, and for the last while, had been the seat of the colonial government. Holloway therefore reformulated a whole series of measures set out earlier concerning the immediate defence of and the approaches to the island of Montréal. This was, for example, the case with reinforcing the defensive arrangements on Sainte-Hélène Island. On the south shore, he insisted once more on the fortifications which were needed at the mouth of the Châteauguay River, the more so because the new Beauharnois Canal was prejudicial to the protection of this approach to Montréal.⁵⁶

Facing Sainte-Hélène Island at Longueuil, Holloway suggested establishing a bridgehead to protect the link between Montréal and the south shore. He further stressed the possibility of fortifying most of the villages along the south shore of the St. Lawrence to Sorel in wartime. It would be enough to use churches and the main stone buildings so as to provide basic shelter for the troops assigned to this sector. At Sorel, Holloway could see the usefulness of an entrenched camp which would serve to secure the withdrawal of the troops in the event that Montréal was lost, while at the same time acting as an assembly point for the militia and reinforcements to launch a counter-offensive.

Mastery of the Richelieu, the main penetration corridor for an enemy, was for Holloway a priority for the defence of Canada. Since the opening of the canal between Saint-Jean and Chambly, an enemy could use the Richelieu River to take up position on the south shore of the St. Lawrence downstream from Sorel and thereby block communications between Québec and Montréal. A favourable location for this purpose was designated opposite Lanoraie where the river was only about 850 metres wide. The Holloway Commission believed at the time that the Americans would

55 The first document he sent to Murray dates from 27 June 1844; the memoirs forwarded to Jackson are divided into three portions: 9 October 1844, 17 February and 31 May 1845 (PRO, WO55/880, fols. 755-60, "Observations suggested by the perusal of Colonel Holloways report of June 27/44 relative to the defence of the Island and City of Montréal for the Inspector genl," G. Murray, 2 October 1844; WO1/552, pp. 441-69, "Report on the River Richelieu," C.E. Holloway and E. Boxer, 17 February 1845; pp. 471-508, "Report on the Country in the immediate Vicinity of Montréal," C.E. Holloway and E. Boxer, 31 May 1845).

56 With his colleague, Boxer, he notes that "it cannot appear improper or irrelevant to notice the very general and deep regret which is felt from the choice made of the South side of the St. Lawrence for the Beauharnois Canal. In a military point of view, it is exceedingly deplorable" (PRO, WO1/552, p. 476, "Report of the Country in the immediate vicinity of Montréal," C.H. Holloway and E. Boxer, 31 May 1845).

mainly use the water route despite the existence of numerous roads on both sides of the river. Besides, the heavy equipment of the siege and artillery trains could be transported more easily and quickly by boat.

Thus several reasons favoured the restoration or reconstruction of the Île aux Noix fortifications. Contrary to the buildings which were in excellent condition, according to Holloway, the rampart of Fort Lennox, which was supported by a wooden revetment, was showing signs of fatigue to the point of allowing easy scaling. This was despite recent repairs in certain areas. For Holloway and Boxer, Île aux Noix was the only defensive post able to contend with an enemy for the easiest invasion route into the province. Without an adequate fortification at Île aux Noix, an enemy could take this position at leisure and transform it to their advantage into a strong point of the first importance.

The nearness of the main roads linking New York and Albany to Montréal was sufficient justification for the maintenance of the Fort Lennox installations; to that was added the need of ensuring the lodging and refuge for troops patrolling these approaches.⁵⁷ Re-erection of the Île aux Noix fortifications could also provide a counterweight to the American efforts to restore Rouses Point. Finally, the British could not allow themselves to lose Fort Lennox to an enemy because the population would see in it a reason for discouragement, given the importance they accorded this position.

Besides the new works to be carried out, Captain Boxer even suggested digging a passage across the island for the gunboats assigned to the defence of the channels on both sides. To increase control of navigation at the approach of war, a stockade of piles could be set up on each side of the island. It would also be desirable to set up such installations across the river opposite Ash Island and Île de l'Hôpital.⁵⁸ Finally, Holloway added, it was important again to oppose at any price the civilian government's plan to canalize the short distance separating Missisquoi Bay from the Rivière du Sud. Such a canal would make Île aux Noix's position very vulnerable, and it would then run the risk of passing into enemy hands as soon as hostilities started.

As far as Saint-Jean was concerned, although it had been decided not to construct any major work there, Holloway nevertheless noted the strategic importance of this position. It commanded the entrance to the new canal

57 *Ibid.*, pp. 454-55, "Report on the River Richelieu," C.E. Holloway and E. Boxer, 31 May 1845.

58 Holloway did not consider it necessary to build defensive works on these two islands.

as well as the end of the bridge crossing the river and linking to Saint-Jean the roads from the Eastern Townships and the United States.⁵⁹ The engineer suggested constructing a blockhouse and some batteries made of entrenchments at Saint-Jean; these works would be closed at their gorges by guardhouses.

The Chambly Canal provided a very practical communications link both for the military and civilians, but it would become very prejudicial to the defensive plan if an enemy took possession of it. Therefore the destruction of its locks must be planned for in the event that an enemy advanced to this point.

At Chambly itself, Grande Île became once more a likely site for setting up possibly a tower or a blockhouse as a support point for the protection of this area near Montréal. As an important road from Sherbrooke and the Eastern Townships ended at Chambly, Holloway stressed the advantage of setting up on one or other of the banks of the river a battery which could mount three or four pieces of large artillery. The engineer noted as well that Chambly could become, if the authorities so desired, a larger-scale defensive post in conjunction with the bridgehead planned for Longueuil and the strategic position provided by Boucherville Mountain (Mount Saint-Bruno).

Finally, there were several small villages between Chambly and Sorel whose geographical location provided a real command of the navigation channels. As on the south shore of the St. Lawrence, Holloway planned to set up their churches and main buildings for defensive purposes.

In short, Holloway and his assistants set out a defensive system based on the protection and preservation of Montréal's south shore and the Richelieu Valley, which would have to be contested inch by inch without risking useless confrontations, while trying to draw advantage from the enemy's least mistake.⁶⁰ This concept justified the proposal of a very

59 G. Murray had also been very definite on this subject: "For whether the erection of a Fortress at some intermediate point between Isle aux Noix and the mouth of the Richelieu, be deemed desirable or not, in a military point of view, no expectation can be entertained [to which], that the British Government will recommend, if the parliament sanction so large an expenditure as must necessarily be incurred by the construction of a respectable Fort in such a situation, in addition to the other works required in more immediate circumstances with the defence of the Island of Montréal" PRO, WO55/880, fol. 756-56v, "Observations suggested...").

60 PRO, WO1/552, pp. 483-84, "Report upon the Country...." Holloway and his assistants describe the suggested strategy in detail: "it was submitted the Cantonments at St. John's and Chambly might be assisted with small Field works, or Blockhouses as might be of use in Checking the advance of an Enemy's passage, but be of no utility to an Enemy's Army, when our forces might successively fall back on the fortified position at Sorel, or upon the Tete de pont under St. Helens. In proportion as these outposts are pressed by superior forces, the troops must necessarily fall back steadily and, by no means committed in any Battle of doubtful issue, but must retire upon the next position in rear for support to be again enabled

large number of small isolated defensive works to form several lines of obstacles with which to oppose the enemy. These works would generally be made up of small armed entrenchments equipped with blockhouses or towers capable of defensive self-sufficiency for a short period.

The commission chaired by Holloway described in full detail the important role that the navy could play in the defence of Canada. It reaffirmed the hopes raised by steam navigation for the mastery of naval supremacy on the interior lakes of Canada, which contrasted broadly with the defensive scheme set in place soon after the War of 1812 by Richmond, Wellington and the Carmichaël-Smyth Commission.⁶¹

On the other hand, the recommendations relating to the Richelieu River and especially the restored importance given to the Île aux Noix position recalled the situation that existed during the War of 1812 and during the first years of the subsequent peace. The resumption of the American fortifications at Rouses Point was once again the pretext for the defensive reorganization of Île aux Noix with a view to controlling navigation. Further, the popularity of steam navigation and the opening of the canal between Chambly and Saint-Jean in 1845 renewed the importance of the role of the navy in offensive and defensive operations on this front. In such a context, the defensive advantages of Île aux Noix would be evident.

There the parallel with 1818 ends. The evaluation of the various strategic positions on the Upper Richelieu, especially at Saint-Jean and Île aux Noix, no longer had the engineers and the navy opposing each other. Both now sat on the same commission. Besides, the Board of Ordnance's decision not to construct large-scale works at Saint-Jean made even the debate somewhat obsolete, though Colonel Holloway had taken the opposite position in his report.

Holloway's proposals, however, did not gain unanimity among the senior British officers. Obviously, the Commander-in-Chief of the forces,

to dispute the passage. In this manner our forces would retire step by step upon their own resources but always on the look out for seizing upon any advantage, that might offer the Enemy at the same time being gradually drawn or when our outposts should at last fall back upon the main body at one or the other Two fortified Positions which have been just signified or rather before the last chains of posts be passed, if possible, a battle might should circumstances favor such a measure perhaps be hazarded with good effect, as, in the event of reverse there would be works to receive and secure the army, and Naval means at hand and facilities previously prepared either to carry reinforcements from Quebec, or to withdraw the Troops."

61 To reach this objective, Holloway and Boxer add: "we could venture to offer the remark, that, were steam vessels fit for the Lakes in this Province, and dimensions proper for passing through the Lachine and Beauharnois Canals, to be prepared in England, and to be forwarded to this Country upon any Commencement of hostilities, they might apparently be the means, as they could easily be lightened, so as not to draw more than 9 feet water, of enabling us not only to assume the ascendancy on Lake Ontario, but also to attack the Harbours of the United States with much probability of success, and before the American Government (according to existing Treaties) could acquire power to oppose us" (*ibid.*, p. 502).

Lord Cathcart, who had replaced Jackson when he died suddenly, approved the commission's recommendations and deplored the inertia of the British government with respect to the measures to be taken for the defence of Canada.⁶²

At the Board of Ordnance office, Sir George Murray did not seem satisfied with Holloway's work. Though he accepted the engineer's thoughts concerning Montréal and his proposals for Châteauguay, Sainte-Hélène Island, Longueuil and Sorel, he was strongly opposed to the construction of advanced posts on the south shore of the St. Lawrence and along the Richelieu. It should be remembered that for Murray this area was not to have been the theatre of a sustained defensive action since he expected to drive the enemy back from Montréal.⁶³ Murray accepted the idea of repairing the fortifications at Île aux Noix, but probably on a more reduced scale that Holloway hoped:

*... the nature of that Island has been since represented to be such as does not favour the construction of a Military Post capable of making a very protracted defence; and although it would be proper to put the Works there in a condition to prevent its being taken by surprize, or without the aid of artillery, it would seem unadvisable to incur a large expenditure upon it; or to construct it upon a scale which would require more than a Company or two of Infantry for its defence. The Works on Isle aux Noix would, under this view of things be merely a Poste d'Avertissement, but sufficiently strong to require that Heavy Artillery should be brought against it in order to reduce it.*⁶⁴

As for naval supremacy, the senior officer of the Board of Ordnance did not much believe that the British were in a position to achieve it, contrary to the more optimistic remarks of the Holloway Commission.

The basis of Murray's thinking on the defence of Canada rested on the need to establish defensive positions at certain places such as Québec, Montréal and Kingston which were sufficiently extensive to force the

62 See J.M. Hitsman, *Safeguarding Canada...*, p. 148; WO55/880, fol. 401, Holloway to J.F. Burgoyne, 25 March 1846.

63 PRO, WO55/880, fols. 755-60, "Observations suggested..."; WO1/555, pp. 433-40, Murray to Gladstone, 21 April 1846. Murray reiterates all his thinking about the defence of Canada, with a new report presented in September 1845 (PRO, WO80/11, "Memorandum about the Defence of Canada," G. Murray, 8 September 1845).

64 PRO, WO55/880, fols. 755v-56, "Observations suggested...."

enemy to dig trenches and erect batteries to besiege them. These few places of major importance would then have the objective of delaying the enemy in order to gain the time needed to organize troops at the theatre of operations.

The contribution of the militia as a force in support of the regular troops was another major element in Murray's defensive system. Also, the construction of small defensive posts which were capable of sustaining "desultory attacks" by the enemy would contribute to encouraging local forces to take part in the defensive effort.

Confiding in Henry Goulburn in September 1845, Murray remained very skeptical about the defence of Canada in the event of a war with the United States partly because of lack of support from the local population. Further, he expressed his confusion at the difficulty of solving the question of the nature and quantity of fortifications to be built.⁶⁵ He commented that the engineers could not limit themselves in proposing very large-scale works. These projects called for impressive spending and, as a result, were almost never realized. The strategists therefore turned to works of a temporary nature (for example, blockhouses), which were less costly but were put out of action when war started. Murray concluded that this was what explained the delays in setting up an adequate defence system in the British North American colonies.

Despite his skepticism, Murray asked Holloway for approximate estimates for the proposed works, including those at Saint-Jean and Chambly, so as to be in a position, he said, to make a definite decision. For Île aux Noix, besides the restoration of the revetments which was undertaken in 1842, an estimate was now wanted for the works necessary to protect this post from a raid.⁶⁶

In January 1846, the Inspector-General of Fortifications, J.F. Burgoyne, submitted the estimated expenditures for the year 1846-47, and included a sum of £40 000 for the new fortifications at Île aux Noix.⁶⁷ For Saint-Jean he estimated the amount of £20 000.

The impetus for constructing fortifications in Canada, which had revived right after the 1842 treaty, was once more stifled by the signing of an agreement in Washington on 15 June 1846 which put an end to the

65 PRO, WO80/11, G. Murray to H. Goulburn, 3 September 1845.

66 PRO, WO55/880, fols. 748-48Bv, "Memorandum for the Inspector General of Fortifications," G. Murray, 12 September 1845.

67 PRO, WO80/11, J.F. Burgoyne to G. Murray, 2 January 1846. The same budgetary estimates devote £80 000 to the works on Sainte-Hélène Island and £20 000 for the bridgehead at Longueuil.

controversy over the Oregon Territory. This treaty resulted in the cessation of all defensive works in Canada at the end of 1846.⁶⁸ Besides the formulation of new plans for Île aux Noix during this period, the repair of the revetment of Fort Lennox had already begun.

New Defensive Plans for Île aux Noix

Associated with the negotiations on the border between the United States and the British provinces as well as with the Oregon question, the exercise in strategic thinking resulted in a re-evaluation of the role of Île aux Noix within the overall defensive system of Canada. Even Fort Lennox's defensive objective was questioned. Should a defensive infrastructure be maintained there, as was the case originally, which would be capable of resisting a siege supported by strong artillery or should the objective simply be protection against a sudden attack or raid?

Towards 1840, the state of the Île aux Noix fortifications no longer made either form of defence possible. Various portions of the wooden revetment were collapsing more and more, making the rampart vulnerable to artillery projectiles and making scaling easier. Between 1842 and 1844, the repairs made to the revetment were proof of the intent to maintain a first-class defence against an attack supported by artillery.⁶⁹ The addition of a horizontal fraise in the places where the escarp had lost its more abrupt slope also showed a concern to prevent scaling. These works, however, were only temporary measures to stop the dilapidation of the rampart for awhile.

The opening of the canal between Saint-Jean and Chambly and the resumption of the American works at Rouses Point once again focused the interest of the strategists and engineers on Île aux Noix, the only obstacle to Americans' going down the St. Lawrence River by the Richelieu route. Further, the decision of the Secretary of State for War and the Colonies, who was supported by the Board of Ordnance, to stop the works planned for Saint-Jean contributed to favouring this renewal of attention for Île aux Noix. As early as the summer of 1844, Holloway was called on to study the defence of Île aux Noix more closely.⁷⁰

68 G.A. Steppier, "Quebec, the Gibraltar of North America?" p. 123.

69 See the preceding chapter.

70 PRO, WO55/880, fols. 761-64, W.H. Holloway to F.W. Mulcaster, 26 July 1844.

Despite the imperfect state of the ramparts, it was now possible to visualize improving them at a moderate cost, at the very least making them capable of resisting an assault or scaling more adequately. Holloway suggested replacing the horizontal fraises on the faces and flanks of the bastions by a palisade pierced with loopholes, behind which two firing levels would be set up in a sentry passageway (Fig. 110).⁷¹ Holloway suggested the same change for the faces of the south ravelin. The counterscarp could be rebuilt with a gentle earth slope covered with sod.⁷²

These proposals would require an investment of scarcely £3000. Ideally, Holloway added, the construction of a masonry tower would serve as final reduit and as a cavalier.⁷³ But this work would call for an additional expenditure of £10 000.

Although the works proposed by Holloway drew their inspiration from the report of the Inspector-General of Fortifications in 1831 for protecting Île aux Noix from a raid (they differed in the more temporary nature of the materials suggested by Holloway), they were not ratified by London.

Not satisfied, the Board of Ordnance enjoined Holloway to submit a new project which would take into account the precise imperatives defined by the Master-General of the Board of Ordnance and the Inspector General of Fortifications.⁷⁴ The new proposal was to bring Fort Lennox to a state where it would be capable of resisting a raid or a surprise attack, and therefore of forcing the enemy to use their artillery. Without incurring excessive costs, the plan was also to require a garrison of only two companies of infantry at the very most. The prescriptions were even more precise: while preserving the present fort design, the Inspector General of Fortifications asked Holloway to plan an interior musketry firing gallery that would join all the existing buildings of Fort Lennox and to plan casemated flanks for each of the bastions.

Holloway's new proposal, submitted in April 1845, followed the instructions of his superiors to a great extent (Fig. 111).⁷⁵ He planned the

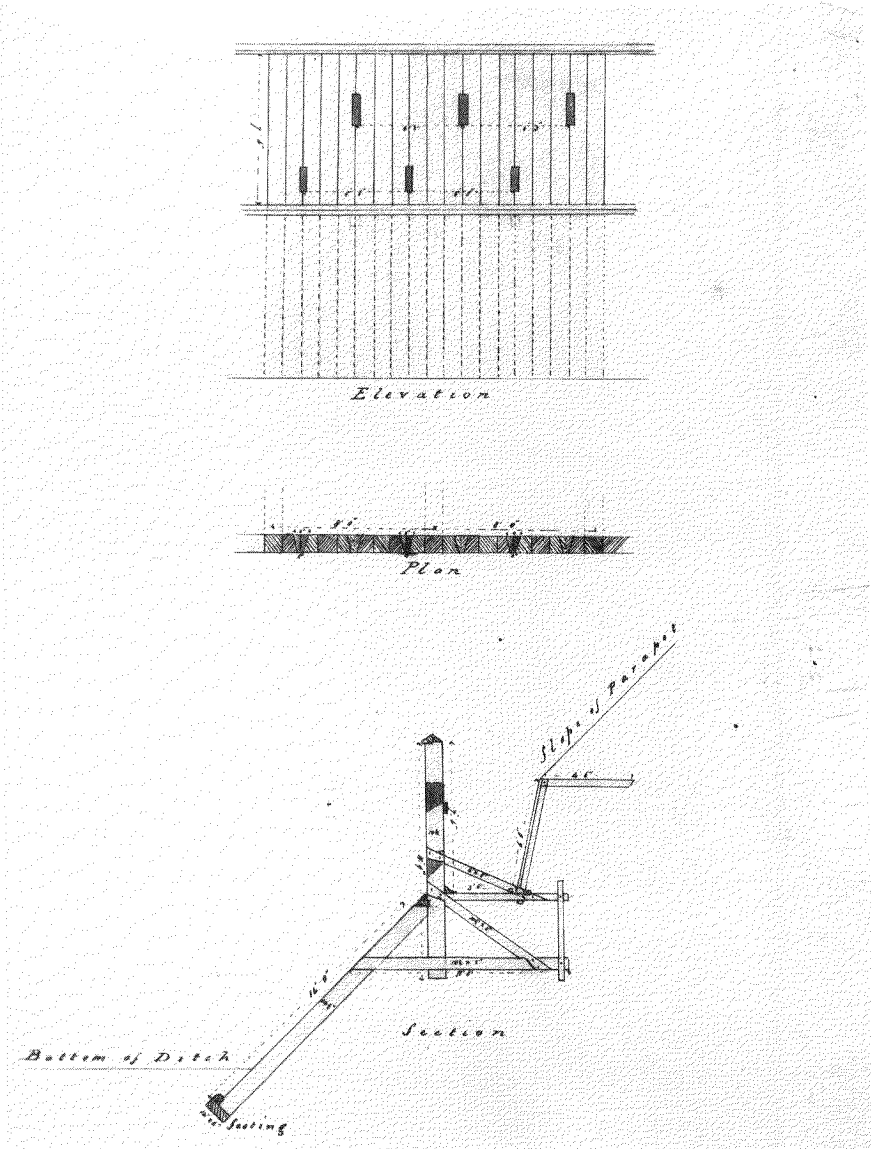
71 This new arrangement implied the complete rebuilding of the revetment around the whole perimeter of the fort, in accordance with the method used in 1843, since the palisaded passageway would be situated at the top of the pieces of revetment lying at a 45° angle to the ground.

72 Holloway also asked to have the top of the cunette widened from 12 to 18 feet, since with its current dimensions it was constantly filled with mud.

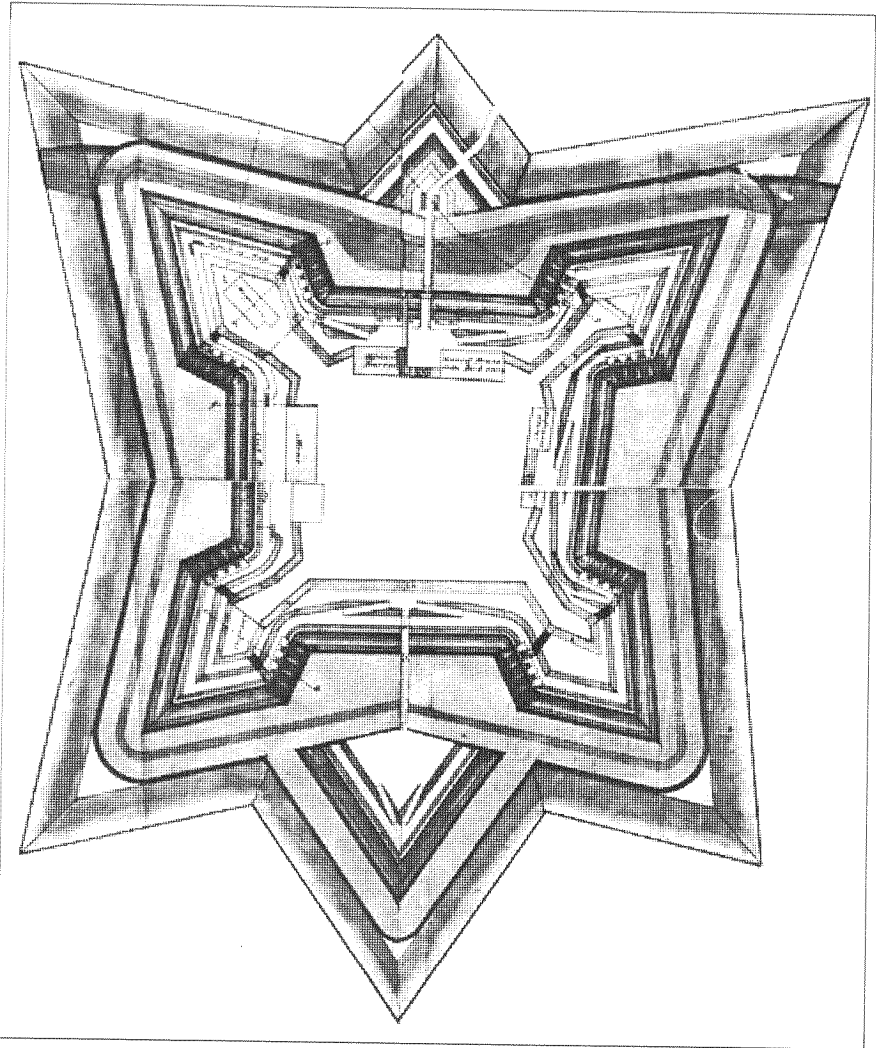
73 Recalling Nicolls's original proposition in 1816 to this effect, Holloway indicated that the fears of subsidence which had justified stopping the work were no longer well founded. Therefore he suggested reusing the foundation in the southwest bastion which had already been begun, which would lead to a reduction in the cost of building the tower.

74 PRO, WO55/880, fols. 366-70, W.H. Holloway to F.W. Mulcaster, 28 April 1845.

75 *Ibid.*



110 Plan for a sentry passageway at Fort Lennox (1844). A palisade with loopholes would replace the rampart's horizontal fraises on the faces and flanks of the bastions. Engineer Holloway, who wished to improve Fort Lennox's defensive capability in this way against assault or scaling, set about producing a sentry passageway at the same time. (PRO, London, WO55/880, fol. 767A)



111 Another proposal by Holloway, the engineer (1845), for sheltering Fort Lennox from a raid. In addition to the construction of a second level of casemated flank, the plan included constructing a vaulted shooting gallery with loopholes on the inner perimeter of the fort, and which would link all the existing buildings. It also included widening the cunette in the ditch of the north front to permit the free movement of small warships from one channel to the other. In addition, the engineer planned the construction of a reduit inside the place of arms. (*PRO, London, WO55/880, fol. 371; computer adaptation by Richard Paquet, Parks Canada*)

construction of a vaulted musketry firing gallery which would join the ends of each of the buildings along the curtains, so as to make interior movement possible along the whole perimeter of the fort. This gallery was a few feet from the terreplein at the base of the interior talus of the rampart and provided two musketry firing levels. The first, inside the gallery, was through the loopholes piercing both side walls and allowed the defenders to contest the enemy position, whether it was between this gallery and the rampart on one side or on the parade ground on the other. The construction of a parapet at the top produced the second musketry firing level, assuring complete coverage of the terreplein and of the interior of the parapet from the rampart.⁷⁶

As was prescribed by Mulcaster, Holloway's proposal also included the construction of casemated flanks under the existing ones, thus reinforcing Fort Lennox's flanking infrastructure by carronade fire.⁷⁷ Access to these casemates would be by corridors joined to the interior gallery of the fort. The engineer also planned a cavalier for the northeast and southwest bastions in order to provide additional command to each end of the fort. Equipped with large pieces of artillery, these cavaliers would prevent the approach of the enemy and would resist any surprise attack or assault. Holloway again took up his plan to build a masonry tower, this time at the centre of the fort. He noted that such a work would protect the fort from an attack and would make a siege difficult!

Another element he planned was a *reduit* armed with heavy artillery inside the parade ground on the north face; this would produce a second level of artillery fire on this side and an additional obstacle on this front.

Finally, Holloway endorsed the suggestion of his navy colleague, Captain Boxer, to build a shelter for the gunboats or other steamships intended for the defence of the navigation channels. To do this, he suggested widening and deepening the *cunette* on the north face and digging a canal across the *glacis* on both sides of the fort which would connect with either channel of the river. The parade ground *reduit* and the casemated flanks on this north face would provide additional cover for the passage of these

76 Holloway did not place the top of the parapet of the gallery in a position of command (that is, higher) in relation to the top of the rampart in front, in order to remove this new work from the view of the enemy guns, which were placed at a distance. As a result, to attack this gallery and its upper level, the enemy first had to take up a position on the top of the rampart or the terreplein.

77 Holloway tried to anticipate every situation. During the winter, the accumulation of snow in the ditch risked making an enemy assault easier. Therefore he recommended clearing the entire ditch. In case the enemy arrived before this was completed, he suggested at the least clearing the fields of fire of the casemated flanks, so as to take the enemy in *enfilade*.

small boats. The earth excavated would serve to rebuild the counterscarp with a gentle slope.

Additional quarters for the officers and hospital and warehousing needs (until then located in dilapidated buildings outside the fort), could be set up in the musketry gallery, which would be intentionally widened in certain places.

The summary estimate of this new project amounted to nearly £40 000, to which must be added £10 000 if the central tower was accepted. Such an estimate was far from satisfactory to the authorities of the Board of Ordnance, who were not willing to agree to such a large investment to improve the Île aux Noix fortifications. Holloway's proposal also involved a garrison of 400 soldiers, double that envisaged by the authorities of the Board of Ordnance.⁷⁸

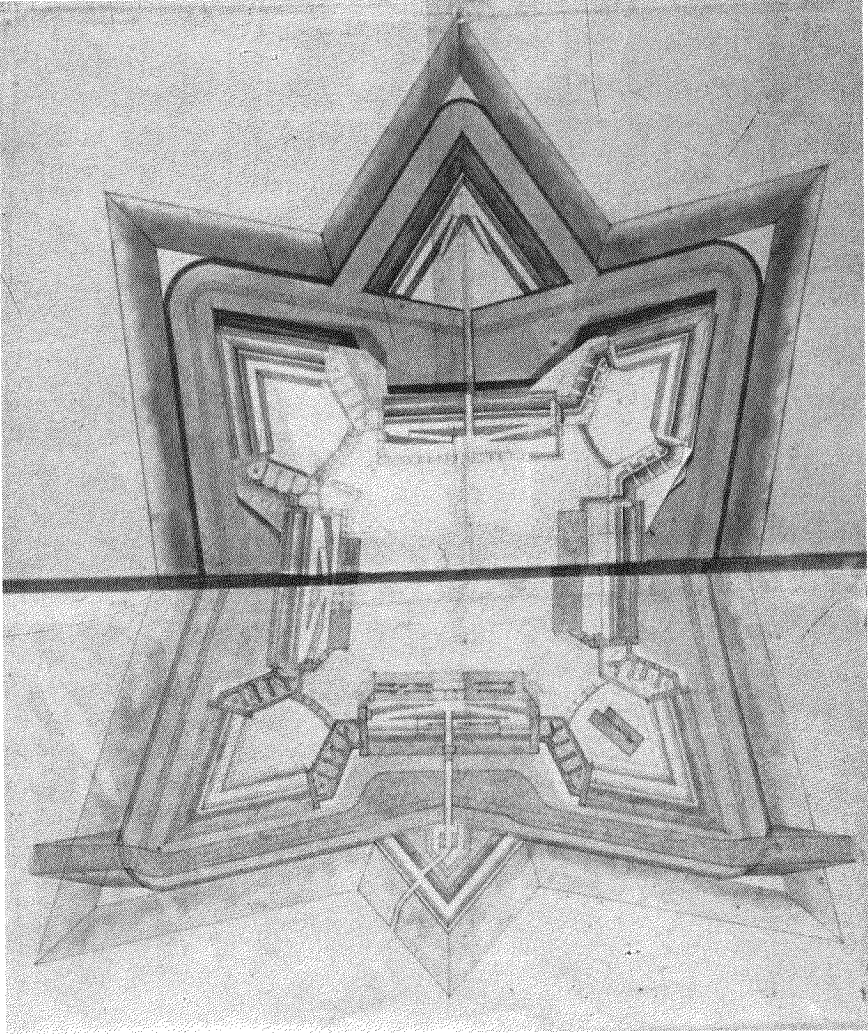
Without categorically opposing the project, Mulcaster reproached Holloway for having given the interior gallery too extensive a trace by extending it along the whole perimeter of the fort.⁷⁹ The Inspector-General of Fortifications was thinking rather of segments of gallery at the gorges of the bastions and the ends of the curtains joining the casemated flanks to the buildings while retaining interior movement around the periphery of the fort. Mulcaster also criticized Holloway for not having entirely followed the Board of Ordnance's instructions, especially in the matters of the troops necessary and the funds required. Therefore he asked Holloway to consult with the Commander-in-Chief of the forces in Canada in order to find a possible compromise between the requirements of the head of the Board of Ordnance, George Murray, and the strategic and tactical requirements of the defence of the Montréal border.

After the required consultations with Commander-in-Chief Cathcart, and confident of his support, in November 1845 Holloway resubmitted to the new Inspector-General of Fortifications J.F. Burgoyne, his plan for Île aux Noix — corrected as Mulcaster wished by the reduction of the musketry firing gallery (Fig. 112).⁸⁰ Cathcart's agreement was based on the fact that the Île aux Noix fortification was not only to be able to resist an assault or a raid, it was also to be in a position to prevent an enemy advance by the water route. Consequently, Cathcart did not hesitate to accept

78 According to Holloway, this figure of 400 soldiers was equivalent to the quartering capacity of the Fort Lennox barracks.

79 PRO, WO55/880, fol. 366-66v, Commentaries dated 26 May 1845, written in the margin of Holloway's letter to Mulcaster, 28 April 1845.

80 *Ibid.*, fols. 360-62, W.H. Holloway to J.F. Burgoyne, 12 November 1845.



112 Holloway modified the shooting gallery planned for Fort Lennox. It was reduced to a series of small segments linking the buildings to the gorges of the bastions. (*PRO, London, WO55/880, fol. 371*)

Holloway's proposals, even if they went beyond the objectives defined by Murray, who was head of the Board of Ordnance. After this bureaucratic beating around the bush, the Board of Ordnance agreed to include in the budgetary estimates for the year 1846-47 a sum of £40 000 for the works on Île aux Noix.⁸¹

Lord Cathcart followed up his move further. In keeping with Île aux Noix's strategic primacy at the entrance to the Richelieu, he asked Holloway to provide him with the details of a plan for defensive works of a temporary nature, which he would have the power to authorize in the event of a premature outbreak of war with the United States.

Responding to the request of the Commander-in-Chief, Holloway produced a new project but still based it on the objective of defence against assault (Fig. 113).⁸² First, he planned the construction of two blockhouses at the gorges of the bastions which were most exposed to the south.⁸³ These works would be joined to one another and to the existing buildings by a palisade erected so as to produce two levels of musketry fire, with the upper level directly facing the terreplein of the rampart. The whole would form a continuous enceinte inside the rampart of Fort Lennox and would be able to produce sustained fire to resist an assault or a raid. As the parapet of the rampart was dilapidated in several places to the point of being ineffective, Holloway suggested raising a second palisaded parapet of smaller dimensions on the terrepleins of the bastions' faces and flanks.

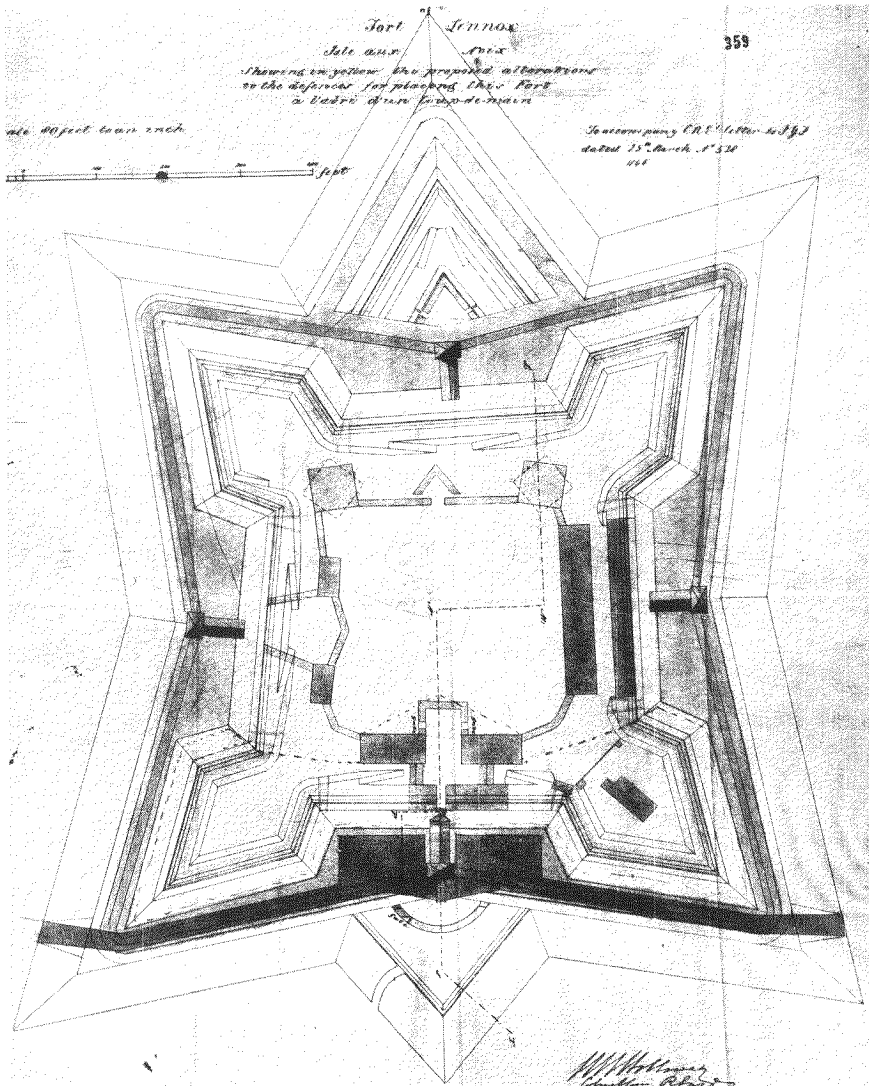
The engineer wanted to add more flanking elements by setting up in the ditch in the middle of each face, caponiers pierced with loopholes⁸⁴ and placed perpendicular to the curtains. Further, the ditches would be cleaned of the accumulation of mud, and Holloway repeated Captain Boxer's proposal to widen the cunette of the north face to shelter the small warships assigned to the defence of the river. Finally, the ravelin at the south and the place of arms at the north would be equipped with palisaded reduits. In the ravelin, the reduit would have a trace similar to the faces, while in the place of arms the reduit would have a semi-circular trace.

81 *Ibid.*, fol. 360-60v, G. Murray's notes to the Inspector-General of Fortifications, 8 December 1845, written in the margin of Holloway's letter to Burgoyne, 12 November 1845.

82 Even though Cathcart, the Commander-in-Chief, had ordered him to carry out this project, Holloway nonetheless submitted it to his superior, the Inspector-General of Fortifications (*ibid.*, fols. 352-53, W.H. Holloway to J.F. Burgoyne, 25 March 1846).

83 Holloway prescribed an area of 30 by 30 feet for these blockhouses with ground floors of masonry.

84 As the ditches of Fort Lennox were filled with water, the erection of these caponiers justified the choice of a particular construction technique. The foundations and the walls would be made from a wooden coffer, filled with stone up to the highest water level, and with earth on top. The wooden roof would be shellproof.



113 An extremely simplified proposal (1845) for enabling Fort Lennox to resist a raid. Temporary works, whose construction could quickly be approved if an emergency situation arose, were to be built up inside the ramparts. Two blockhouses would be erected at the gorges of the south bastions and a palisade with two levels of musketry fire would connect all the buildings, including the two new blockhouses. Holloway also suggested constructing caponiers as perpendicular flanking elements. (PRO, London, WO55/880, fol. 359)

The cost estimate for this proposal amounted to nearly £7000, a fairly large sum considering the temporary nature of the works and the protection they would provide.⁸⁵ Holloway justified this sum by the fact that the blockhouses and the caponiers, because of the nature of their design, could be integrated into a later complex of a more permanent nature built at Fort Lennox. The authorities of the Board of Ordnance, including Murray and Burgoyne, held somewhat differing opinions and noted that carrying out this project of temporary works would have the effect of delaying and harming the erection of permanent works. Agreeing with the Commander-in-Chief's objective of ensuring for Île aux Noix a defence capable of stopping an enemy's naval advance, Burgoyne and Murray visualized instead the possibility of simply entrenching the north face of Fort Lennox or surrounding it with a palisade and digging out the cunette as suggested earlier.⁸⁶

The 1846 Washington Agreement on the question of the Oregon Territories, and especially the calming of relations with the neighbours to the south, meant that Cathcart was no longer justified in authorizing such temporary works. For a certain time at least, any desire to add new defensive elements, even permanent ones, to Fort Lennox died down. Yet, although the numerous plans set forth over all these years were not carried out, they still represented the true picture of British strategy and the defensive role given to Île aux Noix in the middle of the 19th century. Lack of funds always seemed to be the major obstacle to their actualization.

The works on the revetments of the rampart in 1842-44 are proof of the authorities' wish to maintain the initial defensive objective of Fort Lennox. The reconstruction of part of the rampart and the parapet made the works capable of resisting a siege, even one supported by strong artillery. On the other hand, the revetment technique that was preferred fixed on an escarp with a much more gentle slope at 45° made scaling easier. That justified adding a horizontal fraise at the top of the escarp. Despite these works, Fort Lennox no longer retained all its original defensive qualities.

Holloway's proposals in 1845, which stemmed from his superiors' precise recommendations, probably confirmed the reduction of the defens-

85 PRO, WO55/880, fol. 356, "Estimation of the probable expense of carrying into effects alterations for sheltering Fort Lennox Isle aux Noix à l'abri d'un Coup de Main," 31 December 1845.

86 *Ibid.*, fols. 352-53, Commentaries by J. F. Burgoyne and G. Murray dated 16 and 22 May 1846, annexed to Holloway's letter to Burgoyne, 25 March 1846.

ive role of Fort Lennox to one of protection against assault or surprise attack. Unlike a siege, an assault is characterized by a heavy attack supported by a large number of troops and implies a rapid move against the objective. Holloway's plans were a precise response to this tactic. They all included a vertical enceinte providing the necessary cover for the defenders against troops who had no artillery. Besides, the superposition of several levels of musketry fire assured a concentration of fire on the enemy, whatever his position. None of the new works proposed was capable of resisting an artillery attack.

This sort of ambiguity about the defensive role of the fort, which was reflected by the works of 1844-46 and the subsequent projects, expressed the indecision of the military with regard to fortification costs in Canada. On one hand, Murray at the head of the Board of Ordnance defined a defensive objective for Canada and in particular for Île aux Noix that reduced British expenditures. To this end he ordered a smaller-scale fortification for Île aux Noix, limiting the defensive objective to protection against assault. On the other hand, Holloway and Cathcart did not have the same budgetary constraints and defined a broader objective for Île aux Noix, where the fortification was to contribute to stopping an enemy, whatever method was used.

Lastly, it is not part of my purpose here to analyse these proposals and to set them in the wider context of the development of fortifications, since the works were not built. One should note, however, in this connection that one of the plans presented by Holloway included using the caponier as a perpendicular flanking element, and that this called on new defensive ideas which were taking shape and being taught in Europe in the course of the 19th century.⁸⁷

Towards a First Withdrawal of the Île aux Noix Garrison

With the settlement of the Oregon question, a period opened up that was marked by an increased questioning of Great Britain's colonial link with its North American colonies. On the political scene in the home country, the growing influence of the supporters of free trade speeded up this

⁸⁷ On the advent of perpendicular fortification which progressively replaced bastioned works, see also Ian V. Hogg, *Fortress: A History of Military Defence* (London: Macdonald and Jane's, 1975).

process and even brought about a change of attitude: interest in the North American colonies and especially in the moral and economic obligation of providing for their defence, which had been reaffirmed so many times since the beginning of the 19th century, gradually faded. It was this context that predominated in 1847 on the arrival of the Governor General of Canada, Lord Elgin, whose mission was to put in place responsible government. Behind this ostensible political concession a whole other aspect could be discerned: the home country counted on increased participation of the local government in the defence effort in return.⁸⁸

The Treaty of Reciprocity signed with Washington in 1854 stemmed from the same political view of the colonial link. It is true that this idea of commercial reciprocity also had its origin in Canadian discontent over abrogation by Parliament of the protective Corn Laws. This agreement also reflected the home country's wish to smooth over all diplomatic difficulties on the North American continent, especially on the issue of coastal fisheries. The speeding up of the negotiations with Elgin in 1854, at the moment the Crimean War was breaking out, is evidence of this.⁸⁹

As early as March 1854 the Crimean War turned the attention of the military away from the North American continent. The result was an appreciable reduction in British troops garrisoned in Canada. As well, this war pushed the Canadian government into creating, though not without a great deal of resistance, a defensive force distinct from the British troops.⁹⁰ This met to some extent the home country's wish to lead the Canadian population progressively into sharing the costs of defence.

In the Upper Richelieu as on the other borders, the Treaty of Washington had slowed down military activity. The Île aux Noix garrison, which had remained above 200 since the rebellion, fluctuated between 150 and 220 men between 1845 and 1850, at the same time as a gradual withdrawal of British infantry was taking place in favour of the Royal Canadian Rifles.⁹¹ This regiment was essentially made up of regulars who wished to receive postings exclusively in the colonies. The strength of Fort Lennox was

88 According to the historian C.P. Stacey, "There are no grounds for saying that Grey granted responsible government to the colonies merely because he hoped that to do so would relieve the mother country of expense and set free additional troops to defend her shores; but there is no doubt whatever that in his mind the two things went together and that he envisaged the assumption of larger responsibilities by the colonies as an important result of the concession" (*Canada and the British Army, 1846-1871; a Study in the Practice of Responsible Government*, revised ed. [Toronto: University of Toronto Press, 1963], p. 65).

89 On the Reciprocity Treaty of 1854, see D.C. Masters, *Le traité de réciprocité, 1846-1911* (Ottawa: Société historique du Canada, 1973), pp. 1-6.

90 C.P. Stacey, *Canada and the British Army, 1846-1871...*, pp. 114-16.

91 C. Rioux, "L'armée britannique au fort Lennox....," pp. 86-101, Appendix A.

reduced to 130 in December 1851 and to 84 in September 1854.⁹² During the Crimean War and until 1857, the garrison consisted only of some 30 soldiers of the Royal Canadian Rifles. At Saint-Jean, while a large barrack centre which had been built in 1839 quartered more than 650 soldiers in 1841, the garrison dropped to 300 in 1847, to less than 200 in 1850 and to 100 in 1852.⁹³ It was completely withdrawn during the Crimean War.

Despite the period of calm, the defensive situation on the Upper Richelieu and especially the state of the Île aux Noix fortifications, which were the only defensive work on this border, continued to be monitored by the military. The military engineers were still opposing the improvement of the area's road network in 1848. Holloway, the Commanding Royal Engineer, signified his opposition to a proposal to construct a road through the marshy land on the right bank of the Richelieu opposite Fort Lennox to facilitate supplying the garrison; he claimed that this marsh was a defensive advantage to Île aux Noix since it helped to make an artillery bombardment impossible from that piece of land. Even though the fort no longer retained its former reputation for defence, he added, control of the approach from the east side must be maintained and assured with vigilance.⁹⁴

Still in 1848, the Commander-in-Chief in Canada repeated his request to Holloway to present him with a plan to make Fort Lennox capable of resisting a raid. Even though the border situation had caused no apprehension since 1846, he was still anxious about the isolated activities of certain patriots:

*... it is at least that the elements of mischief which were afloat within and without the Colony in the middle of the present year, may still be alive, although latent, and may at any moment be recalled into activity by a similar coincidence of circumstances to that which then existed.*⁹⁵

Holloway then proposed transforming the south face of Fort Lennox, where a part of the rampart had been restored in 1842 during the work done on the revetments, into a sort of reduit.⁹⁶ To do this, it would be enough to entrench the interior of this side of the fort with a palisade which

92 *Ibid.*, pp. 75-79.

93 *Ibid.*, pp. 19, 102-17.

94 NA, RG8, I, Vol. 464, pp. 208-9, Holloway to the Respective officers of Ordnance, 16 June 1848.

95 PRO, WO1/561, fol. 147-47v, J.A. Vesey Kirkland to Holloway, 23 December 1848.

96 *Ibid.*, fols. 137-39, W.C.E. Holloway to J.F. Burgoyne, 14 October 1848.

was divided in the middle by a guardhouse.⁹⁷ Holloway also suggested restoring the horizontal fraises outside the rampart and setting up a second guardhouse inside the ravelin. All this would require an investment of nearly £400.⁹⁸ In conjunction with the Fort Lennox buildings, which included a casemated storey, the Île aux Noix fortification would then be in a position to oppose any "irregular assault," Holloway added. Carrying out these works would require a garrison of 200 to 250 soldiers, a strength slightly above the number of troops who were then quartered on the island.⁹⁹

Because of the nature of the proposed works, this new project continued in spirit with the proposals left in plan form in 1845.¹⁰⁰ These new works were accepted by the Commander-in-Chief and submitted to the authorities of the Board of Ordnance in London, who wondered about the suitability of such a proposal, especially since the colonial situation had not justified immediate action in the area of fortification since 1846.¹⁰¹ The Marquis of Anglesey's recommendations caused some surprise after the many times his predecessor at the Board, Murray, had taken a position between 1840 and 1845:

*This is really an affair of Finance and therefore the decision of the Secretary of State for the Colonies must be sought for. As a military question, I am bound to say that the position of the Isle aux Noix is of the utmost importance, and it ought to be well fortified at a very heavy expence [sic]; but that is, I fear, impracticable. It is however, now intenable against any thing like even Irregular Troops. The minimum sum of £397 might place it in a tolerable state against a Coup de Main, and that is what I would venture to recommend.*¹⁰²

Lord Grey, the Secretary of State for War and the Colonies, finally rejected the proposal, justifying his decision by the climate of détente then existing in the North American colonies.¹⁰³

97 This guardhouse, a one-storey, horizontal hewn log building, would have crenelled loopholes on top.

98 For better effectiveness against assault, Holloway notes that an additional £30 would make it possible to add a second level with loopholes to the guardhouse. Ideally, the construction of a blockhouse would be more beneficial; this would, however, add a figure of £380 to the initial estimate.

99 In October 1848, there were 172 soldiers at Fort Lennox (C. Rioux, "L'armée britannique au fort Lennox...." p. 96).

100 One should remember that following Holloway's last proposal in 1845, the Inspector-General of Fortifications had suggested simply entrenching the north front of Fort Lennox.

101 PRO, WO55/882, fol. 104-104V, Byham to the Inspector-General of Fortifications, 26 March 1849.

102 PRO, WO1/561, fol. 149-49v, Note addressed to Grey, 5 March 1849.

Under these circumstances, the presentation in April 1849 by Captain R.C. Moody, R.E., of a new report on the defence of Canada raises certain questions as to the relevance of such a document, unless it was the author's wish to attract the attention of someone in authority with a view to promotion or a later favour.¹⁰⁴ Moody proposed completely reconstructing the works on Île aux Noix and then providing it with strong artillery.¹⁰⁵

Of course, the engineer's report would remain a dead letter.¹⁰⁶ By 1855 the fortifications of Île aux Noix, like the posts of Saint-Jean and Chambly, no longer provided an adequate defence.¹⁰⁷ Two years later, Île aux Noix completely lost its military role in favour of a reform school for youths.¹⁰⁸ This would be Île aux Noix's new role until 1862, when the American Civil War brought Fort Lennox once more under military control.

The American Civil War

The American Civil War revived strategic discussion in Canada, and with it the old problem of colonial participation in the defence effort resumed. Beyond the fears raised by the war and the concrete measures to be taken

103 *Ibid.*, fol. 134, Note from Grey, 13 March 1849.

104 PRO, WO55/883, fols. 421-41, "Memoranda on Canada," H.C.B. Moody, 9 April 1849. Moody's report was presented to Lieutenant-Colonel E. Matson, deputy adjutant-general of the Royal Engineers in England who, by his appointment, determined the postings of the various engineer officers. It is revealing that Moody's report did not go up the usual chain of command, namely the Inspector-General of Fortifications and the Master-General of the Board of Ordnance.

105 PRO, WO55/883, fol. 428, "Memoranda on Canada," H.C.B. Moody, 9 April 1849. Moody took up several of the proposals presented from 1840 to 1845; at least he again identified the sites of works to be built. The originality of his discourse lies in identifying the two main methods of "attack" available to the Americans. First, by agitation they could try to rouse the population of Canada, especially the French Canadians. As a remedy, he suggested nothing less than destroying that nation: "By destroying the use of the French language and throwing in an English population among the French & between them and the Americans, I would almost predict that in 1 or 2 generations the leading features of their nationality would be destroyed & then would no longer be a dormant weapon that might be used against us at any time" (fol. 423-23v). The Americans' second method lay in making annexation inevitable by the joint construction of major works useful to the public such as the Montréal-Portland Railway and the Niagara suspension bridge. To remedy this, in future all public works in Canada would have to be submitted to the expert opinion of military engineers for them to judge their impact in defensive terms. Moody concluded that if the British troops were withdrawn from the colony the annexation of Canada to the United States was inevitable.

106 Like Moody, another military engineer, Lieutenant Browne, showed a creative mind by presenting a plan to fortify Grande Isle in Chambly Basin (Fig. 114). Though not part of a strategic or tactical discussion on the defence of the Richelieu, this project is of a certain interest in the sense that the author puts together a defensive complex which could be qualified as transitional, since it used the bastioned fortification together with the caponier, that new perpendicular flanking work. The complex planned by Browne included quarters for 600 soldiers and 200 cavalymen, while the Chambly garrison consisted of scarcely 60 British soldiers, a figure which was reduced to zero in 1853! (C. Rioux, "L'armée britannique au fort Lennox..." p. 15).

107 NA, RG8, I, Vol. 469, p. 209, Report of the Commanding Royal Engineer in Canada, 15 November 1855.

108 *Ibid.*, Vol. 472, p. 37, A. Dickson to C. Alleyn, 1 October 1858.

to allay them, various study commissions were called on to re-evaluate the Canadian defensive system, with the additional mission of apportioning the home country's responsibilities and those of the colonies. The negotiations led to the federation of British Provinces in America in 1867 and resulted in the definitive withdrawal of British troops from Canada in 1871.

On the European continent, British-French rivalry surfaced again and was an additional obstacle to British investment in Canadian fortifications: fearing a French landing led by Napoléon III, Great Britain was forced to devote large sums of money to the defence of its own coasts; other efforts were required in the Mediterranean colonies to where the struggles with the French soon spread.¹⁰⁹ At the same time, the secessionist war in the United States presented the British leaders with an important problem. As soon as hostilities began, Great Britain adopted a position of neutrality, justified on one hand by a desire to keep its supplies of cotton which came from the Southern States and on the other hand, by fear of reprisals by the North against Canada. A defeat or victory by one side or the other thus risked having unfortunate repercussions on Great Britain and Canada. The boarding of the British ship *Trent* by the Northerners in December 1861 added to the tensions.

Strong reinforcements were then sent to Canada, and the Commander-in-Chief, Sir William Fenwick Williams, placed them mostly in the Montréal area, since he could not cover the whole border. With a view to preventing an American invasion from Lake Champlain, a plan of attack was even drawn up against Rouses Point.¹¹⁰ At the beginning of 1862, a hundred or so British regulars and a detachment of artillery reoccupied Fort Lennox, which had been without a garrison since 1857. At Saint-Jean more than 150 soldiers of the Royal Canadian Rifles returned to the fort as early as the fall of 1861.¹¹¹ This military re-occupation of Fort Lennox involved certain investments for maintaining the buildings and defensive works. For example the gun platforms were rebuilt in October 1862. The next year, the ditch was cleaned out and new gates were constructed to control the water level.¹¹²

109 See C.P. Stacey, *Canada and the British Army, 1846-1871*.... pp. 110-12, and Q. Hughes, *Britain in the Mediterranean & the Defence of her Naval Stations* (Liverpool: Penpaled Books, 1981).

110 G. Stepler, "Quebec, the Gibraltar of North America?" p. 130 and J.M. Hitsman, *Safeguarding Canada*.... p. 171.

111 Besides the small Royal Artillery detachment which was still present at Fort Lennox until 1865, the Royal Canadian Rifles again replaced the British regulars as early as the fall of 1862 (C. Rioux, "L'armée britannique au fort Lennox...." pp. 20, 99-100 and 116).

112 NA, RG8, I, Vol. 479, pp. 142-45, the Commanding Royal Engineer in Canada to the Secretary at War, 30 October 1862; Vol. 1422, pp. 20-28, Annual Works Estimate.

114 Lieutenant Browne's 1851 plan for fortifying Grande Île (Goyer Island) at Chambly. It included a classical, "bastioned" enceinte, featuring the new perpendicular flanking elements, the caponiers. Behind the gorge front, the engineer also placed a circular réduit. All quarters, to a total capacity of 600 soldiers and 200 cavalymen, were casemated under the rampart. (NA, C-17746)

Despite the augmentation of British troops in Canada, the Canadian government was asked for an increased participation of the militia. Here again, local politicians refused to co-operate on the pretext that tensions between Canada and the United States mainly flowed from British foreign policy, an area where they had no power to intervene.¹¹³

This North American scenario once again required a revision of the Canadian defensive system. A new commission directed by Colonel J.W. Gordon was formed for this purpose in February 1862.¹¹⁴ Whether it was a reflection of British policy or the chance of circumstances, it was the Governor General of Canada, Charles Stanley Monk, who officially commissioned Gordon and his associates, while the Inspector-General of Fortifications in London, J.F. Burgoyne, fixed their terms of reference! Four major themes were identified: the organization of troops, naval strength on the lakes, communications and lastly, works of fortification. Burgoyne warned the commissioners about the political and economic implications of their work and asked them to reduce their recommendations to a minimum, especially where fortifications were concerned:

Nor is this purely a military question, requiring a report upon the number and quality of troops, depots 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

113 C.P. Stacey, *Canada and the British Army, 1846-1871...* pp. 142-45.

114 NA, RG8, II, Vol. 18, "Report of the Commissioners appointed to consider the Defences of Canada," 1862. Besides Gordon, there sat on the Commission Captain W. Crossman, also a military engineer, and as secretary, Lieutenant-Colonel H.L. Gardiner, R.A., and a civilian, the Honourable H.H. Killaly. Two months later, two other members were added: Captain John Bythesea, R.N., the Naval Attaché in Washington, and Lieutenant-Colonel E.R. Wetherall, at that time Chief of the Staff. The presence of marine officers shows once more the importance and the increased role of the navy in 19th-century defensive and offensive tactics. Similarly the contribution of an artillery officer was relatively new within such a commission, which probably reflected the considerable importance of artillery in the conduct of war in general, following the formidable development of weapons with rifled barrels at the middle of the 19th century.

*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.*¹¹⁵

Lastly, Burgoyne added, Montréal and the surrounding area called for particular attention as Lake Champlain and the Richelieu River were still the main American entry route for achieving their primary objective of cutting communications with the western part of Canada.

As early as September 1862, the commissioners submitted their report. They estimated the number of troops necessary for the defence of Canada at a minimum of 150 000 soldiers. This figure included regular troops, the reserves and a certain percentage for replacing the wounded. The commission established once again the essential role of the navy in the defence of Canada and noted that the success of the military operations depended on it. For example, the defence of the St. Lawrence River depended almost entirely on the action of the British fleet. On interior waters, the introduction of "iron plated vessels" gave hope for naval supremacy from the first days of the war. That would, however, make require modifications to the existing canals.¹¹⁶

The protection of communication routes, road, rail or water, and the defence against enemy entry into the colony continued to be among the commission's major preoccupations, as the various proposals for works of fortification show. Except for Québec, which was still the key to the colony because of the essential link with the mother country for both reinforcements and withdrawal, Montréal and its surrounding area was the centre of Canada's defence system. Through Montréal, the commercial capital of Canada, passed all reinforcements for the western part of the province. As well several routes converged at Montréal which gave access to the heart of the province: Lake Champlain and the Richelieu, the various railways and the ever-developing road network.¹¹⁷

115 *Ibid.*, Appendix 2, "Memorandum by Sir John Burgoyne, on the Defence of Canada," February 1862. The presence of the civilian on the commission perhaps reflects these socio-political involvements.

116 On the St. Lawrence, the British fleet would protect the mouth of the Richelieu River in particular. It would be made up of 13 ships, including two floating batteries, two corvettes, two dispatch vessels and seven gunboats (three Algerines and four Bouncers). The commissioners also suggested maintaining six Clown-type gunboats on the Richelieu River.

117 Gordon and his colleagues added: "The main attack would undoubtedly be directed from the head of Lake Champlain on Montréal, 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 Montréal would sever the communication between Quebec and the upper province, and would paralyze the defence of the country" (NA, RG8, II, Vol. 18, "Report of the Commissioners appointed..." p. 8).

The members of the commission worked out the strategy for Montréal around two defensive lines with a citadel to be erected on Mount Royal (Fig. 115). The first line would be supported by the permanent works on Sainte-Hélène Island, and to these would be added additional defensive works of a temporary nature for the obvious purpose of increasing the protection of the main depot in the province. This first line would include temporary works to be set up on Île des Soeurs (Saint-Bernard), at Lachine and Bout-de-l'Île. The advanced line on the south shore would include, in addition to Saint-Jean and Île aux Noix, the bridgeheads set up at Chambly and Saint-Athanase (opposite Saint-Jean) to block access to the two bridges crossing the Richelieu. Also in this second line, an entrenched camp with a radius of more than 2000 feet would be constructed at Saint-Lambert to cover Victoria Bridge on the Grand Trunk Railway and the ferry at the railhead leading to Saint-Jean and Rouses Point.¹¹⁸

For Gordon and his associates, Saint-Jean was a major defensive position where the main body of the army had to be concentrated. Saint-Jean's location offered several advantages to troops who were to face an attack coming from Rouses Point, from the Châteauguay River, or from the Eastern Townships via the Grand Trunk Railway line.¹¹⁹ Saint-Jean therefore required a permanent fortification which should be built on the site of the earlier works. In wartime, a larger entrenchment would be necessary. In addition, the commissioners suggested transferring the naval establishment formerly situated at Île aux Noix to Saint-Jean to make it as distant as possible from Rouses Point.

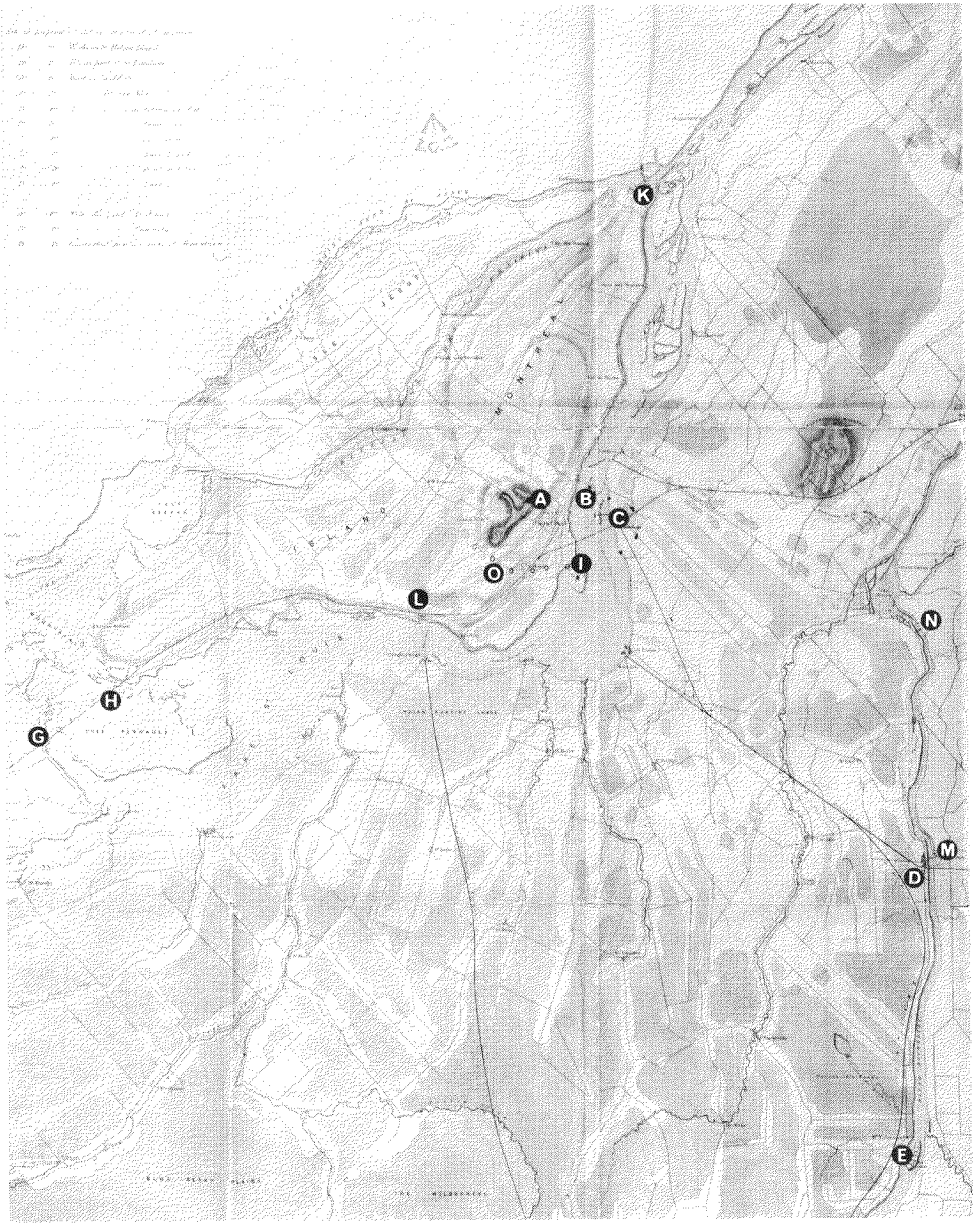
Île aux Noix, once again an advanced post for Saint-Jean, could still serve as a shelter for the gunboats operating in this area, especially because its location enabled it to command navigation there. The existing works were no longer adequate for the new weapons and needed to be completely reconstructed, as also did most of the other border posts. Even their design had to be reconsidered.¹²⁰

Despite the instructions of the Inspector-General of Fortifications, the cost involved for the permanent defensive arrangements in the Montréal

118 The commissioners added that in wartime it would be necessary to monitor the situation east of the Richelieu attentively, especially at Philipsburg and Frelighsburg, where several communication routes ended.

119 The commissioners were more afraid of Rouses Point: "This work covers the railway communication with Ogdensburg, Plattsburg, 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" (*ibid.*, p. 23). They even hoped that an offensive operation would be mounted against Rouses Point.

120 *ibid.*, p. 18.



115 The Gordon Commission's plan (1862) for the defence of Montréal. Its objective was to control the access routes which an enemy could take. Saint-Jean's central position where several communications routes converged gave it a regional defensive role at the time. (*NA, RG8, II, Vol. 32*)

- a citadel on Mount Royal (A)
- works on Sainte-Hélène Island (B)
- a bridgehead at Saint-Lambert (C)
- works at Saint-Jean (D)
- works on Île aux Noix (E)
- temporary works at Côteau-du-Lac [not on the map] (F)
- temporary works at Vaudreuil (G)
- temporary works at Île Perrot (H)
- temporary works at Île des Soeurs (I)
- temporary works at Bout-de-l'Île (K)
- temporary works at Lachine (L)
- a bridgehead at Saint-Jean (Iberville) (M)
- a bridgehead at Chambly (N)
- entrenchments west of Mount Royal (O)

area alone amounted to more than £300 000. For the whole province this figure reached £1 611 000.¹²¹ The 1862 commission's recommendations presented the British authorities with the same problem that had followed on Wellington's defensive scheme some 40 years earlier. In the eyes of the authorities the planned expenditures were prohibitive. The cabinet was not ready to invest the sums required, especially as the commission did not venture to apportion the responsibilities of the home country and those of the colonial government.

The debate on the division of responsibility for the defence of Canada, which was abandoned to some extent in the fall of 1862 because of the unpopularity of the commission's recommendations, was hotly resumed at the beginning of the summer of 1863. The American Civil War was then taking a new turn: the Union was winning territory and that raised numerous fears in Canada at the thought of reprisals by the winners irritated by the British attitude during the war. The British government then delegated the Deputy Inspector-General of Fortifications, Lieutenant-Colonel W.F.D. Jervis, to try to find a solution to the Canadian defence problem that would be acceptable to the British treasury.

121 C.P. Stacey, *Canada and the British Army, 1846-1871...*, p. 148.

Reconnoitring in Canada and several American cities as early as the fall of 1863, Jervois formulated his recommendations in February 1864.¹²² He joined those who had noted the weakness of the Canadian defence system, then antiquated against an enemy who was greatly superior in numbers, arms, available resources and nearness. The Americans, even if divided because of the Civil War, had another advantage in the area of human resources: their officers and men had gained experience which could become an important asset in the event that the conflict turned against the British provinces (which he viewed as more than probable). In these circumstances, the defence of Canada must not rely exclusively on the action of troops in open country supported by a considerable contribution by militia and other local volunteers; certain defensive works must be built:

It is a delusion to suppose that that force can be of any use for the country without fortifications to compensate for the comparative smallness of its numbers. Even if aided by the whole of the volunteers that would be available both in the Upper and Lower Provinces at the outbreak of a war, it would be forced to retreat before the superior numbers by which it would be attacked, and it would be fortunate if it succeeded in embarking at Québec and putting to sea without serious defeat. On the other hand, if the works recommended in this paper be constructed, the vital points of the country could be defended, and the regular army would become a nucleus and support, round which the people of the country would rally to resist American aggression, and to preserve that connexion [sic] with the mother country, which their loyalty, their interests, and their love of true freedom alike make them desirous to maintain.¹²³

On reconnoitring the enemy invasion routes and the meagre resources available on the British side to provide opposition, Jervois perceived the impossibility of defending the western part of Canada without acquiring a naval force there. Though it was impossible on lakes Erie and Huron, the engineer could see this British naval superiority on Lake Ontario, but only on the condition that the canals of the Ottawa and Rideau rivers were

122 NA, RG8, II, Vol. 20, "Report on the Defence of Canada," Jervois, February 1864.

123 *Ibid.*, p. 18.

enlarged to accommodate the “iron plated vessels” of the Royal Navy. Setting up a new naval base at Kingston therefore became dependent on the decision of the authorities about the improvements to be made to the canals. Taking these circumstances into account, Jervois preferred to suggest concentrating the defensive infrastructure and the available forces in Lower Canada, especially since Montréal was the Americans’ primary objective and Québec their ultimate destination. The Royal Navy would be responsible for the defence of the St. Lawrence between these two cities.¹²⁴

In the Québec area, as no direct attack could be expected on the north shore without a prior enemy offensive against Montréal, Jervois preferred to concentrate the main defensive arrangements on the south shore of the river, in order to oppose an enemy coming by the railway which linked Lévis to Portland in the United States.

The existing fortifications at Montréal and in the neighbouring area were completely obsolete, Jervois stated. There was no work to prevent an enemy from coming by the south shore, from which they could easily bombard the heart of the city.¹²⁵ The southern end of Victoria Bridge at the junction of the Grand Trunk and the Champlain & St. Lawrence rail line was the most vulnerable site in this respect.¹²⁶ Jervois suggested fortifying this position with a string of six detached forts laid out in an arc, thus forming a defensive line over a distance of 10 kilometres (Fig. 116). A new fortification erected on Sainte-Hélène Island would serve as a *reduit* for this complex. An ultimate *reduit* would subsequently be built on Montréal’s mountain in the form of an entrenchment erected quickly when war broke out.

Another string of forts set up in the area of Vaudreuil would control the western arrival point of the Grand Trunk. Lastly, four other forts would protect Caughnawaga [Kanawake] on the south shore from a penetration by way of the railway coming directly from Plattsburg.

124 Jervois also suggested keeping the road on the north shore of the St. Lawrence in good shape, to provide an alternative means of communication between Québec and Montréal in the event that the enemy should gain control of the waterway: “Thus the St. Lawrence would be a wide and deep ditch connecting Montréal and Quebec, and securing the communication with Montréal by the road along the left bank of the river.”

125 The use of rifled artillery completely upset military tactics. The range of fire as well as the accuracy of the guns had increased considerably. The effective range was now calculated in kilometres and no longer in metres. See J. Jobe, ed., *Guns: An Illustrated History of Artillery* (New York: Crescent Books, 1971), pp. 127-52; C. Johnson (trans. J. Sorbets), *Artillerie* (Hong Kong: Nathan, 1976), pp. 8-31.

126 This last line followed the trace of the first railway between La Prairie and Saint-Jean, and then followed the left bank of the Richelieu to Rouses Point.

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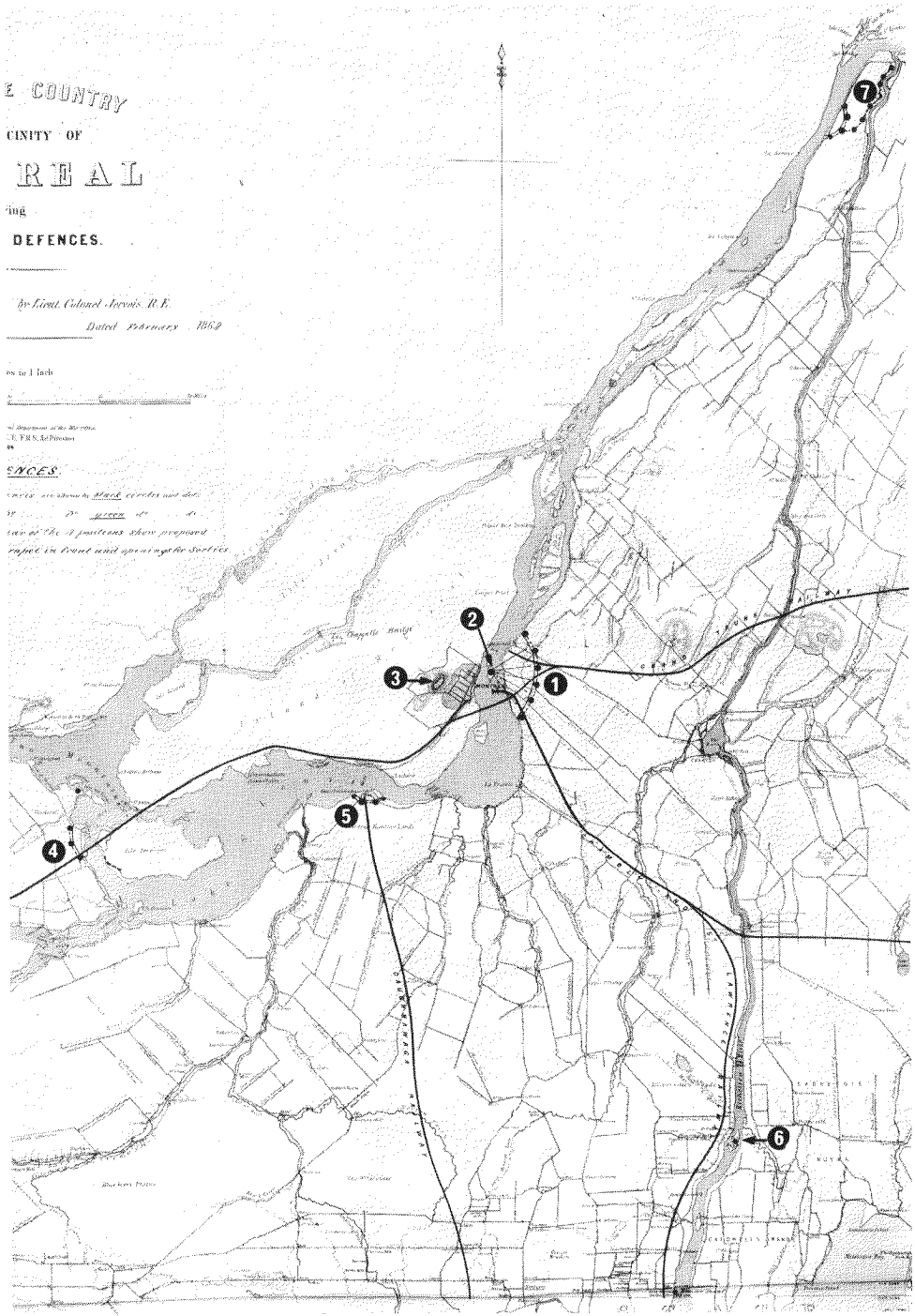
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ences are shown in black, and are not to be taken as the positions shown proposed in France and against the British



116 Engineer Jervis's plan (1864) for the defence of Montréal. His first aim was to ensure control of the main communications routes. Note that Île aux Noix regained its primacy over Saint-Jean. (*NA, RG8, II, Vol. 32*)

- Detached forts: at the southern end of Victoria Bridge (1)
- A new fortification: on Sainte-Hélène Island (2)
- An entrenchment: on Mount Royal in Montréal (3)
- Detached forts: at Vaudreuil (4) and Caughnawaga (5)
- A fortification: at Île aux Noix (6) and Sorel (7)

Favoured by the swing of the strategic pendulum in the Upper Richelieu, Île aux Noix regained its defensive lead since Jervis proposed renewing its fortifications to stop any enemy incursion by water. He also stressed the pertinence of erecting works at Sorel so as to create a second front to oppose the enemy fleet, in the event that Île aux Noix was lost. Further, as the St. Lawrence narrows to less than a kilometre wide above Sorel, Jervis wished to prevent enemy attempts to cut communications between Québec and Montréal by means of these works.

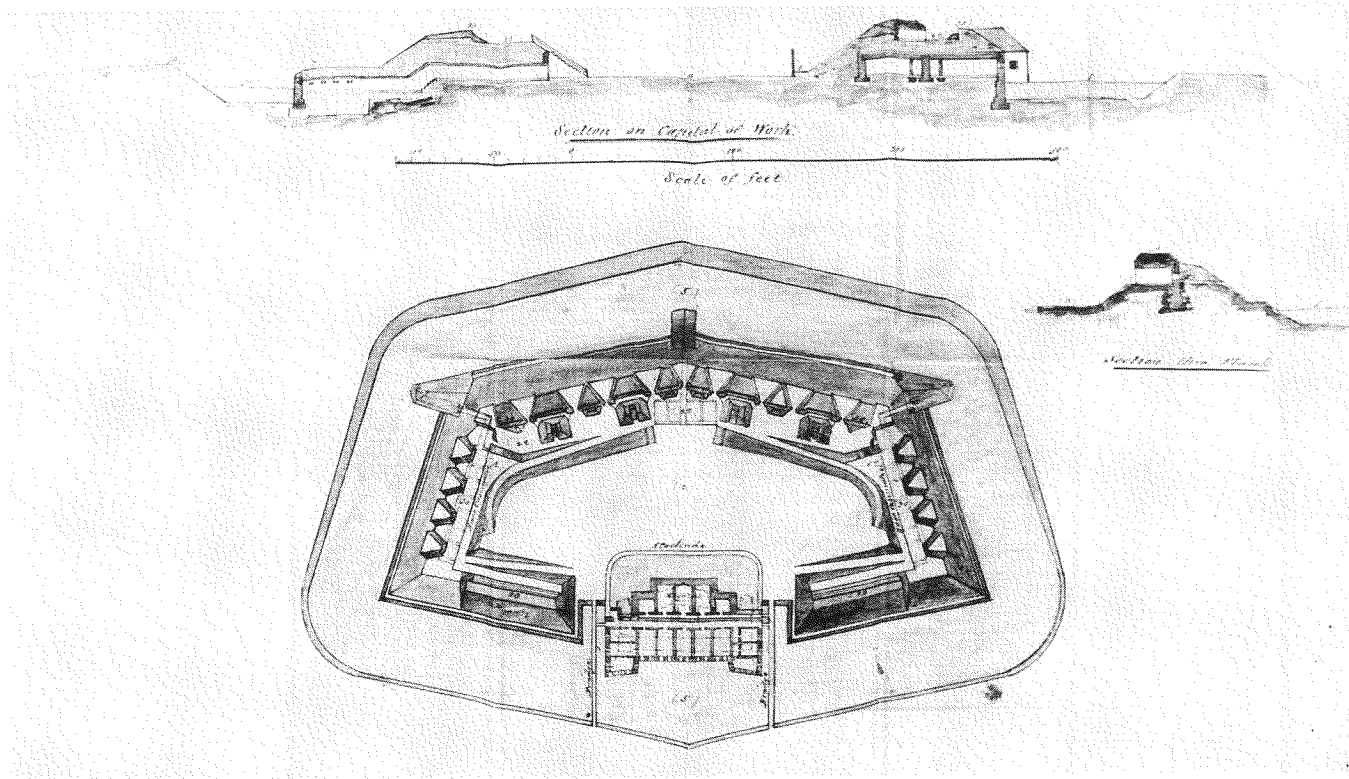
The works proposed by Jervis reflected the new fortification models then in use in Europe, models which he had helped to set up in certain British towns.¹²⁷ In the plan suggested, each fort had a polygonal trace and a rampart which was essentially made of earth of a thickness sufficient to resist rifled artillery (Fig. 117). Caponiers placed perpendicular to each segment of rampart assured the flanking of the works. Finally, Jervis suggested setting up a masonry réduit in the centre of each fort.¹²⁸ According to him, this model of work could be built quickly without involving excessive costs.

Jervis estimated his proposals would cost £450 000 for the defence of Montréal and his plans for Québec (Lévis) £200 000. If armaments are added to the overall estimate, it amounts to £750 000. Jervis defended this figure as being less than the annual cost of maintaining British troops in Canada. Finally, he recommended increased sharing by the local government in the cost of a war.

The Colonial Secretary, Cardwell, received Jervis' recommendations favourably and clearly expressed to the Governor General of Canada the

127 In this regard he was the secretary of a commission tasked in 1859 with studying the defence of British coasts which recommended the use of detached forts. See A. Charbonneau, Y. Desloges and M. Lafrance *op cit.*, p. 179.

128 The armament suggested by Jervis consisted of 40-pound rifled guns placed on traversing platforms inside small casemates situated at the level of the terreplein. The réduit would be armed with small howitzers.



117 Typical plan of all the detached forts that Jervis suggested building at Montréal (1864). They were six-sided polygons, essentially composed of an earth rampart with a masonry redoubt in the centre. A palisaded sentry passageway and a ditch surrounded the work; each side was flanked by caponiers perpendicular to the rampart. Jervis also planned to install heavy artillery in the casemates on the parapet. (*Ontario Archives, fol. 1044, Sir Casimir Gzowski Papers, MU 1188*)

objectives of British participation in the defence of Canada: the protection of British troops posted to the colony and the maintenance of communications with Great Britain's naval forces.¹²⁹ All the evidence suggests that the position of Québec met these objectives by itself, which implies that the British cabinet wished to become responsible only for the fortifications proposed for Lévis. Before committing himself, the Colonial Secretary wished to know the Canadian government's degree of participation in the defence effort, the more so because certain members of his own cabinet, such as William Gladstone, were questioning even the advisability of fortifying Québec (Lévis).¹³⁰

In Canada, it was the possible federation of all the British North American provinces that was of more concern to the government. Certainly Jervis' report raised numerous opposing voices, especially among the representatives of the western part of the country which he had neglected. Canada's answer was deferred, it seems, because they wanted to consult further with the author of the report. Jervis therefore returned to Canada in the fall of 1864 to examine the defensive strategy of the British provinces once again. The Canadian Executive Council asked him to study the defence of the territories situated west of Montréal. He submitted a new report to the Canadian government in which he revised his conclusions of the preceding year so as to give more more of an answer to the concerns of local politicians.¹³¹ Besides Québec and Montréal, which remained the major positions for the defence of Canada, Jervis now suggested fortifications at Kingston, Toronto and Hamilton. He justified these new proposals, which were somewhat contrary to the strategic and tactical considerations of his first report, by the Canadian government's intention to assume responsibility for a naval force on Lake Ontario.¹³²

In this second report, Jervis set out precisely Île aux Noix's objective as well as its intended defensive organization. By means of various obstacles set up in the river, themselves flanked by the restored works on Île aux Noix, it would be possible to oppose an enemy's transporting their logistical train to the theatre of an attack on Montréal. However, because of the proximity of the American border, Jervis added, Île aux Noix would quickly be exposed to attack; much more, it could be isolated as

129 Cardwell to Monk, 6 August 1864, quoted in C.P. Stacey, *Canada and the British Army, 1846-1871*..., p. 161.

130 See G. Stepler, "Quebec, the Gibraltar of North America?" pp. 142-43.

131 NA, RG8, II, Vol. 32, "Report on the Defence of Canada," Jervis, January 1865.

132 *Ibid.*, Jervis to W. McDougal, 10 November 1864.

soon as an enemy made their first move. But Jervois noted that this loss would be largely compensated for, in defensive terms, by the delay that such an operation would cause the enemy. Finally, he pointed out the useful contribution that small gunboats which were able to sail inside the canal between Saint-Jean and Chambly could make to the defence in this area.¹³³

Jervois' new recommendations brought the total bill to £1 754 000. Meanwhile, the diplomatic situation had worsened. For example, the St. Albans incident (Confederate soldiers took refuge on Canadian soil after carrying out a raid on that Vermont town) raised strong reactions in Washington. The Union revoked the Rush-Bagot Agreement of 1817 and considered not renewing the Reciprocity Treaty of 1854.¹³⁴

These circumstances motivated the Canadian government to reply favourably to Jervois' latest recommendations. It undertook to spend £1 000 000 for the construction of fortifications in the Montréal area and for the organization of the militia. This sum would be borrowed in the form of bonds guaranteed by the British treasury. In exchange, the Canadian parliamentarians asked their British counterparts to defray the costs of the works at Lévis and to provide the armaments for Montréal and Québec. Further, the Canadian government disengaged itself from its responsibility for the western part of the province with respect to the fortifications of Kingston, Toronto and Hamilton. Its pretext then was that it did not wish to compromise the entry of the other British provinces into the federation then being considered by assuming a heavy debt to construct these defensive works.

For its part London refused to guarantee the loan, but faithful to the objectives laid out by Cardwell, the British government set aside the necessary funds for the construction of the new fortifications at Québec. The work did in fact start in the summer of 1865.¹³⁵

At Montréal, the Canadian government did not live up to its commitments and considered it was more of a priority to invest in the Canadian rail network. The end of the Civil War in 1865, and in particular the demobilization of the American troops, dissipated the fears on the Canadian side. Montréal's new defensive system would never be realized.

133 *Ibid.*, pp. 18-19.

134 See J.M. Hitsman, *Safeguarding Canada...*, pp. 193-94.

135 A. Charbonneau, Y. Desloges and M. Lafrance *op. cit.*, pp. 74-77, 178-82.

In the summer of 1864, Île aux Noix was, however, the subject of a concrete proposal by the Commanding Royal Engineer in the District of Montréal, Captain Maquay, with the purpose of meeting the defensive objectives of the island as set by Jervois (Fig. 118):

*The point maintained in this project for the reconstruction of Fort Lennox; has been to device [sic] a plan to render the Fort equal to resist any attempt to force the Richelieu which might be made by a Naval force collected on Lake Champlain under cover of Rouses Point.*¹³⁶

Out of a desire for economy, Maquay wished to retain the same trace around which he would augment considerably the fire of the artillery by setting up 34 large-calibre pieces in casemates under the rampart.¹³⁷ But these new arrangements would require lowering the glacis and the ravelin by a few feet to allow the artillery, mainly set up in the curtains, to sweep the river and the opposite banks adequately. The earth obtained in this way would provide the necessary material for reconstructing the parapet so as to make it capable of resisting rifled artillery projectiles.¹³⁸ This earth would also serve for the construction of a *parados* along the south curtain to give more adequate protection to the interior structures of the fort, on this most exposed face.¹³⁹

Maquay also suggested reusing the foundation of the masonry tower, begun in 1825 in the southwest bastion, to erect a *reduit* which would be topped by three Armstrong 80-pound guns oriented so as to flank the neighbouring bastions and the chains that would be installed across the river channels on each side of the island. He proposed covering the powder magazine of the north bastion with a good quantity of earth so as to protect it completely from the enemy artillery.¹⁴⁰ Other smaller magazines would be set up under the *reduit* and the *parados*.

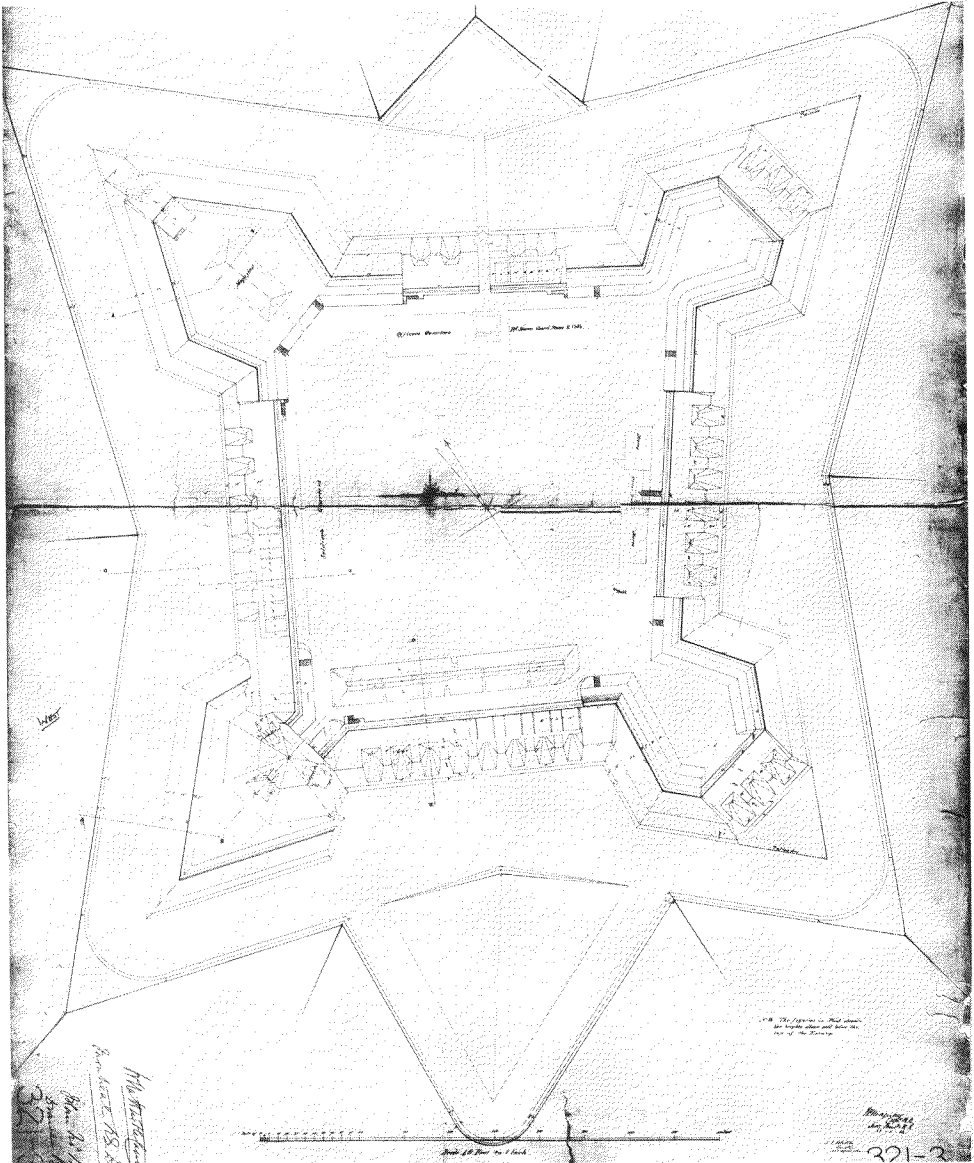
136 NA, RG8, I, Vol. 1599, p. 85, "Project for reconstructing Fort Lennox," Capt. Maquay, 20 June 1864.

137 The suggested calibres were ten 32-pounders, six 56-pounders, seven 40-pound "Armstrong" guns and three 80-pounders and finally eight 68-calibre pieces (95cwt). Maquay also planned a battery of mortars between the sheds east of the fort, whose fire would be oriented on the main channel.

138 This would necessitate a new revetment for the rampart which Maquay suggested constructing with pieces of squared cedar.

139 From the same perspective, an earth traverse blocked entry on the north front.

140 The increasing effectiveness of rifled artillery made this type of arrangement necessary, even with buildings which had been previously considered bombproof because of their vaulting. During an actual siege, Maquay suggested removing the roofs of all the other buildings whose ground floors had been built to be bombproof and covering them with earth, which would be obtained by digging a ditch along these buildings, inside the *parade ground*. As a result, Maquay added: "a very powerful interior defence can be obtained from the



118 Plan to reconstruct Fort Lennox by Captain Maquay in 1864. While retaining its trace, he proposed (1) providing the fort with several pieces of heavy artillery, mostly installed in casemates on the curtains; (2) building a paradoss along the south curtain, the most exposed front; (3) erecting a reduit in the southwest bastion; (4) covering the magazine with earth to shelter it from large-calibre projectiles. (NA, NMC-21154)

In short, Maquay described a defensive complex requiring a garrison of 12 officers and 550 soldiers, and which largely drew its inspiration from the works proposed by Jervois, with the obvious exceptions that the trace was different and that there were no caponiers. The materials used, especially earth and wood, also were consistent with Jervois' intention to suggest relatively inexpensive works and ones which could be built quickly. The total estimate for Murray's project amounted to £22 000.

The objective pursued by Maquay also aimed to cover the different roads that led to Montréal, roads which crossed the area on both sides of Île aux Noix. At first, he considered it necessary to clear both banks and cut down the trees to assure the fort's artillery had the required field of vision to batter Rivière du Sud on one hand and the Rouses Point-Saint-Jean road on the other. He proposed the same at Pointe-à-l'Esturgeon, south of the island, beyond which an enemy fleet could shelter. Halfway between Île aux Noix and the American border was situated Lacolle, which occupied a strategic position at the intersection of the road and the railway to Rouses Point and would require the setting up of a "Strong Ordnance Post." As well the village of Hemmingford further west could be an advanced post blocking the railway to Caughnawaga. Similarly, the defensive occupation of the village of Henryville east of the river would make it possible to command the Fort Lennox bypass road between Misisquoi Bay and Saint-Jean.

Maquay's proposals met the same fate as the Jervois report as a whole. However, the American Civil War had scarcely ended when a new menace struck the Canadian border. The Fenians, an American association of Irish immigrants, began making various raids into Canada. The intent was to divert the attention of the British military from Ireland and thereby relieve their European brothers from the oppression. As early as November 1865 the alarm rang at Île aux Noix.

Uneasy at the broken-down state of certain parts of the Fort Lennox ramparts, the Commander-in-Chief asked the senior artillery and engineer officers to take the necessary measures to make the fort capable of resisting a raid or attack carried out by 500 to 1000 men without artillery support.¹⁴¹ Since the season was too far advanced for a major reconstruction of the rampart and the revetments, Ford, the engineer, suggested

sides of the square and the tower, in the event of a surprise, or the enemy forcing its way into the Fort."

141 NA, RG8, I, Vol. 1602, pp. 101-16, correspondence relating to the "Report on the best way of putting Isle aux Noix in a state of Defence against an assault by night or day of a Force of 500 to 1000 men without heavy guns." November 1865 to February 1866.

instead partially remodelling the parapet, and this was immediately authorized. On the same occasion several embrasures were restored including the ones on the flanks.¹⁴² At the suggestion of Colonel Dunlop, Royal Artillery, the salient angles of the bastions were armed with 24-pound guns and the flanks with 32-pound carronades, except for the right flank of the northeast bastion where a 24-pound gun took the main channel of the river in enfilade (Fig. 119).¹⁴³ Finally, to resist any attempt at a raid, Ford and Dunlop considered it essential to place a sentry at each salient angle of the bastions and at each of the gates and to carry out regular patrols outside the fort, particularly "during the dark winter nights when such surprises might be attempted." During this period, the fort's garrison grew appreciably and fluctuated between 200 and 300 soldiers.¹⁴⁴

From 1867 on the Fenian raids died down.¹⁴⁵ The Canadian parliamentarians, busy forming the Canadian federation, were hardly interested in military matters despite their commitment to the defence of Montréal. The next year, the British government withdrew the extra troops sent during the Fenian raids from Canada. Gladstone's coming to power in Britain brought about the withdrawal of all British troops from Canada.¹⁴⁶ British strategic discussions now dealt with establishing imperial fortresses along the main maritime commercial routes. Neither the defence of the main American entry route into Canada, nor the defence of Montréal, the main objective of the enemy, nor Québec, the guardian of the colonial link, now figured in the concerns of the mother country. The British troops withdrew completely from Île aux Noix in August 1870.¹⁴⁷ The next year, after the last Fenian raids, they left Québec definitively.

The Civil War put an end to the hesitations of the British as they faced the double problem of the defence of Canada. Onto the strategic imperatives had been added economic considerations, which were highlighted by the budgetary limits of the home country government. From the middle of the century, the question was raised with ever greater sharpness: how to maintain the link with the North American provinces without becoming involved in enormous expenses while at the same time leading these same

142 Ford had suggested palisading the berm or the exterior slope of the parapet since the fraises were completely destroyed in several places. Probably this proposal was not adopted.

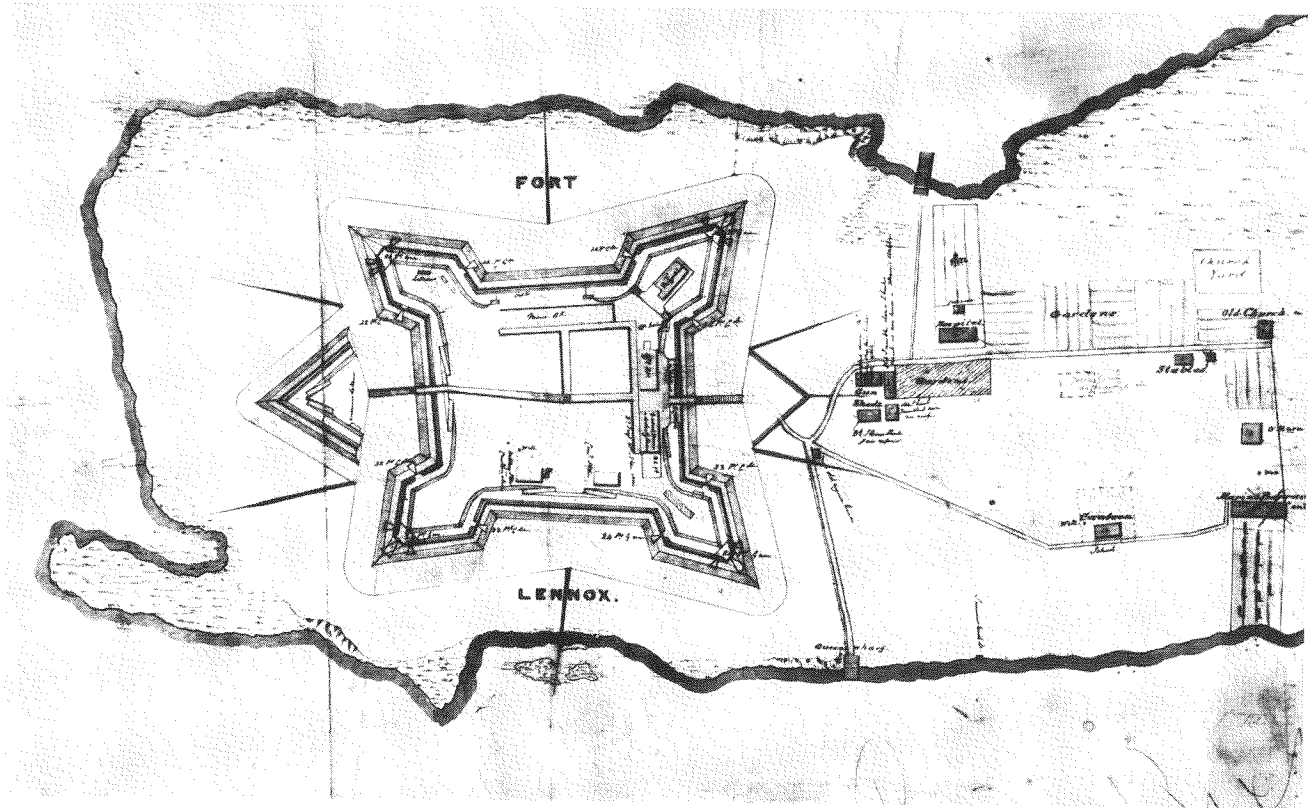
143 In 1867, this same armament is found at the fort; besides, two small 12-pound guns were mounted on field gun-carriages. See Fig. 119.

144 C. Rioux, "L'armée britannique au fort Lennox..." p. 101.

145 A last increase in activity started up in 1870.

146 One should remember that this person had even questioned the need for the British to fortify Lévis.

147 NA, RG8, I, Vol. 495, p. 16, 30 July 1870.



119 The Fenian threat in 1867 resulted in minor defensive construction at Fort Lennox. The parapet was repaired in several places and the embrasures were armed again. At the salient angles of the bastion, 24-pounders were placed; the flanks were provided with 32-pound carronades, except for the right flank of the northeast bastion, where a 24-pound gun made it possible to take the main channel of the river in enfilade. Even though this plan was first drawn up in 1863, the rearrangements which were carried out at the time of the Fenian crisis were later added to it. (*R. Price, 1863; NA, NMC-11849*)

provinces, which were constantly seeking political autonomy, into progressively assuming their own defence. The fears raised by the war among the neighbours to the south were for Britain an opportunity to force Canada to take matters into its own hands. Even though Canada had not lived up to its commitments, the agreement enabled the British government to redefine its objectives and to reorient its investments in accordance with imperial interests. The questioning of the colonial link by both parties accelerated this development.

In the area of strategy, the main recommendations of the Gordon Commission in 1862 and those of Jervois some years later concerning the identification of positions to be fortified as well as the protection of the communications network between the St. Lawrence Valley and the western part of the province allows one to see an interesting parallel with the Carmichaël-Smyth Commission in 1825 and Wellington's scheme. The parallel even extends to the strategic reinstatement of Montréal's south shore and the Richelieu Valley as the expected main theatre of operations both offensive and defensive, which forms a major contrast with the positions adopted in the middle of the century at the behest of Murray.

Jervois and the 1862 commission stood out, however, because of their innovative tactical considerations based on the increased effectiveness of rifled artillery and the advent of new means of communication, including railways. The originality of their proposals rests, however, in identifying works which were able to replace the Canadian defensive system in line with the new fortification techniques then being developed in Europe. As first articulated in Holloway's proposals during the preceding decade, the observations of the Gordon Commission and those of Jervois confirmed the abandonment of the small isolated positions on the border in favour of lines or networks of detached positions which were capable of mutual support and were directly centred on the defence of a communications network. It was no longer a point on the border that was defended, but rather a nerve centre which was essential to the survival of the State. On this score, in 1865 Île aux Noix became an integral part of the defence of Montréal.

During the last decade of the military presence of the British in the Upper Richelieu, the pendulum swung once more between Île aux Noix and Saint-Jean, but with a difference. In 1862 the Gordon Commission made Île aux Noix's role subordinate in importance to Saint-Jean, while in 1864 Jervois reverted, within a different context, to Fort Lennox's

initial role, dedicated to the control of water traffic on the Upper Richelieu border.

CONCLUSION

This analysis of the defensive role of Île aux Noix and its fortifications leads to an appreciation of the various military situations on the Upper Richelieu. While studying the context of the works on the island from the first construction carried out in 1759 until the departure of the British army in 1871, one can see that the military importance of Île aux Noix varied considerably.

To begin with, the choice of Île aux Noix as a defensive position of primary importance to some extent took place by default. It was not the exceptional defensive advantages of Île aux Noix compared to other places in the colony which first motivated the decision of the French officers. The reason lay more in the obvious weakness of the resources available for the defence of the whole colony, and that weakness forced the authorities to reduce the border of the defended territory from the very beginning of the war. In this context the choice of Île aux Noix appears to have been a wise one.

All the evidence shows that the engineers made use of temporary methods of fortification, both in the geometry of the angles of fire and in the construction technique they employed. The rapid surrender of Île aux Noix in 1760 does not necessarily have to lead to a negative assessment of its works. They were consistent with the main principles of fortifications of that type and the engineers chose current defensive models which harmonized with the sort of use expected in 1759. Modifications to the defensive strategy as well as an appreciable reduction in available troops, which was a determining tactical factor affecting the fortification, contributed further to the lack of success of the first fortifications on Île aux Noix. The siege of 1760 also highlighted the major role which devolved on the navy in the defence of this part of the colony. The loss of this navy contributed as much as the lack of troops did to the failure of the French defence. This first military occupation of the island was brief, only for the duration of the war.

Military activity at Île aux Noix began again with the American War of Independence. This time, the position of the island was at the heart of the contested area, even if its defensive role was subordinate to Saint-Jean's. It was the beginning of a sort of rivalry between these two positions which were situated near the future border of the colony. The works built during this second military occupation faithfully reflected the defensive role assigned to Île aux Noix, a role which continued to develop throughout the war. The use of the blockhouse was perfectly suited to the arrangement of a base for offensive operations where it was necessary to resist not an assault, but rather a sudden attempt by an enemy to damage operations by a quick action against the opponent's stores depot. Construction activity continued on the island during the greater part of the war. Setting up an advanced post for Saint-Jean on the island in 1778 by using a portion of the old French entrenchment showed, both in its geometry and its profile, a work constructed hastily in wartime. All the same, the results obtained by the engineer followed the major functional principles of this type of fortification. In 1782, a change in the defensive strategy for the Upper Richelieu increased Île aux Noix's role and several works were added. However, this time the engineer set up a disparate defensive complex which, although it increased the island's defensive capacity, presented some difficulties in terms of the functioning of the works as a whole.

The development of the road network on both sides of the Upper Richelieu border at the end of the 18th century and at the beginning of the 19th century increased the rivalry between Saint-Jean and Île aux Noix. These new roads favoured Saint-Jean, given the growing possibilities of bypassing Île aux Noix. On the other hand, after the Treaty of Paris, Île aux Noix became the southernmost position in this part of the country; it must be added that this new border was very ill-received by the British officers because of its closeness to the heart of the colony. Finally, Île aux Noix still remained the favoured position for opposing any American naval operation.

The War of 1812 restored to Île aux Noix a defensive role of primary importance in this part of the colony since the navy had a preponderant place in the tactics of both belligerents. The reorganization of the works on the island accurately reflected this state of affairs. Besides establishing a naval base and dockyard, the British hastily rehabilitated the 1778 and 1782 ramparts which several people considered to be beyond repair. The fact that a large number of barracks and warehouses overloaded and

surrounded the ramparts, in certain cases to the point of interfering with their effectiveness, bore out the first objective of the planned defence at Île aux Noix of supporting the intended naval operations in American territory. Secondly, the intention was always obviously to stop an enemy who might penetrate by the Richelieu River.

The strategy and tactics developed by the British on the Upper Richelieu border during the War of 1812 did not include erecting any larger-scale military fortifications, either at Saint-Jean or at Île aux Noix, as had been the case during the two previous wars. The development of the art of war explains this to some extent. Since the Napoleonic Wars, rapid manoeuvring by lightly armed troops gradually replaced the slow and static siege which required a considerable train of arms and ammunition. Favoured by the branching out of the road network on the Upper Richelieu on both sides of the border, these tactics caused the British officers to develop defensive installations in the strategic area bounded by the Richelieu River and the St. Lawrence which could support rapid intervention by the many soldiers who were concentrated in this area. The works chosen, such as palisades, field batteries, blockhouses, barracks, etc., which were spread over several strategic spots on the main traffic routes, were such as would favour the mobility of troops advancing toward the theatre of the enemy's land operations.

The postwar period provided another opportunity to rethink the defensive system of the Upper Richelieu in the light of the experience acquired in the recent war. This time the endless debate between Saint-Jean and Île aux Noix brought the engineer officers into direct opposition to the naval officers. The engineers favoured Saint-Jean because of the many possibilities of bypassing Île aux Noix, while the naval officers, convinced by the experiences of the recent war, preferred Île aux Noix because of its advantages against an operation over water. The latter were further favoured by the activities of the Americans a short distance from the border, since the construction of Fort Montgomery near Rouses Point provided the competent British authorities with an argument for supporting Île aux Noix.

The decision to build Fort Lennox did not end the discussion as to the better defensive site on the Upper Richelieu though. The Rush-Bagot Agreement of 1817, which ended the race for naval supremacy on the interior lakes bordering Canada and the United States, considerably reduced the navy's possible contribution to the tactics of both antagonists. Moreover, the British strategists were aware of their weakness in this

regard compared to the Americans, mainly because of the distance from their resources. With this agreement, Île aux Noix lost the main reason for its lead over Saint-Jean.

Besides, the recommendations of the Carmichaël-Smyth Commission, which was tasked in 1825 with inquiring into expenditures on military construction in Canada, put the strategy of the British back into a perspective similar to the one which prevailed before the War of 1812. The members of this commission worked out a defensive program based on the construction of several works of fortification spread out over the enemy's route. On the Upper Richelieu, the commissioners, who were mostly military engineers, questioned the choice of Île aux Noix at a time when the ramparts of Fort Lennox had hardly been completed, and preferred Saint-Jean instead as the major defence site in this part of the colony. A second commission of inquiry in 1828, made up of two military engineers, corroborated the recommendations of the preceding one in general. It was once again noted that an enemy could easily bypass Île aux Noix, mainly because of the presence of main roads crossing the area on each side of the island, as development in this part of the colony was expanding considerably. However, the authorities stood by their decision to finish the defensive installations on Île aux Noix, a decision which they justified by the fact that the Americans had just constructed a canal linking the Hudson River and Lake Champlain, which renewed fears that the waterway might be used in an possible offensive against Canada.

Thus, scarcely had the decision to build Fort Lennox been announced when several officers called its justification into question. The engineers erected a classical bastioned fortification at Île aux Noix following the major functional principles of this type of work, both in the orientation of the angles of fire and in the design and layout of the interior buildings. Just as several contemporaries doubted the appropriateness of such a project, questions are still asked today about the choice of a classical model of fortification, at a time when Europeans were opting for a new type of defensive work which expressed different principles of construction and function. Nicolls and Romilly must not have been familiar with the new theories in fortification.

An analysis of the revetment problems of Fort Lennox highlights another aspect of the interrelatedness of various factors which influenced the choice, shape and design of defensive works. While in 1819, the British decided to establish a permanent fortification on Île aux Noix

capable of answering the area's defensive requirements for a long time, it was noted at the time of construction that the engineers abandoned the original plan of masonry revetment. Instead they used a technique of wooden supports which was closer to those used for temporary fortifications, the ones erected during a war to meet the most urgent threat. Thus, when the rampart of Fort Lennox had scarcely been completed, it was necessary to think about large-scale repairs. The various solutions considered, even if most of them were not adopted, enables one to observe a major change in the engineers' professional knowledge. In contrast to their predecessors, they showed themselves to be familiar with the latest developments that had taken place in their various areas of expertise. Budgetary restraints, however, did not permit the problem to be solved in a definitive manner.

The discussions on the role of Île aux Noix and the suitability of transferring the main defensive works to Saint-Jean began again in the middle of the 19th century, when the question of defining the borders and the occupation of the Oregon Territory increased tensions with the American neighbours. Various projects to reduce the role of Île aux Noix to defence against a simple raid were put forward. A plan to provide Saint-Jean with a fortification conforming to the new European defensive models was even accepted. However, in 1842 the political situation forced the British cabinet to put the brakes on the purely military dynamics on the Upper Richelieu.

The events that took place in the colony gave new life to Île aux Noix's defensive vocation, the more so because London had definitely forbidden the construction of works at Saint-Jean. The advent of steam navigation somewhat revived hopes of establishing British naval supremacy on the interior lakes of Canada. On the Upper Richelieu, the opening of the canal between Saint-Jean and Chambly in 1845 made it possible to forecast a recovery on this border of the role of the navy in the various military operations, both offensive and defensive. In contrast to the preceding situation, however, the strategic discussions did not arouse controversies between the engineers and the naval officers; indeed, they sat together on the same consulting committees.

The works undertaken at Fort Lennox in 1842-44 were only a palliative to react to the diplomatic tensions between Canada and the United States. The very nature of the reconstruction, which was begun on the ramparts'

revetments and which was interrupted as soon as an agreement was signed with Washington in 1846, showed they had a temporary character.

Beyond strategic discussions lay a question which was just as important for London, namely the apportionment of expenditures for the defence of the colonies. In addition to the gigantic sums invested on the defence of Canada since the reorganization of the defensive infrastructure begun in 1817, the British treasury saw itself facing new expenses to complete this system or to modify certain recent constructions as a function of the new defensive principles which emerged due to the developments in the art of war. Since the British treasury's capacity to pay had reached its limit as large number of British politicians maintained, it became necessary to involve local governments in colonial defence. The British cabinet's hesitation regarding any new investment was understandable. On the Upper Richelieu border this translated into a refusal to build the new works at Saint-Jean which were called for by the tactical and strategic requirements, and into an acceptance of the defensive palliatives which were ultimately authorized at Fort Lennox.

The American Civil War provided the British authorities with an opportunity to find the sought-after compromise: involving the colonies in their own defence while fulfilling their obligations as the home country! The renewal of strategic discussions in 1862 and 1865 revived the rivalry between Saint-Jean and Île aux Noix. The various defensive plans then presented for one or other of these places reflected the new fortification techniques now solidly established in Europe. Saint-Jean or Île aux Noix were no longer isolated border posts. They were rather part of the defence of Montréal which was defined in accordance with the new lines of communication, especially including the many railway lines and their links with the American network. In this context, the minor works carried out at Fort Lennox during the last decade of the British presence must be considered as defensive expedients, very short-term and on the scale of the Fenian threat. They were carried out by the British, who were faced with the refusal of the Canadian government to fulfil its obligations for the defence of Montréal.

In summary, as with the example of the French entrenchment, the case of Fort Lennox is particularly interesting in that it shows the need to

analyse the various factors influencing the choice and shape of defensive models. While its trace and design reflect the major principles governing the construction of this type of bastioned fortification, an analysis of the strategic context allows the historian to appreciate its contribution more accurately from the defensive point of view. However, because of the site chosen and the model constructed, Fort Lennox became obsolete in a short time, even though it had been the intention to build a permanent fortification, and one on which the colonial authorities had placed great hopes.

This analysis of the defensive strategy on the Upper Richelieu, in conjunction with the technical evaluation works constructed, shows once more the interaction of various factors and the need for analysts to place themselves in the position of the planners in order to reach a fair assessment of the defensive complexes built. Though this story contributes to the history of military engineering, military activity on Île aux Noix also opens other avenues of research. Although the presence of a military post can in some cases choke off local development (at Île aux Noix the military was opposed to improving the road network as well as to constructing the railway and the canal), on the other hand it can be a very advantageous economic stimulus, and one day it will be have to be understood and given a detailed analysis.

APPENDIX A

SHIPS IN SERVICE AT ÎLE-AUX-NOIX DURING THE CAMPAIGNS OF 1759-60

One schooner: The *Vigilante*¹

The schooner was built at Saint-Jean in 1757 by Nicolas-René Levasseur. It was probably the largest unit in the French flotilla at Île aux Noix. Testimony as to its armament varies from one source to another. In June 1759 Montcalm spoke of 12 guns. In August, Bourlamaque mentioned ten 4-pounders. However, in another document he only mentioned eight guns. At the same time, a French deserter revealed to Amherst that the schooner's armament was made up of ten 6- and 4-pounders as well as some swivel-guns. In 1760, Bourlamaque suggested mounting six 4-pounders and four swivel-guns. On many occasions, the French officers identified this ship as a barque.

In 1759, the schooner and three xebecs had the mission of sailing on Lake Champlain. In 1760, the decision was made to place it downstream from the chains to defend the channel on the east side of Île aux Noix. Bourlamaque even proposed mooring it fore and aft at the mouth of the Rivière du Sud to prevent enemy movement in that quarter. During the siege, the British succeeded in taking it as well as the large tartan and the barge.

Three xebecs: The *Masquinongé*, the *Brochette* and the *Esturgeon*²

Levasseur's dockyard also built these three ships at Saint-Jean during the winter of 1758-59. The French officers generally did not have a high regard for these three-masters. La Pause, for one, described the xebecs as "ships which do not resemble anything." Lévis found it useless to place

the captain's cabin at the rear. A structure, he said, which should be removed to make room for two guns for firing astern. Bourlamaque made many similar comments and did not hope for much success from them, particularly when they were sailing in a narrow corridor like the Richelieu River from Point au Fer to Saint-Jean. He added that these ships, being without oars, could neither intercept nor tack. According to Vaudreuil, the xebecs needed a very favourable wind to get under way.

After experimenting at Saint-Jean, Lévis established that the xebecs could not carry 12-pound guns fore. However, a French deserter informed Amherst in August 1759 that, apart from the swivel-guns mounted on each of the three xebecs, the *Masquinongé* carried two cast-iron 12-pounders and six iron 6-pounders; the *Brochette* and the *Esturgeon* were armed with eight 6- and 4-pounders. After these three ships were refloated by the British in October 1759, it was established that the *Masquinongé* carried eight iron 4-pounders and five swivel-guns; the *Brochette* the same number of guns but only two swivel-guns, and the *Esturgeon* six 4-pounders, four swivel-guns, three blunderbusses and one other wall piece. It seems that the *Masquinongé's* original two cast-iron 12-pounders were thrown overboard before the ship was scuttled.

As with the schooner, these xebecs' role was at first to cruise on Lake Champlain to interfere with enemy navigation. In October 1759, the British navy succeeded in isolating them from Île aux Noix, which forced the commanding officers of these ships to scuttle them in the Baie des Tsonnonthouans. At the time the failure of the xebecs was attributed to their difficulty in manoeuvring without a suitable wind. The British refloated the three ships with their rigging and guns. The *Masquinongé* and the *Brochette* were incorporated into the British navy in the sloop category.

Tartans³

Two in number, these ships were not of the same size. The larger tartan, the *Diable*, left the Saint-Jean dockyard in August 1760, probably a few days before the siege. The construction date of the other tartan, called the little one, is not known; however, its presence was noted at Saint-Jean during the winter of 1759-60. Often identified with galleys, tartans had oars and were difficult to manoeuvre, Bourlamaque tells us, and he

suggested attaching a canoe to them to facilitate raising the anchor and to make it possible to disembark on land.

There is little precise knowledge about the armament of the tartans. At the beginning of 1760, Bourlamaque suggested placing two 6-pounders fore and two 4-pounders aft on each of them. In June, French prisoners reported to Amherst that the small one carried two 24-pounders. The *Diable*, then being built at Saint-Jean, would carry four 24-pounders and 40 swivel guns. The same informants estimated the small ship's number of oars at 24 and between 40 and 60 for the large one. Shortly before the larger one was launched, Lévis stated that three guns were mounted fore.

The two tartans were mainly intended to cruise on the Richelieu River in the area of the Foucault mill above Île aux Noix to support reconnaissance parties in that sector. Since the larger one left the dockyard only shortly before the siege, only the small one was able to play this role. Bourlamaque noted that the tartans, supported by the small gunboats, could serve to contest an enemy's movement in the Rivière du Sud. (The larger tartan was captured during the siege, as were the schooner and the barge.)

Canoes⁴

Bark canoes were used a great deal to carry on French scouting on the Richelieu River and the mouths of its tributaries. Though Bourlamaque preferred large ones with space for 10 to 12 men, canoes of various dimensions were found at Île aux Noix, which could hold four, six or eight men. Moreover Bigot, in contrast to Bourlamaque, was of the opinion that the smaller canoes were better for scouting in the Île aux Noix area.

Barges or Flat Boats and Barques⁵

Barges or small flat boats were generally for the scouts on Lake Champlain; however, not much is known about this type of boat. Some wrecks of small flat-bottomed boats found in the Richelieu River near Fort Saint-Jean and Île aux Noix could belong to this category. Archaeologist André Lépine speaks of ships whose length varied from six to nine metres.

The same type of boat probably served to transport troops and goods from Saint-Jean to the various fronts in the Richelieu-Lake Champlain area during the Seven Years' War. Vaudreuil established two sorts: large and small ones. The large ones could carry 24 men, including officers, soldiers and servants, while the maximum capacity of the small ones was 16 men.

Would it have been these large boats that are sometimes associated with the term "barque," which by definition suggests a larger ship than a barge or a small flat boat? As for small two, it seems that they are related to the English term "whaleboat."

A Floating Redoubt and a Barge⁶

The different pieces of evidence tend to show that the floating redoubt did not have a particular shape, as might have been the case with all other ships. In the spring of 1759, Lévis suggested to Bourlamaque placing "redoubts or *blagouses* on boats or rafts" at each end of the planned stockades. The expression *blagouses* from the word "blockhouse," suggests a structure which presented the enemy a sort of mantlet or railing for the protection of a soldier on guard on this ship.

A floating redoubt was built during the 1759 campaign and armed with two guns. In August, Bourlamaque pointed out that he was transforming a barge into a redoubt by placing five guns on the same side. We know that this ship was in the middle of the eastern channel below the chains. It had no masts and therefore could not move under its own power. The "barge-redoubt" was also attached to the two banks by pieces of wood. In September 1759, British scouts, after they had unsuccessfully tried to set this ship on fire, reported to Amherst that, apart from the swivel-guns, six guns were mounted on it and that two portholes were closed.

At the beginning of the 1760 campaign, Bourlamaque suggested placing four 4-pounders and four swivel-guns in the floating redoubt, hoping for the construction of a second similar "ship." On the barge, he hoped to mount the same number of guns minus a swivel-gun. Still according to Bourlamaque, the barge also had the advantage of being able to take all sorts of guns. At the time of the siege, according to Bigot, it carried four guns.

These two floating structures had the objective of supporting the chains by their artillery in the defence of the passage on the east side of Île aux Noix. At the time of the siege, both of them were to be transported out of range of enemy gunfire and moored fore and aft in a place which would still make it possible for them to defend the passage and prevent the enemy from placing ships in the water further downstream. (The enemy succeeded in capturing the barge during the siege at the same time as the schooner and the larger tartan.)

The floating redoubt then could be defined, at least at Île aux Noix, as a non-self-propelled floating structure whose objective was to make it possible for artillery to be used in marshy areas or on a stretch of still water. Its designation would apply more to its function than to its form.

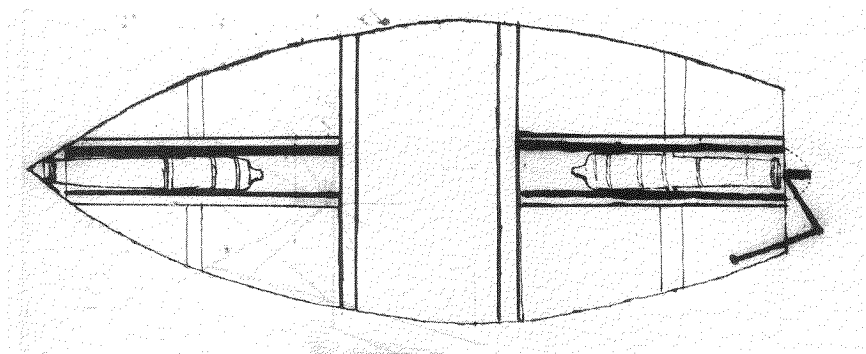
Jacaubites or Small Gunboats⁷

Small gunboats or jacaubites, named for their inventor, artillery officer Jacau de Fiedmont, were part of the naval defensive equipment of the French on the various fronts in the Seven Years' War. On Lake Champlain and the Richelieu, certain pieces of evidence confirm that they were present in 1759 and 1760, more precisely at Île aux Noix during the 1760 campaign and at the time of the siege, when there were four of them

It remains difficult, however, to describe the real nature of these jacaubites. Probably they were small boats which, in the case of the ones present at Île aux Noix in 1760, could carry 11 people. In 1757, Bougainville drew attention to the presence near Carillon of a "boat" built by Jacau. It carried an 11-pounder and two small swivel-guns. The author of the anonymous report on Canada spoke of jacaubites when he told of the use of these "cut away" boats which carried a gun and were invented by Jacau de Fiedmont. Bourlamaque told Vaudreuil in October 1759 that he was having "a small gunboat finished" at Île aux Noix which "will be very useful in defending the river." Now, in Bourlamaque's papers there is a sketch showing a boat cut away at each end in order to mount a gun, which allows one to suppose a resemblance to the jacaubites.

In his report on the Lake Champlain border, Bourlamaque suggested to Bougainville the placing a 4-pounder and two swivel-guns on each of the four small gunboats. Bougainville, however, expressed a preference for cast-iron guns on these small ships, justifying his choice by the fact that

iron guns necessitated frequent caulking of the jacaubites, not to mention the risk of drowning! According to Bigot, at the time of the siege the four jacaubites, which he calls rowboats, each carried an 8-pounder. It should also be noted that at Québec in 1759, a plan to mount a 12-pounder on each of 12 large wooden canoes had been drawn up by Jacau de Fiedmont.



An armed barque. Made by Bourlamaque at Île aux Noix in 1759, this drawing could be connected to the jacaubite. (NA, C-105266)

Note 1

NA, MG18, K, 9, Vol. 1, Montcalm to Bourlamaque, 5 June 1759; *ibid.*, Vol. 3, pp. 79-80, Lévis to Bourlamaque, 22 May 1759, pp. 83-86, Lévis to Bourlamaque, 23 May 1759; *ibid.*, Vol. 5, pp. 215-25, Vaudreuil's Instructions to Bourlamaque, 20 May 1759; *ibid.*, Vol. 6, pp. 249-55, Bourlamaque to the Minister, [August 1759]; *ibid.*, K, 10, Vol. 2, pp. 210-14, Mémoire sur la frontière du lac Champlain, [Bourlamaque, 1760]; H.R. Casgrain, ed., *Collection de manuscrits ...*, Vol. 5, pp. 29-36, Bourlamaque to Lévis, 13 August 1759; *ibid.*, Vol. 10, pp. 148-49, Bougainville to Roquemaure, 25 August 1760; J.C. Webster, *op. cit.*, p. 157, 16 August 1759; Dennis M. Lewis, "The Naval Campaign of 1759 on Lake Champlain," in *The Bulletin of the Fort Ticonderoga Museum*, Vol. 14, No. 4 (Fall 1983), pp. 203-16.

Note 2

NA, MG18, K, 9, Vol. 2, Vaudreuil to Bourlamaque, 16 May 1759; *ibid.*, pp. 275-78, Vaudreuil to Bourlamaque, 25 October 1759; *ibid.*, Vol. 3, pp. 83-86, Lévis to Bourlamaque, 23 May 1759; *ibid.*, Vol. 5, pp. 215-25, Vaudreuil's Instructions to Bourlamaque, 20 May 1759; *ibid.*, Vol. 6, pp. 249-55, Bourlamaque to the Minister, [October 1759]. PRO, C05/57, Pt.1, f. 3, Amherst to Pitt (Journal), 27 October 1759; *ibid.*; f. 94-94v, "Return of Guns...", [October 1759]; PRO, W034/52, f. 23, Amherst to Haviland, 13 April 1760; *RAPQ*, 1928-29, "Journal de Nicolas Renaud d'Avène de Meloïzes," pp. 80-85, October 1759; *ibid.*, 1931-32, "Journal La Pause," pp. 89, 100, 104-5, 1758-59; H.R. Casgrain, ed., *Collection de manuscrits...*, Vol. 1, p. 175, Journal of Lévis, Winter 1758-59; *ibid.*, Vol. 5, pp. 19-22, Bourlamaque to Vaudreuil, 7 August 1759; *ibid.*, pp. 29-36, Bourlamaque to Lévis, 13 August 1759; *ibid.*, pp. 61-63, Bourlamaque to Lévis, 17 October 1759; *ibid.*, Vol. 8, pp. 111-14, Vaudreuil to Lévis, 3 October 1759; A.G. Doughty, ed., *An Historical Journal of the Campaign in North America by Capt. John Knox* (Toronto: Champlain Society, 1914), Vol. 2, pp. 196-97, Oct. 1759; J.C. Webster, *op. cit.*, p. 157, 16 August 1759; Dennis M. Lewis, *op. cit.*, pp. 203-16.

Note 3

NA, MG4, B, 1, A1, Vol. 3574, Document 99, Bigot to the Minister, 29 August 1760; *ibid.*, MG18, K, 9, Vol. 3, p. 235, Bougainville to Bourlamaque, 8 April 1760; *ibid.*, Vol. 6, pp. 129-32, Instructions of Bougainville to La Valette, 24 November 1759; *ibid.*, K, 10, Vol. 2, pp. 205-27, Mémoire sur la frontière du Canada, [Bourlamaque, 1760]; *ibid.*, Vol. 3, pp. 238-41, Bourlamaque to Bougainville, 7 August 1760; *ibid.*, pp. 266-68, Lévis to Bougainville, 12 August 1760; PRO, W034/51, f. 57, Depositions from French prisoners, 21 June 1760; H.R. Casgrain, ed., *Collection de manuscrits...*, Vol. 10, pp. 148-49, Bougainville to Roquemaure, 25 August 1760; G. de Malartic and P. de Gaffarel, eds., *Journal des Campagnes au Canada de 1755 à 1760 par le comte de Maurès de Malartic* (Dijon: L. Damidot, 1890), p. 343, 26 August 1760.

Note 4

NA, MG18, K, 10, Vol. 2, p. 205, Mémoire sur les frontières du lac Champlain, [Bourlamaque, 1760]; *ibid.*, pp. 269-73, Bigot to Bougainville, May 1760; *ibid.*, Vol 3, p. 90, Vaudreuil to Bougainville, 8

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Note 5

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APPENDIX B

NAVAL ACTIVITY ON LAKE CHAMPLAIN

Opposing flotillas which fought in the Battle of Valcourt Bay on Lake Champlain, in October 1776. (NA, C-13202 and C-13203)

(A) American Ships under the command of Benedict Arnold:

Name	Guns	Remarks
1 <i>Royal Savage</i>	12	Burned on 11 October
2 <i>Revenge</i>	8	Captured or destroyed in 1777
3 <i>Entreprise</i>	10	Captured or destroyed in 1777
4 <i>Lee</i>	6	Captured on 15 October
5 <i>Trumble</i>	10	Captured or destroyed in 1777
6 <i>Washington</i>	10	Captured on 13 October
7 <i>Congress</i>	10	Burned on 15 October
8 <i>Philadelphia</i>	3	Burned on 15 October
9 <i>New York</i>	3	Captured or destroyed in 1777
10 <i>Jersey</i>	3	Captured on 12 October
11 <i>Connecticut</i>	3	Burned on 13 October
12 <i>Providence</i>	3	Sunk on 12 October
13 <i>New Haven</i>	3	Burned on 13 October
14 <i>Spitfire</i>	3	Burned on 13 October
15 <i>Boston</i>	3	Sunk on 11 October

(B) British Ships under the command of Captain Thos. Pringle:

1 <i>Carleton</i>	14
2 <i>Inflexible</i>	18
3 <i>Maria</i>	16
4 <i>Convert</i>	5
5 <i>Thunderer</i>	4
6 Longboats	2
7 Gunboats	1
8 L'île Valcourt	

List of Ships on Lake Champlain in 1782. Several of these ships previously took part in the Battle of Valcourt Bay on Lake Champlain on 11 October 1776.

Name	Guns	Tonnage	Sailors	Soldiers	Remarks
<i>Royal George</i>	26	384	100	50	Built at Saint-Jean
<i>Inflexible</i>	22	204	80	40	Dismantled at Québec and reassembled at Saint-Jean
<i>Maria</i>	14	129	35	20	Captured on the St. Lawrence, dismantled at Chambly, reassembled at Saint-Jean
<i>Carleton</i>	12	96	30	20	Dismantled at Chambly and reassembled at Saint-Jean
<i>Washington</i>	20	127	35	20	Captured from the Americans in 1776
<i>Trumbull</i>	14	119	35	20	Captured from the Americans in 1777
<i>Lee</i>	8	48	20	10	Captured from the Americans in 1776
<i>Liberty</i>	8	37	15	10	Captured from the Americans in 1777
<i>Royal Convert</i>	7	109	20	15	Captured at Sillery
<i>Jersey</i>	5	52	15	10	Captured from the Americans in 1776

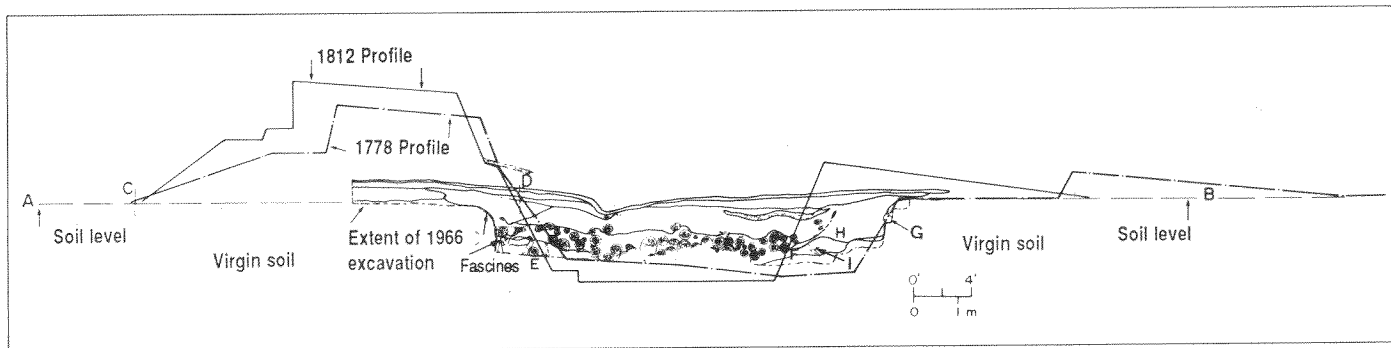
APPENDIX C

HYPOTHESIS ON THE INTERPRETATION OF THE ARCHAEOLOGICAL DIGS ON THE NORTH FACE OF THE FIRST BRITISH FORT

The archaeological digs carried out by R. T. Grange, Jr. in 1966 on the north face of the first British fort brought to light the razing towards 1819 of the support structure of the rampart which was associated with its reconstruction in 1812. The archaeologist's interpretation of the collected data seems to me to be somewhat distorted, however, because he did not compare the original profile of the fort with the one remodelled in 1812, when the ditch was narrowed by a width of at least six feet. For this reason, the archaeological results as expressed by Grange contradict or confuse, wrongly in my opinion, the information contained in the documentation left by the British officers.

To arrive at an interpretation which is more faithful to reality, the hypothesis has to be completely reformulated by superimposing the profiles of the 1778 and 1812 ramparts on the stratigraphic section of the 1966 dig. The line of virgin soil *AB* is the horizontal comparative denominator of these three phases. In the vertical plane, I postulate that the ramparts of 1778 and 1812, which had a similar width *CD*, occupied appreciably the same space because of a minimal volume of earth that had to be displaced. Consequently, the narrowing of the 1778 ditch in 1812 would have been carried out on the counterscarp side.

The results of this procedure seem particularly conclusive, even taking into account a potential margin of error due to possible minor variations both in the ground levels of 1778 and 1812 and in the width of the ditch as shown on the various cross sections. As a first observation, the superimposition makes it possible to note the close relationship between the surface taken up by the logs placed at the bottom of the ditch *EF* and the width of the latter in 1812. These logs come from the demolition of the supporting structure of the 1812 escarp.



Hypothesis on the interpretation of the archaeological remains of the first British fort. (*Parks Canada, L. Lavoie, 85-5G-D27*)

Another interesting observation is that the edge of the ditch shown at *G* in Grange's stratigraphy corresponds exactly to the location of the 1778 counterscarp, which indicates a ditch that was wider than in 1812. This is the more probable because Grange recorded in the ground at *H* a fill material which is earlier than that of the wooden logs. This could correspond to the eroded 1778 counterscarp left in place when the fortification was rebuilt in 1812. The piece of wood *I* could be associated with the wooden revetment of the 1778 counterscarp.

Other, deeper archaeological probing would no doubt make it possible to flesh out this hypothesis which brings documentary and archaeological data into relationship with each other.

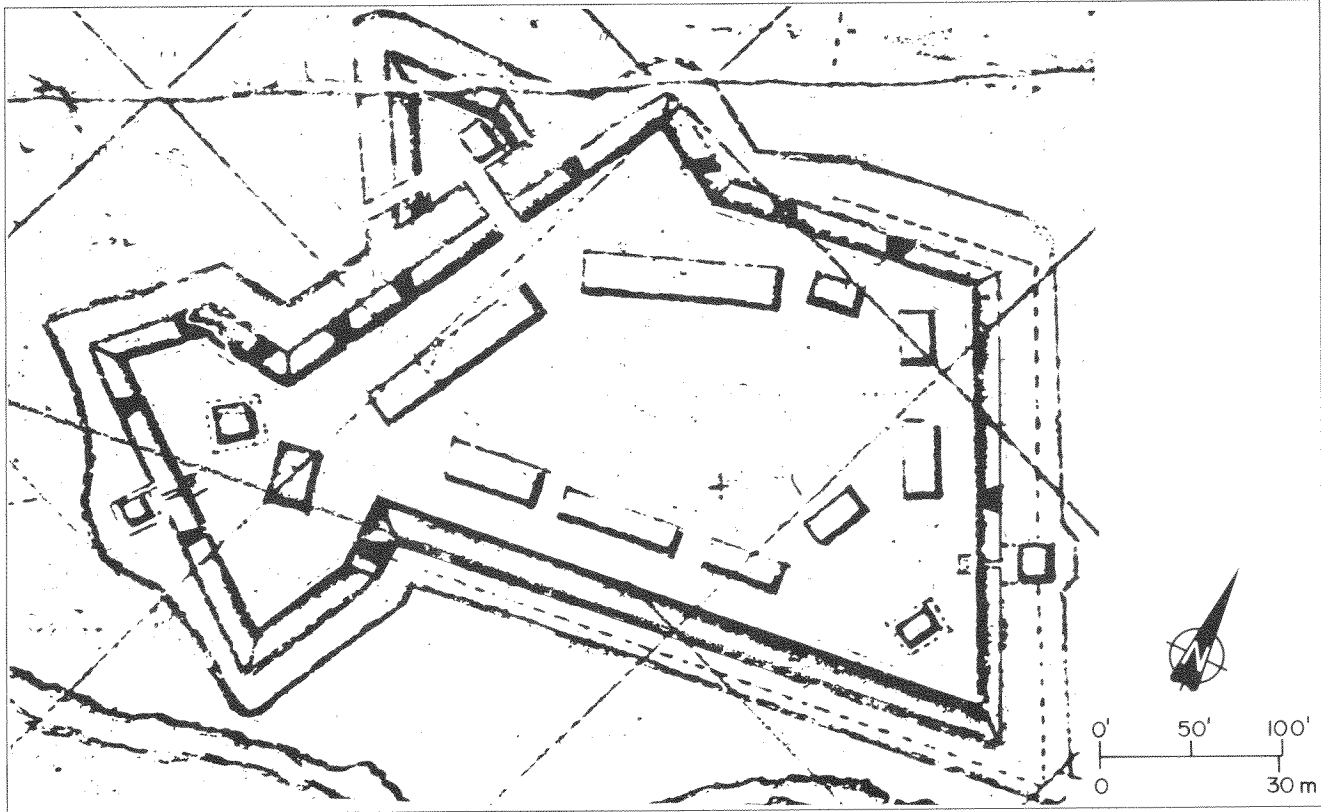
APPENDIX D

HYPOTHESIS CONCERNING THE TRACE OF THE FIRST BRITISH FORT

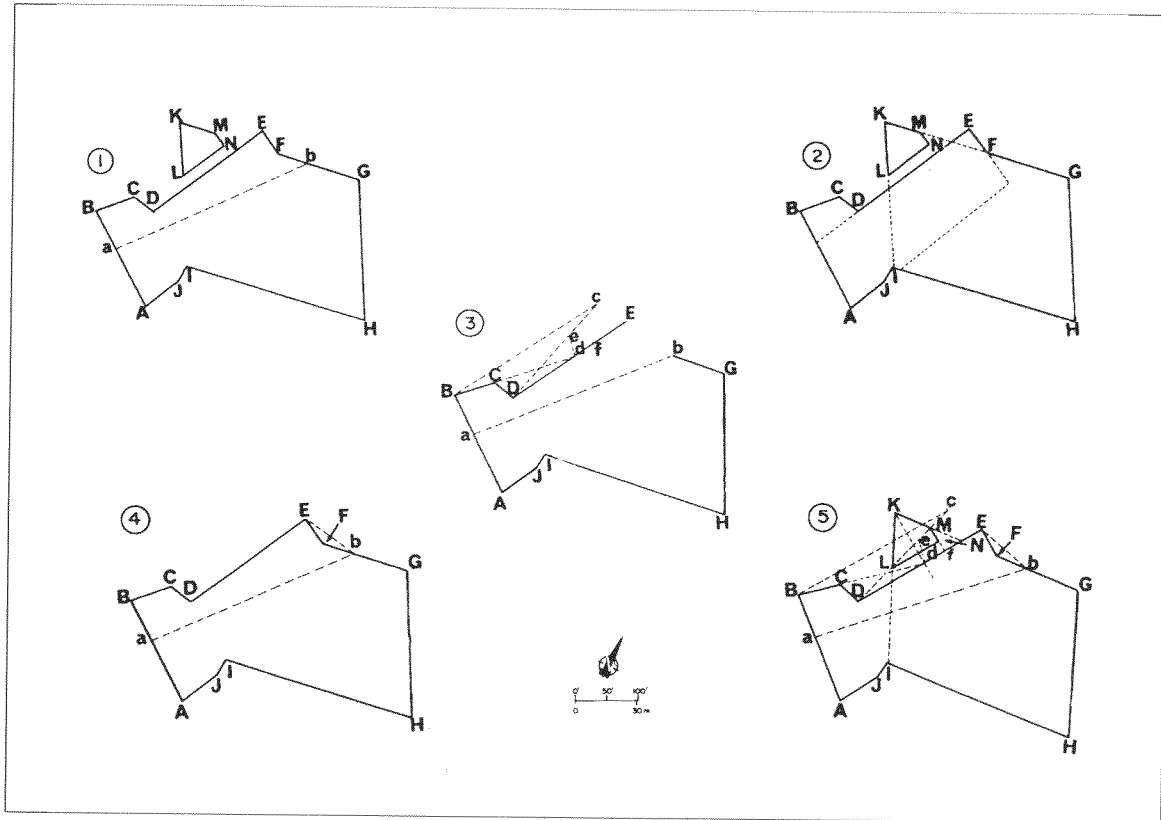
It remains difficult to give a precise geometric justification for the whole perimeter of the first British fort. On one hand, the engineer Twiss, for a good part of the perimeter, salvaged the earlier French entrenchment. On the other hand, he completed his polygon with a series of lines which did not seem to show the conventional geometric regularity. To this was added the difficulty of making exact use of the 1778 plan which, in spite of having an accurate scale, showed outlines or features that were not clearly defined and in some cases were even almost obliterated. Still, this plan remains the most reliable for a study of the trace of this first British fort. The following data therefore represent only a tentative understanding, but one which enables some general conclusions to be drawn about the geometry used by Twiss.

Sketch 1

The 1778 plan shows clearly that a good part of the perimeter of the fort at *A J I H G b*, to the east, makes use of the same trace as the earlier French entrenchment. To complete the perimeter of the new fortification, Twiss had to close the west side and the simplest way would be to draw a straight line from *a* to *b*. Two factors prevented him from doing this. First, a simple straight line did not provide the necessary salients so that this new front could be flanked. Secondly, if the fort was simply closed off by a line going from *a* to *b*, the result would be an enormous reduction of the interior surface, especially in the southeast sector where freedom of movement would be considerably restricted. Twiss chose instead to enlarge the perimeter of the fort somewhat, giving the new part of the fort



The trace of the first British fort according to the 1778 plan [Fig. 11]. (*Parks Canada, L. Lavoie, 85-5G-D26*)



Geometry of the first British fort. (Parks Canada, L. Lavoie, 85-5G-D2)

a geometry which was capable of ensuring the necessary flanking on that side.

Sketch 2

It seems obvious that Twiss drew his inspiration from the parallelogram as the basic polygon for the trace, at least, that is what I'm led to believe by the orientation of the sides *IH*, *HG*, *GF* to the faces *KM* and *LK* of the ravelin. Less obvious, however, the parallel orientations of the face *AJ* and the curtain *DE*, and of the axis of the sides *AB* and *EF*, nonetheless make it possible to form a hypothesis that the parallelogram was the basis of the trace of the new front. The following demonstration is based on that hypothesis.

As Twiss could not close the west sector of his new fortification by a straight line joining *ab*, he enlarged side *Aa*, which was inherited from the French entrenchment, from *a* to *B*, which gave him a length of 200 feet, the addition of *aB* being equal to the existing face *AJ*. At point *B*, the perimeter of the fort as shown on the 1778 plan, leads me to assume a trace which drew its inspiration from the geometry of a bastioned front of fortification, since a face *BC*, a flank *CD* and a curtain *DE* are present.

Sketch 3

Faithful to the hypothesis of the parallelogram as the basic polygon, Twiss would have traced at *B* an indefinite exterior side parallel to the opposite face *AJ*, which gave him at angle *B* an opening complementary to angle *A*. Next, Twiss determined a salient angle equal to salient angle *A* and face *BC*, whose length corresponded to face *AJ*. The length of the exterior side *Bc* was determined by the face *BC*, which corresponded to the quarter of the latter. Knowing points *C* and *c*, with the help of the square, he then traced flank *CD* perpendicular to the line of defence *cD*. In the other direction, he continued his trace by drawing the line of defence *Bd*, in the prolongation of *BC* and equal to *cD*. He then determined face *ce*, which like *BC* was equal to a quarter of the exterior side *BC*. He could then fix the flank *de* perpendicular to the line of defence *Bd*. The curtain *Dd* was now identified.

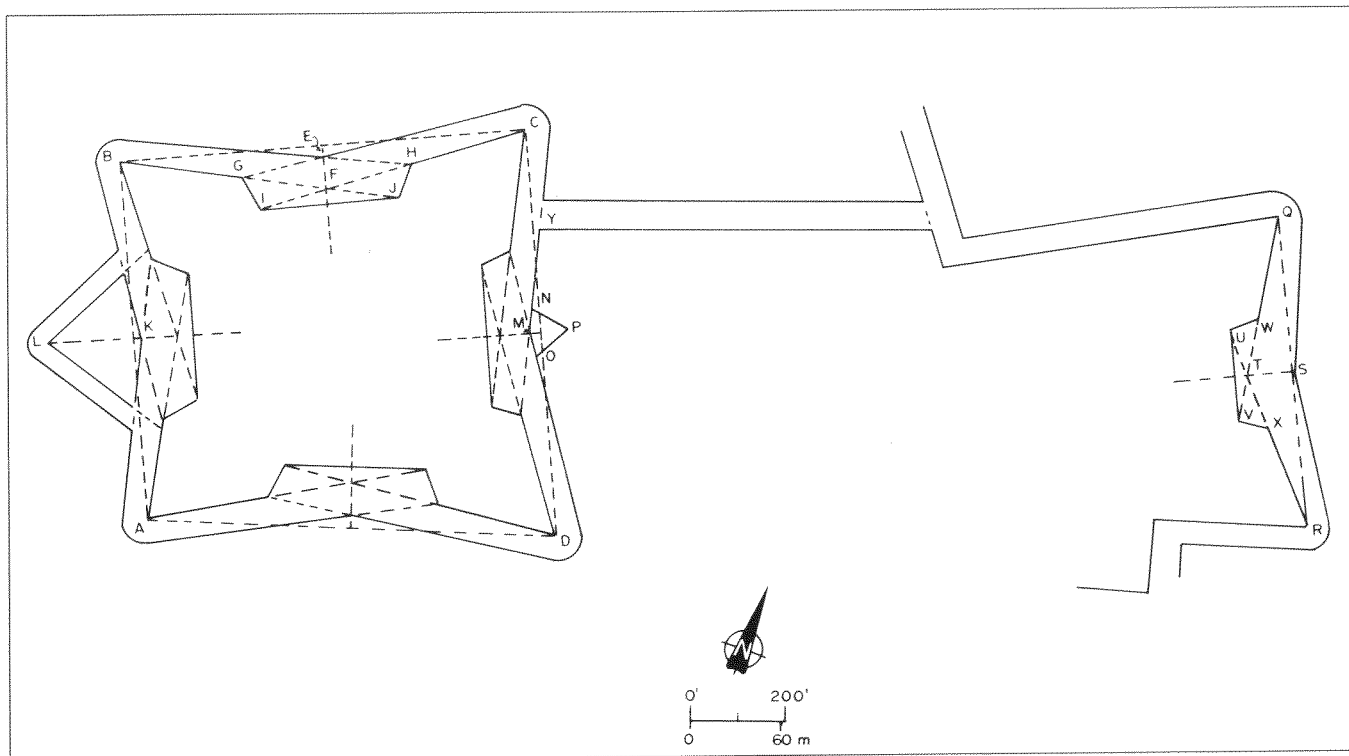
In order to determine additional angles on this new front of the fort, and taking into account that the exterior side extended just a short distance beyond the maximum musket range, Twiss preferred to extend the curtain here by eliminating one of the half-bastions of the resulting new front. To do this, he simply moved the length of the flank de from d to f and the face ce from f to E . He thus obtained a lengthened curtain DE proportional to the length of the exterior side Bc . He avoided making new breaks in the perimeter of the fort which already had too many. At the same time he approached the closing point of the fort at b .

Sketch 4

To complete the enceinte between E and b , Twiss decided to make angle E more acute, which he would have achieved by simply tracing a straight line from E to b . He then continued by erecting the side EF perpendicular to DE ; F being the meeting point with the prolongation of the face Gb . In this way Twiss obtained a better flanking on this front.

Sketch 5

The trace of the ravelin seems to follow logically from the angle which is missing from the parallelogram described by the sides bG , GH and HI of the earlier French entrenchment. Angle K is determined by extending Gb to K ; GK being equal and parallel to HI , as IK is to HG . Salient angle K is equal to angle H and its bisector Kd is located as is normal perpendicular to the curtain DE , and in addition to its point of meeting the line of defence Bd . The length of the left face KL , which is lined up on angle I , is determined by the width of the ditch which Twiss laid out parallel to the perimeter of the fort. At point M he cut the other face of the ravelin aligned on angle G , to trace an additional flank MN , which extends perpendicular to the curtain DE . This flank is also lined up on point f which, it should be remembered, is one of the points of extension of the curtain Dd , in accordance with the theoretical flank de . The gorge of the ravelin LN , which is bounded by the ditch, remains parallel to the curtain DE .



Geometric trace of Fort Lennox. (Parks Canada, L. Lavoie, 85-56-D28).

APPENDIX E

THE GEOMETRIC TRACE OF FORT LENNOX

The trace of the enceinte set out by Nicolls generally reflects the proportions formulated by Vauban in the 17th century. The same defensive ideas were still being taught in the European schools of military engineering at the end of the 18th century, at the time when Nicolls received his academic training.

Nicolls adopted an irregular square $ABCD$ as the basic polygon for determining the geometry of the fort. Three of the sides, BC , CD and AD were equal in length at 850 feet, and the fourth side AB was 750 feet long. To illustrate the geometric detail of the trace, I have used the exterior side BC , on which Nicolls erected an indefinite perpendicular in the centre. Then he made the length of this perpendicular EF equal to one-eighth of the exterior side BC . At point F , he drew the indefinite defence lines from C to F and from B to F . Nicolls then determined the length of the faces, as Vauban stipulated, equal at two-sevenths of the exterior side; he thus obtained the faces BG and CH .

To trace the flanks, Nicolls departed somewhat from Vauban's theoretical model precisely because of the irregular square which was his basic polygon. In doing so, he reduced the length usually assigned to lines of defence, giving them an extent equal to two-thirds of the exterior side BC , while Vauban's theoretical model generally made lines of defence equal to three-quarters of the exterior side. With points G , I , H and J determined, the engineer could then erect flanks GI and HJ , as well as the curtain IJ , parallel to the exterior side BC . By this procedure, Nicolls determined flanks in a slightly more obtuse position, which had the consequence of reducing the length of the curtain and increasing the available surface at the gorges of the bastions.

Nicolls also planned a ditch with a width of 50 feet, which was bounded by a counterscarp lined up on the shoulder angles of the bastions opposite. On the south front AB Nicolls added a ravelin whose trace once again

reflected Vauban's theoretical model, although it was of reduced dimensions. From the re-entering angle of the counterscarp, and perpendicular to the exterior side AB , he traced the bisector of the flanked angle of the ravelin, which he gave a length of 200 feet; the line obtained KL was roughly one-quarter of the exterior side AB . The faces of the ravelin were oriented on those of the bastions behind, a few feet from the shoulder angles. The ditch of the ravelin was about forty feet wide and its counterscarp extended parallel to the faces.

On the opposite front CD , on the north, Nicolls planned a small place of arms, at the re-entering angle of the counterscarp. From angle M , he defined lines MO and MN , each one 50 feet long. From points N and O as centres, and with a radius of 80 feet, he then determined the angle of the capital P of the place of arms.

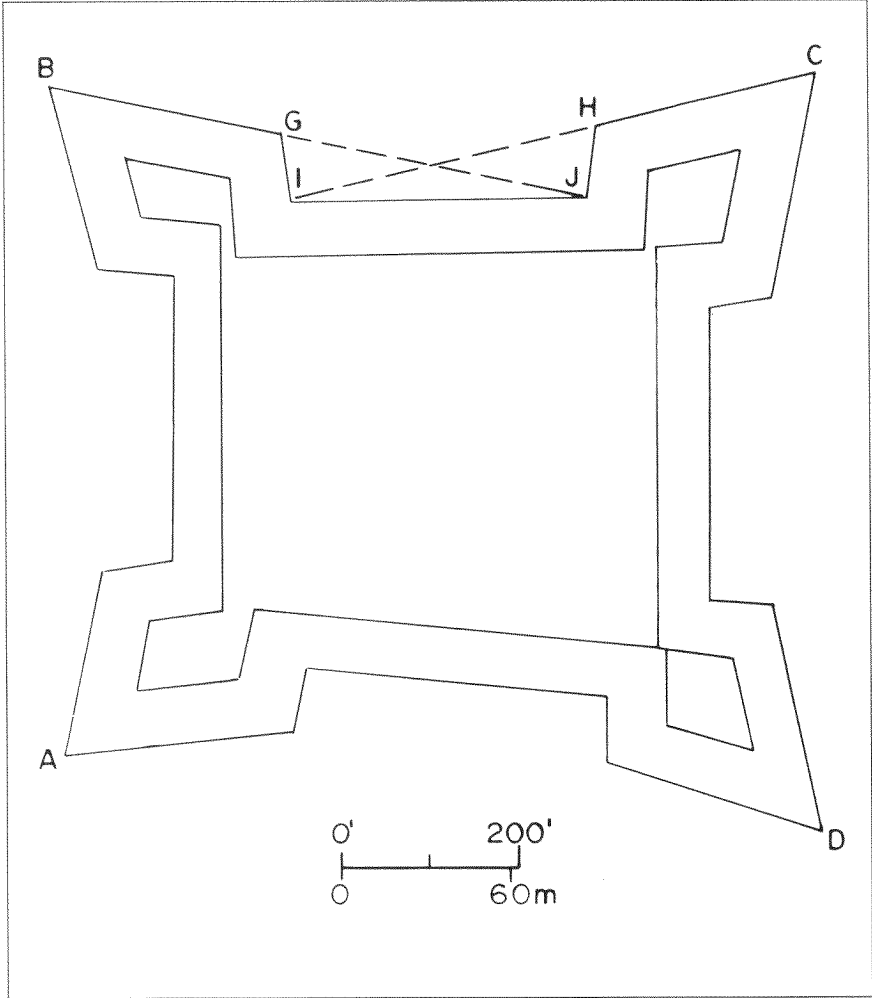
The naval base was protected by a hornwork, one of its branches was defended by the northwest bastion of the fort. The head of this work, made up of two half-bastions and a curtain, had a proportional trace on the exterior side QR , 650 feet long. Nicolls determined that the perpendicular ST in the centre corresponded to one-sixth of QR . He then drew the defence lines RU and QV , equivalent, as in the case of the fort, to two-thirds of the exterior side QR , and he erected the flanks UW and VX perpendicular to these lines of defence. In this way, the faces QW and RX as well as the curtain UV were determined. The west branch of the hornwork completely closed the naval base on that side. As the distance between the head of the work and the fort was 1500 feet, a distance greater than the maximum range of musket fire, Nicolls cut this branch near the centre to provide an additional flanking on that side. To the east, the right branch of the hornwork was much shorter, since the banks of the island opposite the naval base were not fortified. The hornwork was also provided with a ditch 50 feet wide which ran along and parallel to the branches of the work. At the head, Nicolls widened this ditch by aligning the counterscarp towards the centre S of the exterior side QR .

APPENDIX F

FORT LENNOX AND VAUBAN'S MODEL

The irregular figure chosen by Nicolls, for the trace of Fort Lennox did not allow him to use Vauban's method in its entirety to determine the flanks of the work. Since the sides of the square $ABCD$ were not equal, the basic polygon had an acute angle, one which was less than 90° : ABC and BCD were equal to 90° , CDA was more acute at 84° and DAB became its complementary angle at 96° . An angle of 90° was the minimum opening allowed for a polygon in the theoretical models for fixing the geometry of bastions and in particular that of flanks. This difficulty was increased by Nicolls' intention to build a rampart at Île aux Noix at least 60 feet thick which would be capable of resisting large-calibre artillery. That had the result of considerably reducing the space available inside the bastions, particularly because the exterior sides were only slightly extended.

If Nicolls had traced the flanks of Fort Lennox by using Vauban's model in its entirety, he would have proceeded as follows: After determining the length of the faces BG and CH (see App. E), he would carry the distance between GH back onto the lines of defence from G to J and from H to I , which made it possible to fix the orientation and length of the flanks at the same time, as well as the length of the curtain, which was traced parallel to the exterior side BC . The trace obtained shows clearly the lack of space inside the bastions for quick and efficient movement by the infantry and gunners who were tasked with the defence of the fortification. Access to the interior of bastion D would have been impossible! In these circumstances, Nicolls had to depart somewhat from the theoretical model in order to adapt his fortification to the particular conditions of the site which was to be defended.



Fort Lennox and Vauban's model. (*Parks Canada, L. Lavoie 85-5G-D30*)

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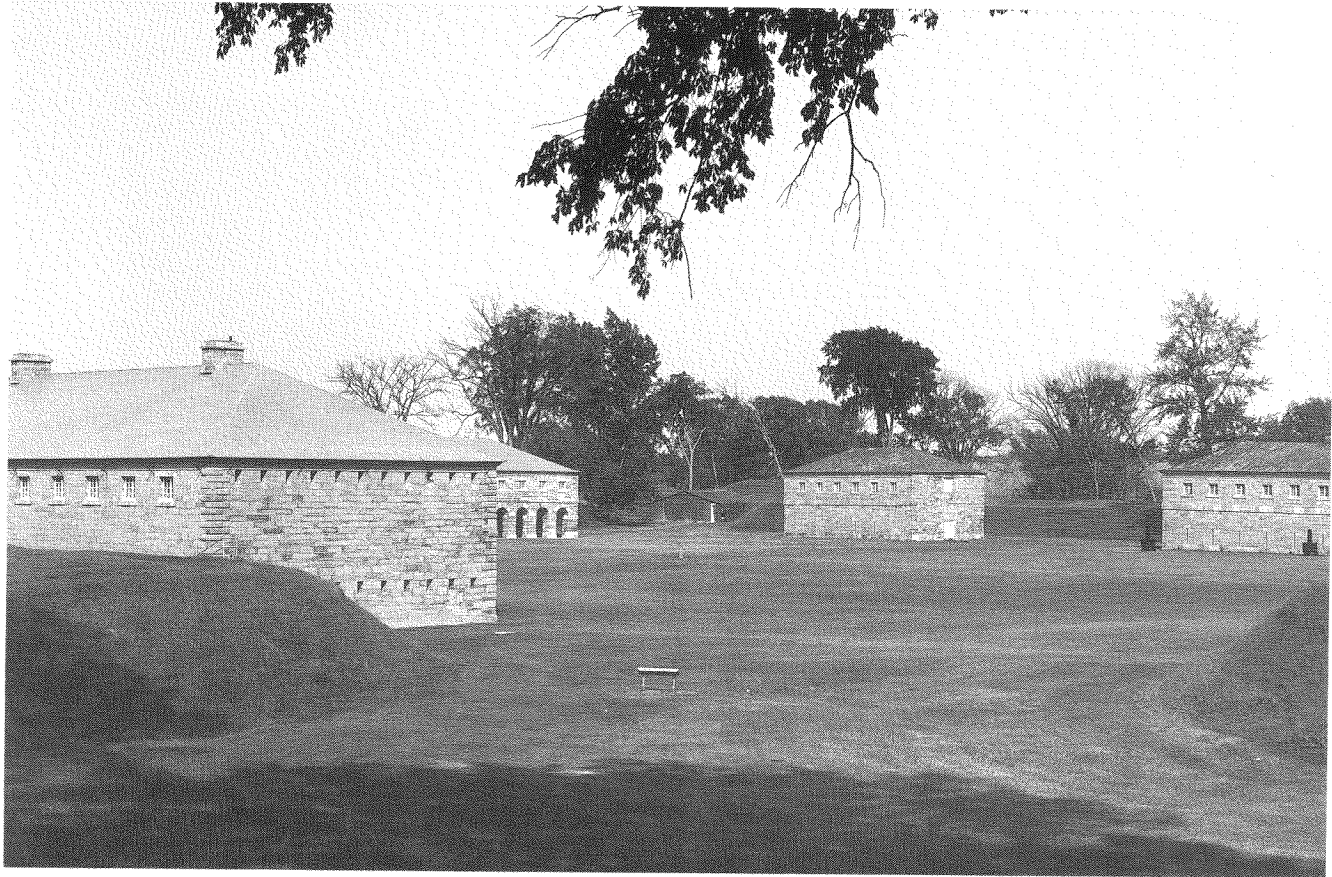
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