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THE POLITICS OF FRENCH PUBLIC CONSTRUCTION
IN THE ISLANDS OF THE GULF OF
ST. LAWRENCE, 1695-1758

by
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ABSTRACT

The governments of Louis XIV and Louis XV recognized the cod fishery of the North Atlantic waters adjacent to Newfoundland and Cape Breton Island as one of France's most profitable areas of trade, and were committed to fostering and protecting it. However, their necessarily ambivalent military policy, whereby naval strength was frequently sacrificed in favour of armies and fortifications on France's European frontiers, influenced the means of protection that they chose. Fortifications came to be thought of as a substitute for naval strength; fortified ports were a refuge for fishing vessels and a base from which the latter, armed as privateers, could harass an enemy in time of war.

The first French base for the protection of the cod fishery was Placentia or *Plaisance*; it was the forerunner of the ports established after 1713 on Ile Royale and Ile Saint-Jean, the most notable of which was Louisbourg. Placentia's earlier defences of wood and earthworks were slowly replaced, between 1695 and 1710, with masonry walls; but the port's fortifications were still unfinished when the colony was ceded to Great Britain in 1713. The reasons for this were primarily political: the government had little success in persuading the *armateurs* of the western ports of France that they must contribute toward the cost and early completion of construction. The Court tried to enlist their assistance in recruiting skilled labour in France and transporting the men to Placentia, and in finding building materials in France and shipping them to the colony. The *armateurs* prevaricated, because they were skeptical

of the value of Placentia's masonry walls to the protection of their investments. The government alternated between putting pressure on the merchants to comply with its orders, and accommodating them lest they invested their funds in other trade. Shortages of funds, labour and supplies made the government's construction program unequal to the Avalon Peninsula's winter, which destroyed each year much of the previous summer's work.

Though the government resolved not to depend on the fishing industry for assistance in building the larger establishments planned for Ile Royale and Ile Saint-Jean, it made new alliances with private business interests. Once the Marine Council had instructed a veteran officer of the engineer corps of the *armée de terre* to recommend the installations necessary for the colony, *ipso facto* it associated what was to become a very ambitious colonial construction project with the existing "fortress industry" on the land and maritime frontiers of France. Thereafter, every engineer in chief was a member of the Corps; every general contractor had strong metropolitan interests; and the most significant sources of supply were those normally used by the engineer corps and the ministry of marine in France itself. Unlike the more populous colony of Canada, where the engineer in chief from 1716 to 1756 was not an officer of the Corps and where the contractors were builders with local interests, Ile Royale became very dependent on public and private institutions in France. By the 1730s, what had begun in 1719 as the *means* of achieving the objective of protecting a vital economic interest, was becoming an end in itself: like the fortresses of the

French frontiers, the fortress of Louisbourg became self-perpetuating. Fortifications, government buildings and port improvements (all constructed under the direction of military engineers) were expanded, repaired and reconstructed. Louisbourg, and to a lesser extent its dependencies on Ile Royale and Ile Saint-Jean (Port Dauphin, Port Toulouse and Port La Joie) became in effect an extension of the metropolitan military construction and supply system, which was evidently an alliance between public officials and private entrepreneurs. It is noteworthy that the properties of French North American building supplies remained relatively unknown during most of the period, necessitating the use of what was available in France; that attempts in 1723 to install an experienced Canadian as chief engineer and Canadian builders as construction contractors were vetoed by metropolitan authorities; and that the government's failure in 1754 to find a suitable metropolitan contractor decided the Minister of Marine to place construction management directly under the representative of the engineer corps in charge of the fortifications of the colony, rather than employ the local contractor recommended by the colonial administration. All of these acts strengthened links with the metropolitan network.

Since metropolitan investment in the installations of the Gulf region were extensive (some 5 million *livres* of government expenditure throughout the period), supervision by the home government was detailed and very thorough in view of the distance between France and the colony, and the slowness of communications. Historians have made much of waste and inefficiency in the construction of Louisbourg in particular, and not enough of the meticulousness of metropolitan administrative control. Too

much attention seems to have been paid to ministerial complaints---an administrative-control device---and too little to accounts and financial correspondence, detailed plans, profiles and elevations and estimates, and directions concerning behaviour among officials and between them and contractors. This thesis attempts to restore some equilibrium to the interpretation of the subject, and at the same time to show that the order of magnitude of expenditure was consistent with policy. The first objective of construction was the encouragement of the cod fishery; and the importance of that resource to 18th-century France is apparent to anyone who examines its role in the peace negotiations of 1713, 1749 and 1763.

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ABBREVIATIONS USED IN THIS THESIS

AN	Archives Nationales (part of the Archives de France) Paris
A.P.T.	<i>Bulletin</i> of the Association for Preservation Technology
A.S.	Amérique septentrionale
Bibl.	Bibliothèque
B.N.	Bibliothèque Nationale, Paris
C.O.	Colonial Office
Col.	Colonies
C.&P.	Cartes et plans
C.S.P., A.W.I.	Calendar of State Papers, Colonial Series, America and West Indies
C.T.G.	Comité technique du génie (part of the Ministère des Armées, France)
D.C.B.	Dictionary of Canadian Biography
D.F.C.	Dépôt des fortifications des colonies
P.A.C.	Public Archives of Canada
P.R.O.	Public Record Office
S.H.	Service hydrographique
S.H.A.	Service historique de l'Armée (part of the Ministère des Armées, France)
W.O.	War Office

GLOSSARY OF CONSTRUCTION AND FORTIFICATION

TERMS USED IN THE THESIS

Banquette: step on which men stood to fire small arms over the parapet.

Barbette: guns *en barbette* were those raised to fire over the parapet instead of through *embrasures* in the parapet; *barbette* batteries provided no cover for the gunners.

Bastion: work salient from a fortress, composed normally of two faces and two flanks; bastions were connected by *curtains*.

Batardeau: a form of coffer-dam, i.e. a work that held back water in parts of a ditch that might be flooded; it was a solid piece of masonry 7 to 8 feet thick which crossed the whole width of the ditch opposite the *flanked* or salient angle of a bastion.

Bavette: scale, layer or blade of metal (usually lead) covering eaves.

Casemate: bomb-proof shelter or room in the rampart of a bastion; known also as *souterrain* in French.

Cavalier: a work constructed on the *terreplein* of a bastion 8 to 12 feet above it in order to command rising ground within cannon-shot, to serve as a traverse for preventing neighbouring *curtains* from enfiladed, and to protect the flanks from the reverse fire of the besieger's batteries.

Cordon: a semi-circular projection of stone, usually about one foot in diameter, on top of the *revetment* of the *escarp*, originally used as an obstacle to scaling ladders.

Counterguard: a work comprising two faces forming a salient angle, built in front of the *flanked* angle of a bastion.

Counterscarp: the slope of wall facing the *escarp* across the ditch from the latter.

Covered way or *covert way*: space about 30 feet wide, extending around the counterscarp, and covered by a *parapet* 7 to 9 feet high, with a *banquette*; served for drawing up troops making sallies or as a place from which such troops could be covered.

Crown work: a work comprising a bastion, two *curtains* and two *demi-bastions*; a double crown work had two bastions.

Cunette: channel at the bottom of a ditch, drain or aqueduct; in a dry ditch, it was from 4 to 8 feet broad, and was used to drain off water.

Curtain (French *courtine*): the part of the *rampart* of a fortress situated between two *bastions* and joining their flanks; length from 420 to 480 feet.

Demi-bastion: a *bastion* with one face and one flank, terminating a *crown work*.

Demi-lune or *ravelin*: a work built opposite a *curtain*, composed of two faces forming a salient angle.

Embrasure: an opening in a *parapet*, widening from within, through which guns were fired.

Enceinte: the "body" of the fortress, the total enclosure.

Epaulement: earth thrown up to cover troops in flank from the fire of the enemy; small flank added to a work.

Escarp: exterior slope of the rampart.

Flanked angle: salient angle of a bastion formed by its two faces.

Glacis: a gentle slope away from the top of the *parapet* of the *covered way*, extending about 120 to 210 feet away from the fortress.

Gorge: the neck of a bastion or other work of fortification.

Guérite: a stone sentry box built into a bastion or other structure at one of the angles.

Line of defence: line extending from the angle of the flank of one bastion to the *flanked* or salient angle of the next bastion.

Lunettes: works built on either side of a *ravelin*, one face perpendicular to that of the *ravelin*, the other nearly perpendicular to that of the bastion.

Merlon: the part of *parapet* between two embrasures.

Parapet: mass of earth 18 to 22 feet thick and 6 to $7\frac{1}{2}$ feet high, built on the rampart on the escarp side, i.e. facing away from the fortress and sloping downward in the same direction; comparable structure elsewhere, e.g. of a *covered way*.

Rampart: mound of earth built for the defence of a place, capable of resisting cannon-shot, and comprising an interior slope, a *terreplein*, *banquette*, *parapet*, and exterior slope or *escarp*; its height and thickness varied according to the terrain.

Ravelin: see *demi-lune*.

Revet: to face a wall with masonry.

Revetment: wall retaining the earth of a *rampart* on its exterior side, five feet thick at the top, with a slope equal to one-sixth

of its height; there were counterforts or buttresses on its interior side, constructed from 15 to 18 feet from each other, from centre to centre.

"Stirrup" (French *étrier*): a brace or clasp of iron used in construction.

Tenaille: a work built on the lines of defence, in front of the curtain; consists of two faces and a small curtain.

Terreplein: the level surface of a *rampart* behind the *parapet*; used also for the level surface behind the parapet of any work, such as the *covered way*, a battery, *cavalier*, etc.

CHAPTER I: THE CONTEXT

The governments of Louis XIV and Louis XV were committed to fostering and maintaining the French cod fishery of the northwestern Atlantic. The fishery loomed large in the maritime and colonial interest, for it provided at home and abroad a marketable product for which there was a steady demand, and it served as a fine training ground for mariners.¹

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1. Authorities agree that the steady flow of raw recruits into the fishery provided experienced men for the French naval conscription system adopted in 1689. Under *L'Inscription maritime*, "...sailors of maritime provinces were divided into three, four and five classes---each class serving one year out of four, five or ten, according to the number of seamen in the province. While one class was drafted for the navy, the others were free to serve in the merchant marine. Called up in rotation, they received half pay when not needed, but remained at the disposal of the navy for their entire lives." (E. Robson in *New Cambridge Modern History* [14 vol., Cambridge, 1957-1970], VII, p.183.) See also H.A. Innis, *The Cod Fisheries* (revised edition, Toronto, 1954), pp.119 (quotation from *Considerations on the Trade to Newfoundland*, 1745), 121 and 131.

Of the fishery's commercial value there can be no doubt.² The demand for fish was great in those countries of southwestern Europe where Roman Catholic fast-days were observed: Portugal, Spain and the Italian states as well as in France itself. This demand was not satisfied by the fisheries of the eastern Atlantic and the Mediterranean, and so fishermen turned to more distant sources of supply. Though they were six or more weeks' sailing time from the ports of Western Europe, the waters off Newfoundland and present-day Nova Scotia teemed with fish of commercial size; the most notable of these was the cod. Of all fish, salted cod best retained its fine flavour and texture. French fishermen in the seventeenth century developed the habit of arriving early in the season on the fishing grounds and returning early to market their product in Europe: the "green" fish (salted without being dried) where it could be quickly consumed, the dried fish (less heavily salted)

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2. The annualeconomic value of the whole French northwestern Atlantic fishery may have reached 8,000,000 *livres* during the period 1720-1760. That reported at Ile Royale during the periods 1723-44 and 1750-1753 has been estimated as ranging from 1,500,000 to 3,500,000 *livres*. This includes both the resident dry fishery, and the French ship fishery (mainly a "satellite" dry fishery) reported by the colony. It excludes that part of the ship fishery (mainly the green fishery) for which the colony had no statistics. See B.C. Bickerton, "The Isle Royale Fishery, 1718-1754," *Abstracts for a Colloquium on Maritime Provinces History* (Ottawa, 1972), p.11. I am indebted to Professor Bickerton for imparting to me his own unpublished estimates on the subject, part of his current research. See also J.S. McLennan, *Louisbourg from its Foundation to its Fall* (London, 1918), Appendix V, p.382. Charles de la Morandi re, *Histoire de la p che fran aise de la morue dans l'Am rique Septentrionale* (3 vol., Paris, 1962, 1966), II, pp.636-637, has estimated the whole French fishery in 1786 at more than 11,000,000 *livres*. It is interesting to compare these figures on the fishery with those for the fur trade, 1728-1756, cited by Dr. Jean E. Lunn and published by C. Nish in *The French R gime*, Canadian Historical Documents Series (Scarborough, Ontario, 1965), p.124: they ranged from a high point of 1,200,000 *livres* in 1728 to a low of 145,500 *livres* in 1756.

somewhat later to destinations far beyond the Atlantic and Channel ports where most of the fishing fleets were fitted out. The French competed successfully for the southern European market with their only rivals, the English, the Spanish, Portuguese and Dutch fishermen having already been eliminated from the scene. Marseille became the foremost entrepôt in France for this Mediterranean trade, the main port to which dried cod was brought from the fishing grounds by ships based in the Atlantic and Channel ports.³ Both the English and the French built up an important secondary market in the Caribbean islands, where cod of low quality and other fish from the northwestern Atlantic were purchased as cheap food for the nourishment of slave labour.⁴

Since the cod fishery was one of several important staples in the French maritime trading system it was an important factor in political negotiations. It vied for private investment and governmental encouragement with the sugar of the Antilles, the slaves of West Africa, the spices of south and east Asia, the varied products of the eastern Mediterranean and the furs of the North American interior. Indeed, it came to be considered a more reliable investment than Canadian furs (despite the spectacular fortunes that could be made from the beaver trade) since the market for cod did not fluctuate with the vagaries of fashion.⁵ Regardless of how much it suffered during war with a strong maritime power (it came virtually to a standstill during the closing years of the War of the

3. La Morandière, *op. cit.*, II, pp.607-612.

4. H.A. Innis, *op. cit.*, pp.119-138 and 168-180; La Morandière, *op. cit.*, I, pp.461-507; II, pp.519-683.

5. See note 2, above.

Spanish Succession), the fishery remained a vital factor in French policy. When France lost Placentia in the negotiations leading to the Peace of Utrecht, Pontchartrain pressed for the establishment of Ile Royale as a new base for the fishery where fortifications were permitted. Madras, taken from the British in the War of the Austrian Succession, was returned to them in exchange for Louisbourg, the capital of the French fishery on Ile Royale for more than twenty-five years.⁶ Finally, when France was forced at the end of the Seven Years' War to give up either her enormous territories on continental North America or her Caribbean sugar colonies, the Duc de Choiseul surrendered the former but bargained tenaciously to preserve traditional French fishing rights; France retained a permanent non-fortified base at St. Pierre and Miquelon and her traditional drying rights on the west coast of Newfoundland. Throughout the century 1663-1763 French ministers of marine strove to maintain metropolitan investment in the fishery despite the loss of ships and cargoes in wartime, when *armateurs* seriously pondered moving their capital into one of the other major areas of trade that to them appeared less risky. Metropolitan interests were favoured over resident fishermen, to such an extent that Placentia and its environs never had more than two or three hundred French inhabitants, and Ile Royale only a few thousand. As this work will show, the principal state investment in the maintenance of the fishery was the construction of fortifications, government buildings and harbour facilities.

6. In both cases, France retained intact the traditional drying rights for her fishermen on part of the Newfoundland coast and on the islands of St. Pierre and Miquelon.

Maritime trade in general, and the fishery in particular, must however be neither overemphasized nor underestimated in French policy. The chief markets for French products were in Europe; and Europe remained the chief source of French imports. As Colbert was attempting to stimulate overseas trade at the expense of the successful Dutch, he sought ways of breaking their virtual monopoly of the coastal carrying trade of western and northern Europe. The aggressive military policies directed against the Dutch during the 1670s and 1680s were not exclusively dynastic, religious and territorial: they were designed as well to intimidate the prosperous mercantile republic to the north, thereby enhancing France's competitive position. As long as the British kingdoms were his client states, Louis XIV could pursue his expansionist policies in Europe---economic as well as political---without concern for his maritime flank. The Glorious Revolution of 1688, however, which brought the Stadholder of Holland to the English throne, changed this situation quickly. When the English and Dutch fleets were combined against that of France the latter suffered heavy losses; and Louis declined to rebuild the navy. Overseas interests were sacrificed to European. In the eighteenth century Franco-British conciliation before 1740 and the gradually increasing French influence in Spain and her colonial empire created a favourable climate for the development of overseas trade, without sacrificing European interests. Though little at first was done to rebuild the navy, the merchant marine grew steadily as French traders acquired control over large portions of the Spanish forwarding trade. The rapid reconstruction of the French cod fishery after 1713 and its development throughout the next three decades coincided with a revival of French world commerce that

challenged that of Great Britain not only on the North American continent, but also in the Caribbean, South America, India and eventually the Pacific. It is evident that Europe continued to take first place in French policy under Louis XV as it had done under his predecessor. This is often cited as the principal reason for the loss of New France and the French possessions in India in the Seven Years' War. It would be wrong, however, to infer from this a tepid interest in overseas trade on the part of either private enterprise or the Court. French commerce threatened that of Great Britain to such an extent that the British government fought the expensive Seven Years' War in several parts of the world at least partly in the hope of eliminating her major trade rival.

French eighteenth-century prosperity was largely based on agriculture that thrived in spite of antiquated, inefficient methods of production and distribution.⁷ Though France lagged behind Great Britain in industrial growth and could not satisfy her own internal demand for such products as iron and steel of good quality, heavy-industrial output increased in some geographical areas, for example, Amiens and environs. Both luxury goods (silks, porcelain, fine glass, fine wines and brandies) and certain necessities (common clothing and other cheap textiles) were significant exports. Yet the basis of wealth in France was land. From it came the income that was either invested in industry and trade or paid

7. The greatest weakness of French agriculture was in the cycle pasture-land-livestock-manure. Shortages of livestock were so marked that, for example, large quantities of Irish salt beef were imported into France and re-exported in part to French colonies. Fernand Braudel and Ernest Labrousse, *Histoire économique et sociale de la France* (1 vol. published, Paris, 1970) II, pp.155-158; Innis, *op. cit.*, p.121.

to the state in the form of taxes. Recent research seems to establish that, in general, the eighteenth century was a period of relative prosperity, of a gradual economic revival after successive depressions in the previous century. Internal communications were improved through much road-buildings;⁸ there was extensive construction of houses and other buildings;⁹ and commercial organization was geared to large-scale internal and external trade. (The late eighteenth-century social grievances that are so well known were prompted not by the general economic conditions, but by poverty in the midst of prosperity,¹⁰ by obvious injustices and inequalities, and by the political impotence of the enriched bourgeoisie.) For much of the period 1695-1758, France was therefore in a position to undertake on an unprecedented scale the colonial construction that is the subject of this work. What has often been described as a huge expenditure assumes less formidable proportions when put into the context of the state budget.

If the French economy became healthy enough to support colonial construction programs, the question of French technical capacity arises. To what extent was it equal to the task of large-scale construction in unfamiliar surroundings with little-known materials? First, how adaptable intellectually were the men who bore the technical responsibility? The

8. Most of this paragraph is based on the synthesis in Braudel and Labrousse, *op. cit.*, II, pp.92-118, 150-158, 166-180, 230-237, 250-252.

9. J.-P. Bardet et al, *Le Bâtiment: enquête d'histoire économique, XVe-XIXe siècles*, (1 vol., published, Paris and The Hague, 1971) I, p.31.

10. Braudel and Labrousse, *op. cit.*, pp.529-563. Labrousse devotes a whole section of the work to the economic crises of the 18th century, "la catastrophe, au sein même de l'essor."

military engineers who directed this kind of work in Europe had the reputation of being the best-trained on the continent in terms of their knowledge of materials and their properties, their knowledge of mathematics, their ability to draft plans from measurements on the ground, their ability to estimate costs, and their managerial competence. However, throughout the eighteenth century, military engineering was becoming formalized, theoretical and stagnated; whereas in the previous century under Vauban and his Dutch adversary Van Coehoorn it had been to some degree innovative and above all adaptive. Vauban's treatises, written for his pupils' guidance rather than for publication, were published after his death¹¹ and used as "holy writ." The result was that by 1750 the ideas of Vauban had not been criticized, much less reformed. The many writers of the period merely elaborated on them.¹² When Vauban's precepts were finally challenged in the 1760s and 1770s by Montalembert¹³ and the

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11. See, for example, *De l'Attaque et de la défense des places* (2 vol., The Hague, 1742-1743); *Le Directeur-général des fortifications* (The Hague, 1725); *Essai sur les fortifications* (Paris, 1739); *Mémoire pour servir d'instruction dans la conduite des sièges et dans la défense des places* (Leiden, 1740). See also Minno, Baron van Coehoorn, *The New Method of Fortification* (London, 1705).
 12. For example, B. Forest de Bélidor, *Architecture hydraulique* (2 vol., Paris, 1737-1739); *Dictionnaire portatif de l'ingénieur et de l'artilleur* (Paris, 1768); *Nouveau cours de mathématique à l'usage de l'artillerie et du génie* (Paris, 1725); *La Science des ingénieurs dans la conduite de fortification et d'architecture civile* (Paris, 1729). Bélidor placed strong emphasis on theory. See also L-A de la Mamie, Chevalier de Clairac, *L'Ingénieur de Campagne ou traité de fortification passagère* (Paris, 1757); Louis de Cormontaigne, *Architecture militaire, ou l'art de fortifier* (The Hague, 1741). G. LeBlond, *Eléments de fortification* (Paris, 1739); *Eléments de la guerre des sièges* (Paris, 1743). M. Rozard, *Nouvelle fortification française* (2 vol., Nuremberg, 1731).
 13. Marc-René, Marquis de Montalembert, *La Fortification perpendiculaire* (11 vol., Paris, 1776-1798). Sixteen-page prospectus submitted in 1761.

Encyclopédie, the senior engineering officers of the French army closed ranks first to delay publication, then to condemn the heresy, and finally to consider publishing their own treatise in the hope of refuting their unjust critics.¹⁴ The philosophical state of French engineering is important for what it reveals about the *corps d'élite* of the French army during the first half of the century. Despite their superiority to the officers of the cavalry and infantry in level of education and general competence, the officers of the engineer corps appear to have rested on their laurels. During the years of peace they were responsible for maintaining the fortresses of France's frontiers, carrying out routine construction, repair, restoration and reconstruction. The scale of this work placed into their hands a great deal of patronage in the form of an extensive network of contractors and suppliers. There was little advantage to be gained from abrupt change in the regular rhythm of this activity: some interested parties on both sides of the military-industrial partnership might have suffered if they had been unable to adapt quickly to new circumstances.

In some respects colonial engineers were better suited than those of France to undertake colonial projects. Often self-taught, except for a basic education in mathematics and drafting and rarely seconded to the Marine Department from the engineer corps, they were more familiar than formally trained members of the Corps with local building materials and

14. See documents in Comité technique du génie (hereinafter referred to as C.T.G.), archives, article 3, section 2, carton 1, pièce 77. See also J. Guttin, *Vauban et le corps des ingénieurs militaires* (Paris, 1957).

local requirements if they had gained sufficient experience in the particular colony. Usually their ability to improvise, to adapt to colonial conditions (or, to put it another way, their lower professional standard) satisfied both the colonial administration and the Court. The latter wished to economize on colonial construction, whereas the former was conscious of the special needs of the colony. In Canada for example, the chief engineer from 1716 to 1756, Gaspard Chaussegros de Léry,¹⁵ was not a member of the Corps; nor were such well-known officers as Gédéon de Catalogne,¹⁶ Josué Duboisberthelot de Beaujours and Jean-Baptiste de Couagne.¹⁷ On the other hand Robert de Villeneuve¹⁸ and Jacques Levasseur de Néré,¹⁹ predecessors of Chaussegros de Léry, were detached from the Corps---Villeneuve as one of its less distinguished officers. Jacques L'Hermitte,²⁰ the engineer from 1695 until 1715 at both Placentia and Louisbourg, claimed to have been released from the Corps as part of a staff reduction; but extant records of the Corps do not confirm this. Though some of these colonial engineers had little more in their favour at Court than their mediocrity, others had a flair for recognizing the advantages of earthworks that could be built quickly and reconstructed cheaply over permanent stone fortifications that were difficult to

15. The present author has prepared for Vol. III of the *Dictionary of Canadian Biography / Dictionnaire biographique du Canada* (volumes I, II and X published, Toronto and Québec, 1966, 1969 and 1972) hereinafter referred to as *D.C.B.*, an article on Chaussegros de Léry.

16. *D.C.B.*, II, pp.120-121.

17. *D.C.B.*, II, p.154.

18. *D.C.B.*, I, pp.663-664.

19. *D.C.B.*, II, p.432.

20. *D.C.B.*, II, pp.433-435.

construct and maintain in the North American climate. Few were particularly expert in the construction of buildings beyond the most ordinary. Some officers of the engineer corps, on the other hand, had considerable ability in architecture as well as basic training in its principles and practices.

Thus there was no easy solution to the problem of adapting engineering training and experience to colonial construction. On the one hand were trained officers of the engineer corps versed in theory and European practice but conditioned against change and adaptability; on the other were persons employed as engineers by the Marine Department or recruited among the officers of the colonial regulars who, although deficient in theory and professional discipline, had the advantage of knowing local conditions and methods. What was required under the circumstances was a blend of the two types. The extent to which such a blend was achieved in the Gulf of St. Lawrence region will become evident in the present study.

It is also appropriate, for purposes of comparison with the Gulf region, to review construction programs and policies in Canada during the same period.²¹ The most important site was the city of Québec, whose upper

21. Figures for Acadia (which before 1710 were primarily for Port Royal) are shown *infra*, Chapter III, p.127. No analysis of construction at Port Royal and other fortifications in Acadia, comparable to that for Placentia in the present work, has as yet been made. The subsistence economy of a colony almost completely ignored by Versailles puts such an analysis outside the scope of this thesis, which deals with colonies whose primary *raison d'être* was imperial trade (including the fishery). More has been written on Canada by other researchers; also, I have done on the work of Chaussegros de Léry research upon

town was militarily well situated. Though the Court recognized the need for some fortifications there, it was not prepared to devote large sums to the purpose. Little was done to implement the design proposals of Levasseur de Néré, described by critics as requiring a garrison of 6,000 men and nine years of work to complete, so when he left for France in 1709 the structures were unfinished. Chaussegros de Léry arrived seven years later and remained for forty years. During that long period, funds were regularly provided for the construction of permanent fortifications that were built, added to, and repaired. However, partly because the design was poor and partly because the Court was really opposed to adequate fortifications, the still incomplete defences proved unequal to the challenge that came in 1759. On the other hand, the government

which I have been able to draw for purposes of comparison. The whole field of French defence construction both metropolitan and colonial, however, remains to be examined according to the criteria applied herein for Placentia and Ile Royale. Louisiana and the French West Indies, for example, deserve attention. Research I have done on the latter in only one primary source, from 1672 to 1730, is still inconclusive. It does, however, suggest a policy requiring cost-sharing between the Crown and the planters, and Court opposition to structures built according to "plans réguliers et capables de fournir un siège réglé." In 1697, the colonists of Martinique were told to finish the construction of Fort St. Pierre themselves: the government would contribute no more. One finds, also, familiar complaints by the ministry of marine that construction promised for such-and-such a date is far from being finished. Planters resisted as much as possible the use of many of their slaves on construction when they were hired for harvesting the sugar crop. Nevertheless, the Crown's investment in fortifications in the Caribbean rose from amounts such as 26,000 *livres* in 1691, to some 45,000 *livres* in 1729 for the Windward Islands alone. The government had balked at a proposal in 1725 for works on Martinique that would require 900,000 *livres* spread over a period of several years, in addition to sums already spent. The chief documents consulted were AN, Col., B, 4, f.8; 9, f.125; 10, f.62; 14, f.251; 21, f.72; 49, f.318; 53, f.251.

approved the construction, renovation and repair of the public buildings necessary to the colonial capital. Architectural historians have not been greatly impressed by the quality of the work done under Chaussegros de Léry. It was, at best, little more than adequate. Montreal's seventeenth-century stockade was replaced during Chaussegros's time by a masonry enceinte paid for by the seigneurs (the Sulpicians), the inhabitants, the *Domaine de l'Occident* and the Crown. Though it presented an appearance of permanence befitting the second town of the colony, it was considered in 1760 to be quite unable to withstand bombardment. Of the other stone forts constructed during the eighteenth century, Fort Niagara proved the best: it withstood a twenty-day siege in 1759. Chambly was adequate for defence against small arms, but Fort Saint-Frédéric was condemned for its poor design and construction. The many forts of the *pays d'en haut*, the Ohio country and the Illinois country, were built of stockades and earthworks. They were suited to the terrain, to the irregular type of warfare and to their intended functions as fur-trading posts and as instruments of French North American military strategy.

This strategy is an important part of the background of military policy in the Gulf of St. Lawrence region. After 1690, the reconstruction of the French navy was slow: though its officers and men were excellent sailors, and its well-built ships possessed heavy fire power, the fleet did not approach the numerical strength of the British navy until the 1750s.²² Yet France had important resources to defend in America: the sugar of her Caribbean possessions, the cod fisheries of the northwestern

22. G.S. Graham, *Empire of the North Atlantic* (2nd edition, Toronto, 1958), p.108.

Atlantic and the furs of the continental interior---roughly in that order. Fortifications were built; settlements were garrisoned by detachments of the *Troupes de la Marine*,²³ who were assisted in some places by mercenaries of the Swiss *Régiment de Karner*. Able-bodied civilians were organized into militia units for use during wartime: those of Canada were particularly effective soldiers. In the North American interior, the French forces could rely, to a varied extent, on their Indian allies. At sea, French privateers (mainly fishing vessels) were the force on which the navy long depended to challenge the British. France used her scattered, relatively meagre forces to protect her holdings and to try to prevent her British rival from expanding at her expense. The importance of sea power was not fully appreciated as a factor in this policy. The primacy of European economic and political interests, and consequently an unwillingness to devote large sums to naval rearmament, led the Court to rely on fortifications and garrisons.²⁴ Even there, the priorities were

23. Soldiers raised by the Marine Department for service in its home ports and in the colonies.

24. Maurepas' long-term objective was naval rearmament, but the fortifications were much cheaper and could, moreover, provide the infrastructure for future naval forces. In France in 1742 a 74-gun naval vessel cost in the order of 380,000 *livres* to build. At Quebec, the *Canada*, *Castor* and *Caribou* cost over 200,000 *livres* each to build, the shipyards themselves another 200,000. To fit out a 74-gun ship for six months in 1742 entailed an expenditure ranging from 230,000 *livres*, to 254,000 for a flagship. Public construction at Louisbourg during its most expensive peacetime years amounted to 150,000 *livres* a year. In 1742 it happens to have been 128,000 *livres*. For ship construction costs, see Jacques Mathieu, *La Construction navale royale à Québec, 1739-1759* (Québec: La Société historique de Québec, Cahier d'histoire No. 23, 1971) pp.69-70. For the cost of fitting out naval vessels, see Maurepas Collection, Cornell University, Ithaca, N.Y., anonymous memorandum dated 7 September 1742: "Etat des vaisseaux et autres bâtiments qui [doivent] être armés et de ce qu'il en coûterait pour leur armement pendant six

evident. As this study shows, the sums spent on Louisbourg's fortifications far exceeded those spent on Québec. Justifying the government's frugality toward Québec even after the fall of Louisbourg, Maurepas reasoned in 1746 that to leave the capital relatively unfortified would be a deterrent to Anglo-American invasion because the enemy would fear the consequences of having no winter refuge after the departure of the last naval vessels before freeze-up.²⁵ Before the fall of Louisbourg, he had argued that the fortress on Ile Royale protected the capital of New France from attack by sea. This was nonsense, because a superior naval force could by-pass Louisbourg, enter the Gulf and, provided its pilots knew the River, proceed upstream. Louisbourg had no strategic importance for Canada without being the base of a naval force able to challenge whatever the British might send against the Gulf.

It has been suggested²⁶ that the French Court deluded itself into thinking Louisbourg had such a strategic role; that the fortress was really believed to be the so-called "guardian of the Gulf"; that it was thought a naval force based on Louisbourg in enemy hands could easily close communications between France and Canada. Statements by ministers in official correspondence are cited to support this interpretation. Yet the evidence demonstrates that Louisbourg was chosen over other ports on Ile Royale as the site of the fortress because it was more accessible to

mois de campagne." I am indebted to Dr. James Pritchard of Queen's University for communicating these figures to me. The interpretation of some words in the title of the document is, however, my own.

25. Archives Nationales (hereinafter AN), Colonies (hereinafter Col.), B, 83, f.270: to La Jonquière, 1 April 1746.
26. T.A. Crowley, "France, Canada and the Beginnings of Louisbourg: in search of the Great Fortress Myth," *Papers and Abstracts for a Symposium on Ile Royale during the French Régime* (Ottawa, 1972), pp.45-69.

good fishing grounds. Port Dauphin would have been a better choice if strategic location and proximity of building materials had been deciding factors. Moreover, Court rhetoric directed at officials at Québec was designed to furnish excuses for neglecting the fortifications at that town. In fact, though France had good imperial reasons for wishing to retain Canada, it had even better ones for maintaining her sugar islands and cod fisheries. Canada, in 1746, was a disappointing colony according to Maurepas. The best that could be said in its favour, he wrote in a letter to the governor-general designate, was that a suitable economic climate had been created for activities profitable to metropolitan interests---activities such as fisheries and shipbuilding that might enable Canada to increase its trade with the Caribbean colonies and the French ports. During thirty years of peace, he continued, Canada had been unable to realize that potential.²⁷ Possibly the fear that Louisbourg, in enemy hands, could be used against Québec existed in the 1740s, although French communications through the Gulf were normal during the period 1745-1749. That fear, however, would have been no reason for building the fortress in the 1720s. In sum, military strategy had little importance in the construction of Louisbourg, and little in its maintenance until after 1749.²⁸

27. B, 83, f.270, *loc. cit.*

28. After 1749, at the instigation of La Galissonnière, greater emphasis was placed by the French Court on the grand strategy of "containing" the British in North America. Large sums were spent in the ensuing years on the improvised construction and improvement of forts from Louisiana to Canada. Though the fishery retains its traditional political role, Louisbourg's part in continental strategy was now emphasized. Though its reconstruction received a smaller share of the fortifications budget in North America than before, it became the headquarters of the director of fortifications for New France.

Of vital economic importance to the colonies of the Gulf throughout the whole period, and hence to the construction programs, was the serious possibility of famine which threatened on several occasions to destroy these small societies. Although agriculture was unfeasible at Placentia and at other French settlements on Newfoundland, different policies could have made the colony of Ile Royale and Ile Saint-Jean agriculturally self-sufficient. The Mira Valley proved productive, other areas on Ile Royale might have been developed, and Ile Saint-Jean, alone, had it been settled and cultivated, could have sustained the fishermen, troops and other inhabitants of Ile Royale.

Placentia and the tiny French outposts of Newfoundland depended almost exclusively on metropolitan fishing interests to supply them with the food they could not obtain from the sea and from the neighbouring streams and forests, or raise in a few barren gardens. The *armateurs* of the western ports of France mercilessly exploited this situation so that throughout most of Placentia's French period, there was an annual food crisis. Merchants who conducted barter with the inhabitants tended to arrive late in the summer and to demand extremely high prices (in terms of fish) for the agricultural produce and other rare commodities they offered.²⁹

Food crises on Ile Royale, although severe, were periodic rather than chronic. This may be explained in part by the acceptance of a somewhat greater measure of responsibility by the metropolitan government for the colonists' welfare, in part by the fact that *some* agriculture

29. John Humphreys, *Plaisance* (Ottawa, 1970), *passim*.

was carried on in the colony, and in part by the general increase in trade throughout the region. Certainly the merchants of the fishing ports of France continued to dominate the supply of foodstuffs and other essentials, so that they were able to obtain high prices for the goods they brought. However, for limited times at least, the colonial administration was able to assist the inhabitants on occasions of real hardship by selling them grain and other food from the government storehouse. French officers were unsuccessful in spiriting Acadians away from their homes in what became the Annapolis Valley of Nova Scotia to till the soil on the islands. Only a few went to the Mira valley. The proprietorship of the Comte de Saint-Pierre over Ile Saint-Jean was a failure, and by the time Acadians were persuaded in the 1750s to settle the island in somewhat greater numbers it proved too late to develop agriculture on a significant scale.³⁰ Greater inducements by the state after 1713 might have made Ile Saint-Jean the garden, the breadbasket and even the pastureland of the colony. On Ile Royale itself, the Mira valley succeeded only on a very modest scale. Elsewhere, possibilities may have existed for broader development, even the raising of sheep and other livestock. Little was done to promote such diversification of the economy. The rapid development of Louisbourg as an entrepôt where goods from various countries, including New England, were stored before being transshipped, limited the monopoly of the metropolitan merchants. Nevertheless, crises occurred in 1733, 1742 and

30. D.C. Harvey, *The French Regime on Prince Edward Island* (New Haven, 1926), *passim*.

1744, to mention only a few.³¹ One custom was to borrow foodstuffs from Basque fishermen, who arrived relatively early in the season, against provisions from Canada that were expected both to repay the Basques and supply the inhabitants for the winter. If the Québec merchants were not encouraged by good prices to bring goods in quantity, there would be too little left after the Basques had been repaid, and stores would become exhausted during the winter. Yet local administrators did not believe the answer to famine was a permanently stocked warehouse: "if it were the King's every one would depend on it, while if it belonged to a company it would ruin commerce."³² In 1742, a special storehouse for New England flour was suggested, but vetoed by the Court.³³ The immediate problem was belatedly solved by shipments of flour from Québec and New England. In May 1744, after the outbreak of war with Great Britain, Louisbourg was reduced to less than a month's food supply apart from fish and *fruits de mer*. Only the receipt of stores from Québec prevented the abandonment of the colony. The periodic crises were never corrected and so the colony continued its precarious existence to the end. In both sieges of Louisbourg the threat of starvation was the most decisive factor leading to the defeat of the French.

Throughout the adversity of food shortages, French policy makers rarely lost sight of the main reason for establishing and maintaining colonies in the Gulf region: commercial fishing and the general trade

31. J.S. McLennan, *op. cit.*, pp.81-82, 103-104, 109-110.

32. *Ibid.*, p.98.

33. *Ibid.*, pp.103-104.

that would follow in its wake.³⁴ The cod fishery was profitable even under the difficult circumstances that prevailed at Placentia. Pontchartrain, in 1714, was determined that it should thrive and expand thereafter under a greater measure of government support. His successors carried this policy forward. Primarily, as the present work seeks to show, this government support took the form of greatly increased public construction. In that domain, there were lessons to be learned from modest beginnings on the west coast of the Avalon peninsula.

34. AN, Col., B, 36, f.419: to L'Hermitte, 26 January 1714; 35, ff.248v.-251v.: Instructions for L'Hermitte, March 1713. The earlier document, in particular, leaves no doubt concerning the primacy of the fishery in the new colony, especially in the choice of its principal port, where the construction of masonry fortifications was supposed to begin in 1714:

Il faut bien des qualités différentes à ce port: qu'il soit bon et facile à défendre, et par conséquent aisé à fortifier sans qu'il y ait assez d'eau pour y entrer de gros navires; que la pêche de la morue y soit abondante, facile à faire, et par conséquent proche, et qu'il y ait une espace considérable pour y faire de la grave et y établir des vignaux. Il faudrait même que les terres en fussent bonnes mais il faut préférer à tout la bonté du port pour la sûreté des vaisseaux et pour l'entrée et la sortie aisée et facile, mais cependant qu'on puisse défendre aisément; et l'abondance de la pêche.

CHAPTER II: WHAT WAS BUILT

It was relatively simple for the French government to decide to build fortifications on the territories adjacent to its cod fisheries; it was quite another matter to have them built. Distance from the mother country, climatic conditions unsuited to West European building techniques, inadequate knowledge of local natural resources, wavering policies and bureaucratic inefficiency: all of these created difficulties, some of which could have been foreseen, others not. Yet despite these vicissitudes, the French managed to carry out the greatest military construction program in North America prior to the 19th century. The detail of what they accomplished, the degree to which they overcame the many difficulties, and how they did so, deserve to be examined. Though these matters impinge upon the broad interpretation of the region's history, a large part of the narrative has hitherto been untold. The

facts of construction must therefore be recounted here, because they are essential to understanding the political analysis that is the main purpose of the present work.

Newfoundland

In a relatively recent thesis,¹ Jean-Pierre Proulx has provided a detailed chronology of the construction of fortifications and other works at Placentia (*Plaisance*) prior to its cession to the British in 1713. Between 1690 and 1694 several stockade defences and earthworks were built, including Fort Louis (the lower fort) at the narrows of Placentia harbour, a four-gun battery across the narrows from the fort, and a redoubt on a hill known as the *Gaillardin*. These served as fortifications during the construction of the "permanent" masonry defences. A masonry powder magazine inside Fort Louis, begun in 1692, was not finished until 1700. The stone redoubt on a hill overlooking the lower fort, begun in 1693, and serviceable by the following year, became Fort Royal, known to the British as the "castle". Work on it was reported "almost finished" in 1701, but in fact it was never fully completed. Nevertheless, because of its dominant position, Fort Royal remained the best of Placentia's defences. Orders were given in 1694 to reconstruct Fort Louis in masonry as soon as possible. After considerable discussion in 1700 and 1701 about whether the fort's seaward face should be in stone or in wood, and the effects of a gale in November, 1702 which almost completely destroyed the

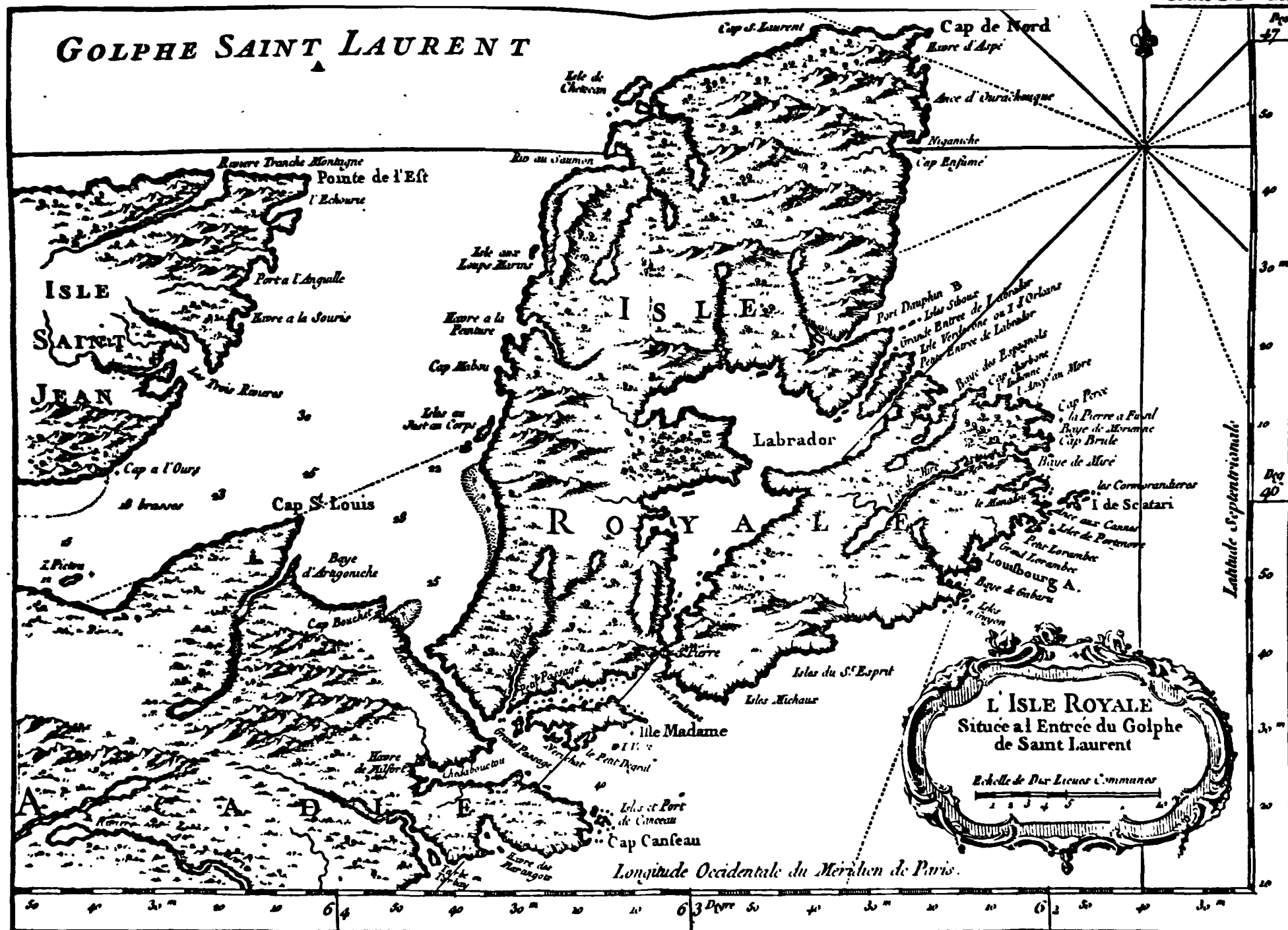
1. Jean-Pierre Proulx, "Histoire militaire de Plaisance: étude sur les fortifications françaises," (unpublished M.A. thesis, University of Ottawa, 1968).

temporary wooden fort, construction in masonry finally began in 1708, but it was never finished.²

As explained below, the construction of Placentia was plagued by a shortage of funds arising out of the French government's financial policy,³ a supply and transport crisis,⁴ and overlapping administrative responsibilities.⁵ From 1695 until the suspension of work in 1710 Jacques L'Hermitte,⁶ who as engineer and town-major was the only person technically qualified to direct construction, fought a losing battle not only against these factors, but also against the ravages of the climate. Under ideal political and economic conditions, it would have been extremely difficult, both to rebuild each summer what the previous winter's frost and gales had destroyed, and to erect new structures. Under the conditions prevailing, it was next to impossible.

Lacking funds until 1699, L'Hermitte devoted his time to detailed plans and reports on all the works he wished to recommend.⁷ Once funds became available,⁸ he was at first allotted too little money with which

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2. *Ibid.*, pp.80-153. Proulx found copies of relatively few original plans of Placentia during that period. Some that he did not cite or reproduce are listed in calendars (inventories) compiled by the Public Archives of Canada but have not been copied by that institution.
 3. Chapter III.
 4. Chapters VI and VII.
 5. Chapter IV.
 6. See my article on L'Hermitte in *D.C.B.* II, pp.433-435.
 7. A number of those to which he refers in his correspondence have not been located.
 8. See Chapter III: 4,000 *livres* in 1699; 10,000 a year 1700-1703; and 20,000 a year thereafter.



Envoy A. l'oyez la Carte du Golphe de S. Laurent N° 13.

B. Voyez le Plan du Port Dauphin N° 25

A. Voyez le Plan du Port de Lonsboury N^o 24.

Jacques-Nicolas Bellin, *Atlas Maritime: l'Amérique septentrionale*
(Paris, edition of 1764), no.22. Copy in National Map Collection,
Public Archives of Canada.

to pay labour; later, he found his workers and funds being diverted to less essential construction. Skilled craftsmen---of the kind needed---were constantly in short supply, as were building materials, tools and equipment, beasts of burden, and boats.⁹ The respective roles of the governor, financial commissary and engineer, were too vaguely defined to make for good management: the engineer's technical competence was not always acknowledged by the governor, while the financial commissary is suspected of having been surreptitiously converting funds to his own use.¹⁰

Ile Royale (Cape Breton Island). 1713-1719

The purpose of the post at Placentia had been to protect the cod fishery. After losing Placentia and Acadia, while retaining Cape Breton Island, the French government was determined to recover, to protect and greatly to expand that same fishery. This was clearly the purpose of the new establishments on Ile Royale. The main port of the colony, the Court decreed, must have a harbour spacious enough for fish-drying facilities; its entrance must be both navigable and defensible. The port must be easy to fortify. Codfish should be plentiful and relatively accessible.¹¹ Havre à l'Anglais, renamed Louisbourg, fulfilled some of these criteria but not others. Good building materials were scarce in the vicinity. The harbour would therefore be extremely expensive to

9. See Chapters VI and VII.

10. Chapters III and IV.

11. AN, Col., B, 35, ff.248v.-251v.: Instructions for L'Hermitte, March 1713.

fortify. On the other hand, the fishery was close and the harbour was excellent.¹² The minister of marine, Pontchartrain, writing to his colleague Desmarets, controller general of finance, emphasized the advantages and ignored the disadvantages: "...le port y est très bon, très spacieux et très aisé à fortifier."¹³ A plan was to be drawn, showing where fortifications could be constructed.¹⁴

If the Court had irrevocably decided then to establish the colonial capital at Louisbourg, the initial task of construction in the wilderness would have been straightforward. The first step was to build dwellings for troops and civilians, offices and workshops, and storage buildings for materials, tools and equipment. During the period 1713-1719, however, the capital was established first at Louisbourg, then moved to Port Dauphin,¹⁵ with subsidiary centres at Louisbourg and Port Toulouse,¹⁶ and then returned to Louisbourg. As a result, structures were erected first at Louisbourg, then at Port Dauphin (the main concentration point for materials and supplies) and Port Toulouse, and finally at Louisbourg again. These shifts in policy created problems of management and supply.¹⁷

12. AN, Col., C^{11C}, 7, ff.223-224: Pastour de Costebelle, 15 October 1713.

13. AN, Col., B, 36, f.28: to Desmarets, 24 January 1714.

14. *Ibid.*, f.419: to L'Hermitte, 26 January 1714. C.T.G., art. 14, Louisbourg...., ctn. 1, no.3 "Havre de Louisbourg dans l'Ile Royale 1714" (PAC, Ph/240-Louisbourg-1714). See Vol. II (Appendix), p.1, for a copy of the plan, which was probably the one drawn by L'Hermitte in compliance with the order.

15. Formerly Baie Ste-Anne, or St. Ann's.

16. Formerly St-Pierre (St. Peter's).

17. Chapters IV, VI and VII.

From the summer of 1713 until the winter of 1714-1715, the main effort was concentrated at Louisbourg, in spite of representations by L'Hermitte and Pastour de Costebelle¹⁸ that Port Dauphin, being adjacent to good building materials,¹⁹ could be much more easily fortified.²⁰ Access to the cod-fishing grounds (from which Port Dauphin was acknowledged to be very remote) was the overriding factor in Louisbourg's selection. By September, 1713 it was evident that there would be no time before winter to clear the area at Louisbourg best suited to fortification. The detachment sent from Placentia and Canada decided to winter on the north shore of the harbour, where supplies from Canada had been unloaded.²¹

Orders reached the detachment in the spring of 1714 to quarry and stockpile stone, and to fell trees and saw the timber into boards. L'Hermitte was to prepare detailed plans for buildings and temporary fortifications. All essential materials were to be made ready for starting work in the spring of 1715, assuming Court approval of the plans during the previous winter.²²

That approval was reluctantly withheld for one reason: the anticipated expense of fortifying Louisbourg. L'Hermitte had pointed out

18. On Costebelle, see R. Le Blant, *Un Colonial sous Louis XIV, Philippe de Pastour de Costebelle* (Paris et Dax, 1935) and G. Cerbelaud Salagnac's biographical article in *D.C.B.* II, pp.509-513.

19. See Chapter VII.

20. AN, Col., C^{11C}, 7, ff.223-224: Pastour de Costebelle, 15 October 1713.

21. AN, Col., C^{11A}, 48, f.202: statement by a number of officers and a priest, 3 September 1713.

22. AN, Col., B, 36, f.419: to L'Hermitte, 26 January 1714; f.562: to Costebelle and Soubras, 18 April 1714.

that building materials would have to be brought, at great cost, to the site from distant points on the island. This factor was brought home forcibly to the Ministry of Marine at a time when the Department of Finance could not provide the funds for an ambitious undertaking.²³ As a result, the Court decided to fortify Port Dauphin as the capital, without abandoning the notion of eventually providing adequate protection for Louisbourg, which was already becoming the main centre of the cod fishery. In fact, it was decided that two companies of colonial regulars would remain in garrison at Louisbourg, and minor defences were to be constructed there.²⁴

There was no question but that Port Dauphin had certain advantages. Its harbour was excellent; adjacent shores were suited to drying fish; good timber, and probably good stone were to be found close by.²⁵ L'Hermitte completed the first structures there in 1715, before the arrival from Canada that autumn of his successor, Jean-Maurice-Josué du Boisberthelot de Beauours. L'Hermitte built a "gouvernement", barracks, a stores building, a bakery and a smithy, all of timber; a redoubt of

23. See Chapter III.

24. AN, Col., B, 37, ff.207v.-209: to Costebelle and Soubras, 17 March 1715; ff.226-237v.: to Costebelle and Soubras, 4 June 1715.

25. AN, Col., C^{11C}, 7, ff.223-224: Pastour de Costebelle, 15 October 1713. Bibliothèque nationale, cartes et plans, service hydrologique, portefeuille 131-7-2: Jacques L'Hermitte, "Plan du Havre Ste Anne, à présent Port Dauphin", 20 September 1713 (PAC, Ph/240-Port Dauphin-1713). AN, Section Outremer, D.F.C., A.S., no.255: "Plans faits à vue qui ne serviront que pour juger de la situation du terrain" and "Projet du Fort Dauphin en 1715" (PAC, Ph/240-Port Dauphin-1715). For copies of these plans, see Vol. II, pp.2-3.

earthworks and timber; and a plaster-kiln.²⁶ Some idea of their appearance may be gleaned from plans that have survived.²⁷ The first barrack building was eventually to become a hospital, but was poorly situated for that purpose. Private houses and huts were built helter-skelter on the site of future public structures. After the arrival of Beaucours, little was accomplished beyond a second barrack building (assembled in part from sections of a building dismantled at Louisbourg), a house for the engineer, and various fireplaces and chimneys for officers' houses.²⁸

At Port Toulouse, Jean-Baptiste de Couagne,²⁹ assistant engineer, supervised clearing and prepared plans.³⁰ For Louisbourg, Beaucours submitted a plan, drawn at Port Dauphin from memory, and a verbal description of the minimum fortifications required to "prevent" capture

26. AN, Col., B, 36, f.209: to L'Hermitte, 17 March 1715; C^{11B}, 1, f.227: L'Hermitte, 28 October 1715; ff.296-299: meeting of Marine Council, 5 November 1715, on letter from Pastour de Costebelle, 9 September 1715.

27. B.N., C.&P., S.H., Portf. 131-7-1: "Plan de l'entrée du Port Dauphin avec les habitations" (PAC, Ph/240-Port Dauphin-[1715-1717]). AN, Section Outremer, D.F.C., A.S., no.256: "Redoute pour l'entrée du goulet du Port Dauphin 1715" (PAC, Ph/250-Port Dauphin-1715). *Ibid.*, no.257: "Plan des bâtiments finis et travaillés solidement au Port Dauphin....en 1715" (PAC, Ph/250-Port Dauphin-1715). C.T.G., art. 14, Louisbourg...., ctn. 1, no.5: "Port Dauphin....1715" and "Caserne....du Port Dauphin....Sieur de Beaucours en 1715" (PAC, Ph/240-Port Dauphin-1715). See Vol. II, pp.4-6 for copies of these plans.

28. AN, Marine, B¹, 8, f.176: minutes of a meeting of the Marine Council, 5 November 1715.

29. F.J. Thorpe, "Jean-Baptiste de Couagne" in *D.C.B.* II, p.154, provides a résumé of his career.

30. AN, Marine, B¹, 8, ff.179v.-180: minutes of a meeting of the Marine Council considering letters from Costebelle of 9 September 1715, and from Soubras of 21 September 1715.

of the port in a raid. The plan did not quite conform to the peculiarities of the terrain, and the cost estimate submitted by Beaucours was far too low, in the opinion of Costebelle. Since there were insufficient funds to fortify all three posts at once, the governor recommended priority for Port Dauphin and Port Toulouse over Louisbourg.³¹

The reports from Ile Royale that the Marine Council studied during the winter of 1715-1716 failed to satisfy its members that the best technical talent was being used in the organization, planning and management of construction in the colony. It is most likely that, in this respect, the Council was much influenced by one of its members, the Maréchal d'Asfeld, director-general of fortifications and head of the engineer corps; and that he, in turn, was much assisted in his appraisals by senior officers of his corps. Their hand is apparent in a marginal note on the minutes of the Council meeting of 5 November 1715: "Expliquer à S.A.R. [Son Altesse Royale, le Duc d'Orléans, Régent] que le conseil est d'avis qu'entendu que les plans ne paraissent pas forts exacts et que les gens qui y seront font des propositions différentes, il faut choisir un ingénieur capable qui ira sur les lieux, à la prudence duquel on se remettra de faire commencer les ouvrages qu'il jugera les plus nécessaires."³²

Jean-François de Verville³³ was the engineer selected for the task.

31. *Ibid.*, ff.180v.-183: meeting of the Marine Council considering letters from Soubras of 8 October 1715; and from Costebelle of 1 October and 30 November 1715.

32. AN, Marine, B¹, 8, f.176: *loc. cit.*

33. For a biographical sketch of Verville, see my "Jean-François de Verville" in *D.C.B.* II, pp.648-650.

He came out in the summer of 1716 with instructions to recommend to the Marine Council the fortifications necessary to the colony's defence. Informed that Port Dauphin had been selected as the capital and chief fortified port, he was warned against proposing works that were too elaborate for a mere colony.³⁴ Verville went beyond his terms of reference, recommending the abandonment of Port Dauphin as capital in favour of Louisbourg, and proposing a system of fortifications for Louisbourg more elaborate than what had been customary in New France. He proposed fortifications for Port Dauphin and Port Toulouse: extensive ones in accordance with the existing policy, secondary ones in the event his own recommendations for change were accepted.³⁵ His first proposal for Port Dauphin included "un ouvrage bastionné, d'une batterie de 25 pièces de canon et d'un logement capable de contenir six compagnies d'infanterie avec des officiers." Elsewhere in the port he recommended complementary works:

Au sud du port, parallèlement à l'entrée, on établira une batterie à barbette de 25 pièces de gros canons qui défendra le passage qui a 84 toises de large à haute mer avec son corps de caserne. La batterie commencera à 28 toises de la forge. Elle s'étendra de 50 toises du côté de l'étang où on fera un épaulement palissadé jusqu'à la mer.

A 98 toises de la forge sur le penchant d'un rideau qui est couvert de la hauteur on fera une redoute bastionnée de 35 toises chaque face, dont l'angle sera ouvert de 110 degrés. Les flancs

34. AN, Col., B, 38, ff.279v.-282: "Mémoire du Conseil de Marine sur les services que le Sieur de Verville a à rendre dans le voyage qu'il va faire à l'Ile Royale", 27 June 1716.

35. For these recommendations, see AN, Col., F³, (Collection Moreau de St-Méry), 51, pp.11-30: "Remarques sur les avantages des trois postes..." [1716].

auront 10 toises chaque; le fossé 8 toises; le chemin couvert 5 toises, et le revêtement de l'ouvrage de 24 pieds de haut. Le flanc droit de l'ouvrage défendra le bout de la grave et de l'étang des habitations, avec les approches de l'entrée du port. Le flanc gauche défendra la redoute que l'on fera à la poudrière distante de 120 toises de la gorge de cet ouvrage. On fera un corps de caserne avec deux logements à chaque extrémité en forme de pavillon sur la longueur ensemble de 14 toises et 6 toises de largeur avec un mur de séparation sur toute la longueur, afin d'y pratiquer un double logement dont une face sera éclairée du côté de la mer et l'autre du côté de la redoute....³⁶

In 1717, the works proposed for Port Dauphin and Port Toulouse were reduced in scope because the Marine Council not only concurred in Verville's main recommendation, but decided to spend even less on the two ports than he had proposed.³⁷ Since only one or two companies of colonial regulars were to remain at Port Dauphin, the barracks for six companies were no longer required. As he was to do at Louisbourg, Verville designed fortifications to protect Ports Dauphin and Toulouse from an attack by land. At Port Dauphin his front of fortification comprised one bastion and two demi-bastions, at Louisbourg and Port Toulouse one full bastion in addition.³⁸

36. AN, Col., F³, 51, pp.31-32: Verville, "Devis de la fortification que l'on fera au Port Dauphin....", n.d. AN, Section Outremer, D.F.C., A.S., no.258: Verville, "Plan du Port Dauphin et de ses environs avec des projets de fortification" (PAC, Ph/240-Port Dauphin-1716) gives some idea of the location of the works described. See Vol. II, p.7 for a copy.

37. See Chapter III.

38. See copies of the following plans and sections of both places and a 1717 view of Port Dauphin, in Vol. II, pp.8-12: AN, Section Outremer, D.F.C., A.S., nos.260-262, and 268-270; no. 260: Verville, "Plan du projet de la fortification du Port Dauphin, relatif au profil et développement" (PAC, Ph/240-Port Dauphin-1717); no.261: "Développement de la redoute bastionnée B, du Port Dauphin...." (PAC, Ph/250-

Verville's instructions of 1717, then, called for a return to the emphasis on Louisbourg. He was to prepare plans, sections and elevations in readiness for an early start in 1718 on permanent fortifications and essential buildings there, and for the construction at Paris of a three-dimensional scale model (*plan en relief*) of the place, similar to the models of European fortresses made for the edification of Louis XIV.³⁹ Verville had already tried, without great success, to anticipate the Council's decision by several months. Saint-Ovide de Brouillan, king's lieutenant and in command at Louisbourg during the winter of 1716-1717, found that the climate and the facilities available at the port prevented him from cutting timber, transporting materials, and digging foundations to the extent Verville wished. All he could do was to take advantage of fine days to clear the construction

Port Dauphin-1717); no.262: "Développement de la redoute bastionnée du Port Dauphin...." (PAC, Ph/250-Port Dauphin-1717); no.268: Verville, "Plan du projet de la fortification du Port Toulouse, relatif au profil et développement" (PAC, Ph/250-Port Toulouse-n.d.); no.269: Verville, "Développement de la fortification de la hauteur du Port Toulouse...." (PAC, Ph/250-Port Toulouse-n.d.); no.270: Port Toulouse, "Plan des bâtiments que l'on peut faire, et de ceux qui sont faits au Port Toulouse dans l'Ile Royale" (PAC, Ph/250-Port Toulouse-n.d.); B.N., S.H., Portf. 131, D7, P3: "Vue du Port Dauphin, 1717, au plan par le point X" (PAC, Ph/240-Port Dauphin-1717). D.F.C., plans nos. 260-262 and 268-270 seem related to Verville's proposals of 1716. They were probably prepared during the winter of 1716-1717. The sketch of Port Dauphin gives a good impression of the harbour's appearance.

39. AN, Col., B, 39, ff.266-269: "Mémoire du Conseil au Sieur de Verville au sujet des fortifications", 3 June 1717. The scale model appears to have disintegrated in the 19th century, although those of European fortresses have been maintained in the Musée des Plans en Relief, Paris. See René Baudry, "Les plans en relief de Québec, Montréal et Louisbourg", *Revue d'Histoire de l'Amérique Française* XVI (1962-1963), pp.213-218.

sites and to collect or quarry stone.⁴⁰

When Verville began in 1717 to draft the fortifications and the basic town plan, he encountered the haphazard construction of frame buildings, chiefly for fishermen, that had occurred after Louisbourg had been forsaken for Port Dauphin as the chief settlement of the island. The detachment of soldiers were barracked on the north side of the harbour, while the site of the future fortress, as conceived by Verville, was occupied by civilians. As Saint-Ovide had written the previous winter, an "exchange" of the two groups was urgently required.⁴¹ Instructions were issued to Soubras,⁴² the financial commissary or administrator, to arrange for the expropriation of private property on areas of the townsite where public structures were to be erected.⁴³

40. AN, Marine, B¹, 19, ff.412-413v.: meeting of Marine Council, 13 April 1717. For a panorama of the harbour in 1717, see B .N., C.&P., S.H., Portf. 131, D11, P2D: "Vue du Port Louisbourg, 1717...." (PAC, Ph/240-Louisbourg-1717). A copy appears in Vol. II, p.13.

41. AN, Marine, B¹, 19, ff.412-413v., *loc. cit.* For the beginnings of the town plan, the outline of the fortifications, and the structure existing in 1717, see AN, Section Outremer, D.F.C., A.S., no.145: "Plan de la grande grave de Louisbourg, 1717", (PAC, Ph/240-Louisbourg-1717). A copy of the plan has been published in the *Bulletin* of the Association for Preservation Technology, Vol. IV, nos. 1-2 (1972) (hereinafter referred to as *A.P.T.*) Figure 2.

42. "Pierre-Auguste de Soubras" in *D.C.B.* II, pp.611-612.

43. AN, Section Outremer, D.F.C., A.S., no.146: Verville, "Habitations de Louisbourg 1718" (PAC, Ph/240-Louisbourg-1718); Verville, "Profils de Louisbourg relatifs aux plans de la partie du port à fortifier 1718" (PAC, Ph/250-Louisbourg-1718). A copy of the plan, showing existing buildings, some of which had to be removed for the fortifications and other public structures, is published in *A.P.T.*, fig. 4. A copy of the profiles appears *infra*. Vol. II, p.14, while certain details from them are published in *A.P.T.*, fig. 3. The "prôfiles" are sections of the terrain of the future landward front of fortification, showing (from top to bottom) the future King's

In his fortification plans, Verville anticipated the possibility of attack overland by troops disembarked in the bays to the southwest. He was unconvinced, obviously, by arguments that the marshy terrain in that direction was impassible. As an engineer chiefly experienced in inland fortifications, he intended to build that landward front before arranging for the defence of Louisbourg harbour against a direct naval raid. As the Court ordered in 1717, the main bastion was to be built in masonry first, the remainder of the front in earthworks. Subsequently, the latter would be finished in masonry and the future Island and Royal Batteries constructed.⁴⁴ The details of the landward front are succinctly described in the following instruction to Verville, and can be read in conjunction with several of the latter's plans and sections:⁴⁵

Bastion, Dauphin Demi-bastion, Queen's Bastion, Princess Demi-bastion, and that taken through the flanked (or salient) angles of all the bastions. For the orders concerning expropriation, see AN, Col., C^{11B}, 2, ff.75-83: meeting of Marine Council, 22 May 1717.

44. AN, Marine, A¹, 54, pièce 61: "Mémoire du Roi au Sieur de Costebelle et au Sieur de Soubras....au sujet des fortifications", 26 June 1717.
45. AN, Section Outremer, D.F.C., A.S., no.242: Verville, "Plan du Port Louisbourg avec le trait des fortifications" (PAC, Ph/250-Louisbourg-n.d.); no.244: "Plan d'une batterie de canons au nord du port de Louisbourg avec un profil par la ligne A, B, C" (PAC, Ph/250-Louisbourg-n.d.). Copy, with detail enlarged, published in *A.P.T.*, fig. 90; no.245: Verville, "Plan du projet de la fortification de Louisbourg, relatif aux profils et développements" (PAC, Ph/250-Louisbourg-n.d.); no.246: Verville, three sections or profiles: "Développements du plus haut bastion de Louisbourg par la ligne A, B, C, D; profil de la hauteur des habitations jusqu'au grand étang; développement de la fortification du port de Louisbourg par la ligne A, C, F, G....relatifs au plan du port...." (PAC, Ph/250-Louisbourg-n.d.); no.247: "Plan du grand bastion de Louisbourg sur la principale hauteur" (PAC, Ph/250-Louisbourg-n.d.); B.N., C.&P., GeBB 563(3): "Plan du bastion du roi servant de citadel" (PAC, Ph/250-Louisbourg-ca. 1718); B.N., C.&P., GeBB 563(4): "Plan de la double couronne de la ville de Louisbourg qui ferme la place du côté de la plaine" (PAC, Ph/250-Louisbourg-n.d.). For copies of all of these plans except the one published in *A.P.T.*, see *infra.*, Vol. II, pp.15-19.

Le roi s'est déterminé de fortifier en forme d'ouvrage à double couronne la partie du terrain au-dessus de ce port, laquelle a 600 toises de long, sur 500 toises de large, à compter par les trois fronts de l'ouvrage dont le demi-bastion E sur une butte, défend une partie du port; le bastion C sur la principale hauteur défend une partie de la plaine de Gabarus; le bastion F sur une petite hauteur défend la plaine aussi, et le demi-bastion G qui s'appuie à la mer du large défend un petit débarquement de l'enceinte des habitations. La batterie de canons L qui se passera à la pointe des habitations défend une partie du mouillage et l'entrée; la batterie I de l'île défend l'entrée; et la batterie K à la pointe du nord défend le principal mouillage des deux branches du port.⁴⁶

Louisbourg, 1719-1725

Louisbourg had an absolute construction priority over other ports until some attention was paid to the latter in the 1730s. The French Court decided on extensive fortifications for Louisbourg, and for six years (1719-1725) Verville was given virtually a free hand in their development. However expensive, the fortress (in conjunction with privateering during wartime) was seen as a cheaper method of protecting the rejuvenated cod fishery than the reconstruction of the French navy would ever have been. By selecting an experienced officer of the military engineer corps as director of fortifications for the colony, the government committed itself, moreover, to fortress-building on a scale unprecedented in North America. Engineer-corps officers favoured metropolitan contractors like Isabeau,⁴⁷ François Ganet and

46. AN, Col., F³, 51, pp.193-194: to Verville, June 10, 1718.

47. See my note, "Michel-Philippe Isabeau" in *D.C.B.* II, p.292.

Bernard Muiron.⁴⁸ Engineers and contractors must have co-operated fully with the metropolitan suppliers of materials and equipment.⁴⁹ Moreover, Verville in no respect sacrificed his metropolitan position. He wintered every year in France. This gave him direct access to officials at Court and a maximum stay in the colony of five months (July to December).⁵⁰ His lack of colonial experience must surely have affected his conception of the fortifications. If, as Saint-Ovide thought, it was far too grand for the circumstances,⁵¹ the Court did not agree. It never questioned Verville's judgment in these matters.

Despite the governor's insistence that the citadel barracks were urgently required for accommodating the garrison, Verville followed the approved plan of building the King's Bastion and the barracks as one unit---the citadel. The attention he devoted to the bastion gave little hope that the barracks (the design of which was modified between 1718 and 1720)⁵² would be available for early use. On the other hand, the casemates⁵³ of the bastion, useful only as shelters in case of bombardment, as detention cells, or (theoretically) as powder magazines, proceeded

48. See *infra.*, Chapter V.

49. See *infra.*, Chapter VII.

50. For the effect of this on administration, see *infra.*, Chapter IV.

51. AN, Col., C^{11B}, 4, ff.76-85: meeting of Marine Council, 4 March 1719, to review a letter from Saint-Ovide.

52. AN, Section Outremer, D.F.C., A.S., no.147: "Louisbourg 1718: corps de casernes" (Plans, sections and elevations) (PAC, Ph/250-Louisbourg-1718). For a copy of this plan, see *A.P.T.*, fig. 43 and detail. Compare with the 1720 plan cited in note 54 below.

53. Vaulted bomb-proof shelters. In French, *casemates* or *souterrains*.

apace. To those of the flanks, provided for in his estimates, Verville added some small unscheduled ones in the right face.⁵⁴

The construction of the citadel must be seen in the context of town planning. In 1720, the layout of the streets was more theoretical than actual, since some structures built earlier still straddled the streets demarcated on plans while others were properly aligned with them.⁵⁵ Plans of 1722 show the complete town plan decreed by the Court.⁵⁶ By the end of that year, orders were given to demolish an original frame barrack block, because troops had been moved into the new citadel barracks.⁵⁷

54. For progress on the "citadel", see C.T.G., Art. 14, Louisbourg....ctn. 1, no.13: "Plan des fondations du grand bastion du roi de Louisbourg...." (PAC, Ph/250-Louisbourg-1720), a small copy of which appears in Vol. II, p.20. The casemates are shown, as well as basement partitions in the north wing or pavilion of the barracks, and part of the north half of the main building. Note the cruciform mine gallery (or tunnel) projected from the flanked (or salient) angle of the bastion. Its purpose, when filled with explosives, was to be blown up in the event an attacking force, having ascended the glacis, was on the point of attacking that part of the covered way. It was used in neither the 1745 nor the 1758 siege. Not included in the British demolition of 1761, it was found intact by archaeologists in 1962-1963. The faces of the bastion were 80 *toises* long and its flanks 40 *toises* (480 *pieds* and 240 *pieds*, or about 520 and 260 English feet, respectively).

55. C.T.G., Art. 14, Louisbourg....ctn. 1, no.14: "Plan de Louisbourg avec ses augmentations faites pendant l'année 1720" (PAC, Ph/240-Louisbourg-1720). For a copy, see Vol. II, p.21.

56. C.T.G., Art. 14, Louisbourg....ctn. 1, no.17: (PAC, Ph-240-Louisbourg-[1722]). For a copy, see Vol. II, p.22. AN, Section Outremer, D.F.C., A.S., no.149: (PAC, Ph/240-Louisbourg-1722). For a copy, see A.P.T., fig. 6. In the second plan, Morville's signature has nothing to do with authorship. Morville was the immediate predecessor of Maurepas as minister of marine. The first plan, torn in two pieces, bears an affidavit in the lower left corner, dated 7 October 1722, to the effect that the plan was received from Verville.

57. AN, Col., C^{11B}, 6, ff.99-100v.: Bourville, 5 December 1722.

Nevertheless, the building was far from being finished. In 1723, continually bad weather threatened its very survival, according to Saint-Ovide.⁵⁸ Another problem was the serious illness of the contractor, which heralded his death the following year. As Verville wrote ungrammatically in August:

Nous sommes arrivés le 29 du mois passé. J'ai trouvé le corps de casernes prolongé, et presque les faces et les flancs du bastion élevés jusqu'au cordon avec deux grands souterrains de voûte. Tout l'ouvrage est conduit avec la solidité et l'utilité convenable, par les bons soins des ingénieurs et de l'entrepreneur; mais l'entrepreneur étant tous les sept ou huit jours alité un jour ou deux par un espèce de paralysie qui l'a gagné dans ce pays, il cause par cet accident des mouvements et des soins auxquels les ingénieurs ne peuvent assez bien suffire, ce qui a fait que des ingénieurs aussi malades, l'ouvrage s'est exécuté de manière à devoir en démolir des petites parties à cause que les maçons sans appareilleurs ou sans assez intelligents pour exécuter les plans, profils et élévations que le papier leur manque, car il faut pour les ouvriers des préparations sur le terrain qui coûte du temps et de l'argent.⁵⁹

A plan of 1724 gives a general idea of the point reached by that year.⁶⁰

The contract with Isabeau did not include the Royal and Island Batteries proposed by Verville for protecting the harbour from a direct naval attack. Verville virtually ignored these structures until the winter of 1722-1723, when at Versailles he was instructed not only to

58. AN, Col., C^{11B}, 6, ff.182-186: Saint-Ovide, 22 November 1723.

59. AN, Col., C^{11B}, 6, ff.293-294v.: Verville, 14 August 1723.

60. C.T.G., Art. 14, Louisbourg...., ctn. 1, no.19: "Plan du rez-de-chaussée du corps de casernes et du bastion du roi 1724" (PAC, Ph/250-Louisbourg-1724). For a copy of this plan, with detail enlarged, see *A.P.T.*, fig. 44.

finish the citadel barracks, but also to make a start on the batteries.⁶¹

A plan of 1722 shows the terrain of the Royal Battery site.⁶²

Louisbourg, 1725-1737

Agitation by Saint-Ovide for the appointment of a resident chief engineer finally gained approval after the Comte de Maurepas was named minister of marine in 1723. In 1724, Etienne Verrier was appointed to serve as chief engineer under Verville. In 1725 Verville was transferred to Valenciennes in France; Ile Royale no longer had a director of fortifications.⁶³

Citadel Barracks

One of several important tasks facing Verrier was the satisfactory completion of the citadel. Verville had blandly reported it in 1724 to be fully defensible, if not quite complete.⁶⁴ Saint-Ovide doubted that Verrier's best efforts would ever make the barrack building completely suitable, especially for accommodation.⁶⁵ The roof leaked everywhere;⁶⁶ its pitch was not steep because Verville had feared the force of Atlantic gales more than he had feared melting snow.⁶⁷ The brick was defective

61. AN, Col., C^{11B}, 6, ff.182-186: Saint-Ovide, 22 November 1723.

62. B.N., C.&P., Ge BB563(5): "Plans et profils du terrain destiné pour la batterie royale dans le port de Louisbourg" (PAC, Ph/250-Louisbourg-1722). Copy in Vol. II, p.23.

63. See *infra*, Chapter IV for an analysis of these changes.

64. AN, Col., C^{11B}, 7, ff.132-133v.: Verville, 3 August 1724.

65. *Ibid.*, ff.194-197v.: Saint-Ovide, 17 December 1725.

66. *Ibid.*, 8, ff.71-75: Saint-Ovide, 1 December 1726.

67. *Ibid.*, 9, f.93: Mézy, 24 November 1727.

because the builders had had little experience with native materials.⁶⁸ The bottom of the ditch on the town side was higher than the basement, so that melted snow and rainwater leaked into the basement rooms.⁶⁹ In the bakery, for example, there was a foot-and-a-half of water six months out of the year!⁷⁰

Progress reports on the building's construction were paradoxical. The large amount of work done on its interior from 1725 to 1728 casts much doubt on Verville's assurances of 1724. In 1725, work on the drawbridge, the main door, the guardhouse, the clock tower, the chapel and the officers' quarters was said to be advanced except that the officers had to be moved in gradually as the masonry set. Five of them were installed by 3 December 1725.⁷¹ The royal coat of arms above the main door and accompanying ornamentation, with the inscription, were prepared at Rochefort to Verville's specifications.⁷² By late in 1726, most of the officers' rooms were occupied, and Verrier had met some of his objectives.⁷³

68. *Ibid.*, ff.141-147v.: Verrier, 17 November 1727.

69. *Ibid.*, f.93, *loc. cit.*

70. *Ibid.*, 8, ff.8-20v.: Saint-Ovide and Mézy, 28 November 1726.

71. *Ibid.*, 7, ff.261-266v.: Mézy, 3 December 1725.

72. Archives du Port de Rochefort, 1E105, f.149: to Beauharnais, 13 February 1725.

73. AN, Section Outremer, D.F.C., A.S., no.150: Verrier, "Louisbourg 1725. Plan du bastion du roi en l'état qu'il est la présente année, et ce qui est nécessaire d'y faire pour sa perfection coloré en jaune par la feuille volante." (PAC, Ph/250-Louisbourg-1725) See the copy of this plan in *A.P.T.*, fig. 45, with some details enlarged. Since the published copy does not include the version on the flap or over-leaf (*feuille volante*) showing work finished in 1725, we have included it in Vol. II, p.24. Verrier's objectives for completion in 1726 were: the governor's quarters (A on the plan), the chapel (B) and the tower (C). See AN, Col., C¹¹B, 7, f.334: Verrier, 16 December 1725.

The governor's wing was finished, and the governor had moved in. In the chapel, the floor was laid, plastering completed, windows glazed, and the sacristy and chaplain's bedroom finished; but the balustrade of the sanctuary had not been done. The clock tower remained unfinished. At the badly-constructed point where the north wing or pavilion joined the main building, however, rain penetrated, while smoke failed to escape. Three small stairways in the north side of the main building, not included in the specifications but added for convenience, reduced the size of at least some of the 21 soldiers' barrack-rooms originally designed for 300 men. The north pavilion, comprising eight rooms, was partly finished.⁷⁴

The building, wrote Verrier in 1727, was "beau et solide, distribué à peu près comme ceux qui sont des places de France."⁷⁵ This was about the finest praise it might receive in metropolitan circles--and was rather exaggerated. Verrier was doing his best with Verville's design, although at great expense. He deepened the ditch to eliminate the flooding of the basement. He revetted the counterscarp on the town side with masonry. He installed fireplaces in three of the eight rooms of the north pavilion. The armoury, designed for 800 muskets and located under the clock tower, was completed late in 1727 by the installation of doors, windows and gun-racks, and by wainscotting. Precautions had also been taken to prevent the accumulation of humidity on the walls, but water

74. AN, Col., C^{11B}, 8, f.111: Verrier, 10 October 1726; ff.8-20v.: Saint-Ovide and Mézy, 28 November 1726; f.115: Verrier, 1 December 1726.

75. *Ibid.*, 9, ff.141-147v., *loc. cit.*

could not be kept out of the room until the clock tower was finished.⁷⁶ Verrier undertook repairs to try to correct as well as possible the defects in the roof. Twenty-five unnecessary dormer windows were eliminated; the ridge-poles and hip-rafters were covered; the roof was sealed around every chimney. The chief engineer also began a program of gradually replacing inferior woodwork and brick as it wore out: window frames, door and window jambs, and door and window pillars. In terms of funds, materials and labour, however, this sort of work had to compete with other urgent construction, such as the Island Battery and the Dauphin Demi-bastion.⁷⁷

King's Bastion

Little progress was made on the King's Bastion during the period 1725-1730, because priority was given to the storehouse, the hospital and the batteries designed to protect the harbour. Saint-Ovide complained of defective workmanship--which threatened some parts of the structure--and blamed Isabeau and Verville for it. Verrier tended to minimize the importance of these defects, but reports of them persisted, especially in 1727. Two gables of the right-face casemates threatened to collapse; stones of both the interior and exterior walls supporting the terreplein of the faces were slipping out of alignment; several walls were bulging

76. *Ibid.*, 8, ff.8-20v., *loc. cit.*; 9, f.93 and ff.141-147v., *loc. cit.* The clock tower was still unfinished in 1729. *Ibid.*, 10, ff.242-245: Verrier, 18 December 1729.

77. *Ibid.*, 9, ff.150-151: Verrier, 9 December 1727; 10, ff.131-140: Verrier, 13 November 1728; ff.242-245, *loc. cit.* B.N., Estampes, Vd. 20a [f.63]: "Bastion du Roi faisant partie de l'enceinte de la ville de Louisbourg" (PAC, Ph/250-Louisbourg-[1729]). A copy of the plan is published in *A.P.T.*, fig. 46 and detail.

in places, or splitting. Despite this, Verrier modified two casemates in order that they might be used as jails. Floors and ceilings were installed.⁷⁸

Stores Building

The importance of the government stores building in a port that was the colonial capital and the centre of the French fishery, and was fast becoming significant as an entrepôt in the general Atlantic trade, is obvious. Facilities for the storage of food and other necessities were vital to the orderly administration of the colony. Work began on the "magasins du roi" before 1724, but made little progress because of Verville's preoccupation with the citadel and the obstruction of the lot by privately-owned buildings built during the period 1713-1719.⁷⁹ In 1725, the Court ordered that the latter be demolished without delay.⁸⁰ Plans of 1725 and 1726 show ~~approximately~~ the work done during those years.⁸¹ One part of the building, about 100 *pieds* in length, was completed in 1725, and food and other supplies stored there during the winter of 1725-1726.⁸² By the end of 1726 the masonry was finished; a

78. AN, Col., B, 50, ff.586v.-587v.: to Saint-Ovide, 10 June 1727; 52, ff.588-593: to Verrier, 20 June 1728. C^{11B}, 9, ff.141-147v., *loc. cit.*

79. See note 56, above.

80. AN, Col., B, 48, ff.950-952: to Verrier, 25 July 1725.

81. AN, Section Outremer, D.F.C., A.S., no.151: Verrier, "Louisbourg 1725: plan des magasins du roi pour servir au projet de 1726" (PAC, Ph/250-Louisbourg-1726); no.157: Verrier, "Plan profils et élévations des magasins aux vivres de Louisbourg, 1726" (PAC, Ph/250-Louisbourg-1726). Copies of these plans have been published in *A.P.T.*, figs. 57 and 58.

82. AN, Col., C^{11B}, 7, ff.261-266v.: Mézy, 3 December 1725; f.334: Verrier, 16 December 1726.

small food-distribution room, with a fireplace, had been built; the roof (partly of slate) was constructed; and the courtyard had been fenced in.⁸³ By the end of 1727, floors, doors and windows were installed, as were partitions, in order to separate various types of goods. The building was finished, except for ovens to be built in the courtyard, and a lean-to for storing molasses.⁸⁴

A plan for the ovens was drawn in 1728,⁸⁵ but construction was postponed once the bakery of the citadel barracks was free of flooding. In 1731 the foundations of the ovens were dug, and the necessary material stockpiled.⁸⁶ They were finished by the autumn of 1732, and the bakers began to use them in December of that year.⁸⁷

In 1733, a number of rooms were added to the stores building. A bakery was completed, comprising two rooms, one of them a bread-distribution room. The baker's quarters were built on the floor above. On the ground floor there was a small forge for the armourer, while most of the second storey was taken up by his armoury, which would hold

83. *Ibid.*, 8, ff.8-20v.: Saint-Ovide and Mézy, 28 November 1726; ff.111-113v.: Verrier, 10 October 1726.

84. AN, Col., B, 50, ff.570-572: to Saint-Ovide and Mézy, 10 June 1727; C¹¹B, 9, ff.93-99: Mézy, 24 November 1727; ff.31-35: Saint-Ovide and Mézy, 26 November 1727; ff.141-147v.: Verrier, 17 November 1727.

85. AN, Col., C¹¹B, 10, f.147: Verrier, "Plan et profil des deux fours proposés 1728." A copy of this plan will be found in Vol. II, p.25.

86. *Ibid.*, 12, ff.104-109v.: Verrier, 29 November 1731. AN, Section Outremer, D.F.C., A.S., no.166: "Plan des magasins du roi où on a représenté en jaune les fours à faire pendant l'année 1731 à un des angles de l'enclos des dits magasins et un logement pour l'ingénieur en chef sur le même alignement." Published copy in *A.P.T.*, fig. 59 and detail.

87. *Ibid.*, 13, ff.200-204v.: Verrier, 16 November 1732.

3,000 muskets. The armoury replaced the one under the clock tower in the citadel barracks, which was constantly being drenched by water leaking through the roof.⁸⁸

Hospital

The hospital seems to have been begun in 1725. In any event, by the end of that year the courtyard wall and part of the outside wall of the building (evidently the part at the corner of the rues d'Estrées and d'Orléans) were built.⁸⁹ A plan of 1725 shows this work and that recommended for 1726: part of the general ward and two auxiliary buildings.⁹⁰ By the end of 1726, the foundations were finished and the walls partly built. Plans for 1727 called for construction of door and window frames, and corners, requiring 2,000 cubic *pieds* of freestone, and a slate roof.⁹¹ Masonry and interior woodwork were finished in 1727,⁹² but an adequate supply of slate did not arrive from France until

88. *Ibid.*, 14, ff.298-309: Verrier, 23 October 1733.

89. AN, Col., C^{11B}, 7, ff.261-266v.: Mézy, 3 December 1725; f.334: Verrier, 16 December 1725; B, 49, ff.699-701: to Saint-Ovide and Mézy, 28 May 1726.

90. AN, Section Outremer, D.F.C., A.S., no.153: Verrier, "Louisbourg 1725: plan de l'hôpital pour servir au projet de 1726" (PAC, Ph/250-Louisbourg-1726). Published copy in *A.P.T.*, fig. 62 and detail. The ward or *salle des malades* is marked F, the buildings G and H.

91. AN, Col., C^{11B}, 8, ff.8-20v.: Saint-Ovide and Mézy, 28 November 1726; ff.115-121v.: Verrier, 1 December 1726. AN, Section Outremer, D.F.C., A.S., no.154: Verrier, "Plan de l'hôpital pour servir au projet de 1727" (PAC, Ph/250-Louisbourg-1727). Published copy in *A.P.T.*, fig. 63.

92. *Ibid.*, B, 50, ff.570-572: to Saint-Ovide and Mézy, 10 June 1727; 52, ff.588-593: to Verrier, 20 June 1728.

1730. A makeshift roof had to suffice until July of that year.⁹³

While waiting for the slate, Verrier designed the clock tower for the building.⁹⁴

Work on the harbour defences was done concurrently with that on some of the other structures. Initially, the Royal and Island Batteries were designed to complement one another without help. Subsequently, Verrier added a battery in the gorge of the Dauphin Bastion, facing the harbour, to increase the amount of crossfire to which attacking ships would become subjected and to make it more effective.⁹⁵ Some excavation at the site of the Royal Battery had been carried out in 1721-1722, but work began in earnest in July 1725 following the contract award to François Ganet. The foundation and the two towers shown on a 1725 plan were built that year six to seven feet above the floor of the ditch. Materials were stockpiled at the site. The battery had its own limekiln.⁹⁶

93. AN, Col., C^{11B}, 11, ff.16-22: Bourville and Mézy, 3 December 1730; ff.74-79: Verrier, 2 December 1730.

94. AN, Col., C^{11A}, 126: "Le plan, profil et élévation du clocher de l'hôpital du roi à Louisbourg 1729" (Louisbourg Restoration Section no.729-3). Published copy in *A.P.T.*, fig. 64; C^{11B}, 10, ff.240-241: Verrier, 31 August 1729; ff.242-245: Verrier, 18 December 1729; 11, ff.16-22: Bourville and Mézy, 3 December 1730.

95. AN, Section Outremer, D.F.C., A.S., no.160: Verrier, "Plan du port et de la ville de Louisbourg, avec ses trois batteries, conformément au projet qui en a été fait 1727" (PAC, Ph/240-Louisbourg-1727). See copy in Vol. II, p.26.

96. AN, Col., C^{11B}, 7, ff.261-266v., *loc. cit.*; f.334, *loc. cit.*, and AN, Section Outremer, D.F.C., A.S., no.152: Verrier, "Ile Royale, 1725: plan de la batterie royale avec ses environs pour servir au projet de 1726" (PAC, Ph/250-Louisbourg-1726). For a copy of the plan, see Vol. II, p.27. Under the flap or overleaf is the work reported finished in 1725. On the overleaf is the work planned for 1726. The plan shows the towers, and the limekiln (M).

Royal Battery

The faces of the battery were finished in 1726; the merlons were erected $2\frac{1}{2}$ *pieds*; the barracks were ready to receive their roof; the towers were constructed to the level of the crenellated room; and the counterscarp was finished. On November 7, 1726 the battery suffered a setback. Twenty-four to thirty *pieds* of the circular counterscarp,⁹⁷ still exposed to the sea instead of being protected by a dam, were destroyed. The sea had also carried away boards and sand and the stone-cutter's workshop. On the same day a gale removed from the west tower a temporary roof that had been installed to protect the masonry from water and snow.⁹⁸ Yet by the end of 1727, the covered way and glacis, and the twin towers, were all constructed. A shortage of freestone and of stonecutters halted further masonry work, leaving the embrasures unfinished. Moreover, the roof and gun platforms remained to be done.⁹⁹

The obtuseness of the flanked angle of the battery (due largely to the need for a 200-man structure squeezed between the harbour and the hills to the north) reduced its command of all parts of the harbour. This was offset to some degree by the co-ordination intended among the Island, Royal and Dauphin Batteries. Their crossfire was supposed to make a

97. AN, Section Outremer, D.F.C., A.S., no.156: Verrier 1726, "Plan, profil, coupe et élévation de la Batterie Royale pour servir au projet de 1727." (PAC, Ph/250-Louisbourg-1727) See copy in Vol. II, p.28.

98. *Ibid.*, Col., C^{11B}, 8, ff.8-20v., *loc. cit.*, ff.111-113v.: Verrier, 10 October 1726; ff.115-121v.: Verrier, 1 December 1726.

99. C^{11B}, 9, ff.31-35: Saint-Ovide and Méty, 26 November 1727; ff.93-99: Méty, 24 November 1727; ff.141-147v. and 150-151, *loc. cit.*

frontal attack on the harbour extremely unprofitable to an enemy. However, the Royal Battery was defective in any event, for the northeast arm of the harbour was inadequately covered. Flanks had already been added; to cover the northeast arm better, Verrier recommended in 1728 an extension of the left flank. By the time of its completion in 1731, it had become an installation for four guns and two mortars.¹⁰⁰

Island Battery

The role intended for the Island Battery may be seen in a plan referred to above.¹⁰¹ Access to the small island by boat was (and still is) extremely difficult, even in a relatively calm sea. It is almost impossible in very rough seas. Excavation at the site began before

100. AN, Section Outremer, D.F.C., A.S., no.159: "Plan de la batterie royale dans le port de Louisbourg" (PAC, Ph/250-Louisbourg-1727). A copy of this plan is found in Vol. II, p.29. This plan, which bears no date, was drawn in 1728: see AN, Col., C^{11B}, 10, ff.131-140: Verrier, 13 November 1728. See also AN, Col., B, 52, ff.588-593: to Verrier, 20 June 1728; B, 53, ff.588v.-590v.: to Saint-Ovide and Mézy, 22 May 1729, and ff.602v.-606: to Verrier, 22 May 1729. Another undated plan by Verrier shows the extension of the left flank: AN, Section Outremer, D.F.C., A.S., no.249: "Plan de la Batterie Royale dans le port de Louisbourg de 39 canons de 36 et de 2 mortiers" (PAC, Ph/250-Louisbourg-[1727]). A copy may be found in Vol. II, p.30. An enlargement of the flank area is shown on a 1730 plan: AN, Section Outremer, D.F.C., A.S., no.168: (Verrier) 2 December 1730 "Partie de la Batterie Royale où on a représenté en couleur jaune le prolongement à faire pendant l'année 1731 du retour qui donne dans le fond du port pour y établir quatre embrasures et deux mortiers" (PAC, Ph/250-Louisbourg-1731). See copy in Vol. II, p.31. Col., C^{11B}, 11, ff.74-79: Verrier, 2 December 1730; C^{11B}, 12, ff.104-109v.: Verrier, 29 November 1731.

101. See note 95.

1723,¹⁰² but stockpiling of construction materials—difficult because of the smallness of the island—did not begin until 1726, when plans for work in 1727 were submitted.¹⁰³ By the end of the latter year, two-thirds of the masonry of the external face were finished to the level of the *bavette*. Completion of the battery in 1728 depended on the despatch of more stonecutters from France.¹⁰⁴ By the end of 1728, the masonry of the battery was finished,¹⁰⁵ and a year later that of the barracks. Space taken up by building materials impeded progress on the gun platforms,¹⁰⁶ which were finished, finally in 1731.¹⁰⁷ The powder magazine was completed by December, 1730 but the masonry of the arch

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102. B.N., C.&P., Ge BB563(6): (PAC, Ph/250-Louisbourg-n.d.). This plan may date from that period. A copy has been published in *A.P.T.*, fig. 97. For discussions of construction contracts and estimates, see AN, Col., C^{11B}, 6, ff.178-180: Saint-Ovide, 22 November 1723; ff.235-242, Mésy, 24 November 1723; 7, f.334: Verrier, 16 December 1725.
103. AN, Section Outremer, D.F.C., A.S., no.155: Verrier, "Plan de la batterie de l'Ile de l'Entrée pour servir au projet de 1727" (PAC, Ph/250-Louisbourg-1727); AN, Col., C^{11B}, 8, ff.8-20v.: Saint-Ovide and Mésy, 28 November 1726; ff.115-121v.: Verrier, 1 December 1726. A copy of the plan is published in *A.P.T.*, fig. 98.
104. AN, Col., C^{11B}, 9, ff.93-99: Mésy, 24 November 1727; ff.141-147v.: Verrier, 17 November 1727. AN, Section Outremer, D.F.C., A.S., no.162: Verrier, "Plan et profil de la batterie de l'Ile de l'Entrée, pour servir au projet de 1728" (PAC, Ph/250-Louisbourg-1728). The plan is published as fig. 99 in *A.P.T.*
105. AN, Col., C^{11B}, 9, ff.31-35: Saint-Ovide and Mésy, 26 November 1727; C^{11B}, 10, ff.41-54: Saint-Ovide and Mésy, 3 November 1728; ff.81-84: Saint-Ovide, 3 November 1728; ff.131-140: Verrier, 13 November 1728. An undated plan, AN, Section Outremer, D.F.C., A.S., no.250: Verrier, "Plan de l'Ile de l'Entrée dans le port de Louisbourg avec sa batterie de 33 canons de 24" (PAC, Ph/250-Louisbourg-1727), was probably drawn between 1727 and 1733. It shows building sizes and locations as in a 1733 plan (see note 112 below), without a suggestion of the *épaulement* shown in that plan. The undated plan is published in *A.P.T.* as fig. 100.
106. AN, Col., C^{11B}, 10, ff.242-245: Verrier, 18 December 1729.
107. *Ibid.*, 12, ff.104-109v.: Verrier, 29 November 1731.

required three or four years to harden before the supports could be removed.¹⁰⁸

A cistern had been planned for the storage of fresh water on the tiny island, but its construction was delayed by supply problems.¹⁰⁹ By the end of 1732 Verrier had observed the devastating effect of sea spray on all the structures. The proposed cistern was in a very exposed position.¹¹⁰ The following year, Verrier recommended the storage of fresh water in barrels—from 60 to 80 would suffice during a siege, according to his estimate—instead of constructing a cistern.¹¹¹ He also submitted a plan showing a new wall or *épaulement* facing the open ocean, which would protect the rear of the battery from both the sea and attacking ships.¹¹² The Court approved its construction at a cost of 6,200 *livres*.¹¹³

Delays in 1734 and 1735, combined with fresh damage in another part of the battery, may have saved the Crown a little money. Frost and spray caused the masonry of the merlons to disintegrate. Verrier recommended replacing the upper two *pièdes* of the merlons by sod. Not

108. *Ibid.*, 11, f.16: Bourville and Mésey, 3 December 1730 and ff.74-79: Verrier, 2 December 1730.

109. *Ibid.*

110. *Ibid.*, 13, ff.200-204v.: Verrier, 16 November 1732.

111. *Ibid.*, 14, ff.298-309: Verrier, 23 October 1733.

112. AN, Section Outremer, D.F.C., A.S., no.179: "Plan de la batterie de l'Ile de l'Entrée où on a représenté en couleur jaune le mur projeté en 1734 qui doit servir d'épaulement à la batterie" (PAC, Ph/250-Louisbourg-1734). Published in *A.P.T.* as fig. 101, with some detail enlarged.

113. AN, Col., B, 61, ff.594-596: to Saint-Ovide and Le Normant, 4 May 1734.

only would this arrest the effect of the climate, but it would protect the gunners from stone splinters during bombardment. The saving was supposed to come from using fieldstone from the merlons in the construction of the *épaulement*. The Court approved the proposal.¹¹⁴ Work was finished during the summer of 1736.

Since the battery was not manned between December and April, maintenance was inadequate. The barracks were in danger of rapid deterioration. The roof required reinforcement against wind, waves and spray. Chimneys and fireplaces made of local flat stone, not thick enough to resist the weather, had to be rebuilt with cut stone from the merlons. A stockade was built around a rock to the right of the battery's flank, to prevent possible landings at the point. Another stockade was recommended for the left side of that flank to block the entrance to the embrasures of the face, which were no more than four *pieds* above ground level.¹¹⁵

114. AN, Section Outremer, D.F.C., A.S., no.187: Verrier, "Elévation et profil de partie de la batterie de l'flot à l'entrée du port de Louisbourg, pour représenter la réforme à faire des merlons que la gelée et l'embrun de la mer dégradent, cette réforme consistant à raser les dits merlons de 2 pieds et y substituer du gazon plat et de la terre, ce qui conservera non seulement les embrasures mais tout l'ouvrage, et les coups de canons qui pourraient battre en passant la batterie ne feront qu'écrêter le gazon, ce qui causera moins de fâcheux accidents pour ceux qui serviront cette batterie" (PAC, Ph/250-Louisbourg-1735). Copy in Vol. II, p.32. AN, Col., C^{11B}, 16, ff.5-8v.: Sabatier, 30 November 1734; C^{11B}, 17, ff.17-20: Saint-Ovide and Le Normant, 28 October 1735; ff.252-260: Verrier, 28 October 1735; B, 64, f.463 (to Saint-Ovide and Le Normant) and f.464 (to Verrier), 24 January 1736.

115. AN, Col., C^{11B}, 18, ff.269-270: Verrier, 8 July 1736; ff.271-283: Verrier, 10 November 1736; ff.11-15v.: Saint-Ovide and Le Normant, 7 November 1736; ff.43-46v.: Saint-Ovide, 30 October 1736.

Dauphin Demi-bastion

The Dauphin Demi-bastion was both the right pivot of the landward front and a part of the harbour's defence. The circular battery in the gorge of the bastion was Verrier's addition to Verville's design. It helped to assuage Saint-Ovide's anxiety about a direct assault on the harbour.¹¹⁶ Most of the construction on the bastion took place during the years 1728, 1729 and 1730.¹¹⁷ By June 1728 part of the face was finished and the foundation of the flank was begun.¹¹⁸ By November of the same year, the walls were raised to a height of 15 *pieds* and the ditch was partly excavated.¹¹⁹ Progress was such that, by August 1729, the embrasures of the circular battery and those of the flank were finished.¹²⁰ By December, the masonry work was complete. The Dauphine Gate was partly constructed, the guardhouse was finished, part of the rampart was terraced and the powder magazine was partially completed.¹²¹ By the end of 1730,

116. AN, Col., C^{11B}, 9, ff.93-99: Mézy, 24 November 1727; ff.31-35: Saint-Ovide and Mézy, 26 November 1727; ff.60-63v.: Saint-Ovide, 19 November 1727; ff.141-147v.: Verrier, 17 November 1727.

117. See the following plans for some idea of construction progress during those years: AN, Section Outremer, D.F.C., A.S., no.161: Verrier, "Plan du demi-bastion Dauphin et de la batterie qui donnera dans le port, pour servir au projet de l'année 1728 et les suivantes. Représenté de haute mer, 17 novembre 1727" (PAC, Ph/250-Louisbourg-1728). Copy in Vol. II, p. 33; no.169: (Verrier) 22 December 1730, "Plan du bastion Dauphin et de sa batterie où on a représenté en jaune les ouvrages à faire pendant 1731 pour le perfectionner" (PAC, Ph/250-Louisbourg-1731). Copy in Vol. II, p. 34; no.251: Verrier, "Plan du demi-bastion Dauphin avec sa batterie de 16 canons qui bat dans le port de Louisbourg" (PAC, Ph/250-Louisbourg-n.d.). Copy published in *A.P.T.*, fig. 29.

118. AN, Col., C^{11B}, 10, ff.126-128: Verrier, 27 June 1728.

119. *Ibid.*, ff.131-140: Verrier, 13 November 1728.

120. *Ibid.*, ff.240-241: Verrier, 31 August 1729.

121. *Ibid.*, ff.242-245: Verrier, 18 December 1729.

the interior parapet, the counterscarp, the rest of the covered way, the sluice, and the spur (*éperon*) were yet to be done. The coat of arms had to be carved at Rochefort for the Dauphine Gate.¹²² The work remaining in 1731 comprised the spur, the installation of the coat of arms, the bridge at the Dauphine Gate and the roof of the pavilion adjoining the gate.¹²³ By the end of 1732, the bridge was done and the Royal arms, which had been sent in 1731, were installed on the Porte Dauphine. The spur, however, was not built, and the glacis remained to be finished.¹²⁴

The landward front of fortification had been largely neglected, except for the Dauphin and King's Bastions. In 1730 Verrier was able to turn his attention to the front as a whole, once other priorities were on the way to being satisfied.¹²⁵

Citadel

Much remained to be done in 1730, even on the King's Bastion and

122. *Ibid.*, 11, ff.16-22: Bourville and Mézy, 3 December 1730; ff.74-79: Verrier, 2 December 1730.

123. *Ibid.*, 12, ff.104-109v.: Verrier, 29 November 1731.

124. *Ibid.*, 13, ff.83-84v.: Le Normant, 17 November 1732; ff.200-204v.: Verrier, 16 November 1732. For a plan of the Dauphine Gate, see AN, Section Outremer, D.F.C., A.S., no.163: Verrier, "La porte Dauphine de la ville de Louisbourg à l'Ile Royale 1729" (PAC, Ph/250-Louisbourg-1729). It has been published in *A.P.T.*, fig. 30.

125. AN, Section Outremer, D.F.C., A.S., no.164: "Plan de la ville de Louisbourg en l'Ile Royale, avec le projet pour son enceinte représenté en couleur jaune, 1730" (PAC, Ph/240-Louisbourg-1730). Published copy in *A.P.T.*, fig. 8.

citadel barracks.¹²⁶ The barracks roof had to be slated; gun platforms and embrasures were to be constructed on the flanks of the bastion; and the parapet was to be built. None of this included the outer works of the bastion (counterscarp, covered way and glacis). The gun platforms, of cut stone, were to be finished by the spring of 1731. The casemates in the two flanks were to be made waterproof.¹²⁷

The work took longer than the single season envisaged for it. In 1731 the parapets and flanks of the King's Bastion were finished, as was a large wall for the revetment of the terreplein in the left-face rampart. The freestone for the gun platforms was cut in 1731 but not laid because the masons were busy in the citadel barracks. They extended the gables and walls of the north wing and rebuilt the pillars and fireplaces in cut stone because the local brick had weathered poorly. During 1731 the roof of the north wing was partially slated.¹²⁸ In 1732, part of the counterscarp of the King's Bastion was constructed in masonry. The slate roof was finished in the soldiers' area of the barracks. The fireplaces and chimneys had been completed. The officers' quarters still awaited their slate roof.

The north wing, originally intended for the use of the financial

126. AN, Section Outremer, D.F.C., A.S., no.167: "Plan du bastion du roi où on a représenté en couleur jaune les ouvrages à faire pendant l'année 1731." Published copy in *A.P.T.*, fig. 47, with detail enlarged.

127. AN, Col., C¹¹B, 11, ff.16-22: Bourville and Mézy, 3 December 1730; ff.74-79: Verrier, 2 December 1730.

128. *Ibid.*, 12, ff.104-109v.: Verrier, 29 November 1731.

commissary, as his residence and administrative and judicial headquarters, proved quite unsuitable for those purposes. Instead of reconstructing the wing to make it suitable, Verrier recommended that it be turned over to officers and soldiers, and that the government purchase Mésy's house on the quay as the permanent residence of the financial commissary.¹²⁹ The minister approved all of this work, but found that the reports of slow progress, repairs and reconstruction made tedious reading. "...je souhaite", he wrote, "que tout ce qui regarde ce bâtiment soit mis en état, de manière que je n'en entende plus parler...."¹³⁰

The minister was to hear more for some years to come. It was 1733 before the clock tower was finished.¹³¹ Alterations in the north wing were necessary to make it suitable as barracks: a complete slate roof and partitions to create officers' rooms. In the north section of the main building, alterations to a stairway, a fireplace and a chimney were required, again to facilitate partitions for officers' rooms. Alterations were necessary to provide an armoury for 2,400 muskets and other small arms. The armoury still had to be protected from powdered snow penetrating through the roof, but it was 1736 before the roof was finally repaired, because the roofers were busy elsewhere. Repairs to the building by that time had totalled over 5,000 *livres*. In spite of that, serious problems with humidity in the cellars of the building remained.

129. *Ibid.*, ff.40-41: Saint-Ovide, 25 November 1731; 13, ff.200-204v.: Verrier, 16 November 1732.

130. *Ibid.*, B, 57, ff.746v.-748: to Saint-Ovide, 19 June 1732; ff.751-755: to Verrier, 19 June 1732.

131. *Ibid.*, C^{11B}, 14, ff.298-309: Verrier, 23 October 1733.

Like the barracks, the bastion was "almost finished" years before it was really completed. By late 1733, the gun platforms and the parapets were finished, the turf was laid and everything was terraced. In order to move earth through the bastion to complete the parapet and the terreplein, it had been necessary to leave a breach at the flanked angle. However, by spring of 1734 this breach was closed by completing the two remaining *toises* of masonry and installing the *guérite*. In 1736, Verrier installed a postern at the re-entrant angle. On the left face, he rebuilt 10 to 12 *toises* of wall that had fallen, a victim of the weather.

Also disintegrating were the casemates. Water always managed to penetrate and drip from the walls, making the casemates used as jail cells extremely dangerous to the health of their prisoners. This occurred despite the precaution of building the arches of the casemates of flat stone, and the gun platforms above them of cemented cut stone. To protect the exterior walls of both the bastion and the barracks from weathering, Verrier stuccoed them in 1737 at a cost of 2,300 *livres*.¹³²

132. C^{11B}, 15, ff.205-207: Le Normant, 4 November 1734; ff.79-83v.: Saint-Ovide and Le Normant, 1 November 1734; C^{11B}, 16, ff.182-193: Verrier, 6 November 1734; C^{11B}, 17, ff.252-260: Verrier, 28 October 1734; ff.17-20: Saint-Ovide and Le Normant, 28 October 1734; C^{11B}, 18, ff.11-15v.: Saint-Ovide and Le Normant, 7 November 1736; ff.289-294: Sabatier, 6 November 1736; ff.271-283: Verrier, 10 November 1734; C^{11B}, 19, ff.232-240: Verrier, 30 October 1737; C^{11B}, 20, ff.227-235: Verrier, 1 November 1738, B, 63, ff.543v.-547v.: to Verrier, 25 April 1735; B, 65, ff.470v.-472: to Saint-Ovide and Le Normant, 6 May 1737.

West Front

Verrier began in 1731 to deal with the other parts of the landward front. The Queen's and Princess Bastions were to be "empty" (i.e. no structures were to be built inside them such as the citadel barracks or the circular battery inside the King's and Dauphin Bastions) but there were other problems that offset these aids to speedy construction. The curtain¹³³ between the Dauphin and the King's had to be constructed in water: the *Petit Etang*. A second town gate---the Queen's Gate---was to be built through the Queen's-Princess curtain. The Princess Demi-bastion almost abutted on the ocean; this required flanking protection for it from both the sea and a hostile naval force.

Between 1731 and 1734, work from the King's to the Princess Bastion made fair progress. Water and rock slowed work in 1731 on the King's-Queen's curtain, but by late 1732 it was built to some 12 *pieds*.¹³⁴ The following June, the ditch of the Queen's Bastion and of the Queen's-Princess curtain was being excavated.¹³⁵ By October 1733, the King's-

133. French: *courtine*; the walls linking the bastions to one another.

134. For a plan and sections showing the state of construction then, see AN, Section Outremer, D.F.C., A.S., no.175: "Plan de Louisbourg pour représenter les ouvrages A, B, C, qui ont été faits pendant l'année 1732 et ceux que l'on doit faire pour la continuation de l'enceinte de la ville représentée en ligne noire pendant l'année 1733". Copy in Vol. II, p. 35; no.173: "Profil pris sur la ligne K, L, de la face droite du bastion de la reine pour représenter en rouge la maçonnerie qui a été faite pendant l'année 1732 et la couleur jaune représente l'ouvrage qui y reste à faire pour sa perfection. Profil pris sur la ligne M, N, de la courtine entre les bastions du roi et de la reine pour représenter en rouge la maçonnerie qui a été faite pendant l'année 1732 et la couleur jaune représente l'ouvrage qui y reste à faire pour sa perfection." (PAC, Ph/250-Louisbourg-1732). Copy in Vol. II, p.36. Col., C^{11B}, 13, ff.83-84v.: *loc. cit.*

135. AN, Col., C^{11B}, 14, ff.132-134: Le Normant, 30 June 1733.

Queen's curtain, and the left face and flank, had reached cordon level.¹³⁶

The Queen's-Princess curtain and the Princess Bastion were built to a height of 7 *pieds* 9 *pouces* in some parts, and of 14 *pieds* in others. The Princess Bastion was to be extended to the sea, by adding to it part of a "left face" with loopholes for small-arms. By the end of 1734, that extension had reached a height of 12 *pieds*, while the rest of the landward front, except for the King's-Dauphin curtain, was built to cordon level.¹³⁷

Late in 1735, the "left face" of the Princess was also constructed to that height, and a battery built at right angles to it. A wooden stockade placed against the battery, however, did not withstand rough seas during October 1735. In order to block entry to the town at that point, a masonry spur appeared necessary.¹³⁸

136. *Ibid.*, ff.298-309, *loc. cit.* The cordon, a carved stone projection from the escarp originally designed to frustrate the scaling of walls, lay between the top of the escarp and the base of the exterior wall of the parapet. See also AN, Section Outremer, D.F.C., A.S., no.176: "Plan de Louisbourg où on a représenté en ligne rouge les parties de l'enceinte qui sont commencées et en ligne jaune celles qui sont à commencer l'année 1734 et l'on continuera la dite année le travail sur celles qui sont établies." Copy in Vol. II, p.37.

137. AN, Col., C^{11B}, 16, ff.182-193: Verrier, 6 November 1734. For the work completed until then, and that planned for 1735, see AN, Section Outremer, D.F.C., A.S., no.184: Verrier, "Plan de Louisbourg en l'état qu'il est 1734, où l'on a représenté en couleur jaune par les profils les ouvrages qui restent à faire pour perfectionner l'enceinte à laquelle on travaillera l'année 1735" (PAC, Ph/240-Louisbourg-1735). Copy in Vol. II, p.38.

138. AN, Col., C^{11B}, 17, ff.252-260: Verrier, 28 October 1735. See also the following plans: AN, Section Outremer, D.F.C., A.S., no.185: Verrier, "Plan du port de Louisbourg dans l'Ile Royale, représenté de basse mer" (PAC, Ph/240-Louisbourg-1735); no.186: Verrier, "Plan de Louisbourg pour représenter les ouvrages de la fortification dans l'état qu'elle est la présente année 1735" (PAC, Ph/240-Louisbourg-1735). Copies in Vol. II, pp.39-40.

In November 1736, Verrier submitted a plan and section for the proposed spur.¹³⁹ The base was to be 16 *pieds* wide, 8 *pieds* high. The masonry was to be joined by boards 2½ *pieds* apart, the tie-beams well blocked by iron "stirrups". The boards were to join a revetment of two-*pouce* planks with seven-*pouce* nails. The head of the spur was to be fortified by a cut stone wall towering over the faces about 18 *pieds* on either side. Only the head of the structure would suffer the waves and spray, since Black Rock and Rochefort Point acted as a breakwater for the rest. The cost estimate was about 27,000 *livres*.¹⁴⁰

At the harbour end of the front, the Dauphine Gate was finally reported finished in January 1734, and a plan submitted at the end of that year for the construction of the spur to protect the sluice gate.¹⁴¹ The minister of marine was disenchanted with the length of time (four years) taken to build that structure. He wrote to Verrier in April, 1735:

139. AN, Col., C^{11A}, 126: Verrier, "Louisbourg 1737. Plan d'une partie du Bastion Princesse et de la batterie du Cap Noir au prolongement de laquelle on a représenté en couleur jaune l'éperon projeté pour empêcher de mer basse la communication dans la ville. Profil de l'éperon pris sur la ligne A, B." (Fortress of Louisbourg Restoration no.737-3A) Copy in Vol. II, p.41.

140. AN, Col., C^{11B}, 18, ff.271-283: Verrier, 10 November 1736.

141. AN, Col., C^{11B}, 15, ff.117-118: Saint-Ovide, 28 January 1734. The plan AN, Section Outremer, D.F.C., A.S., no.178: Verrier, "Plan et profil de la porte Dauphine où on a représenté en couleur jaune l'éperon à construire pour servir à flanquer les écluses, A, la grave, et pour empêcher en mer basse la communication dans la ville 1734" (PAC, Ph/250-Louisbourg-1734), has been published in *A.P.T.*, fig. 31. Note the stockade built but destroyed by a gale shortly afterwards.

Vous deviez faire établir dès 1733 l'éperon de la porte Dauphine; mais vous aimâtes mieux faire travailler cette année-là à l'enceinte de la ville. Vous me marquâtes qu'en 1734 vous profiteriez de la belle saison pour la faire faire, et vous ajoutâtes que les matériaux étaient sur les lieux. J'avais lieu de croire après cela que cet ouvrage ne serait plus retardé; mais puisque votre voyage au Port Toulouse et à l'Ile Saint-Jean vous a empêché d'y faire travailler, je compte que vous le ferez commencer à l'ouverture des travaux et qu'il sera fini cette année-ci.¹⁴²

In October, the spur was finished but a stockade there was destroyed by a gale on 18 October 1735.¹⁴³ "Il est assez extraordinaire", wrote the minister of marine about it the following spring, "qu'on n'ait pas prévu un pareil accident, et qu'on n'ait pas épargné la dépense de cet ouvrage qu'on aurait dû juger ne pouvoir pas être suffisant."¹⁴⁴

The Dauphin-King's curtain was especially difficult because of the water. Construction could not proceed as quickly there as elsewhere lest the foundations became overloaded before the masonry had set.¹⁴⁵ However, it was built to cordon level by November 1736,¹⁴⁶ and the parapet was under construction in 1737.¹⁴⁷

At that time, when it was found necessary to protect the works at the harbour and ocean ends of the front of fortification---the Dauphin

142. AN, Col., B, 63, ff.543v.-547v.: to Verrier, 25 April 1735.

143. *Ibid.*, C^{11B}, 17, ff.252-260: Verrier, 28 October 1735. For the stockade, see note 141 above.

144. *Ibid.*, B, 64, ff.488v.-490: to Saint-Ovide and Le Normant, 15 May 1736.

145. *Ibid.*, C^{11B}, 17, ff.252-260, *loc. cit.*

146. *Ibid.*, 18, ff.271-283: Verrier, 10 November 1736.

147. *Ibid.*, 19, ff.232-240: Verrier, 30 October 1737.

and Princess Demi-bastions---and when this led Saint-Ovide to propose a new front which would enclose the town completely, the landward front still required a considerable amount of work before it could be pronounced fit to withstand an assault. There were details to be finished on every bastion and curtain: the ditch to be widened; the counterscarp and covered way to be constructed in many places; some of the parapet to be finished; and much of the glacis to be fashioned.

Roads

During the construction of the harbour batteries, hospital, storehouse, citadel barracks and landward front of fortification, the builders were busy with roads, with other structures at Louisbourg, and with buildings and fortifications in settlements outside of the capital. In the present section, we are concerned with work at Louisbourg.

To construct roads to Mira Lake (*Grand Lac de Miré*) and the port of La Baleine, and from the Dauphine Gate at Louisbourg to the Royal Battery,¹⁴⁸ the colonial administrators obtained funds from the fortifications account. They had to depend on whatever labour they could raise: soldiers (mainly after the close of the construction season) and some civilians.¹⁴⁹ The roads were to be 12 *pieds* wide, free of stumps and stones, and kept level throughout their length. After an

148. See map in J.S. McLennan, *Louisbourg from its Foundation to its Fall* (London, 1918) opposite p.89.

149. AN, Col., C^{11B}, 20, ff.24-30v.: Saint-Ovide and Le Normant, 15 November 1732.

experiment with piecework, it was decided to pay daily rates for labour because it was in short supply.¹⁵⁰

By the winter of 1733-1734, the road to the Royal Battery was finished,¹⁵¹ but progress on the two other, longer roads was very slow. Several unexpected difficulties in the terrain sharply raised the cost of construction: shifting soil, marshland, rock and underground streams were a few of these.¹⁵² Work continued from 1734 to 1737. Partially completed roads were used by those inhabitants who could reach them---in winter fairly readily by sled, and even in summer to some extent by cart. The fishermen of La Baleine and Lorembec saved revenue during the fishing season by using the road in order to purchase supplies at Louisbourg, leaving their boats free for fishing.¹⁵³ In 1734-1735, twenty-five wooden bridges were built over streams on the Mira road. In 1736, two of them were destroyed by a forest fire and were rebuilt. The Mira road was "almost" finished by that time,¹⁵⁴ but the Baleine road still required much work. The Ministry of Marine continued, under protest, to supply 4,500 *livres* a year¹⁵⁵ for road construction, trusting that maintenance

150. *Ibid.*, C^{11B}, 13, ff.83-84v.: Le Normant, 17 November 1732; 14, ff.151-155: Le Normant, 12 October 1733. See *infra.*, Chapter VI.

151. *Ibid.*, B, 61, ff.585v.-586v.: to Saint-Ovide and Le Normant, 27 April 1734.

152. *Ibid.*, C^{11B}, 15, ff.75-76v.: Saint-Ovide and Le Normant, 25 October 1734. See *infra.*, Chapter IV.

153. *Ibid.*, ff.52-59: Saint-Ovide and Le Normant, 23 January 1734.

154. *Ibid.*, 17, ff.17-20: Saint-Ovide and Le Normant, 28 October 1735; 18, ff.11-15v.: Saint-Ovide and Le Normant, 7 November 1736.

155. *Ibid.*, B, 65, ff.470v.-472: to Saint-Ovide and Le Normant, 6 May 1737.

costs would not be excessive. One can imagine then the consternation at Versailles when an estimate for the repair of bridges and roadway, on the Mira road alone, arrived during the winter of 1739-1740: it totalled 20,250 *livres*.¹⁵⁶ Yet nowhere in the correspondence do the administrators report the Baleine road as "finished" by that date.

Local roads were primarily of interest to the colony. Three Louisbourg projects of considerable metropolitan importance were the careening wharf, the lighthouse and the docks, for they provided services not only to the King's ships, but also to fishing and other merchant vessels.

Careening Wharf

The intended location of the careening wharf may be seen on a plan of 1727.¹⁵⁷ Another plan¹⁵⁸ shows in detail the facilities that were to be constructed for the careening (or removal of barnacles, etc.) of ships. To careen a ship, men had to put it on its side. It had to be securely moored. This was to be the purpose of the old gun barrels, known as *corps morts* or fixed moorings.

Although an estimate was submitted in 1727, and 11,600 *livres*

156. *Ibid.*, C^{11B}, 21, ff.31-33v.: Boucher, 9 November 1739; B, 70, f.396: to Forant and Bigot, 7 May 1740.

157. See note 95 above.

158. AN, Section Outremer, D.F.C., A.S., no.158: Verrier, "Plan du carénage du port de Louisbourg dans lequel on propose un quai. Les sondes sont marquées en pieds et de basse mer." Published in *A.P.T.*, fig. 92.

provided the following year, work did not begin until 1732.¹⁵⁹ No sooner had it begun, however, than the colonial administrators decided to widen the wharf by 14 *pieds*, threatening to increase the cost by 50 per cent.¹⁶⁰ The extra width was necessary because the wharf projected from an underwater ledge.¹⁶¹ The structure was therefore too far from the shore to install moorings and capstans on the land, and they could not be installed at the wharf itself because space was required for the ships. The structure as originally planned had been based on those at Rochefort, which were secured to the shore. At the Louisbourg site, the water extended as much as 60 *pieds* behind the wharf. The additional width, it was alleged, was also needed for stability.¹⁶²

Construction progress was delayed by slow delivery of materials and supplies. In 1733, piling, cross-beams, ties and wales were built, but the builders exhausted their supply of wood suitable for piles. Construction of the platform, for which all the planks *were* ready, was thus held up.¹⁶³ In 1734 the piles were made and put in place, at the same time as the stone jetty that was to cover the wharf and protect it

159. The delay was due chiefly to conflict for labour with other construction. AN, Col., C^{11B}, 12, ff.104-109v.: Verrier, 29 November 1731.

160. *Ibid.*, 13, ff.200-204v.: Verrier, 16 November 1732.

161. This may be seen on the following plan: AN, Section Outremer, D.F.C., A.S., no.177: "Plan de l'anse du carénage dans le port de Louisbourg où on a représenté en couleur noire l'ouvrage qui est faite pour l'établissement du quai et en couleur jaune ce qui restait y faire pour le perfectionner en 1734" (PAC, Ph/240-Louisbourg-1734). Published in *A.P.T.*, fig. 93.

162. AN, Col., C^{11B}, 15, ff.52-59, *loc. cit.*

163. *Ibid.*, 14, ff.298-309, *loc. cit.*

from the sea. The piles supported the jetty, giving the stones time to cement together. The platform was built, except at the front where space was left for the fixed moorings, the capstans and the hoist. Rochefort had failed to send the hardware ordered in 1733: large discarded anchors (foundations for the fixed moorings), old gun barrels (the moorings themselves) and chains 6 *pieds* in length built to withstand the roughest seas.¹⁶⁴ When they did arrive in 1735, the anchors were discovered to be unsuitable. Their shanks were too long, and since there was no blacksmith or other suitable craftsman to shorten them, and since it was wrong to mutilate good anchors, they were returned to France. Three anchors brought from Placentia in 1713 that had been used to hold down the chain across the harbour entrance were tried, but proved too weak. The Ministry was asked to send four anchors with shanks 9 *pieds* long.¹⁶⁵ They did not arrive until 1737.¹⁶⁶ However, they were not installed with the gun barrels, until 1738 (after a decision awarding Muiron the contract), and that very late in the season.¹⁶⁷ Construction of the masonry to secure them was postponed indefinitely in 1740 because completion of the new enceinte had priority. Meanwhile, ships were using the facility.¹⁶⁸

164. *Ibid.*, 15, ff.79-83v.: Saint-Ovide and Le Normant, 1 November 1734; 16, ff.182-193: Verrier, 6 November 1734.

165. AN, Marine, B⁴, 43, f.393: Chevalier de la Sausaye to the minister, 28 September 1735; Col., C^{11B}, 17, ff.17-20, *loc. cit.*; ff.252-260: Verrier, 28 October 1735.

166. C^{11B}, 19, ff.232-240: Verrier, 30 October 1737.

167. C^{11B}, 20, ff.227-235: Verrier, 1 November 1738.

168. B, 70, ff.408-409: to Verrier, 13 May 1740.

Lighthouse

Navigation aids were another type of service to shipping. The waters near Louisbourg harbour were extremely dangerous: the famous fog of the region, when combined with its rocks and shoals, could spell disaster for the unwary. Charts were available,¹⁶⁹ but beacons were sorely needed. In 1727, Verrier was asked to draw a plan for a lighthouse on the site eventually selected (and known today as Lighthouse Point)¹⁷⁰ because it dominated the harbour entrance and was higher than the highest point in the town.¹⁷¹ In any event, construction on Lighthouse Point was delayed for several years because the Ministry of Marine hoped it could economize by building a beacon in the tower of the citadel barracks.¹⁷²

After convincing the Ministry that the latter idea was impractical, Verrier submitted another plan in 1730.¹⁷³ Although not far from the site originally proposed, the location selected was higher and generally

169. I.e. charts of waters.

170. AN, Col., C^{11B}, 9, ff.141-147v., *loc. cit.*

171. AN, Section Outremer, D.F.C., A.S., no.171: Verrier, "Plan, profil et élévation de la tour proposée à faire sur la butte à l'entrée du port de Louisbourg, qui servira à éclairer les vaisseaux et les guider." (PAC, Ph/250-Louisbourg-[1727]) Published in *A.P.T.*, fig. 106. Some features suggest the plan was drawn about 1727, but this is difficult to determine. A notation in the P.A.C. National Map Collection suggests it represents a proposal that was later altered.

172. AN, Col., B, 52, ff.568-569v.: to Verrier, 24 February 1728; 53, ff.588v.-590v.: to Saint-Ovide and Mézy, 22 May 1729.

173. AN, Section Outremer, D.F.C., A.S., no.170: "Vue du fanal que l'on doit établir en 1731 à l'entrée du port de Louisbourg dont le pied de la tour fera 66 pieds au-dessus de la haute mer et la lumière à 121 pieds." Published in *A.P.T.*, fig. 104.

better situated. Materials were stockpiled there in 1730¹⁷⁴ and work began in the spring of 1731. Within a short time, Verrier decided, for safety reasons, to build no more than 20 *pieds* a year.¹⁷⁵ The delay this entailed was preferable to the tower's collapse. Part of the equipment expected from Rochefort did not arrive in 1732 as expected. Nevertheless, in that year the building reached a height of 40 *pieds*, leaving eight to be completed. A small house for the light-keeper was constructed nearby so that he would not have to depend for his lodgings on two tiny rooms constructed on the ground floor in 1731.¹⁷⁶

Although the building was virtually finished in 1733, operation of the light was delayed because the window glass that had been sent was of the wrong dimensions. Glass was ordered from Boston.¹⁷⁷ In 1734, Verrier submitted a *toisé définitif* indicating that the original estimate had been exceeded by 6,600 *livres*, making the total over 20,000 *livres* instead of 14,000. Verrier's explanation was that the caretaker's house, the oil storage, an extra one-*piéd* thickness of wall to sustain the height, copper screws and nuts for the windows---all had added unexpectedly to the cost.¹⁷⁸

174. AN, Col., C^{11B}, 11, ff.74-79: Verrier, 2 December 1730.

175. *Ibid.*, ff.104-109v., *loc. cit.*

176. *Ibid.*, 13, ff.200-204v., *loc. cit.*; 20, ff.24-30v., *loc. cit.*

177. *Ibid.*, 14, ff.298-309 and 144-145v., *loc. cit.* See also AN, Section Outremer, D.F.C., A.S., no.172: "Plan et profil de la tour de la lanterne à l'entrée du port de Louisbourg pour représenter ce qui reste à faire pour la perfectionner pendant l'année 1733." Published in *A.P.T.*, fig. 107 with detail enlarged.

178. *Ibid.*, 15, ff.117-118 and 79-83v., *loc. cit.*; ff.205-207: Le Normant, 4 November 1734; 16, ff.182-193, *loc. cit.*

Wharves

The rapid increase of shipping in Louisbourg harbour by 1730¹⁷⁹ led to discussions about strengthening the docks of the port. It was generally recognized that thick retaining walls were required to protect structures from the ravages of the sea. In 1731, Verrier prepared plans¹⁸⁰ and estimates for such a wall to protect the Louisbourg quay.¹⁸¹ The Court refused to consider the sort of expenditure that Verrier's plans entailed (330,800 *livres*),¹⁸² and so he reduced their magnitude by more than half (to 157,000 *livres*).¹⁸³ The Court refused its approval until the completion of other works had released some of the fortifications funds.¹⁸⁴ The subject was not revived until 1739, and then in a different context.

179. *Ibid.*, 11, ff.74-79, *loc. cit.*

180. C.T.G., Archives, art. 14, Lbg., ctn. 1, no.22: Verrier, "Plan pour servir au projet représenté en jaune du revêtement du quai.... 1731." Published in *A.P.T.*, fig. 15 and several pages of detail enlarged; AN, Section Outremer, D.F.C., A.S., no.253: Verrier, "Profil du revêtement du quai de Louisbourg pris sur le milieu du redan de la rue Toulouse. Profil du revêtement du quai de Louisbourg pris sur la ligne R, S." (PAC, Ph/250-Louisbourg-n.d.) Published in *A.P.T.*, fig. 16.

181. Col., c^{11B}, 12, ff.104-109v., *loc. cit.*

182. Col., B, 57, ff.746v.-748: to Saint-Ovide, 19 June 1732.

183. Col., c^{11B}, 16, ff.182-193v., *loc. cit.* See the plans and sections that accompanied the revised estimate: AN, Section Outremer, D.F.C., A.S., no.180: Verrier, "Partie du plan de Louisbourg où on a représenté en couleur jaune le projet pour le revêtement en maçonnerie du quai 1734" (PAC, Ph/240-Louisbourg-1734). Published in *A.P.T.*, fig. 18; no.181: "Profil du revêtement proposé en maçonnerie du quai de Louisbourg 1734" (PAC, Ph/250-Louisbourg-1734). Published in *A.P.T.*, fig. 19.

184. Col., B, 63, ff.537v.-539v.: to Saint-Ovide and Le Normant, 25 April 1735.

Two other structures at Louisbourg deserve brief notes: the engineer's residence and the shed for the storage of wood for gun carriages.

Engineer's Residence

In 1731, Verrier wished to convert what he called his shed (*hangar*) into comfortable quarters for himself. Since his arrival in 1724, however, his wife had remained in La Rochelle with part of the family. The couple now decided that she would join him in the colony. His shed would have to be turned into a family residence. Verrier had undertaken to do the work at a cost to the Crown of 6,000 *livres*.¹⁸⁵ His estimate was approved, with the warning that he must economize. Verrier finished the alterations by the autumn of 1732, expecting (as he said) not to exceed his estimate by very much. The residence now comprised: a ground floor with kitchen, pantry, a servant's bedroom, a dining room, a bedroom, an office and two small wardrobes. Another office and "a few small bedrooms" for his family were built "under the roof".¹⁸⁶ The cost proved to be 28,945 *livres*!¹⁸⁷ Verrier had exceeded his estimate by almost 23,000 *livres*, or 383 per cent. He explained that the decision to bring his wife to the colony had required more extensive renovations than he had originally planned, but that he had had no idea of how much

185. Col., B, 55, ff.555v.-557v.: to Verrier, 10 July 1731.

186. Col., C^{11B}, 13, ff.200-204v., *loc. cit.*

187. *Ibid.*, 15, ff.77-78v.: Saint-Ovide and Le Normant, 1 November 1734.

more it would cost.¹⁸⁸ Verrier was severely reprimanded.¹⁸⁹ He sent his wife back to La Rochelle, alleging that he could not support her and their daughter at Louisbourg as he had expected to do.¹⁹⁰

Artillery Shed

In 1736 Verrier, with the Ministry's permission,¹⁹¹ built a shed for the storage of gun-carriage wood at right angles to the bakery, one end of the shed abutting on the quay.¹⁹² The purpose was to store in a dry place wood that had been cut to suitable dimensions and from which gun carriages could be quickly built in the event of war.

Town Plan

By the mid-1730s, town planning at Louisbourg was well advanced. Not only had lots within the town and around the north side of the harbour been granted to various subjects, but also an area had been clearly delineated for the use of public buildings. Two plans were sent to the Court in 1734 to illustrate the general construction statement submitted that year. One shows the distribution of lots outside of the town and of blocks within the town,¹⁹³ the other (by the surveyor Vallée),

188. *Ibid.*, 16, ff.182-193v., *loc. cit.*

189. Col., B, 63, ff.543v.-547v.: to Verrier, 25 April 1735.

190. Col., C^{11B}, 16, ff.182-193v., *loc. cit.* AN, Marine, B⁴, 43, f.398, Sausaye to minister, 5 December 1735.

191. Col., B, 63, ff.543v.-547v., *loc. cit.*

192. Col., C^{11B}, 18, ff.271-283, *loc. cit.*

193. AN, Section Outremer, D.F.C., A.S., no.182: "Plan du port et de la ville de Louisbourg suivant le toisé général qui en a été faite pour envoyer en cour 1734" (PAC, Ph/240-Louisbourg-1734). Copy in Vol. II, p.42.

the blocks within the town and the outline of a proposed new enceinte which, with the original one, would completely enclose the town.¹⁹⁴ Two plans of 1735 show several public buildings and adjacent works.¹⁹⁵ The properties of Lartigue, also shown, interfered with the development of the public properties and were to be exchanged for land "zoned" (to use a 20th-century expression) for private purposes.

Other Posts on Ile Royale and Ile Saint-Jean, 1725-1745

Port Toulouse

Since 1718, Port Toulouse had been neglected during the general preoccupation with Louisbourg. Late in 1728, Saint-Ovide de Brouillan pointed out that the small port at the southern outlet of the Bras d'Or Lakes might become the target of an attack by the British installed at Canso. Saint-Ovide thought that the natural defences of the port would make it relatively easy to fortify.¹⁹⁶ At the governor's request, Verrier visited the port in 1729, prepared a plan and recommended the kinds of defences required. They were sent to the Court in December of that year.¹⁹⁷ Its reaction was to provide no funds for Port Toulouse until

194. *Ibid.*, no.183: "Plan de la ville de Louisbourg suivant le toisé qui a été fait....1734" (PAC, Ph/240-Louisbourg-1734). Published in *A.P.T.*, fig. 7. The "new enceinte" must have been added to the plan at a later date.

195. AN, Section Outremer, Atlas Colonies III, no.41: Verrier, "Partie de la ville de Louisbourg 1735" (PAC, Ph/240-Louisbourg-1735); no.49: "Partie de la ville de Louisbourg" (PAC, M240-Louisbourg-1735). Copies in Vol. II, pp.43-44.

196. AN, Col., C¹¹B, 10, ff.81-84: Saint-Ovide, 3 November 1728.

197. *Ibid.*, ff.242-245: Verrier, 18 December 1729.

Louisbourg was in a state of readiness against attack.¹⁹⁸ However, when Saint-Ovide persisted, the Court instructed Verrier to draw a plan and prepare new estimates of the cost of the structures desired. The work, however, would have to be done as economically as possible, in view of other priorities.¹⁹⁹ Verrier replied that the best site appeared to be at the harbour entrance. A small battery in front of the barracks would defend the harbour from all sides. That point was dry, whereas the old barracks were at the bottom of a waterfall and in a marshy area. The wood they contained had rotted. The officers and men were miserably housed. He recommended the replacement of the wood by masonry. This would also serve for other purposes, if the minister decided to authorize the construction of a fort on the hill. Verrier, however, thought that a simple crenellated redoubt would defend the shore of the Bras d'Or.²⁰⁰ Saint-Ovide added that an enemy would attack Port Toulouse first in order to cut the French off from their Indians at Antigonish and on the Acadian Peninsula as well as from Ile Saint-Jean. It was therefore the key to the colony in a sense.²⁰¹

The minister was won over by some of these arguments. He authorized construction in masonry at a cost of 21,600 *livres*. He approved the site recommended by Verrier. Verrier was to provide plans

198. Col., B, 53, f.597: to Saint-Ovide, 22 May 1729.

199. *Ibid.*, 55, ff.567v.-568: to Verrier, 10 July 1731.

200. Col., C^{11B}, 12, ff.104-109v.: Verrier, 29 November 1731. AN, Section Outremer, D.F.C., A.S., no.265: Verrier, "Projet pour le rétablissement à faire d'un petit corps de casernes....au Port Toulouse" (PAC, Ph/240-Port Toulouse-1731). Copy in Vol. II, p,45.

201. *Ibid.*, ff.40-41: Saint-Ovide, 25 November 1731.

for a crenellated redoubt and a more elaborate hill fort, with *devis* for both. Saint-Ovide was to add his own opinion of them. The minister counselled his subordinates in the colony not to propose unnecessary works. It would not be at Port Toulouse that the colony would be in its greatest danger. No enemy could hold such outposts without first becoming the master of Louisbourg.²⁰²

In 1733, Verrier prepared a long report following a visit to the site that spring. He wished to install the detachment commander in new quarters in 1734 and so would begin construction in May of that year. Since his visit in 1729, a site he had chosen for barracks and officers' quarters had been badly washed by the sea. If forced to change the site, he would have to move it back about 1,000 *toises*; then he would be too close to the hill and waterfall. To avoid the cost of changing the site, he advocated placing the new buildings almost on the site of the old ones by digging a small ditch to collect the water from the hill and those from the marsh. The battery would defend the entrance of the harbour and the mooring area. It was useless to spend money on a redoubt at the top of the hill, because it was so directly in line with Ile Saint-Pierre that neither musketry nor guns could direct plunging fire on the point where the ships might land. Neither could it be directed on the Bras d'Or side. If the harbour were more accessible, fortifications might be recommended on one side only.²⁰³

202. Col., B, 57, ff.746v.-748: to Saint-Ovide, 19 June 1732.

203. Col., C^{11B}, 14, ff.298-309: Verrier, 23 October 1733. About eight plans apparently drawn for submission with the report are extant:
(1) C.T.G., art. 14, Louisbourg....ctn. 1, no.21a: "Carte du Port

By the end of 1734, the masonry work was finished and the ditch almost finished. Saint-Ovide observed that a shortage of wood and stone in the Port Toulouse area had prevented the detachment commander's residence, barracks, stores building and officers' houses from being done in 1734.²⁰⁴ The plan and profile called for a square enceinte flanked by two bastions, joined by a curtain wall. Two other curtain walls would join the bastions to two flanks. Extending from one flank to the other, a barbette battery would command the entrance to the harbour and the mooring wharves. There would be a parapet of earth and sod, surrounded by palisades. The difficulty of finding stone would sharply increase costs. The palisade would require large cedar stakes, none of which existed on the island. The more Verrier examined the site, the more useless an expense he thought the proposed redoubt on the top of the hill would be. The hill was so steep that neither musketry nor guns could defend the surrounding area. A small palisaded square might

Toulouse dans l'Ile Royale. Plan du Fort Toulouse." (PAC, Ph/250-Fort Toulouse-1733 and Ph/240-Port Toulouse-1733). Copy in Vol. II, p.46.

(2) The following from AN, Col., C^{11A}, 126 and published in *A.P.T.*, figures 74 to 80 inclusive: fig. 74, Verrier, "Plan général pour l'établissement de la batterie et des logements à faire au Port Toulouse, 1733"; fig. 75, Verrier, "Profil et élévation des casernes à faire au Port Toulouse, 1733"; fig. 76, Verrier, "Plan des casernes à faire au Port Toulouse, 1733"; fig. 77, Verrier, "Profil et élévation du logement du commandant du Port Toulouse, 1733"; fig. 78, Verrier, "Plan du logement pour le commandant du Port Toulouse, 1733"; fig. 79, Verrier, "Plan et profil du bâtiment à faire au Port Toulouse pour servir de magasin des vivres, de chapelle, de boulangerie, &c., 1733"; fig. 80, Verrier, "Plan du magasin des vivres et du logement des officiers, four &c. à faire au Port Toulouse, 1733".

204. AN, Col., C^{11B}, 15, ff.79-83v.: Saint-Ovide and Le Normant, 1 November 1734; ff.149-152: Saint-Ovide, 4 November 1734.

be built later for six to twelve men. The number of buildings might be increased in case the detachment had to be enlarged; but this could be postponed.²⁰⁵

By the end of 1736, the work was substantially completed. The detachment commander and the troops were housed; the storehouse and the bakery were occupied; mass was being said in the chapel. Some alterations would have to be done in 1737 to the two fireplaces, which tended to smoke up.²⁰⁶

Port La Joie

By 1729, a detachment of troops had for several years represented the King's authority on Ile Saint-Jean, under a commanding officer who reported to the governor of Ile Royale at Louisbourg. The detachment was stationed at the settlement known as Port La Joie.²⁰⁷ After a visit in 1729, Saint-Ovide and Verrier thought the place needed some minor defensive works for its protection. Verrier made certain proposals, which

205. *Ibid.*, 16, ff.182-193: Verrier, 6 November 1734; AN, Section Outremer, D.F.C., A.S., no.266: Verrier, "Plan projeté pour un petit fort à deux bastions construit en terre gazonnée et entouré de palissades pour mettre en sureté le détachement du poste du Port Toulouse 1734" (PAC, Ph/250-Port Toulouse-1734); no.267: "Profil pris sur la ligne A, B du fort projeté du Port Toulouse 1734. Profil pris sur la ligne C, D" (PAC, Ph/250-Port Toulouse-1734). Copies in Vol. II, pp.47-48.

206. Col., C^{11B}, 18, ff.271-283: Verrier, 10 November 1736.

207. B.N., C.&P., S.H., Portf. 125-9-5: "Plan de la baie et du Port La Joie en l'Ile Saint-Jean" (PAC, Ph/240-Port La Joie-n.d.). Copy in Vol. II, p.49.

seem to have gone unheeded.²⁰⁸ In 1732, Saint-Ovide and the financial commissary, Le Normant, asked Verrier for an estimate and sketches for a food storehouse, with living quarters for the detachment commander. The structures would be wooden because there was neither good building stone nor lime on the island. Furthermore, every available mason was needed at Louisbourg. It was proposed that the storehouse be put at right angles to the existing barracks in order to create a courtyard that could be palisaded. The storehouse would have priority over other buildings. Meanwhile, stores arriving on the island could be kept in a spare barrack room. Living quarters could be postponed for a certain length of time.²⁰⁹

In 1733, Verrier drew up a construction plan for Port La Joie, after which Le Normant made a general works contract with Laplagne-Despiet. Saint-Ovide had specified officers' quarters for two, so Verrier planned a simple one-storey building. However, the king's lieutenant and detachment commander on Ile Saint-Jean, Pensens, urged extension of the building by about 20 *pieds*, and the construction of a chapel, rooms for a chaplain and a surgeon, and a small powder magazine. Verrier took the recommendations of Pensens into account when submitting his estimates.²¹⁰

208. AN, Col., C^{11B}, 10, ff.242-245: Verrier, 18 December 1729.

209. AN, Col., C^{11B}, 13, ff.200-204v.: Verrier, 16 November 1732.

210. AN, Col., C^{11B}, 14, ff.298-309: Verrier, 23 October 1733; ff.144-145v.: Le Normant, 10 October 1733. Seven plans illustrate these features:

(1) AN, Col., C^{11B}, 14, f.338: Verrier, "Plan général pour servir à l'établissement des bâtiments à faire au Port La Joie dans l'Ile Saint-Jean 1733"; f.339: "Plan général de l'établissement des logements à faire au Port La Joie dans l'Ile Saint-Jean". Copies

The Court approved the additional works.²¹¹

Materials had been stockpiled on the site at the end of 1733. Work began in 1734. By the end of the year, the detachment commander's residence was finished, as were the storehouse and chapel. The surgeon's, chaplain's and storeman's dwellings, and the powder magazine, were finished in 1735. A two-room infirmary (a sick room and a kitchen), a jail and guardhouse were proposed.²¹²

A well was dug and funds for lining it with stone were requested. It was not finished until 1739. Pensens asked for a battery of twelve

in Vol. II, pp.50-51.

(2) P.A.C., National Map Collection, Ph/250-Fort La Joie-[1733], "Plan du Fort La Joie". Published in *A.P.T.*, fig. 82.

(3) The following from AN, Col., C^{11A}, 126 and published in *A.P.T.*, figures 83 to 86 inclusive: fig. 83, Verrier, "Profil et élévation d'un bâtiment à faire en charpente pour servir de magasin aux vivres des troupes qui sont en garnison au Port La Joie dans l'Ile Saint-Jean, 1733"; fig. 84, Verrier, "Plan d'un bâtiment à faire en charpente au Port La Joie en l'Ile Saint-Jean pour servir de magasin aux vivres des troupes qui sont en garnison au dit port, 1733"; fig. 85, Verrier, "Profil et élévation du bâtiment à faire en charpente pour le logement du Lieutenant de Roi de l'Ile Saint-Jean et des officiers, 1733"; fig. 86, Verrier, "Plan d'un bâtiment à faire en charpente au Port La Joie en l'Ile Saint-Jean pour y loger le Lieutenant de Roi et les officiers, 1733".

211. AN, Col., B, 61, ff.594-596: to Saint-Ovide and Le Normant, 4 May 1734; ff.596v.-600v.: to Verrier, 4 May 1734; f.611: to Pensens, 4 May 1734.

212. AN, Col., C^{11B}, 15, ff.79-83v.: Saint-Ovide and Le Normant, 1 November 1734; ff.149-152: Saint-Ovide, 4 November 1734. B.N., Estampes, Vd.20A [F.42]: Verrier, "Carte du Port La Joie dans l'Ile Saint-Jean 1734; plan d'un fort projeté au Port La Joie à l'Ile Saint-Jean....1734...." (PAC, Ph/240-Port La Joie-1734). Verrier fils. Copy in Vol. II, p.52. AN, Col., C^{11B}, 14, f.340: "Projet pour l'établissement d'une chapelle dans le logement pour l'aumonier et du chirurgien major à faire au Port La Joie dans l'Ile Saint-Jean, 1734. Plan et élévation." Published in *A.P.T.*, fig. 87.

guns mounted on a suitable platform. He also proposed that planks be applied to the exterior of the log barracks to protect the interior from penetrating snow; and he recommended a better roof. He recommended the construction of a fort. It was to have $2\frac{1}{2}$ *pieds* of masonry and a ditch 3 *pieds* deep. The earth from the latter would be used to form a parapet and banquette. The exterior height of the revetment was to be 10 *pieds* and the interior height of the parapet 7 *pieds*. This structure was to be completely surrounded by palisades. There is no record that these fortifications were constructed.²¹³

By 1738, the log barracks had rotted to the point of becoming uninhabitable.²¹⁴ In October 1740, Verrier reported that it would cost 5,000 *livres* to reconstruct the barracks as shown on a plan he submitted to Versailles. He commented, however, that by repairing fireplaces and chimneys, the barracks could subsist a while longer (the 5,000 *livres* being used for part of the new enceinte at Louisbourg) until the Court had determined whether or not Port La Joie was to be the permanent capital of Ile Saint-Jean.²¹⁵ The Court agreed in 1741 with the proposal to repair fireplaces and chimneys.²¹⁶

213. AN, Col., C^{11B}, 15, ff.149-152: Saint-Ovide, 4 November 1734; C^{11B}, 16, ff.153-158: Pensens, 20 October 1734; ff.182-193: Verrier, 6 November 1734.

214. AN, Col., C^{11B}, 20, ff.227-235: Verrier, 1 November 1738.

215. AN, Col., C^{11B}, 22, ff.258-263: Verrier, 29 October 1740; AN, Section Outremer, D.F.C., A.S., no.274: Verrier, "Plan pour servir au rétablissement des casernes du Port La Joie dans l'Ile Saint-Jean, relatif à l'estimation ci-jointe, 1740" (PAC, Ph/250-Port La Joie-1740). Copy in Vol. II, p.53.

216. AN, Col., B, 72, ff.423-424: to Bigot, 12 May 1741; ff.427-429: to Verrier, 17 May 1741.

Louisbourg, 1737-1745

As the landward front of fortification took shape in the mid-1730s, Saint-Ovide expressed increasing doubts that the system of harbour defences could prevent an enemy from outflanking the Princess Bastion and taking the town from the rear. Only the citadel, which had defences on the "town" side as well as on the "country" side, could theoretically hold out. The rest of the landward front would be completely useless. This *malaise* concerning the effectiveness of Verville's design---a long-standing prejudice with Saint-Ovide in any case---was reflected in anxiety to construct a "spur" at the Princess Bastion.²¹⁷ In 1736 the governor took a large step beyond that point. He advocated a new front of fortification, extending from a battery placed at right angles to the truncated "left face" of the Princess Bastion, across the town to the *Grave* or beach on the harbour.²¹⁸ Verrier, while acknowledging the virtue of completely enclosing the town, held that the works already begun should be finished before new ones were emphasized. The Princess Bastion spur ought to protect the flank of the original enceinte.²¹⁹ The home government, evidently alarmed by Saint-Ovide's fears, uncharacteristically gave prior consideration to the more expensive solution. Funds for the spur were withheld in 1737 for the time being.²²⁰

217. See the plan cited in note 139, above.

218. AN, Col., C^{11B}, 18, ff.43-46v.: Saint-Ovide, 30 October 1736.

219. *Ibid.*, ff.271-283: Verrier, 10 November 1736.

220. Col., B, 65, ff.470v.-472: to Saint-Ovide and Le Normant, 6 May 1737; ff.473-477: to Verrier, 6 May 1737.

Verrier provided in October a plan and sections,²²¹ and a memorandum,²²² in which Saint-Ovide's proposal was seriously put forward in detail.

Il est évident jusqu'à présent que la ville de Louisbourg n'est pas entièrement fermée, n'étant fortifiée que du côté de la plaine de Gabarus et qu'elle est ouverte du côté de la langue de terre qui avance du côté de l'entrée du port, quoique cette langue de terre soit entourée par la mer du large et par celle du port. On peut néanmoins y débarquer vers la Pointe de Rochefort par les deux côtés d'où la mer l'environne et supposant que les vaisseaux ennemis eussent par un temps favorable affranchi la volée du canon de la Batterie Royale et de la Batterie de l'Îlot, pourrait débarquer de monde par cette pointe et entrer *d'emblée* dans la ville.²²³

The New Enceinte

The cost of building the proposed new front of fortification was estimated at 277,360 *livres*. The Court was thus faced with a major defence expenditure, presumably after having been under the impression that the works planned for Louisbourg at the beginning of the 1720s would suffice.²²⁴ Confronted by a strong consensus in the colony in favour of

221. AN, Section Outremer, D.F.C., A.S., no.190: Verrier, "Plan de la ville de Louisbourg dans l'Ile Royale, sur lequel on a représenté en couleur jaune le projet qui doit fermer entièrement la ville. 1737" (PAC, Ph/240-Louisbourg-1737); no.191: Verrier, "1737. Profil du front terrassé de la continuation de l'enceinte qui fermera entièrement la ville de Louisbourg, pris sur la ligne G, H. Profil du mur crénelé de la continuation de l'enceinte qui fermera entièrement la ville de Louisbourg, pris sur la ligne I, L." (PAC, Ph/250-Louisbourg-1737); no.248: "Profil du projet de l'enceinte de Louisbourg, relatif au plan ci-joint." (PAC, Ph/250-Louisbourg-[1737]) Copies in Vol. II, pp.54-55.

222. AN, Col., C^{11B}, 19, ff.244-246: Verrier, 24 October 1737.

223. *Ibid.*

224. *Ibid.*

the new enceinte and assurances that the old enceinte would be finished in 1738---before the new one was begun---the government agreed in principle, albeit reluctantly. The Ministry even expressed the hope that some funds saved from the old enceinte might be applied to the new.²²⁵ Previous experience should scarcely have given rise to that hope!

The line of fortifications completely enclosing the town is best studied on a number of plans of the period 1737-1745.²²⁶ From the Dauphin Bastion it followed curtain walls and the King's, Queen's and Princess Bastions to the sea; from the Princess Bastion by the crenellated wall to the Brouillan Bastion; by curtains and the Maurepas Bastion to the Pièce de la Grave; and from that battery by way of the quay wall to the Dauphin Bastion.²²⁷

West Front

Despite the undertaking to complete the old enceinte (or west

225. Col., B, 66, ff.285v.-287v.: to Bourville and Le Normant, 29 April 1738.

226. The plans cited in note 221 and the following: AN, Section Outremer, D.F.C., A.S., no.196: Verrier, "Plan de Louisbourg où est représenté en couleur jaune les ouvrages à faire pour perfectionner la nouvelle enceinte pendant l'année 1741" (PAC, Ph/240-Louisbourg-1741); no.198: "Plan de la ville de Louisbourg dans l'Ile Royale, représenté de haute mer, 1742" (PAC, Ph/240-Louisbourg-1742). Copies of these plans may be found in Vol. II, pp.56-57.

227. The following plan shows the properties in the path of the east front that had to be expropriated. A copy may be found in Vol. II, p. 58. AN, Section Outremer, D.F.C., A.S., no.192: "Partie du plan de Louisbourg où sont représentés les terrains qui seront occupés par la nouvelle fortification. Colorée de jaune, 1738." (PAC, Ph/250-Louisbourg-1738).

front) before beginning the new, construction of the two overlapped to a great extent. Some detailed examples of work done on the west front will serve to illustrate this. These works were occasionally slow and difficult, while building the new enceinte tended to be somewhat more rapid, if one may judge from the short space of time between the design and the appearance of massive walls on the horizon.

By October 1737, the masonry of the inner works of the west front was laid, the ramparts terraced and turf placed on the tops of the merlons.²²⁸ During the following year, the counterscarps and the stairs to the ditch, as well as some other works, were completed. The parapets of the covered way, and the glacis, were partially built. A *batardeau*, to close the ditch at the ocean end, was constructed. The ditch was widened and deepened, although some boulders remained to be removed from it. The traverse of the Queen's Bastion place of arms was built, as were the guardhouses at the Queen's Gate. Excavation of the ditch of the east front was begun.²²⁹

East and West Fronts

Rapid progress was made during the next few years on the east front. In order to be able to construct part of the foundation of the Maurepas Bastion, the Grand Etang had to be drained as much as possible. A temporary sluice was constructed in 1739 for this purpose. The crenellated wall was already under construction. On the west front, work

228. AN, Col., C^{11B}, 19, ff.232-240: Verrier, 30 October 1737

229. C^{11B}, 20, ff.227-235: Verrier, 1 November 1738.

continued on the outer works. The parapet of the covered way at the King's Bastion was finished; the places of arms, in front of the right shoulder angle of the bastion, and in front of the King's-Queen's curtain, were almost completed; work was being done on the glacis and palisades of the covered way, and on a large wooden bridge at the Queen's Gate.²³⁰ The guardhouses at the gate could not be occupied until the bridge was built. In 1740, the glacis of the west front was finished.²³¹ On the east front, the walls of the Maurepas Bastion, except for part of its left face, were constructed. The foundation of the unfinished part was in water.²³²

East Front

In 1741, the ditch of the east front was widened, and the earth used to finish some of the ramparts. Twelve miners were required to blast out the hard rock.²³³ At the Grand Etang the parapet, and the parapet of the covered way, were built. All walls constructed that year were covered with planks to protect them from the ravages of the climate. The banquette of the crenellated wall was finished.²³⁴ The counterscarp

230. C^{11B}, 21, ff.266-267: Verrier, 2 August 1739.

231. C^{11B}, 22, ff.60-65v.: Bourville and Bigot, 25 October 1740. For a plan of 1740, showing works proposed for 1741, see AN, Section Outremer, D.F.C., A.S., no.194: Verrier, "Les différents profils de la nouvelle enceinte de Louisbourg, où on a représenté en jaune les ouvrages qui restent à y faire pour la perfectionner pendant l'année 1741" (PAC, Ph/250-Louisbourg-1741). This plan was published in *A.P.T.*, fig. 39.

232. C^{11B}, 22, ff.60-65v., *loc. cit.*

233. C^{11B}, 23, ff.187-188: Verrier, 3 June 1741.

234. C^{11B}, 23, ff.191-200v.: Verrier, 23 October 1741.

of the Brouillan Bastion, and the *batardeau* of its front ditch, were constructed.²³⁵ The embrasures, counterscarp and *batardeau* of most of the Maurepas Bastion were finished,²³⁶ and even much of its difficult left face was built. The parapet of its covered way was under construction, the ditch was being enlarged, and its ramparts were terraced.²³⁷ By the end of August 1741, all that was left to do to the Maurepas Gate was to polish the stone and apply the royal arms and inscriptions.²³⁸ The masonry of most of the Pièce de la Grave, including its counterscarp and a *batardeau*, was finished in 1741; its left face was still under construction, however. The rampart behind the quay wall revetment was sodded.²³⁹

West and East Fronts

In 1742, on the west front, piles were driven into the bed of the Petit Etang for the Dauphin-King's curtain, and 6 *pieds* of masonry were constructed for a battery on the "left flank" of the Princess Bastion. On the east front, the banquettes, covered way, glacis, and

235. *Ibid.*, ff.7-12v.: Duquesnel and Bigot, 10 October 1741.

236. *Ibid.*, ff.189-190: Verrier, 23 August 1741. See also a plan showing work done to that date: AN, Section Outremer, D.F.C., A.S., no.197: Verrier, "Partie du plan de Louisbourg où est représenté les ouvrages qui ont été faits du côté du port pendant le commencement de la campagne jusqu'à ce jour 20 août 1742" (PAC, Ph/250-Louisbourg-1742). A copy of this plan is in Vol. II, p.59.

237. C^{11B}, 23, ff.7-12v., *loc. cit.*

238. *Ibid.*, ff.189-190, *loc. cit.* Details of the gate and its décor may be seen on a plan published in *A.P.T.*, fig. 40: AN, Section Outremer, D.F.C., A.S., no.195: "Inscription pour la porte de Maurepas" (PAC, Ph/250-Louisbourg-1741).

239. C^{11B}, 23, ff.191-200v., *loc. cit.*

palisades were finished. Sod covering was laid wherever necessary. *Guérites* were built at all the flanked angles. Rock was cleared from the ditch. Embrasures were constructed. The ramparts of the Maurepas Bastion (the left side of which was now constructed) were ready for their gun platforms. During the winter of 1741-1742, piles were sunk into the bed of the Grand Etang, to provide the foundation for part of the curtain between the Maurepas Bastion and the Pièce de la Grave.²⁴⁰ At the Pièce, a sluice was built to control drainage from the Grand Etang.²⁴¹ Sixty *toises* of construction completed the foundation for the revetment of the quay. The wall was built to a height of 10 *pieds* in 1742 and revetted with boards. Two piers were constructed.²⁴²

The east front was declared "finished" in 1743. The parapets and banquettes of the quay wall were constructed, and a gate was erected at one of the piers and called the *Porte Frédéric*.²⁴³ In spite of this, three piers were still unfinished in 1744, as were the terreplein of the quay, barriers at the foot of its banquettes, and stairs to its banquettes.²⁴⁴

In the foregoing paragraphs we have presented a chronological outline of the main fortifications of Louisbourg built between 1737 and

240. C^{11B}, 24, ff.212-217v.: Verrier, 3 November 1742.

241. *Ibid.*, ff.58-60: Duquesnel, 20 October 1742.

242. *Ibid.*, ff.212-217v., *loc. cit.* See also the plan cited in note 226, above.

243. C^{11B}, 25, f.19: Duquesnel and Bigot, 28 October 1743. For a plan of the *Porte Frédéric*, see the enlarged detail published in *A.P.T.*, fig. 36.

244. AN, Section Outremer, D.F.C., A.S., no.209: Verrier, 18 November 1744.

the first siege. To show the varied nature of the construction problems encountered, succeeding paragraphs will concentrate on a number of structures, both within and outside of the enceinte, that were planned, built or altered during that period. Wherever possible, the reader will be referred to extant plans of the time to facilitate his understanding of the narrative.

Casemates Used as a Jail

Some of the casemates of the King's Bastion had been used as a jail or prison but had been unsatisfactory because they leaked a great deal after every rain or thaw. Sick prisoners filled the hospital. In 1737 the Ministry decided that a new jail building would have to be constructed and asked for plans and estimates.²⁴⁵ These were duly drawn up by Verrier and submitted. In order to build the new structure, it was proposed that land belonging to the merchant Rodrigue be expropriated, since some buildings on it had been destroyed by fire in 1738. The property adjoined the house of the financial commissary. The Ministry intended that the proposed prison building include the necessary chambers for the Superior Council. In 1740, the Court decreed that fortifications had to take priority over civilian prisons and other less essential structures. The building was never constructed: instead, the house of the financial commissary was enlarged.²⁴⁶

245. AN, Col., B, 65, ff.456-457: to Le Normant, 16 April 1737.

246. AN, Section Outremer, Atlas Colonies, Vol. III, no.47: Verrier, "Plan pour servir à l'établissement des prisons de la ville de Louisbourg et du logement du geôlier, sur lequel seront les salles du conseil supérieur, le tout relatif à l'estimation ci-jointe 1737"

Lighthouse

The casemates had suffered from weather; the new lighthouse suffered a disastrous fire in 1736. Verrier's specifications for its reconstruction were intended to do all that was technically possible to prevent a recurrence of fire. They called for cut-stone pillars faced with lead, a brick ceiling covered with lead, iron uprights and cross-bars, and iron window frames. The new flat-bottomed oil pan had the following dimensions: diameter, $3\frac{1}{2}$ *pieds*; depth, 6 *pouces*; thickness, 8 *lignes* (i.e. $\frac{2}{3}$ *pouce*).²⁴⁷

After taking down the top of the tower in 1737, Verrier found he could increase the diameter by 1 *piéd* over what he had proposed; therefore, he had to increase the height in proportion. While this raised the cost and delayed the opening date for operation, it seemed to

(PAC, M/250-Louisbourg-1737). Published in *A.P.T.*, fig. 60, with detail enlarged. AN, Col., C^{11B}, 20, ff.222-223: Verrier, 2 January 1738; B, 68, ff.344-345v.: to Verrier, 26 May 1739; B, 70, f.407: to Forant and Bigot, 15 May 1740. AN, Col., C^{11A}, 126: Verrier, "Plan et profil, coloré en jaune, du bâtiment proposé pour les prisons, logement du geôlier et chambres du conseil supérieur à Louisbourg. 1739." Published in *A.P.T.*, fig. 51.

247. AN, Col., C^{11A}, 126: "Plan, profil et élévation pour le rétablissement de la lanterne qui doit être placée sur la tour située à l'entrée du port de Louisbourg, dans laquelle il y aura un feu à l'huile pour la sûreté de la navigation." AN, Section Outremer, D.F.C., A.S., no.189: "Plan, profil et élévation du rétablissement de la lanterne qui doit être placée sur la tour située à l'entrée du port de Louisbourg, dans laquelle il y aura un feu à l'huile pour la sûreté de la navigation.1737" (PAC, Ph/250-Louisbourg-1737). Both plans are published in *A.P.T.*, figures 108 and 109. Note Verrier's legend on the second plan, explaining the method of construction. See also AN, Col., C^{11B}, 18, ff.271-283: Verrier, 10 November 1736; ff.11-15v.: Saint-Ovide and Le Normant, 7 November 1736; ff.89-91: Le Normant, 10 November 1736; ff.149-152: Le Normant, 27 December 1736; ff.284-287: Verrier, 29 December 1736.

be in the public interest. Late in 1737, a serious delay was expected in the construction of the iron window-frames. There seemed to be a shortage of both skilled metalworkers and suitable iron. In January 1738, however, Verrier found a craftsman who could work with the material available. The new light was built, installed and functioning in July 1738---a few months behind schedule.²⁴⁸

The Proposed Parish Church

The Court was less enthusiastic about providing funds for aids to *spiritual* enlightenment. The colonial capital had no parish church. The inhabitants of Louisbourg used the chapel of the citadel barracks as their place of worship. By 1738, the eighteen-year-old chapel roof was in dire need of reconstruction in slate, for its shingles were rotten. In January, presumably after discussions in the colony, Verrier's plan for a parish church was submitted.²⁴⁹ It seems to be in accord with specifications described in a memorandum written about that time.

The proposed location was the "plateau of the Recollets". The building would be level with the street where the financial commissary's house was situated. The church was to be built of cut stone as far as the pedestal, at least 2 *pieds* above the ground, so that dripping water

248. AN, Col., C^{11B}, 19, ff.230-231: Verrier, 2 June 1737; ff.232-240: Verrier, 30 October 1737; C^{11B}, 20, ff.222-223: Verrier, 2 January 1738; ff.227-235: Verrier, 1 November 1738; ff.115-116v.: Le Normant, 15 October 1738.

249. AN, Section Outremer, Atlas Colonies, Vol. III, no.42: Verrier, "Plan projeté pour l'église paroissiale de la ville de Louisbourg" (PAC, M/250-Louisbourg-n.d.). Published in *A.P.T.*, fig. 73. See also AN, Col., C^{11B}, 20, ff.222-223: Verrier, 2 January 1738.

and melting snow would not rot its walls. The doors, windows and angles were to be of cut stone, well clamped so that the expansion resulting from the frost would do no damage. Essentially, however, the building was to be wooden.

The Ministry of Marine replied that the construction of a church could not be approved at that time because of the priority of fortifications. At some future date, government funds might be found for the purposes; however, if the matter were postponed, the population itself would be in a position to provide a significant proportion of the required funds. The church was never built.²⁵⁰

Proposed New Barracks

Another area of construction for which Versailles was reluctant to commit new funds was accommodation for soldiers. A consensus at Louisbourg favoured the construction of a new barrack block, because of the dilapidated condition of the soldiers' quarters in the citadel barracks, and the possibility that the garrison would be enlarged. Some advocated a building in the Queen's Bastion: this was rejected because a larger garrison would then be too concentrated (in adjacent bastions) in the event of an alarm. The alternatives were to erect a building either parallel to the crenellated wall or in the gorge of the Brouillan Bastion. The latter option was eliminated because the area was too exposed to sea spray on the south and southeast sides. Verrier submitted his plan

250. AN, Col., B, 66, ff.297-298: to Bourville and Le Normant, 6 May 1738; C¹¹B, 21, ff.275-281: n.a., n.d.

in 1739 for a building set against the crenellated wall between the Princess and Brouillan Bastions.

The Court replied that existing barracks, repaired and renovated, would have to serve for the time being. The policy was not likely to change unless it were decided to increase the size of the garrison. Fortifications had to take priority over new barracks and other less essential structures.²⁵¹

Dike near the Southwest Arm

The Court was more amenable to shared-cost projects. Before leaving the governorship, Saint-Ovide de Brouillan proposed works to benefit the fishermen who lived and worked next to the *barachois* near the southwest arm of the harbour. He wished to create a canal from 20 to 22 *pieds* wide so that people could winter their boats in the *barachois*. Various inhabitants, including merchants, were prepared to contribute toward the cost of the project. Verrier considered it useful. A dike from one bank to the other would be required. Its walls would have to be revetted in field stone to prevent erosion by the sea. An opening would have to be made to let boats through, and a sluice built in order to hold back the water and release it at low tide.

251. AN, Col., C^{11A}, 126: Verrier, "Projet d'un corps de casernes pour huit compagnies de soldats et 32 officiers, et qui sera établi contre le mur crénelé de l'enceinte de Louisbourg. 1739" (Fortress of Louisbourg Restoration no.739-4). Published in *A.P.T.*, fig. 68. AN, Col., C^{11B}, 20, ff.227-235: Verrier, 1 November 1738; ff.2-13: summaries of despatches from Louisbourg, 1738; C^{11B}, 21, ff.275-281: n.a., n.d.; B, 68, ff.344-345v.: to Verrier, 26 May 1739; B, 70, f.407: to Forant and Bigot, 15 May 1740.

Officials in the colony thought the inhabitants could contribute to the cost of the structures by paying a fee for each boat wintered in the *barachois* after the completion of the project. The Court, however, wished them to contribute labour and materials. According to its formula, each person with property fronting on the Dauphine Gate area of the harbour would be expected to construct part of the dike, and to prepare wood during the winter for a start on construction during the spring of 1740. Those considered unable to do so would be given more time.

An assembly of residents and captains of merchant vessels was held. The latter were unwilling to contribute to the cost of construction, but wished to help with upkeep, as they were doing with the lighthouse. Five *sols* a ton seemed adequate for that purpose. However, a watchman to open the sluice-gate at low tide, and to open and close the bridge and ensure that boats did not damage it, would be needed. From 1,000 to 1,200 *livres* a season would be required. Each boat should be taxed 15 *sols* and shallops 3 *livres*.

Although the Ministry of Marine wished to suspend construction of the dike in order to give priority to fortifications, some work was actually done in 1740. The Court authorized the use of 1,300 *livres* of government funds in 1742.²⁵²

252. AN, Col., C^{11A}, 126: Verrier, "Plans et profils d'une digue et d'une porte busquée, avec des écluses, que l'on propose d'établir vers le fond du port de Louisbourg, pour former un bassin dans lequel les bâtiments pêcheurs hiverneront. 1739" (Fortress of Louisbourg Restoration, no.739-2). Published in *A.P.T.*, fig. 34. AN, Col.,

Royal Battery

At the Royal Battery, activity included new structures for officers' convenience and an attempt to improve the battery's defensive capability.

The governor and financial commissary believed that the officers of the Royal Battery garrison who kept livestock (presumably they were to be encouraged to keep livestock for food) should have proper facilities constructed for them. Stables and chicken-coops could be built against the crenellated wall of the battery without in any way harming the fortification. In January 1738, Verrier prepared an estimate and drew a plan. The stables were to be convenient to the detachment commander's household. It was expected their construction would prevent, in future, the damage already done to empty rooms by poultry and other livestock. The stables were finished by the end of 1738.²⁵³

By 1739, some if not all of the weaknesses of the Royal Battery were being revealed. Someone wrote in 1739 that a redoubt on the heights overlooking the battery from the rear would have to be constructed in order to protect it; and that there should be a palisaded communication

C^{11B}, 20, ff.227-235: Verrier, 1 November 1738; ff.2-13, summary of letters from Louisbourg, 1738; C^{11B}, 12, ff.3-4: Forant and Bigot, 27 October 1739; ff.88-89v.: Forant, 19 December 1739; B, 70, f.407: to Forant and Bigot, 15 May 1740.

253. AN, Section Outremer, Atlas Colonies, Vol. III, no.47 bis.: Verrier, "Plan de partie de la batterie royale où on a représenté en jaune les étables que l'on propose d'établir en retour d'équerre contre le mur crénelé de la place d'armes" (PAC, M/250-Louisbourg-n.d.). Published in *A.P.T.*, fig. 95. AN, Col., C^{11B}, 20, ff.222-223: Verrier, 2 January 1738, ff.227-235: Verrier, 1 November 1738.

path between that redoubt and the battery. The ditch of the redoubt (he continued) should be in the form of a *cunette* 9 *pieds* high, 12 wide at the top and $1\frac{1}{2}$ *pieds* at the bottom, palisaded 3 *pieds* into the ground and defended with grenades. In front of the left flank, earth, rock and the limekiln should be removed so that the northeast end of the harbour could be better dominated, as well as the cove where the limestone was being unloaded. The thirty-six-pounder guns were too powerful for the merlons: twenty-four-pounders would be adequate for the range required. Twenty-four-pounders also needed two men fewer per gun.

Forant, the governor who succeeded Saint-Ovide, found the Royal Battery not high enough on the side facing the harbour. The *bavette* of the embrasures was only 7 to 8 *pieds* above the terreplein. The enemy could climb over it in a surprise attack. Although Verrier pointed out that the artillery was as close to the sea level as possible in order to aim low at the hulls of ships, this did not satisfy Forant, who wished to flank the faces. The solution might be to build a small bastion in front of the salient angle, thus providing two flanks, crenellated at the terreplein height. If a wooden gallery were installed around those flanks, there would be a platform for the soldiers behind the parapet, giving double fire. Thus, each face would be defended by sixteen fusiliers in the event the enemy tried to slip along the faces in order to scale the walls.²⁵⁴

254. AN, Section Outremer, D.F.C., A.S., no.193: Verrier, "Plan de la batterie royale, où on a représenté en couleur jaune le petit bastion projeté pour flanquer les faces des dites batteries. 1740" (PAC, Ph/250-Louisbourg-1740). Published in *A.P.T.*, fig. 96. AN, Col., C^{11B}, 21, ff.275-281: n.a., n.d. (approximately 1739); C^{11B}, 22, f.252: Verrier, 7 February 1740.

Nothing was done about constructing this bastion until 1743. During an absence of Verrier in France in 1743-1744, Governor Duquesnel ordered assistant-engineer Boucher to revet the Royal Battery with boards and to cut down all the embrasures, rebuilding them fewer in number than before. Duquesnel also carried out the wish of his predecessor, Forant, by having a spur or small bastion constructed in the flanked angle. Verrier found on his return that the half-finished work exposed the battery a great deal. He knew concentrated work would be necessary in 1745 to close it against a frontal attack. The siege of the spring of that year made it impossible. This was one reason for Verrier's advice during the siege to abandon the battery.²⁵⁵

Dauphine Gate

Between 1741 and 1744 there was a great deal of discussion concerning the protection of the Dauphine Gate, the part of the fortifications thought easiest to attack because of the roads leading up to it. Governor Duquesnel felt, and at first Verrier agreed, that only a horn work costing over 200,000 *livres* would provide the kind of protection required. The latter advised postponing it until after the quay wall was completed, in order to enclose the town before a surprise attack. In the event of an earlier attack, a palisaded trench might fend off the enemy, and the pond and the sea would prevent his attempting flanking action.

255. AN, Section Outremer, D.F.C., A.S., no.212: Verrier, "Plan de la batterie royale dans le port de Louisbourg, où on a représenté en feuille volante les nouveaux ouvrages que l'on a fait et pour les perfectionner pendant l'année 1745." (PAC, Ph/250-Louisbourg-1745) For a copy see Vol. II, p. 60. AN, Section Outremer, D.F.C., A.S., no.206: Verrier, 4 November 1744; no.209: Verrier, 18 November 1744.

When the Court refused to consider the horn work because of the expense, the operation was postponed.²⁵⁶

Throughout 1742 and 1743 Governor Duquesnel continued to worry about the vulnerability of the Porte Dauphine. The Ministry of Marine suggested that a simple counterguard would suffice. Duquesnel disagreed; he was surprised at those who had badly advised the minister on this. Verrier, for his part had, by 1744, come around to the Court's point of view, finding a counterguard sufficient "afin de ne pas s'étendre dans la campagne, et la disposition du flanc droit du bastion du roi batterait la tranchée que l'ennemie ferait pour attaquer cet ouvrage." What Verrier finally proposed, in 1744, was a *lunette*.²⁵⁷

Harbour Facilities

The protection of the docking facilities for naval and merchant vessels was of prior importance to the Court. It lent a sympathetic ear to proposals for improving these facilities wherever necessary. An

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256. AN, Col., C^{11B}, 23, ff.7-12v.: Duquesnel and Bigot, 10 October 1741; ff.191-200v.: Verrier, 26 October 1741; B, 74, ff.558-559: to Duquesnel and Bigot, 6 June 1742; ff.560-561v.: to Verrier, 6 June 1742.
257. *Ibid.*, C^{11B}, 24, ff.212-217v.: Verrier, 3 November 1742; B, 76, f.493: to Duquesnel and Bigot, 27 June 1743; C^{11B}, 25, f.19: Duquesnel and Bigot, 28 October 1743; f.70: Duquesnel, 4 November 1743; C^{11B}, 26, ff.200-202: Verrier, 8 February 1744; AN, Section Outremer, D.F.C., A.S., no.205: Verrier, 4 November 1744; no.209: Verrier, 18 November 1744. For a plan of the *lunette*, see AN, Section Outremer, D.F.C., A.S., no.252: Verrier, "Partie du plan de Louisbourg où on a représenté en feuille volante la lunette projetée pour couvrir la porte Dauphine" (PAC, Ph/250-Louisbourg-[1740]). A copy may be found in Vol. II, p.61.

anonymous memorandum of about 1739 underlined the need for a spur in front of the stores building on the quay. Without this new work, it said, that part of the quay would be open, for it was out of the musket range of the Dauphin spur. The new spur would make excellent crossfire possible. Unloading would be facilitated. It would break the waves which might otherwise reach the stores building. The additional expense of building its faces would go very little beyond what its gorge would cost if the quay continued in a straight line.²⁵⁸

The spur was apparently not constructed but, as we have seen, work proceeded on the revetment of the quay. A plan of 1742 shows the parapet and banquettes completed the following year.²⁵⁹

Two projects recommended for 1745, but prevented by the British attack, were the raising of the crenellated wall by 6 *pieds*,²⁶⁰ and the construction of a kitchen building adjacent to the hospital. The hospital kitchen was considered to be too small to serve the number of patients, which had grown considerably. Furthermore, this kitchen was too dark: it was only 5½ *pieds* from floor to beams and was illuminated only by a

258. AN, Col., C^{11B}, 21, ff.275-281: n.a., n.d.

259. AN, Section Outremer, D.F.C., A.S., no.199: "Profil du revêtement du quai de Louisbourg, où on a représenté en jaune le parapet et banquettes que l'on fera en 1743 pour perfectionner ce quai" (PAC, Ph/250-Louisbourg-1743). Published in *A.P.T.*, fig. 20.

260. AN, Section Outremer, D.F.C., A.S., no.213: Verrier, "Profil et élévation du mur crénelé de l'enceinte de la ville de Louisbourg où on a représenté en couleur jaune le sur-haussement que l'on doit y faire pendant l'année 1745" (PAC, Ph/250-Louisbourg-1745). Published in *A.P.T.*, fig. 42; no.207: Verrier, 4 November 1744; no.209: Verrier, 18 November 1744.

skylight. The new kitchen was to be separate from the rest of the hospital and well lighted.²⁶¹

The British Occupation, 1745-1749

Much has been written about the siege and surrender of Louisbourg in the spring of 1745.²⁶² The capitulation of the capital entailed the occupation of the colony---until its return to France in 1749 by the Peace of Aix-la-Chapelle.²⁶³ During this period, the British feared an attempt by the French to retake Louisbourg. They resolved to repair the fortifications in the hope of repulsing such an attempt. They found the

261. AN, Section Outremer, D.F.C., A.S., no.214: Verrier, "Partie du plan de l'hôpital où on a représenté en couleur jaune la nouvelle cuisine que l'on doit y établir pendant l'année 1745" (PAC, Ph/250-Louisbourg-1745). Published in *A.P.T.*, fig. 65; no.204: Verrier, 4 November 1744; no.209: Verrier, 18 November 1744.

262. McLennan's outline is still useful: *Louisbourg....*, pp.128-164.

263. A comparison of the following plans and map (see copies in Vol. II, pp.62-64) is useful. Service Historique de l'Armée, 7B64: "Le port de Louisbourg dans l'Ile Royale, représenté de basse mer...." (PAC, Ph/240-Louisbourg-n.d.). This plan was drawn after the completion of the enceinte, but before the British occupation of 1745-1749. It shows the location of the town, the batteries, the lighthouse and the careening wharf in relation to each other, and to the surrounding countryside from Gabarus Bay to La Plaine de Laurembec. AN, Section Outremer, D.F.C., A.S., no.221: (PAC, Ph/201-Ile Royale-1746). This map, part of Ile Royale from Spanish Bay around the coast to Gabarus Bay, shows the relationship between the various ports and bays in the area. It shows Fort William, near Glace Bay, built by the British during the period 1745-1749. *Ibid.*, D.F.C., A.S., no.222: "Plan of Louisbourg 1747." This is a British plan, drafted when the Queen's Bastion frame barracks were planned but not yet built. The bastions have been renamed. The King's remained, but the Queen's became the Prince of Denmark's, the Princess the Prince of Orange's, the Brouillan Prince Henry's, the Maurepas Prince Edward's, the Pièce de la Grave the Duke's Battery and the Dauphin the Prince of Hesse's Bastion.

weakest part of the defences to be the re-entrant angle of the "point" of the Dauphin Bastion. It would have to be demolished and a new work of better design built. Meanwhile, the construction of a cavalier for five or six guns, and the repair of the gun platforms and parapets, were indispensable. The demolition of the Dauphin circular battery was recommended.

The right flank of the King's Bastion was so badly shattered that it could be repaired only by making block-timber embrasures and merlons for it. But this was considered only a temporary measure: the only solution was to demolish the flank and to rebuild it. The outside walls of the Queen's Bastion, being "much shattered and....built all of rough stone and bad cement, must come down and be entirely new coated and the parapet and merlons finished as they ought."

The Princess Bastion, having a

re-entrant angle at the point, instead of being properly finished....is very much commanded by a mount or rock about 700 feet from the present salient angle and is other ways an ill-contrived breakneck place. If the fortifications are ever to be rebuilt, this Bastion must be enlarged to its proper dimensions, which will carry it close to the sea, whereas now between the *batardeau* and the sea there is room for thirty men in front. By blowing and quarrying the mount for the masonry of the walls and raising them 6 feet higher, the Bastion will command it. If not, a cavalier may be raised to scour the land all about it. If this is not done this mount, which is called Cap Noir cannot be secured without being particularly fortified with a redoubt or some sort of other work. This bastion is joined to Bastion Maurepas²⁶⁴

264. An error. This was the Brouillan Bastion.

by a thin wall²⁶⁵ of about 9 feet high....with loopholes for musketry in it by way of curtain, which wall is boarded within and without to keep it up, and picketed at the top to prevent anyone getting over the wall. This is an exceeding bad piece of work and must be made into a proper curtain.

The Brouillan Bastion²⁶⁶ was said to be broken off short at the south face where the line for musketry joined it. It would have to be built to its proper thickness. The Maurepas Gate in the curtain between the Brouillan and Maurepas Bastions had had its abutments pressed out by the arch, which was ready to fall in. It had also received damage by shot during the siege. From the Maurepas Bastion to the Pièce de la Grave²⁶⁷ a stockaded bridge "joins the works together, which a large pond otherwise parts....The French intended a curtain through the pond (which is about 6 feet deep) as soon as they could get stone to fill it up".

As for the Pièce de la Grave, it and the whole waterline of the town, to the Dauphine Gate, needed to be raised 5 or 6 feet higher to shelter it from small arms from ships that might anchor within "half a musket shot of it." The waterline wall (quay wall) was only 4 feet thick at the top and no more than 8 or 9 feet high. When the beach heaved up against it, it was easy to climb. It should be lined with another wale and both raised 8 feet higher. The rampart should be raised in proportion because people could be seen, from the poop-decks of the ships in the harbour, walking the streets. The walls scaled off every winter. It was

265. The "crenellated wall".

266. Referred to in the text as the "Maurepas Bastion".

267. The "Duke's Battery" in the text.

common for a coat of masonry 20 or 30 yards long to slip away from the main body of the wall.

Bastide, the senior engineer attached to the British forces in 1745, summarized the repairs required at the Island Battery as follows: repairing embrasures, rebuilding chimney stacks, doors and windows; glazing and lining the masonry, at a cost of £529/10/0.* He estimated the repairs required at the Royal Battery as follows: repairing the masonry of the walls and embrasures; repairing the roof, doors, windows; glazing most of it; palisading and cleaning the ditch, at a cost of £721/16/0.* He advised his commander to enclose the Island Battery with a palisade to protect it from the rear. As for the Royal Battery, he considered it very difficult to defend against attack from the hill above it. Palisading and other protection against surprise or sealing of the walls was all that could be done in addition to common repairs.

The Island Battery was criticized as being very badly designed and built. It was defenceless from the rear. The rubble stone walls were boarded up to keep them together. Except at the corners of the merlons, the cement was extremely bad. It could not hold out long if bombarded from the Lighthouse Point. The workmanship of the Royal Battery was considered to be no better than that of the Island Battery "being cased with boards to keep the walls from falling...."²⁶⁸

268. P.R.O., C.O.5, 900, ff.234-235: Bastide to Shirley, 26 September 1745 (O.S.); W.O.55, 352^B, pp.2-3: Bastide, 28 June 1745 (O.S.); PAC, Nova Scotia "A" 28, pp.191-200: Enclosures in Knowles to Newcastle, 8 July 1746 (O.S.).

* £ = pounds sterling.

What the British did by way of repair, and what they failed to do, is at least partly revealed in a report by Hopson and Bastide just before the cession of Louisbourg to the French in 1749.²⁶⁹

At the Dauphin Bastion, the circular battery had been demolished and a timber and masonry cavalier for eight battering pieces facing the land had been erected. The Dauphine Gate and guardhouse had been repaired, and breaches had been sealed. The *batardeau* across the ditch of the Dauphine Gate had been dismantled and rebuilt, except that the freestone facing of the *batardeau* near the ditch had been discontinued. The parapet had been entirely revetted on the inside with masonry and sod. Six embrasures had been cut and six platforms built. The powder magazine of the Dauphin Bastion had been repaired and a new covering put on its arch. The merlons and embrasures of the south flank had been taken down and rebuilt with a greater thickness and a greater slope from the foundation to the cordon. The merlons and the embrasures had been "secured against the efforts of the frost" by strong oak frames. In order to complete them, they would have to be built up another foot and a half. In the curtain wall between the Dauphin and King's Bastions two strong traverses of masonry and earth had been constructed and two embrasures with platforms had been built above the upper traverse.

At the King's Bastion the right flank had been demolished and a battery of five guns substituted, 18 feet broad with frame timber well filled with cement and a platform of 28 feet projecting over the inside

269. PAC, Nova Scotia "A" 34, pp.156-165: Hopson and Bastide, 12 July 1749 (O.S.).

face of the rampart on large timber supports. The inside wall of the parapet of the right face had been rebuilt, four new embrasures constructed. Most of the stone platform covering the casemates of the left flank was reconstructed in order to keep the casemates dry. Nevertheless, some part of the King's Bastion was always disintegrating: the worst places were the faces and angles. One of the latter was completely separated from the solid masonry. Inside the Queen's Bastion, four buildings, each two storeys high, formed a quadrangle with a court sixty yards by fifty yards. The lower building, for officers, had not been finished. At the Queen's Gate, in the curtain between the Queen's Bastion and the Princess Bastion, next to the guardhouses, two barrack sheds each 100 feet long and one storey high had been put up in great haste. On the face of the Princess Bastion, the rampart had been raised and widened, a strong timber platform for ten guns *en barbette* had been made, and a gallery under the bastion had been fitted out and turned into a powder magazine. A powder magazine with a capacity for 2,000 barrels, of timber and brick "well secured against fire" had been constructed in the Brouillan Bastion. Between the Brouillan Bastion and the Pièce de la Grave, a strong fence of three-inch plank (a palisaded way) had been built on the long stockaded bridge. The Maurepas Gate was in bad condition. The Island Battery was repaired, except that the merlons and the embrasures were in need of some work. The Royal Battery was palisaded in, and the barracks repaired and made "more lodgeable", but the old gun platform was badly decayed.

Ile Royale and Ile Saint-Jean, 1749-1758

The peace that ended the War of the Austrian Succession was widely regarded, at least in the North Atlantic region, as a truce. It was imperative, militarily and economically, that the French should energetically rebuild the important colony that their victories in Europe and India had restored to them. During the first year of reoccupation, their reconstruction of the colonial capital may be called "vigorous improvisation"; from 1750 to 1754 it existed largely on paper, in the form of scores of memoranda and plans; and from 1754 to 1757 it comprised a combination of permanent and temporary works built under the threat of imminent attack and not properly finished before the British landed in 1758.

Most of the construction of those nine years took place on Ile Royale, and the overwhelming part of that, at Louisbourg. After sketching this activity, we shall briefly summarize what was done elsewhere in the colony, in so far as available documentation permits.

New England Barracks

At the reoccupation of Ile Royale in 1749, the citadel barracks were not fit to accommodate troops. Pending restoration of the building, civilian squatters used it because of the bad state of repair of many of the houses of the town. The troops were housed, instead, in the frame barracks built by the New Englanders inside the Queen's Bastion. Boucher reported that three of the buildings could house 500 men, including several officers. The fourth building, unfinished, was to have been a

hospital. About 1,000 men were housed there by means of *cabannes*. Behind the guardhouses at the Queen's Gate there were two frame buildings which could house 100 men. It was thought best to convert the fourth building in the Queen's Bastion to subalterns' quarters, giving it a shingled roof.²⁷⁰

A contract was made in 1750 (with the builder Claude Coeuret) to construct latrines to be used in common by the occupants of the frame barracks of the Queen's Bastion. The building was separate, but communicating with all other parts of the barracks. It was finished by November 1750 and the *toisé définitif* prepared the same month. The cost was approximately 8,600 *livres*. A drain leading into the ditch was built, as shown in a plan and section of 1750. This was not exceptional, according to the sanitation standards of the day.²⁷¹

Louis Franquet,²⁷² appointed in 1754 the director of fortifications

270. AN, Col., C^{11B}, 28, ff.298-302: Boucher, 24 July 1749; ff.16-21: Desherbiers and Prévost, 10 September 1749; Section Outremer, D.F.C., A.S., no.223: Boucher, "Plans, profils, coupes et élévation des casernes de charpente que les anglais ont établi dans le bastion de la reine à Louisbourg....1749" (PAC, Ph/250-Louisbourg-1749). Published in *A.P.T.*, fig. 70.

271. AN, Col., C^{11B}, 29, ff.266-268: Boucher, 29 September 1750; ff.269-275v.: Boucher, 15 November 1750; C^{11C}, 16, pièce 37: Boucher, 25 November 1750. The plan, AN, Section Outremer, D.F.C., A.S., no.224: Boucher, "Plan du bastion de la reine, avec les casernes, le projet des latrines et de son aqueduc qui passent sous le rempart du flanc gauche, 1750" (PAC, Ph/250-Louisbourg-1750), has been published in *A.P.T.*, fig. 71 and enlarged detail.

272. Louis Franquet (1697-1768), who became a brigadier in 1754, had served in the engineer corps since 1720 and participated in many sieges during the wars of the Polish Succession (1733-1735) and Austrian Succession (1741-1748). An article on him is to appear in *D.C.B.* III. Published references to him may be found in *R.A.P.Q.* (1923-1924), pp.112-140; the *Annuaire* of the Institut Canadien de Québec, no.13 (1889), pp.33-240; and elsewhere.

not only of Ile Royale but of the whole of New France with his base at Louisbourg, arrived at the colonial capital in 1750. During the next several years, with the assistance of Pierre-Jérôme Boucher²⁷³ until the latter's death in 1753, Franquet prepared memoranda, plans and sections concerning improvements to the fortifications and public buildings of the colony. These followed the view he expressed in a memorandum of October 1750.²⁷⁴

Franquet found some of the fortifications satisfactory, others in need of improvement. He placed two options before the Court: one entailed changes to the existing system, the other extensive reconstruction. He discussed the first option in relation to both fronts of fortification.

The Enceinte

The east front was relatively satisfactory, except that *banquettes*, parapets and ramparts required thickening, and a few extra embrasures were needed. The west front faithfully followed Vauban's first system. The works flanked one another reciprocally with two exceptions: the Dauphine Gate, which had no direct defence from the gap in the palisades that left the foot of the curtain between the Dauphin and King's Bastions unprotected; and the left flank of the Princess Bastion, which artillery could completely demolish from Black Rock. Works had to be planned to deal with these defects. The ditches were too narrow at the flanked angles

273. Boucher had served as assistant-engineer under Verville and Verrier. A biographical article on this able engineer is also to appear in *D.C.B.* III.

274. AN, Col., C^{11B}, 29, ff.306v.-310v.: Franquet, 13 October 1750.

of the bastions: it had been intended to defend the walls from close quarters. In Franquet's eyes, his predecessors had obviously renounced all external works to rely upon the covered way. Several traverses and two re-entrant places of arms would be required to correct this fault. Franquet thought the first option would assure the town's defence.

The second option, to include external works, would entail a much greater expense because it would necessitate changing the whole counterscarp. He offered it only in order to give the Court a choice, despite the new professional military threat to Louisbourg created by the establishment of the British at Halifax. The advantages of the first, less expensive option lay in the difficulty of a frontal attack on the harbour, the impediments of the terrain to the digging of siege trenches for a frontal attack against the landward fortifications, and the rigours of the climate. These combined to favour the defence of the town provided it had men and supplies to last out a year.

Franquet recognized the defective workmanship and poor choice of building materials in the existing fortifications, but observed that the chief trouble stemmed from the failure of the mortar to dry and harden before winter, resulting in the crumbling of layers of stone as much as three feet thick. If those walls were redone and covered with boards for eighteen to twenty years, by the time the boards themselves had disintegrated, the stone walls behind them would be solid. In certain parts of the covered way, some works could be covered only from a distance; this could be remedied by raising the salients and lowering the shoulders of the places of arms. The quay wall was enfiladed from heights situated in front of the Dauphine Gate. The remedy for this was by no means impossible:

a raising of the curtain wall between the Dauphin and King's Bastions by 5 to 6 *pieds* would accomplish it.

Exterior Work

Franquet also assessed the works outside of the town. The lighthouse was repaired. The careening wharf would have to be redone entirely, in the same cove or in a neighbouring one. The Island Battery was undoubtedly the most useful of the fortifications. Nevertheless, although its surrounding rock seemed to make it inaccessible, the English had found ways of landing there; Franquet wished to find methods of preventing a recurrence of this. As for the Royal Battery, most people favoured destroying it as a greater menace to the town than a protector. Franquet did not agree. True, its artillery could be used against the town and inflict great destruction; yet, if it were demolished, and vessels were able to run the gauntlet of the Island Battery and reach the northeast arm, the ships would be out of range of other artillery. To prevent the artillery of the battery from being of use to an enemy who might capture it from the rear, it should be abandoned at the first word of any landing by the enemy in the vicinity of Gabarus Bay, and its artillery transferred to the town on flat boats.²⁷⁵

275. The following plans by Franquet and his staff illustrate his ideas. Copies may be found in Vol. II, except for two that have been published in *A.P.T.*, figs. 11 and 21. AN, Section Outremer, D.F.C., A.S., no.225: "Plan de la ville de Louisbourg dans l'Ile Royale où l'on a représenté en couleur jaune les ouvrages du premier projet" (PAC, Ph/240-Louisbourg-1751); no.226: "Plan de la ville de Louisbourg dans l'Ile Royale où l'on a représenté en couleur jaune les ouvrages du second projet" (PAC, Ph/240-Louisbourg-1751). *A.P.T.*, fig. 11. The works shown in the plans for the second option would have made the west front closer to the second or third system of Vauban, than to the first system which had originally been planned;

In addition to the east and west fronts, other structures of

no.227: "Plan du front de fortification d'entre le bastion du roi cotté 3 celui de Dauphin cotté 4 et la tenaille de la porte Dauphine. Louisbourg, 1751." (PAC, Ph/250-Louisbourg-1751); no.230: "Plan des changements et des ouvrages neufs que le roi a ordonné de faire exécuter aux fortifications de Louisbourg dans le front depuis l'angle flanqué du bastion du roi jusqu'au bord du port vers la tenaille de la porte Dauphine. A Versailles le 25 mars 1754. Rouillé" (PAC, Ph/250-Louisbourg-1754); no.228: "Plan du port de Louisbourg et de ses batteries" (PAC, Ph/240-Louisbourg-1751); no.229: "Plan de l'île et de la presqu'île du quai de Louisbourg avec celui de la partie des îles no. 4 et no. 5 qu'on propose de faire raser pour faire une place" (PAC, Ph/240-Louisbourg-[1752]); no.231: "Plan des changements et des ouvrages neufs que le roi a ordonné de faire exécuter aux fortifications de Louisbourg dans le front du mur crénelé et dans celui compris entre l'angle flanqué du bastion Princesse et l'angle flanqué du bastion de la reine. A Versailles le 25 mars 1754. Rouillé" (PAC, Ph/250-Louisbourg-1754); no.232: "Plan de l'état actuel des fortifications de Louisbourg dans le front du mur crénelé et dans celui compris entre l'angle flanqué du bastion Princesse et l'angle flanqué du bastion de la reine" (PAC, Ph/250-Louisbourg-1754); C.T.G., art. 14, Louisbourg....ctn. 1, no.31: "Premier plan des ouvrages projetés sur les deux fronts de fortifications, compris l'un entre le Bastion de la Reine cotté 2 et celui Princesse cotté 1 et l'autre d'entre ce dernier bastion et celui Brouillan cotté 10" Louisbourg, 1751 premier projet (PAC, Ph/250-Louisbourg-1751); no.38: "Plan et élévation de la batterie royale dans le port de Louisbourg" (PAC, Ph/250-Louisbourg-[1751]); no.27: "Plan de la batterie de l'Ilot à l'entrée du port de Louisbourg" (PAC, Ph/250-Louisbourg-1751); no.41: (Plans and profiles related to the docks) (PAC, Ph/250-Louisbourg-1751). A.P.T., fig. 21 and added detail; no.34: "Premier profil sur la ligne IK....; second profil....sur la ligne IK...." (PAC, Ph/250-Louisbourg-1751); no.27: "Louisbourg, 1751. Plan, profil et élévation du mur crénelé projeté pour....la Batterie de l'Ilot...." (PAC, Ph/250-Louisbourg-1751); no.49: "Plan des changements et des ouvrages neufs que le roi a ordonné de faire exécuter aux fortifications de Louisbourg dans le front depuis l'angle flanqué du bastion du roi jusqu'au bord du port vers la tenaille de la porte Dauphine 1754" (PAC, Ph/250-Louisbourg-1754). AN, Col., C11A, 126: "Louisbourg, 1752. Plan de la Pointe à Rochefort". *Ibid.*, Boucher: "Plans, coupes et élévations du bâtiment neuf de l'hôpital à Louisbourg... achevé au mois de mai 1752." *Ibid.*, "Plan du Bastion du Roi, cotté 3, nommé communément le fort, pour servir au projet de l'aggrandissement de la Place d'Armes, 1752" (Fortress of Louisbourg Restoration, nos. 752-5 and 752-5a); *Ibid.*, "Plan du front de fortification d'entre le Bastion du Roi cotté 3, celui de Dauphin cotté 4, et la tenaille de la Porte Dauphine, sur lequel sont marqués en rouge brun les ouvrages faits cette année, et en jaune d'autres à faire pour mettre ce front en état de défense. Louisbourg 1755" (Fortress of Louisbourg Restoration, nos. 755-5 a & b).

various kinds were considered. Some were actually constructed; others, for one reason or another, were not: either they were not approved, or construction was not possible before the fall of the colony.

Raymond's Redoubts

Since Louisbourg appeared to be the key to the colony of Ile Royale, Franquet advocated spending the available money, time and skill on fortifying it. The governor from 1752 to 1754, the Comte de Raymond, disagreed. His conception of the best defence for the colony was to place redoubts or small forts near various possible landing places on the island to prevent the repetition of a successful overland attack on Louisbourg.

The redoubts would have other advantages: the detachments of troops garrisoned in them would keep order among the scattered population, and facilitate trade; and they would protect the outports themselves against the enemy. Redoubts were envisaged for the following places: the harbour of Laurembec, that of Baleine, the mouth of the Mira River, Lingan (L'Indienne), Spanish Bay, two entrances to the Little Bras d'Or Lake, Port Dauphin, near White Point, and across Gabarus Bay from La Petite Cormorandière. Finally there would be one at Port Toulouse. These redoubts would be of a standard type, depending on whether they were built on earth or rock.²⁷⁶

276. AN, Col., C^{11B}, 32, ff.291-294v. [Franquet, n.d.] enclosed with Franquet to the minister, 12 June 1752, ff.287-290; *ibid.*, 31, ff.142-143: Franquet, 14 December 1751; C.T.G., Bibliothèque, ms. in-fol. 205^b, ff.55-59: Franquet to Regemorte, 14 January 1752; AN, Col., C^{11A}, 126, pièce 32: Franquet to the minister, 14 January 1752. The following plan and sections, published in *A.P.T.*, fig. 91,

In 1752, two strategists, the Comte de la Galissonnière and the Maréchal de Noailles, were consulted (the former at Franquet's suggestion) concerning Raymond's idea. It was rejected. Raymond, convinced of its merit, modified it by advocating palisaded houses at various points to the east and west of Louisbourg; but this idea was rejected also. Raymond was not convinced of the rightness of his adversary in this dispute and continued after his recall in 1754 to criticize the plans of Franquet for the defence of the colony.²⁷⁷

Pièce de la Grave

A gale in November 1751 broke the *batardeau* at the Pièce de la Grave and damaged the angle of the battery. Boucher tried to make it last through the winter by building a temporary structure in boards that cost 527 *livres*, but that was swept away by another gale in December. Work began in the spring of 1752. It was hampered by the large amount of gravel washed up by the sea and into the former foundations and the ditch of the battery. The piling was very difficult to install because of the hardness of the soil, so Boucher had to reinforce the piles and use heavier rams. He reported that the second face of the battery, from the first redan to the second, was also laid bare in its centre down to the

illustrate the type of structure proposed: C.T.G., art. 14, Louisbourg...ctn. 1, no.44: "Ile Royale 1752. Profil d'une redoute à construire avec fossé sur un plateau de terres ordinaires. Profil coupé sur la ligne A, B, d'une redoute à construire sans fossé sur un plateau de roc. Plan d'une des redoutes projetées le long des côtes de l'Ile Royale" (PAC, Ph/250-Cape Breton-1752).

277. AN, Col., B, 95, ff.267-268v.: to Raymond, 15 March 1752; 97, f.295: to Raymond, 13 April 1753.

netting (*grillage*) of its foundation, for about 12 *toises* in length.

Piling would have to be installed for that also.²⁷⁸

Brewery

In 1750, Boucher included in the estimates for 1751 the sum of 6,200 *livres* for the construction of a brewery for the troops. Originally it was to have six vats. Boucher's plan²⁷⁹ shows that that figure was increased to eight. Franquet had advised him to widen the building originally planned by 2 *pieds* and to lengthen it by 4, in order to provide more space.²⁸⁰

Hospital

In 1749, Boucher noted that the floors of the hospital were rotten and that most of the hardware had been removed by the British troops, who had used the building as barracks. In particular he noted that the balustrade of the chapel grill had been stripped. In 1750 a kitchen and

278. AN, Col., C^{11B}, 30, ff.338-340v.: Prévost, 28 December 1751; C^{11A}, 126, pièce 89: Franquet, 14 January 1752; C^{11B}, 32, ff.261-264: Boucher, 18 October 1752. AN, Col., C^{11A}, 126: "Louisbourg 1752. Plan pour servir au projet du rétablissement du batardeau cotté 26, et d'une estacade ou digue de gros pilots, pour garantir la Pièce de la Grave, cottée 7, contre l'impétuosité de la mer" (Fortress of Louisbourg Restoration, no.752-2). AN, Col., C^{11A}, 126: Boucher, "Plan et profil du batardeau de la Pièce de la Grave....à Louisbourg le 23 septembre 1752" (Fortress of Louisbourg Restoration, no.752-6).

279. AN, Col., C^{11A}, 126: Boucher, "Plan, profils, coupes et élévation du bâtiment de la brasserie, établie à la gorge du Bastion de la Reine, à côté des casernes. A Louisbourg, le 20 novembre 1752" (Fortress of Louisbourg Restoration, no.752-8). Published in *A.P.T.*, fig. 72.

280. AN, Col., C^{11C}, 16, pièce 37: Boucher, 25 November 1750; C^{11B}, 32, ff.261-264: Boucher, 18 October 1752.

a drain were built. Work was done the same year on the roof. According to Boucher's plan,²⁸¹ an extension was finished by May 1752.²⁸²

Policy

The poor state of Louisbourg's defences in 1758, much decried by officers of the regular army who were sent with their battalions to augment the garrison in anticipation of a second siege,²⁸³ is attributable to a vacillating policy at Court. Four years passed between Franquet's arrival at Louisbourg and his appointment in 1754 as director of fortifications; not until then did the Ministry of Marine decide on the method of managing programs for the reconstruction and repair of the fortress.²⁸⁴ From 1754 to 1757, although much more work was done than between 1750 and 1754, the demands of the officers of the *armée de terre* for accommodation commensurate with their social and military status often interfered with the urgent needs of defence.²⁸⁵ Franquet's protests to this effect seem to have fallen on deaf ears at Court, where ministerial changes from 1754 to 1758 were far too frequent to assure

281. AN, Col., C^{11A}, 126: Boucher, "Plans, coupes et élévation du bâtiment neuf de l'hôpital de Louisbourg, fait sur la prolongation de l'aile gauche de l'ancien bâtiment, achevé au mois de mai 1752." (Fortress of Louisbourg Restoration no.752-10) Published in *A.P.T.*, fig. 67.

282. AN, Col., C^{11B}, 28, ff.298-302: Boucher, 24 July 1749; C^{11B}, 29, ff.51-54: Desherbiers, 3 November 1750; C^{11C}, 16, pièce 37: Boucher, 25 November 1750.

283. See, for example, AN, Col., C^{11C}, 16, pièce 10: Saint-Julien, 20 November 1757.

284. See Chapter IV, *infra*.

285. See, for example, AN, Col., C^{11B}, 35, ff.279-280: Franquet, 28 June 1755.

continuity of policy direction. It is a moot point anyway whether Louisbourg could have held out much longer in 1758 had its fortifications been in a "perfect" state of repair, for a garrison poorly supplied from its distant home base because of naval weakness had little hope against a well-supplied enemy who commanded the sea. Nevertheless, current research²⁸⁶ suggests the naval balance was less uneven than has traditionally been supposed. This would make the state of the fortifications a more important factor in the duration of the port's resistance.

Outports

Outside of Louisbourg, no work seems to have been done at Port Dauphin,²⁸⁷ and only some "temporary" construction in 1750 at Port Toulouse and Port La Joie.²⁸⁸ In 1751, Franquet studied the requirements of the two ports last named, and proposed 88,800 *livres*' worth of construction for Port Toulouse and 153,600 *livres* for Port La Joie.²⁸⁹ No action seems to have been taken on these recommendations: this is hardly surprising in view of Franquet's own emphasis on Louisbourg as the key to the colony's defence.

286. Conversations with Cdr. W.A.B. Douglas, a specialist in naval history. The British did overcome in 1758 the French naval supremacy of 1757 in Nova Scotian waters, but it could only be of value to them at Louisbourg if they achieved a landing.

287. In 1746, the British commanders had recommended the construction of a fort there. P.R.O., W.O.55, 352^B, p.187: Warren and Pepperell to Newcastle, 18 January 1745/46 (O.S.).

288. AN, Col., C¹¹B, 28, ff.267-272: Boucher, 9 September 1749, ff.287-296: Boucher, 3 September 1749.

289. R.A.P.Q., 1923-1924, pp.111-140: Franquet, 29 December 1751.

Fieldworks

With the approaching threat of attack, Franquet and his assistants concentrated their efforts in 1757 on field defences, near Louisbourg, that were designed to hold the enemy off as long as possible before he could besiege the town. To the east of the harbour, a three-gun battery was built at Lighthouse Point, and entrenchments at the Anse à Gauthier and the Anse du Grand Lorembec. To the west, entrenchments were dug at Flat Point (*Pointe Plate*) and the Anse de la Cormorandière.²⁹⁰

The story of the siege of 1758 has been told elsewhere.²⁹¹ Our present concern is rather with what was actually built, and where and in which sequence. Several stages in the chronology are discernible. At Placentia between 1695 and 1713, the masonry fortifications destined to replace earthworks and wooden stockades were built in piecemeal fashion. Only a powder magazine was completely finished, and that after eight seasons' work. On Ile Royale, 1713-1719, temporary structures were built at Louisbourg, Port Dauphin and Port Toulouse. Of necessity, most of them were dwellings or storehouses, although basic field defences were erected. A vacillating policy at Court on the location of the colonial capital, and the lack of town plans to control property boundaries, led to haphazard and inefficient development. Improvement came after the

290. C.T.G., Archives, art. 14, Louisbourg et l'Ile Royale, no.51: Franquet, 1757.

291. For example, McLennan, *op. cit.*, pp.264-285; J.M. Hitsman and C.C.J. Bond, "The Assault Landing at Louisbourg, 1758" in *Canadian Historical Review*, XXXV (1954), pp.314-330.

government had opted for Louisbourg as the capital and for the contract system of construction.

During the period 1719-1725 at Louisbourg, town plans were prepared and extensive work done on the King's Bastion and citadel barracks. Diffusion of labour and materials, however, resulted in a failure to finish either structure before Verville's recall to France. This delayed the use of the barrack building for housing the garrison. A start was barely made on the harbour defences.

The period 1725-1737 was much more productive. First attention was given to trying to finish the barracks---the design of which was revealed as very faulty---and proceeding with the construction of a large stores building and hospital. The priority in fortifications was assigned to the harbour defences: the Royal and Island Batteries and the Dauphin circular battery. Work was begun on the Dauphin Demi-bastion and resumed on the King's Bastion, and proceeded on the remainder of the west front throughout the 1730s. Harbour facilities were improved: the most notable of these works were the careening wharf and the lighthouse. Few of these structures were built on time or at a cost nearly as low as the original estimate. Many of them had serious defects due to the builders' failure to adapt to local climatic and topographical conditions. Part of the lighthouse had to be rebuilt with fireproof materials after a devastating fire. By and large, however, a great deal of public construction was accomplished; and the town grew according to a systematic plan, in which private development (which also proceeded apace) was excluded from areas set aside for the king's buildings.

A program of road-building was begun about 1732. A road between Louisbourg and the Royal Battery was finished by 1734, but work on those to Mira Lake and La Baleine went very slowly, largely because of unexpected obstacles.

Between 1725 and 1745 fortifications and public buildings were constructed elsewhere on Ile Royale, and on Ile Saint-Jean. At Port Toulouse, essential buildings and basic fortifications were completed by 1736. At Port La Joie on Ile Saint-Jean, several public buildings, mainly wooden, were constructed between 1734 and 1739 for what was in effect the principal settlement of the island. There is no record that fortifications proposed for the protection of the settlement were actually constructed at that time.

The west front of fortification at Louisbourg was still unfinished when work began on a new east front that was designed to enclose the town completely. Private property in the path of the new works was expropriated, because this extension of the enceinte had not been part of the original plan. Work proceeded fairly rapidly on the east front, while continuing at its accustomed pace on the west. By 1745, Louisbourg had four ornamented but functional town gates, four full bastions and two demi-bastions with their curtain walls, four batteries as well as a quay wall to protect the harbour, and an impressive array of substantial public buildings. Harbour facilities were expanded and improved, and work began on a channel with a sluice-gate and dike to provide access to the *barachois* near the southwest arm of the harbour as a wintering place for fishermen's boats. New amenities made the large detachment of the Royal Battery more

self-contained, even though the battery itself remained very defective as a defensive work. Plans were drawn up for a parish church and a new barrack block, but were not implemented.

The British patched up the fortifications of Louisbourg during their occupation (1745-1749), replaced the Dauphin circular battery with a cavalier facing the land and built, in the gorge of the Queen's Bastion, frame barracks that could house about 1,600 men. The French, upon reoccupying the colony in 1749, made use of the new barracks, and effected initial repairs to the other public buildings and to the fortifications. Though a detailed report of the work required to reconstruct the defences and buildings was submitted, little was actually done until after 1754, when the Court issued instructions about how the reconstruction was to be administered. As work went forward, hostilities began in 1754 and war was officially declared in 1756. By 1757, with the British threatening to attack Louisbourg, Franquet emphasized fieldworks to delay potential besiegers.

Outside Louisbourg, the Comte de Raymond had advocated in 1752 the construction of redoubts at eleven possible landing places on Ile Royale from Port Dauphin to Port Toulouse. The idea was rejected. The only construction at Port Toulouse and Port La Joie after 1749 consisted of emergency repairs carried out in 1750. Nothing was done at Port Dauphin.

The achievements of the French builders of the Gulf region can be overrated or unfairly criticized. They should be assessed in balance.

Placentia was a relative failure as a venture in colonial construction. Louisbourg was the largest project of its type yet undertaken on this continent, but in the context of French policy it deserves to be remembered more for its commercial port facilities and administrative buildings than for its crumbling bastions and ill-designed Royal Battery. The sums spent on construction in the region were often laid out reluctantly; yet they were provided. The reasons underlying this financial policy merit examination.

CHAPTER III: FINANCIAL POLICY

The annual level at which the French government provided funds for public works was a reflection of its financial, maritime and colonial policy. For France, the sixty-three-year period under study began with an economic depression. Despite the Court's continued preference for European affairs and neglect of maritime and colonial interests, overseas trade recovered, and as the 18th century progressed, came to flourish. Through commerce, agriculture and industry, France experienced a new era of prosperity: in the competition for world markets and the Spanish forwarding trade, she became one of only two great contenders. Despite this prosperity, financial support for the navy, maritime trade and the colonies, all of which were the Marine Department's responsibility, was never generous. It is in this context that the French Court's expenditure of some 5 million *livres* on fortifications and public buildings in the

Gulf region must be considered. Public works, in an area where settlement never reached significant proportions, represented a varied investment by the home government: it protected the region's chief resource, the cod fishery; it erected a potentially important entrepôt for general trade; and it established bases for warships and armed merchantmen in the event of war. As government investment grew, so too did control of expenditures become more systematic. The pattern of investment, the system of auditing, and an estimate of the success of the financial policies of the French government in the Gulf area are the principal concerns of this chapter.

When Pontchartrain resolved after 1695 to fortify Placentia with masonry,¹ deficit financing in France was already becoming more the rule than the exception. For most of the period 1689-1713, France was engaged in a general war, largely continental. From 1689 to 1697 the total state expenditures doubled, while from 1701 to 1714, military costs alone trebled. Paradoxically, this coincided with a general tendency toward economic stagnation, in fact depression, which bore heavily on the agricultural classes. The flight of craftsmen following the Revocation of the Edict of Nantes aggravated economic conditions still further.

Some of the financial measures undertaken by the state were inflationary, whereas others tended to have the opposite effect. From 1695 to 1698 the state imposed a special head-tax (*capitation*) from which the privileged orders were not exempt. Although revived in 1701 in another form, the *capitation* never succeeded in providing more than a

1. See Chapter II, pp.20-22.

fraction of the revenue required to meet expenditures that ranged from 120 to 264 million *livres* per annum during the period 1700-1711.² The expedient, begun in 1701, of issuing paper notes redeemable by re-coinage, became firmly established as an inflationary monetary policy by 1704 after 7 million *livres* in notes had been issued. From 4 to 8 million a month were soon coming off the presses, so that the total in circulation by August 1706 reached 140 million and by April 1707, 180 millions of *livres*. The state was able for a time to pay most of its bills quickly by printing more paper-money in this fashion, but soon at the cost of debasing its currency, first abroad and then at home. The notes were before long being discounted abroad by 80% and by 1710 had lost 62% of their value in France. Measures had to be taken to replace them, by new issues of coin—further debased—and by annuities. The state also inflated the value of certain coins in circulation: from 1700 to 1713 the silver mark rose in value from 30 to 42 *livres tournois*, although by 1715 it had dropped again to thirty.³

In 1705 the rates of the *taille*, the traditional direct tax imposed on personal income in some parts of the country, and on certain properties elsewhere, were raised by 10%, as were those of the *fermes*, the agencies for collecting indirect taxes.⁴ At the same time, short-term government borrowing from the public became so frequent as to be routine. From 6% to 10% was paid on deposits in the *Caisse des Emprunts*

2. F. Braudel and E. Labrousse, *Histoire économique et sociale de la France* (Paris, 1970-), tome 2 (1660-1789), p.270.

3. *Ibid.*, p.271.

4. *Ibid.*, p.274.

(1702-1715) and 100 million *livres* of its bonds were in circulation in 1715.⁵ Most important in the long run was the credit which the state was able to obtain through the good standing in the financial community of its own agents: the tax-collectors, tax-farmers and treasurers of the various departments of government. These financiers, who had purchased their offices, were able to borrow for the Crown on their own signatures, on the expectation of repayment from forthcoming government revenues. Their promissory notes circulated---discounted of course---as a form of currency eventually redeemable in coin of the realm. The ultimate creditors of the French state were chiefly a small group of French, Swiss and Dutch private bankers prepared to take the risks involved in financing costly military adventures. When one of them, Samuel Bernard of Paris, went bankrupt in 1709, he was a creditor of the state to the extent of 38 million *livres* and had just drawn bills of exchange for 36 million on Castan, a leading banker of Lyon: the latter was able to discount the bills only with the help of funds from Genoa and Geneva.⁶ By 1710, the entire financial resources of the state for the next three years were committed in this way. In order to free its future revenues from this bondage, the state "funded" the entire debt, that is, converted it into annuities of the Hôtel de Ville of Paris. However, the government immediately resumed the old practice of issuing notes, so that within five years 600 million *livres* of them were in circulation, discounted by

5. *Ibid.*, p.272; J.F. Bosher, *French Finances, 1770-1795* (Cambridge, 1970), p.16. Such short-term debts are known as "floating" or "unfunded" debts.

6. Braudel and Labrousse, *op. cit.*, p.273.

as much as 60% to 70%.⁷

The government could reduce the public debt by spending less, by raising new revenue, by borrowing less, or by inflating the currency in order to lower the value of the debt in real terms. All of these methods were tried at one time or another. Nicolas Desmarets, who became controller-general of finance in 1708, tried several methods of raising new revenue. First, there was a marked increase in the sale of offices. Then, in 1710, following military reverses the previous year, an edict imposing a tax of 10% on all incomes (*dixième denier*) was promulgated. The maximum net amount collected thereby was only one per cent of the national income because of widespread fraud. Four hundred million *livres* were collected, however, by means of the *Caisse de Legendre*, a fund for consolidating the revenues brought in by a group of twelve receivers-general.⁸

During this period, and indeed for the next half-century, the Marine Department, which administered the colonies, was responsible for a relatively small share of the total government expenditures. Legohérel⁹ has tabulated figures showing that it ranged, during the period 1695 to 1710, from 2.5% (in 1699, a year of peace) to 14%. It never exceeded 33.5 million *livres* between 1695 and 1715, if in fact it ever attained

7. *Ibid.*, p.272.

8. *Ibid.*, p.274. Desmarets later asserted that the *Caisse de Legendre* sustained the state to the end of the war.

9. Henri Legohérel, *Les Trésoriers généraux de la Marine (1517-1788)* (Paris, 1965).

that figure, and it may have dropped as low as 6 million.¹⁰ Moreover, its revenue---chiefly funds provided by the royal treasury---rarely approached its expenditures.¹¹ When the minister of marine wrote his naval and colonial administrators that funds had been approved to a given amount, this did not necessarily mean that the treasurers-general of marine had received such an amount in government funds. The treasurers-general were expected, rather, to raise the difference through their connections in the financial world, as other government financiers did, in the ultimate expectation that they would be reimbursed from state revenue. It became commonplace for the treasurers-general to pay suppliers, contractors and all manner of servants of the state with their own promissory notes,¹² and for their agents in the French ports and in the colonies to pay in bills of exchange drawn upon the treasurers-general. The latter were personally indebted by these transactions, for they were bound to honour their agents' bills as well as their own notes.¹³ Reimbursement from the royal treasury was continually being postponed, with the result that the treasurers-general often extended themselves so thinly that the government had to take arbitrary steps to redeem them. General or partial bankruptcy, for example, had the effect of lightening their obligations and re-establishing their credit for a time; but only for a time, because after many operations of that sort, credit could be completely eroded.

10. *Ibid.*, pp.182-183.

11. *Ibid.*, pp.185-186.

12. *Ibid.*, p.252.

13. *Ibid.*, p.251.

Legoh  rel provides a number of examples of the embarrassing state in which the treasurers-general found themselves during the period 1704-1713 and reveals, in passing, the sources of some of the credit which they were able to obtain. In 1704, one of the treasurers, Lubert, complained that no more than 12 or 13 million *livres* had been provided to cover approved expenditures of 18 million. He urgently required 950,000 *livres* in order to discharge bills of exchange drawn on him at Venice. Moreover, in various ports, some 4.1 million beyond his receipts had been drawn on him in bills of exchange. The following year there was a judgment against him at Rochefort because he could not honour some of these obligations, and by 1707 he required royal protection in order to prevent seizure of his property by the bearers of his notes. His colleague Vanolles stated in 1704 that he lacked funds to cover bills of exchange on him which had fallen due; furthermore, he had an urgent payment to make at Lyon. The royal treasury still owed him 2.8 million *livres* for the previous year. In 1707, it owed 4.5 for 1705; for 1707 itself, the treasurers-general received only 5 out of the 9.25 million approved. From 1710 to 1713, they received only about one-third of what was due them.¹⁴

In 1711, as part of a general policy of deficit financing, obligations of the treasurers-general of marine were converted into annuities: 500,000 *livres* into state debentures and a further sum into

14. *Ibid.*, pp.187-188, 254. Legoh  rel says nothing about interest rates on these debts. Interest payments were, unquestionably, the responsibility of the treasurers-general.

securities of the Hôtel de Ville of Paris.¹⁵

It is, then, against this background of financial stringency in the Marine Department,¹⁶ and the chaotic state of the national finances, that one must consider the government's financial policy for the fortifications of Placentia. By 1698, the minister had decided to rebuild those structures "little by little", first raising the allocation for 1699 from 2,000 to 4,000 *livres*,¹⁷ then increasing it the following year to 10,000, a sum evidently based on a total cost estimate of 60,000 spread over six years.¹⁸ Slow work progress and the urgencies of war resulted in a doubling of this figure in 1703.¹⁹ Thereafter, 20,000 *livres* were authorized each year until the cession of the colony in 1713, although work was suspended after 1710.

In 1700, almost the total allocation of 10,000 *livres* was spent in France on the purchase of materials and supplies,²⁰ leaving too little for labour and other local expenses, and, in the opinion of some, paying higher

15. *Ibid.*, p.257.

16. D. Neuville (ed.), *Etat sommaire des archives de la marine antérieures à la révolution* (Paris, 1898): Série E. Comptabilité. Notice préliminaire, pp.611-612.

17. AN, Col., C^{11C}, 2, ff.201-203: *Etat du roi*, 16 March 1699. The *état du roi* was the annual statement of funds authorized. It included instructions to the treasurer-general of marine in office for that year to remit the amount in question to the colony.

18. AN, Col., B, 22, f.34: to Bégon, 3 March 1700.

19. *Ibid.*, 23, f.301: to Arnoud, 28 February 1703.

20. AN, Col., C^{11C}, 3, ff.12-15v.: L'Hermitte, 19 July 1700.

prices for those goods than those which prevailed at Placentia.²¹ In 1701 the minister insisted that 4,000 of the 10,000 *livres* allotted to fortifications be sent to the colony in cash and that the intendant at Rochefort make do with the remaining 6,000 even though he found it insufficient for the supplies needed.²² In 1707, 9,100 of the 20,000 *livres* were credited to the King's stores at Rochefort, 3,000 allocated to purchases at the same port, and the remainder sent to Placentia.²³ In 1708, 4,200 were spent at the Rochefort stores and the remaining 15,800 sent to Placentia.²⁴ The government, moreover, made repeated but not very successful attempts to have metropolitan fishing interests contribute toward construction costs, other than in specie or in paper.²⁵

Evidence for the actual amounts spent on the works at Placentia, as distinct from the funds authorized, is difficult to find. Costebelle's remark that no funds arrived from 1706 to 1709²⁶ must be considered in the light of records that show an overexpenditure in 1707 of 7,053 *livres*.²⁷ During 1709, about 6,350 *livres* were spent in the colony;²⁸

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21. *Ibid.*, ff.37-38v.: Costebelle, 8 September 1700. The metropolitan merchants may have been favoured at least partly because they were willing to accept payment in paper.
 22. AN, Col., B, 22, f.155v.: to Bégon, 16 March 1701.
 23. AN, Col., C^{11C}, 5, ff.302-305: *Etat du roi*, 9 May 1707.
 24. *Ibid.*, 6, ff.156-158: *Etat du roi*, 1708.
 25. See Chapters VI and VII.
 26. AN, Col., C^{11C}, 6, ff.209-218v.: Costebelle, 14 October 1709.
 27. AN, Col., F^{1A}, 21, f.17: "Pour le supplément des dépenses des marchandises et munitions employées aux fortifications de Plaisance, 1707." Royal order of 26 February 1719.
 28. AN, Col., B, 32, ff.432-434v.: *loc. cit.*

presumably, some 13,650 were used up in France for materials and supplies. In 1710, expenditures (revealed in an audit dated 1719) exceeded funds provided by 26,240 *livres*:²⁹ on the other hand, 20,000 *livres* had been authorized for each of the three years 1711, 1712 and 1713, whereas there is no evidence that any work was accomplished during those years.³⁰

Table I (p.127) compares the amounts authorized for construction in each of the three colonies of Placentia, Acadia and Canada for the period 1701-1710 and shows, approximately, the construction share of the total colonial expenditure.³¹ Thus the percentage of the total which at Placentia was assigned to construction, exclusive of salaries, wages, food and clothing attributable to it, averaged about 34.6 over the ten years. For Acadia, within the nine-year period 1702-1710, the comparable percentage is 25.7. For Canada, which devoted more of its military funds to offensive expeditions than to fortification and public buildings, it is 7.5 for 1701-1710. In comparative terms, the amounts allowed for Placentia were not unduly small, though the policy of constructing the fortifications in a piecemeal fashion was quite wasteful.

29. AN, Col., F^{1A}, 21, f.20: "Pour le supplément des dépenses des marchandises et munitions employées aux fortifications de Plaisance, 1710." Royal order of 8 August 1720.

30. The accounts for Placentia were confused at this time. It is possible that Durand de la Garenne, the financial commissary, was converting funds to his own use. See René Baudry, "Durand de la Garenne", in *D.C.B.* II, pp.214-215.

31. Amounts are in *livres*. The data for this table were gathered primarily from the *états du roi* in AN, Col., F^{1A}, 10-17. AN, Col., C^{11A}, 113 (expenditures) was used in two instances: Acadia, 1701 (f.205) and Canada, 1707 (f.220) for purposes of comparison.

TABLE I

PROPORTION OF EXPENDITURE ASSIGNED TO CONSTRUCTION, 1701-1710

<i>Year</i>	<i>Placentia</i>		<i>A as a Percentage of B</i>	<i>Acadia</i>		<i>C as a Percentage of D</i>	<i>Canada</i>		<i>E as a Percentage of F</i>
	<i>A</i>	<i>B</i>		<i>C</i>	<i>D</i>		<i>E</i>	<i>F</i>	
	<i>Constrn.</i>	<i>Total</i>		<i>Constrn.</i>	<i>Total</i>		<i>Constrn.</i>	<i>Total</i>	
1701	10000	41000	24.4	20000			20000	287000	6.9
1702	10000	41000	24.4	20000	69250	28.8	24000	274400	8.7
1703	20000	41000	48.8	20000	69500	28.8	22550	304000	7.4
1704	20000	52000	38.5	20000	69800	28.6	22550	302000	7.5
1705	20000	58500	34.2	20000	67300	29.7	22550	326250	6.9
1706	20000	55600	36	20000	77300	25.9	20000	299000	6.7
1707	20000	60500	33	19000	77900	24.4	21000	299000	7.0
1708	20000	60600	33	15000	78000	19.2	22500	298600	7.5
1709	20000	60600	33	15000	68000	22.1	25000	298600	8.4
1710	20000	50000	40	15000	62000	24.2	25000	298600	8.4

Source: AN, Col., F^{1A}, 10-17; C^{11A}, 113, ff.205, 220.

The decision in 1713 to establish a new centre for the French fishery to replace Placentia, and the consequent appeals by Pontchartrain to Desmarets for the necessary funds, coincided with the latter's attempts to avoid the financial collapse of the state through economy measures and tax levies, new and old, designed to assist post-war recovery.³² Explaining the political and economic reasons for the founding of Ile Royale, Pontchartrain asked in 1713 for 48,520 *livres*, the Marine Department's estimate of the cost of supplies, fortifications during the first year, and other expenditures chargeable to the fortifications account.³³ When, undoubtedly because of his preoccupation with avoiding expenditures, Desmarets did not reply, Pontchartrain had to postpone his plans. The following year he proposed 80,000 to begin the works at Louisbourg,³⁴ but received no reply.³⁵ Finally, in May, June and July of 1715, before both he and the controller-general went out of office, he tried again, but unsuccessfully.³⁶ The work done in 1714 and

32. Braudel and Labrousse, *op. cit.*, p.277.

33. AN, Col., B, 35, f.111: to Desmarets, 1 June 1713.

34. *Ibid.*, 36, f.28: to Desmarets, 24 January 1714.

35. Evidence of the desperate situation of the treasury is shown by Desmarets' failure even to reply to Pontchartrain's appeal to bail out Gaudion, one of the treasurers-general of marine, in trouble over bills of exchange drawn on him in Canada to liquidate card-money. A. Shortt (ed.), *Documents Relating to Currency, Exchange and Finance in the French Period* (2 vol., Ottawa, 1925), I, p.303: to Desmarets, 17 July 1715 (erroneously published as 17 July 1717).

36. AN, Col., B, 37, f.105v., 26 May; f.122, 17 June; and f.128, 10 July 1715.

1715 was paid for in 1716, under the Councils of the Regency: 40,000 *livres* were authorized in arrears for each of the two years.³⁷

During the period 1715-1718, as the Marine Council was pondering where on Ile Royale to spend the construction funds it hoped to obtain, the Finance Council under the Duc de Noailles was seeking orthodox methods of reducing the public debt. The Duc reduced the interest rates on some state loans; inflated the coinage; abolished certain tax exemptions; prosecuted alleged tax profiteers in *chambres de justice* set up for the purpose; improved accounting procedures; reformed some taxes; and abolished some of the venal offices.

At the same time John Law was laying the groundwork for his "system" by setting up his famous bank. Three-quarters of each 5,000-*livre* share in it were purchased in state notes, and only one-quarter in coin, so that as it developed, this new credit institution made state notes more respectable. By 1717, Noailles had abandoned some of his measures, notably the *chambres de justice*, for their failure to offset in revenue the discredit of tax-collectors which they had inspired.³⁸ Law established his *Compagnie d'Occident*, capitalized at 100 million *livres* comprising 200,000 shares of 500 *livres* purchased in state notes. Its objective, to convert the many *rentiers* into speculators in foreign and colonial trade, succeeded so well that the following year the company

37. AN, Marine, B¹, 8, f.185: meeting of Marine Council, 1716, reviewing a letter from Soubras of 28 November 1715; AN, Col., F^{1A}, 19, ff.15-17: *Etat du roi* for 1715, 18 May 1716.

38. M. Marion, *Histoire financière de la France depuis 1715* (4 vol., Paris, 1914-1925), I, 1715-1789, pp.63-86.

was able to take over four established trading firms. As Noailles failed in his endeavours to reduce debt and increase revenue, Law's star rose. After the dismissal of Noailles, Law succeeded, over the opposition of the *Parlement* of Paris, in having his bank become the state bank with branches in Amiens, Orléans, Tours and La Rochelle. On behalf of the state, it issued 148.5 million *livres* in new notes, with the denominations in *livres tournois* or in *écus de banque* as the bearer preferred.³⁹

During this period the expenditures of the Marine Department were about 5 to 6 million *livres* a year.⁴⁰ Sixty thousand, or about 1%, was assigned to construction on Ile Royale in 1716;⁴¹ 80,000, or 1.4% in 1717;⁴² and 80,000, or 1.5% in 1718.⁴³ Intended for work at four locations in a completely new colony, it ranged from three to four times the expenditure for Placentia between 1701 and 1710, which moreover had constituted only from .08 to .2% of the Marine Department total. Even allowing for inflation of the currency, we can conclude that construction on Ile Royale was already assuming much greater political importance than Placentia did in the period before 1713.

39. *Ibid.*, pp.90-96; Braudel and Labrousse, *op. cit.*, pp.281-286.

40. Legohérel, *op. cit.*, pp.177-178, and table facing p.180.

41. AN, Col., F^{1A}, 19, ff.18-21: *Etat du roi* for 1716, 8 June 1716.

42. *Ibid.*, ff.243-247v.: *Etat du roi* for 1717, 29 May 1717.

43. The *état du roi* for 1718, dated 28 June 1718, has not been found; it is mentioned in AN, Col., F^{1A}, 21, f.240 ("à compte des dépenses pour les fortifications de l'Ile Royale", 15 May 1720). I have assumed that 80,000 *livres* were *theoretically* authorized that year. Until a change in policy in 1723 raised the annual allocation to 130,000 *livres*, it was supposed to be 80,000 *livres*.

In fact, it was the most ambitious colonial construction project France had yet undertaken, one for which the Marine Council was administratively unprepared. Funds were provided for it in 1716 as part of colonial operations and maintenance, once Marine Department allocations had been set up. No provision, however, had been made for a separate account.⁴⁴ Some officials argued that it made more sense to charge capital construction in a new colony to a special account which would be closed when the work was complete; moreover, in France, fortification funds were normally separated from general military expenses.⁴⁵ After two years of indecision, the Marine Council decided in 1718 to separate the construction funds of Ile Royale from other colonial expenses.⁴⁶

The first sign of concern for construction accounting separate from general expenditures at Placentia had come only in 1710, when the minister supported in principle the engineer L'Hermitte. The latter had refused in 1708 to countersign an order to pay a non-fortification item out of fortification funds. An item of expenditure, the minister said, should be chargeable against a corresponding authorization in the *état du roi*. Otherwise, it should be submitted with a special explanation of

44. In 1716, the matter was left in abeyance. See AN, Marine, B¹, 8, f.211v.: meeting of Marine Council, n.d.

45. AN, Col., F³, 51, ff.189-191v.: "Régie des fonds de la fortification dans les places du royaume", n.a., n.d.

46. AN, Col., C^{11B}, 3, f.67: Order by the regent in the King's name, 26 June 1718.

why it was an unavoidable emergency.⁴⁷ Now, in 1718, the Marine Council established official procedures for administering and accounting for construction funds:⁴⁸ the magnitude of the project demanded it. It was difficult to maintain from faraway Versailles that centralized control of financial policy by which the French state was normally governed, while still permitting the flexibility necessary to avoid impeding good local management. As in France, control was to be achieved through a system of checks and balances, whereby no single official could authorize expenditures; yet vital work was not to come to a halt solely for the reason that some of the officers with the requisite authority to approve cash advances, were absent.

In France, where communication between administrative levels was year-round in spite of poor roads, this kind of control was possible though far from perfect. The director-general of fortifications approved or modified construction estimates submitted to him by regional directors, and (in the time of Vauban, at least) he held an annual meeting at Paris to review with his engineers from all regions the expenses of the current year and the estimates for the following year. Each regional director submitted detailed estimates and reviewed the accounts of work completed that had been prepared by subordinate engineers. The intendant of the *généralité* authorized the full settlement of these accounts, including the payment of all moneys owing to workers, contractors and suppliers.

47. AN, Col., B, 30, ff.326-327v.: to L'Hermitte, 10 August 1709; f.304: to Costebelle, 10 August 1709; 32, ff.432-434v.: to L'Hermitte, 10 August 1710.

48. *Ibid.*

At the same time, the vouchers of the engineers who dealt directly with those creditors constituted adequate authority to treasurers to make the interim payments or advances that assured the continuance of work. These advances invariably fell quite short of the monetary value of the work to be done, so that the state was always in debt until the final settlement. This was a form of control. Another was the careful book-keeping of all such accounts, and the daily ledger of materials used.⁴⁹

In Ile Royale, both the engineers' vouchers and the financial commissary's authorization were necessary for advances or for the issuance of stores. The engineers' vouchers sufficed in emergencies, but only if the senior engineer informed the financial commissary every four days of such transactions and if the treasurer or storeman kept detailed accounts of his disbursements or issuances. The short construction season, which might lengthen the duration of a project, resulted in another modification of metropolitan practice. The basis for eventual settlements was to be an annual account, checked by both the governor and the financial commissary, rather than a definitive account prepared after construction was finished, checked at various administrative levels by engineers alone.⁵⁰ While the order to pay in

49. J. Guttin, *Vauban et le corps des ingénieurs militaires* (Paris, 1957), pp.42-44; AN, Col., F³, 51, ff.189-191v., *loc. cit.*; C.T.G., Archives, art. 3, sec. 9, ctn. 1, pièce 7a: "Mémoire des fonctions d'un ingénieur en chef du projet", 1709, and pièce 8: "Fonctions de l'ingénieur en chef d'une place", 1720.

50. By 1720, there was supposed to be, in certain cases, an annual *toisé général* in France, too, according to one memorandum (C.T.G., Archives, art. 3, sec. 9, ctn. 1, pièce 8), but there was no royal ordinance governing accounting practices related to construction. It is evident that the Marine Council, in 1718, knew it was devising

both cases was to be issued by the intendant (in Ile Royale, by the financial commissary, the delegate of the Intendant of New France) to the treasurer (in France through the *chambre des comptes*, in the colony directly), theoretically there was a greater check in the colony on the authority of engineers. The annual account, received at Court in December or January, and reviewed before the first despatches were sent out in the spring, was intended to ensure that the metropolitan authorities controlled settlements with creditors in the remote colony as well as they could do in France by means of the definitive account.

These procedures had little importance until construction began in earnest. Of the 80,000 *livres* approved for 1717, only 40,000 were sent to the colony, and less than that was spent.⁵¹ The funds for 1718, too, were underspent, in fact were applied against 1719 and 1720 expenditures.⁵² This happened to coincide with the inception of John Law's "system": his royal bank and his *Compagnie des Indes* were assuming control of public finance and overseas trade. The paper currency the Bank issued on the government's behalf became the predominant legal tender. The Company, for its part, undertook to collect taxes and liquidate the national debt, paying all the while very attractive

special accounting rules for the works on Ile Royale, and yet that five years later, in effect, it modified them. AN, Col., C¹¹B, 3, f.67, *loc. cit.*; F^{1A}, 23, ff.54-55v.: minute, 2 April 1723, to Mouffle de Champigny's memorandum of 19 February 1723, enclosing Mésy to Champigny, 6 December 1722; F³, 51, ff.189-191v., *loc. cit.*

51. AN, Col., F^{1A}, 19, ff.176-177v.: "Fonds ordonnés...", 29-31 May 1717.

52. *Ibid.*, 21, f.240: "A compte des dépenses pour les fortifications..." 15 June 1722.

dividends---in paper---to its shareholders.⁵³ Until late December, 1719 was a year of rosy optimism in France. Indirectly, this may have been reflected in Ile Royale by the Marine Council's determination to make Louisbourg a substantial fortress, thereby implying large future expenditures. It had little direct effect; there was hardly time for the short-lived "boom" in France to be felt in the new colony.

The new administrative regulations were applied first in 1719. The colonial government was reprimanded for improperly charging to the fortification account the 6,500 *livres* spent on transporting troops from Canada to Ile Royale.⁵⁴ Though the men had been sent to the new colony largely to work on the fortifications, their transportation costs should have been a charge against the general colonial account. Thereafter, only construction expenses were to be paid out of the fortification account; the Court insisted repeatedly on strict conformity to this rule.⁵⁵ It reinforced its admonitions to the colony by warning the treasurers-general of marine that their agent at Louisbourg would henceforth have to make good any payments out of the construction account not authorized by an engineer's voucher.⁵⁶

53. Marion, *Histoire financière...*, I, pp.90-96; Braudel and Labrousse, *op. cit.*, pp.280-287.

54. AN, Col., C^{11B}, 5, ff.35-40: Saint-Ovide and Mézy, 27 November 1719.

55. E.g. AN, Col., B, 44, f.560: to Saint-Ovide and Mézy, 24 June 1721; C^{11B}, 6, ff.30-51: to Saint-Ovide and Mézy, 12 May 1722.

56. AN, Col., B, 44, f.60v.: to Gaudion, 1 July 1721. The treasurer was "avenged" late in 1722 when, lacking funds, he made no payment when presented with an engineer's voucher: AN, Section Outremer, G³, 2057, Greffe de Lambert Micoïn, no.8: statement by Isabeau, 6 December 1722.

Paradoxically, the Marine Council allowed the director of fortifications to flout the financial-control procedures without, however, adopting his alternative. Verville, disregarding the clause of the royal order of 26 June 1718 pertaining to annual accounts, neglected to furnish those for 1718, 1719 and 1720. This provided the financial commissary, Mésy, and the treasurer, Goutin, with an excuse for not submitting construction-expenditure statements for those years, and embarrassed the treasurers-general of marine because their accounts could not be settled. Though the 1718 rule was not rescinded, neither was it enforced.⁵⁷ Aside from the government's general lack of decisiveness and the incompetence of Mésy, the main reason for these contradictory policies was an almost blind faith in the engineer corps and in Verville, its representative. Except in one particular, Verville was given virtually a free hand in following the procedures he considered best, whether or not they were suited to colonial circumstances. The important exception was the authority of the colonial treasurer (i.e., the agent in Ile Royale of the treasurers-general of marine) for making payments out of the fortification account. Verville strongly recommended the appointment of an agent of the treasurer-general of fortifications as a method of maintaining separate control over construction expenditures. The proposal was not approved.⁵⁸ Perhaps it appeared to diminish the Marine Council's authority over the program; it might have occasioned a duplication of posts in a colony where the volume of work justified one

57. AN, Col., F^{1A}, 23, ff.54-55v., *loc. cit.*

58. *Ibid.*, F³, 51, ff.189-191v.: "Régie des fonds...", n.d.; C^{11B}, 4, f.224: Verville, 29 November 1719.

treasurer; but it would have been a surer way than the existing one, of preventing the mingling of the general and fortification accounts.

In 1723, the Marine Council ceased to function, and some months later the Comte de Maurepas began his long ministry at the Marine Department. The government resolved to provide more funds to Ile Royale for construction, for at least two reasons. During 1722, the contractor had overspent the allotment because of unusually good building weather;⁵⁹ the government wished to avoid a recurrence of this. There was to be a general increase in construction at Louisbourg in any case: the Royal and Island Batteries were to be built without interrupting work on the citadel; later, other structures would be added; and more than one building contractor might be engaged at the same time. Accordingly, the allotment was raised in 1723 from 80,000 to 130,000 *livres*.⁶⁰ Despite procedural arguments at Louisbourg, construction was not to be delayed by the treasurer's withholding payments.⁶¹

In 1724, the annual allocation was increased further to 150,000 *livres*,⁶² there to remain until 1730. The Ministry controlled priorities by assigning amounts each year to particular items of expenditures, varying these according to the dictates of policy and local feasibility.

59. *Ibid.*, C^{11B}, 6, ff.116-117v.: Verville, 20 September 1722; ff.127-130: Isabeau, 30 November 1722.

60. AN, Col., C^{11B}, 6, ff.170-173: to Saint-Ovide and Mésy, 27 May 1723.

61. AN, Col., C^{11B}, 6, ff.235-242: Mésy, 24 November 1723.

62. AN, Col., F^{1A}, 23, ff.204-205: *état du roi*, 8 May 1724.

It forbade the transfer of funds from one item to another. The following table illustrates this for the years 1724 to 1729 inclusive.⁶³

TABLE II

SUMS ALLOCATED TO CONSTRUCTION AT ILE ROYALE, BY ITEMS, 1724-1729

	1724	1725	1726	1727	1728	1729
Royal Battery	25000	30000	80000	70000	50000	30000
Island Battery	25000	15000	10000	40000	30000	25000
Citadel Barracks	50000	30000	12000			3000
clock tower						5000
Stores Building	10000	15000	20000	3000		
Hospital	10000	15000	12000	26000	28000	20000
King's Bastion	12200					
interior		20000				
exterior		15000				
Unforeseen contingencies	3000	1900	2600	3600	3000	3000
Dauphin Battery					20000	
Dauphin Bastion						56600
Careening Wharf					11600	
Salaries and gratuities	14800	8100	7400	7400	7400	7400

Source: AN, Col., F^{1A}, 23-28.

63. From the *états du roi* for 1724 to 1729 inclusive: AN, Col., F^{1A}, 23, ff.204-205; 24, ff.42-43; 25, ff.34-35; 26, ff.61-62; 27, ff.5-6; 28, ff.24-25. Amounts are in *livres*.

The amounts assigned to individual items, though based on the engineer's proposals, were modified not only to conform to policy and priorities, but also to accommodate certain fixed charges. Thus, the salaries and gratuities for 1724 and 1725 still included payments to Verville and his son (for 1725, a residue), whereas those for successive years were free of that charge. Having decided on a total allocation of 150,000 *livres*, against which 14,800 in 1724 represented a fixed charge, the Ministry directed most of the remaining 135,200 toward a good start on the Royal and Island Batteries, stores building and hospital, and toward accelerated work on the citadel barracks and King's Bastion. In 1725, when the fixed charge had decreased to 8,100 *livres* and work on the barracks had advanced (in quantity, if not in quality), the amounts for the Royal Battery, stores and hospital could be increased by 5,000 *livres* each, while the barracks required 20,000 less. To finish the King's Bastion, there were 35,000 *livres*: 22,800 more than the previous year. The Ministry made it clear that no funds would be provided for other structures of the west front until work had been finished---or substantially finished---on the priority items.⁶⁴

In succeeding years, Verrier's annual estimates reflected a vain hope for an allocation of 150,000 *livres* in addition to salaries and gratuities. His proposals for certain items were pared down to provide for the 7,400-*livre* fixed charge. For 1726, for example, the figures

64. AN, Col., B, 48, ff.929-931: to Verrier, 1 May 1725.

read as follows⁶⁵ (amounts in *livres*):

TABLE III

ENGINEER'S PROPOSALS AND MINISTRY'S ALLOCATIONS, BY ITEMS, 1726

<i>Item</i>	<i>Verrier</i>	<i>Ministry</i>	<i>Difference</i>
Royal Battery	85,000	80,000	5,000
Island Battery	10,000	10,000	
Stores Building	20,000	20,000	
Citadel Barracks	12,000	12,000	
Hospital	20,000	18,000	2,000
Unforeseen contingencies	3,000	2,600	<u>400</u>
Salaries and gratuities		7,400	7,400

Sources: AN, Col., C^{11B}, 7; F^{1A}, 25.

The engineer's estimates could thus be reduced by about 6% on the Royal Battery and 10% on the hospital, without seriously disturbing the order of priorities.

65. For Verrier's figures, see AN, Col., C^{11B}, 7, f.334: Verrier, 16 December 1725. For the Ministry's, see the *état du roi*, F^{1A}, 25, ff.34-35: 27 May 1726.

The *états du roi* are extant for the period 1721-1738, and the years 1744 and 1745.⁶⁶ A survey of the funds authorized for the various programs of those years provides a quick view of the chronology of

66. *Etats du roi* for the years 1716 and 1717 are also extant, but fortifications are shown there as a single item of general expenditure. For the annual appropriations for construction (totals), see Table V; for the detail, 1721-1738 and 1744-1745, see Table VI. The references for 1724-1729 are given in note 63, above. The *états du roi* for other years are found in AN, Col., F¹A, 19, ff.18-21: 8 June 1716; ff.243-247v.: 29 May 1717; 22, ff.84-85: 21 May 1721; ff.242-243: 20 May 1722; 23, ff.59-60: 21 May 1723; 29, ff.58-59: 8 May 1730; 30, ff.28-29v.: 5 February 1731; ff.231-232: 16 April 1732; 31, ff.35-36: 25 May 1733; ff.212-213: 10 May 1734; 32, ff.47-48: 2 May 1735; 33, ff.33-34: 14 May 1736; ff.277-278: 5 May 1737; 34, ff.75-76: 12 May 1738; 34, f.223 (n.d., re 1744). For 1745, a draft *état* is found in AN, Col., C¹1B, 27, f.64 (n.a., n.d.), but the definitive one was prepared in 1748: see C¹1C, 12, ff.193-195: 25 February 1748. Other sources for figures on Ile Royale appearing in Table V are: AN, Col., F¹A, 19, ff.176-177v.: 29-31 May 1719; 21, f.58: 5 June 1719; Archives du Port de Rochefort, 1E93, f.119: to Beauharnois, 19 July 1719; AN, Col., B, 68, ff.377-378v.: to Forant and Bigot, 28 June 1739; 70, f.407: to Forant and Bigot, 15 May 1740; ff.408-409: to Verrier, 13 May 1740; 72, ff.432-433v.: to Duquesnel and Bigot, 17 May 1741; 74, f.589: to Duquesnel and Bigot, 15 June 1742; C¹1C, 13, ff.68-88: Laborde, 13 November 1751; C¹1B, 30, f.331: Prévost, 10 October 1751; C¹1C, 13, ff.107-127v.: Laborde, 13 September 1751; ff.128-159: Laborde, 15 November 1753; ff.170-199v.: Laborde, 15 July 1754; 14, ff.12-41: Laborde, 20 October 1755; ff.43-65v.: Laborde, 15 October 1757; Bibliothèque de l'Arsenal, archives de la Bastille, 12200, ff.425-426: "Etat sommaire des ouvrages faits....avant le siège....1758", and f.421: "Etat sommaire des ouvrages....faits pendant le siège....1758". C¹1C, 11, ff.41 and 43; ff.28, 39-40; Mézy, 2 March 1730; also, the following statements signed by Rondeau: C¹1C, 11, ff.49-53v.: 1 October 1732; ff.67-72: 14 October 1733; ff.77-83: 28 October 1734; ff.84-90: 20 September 1736; ff.100-107v.: 3 October 1736; ff.124-125v.: 31 October 1737; ff.132-135: 1 October 1738; ff.181v.-184v.: 12 November 1739; 12, ff.14-15v.: 17 August 1740; ff.56v.-59v.: 20 October 1741; ff.82-85: 30 October 1743; ff.100v.-104: 25 October 1743; ff.113v.-117: 25 August 1744; ff.167-172v.: 2 April 1746. For sources in Table V on Canada (appropriations), see F¹A, 19, ff.36-38v.: 18 May 1716; ff.204-209: 12 May 1717; 20, ff.37v.-41: 25 June 1718; 21, ff.114-116v.: 27 May 1719; ff.263-264v.: 8 May 1720; 22, ff.25v.-28: 24 May 1721; ff.197-201: 20 May 1722; 23, f.227: 22 May 1724; 24, f.57: 30 April 1725;

construction. More significantly, when taken in conjunction with the Court's scrutiny of accounts, it will show the extent to which the Ministry of Marine sought, from the mother country, to control the programs in detail.

Anyone wishing to prove that the construction of Louisbourg was all "extravagance" and "waste" should not base his findings on the minister's annual catechism. If he does, he will be misled. Based on reports from the colony, the reprimands meted out each spring to engineers and administrators for poor estimates, bad arithmetic, failure to submit accounts on time or at all, negligence in the planning of work, and technical ignorance, were an administrative-control device. Centralized control was difficult from such a distance and with such a short navigation season. The Ministry could usually review progress only once a year, during the winter and early spring. Though insisting on a form of command

25, f.49v.: 15 May 1726; 26, ff.38-39v.: 16 May 1727; 27, ff.85v.-90: 15 April 1728; 28, ff.43-47v. (1729); 29, 37v.-43v.: 24 April 1730; 30, ff.84-87: 7 May 1731; ff.255-259: 14 April 1732; 31, ff.53v.-56v.: 4 May 1733; ff.232v.-233v.: 26 April 1734; 32, ff.73v.-75v.: 2 May 1735; ff.295v.-299: 6 May 1737; 34, ff.89v.-92v.: 5 May 1738; C¹¹A, 114, f.311: 17 May 1740; 115, f.5: 14 May 1741; ff.21-26: 2 April 1742; ff.49v.-54: 9 June 1743; ff.139-144: 26 April 1744; ff.230-234: 17 June 1745; ff.331v.-336: 20 March 1746; ff.369-376: 19 March 1747; 116, f.57v.: 25 February 1748; ff.191-198v.: 10 May 1749; 119, ff.434-441v. (1751). For Canada (expenditures), see C¹¹A, 113, f.286v.: 15 October 1716; f.305v.: 9 October 1717; f.327 (1723); f.336 (1724); f.394: 8 November 1728; ff.427-443: 19 October 1730; 114, ff.66-73: 28 August 1739; ff.98, 129: 20 October 1741; ff.261, 300: 20 October 1742; f.393v.: 28 August 1742; 115, ff.45v.-47: 25 October 1750; ff.65, 105, 110: 25 September 1746; ff.150, 220: 18 September 1747; f.278; f.314v.: 15 August 1752; f.358; 116, f.31 (1747); f.79: 2 November 1748; f.91: 1 September 1748; f.102: 12 August 1752; ff.272, 321: 24 August 1750; 117, f.90: 2 August 1746; f.15; 119, ff.332, 356v.: 12 August 1752; f.388v.: 26 October 1751; ff.405-429: 2 September 1752.

pyramid of which the colony's governor or commandant was the apex, the French system of administration required that the activities and reports of the various officers should serve as a check on the efficiency of the others, hence of the colonial government as a whole. This was true of all French colonial administration; it was no less true of the large building program of Ile Royale and Ile Saint-Jean.

Thus, the financial commissary's authorization was necessary for release of funds such as advances to contractors, but could be given only on the recommendation of the engineer-in-charge. Though the commissary was the senior financial officer, the engineer-in-charge was encouraged to inform the minister of any abuses or negligence in the financial management of construction. Though the engineer was responsible for technical quality, the governor, commissary and others were also permitted to comment on it, and did. Every officer was a potential source of information about every other. The Ministry differentiated between informing and special pleading (which were addressed directly to it), and reports, that were intended to pass through "proper channels".

Major administrative surgery was necessary only in the case of the senior Mésy, who was recalled because he had allowed the accounts of the 1720s to deteriorate, even several years after Verville's transfer had removed an important source of the confusion. The detailed inquisition of Mésy,⁶⁷ typical of the scrutiny to which the accounts

67. See, for example, AN, Col., B, 52, ff.566-568: to Mésy, 24 February 1728; ff.597v.-598v.: to Mésy, 23 June 1728; ff.568-569v.: to Verrier, 23 June 1728; 53, ff.602v.-606: to Verrier, 22 May 1729; C¹¹C, 11, f.28: Mésy, 2 March 1730.

were subjected during the Maurepas era, makes unconvincing any contention that neglect was tolerated by the Court. While no project of comparable size and type was undertaken in North America at that time, neither has anyone demonstrated that Louisbourg and its dependencies were built less economically than other public construction of any kind on the continent. There is much to criticize respecting local project management on Ile Royale, within the confines of established policy, though conditions were far from suitable for the work prescribed; but metropolitan financial control, especially from 1725 to 1745, was firm.

The official correspondence is replete with instances of this ministerial vigilance. To catalogue them all would be tedious: a few examples should suffice to illustrate the reasoning that underlay them. In 1731, the annual allotment was lowered from 150,000 *livres*, including salaries and gratuities, to 120,000 *livres*, plus 8,900 for salaries and gratuities. The net reduction was therefore 21,100 *livres*. The Ministry now considered the lower amount adequate; it wished to encourage economies; and the separation of salaries and gratuities from other costs would obviate the annual ritual of reducing the latter in order to provide for the former. In spite of these precautions, Verrier had to be admonished in 1732 for still basing his estimates on an allocation of 150,000 *livres*! He was also admonished for having underestimated the cost of the lighthouse by 86%, and for requesting, a second time, funds provided in previous years for certain structures.⁶⁸ As the governor was told the following year:

68. AN, Col., B, 57, ff.751-755: to Verrier, 19 June 1732.

Je sais qu'il est difficile de faire entendre raison aux ingénieurs sur l'économie de leurs projets; et c'est ce qui doit vous rendre pourtant plus attentif sur ceux qui sont proposés dans la colonie. Dans les grandes dépenses qu'on y a fait jusqu'à présent, il n'y en a eu que trop d'inutiles; et l'on ne saurait veiller avec trop de soin à ce qu'il n'en soit fait que de nécessaires.⁶⁹

Nevertheless, Verrier had already underestimated by 19,000 *livres* the cost of renovating his residence: in 1734, he, the governor and the financial commissary were all reprimanded for having allowed this to happen.⁷⁰

Only if every minute element of cost were carefully calculated in advance would engineers produce estimates within a reasonable margin of error. Accurate estimates were based on experience in the actual cost of such elements. Verrier's neglect of the engineer's annual accounts for a few years may well have contributed to his poor estimates; orders from the minister brought him back to his duty, and increased the frequency and improved the quality of his submissions.⁷¹

Though the Ministry's attempts to make Mésy more efficient were unsuccessful, the same scrutiny continued during the stewardships of Mésy's son and successor, Le Normant, and of Bigot; and through them, it achieved better results. On the other hand, under the various ministers between the fall of Maurepas (1749) and the end of French rule on Cape

69. *Ibid.*, 59, ff.558-560: to Saint-Ovide, 2 June 1733.

70. *Ibid.*, 61, ff.594-596: to Saint-Ovide and Le Normant, 4 May 1734; ff.596v.-600v.: to Verrier, 4 May 1734.

71. *Ibid.*, 59, ff.554-558: to Verrier, 2 June 1733.

Breton Island (1758), the Marine Department's concern with construction detail slackened off somewhat. The Ministry was concerned with economy, but expected Franquet and Prévost to exercise it.⁷² Both the appropriations and the annual expenditures (to the extent they are known) reflect the Court's indecision to 1754, and the more active period thereafter. Unlike the period 1718-1745, the amounts authorized varied widely from year to year.⁷³ During the first year (1749-1750), funds were more than adequate for emergency reconstruction and for the preparation of innumerable plans and reports. The expenditure of 108,000 *livres* in 1754 mirrored that year's international tension in North America; it included some unused funds authorized for the period 1750-1753. The figures for 1755 have not been found. Those for 1756 and 1757, running for the first time over 200,000 *livres*, represent accelerated preparations for the expected attack. The 121,500 *livres* spent during the siege year, 1758, comprised chiefly the cost of field works and the repairs of fortifications.

These expenditure levels near the end of the period are comparable to those for Canada after 1748. During the period 1716-1744, Ile Royale's construction program cost the French government more than double that of Canada. The policy was deliberate. The cod fishery was a natural resource more precious to metropolitan interests than anything Canada had to offer---even furs. Canada's small population was considered large enough, moreover, for it to share with the Crown (and, to some extent,

72. See, for example, the minister's disappointment over increased costs: AN, Col., B, 105, f.236: to Drucour and Prévost, 22 June 1757.

73. See Table V, pp.154-155; amounts are in *livres*.

with the *Domaine de l'Occident*) the cost of fortifications and public buildings being erected in peacetime. War brought increases after 1742, but the expenditure level in Canada after 1748 represented a renewed emphasis on the strategic role of New France from the Gulf of St. Lawrence to the Gulf of Mexico. Whatever the vagaries of the fur trade, Canada (with Louisiana) was to contain and to counter British continental imperialism. Accelerated construction of fortifications in the continental interior was an essential part of that policy. In no respect, however, did it diminish the importance of the cod fishery; and that remained the original purpose of the French government's investment in the fortifications of Ile Royale.

Sparse and conflicting evidence makes it difficult to discuss that investment in the larger context of French financial policy from the fall of John Law to the end of French rule in North America. Figures cited must all be considered approximate. From 1720 to 1740, the annual appropriation for the Marine Department ranged from 6 to 14 million *livres*; for sixteen out of those twenty-one years, it ranged from 7 to 10 million.⁷⁴ The share of those funds that was authorized for the fortifications and public buildings of Ile Royale and Ile Saint-Jean ranged from 0.9% to 2.2% throughout the period. From 1740 to 1745, the corresponding ranges were: 12 to 31 million *livres* and 0.4% to 1.0%; from 1749 to 1754: 15 to 27 million *livres* and 0.1% to 0.8%; and from

74. Legoh  rel, *op. cit.*, table facing p.180. Note the variations in his figures, depending on the primary source used. In Tables VII, VIII and IX, I have placed these three versions next to the appropriations for Ile Royale to obtain the percentages mentioned. See *infra*, pp.158-161.

1756 to 1758 (since the Ile Royale figure for 1755 has not been found): 42 to 60 million *livres* and 0.2% to 0.8%. In sum, the share of the Marine Department's annual budget assigned to the construction of Ile Royale appears not to have fallen below 0.1%, nor to have exceeded 2.2%, during the period 1720-1758 (except, of course, during three of the years of the British occupation: 1746, 1747 and 1748). Data for the Marine Department's share of total government expenditures in that period are extremely rare, but in 1725 it was about 4%; in 1739, about 5%.⁷⁵ The substantially increased appropriations between 1740 and 1758 mainly represented assistance to privateers and to naval rearmament, but the department's share of the total budget has not been determined.⁷⁶

After the collapse of John Law's "system", there was a return to fiscal and monetary orthodoxy. Traditional tax-collecting methods were re-introduced, for the use of financiers who had been forced out of office by Law's organization. In 1726, the value of coinage was stabilized. Overseas trade flourished---notably with the Levant, the Spanish-American colonies, and the Antilles. The prosperity of the merchants who benefited from this commerce went hand in hand with that of the merchant-bankers who traded in the credit instruments---particularly bills of exchange---that facilitated it. Steadily, they increased their ability to raise large amounts for the state, too, if the need arose; and here, their associations

75. Legoh  rel, p.180.

76. For the colonies' share of the Marine budget for certain years, see A. Duch  ne, *Histoires des finances coloniales de la France* (Paris, 1938), p.44. According to the figures Duch  ne cites, the colonies steadily improved their position from about 25% in 1737, to some 58.5% in 1755.

with the state's financiers (tax-farmers, treasurers, etc.) were useful to both sides. A few of them even entered state enterprises, such as the *Compagnie des Indes* and the *Manufacture royale des Glaces*. Interested in colonial, as well as in other branches of trade, and in fitting out merchant ships, these bankers also invested extensively in private industry, such as mining, textiles and glass.⁷⁷ A link, direct or indirect, between the merchants who fitted out the North Atlantic fishing fleets, and some of the suppliers of the Marine Departments, is far from inconceivable, especially if one thinks of the private bankers as intermediaries.

The role of private enterprise in French public finance that Dr. Boshier has emphasized⁷⁸ may provide a clue to the Crown's reason for sustaining perennially unfinished structures. The state both influenced the private sector of the economy and was influenced by it. Part of the four to five million *livres*⁷⁹ spent on construction, less costly than a

77. Braudel and Labrousse, *op. cit.*, pp.301-321; Marion, *Histoire financière*, I, pp.113-185.

78. J.F. Boshier, "Government and private interests in New France" in *Canadian Public Administration*, Vol. 10 (1967), pp.244-257, and *French Finances* (*op. cit.*), pp.92-110.

79. The total for the period 1713-1758 exceeded 4 million: for 1695-1713, it exceeded 200,000. Guy Frégault, in his *François Bigot, administrateur français* (2 vol., Montréal, 1948) was quite right that earlier claims of 20 or 30 million *livres* for Ile Royale were very inaccurate. His understanding of the period, even at an early stage in his career, puts him closer than his predecessors to the truth about construction costs. He would, however, have had a better idea of the total cost had he realized that allocations varied from 80,000 to 150,000 *livres* before the first siege of Louisbourg. Having restricted himself mainly to the period 1739-1745, and to correspondence rather than accounts, he was under the impression that the annual allocation throughout the colony's history was 128,900 *livres*.

strong naval force in the region, was returned to France in the form of patronage to metropolitan contractors and suppliers. To the extent that this stimulated investment in the cod fisheries, the government's financial policy on construction furthered one of its most important economic objectives.⁸⁰

At first, during the period 1695-1713, the government tried, with little success, to have private interests assume much of the cost of building the fortifications. When it re-established the French fishery on Ile Royale after 1713, it resolved to depend no longer on the *armateurs*: the fortifications and harbour facilities of the new colony would be constructed at government expense. By 1720, the annual allocation by the Crown had reached 80,000 *livres*, or four times that of Placentia each year after 1702. It was comparable in scope to the funds provided for several of the fortresses of France.⁸¹ Between 1720 and 1745, it went as high as 150,000 *livres* and never fell below sixty-two thousand. The average was about one hundred and thirty thousand. For about ten years, the government had difficulty in controlling the

80. See Chapters V and VII.

81. In 1717, 1,029,400 *livres* were allocated to the fortifications of France's land frontiers, 897,900 to the ports. In 1720, when 80,000 *livres* were provided for Louisbourg, 158,450 were allocated to Strasbourg; 148,500 to Douai; 136,700 to Bergues; 132,000 to Gravelines; 102,900 to Briançon; 96,250 to Calais, and 68,725 to Le Havre. Admittedly, these were well-established European towns, instead of a new colonial capital being constructed in a wilderness 3500 miles from France; also payment for the work was delayed; but the order of magnitude was comparable: the allocation for Ile Royale rose to 130,000 *livres* in 1723, to 150,000 in 1724. See A.M. Augoyat, *Aperçu historique sur les fortifications, les ingénieurs et sur le corps du génie en France* (3 vol., Paris, 1860-1864), II, pp.14, 48-50.

use of these funds in detail and from afar. By dint of administrative persistence, however, the Ministry of Marine achieved after 1730 a considerable measure of detailed control, which it maintained until 1745. After the reoccupation of the colony in 1749, financial control was less specific than before. Not until 1754, when another British attack on Louisbourg became likely, did the Court again show evidence of a coherent policy.

In a general sense, nevertheless, French financial policy was consistent. Its purpose was to support the fishery, and then the entrepôt trade that developed at Louisbourg. Though he had lost an empire on continental North America, Choiseul bargained hard and successfully in 1762-1763 for a continued French presence near the Grand Banks. Had the state not supported the French cod fishery in one form or another during the previous one hundred years, its position on the question would have been virtually untenable in 1763. Moreover, the interminable construction programs were themselves a significant form of economic activity, not only for their stimulus to metropolitan interests, but also for their benefit to the trade of Ile Royale.

It was a long step from a consistent financial policy to its successful implementation. The latter depended on capable administrators, not only at Court but also in the colony where construction was taking place. Technically competent engineers were expected to translate detailed plans into accurate cost estimates; competent financial administrators were to fit the estimates into the framework of

established policy. In this chapter, we have examined among other things the nature and extent of financial control by the metropolitan authorities. In the next, we must consider how this depended upon co-operation among the various officials within the colony.

APPENDIX TO CHAPTER III

TABLE IV

FUNDS AUTHORIZED, 1695-1713

	<i>Placentia</i>	<i>Canada</i>	<i>Acadia</i>
1695	2500	6000	
1696	4080	6000	(10321)
1697	2184	3000	
1698	2080		(3000)
1699	5080		
1700	10000		(3000)
1701	10000	20000	20000
1702	10000	24000	20000
1703	20000	22555	20000
1704	20000	22555	20000
1705	20000	22555	20000
1706	20000	20000	20000
1707	20000	21000	19000
1708	20000	38300	15008
1709	20000	25000	14500
1710	20000	25000	15000
1711	20000	25000	
1712	20000	25000	
1713	20000		

Sources: AN, Co1., F^{1A}, 9-15; C^{11A}, 113.

TABLE V

FUNDS AUTHORIZED AND SPENT, 1716-1758

	ILE ROYALE		CANADA	
	<i>Authorized</i>	<i>Spent</i>	<i>Authorized</i>	<i>Spent</i>
1716	61700	41451	40000	4450
1717	81700		52200	12000
1718	80000		3400	6650
1719	80000	33288	3500	6650
1720	80000	80000	30000	56500
1721	80000	80000	8000	24200
1722	80000	62693	20000	24300
1723	130000	118082		34900
1724	150000	131746	2400	25150
1725	150000	150000	2400	19800
1726	150000	150000	2400	
1727	150000	150000	6650	
1728	150000	140400	10400	38416
1729	150000	140529	7450	
1730	152700		44060	11000
1731	128900	128900	33400	51300
1732	128900	128856	58450	49300
1733	130336	125536	109704	68400
1734	128900	128900	30100	30100
1735	128900	128900	31300	32200
1736	128900	128900	31000	32600

(continued next page)

TABLE V (concluded)

	ILE ROYALE		CANADA	
	<i>Authorized</i>	<i>Spent</i>	<i>Authorized</i>	<i>Spent</i>
1737	128900	128900	27450	34450
1738	128900	128900	32550	52450
1739	128900	128004		33791
1740	128900	128900	41400	42700
1741	128100	128100	22000	29400
1742	128100	128100	73600	
1743		130560	57950	82457
1744	128100	138206	56700	92100
1745	190798	390223	110100	82100
1746			122900	129100
1747			132650	128650
1748			206600	282050
1749	48420	57417	260500	307500
1750	143200	77358		240150
1751	28400	34270	143000	178550
1752	80000	76989		
1753	57120	37585		
1754	82000	108472		
1755				
1756		266958		
1757		206896		
1758		121504		

Sources: AN, Col., F^{1A}, 19-34; C^{11A}, 113-119; C^{11C}, 11-14; Bibliothèque de l'Arsenal, archives de la Bastille, 12200.

TABLE VI

"ETATS DU ROI": FUNDS AUTHORIZED FOR CONSTRUCTION, 1721-1738 AND 1744-45

	1721	1722	1723	1724	1725	1726	1727	1728	1729	1730
Royal Battery	4000	3000	30000	25000	30000	80000	70000	50000	30000	12000
Island Battery	3000	3000		25000	15000	10000	40000	30000	25000	10000
Barracks			80200	50000	30000	12000			8000	
Stores	6000	4000		10000	15000	20000	3000			
Hospital	6000	6000	5000	10000	15000	18000	26000	28000	20000	12000
King's Bastion	39800	44460		12200	35000					23000
Ovens										
Powder Magazine										
Artillery Shed										
Dauphin Bastion	4000	3000						20000	56600	50000
Careening Wharf								11600		
Lighthouse										14000
Enceinte incl. Crenellated Wall										20000
Engineer's House										
Port La Joie										
Isabeau Estate										
Roads										
Port Toulouse										
Mésy House										
Upkeep of buildings										
Ganet										
Muiron										
Contingencies	8000	6000	900	3000	1900	2600	3600	3000	3000	3000
Salaries & Gratuities	8200	10540	12900	13600	6900	7400	7400	7400	7400	8700

(continued next page)

TABLE VI (concluded)

	1731	1732	1733	1734	1735	1736	1737	1738	1744	1745
Royal Battery	6600				2035			325	20000	62166
Island Battery	9400			6194		600				1200
Barracks	20000	20000	4000		2516			600		4577
Stores										
Hospital	9909							5731		
King's Bastion	30000	30000	1500							
Ovens			15000							
Powder Magazine									11000	
Artillery Shed						15171				
Dauphin Bastion	15000	10000			16256					
Careening Wharf				8334	6000					
Lighthouse							6000	6000		
Enceinte incl.										
Crenellated Wall	20083	32800	51873	83886	76011	92625	72824	100964	62620	56777
Engineer's House	3000	3000		8087						
Port La Joie	3008		5333			4104	2796			
Isabeau Estate		16700	16729							
Roads		4500	4500	4500	4500	4500	4500			
Port Toulouse			6000	6000	9682					
Mésy House			13500				2500			
Upkeep of buildings							3380	3000	3380	
Ganet							25000		10000	15000
Mulron									10000	36383
Contingencies	3000	3000	3000	3000	3000	3000	3000		3000	2326
Salaries & Gratuities	8900	8900	8900	8900	8900	8900	8900	8900	8900	13278

Sources: AN, Col., F^{1A}, 22-34; C^{11C}, 11-14.

TABLE VII

ILE ROYALE CONSTRUCTION AS A SHARE OF MARINE
DEPARTMENT BUDGET 1720-1758 (First Version)

	<i>Department of Marine (A)</i>	<i>Ile Royale Fortifications (B)</i>	<i>B as a Percentage of A</i>
	Thousands of <i>livres</i>	Thousands of <i>livres</i>	
1720	8,210	80	1.0
1721	7,087	80	1.1
1722	7,979	80	1.0
1723	9,870	130	1.3
1724	9,856	150	1.5
1725	8,458	150	1.8
1726	6,775	150	2.2
1727	8,809	150	1.7
1728	8,006	150	1.9
1729	7,760	150	1.9
1730	7,965	150	1.9
1731	8,309	129	1.6
1732	8,496	129	1.5
1733	10,340	129	1.3
1734	14,500	129	0.9
1735	12,027	129	1.0
1736	6,664	129	1.9
1737	8,543	129	1.5
1738	9,415	129	1.4

(continued next page)

TABLE VII (concluded)

	<i>Department of Marine (A)</i>	<i>Ile Royale Fortifications (B)</i>	<i>B as a Percentage of A</i>
	Thousands of <i>livres</i>	Thousands of <i>livres</i>	
1739	9,407	129	1.4
1740	15,440	129	0.8
1741	19,366	128	0.7
1742	12,490	128	1.0
1743	14,133	128	0.9
1744	27,487	128	0.5
1745	21,659	191	0.9
1749	15,562	48	0.3
1750	18,218	143	0.8
1751	16,511	28	0.2
1752	16,278	80	0.5
1753	14,604	57	0.4
1754	15,424	82	0.5
1756	42,960	267	0.6
1757	49,713	207	0.4
1758	40,949	122	0.3

Sources: Legoh  rel, *Les Tr  sori  rs g  n  raux de la marine* (Paris, 1965), table facing p.180; AN, Col., F^{1A}, 21-34; B, 68-74.

TABLE VIII

ILE ROYALE CONSTRUCTION AS A SHARE OF MARINE
DEPARTMENT BUDGET 1740-1758 (Second Version)

	<i>Department of Marine (C)</i>	<i>Ile Royale Fortifications (D)</i>	<i>D as a Percentage of C</i>
	Thousands of <i>livres</i>	Thousands of <i>livres</i>	
1740	19,974	129	0.7
1741	23,452	128	0.5
1742	19,842	128	0.6
1743	19,786	128	0.6
1744	31,507	128	0.4
1745	27,567	191	0.7
1749	25,696	48	0.2
1750	25,241	143	0.6
1751	24,672	28	0.1
1752	27,645	80	0.3
1753	23,528	57	0.2
1754	21,786	82	0.4
1756	49,294	267	0.5
1757	60,269	207	0.3
1758	55,306	122	0.2

Sources: Legoh  rel, *Les Tr  sori  rs g  n  raux de la marine* (Paris, 1965),
table facing p.180; AN, Col., B, 68-74; C^{11C}, 11-14; F^{1A}, 34.

TABLE IX

ILE ROYALE CONSTRUCTION AS A SHARE OF MARINE
DEPARTMENT BUDGET 1750-1758 (Third Version)

	<i>Department of Marine (E)</i>	<i>Ile Royale Fortifications (F)</i>	<i>F as a Percentage of E</i>
	Thousands of <i>livres</i>	Thousands of <i>livres</i>	
1750	17,650	143	0.8
1751	18,700	28	0.1
1752	22,256	80	0.4
1753	17,395	57	0.3
1754	17,746	82	0.5
1756	40,006	267	0.7
1757	39,006	207	0.5
1758	42,370	122	0.3

Sources: Legoh  rel, *Les Tr  soriers g  n  raux de la marine* (Paris, 1965), table facing p.180; AN, Col., C11C, 13-14; Biblioth  que de l'Arsenal, archives de la Bastille, 12200.

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THE POLITICS OF FRENCH PUBLIC CONSTRUCTION
IN THE ISLANDS OF THE GULF OF
ST. LAWRENCE, 1695-1758

by
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A thesis submitted in partial fulfilment
of the requirements for the degree of
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CHAPTER IV: MANAGEMENT

Geography, technical quality, and the planning and direction of policy, were significant factors determining the nature of the fortifications and other public facilities built in the Gulf region during the period under study. No less important a factor than the others was local management. Overlapping authority, the clash of strong personalities, and the tendency of officials to circumvent procedures in the pursuit of private interests, were all potential threats to the effective implementation of policy. Their presence or absence contributed to the nature of the end product.

At Placentia, the engineer was given too little authority; at Louisbourg, the first director of fortifications had too much. Strong-willed local governors, lacking technical competence, intervened nevertheless to take decisions in matters where such expertise was necessary.

Nevertheless the governors, as the local military commanders, had a duty to recommend defence priorities for their colonies, if not to determine them; senior engineers who usurped this role, exceeded their authority. Conflicts also arose over the relative priority of construction and military duties, for the main labour force was drawn from the ranks of the colonial regulars. Here, engineers were pitted against officers of the *compagnies franches*; and the governors, who should have been impartial, tended to support the company officers.¹ Financial commissaries, acting as delegates of the intendant of New France, were responsible for financial management; but the accuracy of the accounts kept for them depended to a great extent on the data furnished by the engineers, and this was sometimes incomplete or inaccurate. On the other hand, there were instances of incompetence and suspected dishonesty among the commissaries and their subordinates.

The present chapter traces the administrative history of construction throughout the period, emphasizing somewhat those years when projects were managed directly, instead of through a general contractor.² Also stressed are the kinds of administrative problems that, directly or indirectly, affected the quality of structures built at public expense.

Placentia, 1695-1713

Those charged with building the forts at Placentia were given no

1. See Chapter VI.

2. The problem of contracts and contractors is dealt with in Chapter V.

ordinance or other formal instruction governing procedures. They simply tried to adapt established European procedures to Newfoundland conditions. Placentia was too small and remote, however, and the funds assigned to its defences too sparse, to justify awarding the customary general contract to a private builder. Until L'Hermitte's appointment in 1695, there was not even an engineer: the governor³ alone organized construction and repair.⁴ As both engineer and town-major, L'Hermitte could not devote all of his time to fortifications. Furthermore, not until 1699 were there sufficient funds to do more than prepare detailed plans and reports on the works thought necessary. As a trained engineer, however, he brought technical competence to bear on the planning. Since he was the only officer in a position to estimate construction costs in detail, the importance of his role was appreciated at Versailles.⁵

It was less readily accepted in the colony. While Brouillan took leave in France (1697-1702), Joseph de Monic⁶ served as commandant, or acting governor. In utter disregard for L'Hermitte's responsibility, Monic used fortifications money (once it became available) for the construction and repair of his residence and of the stores buildings.

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3. See the biographical article on Jacques-François de Mombeton de Brouillan by René Baudry in *D.C.B.* II, pp.478-481.
 4. It was Brouillan who had urged the Court in 1694 to organize the supply of craftsmen and building materials for masonry works. AN, Col., C^{11C}, 2, ff.28-37: Brouillan, 25 October 1694.
 5. See for example, his cost estimate prepared about 25 August 1697: AN, Col., C^{11C}, 2, ff.150-151v., or AN, Section Outremer, D.F.C., ctn. 2, no.107.
 6. My article in *D.C.B.* II, p.482, outlines Monic's career.

Since these had not been included in the *état du roi*,⁷ the act was illegal. Though enough unskilled workers were detached from other military duties during the 1700 building season to work on the construction of fortifications, five carpenters were kept busy working for Monic.⁸ L'Hermitte incurred the commandant's wrath by trying to "borrow" two of the carpenters for urgent work on the forts and by opposing Monic's wish to sell surplus military clothing on the open market instead of giving soldiers working on the fortifications the first opportunity to purchase it.⁹ The replacement of Monic in 1702 by Auger de Subercase¹⁰ somewhat improved the position of the engineer. Subercase, anxious to permit L'Hermitte to concentrate on his job as engineer, obtained approval for the appointment of an *aide-major* to relieve him of many of his major's duties.¹¹ This did not deter the governor from making almost exclusive use of the few masons and carpenters in the colony¹² to build and repair houses and stores buildings with His Majesty's lumber, masonry and mortar.¹³ In 1706, moreover, Subercase rejected L'Hermitte's

7. Funds authorized. See Chapter III.

8. AN, Col., C¹¹C, 3, ff.43-52v.: L'Hermitte, 1 October 1700; ff.54-57: Durand, 18 October 1700; ff.58-60: L'Hermitte, 20 October 1700.

9. *Ibid.*, 3, ff.79-85: L'Hermitte, 7 December 1700. The minister reprimanded Monic: AN, Col., B, 22, f.220: to Monic, 25 May 1701.

10. René Baudry, "Auger de Subercase", *D.C.B.* II, pp.35-39.

11. AN, Col., C¹¹C, 4, ff.26-51: Subercase, 21 October 1703; ff.62-65: Costebelle, 22 October 1703; B, 25, ff.43v.-44: to L'Hermitte, 2 April 1704. L'Hermitte found Dupin, the officer appointed, to be of little use. C¹¹C, 4, ff.256-258v.: L'Hermitte, 30 October 1704.

12. Chapter VI.

13. AN, Col., C¹¹C, 5, ff.26-28v.: Forest, 14 November 1706.

plans for a new barrack building.¹⁴

The appointment that year of the successor to Subercase, Pastour de Costebelle, further undermined the engineer's position until ministerial intervention restored a form of equilibrium. Costebelle was confident of his own knowledge of fortifications and held a correspondingly low opinion of L'Hermitte's whom he wished to replace.¹⁵ Costebelle was reminded that he had insufficient knowledge of L'Hermitte's abilities, and indeed of the subject, to judge the engineer professionally. Since L'Hermitte could not be permitted home leave in wartime, and since he had been promised advancement as soon as a suitable opportunity arose, the governor was instructed instead to make the atmosphere at Placentia as agreeable as possible for the engineer.¹⁶ Costebelle suggested that it was perseverance, not technical knowledge, that L'Hermitte lacked. The indifference of previous governors to L'Hermitte's talents had demoralized the engineer.¹⁷

Both he and the financial commissary (*commissaire-ordonnateur*) had responsibilities for the fortifications of Placentia comparable to those of engineers and intendants in France, without the commensurate

14. *Ibid.*, ff.71-74v.: L'Hermitte, 5 November 1706.

15. *Ibid.*, ff.82-88v.: "Mémoire sur les ordres à donner d'avance sur la colonie de Plaisance." Costebelle proposed Dubois Berthelot de Beaucours as the substitute. Beaucours proved to be a favourite engineer among various colonial administrators, but not at Court. He advanced in the service, though very little in the field of military engineering.

16. AN, Col., B, 29, f.147v.: to Costebelle, 30 June 1707.

17. C^{11C}, 5, ff.118-155: Costebelle, 10 November 1707.

authority and prestige to challenge the governor on matters within their own specialties. "Si en France les ingénieurs étaient sujets aux critiques et sentiments de tout le monde," wrote L'Hermitte in 1707, "ils ne se feraient guère de travaux." Since 1703, no one had told him the amounts available for fortifications. In France, not only would he have been told, but it would have been illegal to use funds for matters other than construction, or even for structures other than the one to which the amount in question had been assigned. No contract or salary agreement would have been concluded, other than in the engineer's presence and on the basis of his *devis*; nor would wages have been paid to workers, other than on his signature. L'Hermitte, possessing none of the necessary figures, was in no position to report his expenditures to the minister of marine, in the way that engineers in France had to report to the superintendent of fortifications.¹⁸ The Ministry decreed that the financial commissary was to keep the engineer informed of how the funds were being used, "de même que les ingénieurs qui servent dans les places du royaume," and asked L'Hermitte to report whether the funds were being used as they should.¹⁹

Durand de la Garenne, the financial commissary, had carried out the duties of the post since 1699, but his role in construction was defined only in 1707. In the administration of fortification funds, he was to follow the governor's wishes whenever they differed from his own, though he was free to explain his reasons for holding the contrary

18. *Ibid.*, ff.234-244v.: L'Hermitte, 12 December 1707.

19. B, 29, ff.466-467: to L'Hermitte, 6 June 1708.

opinion, and the letter would be taken into account when the Ministry decided how to act. He was to sign on the King's behalf whatever contracts or agreements were made with individuals for construction work.²⁰

Ile Royale, 1713-1719

Except for Durand, the senior officers from Placentia were appointed to similar posts in the new colony established on Cape Breton Island in 1713. Pierre-Auguste de Soubras²¹ was appointed financial commissary in 1714. Until 1719, management problems were of the type occasioned by constructing buildings in a virtual wilderness, and were aggravated by the vacillation of the Court respecting the choice of a colonial capital. The indecision, the continual change of priorities that occurred during those years, created serious logistical problems, disseminated personnel and interrupted carefully laid plans.

Since the Court envisaged in Ile Royale a larger, more important colony than Placentia, the post of financial commissary required a higher status than that held at the former colony. With respect to fortifications, the powers of the position were comparable to those of an intendant in France, though on a much smaller scale. Soubras was told to have *devis* properly drawn up and to do everything within his area of jurisdiction to

20. B, 29, f.160: "Mémoire pour servir d'instruction au Sieur Durand de la Garenne", 30 June 1707. See also René Baudry, "Durand de la Garenne", *D.C.B.* II, pp.214-215.

21. *D.C.B.* II, pp.611-612.

ensure solidly and economically built fortifications.²² The governor and he were held responsible for having the first plans and *devis* in the minister's hands as quickly as possible.²³ The commissary was supposed to be consulted before original plans were changed, so he objected strenuously in 1715 when private buildings appeared---helter-skelter---at Port Dauphin, on sites where public structures were to be built. It made a mockery of planning and used up precious lumber, he complained. In his capacity as the senior civil administrator of the colony, he sharply criticized Beaucours for accomplishing little of use at Port Dauphin after relieving L'Hermitte, and for preparing what he considered to be a poor fortification plan for that port.²⁴ Soubras was quite dissatisfied with the engineers' accounts, which he said were prepared in extreme haste and in an inequitable manner. Since the engineers had plenty of time during the winter to make their calculations, he suggested they should be obliged, in their statements, to differentiate three kinds of expenditure: in coin, by bill of exchange and by previous deduction in France for supplies.²⁵

The role of the engineer-in-charge during the formative years of the new colony changed radically between L'Hermitte's arrival in 1713 and the end of Verville's first season in 1716. L'Hermitte's relatively subordinate position at Placentia affected his superiors' treatment of

22. AN, Col., B, 36, f.449: to Soubras, 10 April 1714.

23. *Ibid.*, f.562: to Costebelle and Soubras, 18 April 1714.

24. AN, Marine, B¹, 8, ff.176, 178v.

25. AN, Col., C^{11B}, 2, ff.251-252: Soubras [1717].

him at Louisbourg and Port Dauphin. Brouillan de Saint-Ovide, king's lieutenant (later governor), in 1713 prevented the minister from receiving L'Hermitte's views about various building sites at Louisbourg, and tried again to do so in 1714. Only when L'Hermitte threatened to transfer professional responsibility for a choice of site to Saint-Ovide did the latter relent.²⁶ The work of Beaucours was not held in very high regard. His plan of Louisbourg, drawn from memory, had to be revised to make it conform to the terrain, and his accompanying cost estimate was said by Costebelle to be too low by 80%.²⁷ The Marine Council, unable to rely on Beaucours, decided to send a "capable engineer" to the colony to assess the situation.²⁸ Its instructions to Verville in 1716 put him in a position much closer to that enjoyed by engineers in charge of construction programs in France than any previously held by colonial engineers in Canada, Acadia or Placentia. Though he was to keep in touch with the governor and commissary during his stay, his recommendations about the structures required, his reports on materials and natural facilities, and his cost estimates, were all to be quite independent.²⁹ Furthermore, by accepting his recommendation to restore priority to Louisbourg, the Council not only expressed complete confidence in his judgment, but brushed aside that of the governor.

26. *Ibid.*, 1, f.67: L'Hermitte, 29 August 1714.

27. AN, Marine, B¹, 8, ff.180v.-183: meeting of Marine Council to consider letters from Soubras (8 October 1715) and from Costebelle (1 October and 30 November 1715).

28. *Ibid.*, f.176.

29. AN, Col., B, 38, ff.280-282: "Mémoire du conseil de marine sur le service que le Sieur de Verville, ingénieur, a à rendre dans le voyage qu'il va faire à l'Ile Royale", 27 June 1716.

The rules of procedure developed in 1717 defined the roles not only of the engineer, but of all the officers of the colony having to do with fortifications. The governor and commissary were charged with accounting annually for fortification costs after having each statement checked by the senior engineer for accuracy. The latter was to provide the commissary with a detailed voucher for each finished task and to witness the commissary's ordinances authorizing payments out of fortification funds. Inspectors of works were to oversee the workers, whether employed on daily wages or on a piecework basis. All absences from duty were to be recorded with precision, including those of workers employed by contractors. Each day, a register of man-days worked was to be prepared, one copy being used by the engineer-in-charge as a basis for calculating wages. No worker was to be employed without the knowledge and consent of the commissary. Since the director of fortifications (Verville) would be in France during the winter and spring, the governor and commissary were to ensure that the two assistant engineers and other employees³⁰ carried out the director's orders.³¹ Among those subordinates, a division of labour was provided for in detail, that there might be no mistake about who was to be responsible for various tasks during the winter of 1717-1718, while Verville was in France.³²

30. Such as Sabatier, clerk of works, who was to act as a *toiseur* (a person who assisted engineers with the measurements upon which estimates and accounts were based). AN, Col., C¹¹B, 2, ff.75-83: Marine Council meeting of 22 May 1717.

31. *Ibid.*, 39, ff.266-269: "Mémoire du conseil au Sieur de Verville au sujet des fortifications", 3 June 1717.

32. AN, Marine, A¹, 54, pièce 61: "Mémoire du Roi au Sieur de Costebelle et au Sieur de Soubras au sujet des fortifications", 26 June 1717.

After deciding that the scope of construction on Ile Royale, like that of fortresses in France, justified management through a general contractor, the Marine Council in 1718 prepared rules of procedure governing the future administration of the program. Those rules were intended to adapt custom in the engineer corps and the Marine Department in France to the circumstances of the colony.³³ In the context of administrative history, they are important for their definition of the roles of the governor, financial commissary, director of fortifications or engineer-in-charge, treasurer, storeman and general contractor.

The rules specify clearly that the commissary is the senior authority of the colony in administrative matters, the engineer in technical ones. The governor's role (apart from military command) is that of general overseer and umpire. It is the commissary who awards contracts, but bids for them are based on *devis* prepared by the engineer-in-charge, and the latter, as well as the governor, must be present when the commissary decides. It is the commissary who authorizes payments out of the fortifications account, and the treasurer who releases the moneys as a charge against the general contractor's account; but neither can act without a pertinent voucher signed by the engineer. The storeman issues supplies if he has the commissary's authorization; but again, that is not given without an appropriate voucher signed by the senior engineer. An exception is made in cases of urgency, when the commissary is not available. In such instances, the treasurer or storeman may act on the

33. Some of these procedures have been discussed in Chapter III (pp.132-134) in the context of financial control. See AN, Col., C^{11B}, 3, f.67, *loc. cit.*

authorization of the engineer alone, but the engineer must obtain confirmation of his decision, by the commissary, within four days.

The governor and commissary on the one hand, and the senior engineer on the other, were mutually obliged to further the proper administration of projects. The governor and commissary were to ensure the largest possible labour supply, including soldiers from the colonial regulars. The governor was encouraged to detach infantry officers from other duties to assist with supervision of construction, if the engineer so requested, and all officers so employed came under the command of the engineer. The treasurer was to account for cash on hand in the fortifications *caisse*, whenever the engineers so requested, in order to inform the latter how much more work was possible before the funds became exhausted. The engineer's primary obligation to the commissary and the governor was to prepare and submit for their scrutiny an annual *toisé*, or account of the work completed for the building season. That document was to serve as the basis for the fortifications section of their annual statement of receipts and disbursements (*bordereau des recettes et dépenses*), and was therefore vital. Advances already made to the contractor were deducted from the total of the *toisé*, thus showing the moneys apparently still owing to the contractor. The governor, commissary and senior engineer were to act jointly in setting the wage rates of soldier-workers whenever these were not established between a contractor and the soldiers themselves.

Until the first general contractor, Isabeau, began work in 1719, the new rules were applied to construction directly managed by the

engineers and their assistants. Problems quickly arose concerning the quality of the vouchers furnished by the engineers. Soubras said they had to be clear and to show the work done, with its estimated value. Vouchers submitted in 1718 were ambiguous: usually the worker's name, the number of hours worked, and the part of the job on which he had worked, were all missing. Soubras criticized the emergency clause permitting payments in the commissary's absence: since assistant engineers were permitted to prepare and sign vouchers, the *écrivain du roi*, as the commissary's assistant, should be permitted to act for his superior when the need arose. Soubras regretted also that assistant engineers were no longer required to report work progress to the financial commissary. The latter could not properly exercise his right to authorize the payment of public funds without being informed about the general state of the works. Finally, Soubras forecast that the director of fortifications would make common cause with contractors and, in effect, subvert the financial commissary's endeavours to maintain complete objectivity in relations between the state and these private businessmen.³⁴ Implicit in his remarks was a criticism of what appeared to be influence by Verville at Versailles in obtaining the general contract for Isabeau. The provision for having the first general contract awarded by the financial commissary was thus ignored. No rules were ever intended, however, to preclude decisions at Court that would replace or overturn those of the colony.

34. AN, Col., C^{11B}, 4. ff.39-45: meeting of Marine Council, 1 April 1719, discussing letter from Soubras of 30 November 1718.

Verville's attitude was that of one with a mandate to build the works of Ile Royale and a conviction that he deserved a free hand to carry it out. Since the director of fortifications had authority over all persons employed on the works, Verville thought he ought to be allowed to take disciplinary action without requiring the governor's prior permission. During the director's absence, the governor should be permitted to issue no orders to assistant engineers, to the contractor, or to others employed on the fortifications. He said it was normal for the director to be provided with accommodation for himself and his immediate staff and for the contractor to be given, for building materials and other supplies, a storehouse that included accommodation for his foremen.³⁵ Verville would have preferred also a separate treasurer reporting to the treasurer-general of fortifications in France, instead of one agent of the treasurers-general of marine who dealt with both the general and the fortification accounts. The existing system, he observed, encouraged the mixing of the two accounts. He would, moreover, have preferred to be entirely free of the colonial administration, reporting, with his staff, directly to his technical superiors in France. He criticized the rule requiring an annual *toisé*. This sort of account was expensive to prepare without being at all accurate. A *toisé* submitted upon completion of a phase of the work, rather than at the end of a time period, would facilitate accurate accounting.³⁶

35. *Ibid.*, ff.107-108v.: Verville, July 1719.

36 *Ibid.*, ff.237-241v.: Verville, 19 November 1719; f.224: Verville, 29 November 1719; f.244: Verville, 29 November 1719. (Note: f.224. is *signed* by Verville, though someone wrote Saint-Ovide's name at the top of it.)

Ile Royale, 1719-1725

With the award of a general contract in 1719, the program entered a phase that ended with the death of Isabeau in 1724 and the departure of Verville in 1725. Opposing viewpoints, described above, boded ill for harmonious administration: in fact, the six years were very stormy. Saint-Ovide, Costebelle's successor as governor, and Mésy, successor to Soubras, deplored the failure of those who had drawn up the contract with Isabeau to make the builder responsible for transport. They accurately predicted that this would increase administrative problems.³⁷ However, it was not the only contributing factor. The governor refused to recognize that Verville had an undisputed mandate to build what he wished, where he wished and in the order he preferred. He complained bitterly to the Court about Verville's priority to the citadel, to the neglect of the harbour defences and, within the citadel, to the engineer's failure to finish the barracks before working on the bastion. Verville, for his part, complained that his mission was frustrated by local officials who felt governed by the orders of the Court only during the short time the King's ships were in the harbour.³⁸ Saint-Ovide's impatience over the completion of the barracks was due to a shortage of accommodation for the officers and men of the garrison.³⁹ Verville's reply was that the officers---in fact the whole colonial government---should have remained at Port Dauphin until enough of the new Louisbourg was built. They were nothing but an

37. *Ibid.*, f.133: Saint-Ovide and Mésy, 27 November 1719.

38. *Ibid.*, 5, ff.231-232: Verville, 15 June 1720.

39. *Ibid.*, ff.206-216: Saint-Ovide, 11 November 1720; 6, f.178: Saint-Ovide, 22 November 1723.

encumbrance to those who were trying to build the fortress.⁴⁰ Verville hardly anticipated a twenty-five-year construction program, but hoped, rather, for one that he could complete within a reasonable number of seasons and leave behind him---along with the colonial officials he detested so much.

Though he lacked this degree of independence *de jure*, Verville assumed it *de facto*, and succeeded because of the Council's great faith in the engineer corps and in him. He would leave the colony for France at the end of the building season without briefing the governor or financial commissary on work progress.⁴¹ He would take decisions, such as the building of structures not included in the original *devis*, without first consulting the governor and commissary. Evidently he misused the emergency payments provision on occasion by failing to obtain the financial commissary's confirmation afterwards.⁴² Verville took full advantage every year of his access to the Court before the spring instructions to the colony were written, and the Marine Council acted on his recommendations before the governor and commissary had a chance to comment on them. For example, it agreed to a special gratuity to Isabeau following the destruction by fire of a brick kiln at Port Toulouse, and also to a method proposed by Verville of compensating soldiers for guard duty by deductions from the pay of soldier-workers.⁴³ The greatest

40. *Ibid.*, ff.235-237: Verville, 19 June 1720.

41. *Ibid.*, 5, ff.218-219: Saint-Ovide, 20 November 1720.

42. *Ibid.*, ff.136-143v.: Saint-Ovide and Mézy, 12 November 1720.

43. *Ibid.*, 6, ff.145-148: summary prepared for the Marine Council, May 1723; f.170: to Saint-Ovide and Mézy, 27 May 1723.

latitude given to Verville, however, was in the matter of preparing annual *toisés*. In spite of the 1718 rule making him answerable for this task to the financial commissary, the Council did not oblige him to carry out the responsibility.⁴⁴ Whether eventually it would have done so became academic when Isabeau died in 1724, for in 1723 it decreed that after cash payments to Isabeau had reached a stated limit, no further moneys would be paid to the contractor until Verville had furnished *toisés* for previous years.⁴⁵ A few months later, Verville drew up *devis* for the Royal and Island Batteries. It stipulated that the contractor would receive periodic cash advances against a total sum calculated, not from *toisés annuels*, but from one *toisé définitif*, "comme il se pratique dans la France-Europe."⁴⁶ Verville had shown no sign of changing his attitude.

Both sides (Verville on the one, Saint-Ovide and Mézy on the other) broke the rules; but when Verville did so, the Council said little, whereas it strongly supported him when he complained of breaches by the others, or even when there was no breach. The governor had the right---in fact the duty---to concern himself with military matters other than fortifications. He had to keep his troops in training. What if the outbreak of war found them unprepared? A dispute arose over removing men from the fortifications for periods of drill: Verville insisted on

44. See Chapter III.

45. AN, Col., C^{11B}, 6, f.170, *loc. cit.*

46. *Ibid.*, f.295: "Devis de la batterie....de l'île de l'Entrée....", 5 August 1723; f.298: "Devis de la grande batterie", 8 August 1723; f.154: Verville, n.d., 1724.

the priority of fortifications.⁴⁷ He was supported by the Marine Council, which said that construction had an absolute priority. After Verville's departure for France near the end of 1720, the contractor was constrained, evidently by the governor and financial commissary, to use funds and stockpiled building materials for purposes other than authorized public construction.⁴⁸ Sharply reprimanded for this,⁴⁹ Saint-Ovide and Mézy said that the amounts involved had been extremely small.⁵⁰ The Council's attitude was that the governor and commissary were at fault, not only for this misuse of funds, but for all the friction between them and Verville. If the latter had been given the support he required, if the governor had created a harmonious atmosphere conducive to rapid, efficient work, it would not be necessary now for the Marine Council to assume that role. The commissary must immediately order a stop to the practice of issuing promissory notes against future deposits in the fortification account, notes that were being heavily discounted on circulation. And the two officials were to prosecute private parties who had disobeyed an ordinance forbidding construction near the sites of fortifications and public buildings.⁵¹ The treasurers-general of marine were also warned that the Crown would not reimburse them for construction funds disbursed at Louisbourg by their agent without the authority of vouchers signed by Verville or one of the assistant engineers he had

47. *Ibid.*, 5, ff.206-216, *loc. cit.*

48. *Ibid.*, ff.418-422: Verville, 4 February 1721.

49. AN, Col., B, 44, f.560: to Saint-Ovide and Mézy, 24 June 1721.

50. AN, Col., C^{11B}, 5, ff.148-155v.: Saint-Ovide and Mézy, 7 December 1721.

51. AN, Col., B, 44, f.560, *loc. cit.*; f.569: to Saint-Ovide, 1 July 1721.

left in charge.⁵²

The root of much of the misunderstanding between the two sides was a lack of communication: Verville's annual absences in France, and his avoidance of Saint-Ovide and Mésy when he was in the colony. The appointment of Maurepas as minister of marine in 1723 may have provided the governor and commissary with the opportunity of reviving an earlier suggestion: that a resident chief engineer be appointed in order to ensure year-round direction of construction programs. It would have been impolitic of them to suggest the recall of Verville, so they assumed he would remain as director of fortifications. Saint-Ovide, however, recommended "his own man", Beaucours, as the chief engineer, despite the latter's mediocre performance in 1715-1716. Such an appointment would have strengthened the governor's authority over fortifications between December and July, and undermined that of Verville. Saint-Ovide and Mésy argued that a resident chief engineer would ensure good work: during the director's absence, and in the event an accident befell the director.⁵³

The Ministry accepted the principle; undertook to recall Verville by 1725;⁵⁴ and, instead of naming Beaucours to the new post, appointed Etienne Verrier, a seventeen-year veteran of the engineer corps.⁵⁵ The

52. *Ibid.*, f.60v.: to Gaudion, 1 July 1721.

53. AN, Col., C^{11B}, 6, ff.152-162v.: Saint-Ovide and Mésy, 29 December 1723.

54. AN, Col., C^{11C}, 16, pièce 6, no. 15: to Saint-Ovide and Mésy, 9 May 1724: "...Verville reviendra à l'ordinaire après la cessation des travaux de cette année."

55. AN, Col., B, 46, f.109: to Asfeld, 1 May 1724; f.121: to Asfeld, 16 May 1724.

latter was chosen as much for his ability to work harmoniously with others as for his technical knowledge and experience.⁵⁶

Ile Royale, 1725-1745

Saint-Ovide was warned to co-operate with Verrier, because it was difficult to find good engineers willing to serve in the colonies, and Verrier would have the right to ask for his recall to France⁵⁷ if he found the working conditions intolerable. The warning was timely, because Verville's arrogance had been matched by that of the governor; replacing Verville, therefore, had not necessarily ensured harmony. The governor's managerial role in fortifications was important: he was permitted---at times even encouraged---to assume his full authority in that field. He had to maintain, however, a delicate balance between usurping the engineer's part and abandoning his responsibility as military commander. In 1724, Saint-Ovide had upset that balance by reversing a decision of Mésy's. Verville had persuaded the commissary to authorize payments for certain structures beyond the maximum amounts allowed, explaining that some of the structures would have collapsed, once begun, if they had not been finished. Saint-Ovide refused to listen to the joint appeal on the subject made to him by Verville, Mésy and Verrier. His decision may have been inspired by spite and emotion, though he had the letter of the law on his side,⁵⁸ but it may also have been

56. *Ibid.*, 47, ff.1239: to Verrier, 1241: to Verville, and 1242: to Saint-Ovide and Mésy, 9 May 1724. Verrier was "un sujet de réputation dans le génie" and "d'un caractère paisible".

57. *Ibid.*, 48, f.932: to Saint-Ovide, 25 July 1725.

58. AN, Col., C^{11B}, 7, ff.59-65v.: Mésy, 22 November 1724.

dictated by other considerations. Nine seasons later he recommended the stoppage of work at the end of September every year, again ignoring the argument that partially completed, exposed structures could be ruined if not protected before the frost. His proposal, accepted by the Ministry, was defective in not leaving wider discretion to the engineer-in-charge of the project concerning when to stop the season's work. Paradoxically, one of the reasons for his recommendation was to give structures in general a better chance of withstanding frost! Another reason, however, may have been more important: an early end to the building season meant that the captains of merchant vessels might be paid, for the building supplies they had brought, when they were loaded and ready to sail. Delays in previous years had caused deep resentment.⁵⁹

Verrier's tact helped to forestall the degree of friction with Saint-Ovide that had characterized the period of Verville. Yet the elements of friction were present. The Ministry desired an early settlement of the mutual contractual obligations of the Crown and the heirs of Isabeau. Since Verville had neglected to prepare *toisés annuels*, and since accurate *toisés* were necessary to a settlement, Verrier was expected to prepare them. He kept postponing the task, either because the structures in question were not yet complete, or because more urgent work was pressing. Both the governor and the financial commissary

59. *Ibid.*, 20, ff.24-30v.: Saint-Ovide and Le Normant, 15 November 1732; Col., B, 59, ff.551v.-554: to Saint-Ovide and Le Normant, 26 May 1733; Col., C11B, 14, ff.298-309: Verrier, 23 October 1733.

complained that this prevented the latter from preparing the settlement.⁶⁰ Verrier prepared a *toisé* covering Ganet's work for the Isabeau estate from 1725 to 1727,⁶¹ a *toisé provisionnel* of Isabeau's work,⁶² and a *toisé définitif* of Ganet's work on the stores building.⁶³ He did not provide the *toisé définitif* on Isabeau's work until 1731, two years after the death of Isabeau's sister, Madame Planton.⁶⁴ In 1727, Saint-Ovide had suspected Verrier, with his assistant Pierre-Jérôme Boucher, of deliberately attempting to conceal defects in Isabeau's work.⁶⁵ In the governor's view, engineers closed ranks to protect other engineers and their contractors; Verville, for example, by concealing his documents from the governor and financial commissary, had prevented a catalogue of the defective work,⁶⁶ and Verrier protested that Verville's direction had been sound. Despite the governor's accusations, Verrier convincingly explained his reasons for delaying the *toisé*, and won the minister over.⁶⁷

Verrier's neglect of the annual *toisés* for several years,⁶⁸ and

60. AN, Col., C¹¹B, 8, ff.8-20v.: Saint-Ovide and Mézy, 28 November 1726. For further discussion of the subject, see Chapter V.

61. *Ibid.*, 9, ff.210-230: Verrier, 30 May 1727.

62. *Ibid.*, ff.231-250v.: Verrier, 15 November 1727.

63. *Ibid.*, ff.180-192: Verrier, 1 November 1727.

64. *Ibid.*, 12, ff.122-142 and 145-146: Verrier, 1 September 1731.

65. *Ibid.*, 9, ff.31-35: Saint-Ovide and Mézy, 26 November 1727; ff.60-63v.: Saint-Ovide, 19 November 1727.

66. *Ibid.*, 10, ff.81-84: Saint-Ovide, 3 November 1728.

67. AN, Col., B, 52, ff.598v.-600: to Saint-Ovide, 23 June 1728.

68. *Ibid.*, 59, ff.554-558: to Verrier, 2 June 1733.

his very defective estimates,⁶⁹ were due in part to the enlargement of the program, in which new works were already being added while old ones were being completed and repaired. These errors had the effect of impeding checks on waste, inefficiency, and even dishonesty; but whether another of their causes was deliberate protection of the contractor, is difficult to establish. Such a finding would not be surprising, in view of the habitual collusion in France between engineers and contractors that ministers had been trying for a long time to control.⁷⁰ There is little doubt that Ganet and Muiron both obtained their contracts with the help of engineers, and that Verrier was a strong supporter of both contractors. Though expected, as officers of the Crown, to be impartial, engineers could not manage construction projects unless their relations with contractors were cordial.

Until 1734, so much attention was paid to new work that the repair and upkeep of finished structures was largely neglected. Occasional repairs were made, as a charge against the structure in question; but there was no regular program of maintenance. In 1734, Verrier proposed a regular allotment of funds for the purpose, and a contract award.⁷¹ The Ministry agreed.⁷²

69. See Chapter III, p. 144. Conversion of a "shed" into the chief engineer's official residence was originally estimated at 6,000 *livres*. By 1733, the cost had mounted to 25,000 and rumours were reaching the Ministry that it might rise even higher. AN, B, 61, ff.594-596: to Saint-Ovide and Le Normant, 4 May 1734.

70. See Chapter V.

71. AN, Col., C^{11B}, 16, ff.182-193: Verrier, 6 November 1734.

72. AN, Col., B, 63, ff.537v.-539v.: to Saint-Ovide and Le Normant, 25 April 1735.

The construction of roads was managed directly by the governor and financial commissary, though the funds for the program came out of the fortification account. Verrier ignored road-building when submitting his annual estimates. Each year, from 1732, other items in the estimates were reduced by the Ministry in order to allow 3,000 or 4,000 *livres* for roads. There were too few projects to justify the appointment of a *voyer* like Lanouillier de Boisclerc in Canada, so the main burden of management fell on the shoulders of the commissary.

We have observed that that official, as the senior civil administrator of the colony, bore the chief responsibility for non-technical management under the rules promulgated in 1718. Three officials held the office between 1719 and 1745: Jacques-Ange Le Normant de Mézy (usually referred to as Mézy), his son Sébastien-Ange (known as Le Normant), and François Bigot. Mézy was unable, for at least five reasons, to account satisfactorily for the expenditures of the 1720s. Verville did not provide the *toisés* on which good accounts would have been based; Isabeau's death in 1724 entailed succession problems complicated by Ganet's vacillation over whether or not to finish Isabeau's work; Goutin, the treasurer, was either inefficient or dishonest;⁷³ Mézy was permitting many errors in arithmetic to pass without scrutiny; and he was using fortification funds for other purposes, probably in order to make up shortages in the general colonial account. Le Normant performed well: for him the post was the second of a series of steps in a successful

73. Mézy suggested that Goutin was unable to live on his salary. AN, Col., C¹¹C, 11, f.28: Mézy, 2 March 1730.

career within the Marine Department. Bigot, for his part, was the most adroit of administrators, capable of answering despatches on financial questions point for point, taking the initiative in the improvement of procedures, and closely following financial relations with the general contractor.⁷⁴

Ile Royale, 1749-1758

During the first year of reoccupation, the governor (Desherbiers), the financial commissary (Prévost) and the engineer-in-charge (Boucher) worked in harmony to take stock, organize accommodation, estimate the cost of reconstruction,⁷⁵ and do whatever emergency work was possible. Though hampered at first by shortages of labour and materials, they accomplished what they could without bickering among themselves or complaining about each other. Estimates were submitted for works at

74. For Bigot's career in Ile Royale, see Guy Frégault, *François Bigot, administrateur français* (2 vol., Montréal, 1948) I, pp.73-235. See also the *bordereaux des recettes et dépenses* for the years 1731-1744. Though they show the sequence and order of magnitude of some projects, most of the work (fortifications, harbour facilities and public buildings) is concealed in payments to Ganet (to 1737) and Muiron (1737-1744). Since contractors' records have not been found, virtually the only source for the cost of individual projects comprises the *toisés définitifs* that have survived. Final payments to the Isabeau estate, eight to nine years after the first contractor's death, and the payments to Ganet years after he had lost the general contract to Muiron, show the pains taken to avoid overpayments to contractors. See AN, Col., C¹¹C, 11, ff.49-53: 1 October 1732; ff.67-72: 14 October 1733; ff.77-83: 28 October 1734; ff.84-90: 20 September 1734; ff.100-107v.: 3 October 1736; ff.117-125v.: 31 October 1737; ff.127-135: 1 October 1738; ff.175-184v.: 12 November 1739; 12, ff.9-15v.: 17 August 1740; ff.48-59v.: 20 October 1741; ff.75-85: 30 October 1743; ff.91-104: 25 October 1743; ff.105-117: 25 August 1744; ff.138-172v.: 2 April 1746.

75. See Chapter III.

Louisbourg, Port Toulouse and Port La Joie. At Louisbourg, the contractor Claude Coeuret carried out construction valued at 22,400 *livres*.⁷⁶

The next four years (1750-1754) were devoted primarily to planning, although construction costing about 225,000 *livres* was undertaken. Franquet's plans for rebuilding Louisbourg's fortifications were extremely thorough. They might have been put into effect sooner, but for the counter-proposal of the Comte de Raymond that emphasized coastal redoubts to keep an attacker away from Louisbourg, more than great masonry walls to face him when he arrived. Franquet's winter absences in France, where he opposed Raymond's ideas at Court, and Raymond's act in preparing materials for the proposed redoubts during one of those winters (1751-52), were reminiscent of the struggles, thirty years before, between Saint-Ovide and Verville. They disrupted the co-operative spirit in which the period had begun, and they contributed to delays at Court in taking policy decisions, especially as to the most desirable method of administering construction in the colony. Raymond blamed Franquet and Prévost for the rejection of his redoubts proposal, the former for disobeying orders by secretly presenting contrary arguments to policy-makers, the latter for refusing to authorize expenditures.

76. See AN, Col., C^{11B}, 28, particularly the following documents: ff.298, 302: Boucher, 24 July 1749; ff.75-78: Desherbiers, 9 August 1749; ff.303-320, 326-329v.: Boucher, 30 August 1749; ff.287-296: Boucher, 3 September 1749; ff.267-272: Boucher, 9 September 1749; ff.16-21: Desherbiers and Prévost, 10 September 1749; ff.30-32: Desherbiers and Prévost, 12 October 1749; ff.44-47: Desherbiers and Prévost, 21 October 1749; ff.330-351v.: Boucher, 31 December 1749.

Prévost had simply refused funds without prior instructions from the minister.⁷⁷

Franquet's recommendations (1750-1753) concerning works to be built, materials to be used and specialists to be hired, provided the Court with fairly accurate estimates of the cost of rebuilding the colony and making its capital ready for the war that was coming. The high bid submitted by Claude Coeuret for a general contract, and a scarcity of available builders, led the Ministry to decide on a system of direct management, though encouraging contracts for the performance of individual tasks.⁷⁸ During the ensuing years (1754-1758), the colonial administration made judicious use both of craftsmen under contract and workers paid by the Crown.⁷⁹

During the winter of 1753-1754 in France, Franquet organized the supply of skilled labour, materials and tools. He used for this purpose

77. C.T.G., Bibliothèque, ms. in-fol. 205^b, ff.55-59: Franquet to Regemorte, 14 January 1752; AN, Col., C¹¹A, 126, pièce 32: Franquet to Rouillé, 14 January 1752; C¹¹B, 32, ff.295-296: n.a., March 1752; B, 95, ff.267-268v.: to Raymond, 15 March 1752; f.277: to Raymond, 27 March 1752; 97, f.295: to Raymond, 13 April 1753.

78. See Chapter V.

79. The 252,000 *livres* spent on contracts in 1756, and the 118,000 *livres* spent on wages in 1757, illustrate a change in requirements. See the *bordereaux des recettes et dépenses* for the period: AN, Col., C¹¹C, 13, ff.68-88: 13 November 1751; f.106: 20 December 1756; ff.107-127v.: 13 September 1751; ff.128-159: 15 November 1753; ff.170-199v.: 15 July 1754; 14, ff.12-41: 20 October 1755; ff.43-65v.: 15 October 1757; ff.67-119: 16 December 1757. See also Bibliothèque de l'Arsenal, archives de la Bastille, 12200, ff.421, 425-426 (expenditures for 1758).

his wide contacts in both the War and Marine Departments.⁸⁰ In accordance with the Ministry's instructions, contracts were let in the colony for such tasks as excavation, quarrying freestone, and cutting and hauling timber.⁸¹

The absence of a general contractor, by placing responsibility for the co-ordination of supply in the hands of the Ministry of Marine, introduced a serious management problem. Though the Court appreciably increased the labour supply in 1755 by sending out two regular infantry battalions, unintentionally it created problems of accommodation that interfered with work on the fortifications. Though the same year it lightened Franquet's burden by providing two experienced engineers who had served under him in Europe,⁸² it sent unsuitable or inadequate quantities of materials.⁸³ During the winter of 1755-1756, moreover, one of the building-material storehouses was destroyed by fire and another damaged.⁸⁴ Severe food shortages, following the outbreak of

80. C.T.G., Bibliothèque, ms. in-fol. 205^b, f.135: Franquet to Rouillé, 6 April 1754; AN, Col., C^{11B}, 34, ff.201-202: Franquet, 19 April 1754; f.213: n.a., n.d., "Etat des ouvriers...."; f.214: n.a., n.d., "Etat des brouettes et outils...."; ff.215-216v.: Franquet to Hocquart, 19 April 1754; B, 100, f.86v.: to Hocquart (at Brest) and to Franquet (at Saint-Omer) 27 April 1754.

81. AN, Col., B, 99, ff.240-243: to Drucour and Prévost, 12 May 1754.

82. Pontleroy and Grillot de Poilly. *Ibid.*, 101, f.217: to Franquet, 17 March 1755.

83. AN, Col., C^{11B}, 35, ff.285-286: Franquet, 11 November 1755; ff.291-295: Franquet, 17 December 1755.

84. *Ibid.*, 36, ff.247-248: Franquet, 19 April 1756. The destroyed inventory was reconstructed as well as possible from vouchers.

hostilities with the British, was a further threat to construction progress.⁸⁵

Smooth administration was hampered, during the period 1755-1758, by friction between the senior infantry officers, on one hand, and the governor and director of fortifications on the other. Lt. Col. Saint-Julhien and others (including the Comte de Raymond in France) wrote frequently to the Court severely criticizing the state of Louisbourg's defences and, pointedly, the governor and Franquet. The criticism tended to be destructive.⁸⁶ Relations between Drucour and Franquet, however, were cordial. "Il est bien satisfaisant pour moi," wrote the governor in 1756, "de voir à la tête des travaux de cette place une personne qui réunit comme lui les talents de son métier et l'union qui doit régner pour les accélérer."⁸⁷

Reconstruction of the fortress was never finished. Though Laborde, the treasurer, went on trial for embezzlement, and Prévost, suspected of complicity, spent a year in the Bastille (1763-1764) before being barred from holding another office of trust,⁸⁸ there is no evidence

85. C.T.G., Bibliothèque, ms. in-fol. 205^b, ff.178-180: Franquet to Regemorte, 6 June 1755: "Si le bon Dieu ne fait pleuvoir des boeufs, nous serons réduits au lard, et au poisson...."

86. See, for example, AN, Col., C¹¹C, 16, pièce 10: Saint-Julhien, 20 September 1757; C¹¹B, 37, ff.327-331v.: [Bompar, 1757].

87. *Ibid.*, 36, ff.61-62v.: Drucour, 27 June 1756.

88. McLennan, *Louisbourg*, p.233, n. For the voluminous record of the interrogations of Laborde and Prévost, see Bibliothèque de l'Arsenal, archives de la Bastille, 12200.

that any acts of theirs affected adversely the quality or quantity of construction. The most important factor appears to have been the Ministry's procrastination over awarding a general contract. One suspects that Claude Coeuret was undesirable because he was a bidder from the colony, and that the delay was due to a fruitless search in France for a builder interested in the Louisbourg contract. When Prévost awarded the contract to Coeuret⁸⁹ the former's decision was repudiated, ostensibly because Coeuret's price was exorbitant. In any event, the result of the tardy, negative decision was that war overtook construction. As a second siege became more and more likely, Franquet had to resort increasingly to fieldworks to try to keep an attacking force away from the fortress walls, and to temporary structures in the fortress itself to patch up its flaws.

Conclusion

The nature of project management in the Gulf region during the period under review depended, in the first instance, on the distribution of authority among the officials of the colony most concerned with fortifications. When personalities clashed---as they frequently did---the strong-willed who possessed or could assume authority rode roughshod over the others. If this upset the balance unduly, it had to be restored by the metropolitan authorities. We have seen that L'Hermitte, having no strong supporter in the engineer corps, lacked the authority engineers

89. Archives du Séminaire de Québec (hereinafter referred to as A.S.Q.) Polygraphie 58, no.3: marché avec Claude Coeuret, 1 October 1753.

usually had in France. In this respect, his position was not very different from that held by the chief engineer of Canada. Chaussegros de Léry, for example, who held that office for forty years, was not presented as a specialist to whom everyone must defer in the field of construction: he was definitely in a subordinate role.⁹⁰

Verville and Franquet, both of whom were given the title of director of fortifications, believed they had from the Court a mandate that transcended local authority. Legally, this was not strictly true: both the governor, in his sphere, and the intendant's delegate, in his, had been given, by their commissions, greater powers than those of the senior engineer. In practice, however, Verville and Franquet were almost completely right. Verville was able to break rules with impunity, whereas Saint-Ovide and Mésy were obliged to observe them to the letter---especially those favoured by Verville. Franquet's situation was somewhat different. The only governor with whom he clashed was Raymond, who was recalled because the home authorities sided with the engineer. The outcome of the earlier struggle was Verville's recall, not the governor's. The appointment of Verrier as resident chief engineer was a judicious compromise effected by the new minister, Maurepas. It met first of all the governor's objection to an arrogant, extremely independent senior engineer who was absent from the colony for eight months out of every year. Furthermore it gave a decided preference to another career officer

90. This remark is based on research by the writer for a biographical article on Chaussegros de Léry in *D.C.B.* III, not yet published. Main sources are AN, Col., B and C11A, for the years 1716-1756, the *Papiers de Léry* published by the Québec archives, and miscellaneous documents in AN, Section Outremer, D.F.C.

of the engineer corps over the practical engineer from the colonial regulars whom the governor had fervently wished to appoint. Verrier lacked the overriding mandate that Verville had formerly claimed: he was bound to co-operate fully with the colonial authorities. But as a metropolitan professional, neither was he the governor's lackey. The appointment of Verrier restored the balance, as the recall of the Comte de Raymond did thirty years later.

The same balance was maintained at other times and between other officials. .Monic abused his authority to such an extent that he was recalled. Subercase abused his---in fortifications---less conspicuously; for other reasons, he was promoted. Costebelle was checked at Placentia by the Court when he tried to replace L'Hermitte by Beaucours, and was eclipsed in Ile Royale after the arrival of Verville. Saint-Ovide gained in authority after Verville's departure, but less than he would have wished; nevertheless, he was a hardy perennial who retired only at his own request. As for Franquet, the main challenge to his integrity as a specialist came from infantry officers of the *armée de terre*; and, before the siege of 1758, it failed to upset the balance.

In the administration of funds for construction, the quality of local management was of small moment. Local officials were working within a fairly tight system of control over the latitude they might enjoy. Whatever Durand de la Garenne may have taken for himself from the *caisse* at Placentia could not have affected significantly the use of funds for the fortifications. The factors of supply and climate, and the rate at which funds were provided were more important. Mézy's mismanagement

at Louisbourg during the 1720s was due more to the Marine Council's laxity toward Verville's accountability, than to Mésy's own inefficiency or Goutin's dishonesty. If Le Normant and Bigot restored order, it was largely because they thought their advancement depended on following instructions. This was a lesson that Verrier also learned after several stern reprimands over his errors of omission and commission.

In sum, local management of construction functioned with reasonable effectiveness so long as a balance of authority was maintained; but whenever local disputes upset that balance, it had to be restored by the intervention of the metropolitan government.

CHAPTER V: CONTRACTS AND CONTRACTORS

In the 1660s it was established that normally major construction for the French Crown would be carried out by contract awarded to the builder who submitted the lowest estimate, all other things being equal. To hire labour by the day or to invoke the *corvées*, and to have men supervised by government officers, was to be the exception rather than the rule. The reason was relatively simple: a contractor was normally expected to complete the work within the estimated time and he was responsible for supervising labour in order to ensure its completion. Men hired by the day, whether soldiers or civilians, were, it was believed, not inclined to work hard: the high cost and the failure to meet deadlines resulting from the application of this method to large-scale projects (including the high cost of supervision by government officers) made it undesirable. Likewise, the *corvée* was rarely successful

because the farmers and farm labourers, whether paid or not, had little incentive apart from some form of punishment which they might receive for incurring the wrath of the King's officials to complete the work begun.¹

Admittedly, there were pitfalls in the contract system; and these were recognized early in the personal rule of Louis XIV. It was almost impossible for engineers and builders to provide the perfect estimate. An exasperated minister or other official at Court might complain bitterly that a structure was costing much more than had been expected, yet there were often many plausible reasons for this, so that it was not always possible to dismiss a contractor for having failed to keep within his original bid. Administrators were always on the watch for possible collusion between engineers and contractors whereby the engineer was able somehow to supplement his relatively meagre officer's salary by some form of peculation. This sort of thing was relatively difficult to detect, since it was quite possible that both engineer and contractor had failed, for quite good reasons, to estimate accurately the cost of a structure. Ministers such as Colbert, and his son Seignelay, could merely develop a system of careful checks by administrators and by engineers in the hierarchy in order to prevent either honest error or dishonest collusion. To suspect wrong-doing, and to warn public servants against temptation, seems to have been normal administrative policy.

1. R. Mémair, *Le Matériel de la marine de guerre sous Louis XIV* (Paris, 1936), pp.124, 294. (Despite the title, Mémair's thesis concerns the foundation and development of Rochefort.) P. Clément (ed.), *Lettres, instructions et mémoires de Colbert* (10 vol., Paris, 1861-1882), V, pp.33-6. Colbert to Clerville, 11 October 1670.

It was considered just as important for engineers to work at persuading timid builders to bid for contracts, by showing them how they were going to be able to realize a reasonable profit and not to lose their investment, as it was to be wary of the contractor who made a low bid and looked for ways of realizing his profit without actually carrying out the spirit of the contract. One method of persuading reluctant bidders was to have some small jobs carried out by day labour, with careful accounting for all cost factors: the records of these accounts would then be made available to the prospective bidders.² In any event, Colbert lectured his administrators frequently that a great deal depended on the ability of a contractor to manage his use of supplies, materials and labour: an able builder could thus make a higher profit asking lower rates than a less able one might do, demanding higher rates.³ At the same time, regional administrators could be exhorted to offer the going rate in the region, because to offer something lower might lead to bad workmanship and perhaps bankruptcy on the part of contractors, and this in the long run would be of no use to the government.⁴

Nevertheless, it seems to have been difficult for such ministers as Colbert to enforce the rules regarding the use of contracts, since certain engineers evidently found it profitable to hire labour themselves.⁵ Officials at Court complained that the accounts of these officers were

2. Clément, V, pp.33-6: *loc. cit.*

3. *Ibid.*, pp.138-9, Colbert to De Breteuil, 26 May 1675.

4. *Ibid.*, p.150, Colbert to De Moyenneville, 14 September 1675.

5. *Ibid.*, p.213, Colbert to Bazin, 21 December 1677.

frequently in a state of confusion, leading to the suspicion that this was being done deliberately in order to conceal the losses to the Crown and the profits to the engineers. One of several places where this seems to have occurred, at least during the 1660s, was at the new supply port of Rochefort---the key port for France's American possessions.⁶ Experience there, as in France generally, is useful to this discussion, for similar conditions existed in Ile Royale.⁷ Construction at Rochefort was hardly an administrative success. The first building, the enormous stores building, cost many times the original estimate. The contract changed hands several times; and the building proved in several respects to be unsuitable.⁸

This experience led Colbert, the responsible minister, to try to cut costs by insisting on low rates; but the buildings which were constructed under those rates turned out to be far less durable than those more carefully constructed at greater cost.⁹ Vauban warned in 1685 that the rule of awarding the contract to the lowest bidder was a form of false economy since it drew as contractors rascals and ignorami, and drove away able men who were competent in their field.¹⁰ There were other factors besides the offer of low rates. If, for example, a

6. *Op. cit.*, see critical bibliography.

7. As in Ile Royale, the Rochefort arsenal was constructed where there were no cost precedents on which prospective bidders could base their estimates, so it was difficult to find bidders for the first structures. Mémain, *op. cit.*, p.296.

8. *Ibid.*, pp.127-132, 297.

9. *Ibid.*, p.297.

10. *Ibid.*, p.298. Mémain has no reason to suspect Vauban of a lack of objectivity in this instance.

prospective bidder had stockpiled materials, having been encouraged to compete with perhaps no other likely bidders in the offing, the contract might be accepted in spite of an apparently high bid. After a contractor was well ahead in his work, if it were evident that he was losing money through no fault of his own it might be both fair and politic for him to receive compensation instead of being forced to adhere to the letter of his agreement with the Crown.¹¹ Another factor at Rochefort was a housing shortage which drove up the price of labour and led businessmen to pool their resources in obtaining contracts rather than to compete with one another in bidding for them.¹² Thus it was necessary at Rochefort to compromise with special local conditions rather than to insist on strict adherence to official policy at all times.

Isabeau, 1719-1724

At Placentia, this entailed dispensing entirely with contracts;¹³ in Ile Royale, exceptions to the usual policy were allowed. By the time the contract with Isabeau was signed at Paris on 7 March 1719,¹⁴ it had been decided to construct masonry fortifications and a number of other masonry structures on a site which until then had been occupied by quite temporary buildings quickly erected during the previous six years, when there had been considerable indecision over which of the several ports

11. *Ibid.*

12. *Ibid.*, p.299.

13. See Chapter IV, pp.163-168.

14. AN, Col., C^{11B}, 4, ff.278-82. It was notarized by one Fortier. Isabeau was described as "entrepreneur de bâtiments, demeurant à Paris, rue de Mislé, paroisse St. Nicolas des Champs."

was to be the capital of the colony and headquarters of the French fishery. Thus, construction required the razing of only a few temporary buildings which would otherwise obstruct the site of the principal bastion and the citadel barracks. Furthermore there was a severe shortage of labour, particularly of skilled craftsmen. It was undoubtedly in view of the isolation of the colony that the Court decided, against its normal policy, not to oblige Isabeau to transport his own building materials to the site or to raise all the skilled labour that he required.

Isabeau, who may have undertaken construction for the *corps du génie* in northern France, was first sent briefly to Ile Royale in 1717 primarily to look for building materials and to examine the terrain.¹⁵ There is no record of other bidders, and if there were any they must have received short shrift from the Marine Council, in spite of a royal edict of 1718 that the contract awards were to be made strictly according to established practice.¹⁶ Moreover, the Court ignored a suggestion by the governor and financial commissary that builders might be sought in Canada as well as in France to take on parts of the Louisbourg works and thereby accelerate completion of the fortress.¹⁷

Isabeau's task was to construct the King's Bastion, and the citadel barracks which was to close its gorge, with casemates (i.e. bomb-proof shelters) in the two flanks of the bastion, the whole thing to be

15. AN, Col., B, 39, f.227v.: to Costebelle and Soubras, 26 June 1717.

16. AN, Marine, A¹, 56, pièce 44: mémoire du roi, 28 June 1718. Same text in AN, Col., C^{11B}, 3, f.67, 26 June 1718, and B, 40, ff.537-538v.

17. AN, Col., C^{11B}, 2, f.163: Saint-Ovide and Soubras, 13 September 1717.

finished in masonry, wood, iron and other hardware; and to make construction conform with the plans and sections which had been worked out jointly between him and the engineer Jean-François de Verville.¹⁸ Isabeau was to furnish any additional labour required for transporting wood, limestone, freestone, plaster and other materials from Port Dauphin, Port Toulouse and other places; otherwise, such local transport was the Crown's responsibility. Furthermore, the Crown was responsible for finding in France ten masons and two stonecutters for Louisbourg to be put at Isabeau's disposal; while Isabeau was to be provided with passage and subsistence from France to Ile Royale. For his part, Isabeau was to hire at his own expense a carpenter, a joiner, a locksmith, a main foreman and an assistant foreman whose ocean passage would be provided by the Crown. Spades, picks, shovels, saws, rope and other equipment and supplies would be provided from the naval stores at Rochefort at cost plus freight.

Isabeau was provided with a building where his craftsmen would live and where his tools and materials could be kept, and in addition he was to receive free annually one ton of freight from France. For additional freight, he was to reimburse the Crown at the rate current at La Rochelle. In accordance with normal practice, the rates at which he was to be paid for his work were set out in the contract, under such headings as excavation of earth, fieldstone walls, mortar (one-third

18. Later evidence (1727 and 1731) shows that the hospital, stores building and a shed, and repairs to older temporary buildings, were somehow added. No extant contracts show the legal basis for this. See C^{11B}, 9, ff.231-250v.: Verrier, 15 November 1727, and C^{11B}, 12, ff.122-143, 145: Verrier, 1 September 1731.

lime, two-thirds sand), cut stone, brick fireplaces including plaster, flooring, roofing in wood, shingles, etc.; also rates for locks and other hardware, for different kinds of window frames and windows, shutters, etc.; and for glass and lead. Prices covered all materials and work. Isabeau was to be paid as work advanced by the agent of the treasurer-general of the marine functioning for that particular year. However, he was to receive advances every two weeks on account, on the basis of an *avant-toisé* signed by the engineer.¹⁹

The procedures for measuring the work completed by a contractor and determining his compensation became a source of bitter controversy between the governor and the senior engineer during the first four years of construction. It is therefore well to review the instruction issued in 1718 on this subject. The engineer-in-charge was to keep work records, issuing vouchers which the financial commissary was to use as the basis for authorizing to the contractor the interim payments the treasurer-general's agent was to make. In the absence or preoccupation of the financial commissary, the treasurer's agent was empowered to make payments on the engineer's order, provided the latter reported such payment to the financial commissary every four days for approval. Furthermore, the engineer was to draw up every year a *toisé* of the work completed, and to submit it to the governor and financial commissary for review. The latter was then to authorize payment of the remaining sums owing the contractor for the year completed. The sum paid comprised the total amount due the

19. *Ibid.*

contractor according to the *toisé*, less the interim payments made from time to time according to the engineer's vouchers.²⁰

Thus the authority to pay the contractor, whether advances for current expenses or compensation for work completed according the terms of the contract, lay with the financial commissary, who carried out the duties of intendant in the colony. He issued his authority to the agent of the treasurer-general, on the basis of facts provided by the engineer-in-charge.

It was supposed that, if this procedure were followed, if relations among officials were harmonious and if everyone put the King's interest ahead of his own, the fortifications and buildings would be constructed economically and with despatch. In fact, neither the contract nor the rules of procedure were devised to meet the conditions that Isabeau encountered. Between 1719 and 1724, progress was slow; accounts were poorly kept; the engineer and contractor were ranged politically against the governor, financial commissary and officers of the garrison; several of the procedures were contravened; and the contract was at times ignored. In 1719 and 1720, labour and materials were diverted to other construction from works contracted to Isabeau. Some publicly-owned materials may have been simply taken by the contractor. The latter was obliged to look to his own financial resources to keep construction going when his cash advances from the government were exhausted. Finally, clauses in the contract intended to limit expenditure each season were inappropriate

20. Mémoire du roi, 28 June 1718, *loc. cit.*

in a climate with extremely changeable weather conditions.

Isabeau's first construction season (1719) was unproductive. He arrived in the colony too late to commence work.²¹ Since the delay had been due to the late sailing of a King's ship, he was compensated during the ensuing winter by the Crown. He and his craftsmen were provided with subsistence. However, the officers of the garrison took advantage of the situation by hiring skilled and unskilled labour to build them houses on the townsite. Disregarding Isabeau's contract, they even ordered soldiers to continue some work on the fortifications.²² Since Verville and Isabeau believed they had a mandate directly from the Marine Council, they construed any actions which seemed to interfere with their duty to build well and quickly, as working against the interest of the Crown. The governor failed to make the garrison officers co-operate with them because he was totally opposed to Verville's priority for masonry fortifications on the landward side, and increasingly incensed by Verville's haughty disdain for his opinion and apparent disregard for his authority over fortifications.²³

More was accomplished during the second season (1720) but officers of the garrison were not reconciled to the contractor. Work proceeded on the King's Bastion and citadel barracks, but as soon as

21. AN, Col., C^{11B}, 12, f.144: Isabeau to Comte de Toulouse, 1719.

22. AN, Col., C^{11B}, 4, ff.248-249: Isabeau to Council, 22 October 1719.

23. *Ibid.*, ff.39-45: minute to Council on despatch of Soubras, 1 April 1719; ff.107-108v.: Verville to Council, July 1719; ff.76-85: Saint-Ovide to Council, 4 March 1719; 5, ff.202-205: Saint-Ovide to Council, 11 November 1720.

Verville had left for France Isabeau was forced to divert men and materials (such as boards, shingles and hardware) to the construction of officers' houses. Word of this reached the Marine Council through Verville, to whom Isabeau had written.²⁴ Advised by Verville that the officers did not require special housing because they could live in existing barracks at Port Dauphin and Port Toulouse until their Louisbourg quarters were ready, the Council warned the governor and financial commissary that they would be held responsible for any future activity that might detract from construction progress.²⁵ The houses, however, were an accomplished fact---although the only hint, in the accounts extant for those years, of the use of public funds for their construction is an item in the *état du roi* (fortifications) for 1721: 2,000 *livres* for "repairs to the officers' houses."²⁶

As a private entrepreneur under contract to the government, Isabeau was responsible for meeting his contractual obligations whether

24. *Ibid.*, 5, ff.418-422: Isabeau to Verville, 27 November 1720; Verville to Council, 24 February 1721.

25. AN, Col., B, 44, f.566v.: Council to Saint-Ovide and Mézy, 1 July 1721.

26. AN, Col., F^{1A}, 22, ff.84-85: 21 May 1721. The records did not differentiate adequately the publicly-owned materials from those belonging to Isabeau. The latter were used in the construction of houses, but the contractor acquired Crown-owned materials that had been stockpiled in earlier years at Port Toulouse, Port Dauphin and L'Indienne. Limestone quarried earlier at Port Dauphin and shipped to Louisbourg was apparently sold for use in house construction. Isabeau and De Mézy accused one another of profiting from this enterprise. C^{11B}, 5, ff.58-67v.: Mézy to Council, 13 August 1720; B, 44, f.566v.: to Saint-Ovide and Mézy, 1 July 1721.

his advances were adequate or not, and whether or not the government's agents respected the terms of his contract. Thus, lacking special advances for house construction, Isabeau was reduced in November 1720, to only 500 *livres* cash on hand or, as he put it, "pour mieux dire, rien du tout". First, he paid the workmen in promissory notes signed by the financial commissary. Sharply discounted, they eventually cost the Crown about ten times their face value, according to Verville---about 10 *écus* to 3 to 4 *livres*.²⁷ Isabeau borrowed from 10,000 to 12,000 from Louisbourg merchants and, by so doing, succeeded in accomplishing more construction in the 1721 season, according to Verville, than he would have done had he relied on the Council's advances alone.²⁸ The extent to which Isabeau could have continued to meet his obligations in this way by private borrowing, depended very much on his credit in the business community. He was forced to borrow 5,000 *livres* in order to meet his expenses during the 1722 season.²⁹

Did Isabeau merely drift into trafficking in wine and spirits in order to satisfy the workers' rather insistent demand for payment of their wages, or did he deliberately engage in competition with the officers (and their wives!) who, as we have seen, had already been engaged in this

27. AN, Col., C^{11B}, 5, ff.418-422: Isabeau to Verville, 27 November 1720 and Verville to Council, 24 February 1721.

28. *Ibid.*, ff.414-416: Verville to Council, 9 October 1721. There is no evidence that the Council, to alleviate Isabeau's financial embarrassment, acted on Verville's advice and sent the contractor 3,000 to 4,000 *livres* by the first ship in 1721.

29. *Ibid.*, 6, ff.127-130: Isabeau to Toulouse, 30 November 1722. Isabeau accused Dégoutin, treasurer of refusing to pay him 1,200 *livres* on the signature of Couagne, assistant engineer. He refused to answer for the consequences of not paying wages. AN, Section Outremer, G³, 2057, 1722 no. 8, 6 July 1722.

kind of trade with the soldiers as a captive clientele? Isabeau, of course, insisted that the former was the case: he ran out of cash in 1721, and when the workers discovered that he had in his possession three barrels of wine intended for the consumption of his own staff, they demanded it as payment in lieu of wages. He refused but was persuaded by the engineers to change his mind; whereupon the governor told him that he was to desist and share the market with his competitors. He attributed the brisk trade in wine and spirits to the bad habits into which the officers had got the men before he had begun to work under his contract.³⁰ Naturally the accusations made by the officers against Isabeau, which were usually supported by the governor, were to the effect that he deliberately set out to traffic in these luxury goods, whereas he alleged that he had asked for cash advances instead of the right to a share of the local trade as a means of raising the funds required for the payment of wages and the cost of materials. He pointed out that the continued lack of cash on his part was likely to provoke a mutinous mood on the part of the troops who were working for him.³¹

If Isabeau was a victim of arbitrary local government (as he and Verville implied), he or his estate may also have gained, with respect to the early years, from generous rates provided for in his contract. According to the governor and financial commissary, prices in the colony in 1719 and 1720 were lower than those accorded him: a table they prepared, based on a *toisé* by Verville, purported to show that the work

30. AN, Col., C^{11B}, 6, ff.127-130, *loc. cit.*

31. *Ibid.*

done to September 1720 cost the Crown almost 53,500 *livres*, whereas according to them, the cost should have been slightly less than 28,450.³² The accounts for the period are so inadequate that it is impossible to confirm this from other sources.

The rules which the Court devised for controlling fortifications funds were hardly suited to the climatic conditions of Ile Royale. By an order of 24 June 1721, construction was to cease when expenditures approached 6,000 *livres*; and that amount was to be advanced to the contractor on account in order to cover the materials remaining in his possession or those which he would be stockpiling for the next season.³³ Despite the soundness of the purpose---to avoid having to pay for labour and materials on credit---the order did not take into account the vagaries of the climate, which made it impossible to forecast whether there would be more than the usual number of rain-free days, permitting the contractor to advance his work more than had been expected.³⁴ On the other hand, the Court was urging those on the site to hasten the work, while at the same time limiting the progress of construction by not providing for enough flexibility to permit work at a faster pace than was usual.

The death of Isabeau in 1724, and the performance of most of the work for the next twenty years by Ganet and Muiron, tend to obscure the fact that Isabeau was not originally contracted for all the works at

32. AN, Col., 5, ff.220-221v.: attachment to Saint-Ovide and Mésy to Council, 20 November 1720.

33. *Ibid.*, 6, ff.30-51: despatch to Saint-Ovide and Mésy, 12 May 1722.

34. *Ibid.*, ff.170-173: to Saint-Ovide and Mésy, 27 May 1723.

Louisbourg, but only for the King's Bastion and citadel barracks. It was intended in 1723 to find contractors to begin work on other structures while Isabeau continued with his responsibilities. While sorting out the method of awarding contracts for the new structures, officials at Versailles decided to begin with specific small contracts in the 1723 season, including excavation and some masonry structures on the site of the Royal Battery.³⁵

Saint-Ovide and Verville gave contradictory advice in 1723 on the selection of contractors for the Royal and Island Batteries. Saint-Ovide was convinced that local businessmen could do the job with local materials, under the direction of an engineer with colonial experience such as Beaucours.³⁶ Verville, on the other hand, firmly believed that the new work should be undertaken by Isabeau, who would thus become general contractor for all the construction within the town. He argued that no one in the colony could underbid Isabeau, casting serious doubts upon the ability of other businessmen to carry out the kind of supervision over the craftsmen that Isabeau and his assistants were able to provide. As a result, he wrote, "...on doit bien se défier en Europe des propositions contradictoires de ceux qui habitent l'Amérique car l'inexpérience et la distance des mers confondent presque les bons avec les mauvais."³⁷

35. *Ibid.*

36. *Ibid.*, ff.152-162v.: Saint-Ovide and Mézy, 29 December 1723; ff.235-242: Mézy, 24 November 1723.

37. *Ibid.*, ff.293-294v.: Verville, 14 August 1723.

In order to understand why such words might have been convincing, one must assume that the Court officials habitually favoured European methods, European experience and European staff over those of the colonies. One thing is most evident: complete trust was placed in Verville and opinions contrary to his were usually suspect. This was not at all inconsistent with policy, for the construction of a European fortress-port on North American shores implied the use of European methods of construction.

Saint-Ovide accused the director of fortifications and the contractor of collusion. The governor was convinced that Verville's plan, and particularly his priorities, were quite wrong. Since he probably believed that it was quite inappropriate for a specialist on inland fortifications to be directing the construction at Louisbourg, he doubtless considered that Verville was protecting the contractor from justifiable criticism of his business methods.³⁸ As has been shown earlier,³⁹ there were bitter differences of opinion during the Verville-Isabeau period concerning the proper procedure for the payment of the contractor on the basis of measurements made of work finished. The Court came unequivocally down on the side of Verville, thereby reversing itself and contradicting an order it had issued in 1719. In any event Verville, as we have seen, supported Isabeau's "zeal" in borrowing money in order to continue building, and had condemned moves to involve Isabeau in construction activities outside of his contract. Moreover, the

38. *Ibid.*, ff.182-186: Saint-Ovide, 22 November 1723.

39. See Chapter IV, pp.176-180.

engineer was quick to point out that the contractor had been working in difficult conditions not only because of the distance from the home base and the unpredictable climate, but also because of the deterioration of his own health, which caused him to lose about two days every week.⁴⁰

No one but Isabeau made a bid in 1723 for the contracts on the port defences. Some businessmen were interested but, according to Saint-Ovide, Verville managed to dissuade them from making bids by giving them the impression that they would be financially ruined if they succeeded in underbidding Isabeau. Verville, it was alleged, had implied that every bit of work done by them would have to be torn down and redone, thereby doubling or trebling the expense.⁴¹ The financial commissary had written to the intendant of New France, Michel Bégon, asking him to induce experienced builders from Canada to underbid Isabeau. The conditions the Canadians offered, however, were vague about assuming responsibility for the transport of building materials, a factor that the financial commissary, in his drafts of contracts, had made an indispensable proviso.⁴²

Garnet, 1725-1737

Upon learning of Isabeau's death, the Marine Department took no

40. *Ibid.*, ff.293-294v.: Verville, 14 August 1723. This must have been the illness that eventually led to Isabeau's death.

41. *Ibid.*, ff.199-203v.: Saint-Ovide, 26 November 1723.

42. *Ibid.*, ff.235-242: Mézy, 24 November 1723. Isabeau died during a voyage to France, where he hoped to recover his health. AN, Col., B, 47, ff.306-314: to Saint-Ovide and Mézy, 26 June 1724; C¹¹B, 7, ff.132-133v.: Verville, 3 July 1724. *Ibid.*, B, 48, f.925: to Saint-Ovide and Mézy, 1 May 1725.

action to replace him, for the unfinished work on the citadel barracks and King's Bastion was the legal responsibility of the contractor's heirs. What the Department did was to award to François Ganet, a builder in France who had underbid Isabeau in 1724, the contract for the Royal and Island Batteries and for the transport of the materials required for the construction of the hospital and the King's stores.⁴³ In Paris, Ganet apparently tried to persuade his predecessor's father and principal heir, Arnoud Isabeau, to let him assume the risks and profits pertaining to the unfinished work.⁴⁴ When Ganet arrived in the colony, the governor, the financial commissary and the new resident engineer (Etienne Verrier) were anxious for him to work on the citadel barracks, in order to prevent degradation of the structure and to make it ready to accommodate the troops. Ganet's priority according to his instructions, however, was to commence work immediately on the works for which he had been contracted.⁴⁵

Ganet was not reluctant to bow to local pressure if there were profits to be made from taking over Isabeau's work.⁴⁶ What ensued was a complex legal tangle that could have been avoided if the Court had given special orders for work on the barracks during the 1725 season, or if the local authorities had devised a method of continuing that work without involving Ganet; and if Ganet had adhered to the letter of his

43. *Ibid.*, 71, ff.193-195v.: Decree of 5 February 1740; date of contract was 24 February 1725.

44. *Ibid.*, C^{11B}, 7, ff.368-369v.: Arnoud Isabeau, n.d.

45. *Ibid.*, ff.366-367: Ordinance by Mésy, 24 July 1725. AN, Section Outremer, G³, 2058 (Grefte de L. Micoïn) 1725, no.45: 19 December 1725.

46. AN, Col., C^{11B}, 8, ff.226-228v.: Ganet to Mésy, n.d.; f.221: Mésy to Verrier, 23 May 1725.

instructions. Instead, he made an agreement with Antoinette Isabeau Planton, widowed sister of the former contractor, to assume responsibility for her brother's unfinished work.⁴⁷ Mme Planton had no power of attorney to make such an agreement, either from her late brother, or from his heirs. As Ganet proceeded with work on the barracks, he discovered it to be much less profitable than he had supposed: Isabeau had realized large profits from the coarse work of the early stages, whereas Ganet's task comprised the slow, fine, expensive work of finishing. Discovering then that his agreement with Mme Planton was technically null and void, he repudiated it.⁴⁸ Thereupon Mme Planton obtained the legal authority to continue her deceased brother's work,⁴⁹ which she directed until her own death in 1729.⁵⁰ In 1731, when her estate was being settled,⁵¹ the Crown transferred the responsibilities of the Isabeau-Planton contract to Ganet as part of his second contract (1731-1737). Since Ganet's area of responsibility had already been broadened in 1727⁵² by a supplementary

47. *Ibid.*, 7, f.324: Verrier, 13 November 1725; date of agreement: 24 July 1725 (Col., B, 49, ff.707-708v.: to Saint-Ovide and Mézy, 28 May 1726).

48. *Ibid.*, B, 49, *loc. cit.*; G³, 2058, *loc. cit.*

49. B, 49, *loc. cit.*

50. AN, Section Outremer, G², 180: succession of Antoinette Planton, 15 July 1729. Between 1725 and 1727 Mme Planton and Ganet disputed the value of his 1725 work. Provisional *toisé* in 1727 did not settle the matter, see C^{11B}, 9, ff.231-250v.: Verrier, 15 November 1727.

51. Col., C^{11B}, 12, ff.122-143: Verrier, 1 September 1731. According to calculations made at that time, the Crown owed the estate about 33,430 *livres*. This sum was paid in two instalments. F^{1A}, 30, ff.231-232: 16 June 1732; 31, ff.35-36: 25 May 1733.

52. B, 50, ff.597v.-599: to Verrier, 10 June 1727.

contract, he was now the contractor for all the Louisbourg works.⁵³

Between 1725 and 1743, the colony's volume of trade steadily increased. Ganet and his successor, as businessmen employing labour and using materials and tools, played a significant role in the local economy. The predominant interests, however, were metropolitan, chiefly because the economic base, the fishery, was overwhelmingly metropolitan. Although Canadian, Caribbean, and New England goods were also exchanged at Louisbourg in quantity, the merchants who brought French goods and returned to Europe with cod and other fish were in a good position to manipulate the local market, not only in goods but in specie. The latter became very scarce as the supply never seemed able to meet the demand. Promissory notes and bills of exchange were accepted only at a discount, or were sometimes refused, depending on the credit of the individual in question.

This accounts for Verrier's concern when he reported that Ganet, having used his 1728-1729 advance to pay off 1727-1728 debts⁵⁴ (wages and supplies), could raise no money on the local market in order to continue work. Verrier had to ask the governor to impose military discipline to make the soldiers work.⁵⁵ A similar situation arose in 1734: Ganet used 1734 cash advances to pay for 1733 work; furthermore, like Isabeau in

53. Col., C^{11C}, 11, ff.65-72: 24 December 1732 and 14 October 1733; ff.77-83: 28 October 1734.

54. Although the financial year and the calendar year coincided, the colony had to depend on the previous year's funds until the arrival of the supply ship during the summer.

55. AN, Col., C^{11B}, 10, ff.126-128: Verrier, 27 June 1728; and ff.131-140: Verrier, 13 November 1728.

1722, he made better-than-average progress in 1734, and exhausted his cash supply. Although the financial commissary authorized the issuance of 10,000 *livres* in bills of exchange on 1735 to keep work going, this was far from what Ganet required to pay off debts incurred in 1733. In reporting this, the commissary remarked on the shortage of specie: the only coin that entered the colony each year was that sent on behalf of the Crown by the treasurers-general. The colony could not afford to reduce the quantity, or to drive specie out entirely, by drawing too many bills of exchange on future years.⁵⁶

There is no direct evidence of speculation by Ganet in the local market in goods and specie. In 1735, however, because of his chronic shortage of cash, he tried to postpone the payment of part of the men's wages. This brought him into conflict with the contractors' established rivals, the garrison officers. The soldiers, as well as the officers themselves, were expected to pay metropolitan suppliers before the latter's return to France in the late autumn. They complained they could not settle their debts unless Ganet paid all wages. The financial commissary agreed with the contractor that he should not be expected to pay what he lacked in cash.⁵⁷

56. AN, Col., C^{11B}, 15, ff.221-225: Le Normant, 6 November 1734.

57. AN, Col., C^{11B}, 17, ff.42-45: Saint-Ovide, 28 October 1735. For years Ganet had legal difficulties with an erstwhile partner in France, Gratien d'Arrigrand. The dispute used up some of Ganet's energies and D'Arrigrand's legal attacks against Ganet in France were such that only the latter's contract with the Crown in a distant colony prevented him from facing serious charges in Court. Rightly or wrongly, Ganet was able to prevent D'Arrigrand from seizing half of his tools and equipment as a share under their

Muiron, 1737-1745

When Ganet's contract was renewed and broadened in 1731, Bernard Muiron, a contractor of Dijon, first became involved with Louisbourg.⁵⁸ Coming to the colony in 1736 ostensibly to exploit timber and water rights conceded to his partner D'Arrigrand, in actual fact he was seeking to replace Ganet as the general contractor.⁵⁹ By the time Muiron attained this goal after the expiration of Ganet's second contract, he had already become established in the town because of his own business activity. Neglecting D'Arrigrand's concession, he succeeded in establishing his own leather tannery.⁶⁰

Only after he obtained the general construction contract in 1737,⁶¹ after underbidding Ganet, did Muiron's tannery take second place. During that building season, Ganet's materials and tools were transferred to Muiron, who got a fairly early start on his work. Verrier helped to make the transaction easier by recommending that Ganet finish certain

former partnership. AN, Col., E, 9 (dossier D'Arrigrand); R. Le Blant, "Un entrepreneur à l'île Royale, Gratien d'Arrigrand" in *Revue des Questions Historiques*, vol. 64 (July 1936): offprint (36 pp.) held at P.A.C. library. Articles on Ganet, D'Arrigrand and Muiron, by the present writer, will appear in the *D.C.B.*, vol. III.

58. AN, Section Outremer, G², 180: 1731, Réponse de François Ganet....

59. Le Blant, *op. cit.*, pp.16-17; G², 183, f.430: Muiron, 17 October 1736; Col., C^{11B}, 18, ff.85-87: Le Normant, 6 July 1736.

60. AN, Section Outremer, G³, 2039: Engagement de J. Souvestre, compagnon taneur....à Bernard Muiron.... 6 November 1736; Col., C^{11B}, 20, f.137: Le Normant, 3 November 1738; f.297: Muiron, 4 November 1738; 22, ff.277-278: Muiron, 20 January 1740.

61. Col., C^{11B}, 19, ff.176-188v.: text of contract with Muiron, 10 May 1737. There was nothing in the contract to make it very different from Ganet's.

structures⁶² such as the reconstruction of the lighthouse.⁶³

From his year's experience as a businessman in Louisbourg, Muiron saw the profits to be made from retailing luxury and other goods to the soldier-workers. Like Isabeau, he soon clashed with the officers of the garrison. In November 1736 he complained:

Je ne puis me dispenser de vous informer des mauvais traitements que je reçois de messieurs les officiers de cette colonie qui ne veulent pas me permettre de payer un soldat qui travaille pour moi. Ils exigent des billets de tout ce que je leur fais faire quand il ne leur serait dû que cinq sols, non plus que le prix des ouvrages qu'ils me font, de telle conséquence qu'ils puissent être; en sorte que m'ôtant la liberté de payer moi-même les soldats qui font les travaux, cela me jette dans une dépense beaucoup plus grande. Ces soldats recevant leurs paiements par la main de leurs officiers, veulent et exigent de moi des prix beaucoup plus forts que si les paiements étaient émanés de moi directement parce que ce soldat achèterait avec son argent son nécessaire à un prix d'un tiers et moitié moins que le lui fait payer son officier, il prévoit que j'échouerais à payer les prix que les troupes exigent de moi pouvant les faire à beaucoup moins.⁶⁴

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62. By remaining somewhat longer in the colony than he would ordinarily have done following the awarding of the general contract to Muiron, Ganet was able to postpone his encounter in the courts with D'Arrigrand.
63. Col., B, 65, ff.479-480: to Verrier, 10 May 1737; ff.481v.-482: to Saint-Ovide and Le Normant, 17 May 1737; C^{11B}, 19, ff.232-240: Verrier, 30 October 1737; B, 66, ff.287v.-289v.: to Verrier, 29 April 1738. Verrier and other officials calculated the Ganet accounts in order to prepare the final balance sheet showing the amounts that the Crown owed Ganet. The payments of these amounts were spread over several financial years. Col., B, 71, ff.193-195v.: statement of 28 June 1739 that Crown owes Ganet 44,800 *livres*; F^{1A}, 35, f.20: 27 June 1744: payment of 10,000 *livres* to Ganet.
64. Col., C^{11B}, 20, f.297: Muiron, 4 November 1738.

Evidently the officers had no intention of permitting Muiron to make from the troops the profits they considered their due. This competition for the trade of the soldiers dominated the period of the two contracts of Muiron, from 1737 to the capitulation in 1745. In 1742, when the first contract came up for renewal, Muiron wished to make his bid subject to the condition that he be allowed to pay the troops himself periodically---every two weeks or once a month---instead of going through the officers.⁶⁵ It is interesting to note that the Court believed the officers deserved certain perquisites in this respect:

Quoi qu'il me soit souvent revenu des plaintes sur l'usage où sont les capitaines de compagnie de recevoir les sols qui reviennent aux soldats travailleurs, et de leur faire les fournitures dont ils ont besoin dans le courant de l'année, je n'ai pas voulu accepter la condition que le Sieur Muiron mettait à son offre. J'ai jugé que les fournitures que cet entrepreneur ferait à ces soldats pourraient être plus abusives par elles-mêmes, et occasionner d'ailleurs bien plus de discussion; et persuadé aussi que M. Duquesnel tiendra la main à ce que les capitaines ne puissent pas vexer les soldats travailleurs, je n'ai pas voulu les priver des avantages qu'ils peuvent [avoir] dans ces détails, en ménageant aux soldats ce qu'il est juste qu'ils tirent de leur travail.⁶⁶

Unlike the contractors, who were temporary residents, the captains and other officers of the garrison, were in danger of being kept in the colony for decades. François Bigot suggested that these officers' deeper roots in the colony entitled them to such profit-making ventures as

65. Col., C^{11B}, 23, ff.7-12v.: Duquesnel and Bigot, 10 October 1741; 24 f.295: Muiron, 1 January 1742.

66. Col., B, 74, f.568: to Duquesnel and Bigot, 6 June 1742.

trafficking in goods for the troops. And while it seems to have been conventional ethics to recognize that the troops themselves had rights, in practice it was the officers who were favoured. Moreover, wrote Bigot, soldiers were prone to drunkenness and profligate living: if the Court decided to permit Muiron to pay his helpers once or twice a month, it should insist that the officers be permitted to make deductions from those wages for the soldiers' upkeep. At the same time, Bigot would have permitted the soldiers to purchase drink wherever they wished, at whatever prices they preferred to pay.⁶⁷

It is clear that metropolitan contractors like Muiron, whose period in the colony was limited, strove to make as large a profit as possible before returning to France. Muiron, the only bidder for the second contract, theoretically should have been able to dictate better terms than those he received. His acceptance of the terms suggests that he anticipated interesting profits in some form. One must discount the largely rhetorical complaints made by contractors about the fortunes they were losing in the King's service: their aim was to gain acceptance for their viewpoint. Muiron, for example, complained that the financial commissary and the chief engineer were having special jobs done, using Muiron's materials and equipment, paying him for them only whenever they required them.⁶⁸ The Court noted that justice must be done Muiron and instructed the financial commissary to see to it.⁶⁹ At the same time

67. Col., C^{11B}, 23, ff.88-90v.: Bigot, 15 October 1741.

68. Col., C^{11B}, 22, ff.279-280: Muiron, 10 September 1740.

69. Col., B, 72, ff.425-426v.: to Duquesnel and Bigot, 17 May 1741.

the financial commissary was reminded that he should be diligent in assuring that the Crown was always in debt to the contractor during the period of his contract, and not the reverse.⁷⁰

Muiron argued in 1742 that in ideal circumstances the soldier paid in cash, and permitted to spend his money on whatever he wished and wherever he wished (instead of having it deducted to pay for goods and services he might not have wanted if he had known what was good for him!) would work better and look after his tools; and could be more easily handled. If Muiron were not allowed to pay the men entirely in cash, he should be permitted to pay them partly in goods---from one-third to one-half of their wages, according to their own wishes.⁷¹ Muiron wrote that he required ready cash for the purchase of hardware, and for hiring "special" workers, such as a foreman, a master blacksmith, a locksmith, two valets, and carters. He would need a special advance of 5,400 *livres* for these purposes, to be spent at La Rochelle and Rochefort, as well as free passage for the men, and eight tons of free freight. He would also require a further advance of 10,000 *livres* to be spent in the colony on wages and local supplies. Finally, his rates must rise to match the men's demands for higher wages and the general increase in prices in the colony.⁷² Muiron failed to obtain any of these concessions.

Both the Court, and the governor and financial commissary in office, saw a need in the administration of the contract for a fair

70. *Ibid.*, ff.441-442: to Bigot, 17 May 1741.

71. Col., C^{11B}, 24, f.295: Muiron, 1 January 1742.

72. *Ibid.*, f.296: Muiron, n.d. [1742].

compromise between the claims of the contractor and those of the officers. The Court's priorities were (a) the royal interest in completing the works and (b) those of the soldier-labourer. Company commanders, the governor was told, were to be instructed that "s'il me revenait que quelqu'un d'entre eux fît des manoeuvres, dont les soldats ou l'entrepreneur eût sujet de se plaindre, je ne pourrais me dispenser, outre la punition particulière et exemplaire de celui qui tomberait dans le cas, de leur faire défendre à tous de se mêler et d'entrer pour rien dans ces détails."⁷³ This "last warning" was largely rhetorical. Although the authorities could not afford large-scale mutinies, they did not hold the individual soldier in very high esteem; and their concessions to him were the smallest that were necessary under the circumstances.

During the years following the signing of his second contract, Muiron's situation appeared to deteriorate. At the end of the first year of his new contract, work valued at 109,000 *livres* had been done, but only 30,000 *livres*, one-half in cash and one-half in bills of exchange, had been received. In the previous year he had received 94,000 *livres* in advances instead of the 129,000 *livres* owing for labour. He had to satisfy his creditors temporarily with promissory notes,

en sorte que celui qui doit toucher de moi
3,000 livres ne reçoit que 400 livres d'argent
et autant de lettres de change et le restant en
un billet de moi payable dans un an, ce qui fait
murmurer le public qui me donne mille malédictions
et des promesses de me faire payer dorénavant
argent comptant et à un prix à les dédommager de

73. Col., B, 74, f.568: to Duquesnel and Bigot, 6 June 1742.

ce qu'ils perdent sur mes billets qui est de dix pour cent.... Cette paie dernière s'est faite avec des sols marqués à deux sols pièce et deux jours avant l'entière paie on a diminué ces sols marqués de deux sols à un sol six deniers, il m'en restait encore pour 450 livres de ce que j'avais reçu sur lesquelles il y a en diminution de 150 livres,....⁷⁴

Muiron appears to have been caught with few liquid assets, between a tardy debtor (the Crown) and impatient creditors; and to have found his notes being discounted at ten per cent, or even refused.

The government felt it had to help the contractor. With little or no apparent credit, he was an economic liability. It redeemed his notes (or at least most of their value) and arranged to deduct the amounts from its future payments to him.⁷⁵ In 1744, though the colony was under the threat of military attack, the government reduced the volume of construction in order to help Muiron pay off his promissory notes.⁷⁶ After the surrender of the colony in 1745, the Crown worked out a settlement with Muiron: to purchase from him his materials and tools and to pay him the balance of the funds owing him, i.e. his gross income less the advances already made. Muiron claimed 104,432 *livres* for work and materials provided by him during the siege. He urged early payment of this amount, so that he could settle his debts, which amounted to between 35,000 and 36,000 *livres*. His creditors had been obtaining judgments

74. *Ibid.*, 25, ff.208-10: Muiron, 21 November 1743.

75. Col., B, 76, ff.482-483v.: to Bigot, 12 June 1743; f.493: to Duquesnel and Bigot, 27 June 1743.

76. *Ibid.*, 78, f.413v.: to Verrier, 30 April, 1744; C^{11B}, 25, f.19: Duquesnel and Bigot, 28 October 1743; 26, ff.116-122: Bigot, 13 November 1744.

against him in court, with the probability of his losing his freedom and having his chattels seized and sold. This, he said, would ruin him and his large family.⁷⁷ It was not until 1747, however, that authorization was finally given to pay him in full.

The most plausible explanation for Muiron's acceptance in his second contract of terms less favourable than those he had requested, is his general business interest. He had come to Ile Royale, as any businessman would have done, in anticipation of realizing greater profits than those he had obtained in France. After one year he gave up the management of his relatively successful tannery to bid for and obtain the general construction contract. Military construction, after all, was his field: this was the kind of business in which he had been engaged in Burgundy. Despite the fact that his first contract (1737-1743) had given him cause for complaint, despite the rejection of his request for improved terms for himself, he was evidently prepared in 1742 to risk another six years of difficult business relations with the government. Muiron arrived at Louisbourg when its entrepôt trade was flourishing. By 1742 he had been able to assess the profits being made

77. *Ibid.*, C^{11B}, 27, ff.10-12: Bigot, 3 November 1745; f.200: Muiron, n.d. [1746]; f.64: expense statement, 1745; ff.41-43v.: Verrier, 22 August 1745. In 1746, when he had received 10,000 *livres* on account, Muiron was challenged, as Ganet had been, by Gratien d'Arrigrand: the latter claimed the right to fifty per cent of Muiron's profits, since he had sent Muiron to Ile Royale to obtain the general contract and had agreed to turning over his fifty per cent share of the tools and materials used by Ganet. It does not appear, from the D'Arrigrand dossier, that the latter was able to obtain a judgment against Muiron, although he was still trying to do so as late as 1752. C^{11B}, 27, f.201: Muiron, n.d. [1746]; E, 9 (dossier D'Arrigrand): D'Arrigrand to Rouillé, 27 March 1752.

from speculation in the lucrative trade in goods and specie at Louisbourg. The more specie Muiron could obtain, and the more he could pay wages in kind, the better would be his position for participating in that speculation.

Ile Saint-Jean, 1733-1736

No general contractor was interested in the risks entailed in a construction contract for Port La Joie on Ile Saint-Jean. In 1733, the financial commissary, Le Normant, made a contract with La Plagne Despiet, nephew of the king's lieutenant, Despiet de Pensens, to undertake the construction of fortifications and public buildings for the island's provisional chief settlement.⁷⁸ In view of the relatively small scale of the enterprise, it had little economic importance. It is interesting, however, to note that La Plagne was soon complaining of heavy losses, which he said were due to poor estimating by people at Louisbourg; to being expected to undertake work not covered by his contract; to unfavourable prices for materials and correspondingly poor rates for work; and finally to the unco-operative attitude of the colonial authorities. In 1736 La Plagne submitted a table of comparative piece rates, showing that his were consistently lower than those being paid to Ganet for the same kind of work. La Plagne asserted that he had agreed, at his uncle's request, to accept the contract in default of other bidders; but that he would never have done so if he had thought he would

78. AN, Col., C^{11B}, 14, ff.298-302: Verrier, 23 October 1733.

lose 3,000 to 5,000 *livres* in the course of it.⁷⁹

Ile Royale, 1749-1758

As has been seen,⁸⁰ the Court took four years to decide whether to let a general construction contract for Ile Royale following the French reoccupation of the colony in 1749.

Within a year of the reoccupation, the financial commissary, Jacques Prévost, made a "provisional" contract with a builder called Coeuret⁸¹ to undertake the work of reconstruction being recommended by the new director of fortifications, Louis Franquet. Coeuret was a local supplier whom Prévost engaged not only to save time, but perhaps also to use as a sort of yardstick against which other possible bidders might be measured. In any event, the temporary contract was not intended to prejudice the letting of a general contract. Business in the colony was only becoming re-established. The return of large-scale fishing and trade was foreseen, with an expected rise in prices. Coeuret's rates were thus very provisional. Prévost wished authority for the contract with Coeuret to stockpile materials and to build certain structures during the winter (palisades, planks, lime etc.) "afin de mettre en avance et de gagner une année pour être en état d'exécuter vos ordres avec diligence."⁸² Should Coeuret not be awarded the general contract, the successful bidder would

79. AN, Col., C^{11B}, 18, ff.340-341: La Plagne, 15 October 1735; and ff.337-339: La Plagne, 15 November 1736.

80. See Chapter IV, pp.187-188.

81. Col., C^{11B}, 29, ff.152-155: Prévost, 4 November 1750.

82. *Ibid.*

reimburse him for the stockpiled materials.⁸³

By 1753, when Rouillé was replaced as minister of marine by Machault d'Arnouville, there were hints that the sacred doctrine of the contract might be abandoned in so far as the colony of Ile Royale was concerned. Until then the Court lacked the information required for a clear decision. Franquet, having been sent on various tours of inspection in the Atlantic area and in Canada, was slow in completing his designs. The dispute between the Comte de Raymond and Franquet over the best kind of fortification system to be used for the defence of the colony⁸⁴ undoubtedly contributed to the delay. More than two years after Prévost had made his proposals, officials at Versailles were saying that the most important consideration was the solidity of the works and the speed of construction, whether this was carried out by contract or by direct labour.⁸⁵ There were of course definite disadvantages to the direct employment system. Prévost could adjudicate contract bids if he decided that was the best course to take, but he must obtain the advice of Franquet and the governor before making any awards; and in any event, the awards were subject to the approval of the Court. Before accepting a bid, Prévost was to ensure that the prospective bidder would be financially competent; because if there were none in that state, it would be better not to use the contract system.⁸⁶

83. *Ibid.*

84. See Chapter II, pp.107-108.

85. Col., B, 97, f.294: to Raymond and Prévost, 13 April 1753; f.296: to Prévost, 13 April 1753.

86. *Ibid.*

On 1 October 1753, the contract award was made at the colonial level to Claude Coeuret, who evidently underbid other interested parties.⁸⁷ The Comte de Raymond charged that, in fact, Coeuret had been the only bidder, except for the representative of a certain Baron du Hart, who had said nothing; and that the whole procedure had been irregular.⁸⁸ Nevertheless, in a joint despatch, Franquet and Prévost expected the minister to be pleased at the awarding of the contract to Coeuret "parce que les diminutions qu'il a offertes sur les parties les plus considérables ont empêché ceux qui étaient présents de mettre au rabais, qu'ils nous ont déclaré ne pouvoir se charger de cette entreprise à de plus bas prix, et même que ceux qu'a fait le Sieur Coeuret sont au dessous des offres qu'ils voulaient faire."⁸⁹ Franquet went to some length to explain the incident---where the representative of the Baron had attended but had failed to make a bid---in order to convince the minister that a fair adjudication had taken place.⁹⁰

When the decision came, it went against the colony's recommendation: the minister vetoed the adjudication (while permitting small contracts to go to various persons, including Coeuret) and opted against a general contract. The Baron du Hart had approached the Department of Marine directly in France, and had been sent the conditions under which the

87. A.S.Q., Polygraphie 58, no.3: "Devis et conditions à observer par ceux qui entreprendront les ouvrages ordonnés...." 25 September 1753; marché avec Claude Coeuret, 1 October 1753.

88. Col., C^{11B}, 33, f.86: Raymond, 1 October 1753.

89. *Ibid.*, ff.43-44: Franquet and Prévost, 2 October 1753.

90. *Ibid.*, f.458: Franquet, 9 October 1753; ff.459-460: Franquet, 9 October 1753.

colonial authorities had awarded the contract to Coeuret. He had found he could not underbid Coeuret. However, the minister found Coeuret's prices exorbitant. The decision in favour of direct management was explained in these words:

....il n'est pas douteux en effet que si cette régie est bien faite, on y trouve une diminution considérable dans les dépenses indépendamment de l'avantage qui en doit résulter pour la solidité des ouvrages.

Mais le parti de la régie peut avoir aussi ses embarras et ses inconvénients. Il entraîne des détails qui exigent beaucoup d'intelligence, d'activité et d'exactitude de la part de ceux qui en doivent être chargés. Par cette raison j'aurais peut-être préféré de m'en tenir à l'adjudication passée à Coeuret, toute coûteuse qu'elle aurait été si je n'avais compté sur Monsieur Franquet pour la régie; et il s'y est effectivement prêté avec beaucoup de zèle.⁹¹

The overall administration was therefore put in the hands of the director of fortifications, who was to have whatever professional assistance he required in order to administer effectively the various parts of the works. The result was that between 1755 and 1758, as we know, Franquet had on his staff several professional engineers from the *Corps du Génie*, from which he had come himself. He was also to receive adequate supporting staff, who would replace those normally provided by the contractor:

....il doit rassembler quelques ouvriers qui puissent servir de chefs d'atelier, quelques sujets propres à être inspecteurs ou piqueurs d'ouvrage, et une certaine provision d'outils.

91. Col., B, 99, f.231: to D'Ailleboust and Prévost, 5 March 1754.

Et je compte que tous ces ouvriers et outils seront embarqués sur deux vaisseaux qui doivent s'expédier à Dunkerque pour l'Ile Royale. Monsieur Franquet fera tous ces arrangements dans un voyage qu'il va faire en Flandre, et en informera directement Monsieur Prévost....

Il faut en attendant que Monsieur Prévost prenne les plus justes mesures pour faire continuer l'amas des matériaux aussi abondamment qu'il sera possible. Et comme le sieur Coeuret doit en avoir fait provision, il sera juste de lui en rembourser les dépenses....⁹²

Another despatch emphasized that minor contracts would be made wherever possible in order to reduce the massive administrative tasks and, in general, the cost. The system was to be applied

....pour toutes les parties qui seront susceptibles d'entreprises, telle que l'extraction du moellon, et de la pierre de taille des carrières, de la fourniture de la chaux, de ceux du bois de charpente et autres objets semblables il soit passés des marchés particuliers, si l'occasion s'en présente; et ce sera au sieur Prévost d'y pourvoir suivant les prix et les conditions qui seront indiqués par le sieur Franquet, et les paiements en conséquence de ces marchés seront faits sur les certificats de livraisons de la part de celui qui sera préposé, visé par un ingénieur et par le sieur Franquet, en observant que le préposé dans cette partie et chaque ingénieur dans ce qui sera confié à sa conduite tienne un registre exacte de toutes ces fournitures afin que l'on puisse y avoir recours tant pour des vérifications auxquelles différents incidents peuvent donner lieu, que pour être en état de faire quand on le jugera à propos, la comparaison des quantités des différentes matières qui auront été fournies à celles qui auront été employées.⁹³

Thus, it was between 1719 and 1745 that the device of the general contract was used for the fortifications and public buildings of Ile

92. *Ibid.*

93. *Ibid.*, ff.240-243: to Drucour and Prévost, 12 May 1754.

Royale. Prior to that time, when the foundations of the colony were being laid, and in those years from 1715 to 1719 when the Marine Council had not decided to make Louisbourg the capital, direct labour was used, as it had been at Placentia before 1713. After the reoccupation, the Department of Marine carefully considered the use of general contractors and decided that the institution was not sacrosanct. What was sacrosanct, according to the officials, was economical construction; and whether this was to be achieved by contract or not depended on the conditions offered. The doctrine that the general contract was always more economical was therefore rejected in favour of a more flexible system permitting specific contracts wherever a general contract was considered uneconomical.

Were the administrators at Versailles disillusioned by the general contract system? Fairly large sums had been laid out on the fortifications of Ile Royale, notably the fortress of Louisbourg. But would there have been a greater saving had the general contract system not been employed? This seems quite doubtful, since the government spread its payments to the contractor over many years, and since many administrative costs would have been incurred. It would be more accurate to say simply that the authorities after the Maurepas era had become less doctrinaire on the subject. In 1731, twenty-two years before the incident of the rejection of the Coeuret contract, an officer of the *Corps du Génie* had advocated a greater degree of flexibility in the awarding of contracts, urging that the type of award be adjusted to the

kind of situation encountered.⁹⁴ Though his memorandum applied to the European scene, it seems to have had equal validity for the colonies.

94. Comité technique du Génie, Archives, art. 2, sec. 1, ctn. 1, pièce 6.

CHAPTER VI: LABOUR

The state could provide unskilled labour for the construction programs of the Gulf region during the period under study by recruiting garrisons of adequate size. Although this solved the general labour-supply problem throughout most of the period, there were construction seasons when even this ready-made source failed to meet the demand. For skilled craftsmen, however, the military cadres were a very uncertain source; and there was little incentive for civilians in the building trades to emigrate to fishing communities. Nor was there a surplus of skilled labour in Canada upon which to draw. In the following pages, we describe how labour was supplied for the building programs, what the political and economic repercussions of those methods were, both in France and the colony, and why those repercussions occurred.

At Placentia, several devices for recruiting skilled craftsmen

for work on the fortifications were attempted: inducing the owners of fishing vessels to recruit and transport civilian craftsmen; recruiting craftsmen into military service by either voluntary or other methods; and recruiting the civilians directly through the port officials of the Ministry of Marine. At best, these methods met with only sporadic success. During the formative years of Ile Royale, the last two of the foregoing methods were used. After the award of a general construction contract in 1719, the contractor was responsible for providing skilled labour. This did not completely solve the problem for the government, however, since in the beginning the contractor encountered difficulty in finding suitable men in certain trades; and the government was obliged in its own interest to assist him. Also, for certain tasks, such as sapping and mining, the Crown provided military specialists for the specific period during which they were needed.

Gradually, the labour supply increased. As the large construction program at Louisbourg progressed, it generated its own demand for skilled labour. Furthermore, the development of the port as a trading entrepôt, with the consequent expansion of private construction throughout the town, created enough work for certain self-employed craftsmen to undertake jobs for the local government, for the general contractor or for private individuals. This situation prevailed at Louisbourg until 1745. Elsewhere in the colony, skilled labour was scarce; Louisbourg supplied the need only when workers could be spared from the capital. After 1749 a shortage of skilled labour existed until the French colony became fully re-established with trade and fishing flourishing. Since the government

did not award a general construction contract during those years, the local officials were responsible, with the help of the home authorities, for hiring skilled craftsmen. Some had to be found in France, because the director of fortifications decided to use techniques new to Ile Royale, and to revive others that had been abandoned; and this necessitated importing specialists. However, there was a fairly good supply of skilled workers who had returned to the colony or emigrated in the hope of improving their lot, some of them for the profits they might derive from investment in business outside of their own particular craft.

Placentia, 1695-1713

During the Placentia period, the state depended upon merchant vessels for most of the transport of labour; in addition, it wished to involve the shipowners in recruitment. There were several ways of raising skilled labour in France: craftsmen could be induced to emigrate as fully qualified, solvent civilians, or to become indentured for a specified period; they could be found serving in the ports as soldiers in the independent companies of the *Troupes de la Marine* or recruited into those companies and put to work at their trades; and they could be pressed into service as crew members of fishing vessels, to work on the fortifications while their messmates spent the season in the fishing zones. Most of these methods were tried.

Since the government looked upon the fortifications as protection for the fishing fleets, it was determined to have the merchants finance

an important part of them through the supply and transport of labour and materials. The merchants seem to have been equally as determined to avoid such service. They were loyal to the King but had a natural aversion to assisting the government financially unless they could see advantages for themselves in so doing. Though their ships were promised a safe harbour when threatened by storms or enemies, they did not really understand how Placentia's crumbling fortifications and few guns could protect their fleets and precious cargoes. During wartime an attack might come when there was not enough time to retreat to Placentia, and French naval forces in the North Atlantic were unequal to the task of escorting them. On the other hand, their resistance to government pressure was subtle. It took the form of pleading, quite plausible excuses, or bargaining with port officials.

A few months after his arrival at Placentia in 1695, L'Hermitte wrote that "...les compagnies sont trop faibles pour y prendre des ouvriers. Pour des maçons, il n'est pas possible de s'en passer. Ceux que nous avons sont des soldats à qui j'ai appris. Nous avons besoin d'un homme entendu pour les conduire, ne pouvant pas toujours être avec eux."¹ Since few funds had been provided, his requirements were modest: a good mason to act as foreman, and some labourers. The request, however, set in motion a series of political manoeuvres with the shipowners² that were to continue in one form or another until construction at Placentia

1. AN, Col., C^{11C}, 2, ff.72-73v.: L'Hermitte, 14 October 1695.

2. I.e. the *armateurs*, the merchants who fitted out the vessels of the fishing fleets.

ceased, and which had their counterparts in the field of materials and supplies.³ In reply to L'Hermitte's request, the Ministry of Marine undertook to have the ships going from St. Malo and Granville to Placentia for the 1696 fishing season, carry two masons and four labourers for employment on the fortifications;⁴ but the minister was reluctant to obstruct the departure of the *terreneuviers* for having failed to fulfil the requirement, so no masons were actually sent to the colony. Neither the shipowners nor the port officials had been able to recruit any.⁵ In 1697, the Ministry issued orders that every merchant vessel bound for the colony was to carry either four barrels of lime or one mason.⁶ Limestone arrived in quantity,⁷ but no masons appeared. L'Hermitte would have been fairly satisfied with about 100 soldier-labourers out of a garrison of 150, but stressed that little could be accomplished unless six masons, four stonecutters, four carpenters, a tiler, a limeburner and a joiner were recruited in France.⁸ Brisacier, an official sent from Rochefort in 1698 to report on Placentia, raised

3. Chapter VII.

4. AN, Marine, B², 115, ff.457-459: to Argoud, 22 February 1696.

5. *Ibid.*, 116, f.121: to Le Camus, 18 April 1696; ff.286v.-288: to Gastines, 9 May 1696.

6. *Ibid.*, 124, ff.245-246: to Argoud, 30 January 1697.

7. An English visitor reported having seen 200 hogsheads next to the lower fort! C.S.P., A.W.I., 1697-1698, no.990, pp.552-553 (1698). See Chapter VII.

8. AN, Col., C^{11C}, 2, ff.145-148v.: L'Hermitte, n.d. [1697]; ff.150-151v.: L'Hermitte [25 August 1697]. The same text may be found in AN, Section Outremer, D.F.C., A.S., no.107: 25 August 1697.

that estimate to eighteen masons, twelve stonecutters, twelve carpenters and three joiners.⁹

The labour shortage persisted despite new signs of government interest. Gradual increases in appropriations for construction¹⁰ made Brisacier's estimates more realistic than before, though still rather high in relation to the numbers apparently available in France. Nevertheless, in 1699, L'Hermitte still had at his disposal only three carpenters, four masons and eighteen labourers from the garrison: as he reiterated, there was little he could achieve with that sort of labour force. He suggested that labour be paid for out of a special levy on fishing vessels of 20 *soles* per ton of cargo. He estimated that in 1699 such a tax would have brought between 14,000 and 15,000 *livres* of revenue, sufficient to pay the wages of fifty labourers, and eight to ten masons and stonecutters.¹¹

The Ministry disregarded L'Hermitte's proposal, probably for the reason that the revenue so raised would not have justified the political disadvantages of an additional tax. The government preferred contributions in the form of passage, subsistence and perhaps wages---all of

9. *Ibid.*, ff.176-180v., 188-199v.: Brisacier, 2 December 1698. Brisacier was an administrator (*écrivain principal de la marine*), not an engineer.

10. Chapter III.

11. AN, Col., C^{11C}, 2, ff.226-232v.: L'Hermitte, 21 September 1699; ff.247-249v.: Durand de la Garenne, 20 October 1699. One of the four masons was an Irishman married to a Frenchwoman---a settler in the colony. L'Hermitte complained that 33 soldiers were not available as labourers for the fortifications because they were working for officers and civilians. He insisted on undisputed priority for fortifications.

which seemed psychologically more palatable. Though vacancies in the establishment of the Placentia garrison made it possible for the Ministry to supply some of the skilled labour itself in the draft of twenty-nine reinforcements sent out in 1700, it was clear that civilians were also required.

They could hardly be induced by the prospect of financial betterment to work on the bleak shores of the Avalon peninsula, even for a few years. Masons in France at this time might expect at the most 30 *sols* a day,¹² presumably without board or other perquisites. Though data on wages, whether in France or at Placentia, are extremely scarce for the period, the little evidence we have for rates paid in the colony indicates that for stonecutters and masons they ranged from 20 to 50 *livres* a month, plus food, depending on the qualifications of the individual. In 1704, two carpenters and one mason were paid 40 *livres* apiece, while another mason received 45.¹³ In 1708, among a group of ten stonecutters and masons from the Basque ports, one was paid 50 *livres*, three received 40, one 35, three others 30 and two of them 20 *livres*. Rations were valued at 18 *sols*, 3 *deniers* a day.¹⁴ The same year, six men of the same trades

12. Braudel and Labrousse, *Histoire économique et sociale*.... II, p.273. The figures were compiled by Goubert. Perhaps some of the building trades were underpaid, or the men thought they were. In any event, there were labour disputes between 1691 and 1704 involving roofers, carpenters and joiners: E. Coornaert, *Les Compagnonnages en France* (Paris, 1966), pp.425-428.

13. AN, Col., F^{1A}, 11, ff.243-245v.: procès-verbal d'embarquement [des fonds] pour Plaisance, 9 May 1704.

14. AN, Col., C^{11C}, 6, f.147: Costebelle, 25 October 1708. Wages authorized for Louisiana in 1707 had ranged from 32 to 40 *livres* a month for skilled workers: F^{1A}, 14, f.59: *état du roi*, La Louisiane, 13 June 1707.

from St. Malo demanded 45 *livres* a month, plus board, as their price for working at Placentia.¹⁵ In 1700, it was suggested that masons could be recruited at Bordeaux and Bayonne at a rate of 20 to 25 *livres* for each month worked at Placentia, if---and this was vital---rations were provided for the whole year.¹⁶ Though these figures are far from conclusive, they do not suggest that men might hope for quick gains from seasonal or year-round work on the fortifications of Placentia.

It was found that year-round workers were under-employed. During the winter, timber could be hewn, stone cut, materials stockpiled and mortar prepared---but little else. On its meagre budget, the colony preferred to pay seasonal wages to skilled craftsmen. If they were soldiers, they would be paid civilian wages only for the months they actually worked on the fortifications. As for civilians, the government had several options: it could transport and maintain them; it could expect the *armateurs* to transport them; or, it could share costs with the *armateurs*, even expecting the latter to pay part of the wages. Until 1704, the government fought on two fronts: it ordered port officials from the Basque country to Normandy to continue recruiting men of the building trades for military service; at the same time, it instructed them to persuade the *armateurs* to recruit civilians. The military recruiting campaign was only slightly successful: the draft of 1700, for example, included only eight craftsmen: three sawyers, one stonecutter and four

15. AN, Marine, B³, 157, f.146: Lempereur, 8 April 1708.

16. AN, Col., C^{11C}, 3, ff.43-52v.: L'Hermitte, 1 October 1700.

masons.¹⁷ As the threat of renewed war increased the competition for recruits,¹⁸ the government resorted to such methods of recruiting civilians as hiring them for a two-year period on year-round subsistence, plus 20 to 25 *livres* for each month actually worked. The advantage of that arrangement was that the men would be on hand throughout the whole construction season---not only from the arrival of the first ship to the departure of the last.¹⁹ The disadvantage was that the government had to feed and clothe for twelve months men who practised their trades for only six or seven.

Eventually, the Ministry reverted to the idea of obliging the merchants to finance the skilled-labour supply. In 1705, it decided that the *armateurs* must hire the workers for the season as crew members, pay their wages, provide their upkeep, deliver them early to Placentia and pick them up late for the return voyage. Endeavouring to demonstrate a relationship between the profits of a merchantman and its owner's obligation toward the fortifications, the Ministry made the rule that each *terreneuvier* out of St. Malo, Granville, Nantes and Bayonne with a capacity exceeding 2,500 quintals of cod, was to carry a mason in her crew.²⁰

17. *Ibid.*, ff.12-15: L'Hermitte, 19 July 1700.

18. AN, Col., B, 22, f.187v.: to Monic, 13 April 1701.

19. AN, Col., C^{11C}, 3, ff.39-42: Monic, 30 September 1700; ff.43-52v.: L'Hermitte, 1 October 1700; Marine, B², 153, ff.442-443v.: to Argoud (Bayonne), 23 February 1701.

20. AN, Col., C^{11C}, 4, ff.111-133v.: Subercase, 26 October 1704; B, 27, f.114: to Argoud, 28 January 1705.

The apparent disadvantages of these arrangements to the merchants stiffened their resistance to the government orders. Some complained that it was extremely time-consuming and costly to carry out the recruiting. Most craftsmen feared the sea. If port officials would do the recruiting, they (the shipowners) would bear the cost of passage, accommodation, board and wages.²¹ Others thought that only a certain number of ships should be obliged to sign on craftsmen, but made no suggestion as to how a selection ought to be made.²² Some merchants not only lied about the number of craftsmen in their district willing to work at Placentia, but even tried to bribe a recruiting foreman into saying he could find no men.²³

Despite voluminous correspondence between Placentia, Versailles and the French Atlantic ports, such negotiations with the merchants failed to alleviate the labour shortage. By 1708, the Ministry abandoned its attempts at persuasion in favour of penalties for failure to conform to government orders. Ships would not be permitted to leave their own ports for the fishing grounds unless they had craftsmen on board (or were carrying building materials).²⁴ After warnings, heavy fines were to be imposed for disobedience:²⁵ some fines actually were imposed.²⁶

21. AN, Marine, B³, 146, ff.49-54v.: Lusançay, 22 February 1707.

22. *Ibid.*, B², 196, ff.1037v.-1038: to Laudreau, 9 March 1707.

23. That occurred at Bayonne: AN, Col., C^{11C}, 6, ff.47-72v.: Costebelle, 28 October 1708.

24. AN, Marine, B³, 145, ff.55-58: Lempereur, 6 March 1707.

25. AN, Col., B, 29, f.425v.: to Laudreau, 25 January 1708.

26. *Ibid.*, 30, f.242: to Lempereur, 19 January 1709.

Yet coercion was not the answer. Unless the government was prepared to commandeer merchant ships and crews (which it was not), then to prevent ships from leaving their home ports was to deprive Placentia of the food supplies it desperately needed.²⁷ For food shortages, due largely to English naval and privateering action, but partly to monopolistic trade practices,²⁸ plagued the colony from 1701 to 1713.

None of the methods the government used for recruiting skilled labour for the fortifications of Placentia was really successful. The Ministry had not tried indentured apprenticeship, obviously because it hoped it could recruit trained men for the urgent work at hand. If it had done so in the early 1690s, it might have had an adequate work force by 1700.

Ile Royale, 1713-1719

When the government was establishing its new base for the French fishery, it could not rely upon the *amateurs* to recruit and transport the labour force for its construction workshops. All workers were to be recruited by port officials of the Ministry of Marine and given passage to Ile Royale on the King's supply ships that would visit the colony regularly.

Supply continued to fall short of demand, particularly in certain

27. AN, Marine, B³, 169, ff.46-49v.: Lempereur, 6 February 1709.

28. These persisted from the colony's beginnings. For the period before 1690, see J. Humphreys, *Plaisance....1660-1690* (Ottawa, 1970) *passim*.

trades. The colony apparently began with four blacksmiths, one nailer, two coopers, three masons, two edge-tool makers, four carpenters, one joiner, one caulker, one brickmaker and one turner.²⁹ A few skilled workers were sent from Canada, but some did not remain.³⁰ Of the first group sent from Rochefort (in 1714), officials had been able to fill the order for coopers, carpenters, a blacksmith and a glazier, but had found only one of four masons, one of two joiners, and no stonecutters or plasterers. In general, the wages demanded were relatively high.³¹ In 1715, Rochefort found only one of the two master brickmakers required to direct the construction and operation of the kiln at Port Toulouse, and only two of the four masons requested.³² The Marine Council, in November of that year, undertook to supply six competent masons (who could double as stonecutters), two joiners, six carpenters, three men combining the trades of blacksmith and locksmith, one coppersmith, two limeburners, one brickmaker, and finally one clogger (maker of wooden shoes) who could make shovels and spades. If any skilled roofers were required as

29. AN, Section Outremer, G¹, 466, no.50: recensement, Ile Royale, 1713.

30. AN, Col., B, 36, f.419: to L'Hermitte, 26 January 1714; C^{11B}, 1, f.67: L'Hermitte, 29 August 1714.

31. AN, Col., B, 36, f.8v.: to Beauharnois, 15 January 1714; Archives du port de Rochefort, 1E, 569: copies of letters of Montholon dated 15 February, 17 February, 24 February and 6 March 1714. The blacksmith was also skilled as an edge-tool maker (*taillandier*). Annual wage rates were settled as follows: glazier, 432 *livres*; cooper, 480; carpenters, from 420 to 540; joiner, 360; mason, 396; and blacksmith, 500. Yet there were carpenters' helpers who refused to go unless they were paid 50 *livres* a month plus subsistence!

32. AN, Col., B, 37, ff.72-73: to Beauharnois, 4 April 1715; ff.108v.-109v.: to Montholon, 4 June 1715.

supervisors, they could be recruited in Canada.³³ Ironically, there was not really enough work in 1716 for so many skilled workers, since the unskilled labour force consisted of too many raw recruits who required more training if they were to become useful to the craftsmen.³⁴ Thus, the masons spent their time building limekilns, making plaster, repairing fireplaces in the temporary buildings, building bread ovens and helping with estimates by stockpiling and sorting stone.³⁵

As the unskilled labour became more useful, the demand for craftsmen of course increased. A shortage persisted until 1719 as construction policy became firm and local management was getting ready to proceed with the large program decided at Versailles. The Marine Council promised to recruit master-masons to direct the preparation of lime and plaster, and approved Verville's selection of two miners from the *armée de terre* to instruct colonial regulars in the construction of mine galleries and the use of explosives.³⁶ However, the demand for high wage rates continued to plague recruiting in France. Men were not prepared to leave home without substantial inducements, particularly since they knew they could not expect the kinds of accommodation available in Paris or Quebec,³⁷ and perhaps also because they had heard

33. AN, Marine, B¹, ff.183-184v.: Council meeting of 28 November 1715.

34. AN, Col., F³, 51, p.16: "Remarques sur les avantages des trois postes qui se peuvent fortifier à l'Ile Royale...." [1716].

35. *Ibid.*, p.124: "Dispositifs des effets et de quelques ouvriers qu'il est nécessaire de transporter à l'Ile Royale...." [1716].

36. AN, Col., C^{11B}, 2, ff.75-78: memorandum of Marine Council, 22 May 1717.

37. AN, Col., F³, 51, pp.185-188: "Observations à faire sur la délibération que le conseil se propose pour faire faire une partie des ouvrages par économie."

of the high prices arising from shortages in the new colony.

Wage rates were vital in the negotiations with Isabeau for a general contract, since the current market price for labour was one of the main determinants of the contract agreement. It was normal to negotiate rates with workers during a preliminary period of direct management and to use those rates as a basis for negotiation with contract bidders. Isabeau's observation of the market led him to raise his asking price by 20%;³⁸ and this, in turn, led the Council to consider undertaking part of the work without a contractor, even using convicts from the galleys wherever feasible. Council members found it difficult to accept the overwhelming evidence in 1719 of extremely high wage demands, even for work in France.³⁹ In any event, as has been seen elsewhere, a contract settlement with Isabeau was eventually concluded. It was based largely on piecework rates for labour and, despite official grumbling about exorbitant wages, it was realized that craftsmen would work harder for a contractor against whom they had legal redress if he failed to pay their wages, than for the King's officers whom they believed to be immune from such action.⁴⁰

The colony depended on troop reinforcements for its supply of unskilled labour. In 1715, the garrisons of Ile Royale were too small

38. *Ibid.*, p.179: "Mémoire de la préparation que l'on peut apporter au temps qu'il conviendrait d'arriver à Louisbourg pour y faire travailler."

39. AN, Col., C^{11B}, 4, f.66: meeting of Marine Council to consider a letter from Verville dated 24 January 1719; f.73: meeting of Council, 6 February 1719.

40. AN, Col., F³, 51, pp.185-188, *loc. cit.*

and scattered to be adequate, so civilian *corvées* were considered.⁴¹ The idea was abandoned because the civilian population was so dispersed that nothing could be expected of them except between the end of September, when the fishing season closed, and late March, when they began to stockpile wood for their sheds and scaffolds and to repair their boats. Otherwise, the *corvées* would have interfered with their main livelihood.⁴² The Marine Council relied thereafter on increasing the garrison of Ile Royale to provide an adequate supply of general labour.

Only the rational use of labour---skilled and unskilled---could justify so much preoccupation with supply. Verville calculated that the average number of working days a year amounted to only 93 out of 365. For seven months it was too cold, and there was too much snow and ice, to make any building possible. Twenty-two Sundays, eighteen holidays and at least twenty stormy days during the remaining five months made it necessary for workers to earn high enough wages in 93 days to subsist for the remaining 272 in a country where prices were high. Both brandy (an imported product) and firewood (a local product), for example, cost much more than in France.⁴³ As early as 1714, the Court had encouraged workers to provide maximum service to the new community by

41. AN, Marine, B¹, 8, f.182: meeting of Marine Council, 8 October 1715.

42. *Ibid.*, f.178v.: meeting of 5 November 1715.

43. AN, Col., C^{11B}, 4, f.66, *loc. cit.* Evidently Verville did not realize that the scarcity of imported products in great demand raised other prices, including the cost of cutting and hauling firewood.

hiring themselves out to private individuals when they were not busy with public structures. If good work records were kept, the men would not be a charge to the Crown when employed by others. A cooper and a glazier, for example, would be in lesser demand for public construction than other trades were, and thus freer to work for private individuals.⁴⁴ By 1718, Soubras was complaining of poor timekeeping,⁴⁵ and by 1720 skilled men who should have been working on fortifications were found to be repairing officers' houses.⁴⁶ One suspects that some men had been paid twice for working the same hours, at least until piece rates were introduced. Finally, there were examples of sheer waste due to policy changes, as in 1717 when some carpenters were kept idle in their quarters at Port Dauphin when they were required near Louisbourg to saw lumber for gun platforms.⁴⁷

Ile Royale and Ile Saint-Jean, 1719-1745

Placing in the hands of a general contractor the responsibility for hiring, supervising and paying workers reduced, but did not immediately eliminate the government's task of dealing with the shortage of skilled labour. In 1719, Isabeau found that some masons were demanding 80 *livres* a month to go to Ile Royale, and he had not found

44. AN, Col., B, 36, f.462: to Costebelle and Soubras, 18 April 1714.

45. AN, Col., C^{11B}, 4, ff.39-45: meeting of Marine Council, 1 April 1719.

46. *Ibid.*, 5, ff.235-237: Verville, 19 June 1720.

47. *Ibid.*, 2, f.193: Costebelle, n.d. [1717]; AN, Marine, B¹, 19, f.412; meeting of Marine Council of 13 April 1717.

the twelve he had been seeking. Verville asked the Marine Council to recruit masons into the *Troupes de la Marine* in the summer of 1719,⁴⁸ to begin service at Louisbourg, as masons, in the spring of 1720. This would ensure their presence without costing the contractor their wages before they began working.⁴⁹

Recruiting methods of this sort had to be used until the economic climate of Ile Royale became more attractive to skilled workers. The process was gradual. The labour force became stable during the 1720s; during the 1730s and early 1740s several master craftsmen were prospering as independent entrepreneurs: men like Jean Claparède, a locksmith; Louis Logier, a joiner; Jean Bernard, a roofer; Salué Saille, a carpenter; Jean Laumonier, a stonecutter; Jean Durand, a carpenter; and a certain LaForest, a limeburner. All of them obtained small contracts for government work; Claparède, Logier, Bernard and Durand were awarded steady contracts after 1736 for the maintenance of public buildings;⁵⁰ and there is no reason to doubt that, as the town of Louisbourg grew, they received a considerable amount of private construction and repair business. Of course, by far the largest amount of work for skilled craftsmen comprised jobs for the general contractor, whether for negotiated wages or by sub-contract. Very few records of these relation-

48. Presumably by a form of impressment.

49. AN, Col., C^{11B}, 4, ff.235-236: Verville, 10 August 1719.

50. See, for example, AN, Col., C^{11C}, 11, ff.49-53v.: Rondeau, 1 October 1732; ff.67-72: Rondeau, 14 October 1733; ff.84-90: Rondeau, 20 September 1736; ff.132-135: Rondeau, 1 October 1738; ff.144-147v.: Rondeau, 22 October 1741; ff.155v.-159: Rondeau, 22 October 1741.

ships have been found.⁵¹

Where military engineering specialties were concerned, such as Verville's requirement in 1722 for a detachment of experienced miners to construct mine galleries⁵² and related works, men were borrowed for a specified period. The detachment sent out in 1722 was seconded from the *armée de terre* for a season. It comprised ten men under a sergeant who were paid by the contractor for the days they actually worked. They expected, like a similar group previously sent to Martinique, to be given their military pay in advance for the whole season, in addition to the wages they would earn; but the treasurer of the *Extraordinaire des guerres* refused. His attitude was that the Ministry of War was responsible for them only until they embarked for Ile Royale and after they disembarked in France at the end of the year. His view must have prevailed, since the Marine Department decided in January 1723 to pay the detachment craftsmen's wages for five days in July and for the whole month of November 1722---presumably part of the time they were at sea---perhaps to compensate them for the lack of military pay.⁵³

51. One that has, is a notarized agreement between Bernard Muiron and the stonecutter Pierre Morin, providing for payments of 22 *sols* per square *pied* of native stone cut, and 10 *sols* per square *pied* of French stone: AN, Section Outremer, G³, 2047, Greffe de Jean Laborde: 17 December 1743.

52. See Chapter II, p.35, note 54.

53. AN, Col., C^{11B}, 6, ff.112-113: Verville, 26 May 1722; F^{2C}, 3, ff.294-295: 8 June 1722; ff.572-575v.: 4 January 1723; Archives du port de Rochefort, 1E99, f.671: to Beauharnois, 31 May 1722; ff.695-699: to Beauharnois, 11 June 1722.

In so far as the regular workers were concerned, no wage disputes seem to have arisen before 1732. The only controversy that occurred, about ten years before that, concerned deductions from wages to compensate soldiers who served on guard detachments and therefore could not supplement their military pay by construction wages. It had been the practice to withhold for that purpose 20 *sołs* a month, which was inequitable, since the men were paid only for days worked and might miss as many as twenty days in a month because of bad weather. At Verville's suggestion, the deduction was based on earnings: 2 *sołs* out of every twenty earned, or 10%.⁵⁴ As for wage rates, they were normally negotiated between the contractor and the workers without difficulty and without official intervention. At the outset of Ganet's second contract,⁵⁵ however, Verrier undertook to set the rates himself. Though wages had not been settled before the work of the 1732 season began, Verrier told the foreman and workers they would have reason to be satisfied. Despite that assurance, after they had worked a full season, they found the new rates to be lower by one-third than those that had applied under the previous contract, for the same quality of work. Verrier contended that the rates the men claimed were to the distinct disadvantage of the contractor. The main area of dispute was excavations. The contractor did not wish to negotiate with the men the rates for the most difficult ones, but rather to rely on the judgment of the chief engineer. The

54. AN, Col., C^{11B}, 6, ff.145-148: memorandum for the Council, May, 1723; ff.170-173: to Saint-Ovide and Mézy, 27 May 1723.

55. See Chapter V.

men, for their part, understood they had the right to negotiate all their wage rates with the contractor. They were upheld by the Ministry.⁵⁶

Thus, the engineers had supported the workers in 1719, when the wage rates negotiated with the government became the basis for the prices to be paid to the contractor. After years of employing men through contractors, the chief engineer now tried to lower the piecework rates paid to the workers. This demonstrates the close identity of interest between engineer and contractor. The government, for its part, seems to have condoned the collusion in practice if not in theory, while intervening whenever it was necessary to ensure wage levels that would encourage diligence, hence a satisfactory output of work.⁵⁷

The government undertook to supply the contractors with general

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56. AN, Col., C^{11B}, 20, ff.24-30v.: Saint-Ovide and Le Normant, 15 November 1732; B, 59, ff.55lv.-554: to Saint-Ovide and Le Normant, 26 May 1733.
57. Only the one instance of government intervention, that of 1733 just mentioned, has been found. Data on 18th century wage rates in France and in the colonies are very rare. The account books of building contractors have apparently not survived, even of those who constructed government buildings. The data compiled by Yves Durand for 1727-1786 (with some gaps), from the account books of the Hôpital des Incurables at Paris are very exceptional. It is noteworthy that his main source is a series of monthly statements of daily rates *paid directly* (i.e. not through a contractor), each entitled "rôle général des journées d'ouvriers employés par économie pour les réparations, tant dans l'intérieur de l'Hôpital des Incurables que les maisons dépendantes...." Wages were paid through foremen (*piqueurs*, assisted by *appareilleurs*) who themselves received weekly salaries. The workers were hired for the days they were needed, and wage rates varied by season. See Yves Durand, "Recherches sur les salaires des maçons à Paris au XVIIIe siècle" in *Revue d'histoire économique et sociale*, XLIV (1966), pp.468-480, particularly pp.468-470.

labour from the garrison. The contractors paid the soldiers for their labour at negotiated rates. The labour force had to be suitable, in quantity and in quality, to accomplish the task at hand. To make it numerous enough, not only was a sufficiently large garrison required, but also the governor had to make enough men available to the engineers and contractors when and where they were needed. As to quality, it was necessary for the men to be sturdy, physically mature and dependable.

At times, some of these elements were lacking. In 1720, Verville complained that the governor had provided too few soldiers for work on the fortifications---only 217 out of 240. The Marine Council, implying that guard duty and other garrison chores could be temporarily neglected to some extent, reminded the governor that construction had an absolute priority over all other military duties.⁵⁸ Though the governor had complained that he was hampered thereby from having his troops always fully trained in case of war (according to his instructions), the Council failed to suggest to him that he might make some use of the 272 days in the year when work on the fortifications was impossible! In 1722, good weather hastened construction, yet only 154 French soldiers and 44 of the Swiss mercenaries of the Régiment de Karrer⁵⁹ were available. Of these numbers, only twenty-six men were available for excavations at the King's Bastion site instead of the eighty required; the rest were, of

58. AN, Col., C^{11B}, 5, ff.235-237: Verville, 19 June 1720.

59. J.S. McLennan, *Louisbourg*, p.49.

necessity, assisting stonemasons.⁶⁰ Isabeau contended that season that the men were less effective than they should have been, because of the quantities of alcohol they were drinking: the sale of brandy to the troops was already an interesting source of profit to officers of the garrison and to civilians.⁶¹ Men drank, however, at least partly because they were quite demoralized by their frustrating task. There is no evidence that the Court understood that. To the Marine Council the question was reduced to recruitment and to the construction priority.⁶² In 1723 it sent two small drafts of recruits: though the first, comprising twenty men or, as Verville wrote, "pour mieux dire, des enfants," would eventually become good workers, the director of fortifications thought they could scarcely qualify at first even for guard duty. Progress would be slow unless the Council could send three French companies and fifty more Swiss.⁶³

After 1723, the size of the work force was apparently adequate, if not exceptional. In 1741, when the Court pressed the colony's administrators to accelerate the completion of the Louisbourg enceinte, it sent enough French and Swiss recruits from France, and transferred enough men from Port Toulouse, Port Dauphin and Port La Joie, to increase manpower. Duquesnel, more interested than his predecessors in the fortifications, frequently visited construction sites to exhort the men

60. AN, Col., C^{11B}, 6, ff.116-117v.: Verville, 20 September 1722.

61. *Ibid.*, ff.127-130: Isabeau, 30 November 1722.

62. *Ibid.*, ff.170-173, *loc. cit.*

63. *Ibid.*, ff.293-294v.: Verville, 14 August 1723.

to work hard. He barred workers from spending rainy days in drinking establishments (where they became unfit for good work on fine days). He increased the actual number of days worked.⁶⁴

Ile Royale, 1749-1758

During the last nine years of the colony's existence, the shortage of labour, both skilled and unskilled, and the wage rates to be paid both groups, were frequent preoccupations of administrators and engineers. The bad effects of heavy drinking, and the need for a rational distribution of the labour force, also concerned them.

To relieve the shortage of skilled labour, Franquet made a suggestion that was novel for the Gulf region, and perhaps for all French colonies. Though the engineer corps comprised only officers, Franquet advocated the formation of a sort of special company of engineers for Ile Royale, composed of about 100 men, including four officers, four sergeants, two drummers, twenty-two carpenters, twenty-two masons, eighteen sawyers, five stonecutters, five wheelwrights, eight joiners and ten roofers. They would be drawn from regiments of the *armée de terre*; men serving for an unlimited period would be asked to sign up for six years' service in the colony. Supplementary wages would be paid them from June to the end of October at the daily rate of 30 *soles*. During the rest of the year, they would receive 25 *soles*, or 20 when the weather prevented them from doing any work other than cutting

64. *Ibid.*, 23, ff.84-85v.: Bigot, 1 June 1741; ff.42-43v.: Duquesnel, 2 June 1741; ff.187-188: Verrier, 3 June 1741; ff.189-190: Verrier, 23 August 1741.

firewood. In addition, they would be housed, fed and clothed on the same terms as other troops. At the end of their six-year terms, they would have three options: returning to France, settling in the colony, or remaining in the company for a longer period.⁶⁵

It was natural for Franquet to suggest the recruiting of craftsmen from the *armée de terre*: as a result of his long service in French fortresses, these were the men he knew. He knew even better the contractors associated with the engineer corps; and whether the workers to be recruited were civilians or soldiers, he believed the contractors were the people best qualified to find the right men. He suggested a prominent fortifications contractor of Calais, Roode, "...homme capable de procurer ce qui convient de chaque espèce,....je l'invite à y donner ses soins. La confiance qu'il a en moi le persuadera que je veux le bien de ces gens-là plutôt que leur ruine."⁶⁶ To exploit the coal resources of Ile Royale,⁶⁷ Franquet recommended that a Flemish master brickmaker and a Flemish master limeburner, both accustomed to using coal in their respective trades, be brought out to the colony to teach others and direct the work. Franquet also recommended the urgent acquisition of forty miners, and two quarrymen specializing in hard stone.⁶⁸ Two quarrymen from Givet, considered the best in France, and

65. *Ibid.*, 29, ff.306-315: Franquet, 13 October 1750.

66. C.T.G., Bibliothèque, ms. in-fol. 205^b, f.7: Franquet to La Porte, 24 August 1750.

67. See Chapter VII.

68. AN, Col., C¹¹B, 29, ff.301-302v.: Franquet, 24 August 1750.

Flemish brickmakers, arrived in 1752.⁶⁹

Franquet's proposal for a special craftsmen's company was not adopted, and the shortage of good craftsmen persisted. Prévost had already written that competent workers were rare in the colony, among either the troops or the civilians.⁷⁰ In France, it was difficult to find men willing to emigrate, except at high wage rates. In terms of numbers alone, results fell far short of expectations. In April 1754, Franquet found, in the vicinity of Saint-Omer, two stonecutters, two masons and two carpenters. Eventually he assembled a total of thirteen men;⁷¹ by December of that year he had gathered together at Louisbourg twenty-nine skilled workers: nine masons, one stonecutter, two lime-burners, eight carpenters, two joiners, one excavation specialists, one blacksmith, two miners sent from Grenoble in 1752, and two *piqueurs* or foremen.⁷²

Among the unskilled workers, there was a scarcity of suitable men, at least until the arrival of the first two battalions of *troupes de terre* in 1755. Franquet's view of the *Troupes de la Marine* after his first season was rather unfavourable. Their level of discipline was low, though they were among the best housed, fed and kept soldiers under the

69. AN, Col., B, 95, ff.272-275v.: to Franquet, 15 March 1752; C^{11B}, 32, ff.66-71: Raymond, 19 November 1752; ff.265-268: Boucher, 7 November 1752.

70. AN, Col., C^{11B}, 29, ff.110-115: Prévost, 14 December 1750.

71. C.T.G., Bibliothèque, ms. in-fol. 205^b, ff.135-136: Franquet to Rouillé, 6 April 1754; AN, Col., C^{11B}, 34, ff.201-203, 213: Franquet, 19 April 1754.

72. *Ibid.*, ff.223-230: Franquet, 9 December 1754.

French flag. They could earn 20 *sols* a day on the fortifications, and an additional 30 or 40 working for private individuals; yet "...malgré ces aisances il règne parmi eux un esprit de sédition et de révolte qui les conduit à un mépris pour les officiers et à une indépendance."

Like his proposed company of specialists, they should be sent to the colony for a fixed period of six years. This would encourage them to try to save a nest-egg for their retirement instead of being tempted by desertion while in the colony on unlimited service.⁷³ For his part, the Comte de Raymond urged the use of prisoners: soldiers under sentence for military crimes, and persons sentenced for contraband activities. He had already saved about 6,000 *livres* in 1752, he said, by using the former; using prisoners, he wrote, was preferable to paying men from two and one-half to four *livres* a day for what was really half-time work. Raymond asserted that prisoners had done a fine job of road building: a road from Louisbourg's Dauphine Gate to a point close to the Royal Battery had been converted from something dilapidated into one "...d'une grande beauté et très utile au publique."⁷⁴

Raymond's solution was a temporary measure at best. The work force could be increased only by adding to the garrison. Yet after the arrival of the two battalions of *troupes de terre*, though there were now 1,800 soldiers at Louisbourg, Franquet found (for a reason he does not state) that only 540 of them could be employed on the fortifications. Furthermore, excessive drunkenness was retarding work progress. In

73. *Ibid.*, 29, ff.306-315, *loc. cit.*

74. *Ibid.*, 32, ff.56-71: Raymond, 19 November 1752.

Franquet's opinion, soldiers were too well off at Louisbourg; when they were paid, they abandoned their work to squander their earnings in the eight cabarets that were apparently operated by a number of officers for profit.⁷⁵

The scarcity of labour, both skilled and unskilled, led to much discussion of wage rates. Franquet pointed out, soon after arriving in the colony, that if the labour force were greatly augmented, and the labour shortage turned into a job shortage, men would compete for jobs from one structure to another; and this would lower wage rates.⁷⁶ His suggestion could only have entailed a much larger initial expenditure by the government, an expenditure that evidently it was not prepared to undertake. The matter of rates came to a head in 1754, once the Court had decided to administer construction directly. Prévost and Franquet recommended a set wage of 100 *livres* a month for four key craftsmen: two miners, and two limeburners with additional expertise in brickmaking, masonry and stonecutting. The Court, though it considered the rate to be high, recognized that it was realistic because of scarcity; however, to assist the men's dependents, to discourage profligacy in the colony and perhaps even to encourage the practice of retaining some specie in metropolitan France, the government agreed to the rate only if a significant portion of the wages were paid directly to dependents. The portions ranged from 30 to 50 per cent.⁷⁷

75. *Ibid.*, 36, ff.279-285: Franquet, 24 June 1756.

76. *Ibid.*, 29, ff.306-315, *loc. cit.*

77. *Ibid.*, 33, ff.237-241v.: Prévost, 12 October, 1753; B, 99, f.251v.: to Prévost, 8 June 1754.

The Ministry laid down rules for economy, control and fairness in the payment of wages. Though it was stressed that piece rates were more conducive to diligence than wages by the day, there would be instances when daily rates were necessary. It instructed the colony's officials to reduce these to a minimum: wherever it was possible to have men employed by sub-contractors (*entrepreneurs particuliers*), or even under the soldier in charge of a workshop, the average earnings of such men should exceed daily rates by 25%. Under the direction of one of Franquet's engineers to ensure both the fact and the appearance of impartiality, foremen would draw up *toisés* to calculate piece rates, or attendance rolls for the day-labourers. Wherever day-labourers were employed, the engineer-in-charge would ensure that the roll was called frequently enough to prevent abuse. All workers were to be paid often enough so that they would be able to purchase their necessities in cash, rather than in long-extended credit. Wages were to be paid directly to the soldier, rather than to third parties as before: several witnesses were to attend pay parades to ensure that this was done.⁷⁸

The rates established in accordance with these instructions were relatively high by metropolitan standards. Of the craftsmen found by Franquet near Saint-Omer in 1754, eight were paid 2 *livres* a day, two 1 *livre*, 10 *sols*, another 1 *livre*, 5 *sols*, and two others 1 *livre*.⁷⁹ The minimum daily wage for labourers was set in the colony at 1 *livre*,

78. *Ibid.*, B, 99, ff.240-243: to Drucour and Prévost, 12 May 1754; ff.245-249: to Franquet, 12 May 1754.

79. C.T.G., Bibliothèque, ms. in-fol. 205^b, ff.135-136, *loc. cit.*; AN, Col., C¹¹B, 34, ff.201-202, 213, *loc. cit.*

5 *sols*, and the minimum daily payment to workers on piece rates averaged 1 *livre*, 15 *sols*.⁸⁰ After these rates had been in effect from twelve to eighteen months, the Ministry emphasized the need for strict control to prevent a further rise in wages. The colony's administrators were not to be influenced by the "importunities" of soldiers or of their officers. The governor was to provide the Ministry with a special return on the number of soldier-workers from each battalion of the *troupes de terre* now in the garrison, and from each company of colonial regulars. Anything should be done that would reduce the general wage rate.

Conclusion

Throughout the period, construction labour was in short supply chiefly because settlement in general was insignificant. The government employed soldiers of the garrisons for unskilled, and to a degree for skilled labour. Productivity among the unskilled workers depended on the size of the garrison, the number of rain-free working days during the building season, the number of men released from other military duties, and the regulation of the workers' consumption of alcohol. For skilled labour, the situation was more complex. The inducements to emigrate or even to work in the colonies for a brief period were not great enough to offset the demand for craftsmen in France, a fear of ocean voyages, a distaste for the isolation and severity of the climate, and a deep reluctance to leave *la douce France*. The Ministry of Marine sought to persuade or coerce the *armateurs* of the fishing fleets to

80. AN, Col., C^{11B}, 34, f.33: Drucour and Prévost, 12 December 1754.

contribute to the fortifications of Placentia by recruiting and transporting craftsmen. The Ministry's lack of success was due in part to a fear that the merchants might transfer their investment in the cod fisheries to less burdensome fields, in part to the realization that withholding annual permits to the fishing vessels would have the effect of cutting off the colony's vital supplies.

After 1713, the Ministry benefited from this failure by recruiting and transporting its own skilled workers for Ile Royale, until it awarded a general construction contract. Though the responsibility then became the contractor's, it became necessary to assist him whenever he was unable to find craftsmen, because the government's construction schedule was more important than the time of its officials. Wage rates rose with the increased demand, not only for public construction, but also for private dwellings and commercial buildings in Louisbourg. Though the port's prosperity as an entrepôt in the 1730s and 1740s hardly caused a "boom" in private construction, it steadily filled out the townsite. The sparseness of data on the wages paid to craftsmen by the contractor makes it impossible to measure the rise in wages, but we do know from the government accounts that a small body of entrepreneurial craftsmen developed in the colony. These men undertook minor tasks for the colonial administration; several of them obtained maintenance contracts on Louisbourg's public buildings. In general, the evidence points to a level of demand that always exceeded supply.

After the reoccupation of the colony in 1749, this trend increased; and we have more documentary evidence for it, because of the

government's decision to employ men either directly or through job contractors. Increased construction of fortifications after 1754 accentuated the labour shortage and drove wages up still further. The government reacted by ordering strict control measures.

Whether the government could have found an effective solution for the labour-supply problem is debatable. One technique that was not tried in the Gulf region was a system of indentured apprenticeship to encourage the growth of a community of colonial craftsmen. On a modest scale, such a system might have served both public and private construction. But the construction of fortifications and other military buildings was never conceived as a long-term program, in spite of the government's tendency to allocate funds in relatively small annual amounts. Consequently, plans for the employment of skilled labour rarely reached beyond the immediate future. Yet, paradoxically, public construction in the region became virtually "permanent". The fortress of Louisbourg, in particular, was constructed, enlarged, repaired and reconstructed. There could have been a market for men trained as indentured apprentices. The lack of them had one evident consequence. Given a lack of colonial craftsmen, the government turned to metropolitan sources, to the men of the building trades who were accustomed to working either for the engineer corps and its contractors, or for the officials who administered the western ports of France for the Ministry of Marine. To the extent that labour was supplied for public construction in the region, it was supplied by means of those patronage systems.

CHAPTER VII: THE SUPPLY OF MATERIALS

The theme of supply is central to the study of construction in the Gulf region. The area lacked some of the materials required for the types of structure the Court decided to build there, while engineers frequently neglected to make use of other resources. To manufacture many kinds of supplies in the colony proved unfeasible economically, and to make some others was inexpedient politically. The result was that, while the use of local resources was extensive, the importation of materials, tools, instruments, animals and even vehicles was extremely significant. Dependence on the arrival of imported goods often delayed construction; conversely, a concern with haste, a natural preference for using familiar materials, and a vested interest in metropolitan industry, combined to delay experiments in the use of local resources. As construction became an end in itself instead of the means to an end,

those same metropolitan vested interests came to dominate supply and to leave their imprint on the colony.

Those associated with the works of the region had little or no North American building experience, with the exception of Jean-Baptiste de Couagne,¹ (and possibly of such officers as Boisberthelot de Beaucours and Gédéon de Catalogne² whose impact on construction in the Gulf region was slight). For clues to their knowledge of building materials and supplies, one must turn to French documents and published works of the period. Two works, one a "how-to-do-it" manual for the general public by a writer on country life,³ the other a textbook for military engineers,⁴ are particularly valuable for their appraisals of materials used by French builders. The correspondence of Colbert on construction matters, and works based on it, are useful for learning the minister's preoccupation with building materials and supplies during that earlier but active period of French economic development. Before examining the use of such goods in the Gulf region, let us consider what was known about them in France.

Building Stone

Though some of the fortification structures mentioned in this

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1. For a sketch of the career of Couagne, see *D.C.B.* II, p.154.
 2. See a summary of Catalogne's career in *D.C.B.* II, pp.120-122, including the bibliography.
 3. Louis Liger, Sieur d'Auxerre (1658-1717), *La Nouvelle maison rustique, ou, économie générale de tous les biens de campagne....* (10ème édition, 2 vol., Paris, 1772).
 4. Bernard Forest de Bélidor, *La Science des ingénieurs dans la conduite des travaux de fortification et d'architecture civile* (Paris, 1729). See also M. Bullet, *Architecture pratique* (Paris, 1792).

study⁵ were made of earth and wood, either by themselves or in combination with stone, most were of masonry. Fortification walls, like escarps, counterscarps, ramparts, casemates, mine galleries, posterns, merlons and *guérites*;⁶ the main buildings, such as barrack blocks, official residences, stores buildings, powder magazines, and hospitals: all of these were usually of masonry construction. Stone was as commonly used in the 18th century as reinforced concrete is in our day. Though hard stone was considered the best, some softer types were more frost-resistant. Bélidor tells us, however, the craftsmen had to know their stone very well before counting on that; because often the hard stone resisted frost better because moisture was less able to penetrate its "pores". Nevertheless both were subject to frost which could split the stone and cause disintegration of a wall. All stone, he wrote, contained "imperceptible pores" filled with humidity that expanded when frozen; and the more the stone contained clayey and "oily" material, the more likely it was to be subject to this process. Bélidor added another, startlingly original explanation:

Ce n'est pas seulement la gelée qui détruit la pierre, on croit que la lune l'altère, ce qui peut arriver pour les pierres d'une certaine espèce, dont les rayons de la lune peuvent dissoudre les parties les moins compactes: en ce cas on pourrait croire que ces rayons sont humides et que venant à s'introduire dans les pores de la pierre, ils sont cause de la séparation de ces parties, qui tombant insensiblement en parcelles, la fait paraître moulinée; il en sera au reste tout ce que l'on voudra; mais ce qui me réjouit, c'est que si la lune mange ou mouline les pierres, la terre qui doit

5. See Chapter II.

6. Usually a stone sentry-box built into masonry walls at the angles; sometimes, a wooden sentry-box.

être une bien plus grande lune, a bien sa
revanche, et les pierres de là-haut sans doute
n'ont pas beau jeu.⁷

Persons contemplating the use of stone from a hitherto unused quarry, where the stone's properties were not known, were advised to take samplings from various parts of the quarry, and to leave them on damp ground throughout the winter to test the effects of frost upon them. Trained craftsmen could judge the properties of stone from its appearance after such experiments and from the effect of its being struck with heavy sticks and hammers. It was advisable to place stone as it had lain in the quarry, because this way it would be able to bear heavy loads more readily than if placed upon its side, for example. Though experienced craftsmen knew how a stone should be laid, they did not always bother to lay it properly and had to be watched. The best stone was always to be used in the places exposed to the air, those of lower quality (in terms of their resistance to weather) in foundations and other sheltered places. Since the thickness of strata varied in a given region according to specific sites and the nature of the stone itself, persons in charge of construction were advised that, if they were not completely familiar with all the geological peculiarities of the area, they were to obtain this information. This was then set out in detail, in a *devis* showing from which quarries the stone was to be taken, so that the various types of stone would suit the work for which they were intended.

7. Bélidor, Livre III, pp.2-3. (The work is bound in one volume, but there are six "books" within it and the pagination recommences with each book.)

Stones that could be quarried in large enough pieces, and was suitable for carving in whatever shape was desired, was known as free-stone or, in French, *pierre de taille*. Stone it was not included to fashion, that was taken from quarries in which the strata were not thick enough to produce large pieces, was known as *moellon*, or quarry-stone. Some types of very hard, yet very porous quarry-stone were excellent for construction, because the mortar permeated the pores and held the stones very firmly to one another. The hardest stone was that found near the tops of quarries, when quarrying was first begun. These well-weathered stones, if extremely hard, could be used for paving streets and roads; but the less hard could be cut and used in the foundations of large walls. Its main defect was that it was too smooth to guarantee a firm bond with mortar. For that reason, wedges were hacked into the points where the stones were to be joined so that the mortar could hold better.⁸ Opinion in France was divided⁹ over the usefulness of this type of *moellon*, the boulder or *grès*. Moreover, the term *moellon* itself became less precise after crossing the Atlantic. Large quantities of the stone used at Louisbourg, for example, were either gathered from the beaches or, more usually, excavated when fortification ditches were being built. Though closer to *grès*, it is referred to in the documents simply as *moellon*. This difference in terms blurs somewhat the relationship between the general published literature and the specific reports from

8. *Ibid.*, pp.3-5.

9. According to Liger (I, p.22), some persons thought it the worst type. Bélidor accepted it because the ancients had used it with success.

Placentia and Louisbourg, because the former were quite definite that *moellon* was quarried material. As for the properties of *moellon*, Liger wrote:

Il faut éprouver les pierres qu'on trouve ordinairement dans les excavations des fossés, avant de les mettre en oeuvre; car il y en a qui se réduisent en poudre en vingt-quatre heures de temps, dès qu'elles sont à l'air; et d'autres se dissolvent en les jetant dans un seau d'eau.

Les pierres de roche et de meulière sont fort estimées pour la maçonnerie.

Les cailloux unis, surtout ceux de mer, en doivent être rejetés comme matériaux peu liants, et par conséquent très mauvais pour bâtir solidement au-dessus de terre; mais on peut fort bien s'en servir dans les fondements et dans les murs de simple clôture à la campagne.¹⁰

In Colbert's time, a great deal of effort was put into increasing and improving the production of building stone. Widespread searches were conducted for good material;¹¹ members of the academy of architecture were sent to inspect various quarries.¹²

In the Gulf of St. Lawrence region, however, finding good stone was not enough. Almost sixty years of experience there taught engineers and stonemasons that stone-laying techniques must be adapted to the climate:

10. *Ibid.*, p.23.

11. See for example, Clément, *op. cit.*, V, p.39: Colbert to Boucher, 25 October 1670.

12. C.W. Cole, *Colbert and a Century of French Mercantilism* (2 vol., New York, 1939), II, p.462.

Quand l'on posera de la pierre de taille, en quelque endroit que ce puisse être, il la faut poser en faisant l'ouvrage et non après coup; l'ouvrage n'en étant pas si bon, il faut la cramponner exactement. Toutes ces précautions doivent se prendre, et pour cela il ne faut rien épargner, attendu que le climat de l'Ile Royale est très dur, et que le temps y change facilement plusieurs fois par jour; car il arrive souvent qu'il neige abondamment, le moment d'après il pleut à averse et dans la même heure il gèle à pierre fendre. Ce sont ces gelées qui viennent après les pluies qui les écartent à ne pouvoir se soutenir qu'en les réparant, et quand la pierre de taille n'est point épargnée et surtout bien cramponnée l'ouvrage se soutient.¹³

Not only good building stone, but also suitable brick-clay was necessary for certain structures or parts of them.

Brick

Brick was less widely used than stone for construction in the Gulf region, but was important enough for experiments in brickmaking to be carried out in Ile Royale. When the product of that operation proved to be inferior, brick was imported from France and New England.

In making brick, wrote Bélidor, the first consideration must be to find good brick-clay.

....il faut qu'elle soit grasse et forte, de couleur blanchâtre, ou grisâtre, sans qu'il s'y rencontre des petits cailloux ni gravier; il y en a aussi de la rouge qui peut servir au même usage; mais elle n'est pas des meilleures, parce que les briques sont sujettes à se feuilletter et à se réduire en poudre à la gelée; mais sans prendre garde scrupuleusement à la couleur; on jugera qu'une terre est bonne pour faire de la brique, si après

13. AN, Col., C^{11B}, 21, ff.275-281: n.a., n.d. [1739].

une petite pluie, on s'aperçoit qu'en marchant dessus elle s'attache aux souliers, et s'y ramasse en grosse quantité, sans qu'elle s'en détache aisément; ou si en ayant pétri dans les mains, on ne peut la diviser qu'avec peine.¹⁴

He added that although the best time to gather earth for brickmaking was during the winter,¹⁵ the best time for making brick was during the months of May and June, because during that season it had time to dry out "... pour être ensuite plus propre à mettre au four." A great deal of inferior brick was being used during his time "...puisque à la confusion de la plupart des entrepreneurs, l'on voit tous les jours des bâtiments menacés ruines, avant pour ainsi dire d'être achevés."¹⁶

Lime and the Preparation of Mortar

The student of 17th and 18th-century construction is struck by the importance of lime, the key to masonry work. As Bélidor wrote, "la chaux pouvant être gardée comme l'arme de la maçonnerie, il est de la dernière conséquence d'être bien instruit de tout ce qui lui appartient...." Lime was a vital ingredient in the preparation of mortar which was absolutely necessary for good construction "...de faire en sorte que les matériaux soient si bien unis qu'ils ne paraissent plus composés d'une

14. Bélidor, Livre III, p.5. See also Dilys Francis, "The mines and quarries of Cape Breton Island during the French period, 1713-1760" (unpublished report, Fortress of Louisbourg Restoration Section, National Parks Branch, Department of Northern Affairs and National Resources, Ottawa, 1965), p.19, for a résumé of the specifications in the *Encyclopédie* (article entitled "Briqueterie").

15. This, of course, could not be done in the Gulf region.

16. Bélidor, Livre III, p.6.

seule pierre." Before it could be used in preparing mortar, limestone had to be baked in a kiln, and the resultant quicklime (*chaux vive*) slaked by adding water after its removal from the kiln. Just the right quantity of water was necessary, for too little "burned" the lime, and too much would "drown" it. Coal was a better fuel for baking lime than wood, for, as Bélidor wrote, "...non seulement la cuisson en est plus prompte; mais c'est qu'il rend la chaux plus grasse et plus onctueuse."¹⁷ The best lime was said to be that slaked as it came out of the kiln; and the harder the original limestone, the oilier and more glutinous would be the lime it produced. The best mortar was made from the thickest and strongest substance. Baking should not diminish the volume by more than one-third to one-half: otherwise the stone was not suitable for making lime. Before being used, not only had quicklime to be kept fully moistened, but also the slaked lime was not to be used too soon, for some parts underwent chemical change more rapidly than others; and the effect caused by small pieces of less baked stone that had been slaked later than the others was to break and spoil coating.¹⁸ These effects were described by Liger in his sprightly style as follows:

La *chaux* sert à lier les ouvrages de maçonnerie, et ce n'est autre chose que de la pierre qu'on a *calcinée*, c'est-à-dire, qu'on a fait cuire au feu dans des fours bâtis exprès, et dont le feu a desséché toute l'humidité, et a introduit à sa place une grande quantité de corps ignés. Ce sont

17. *Ibid.*, pp.7-8. For a more detailed discussion of limekilns and limeburning, see Francis, *op. cit.*, pp.29-30, based on the article "Four" in the *Encyclopédie*.

18. *Ibid.*, p.8.

ces petits corps qui causent l'ébullition, lorsque l'eau a pénétré la matière qui les tenait enfermés; et cette ébullition dure jusqu'à ce que toutes les parties de la chaux aient été dilatées, les parties du feu soient en liberté, et ne fassent plus d'efforts pour sortir. La *chaux vive* est celle qui sort du fourneau; et la *chaux éteinte* est celle qu'on délaie avec de l'eau dans un bassin, et qu'on réserve pour en faire du mortier.¹⁹

How long slaked lime was to be kept seems to have been a matter of debate. According to Bélidor, the ancient Romans had preferred to keep it two or three years, but in such cases it had to be moistened under a foot of sand and kept there until used. Lime reduced to powder was useless.²⁰

Sand

The other important ingredient of mortar was sand. It is relevant that contemporary writers strongly opposed the use of sand from sea beaches: it dried with great difficulty; did not adhere; and "...est sujet à des sueurs salines qui font crevasser la maçonnerie." Some sand was so useful that the proper proportion in mortar was from five to seven parts sand, to one part lime. Other sand was so inferior that one had to use as much lime as sand. River sand was particularly good, because it was thoroughly washed.²¹ Sand used in mortar had to be coarse enough, because if it was too fine---almost imperceptible---"...il ne fait point

19. Liger, I, p.24.

20. Bélidor, Livre III, p.9.

21. Liger, I, pp.25-26.

de corps avec la chaux." It was as important for sand to be dry as it was for lime to be moist and oily.²² Colbert's officials had to be constantly on the *qui vive* to ensure that sand of the proper quality was used in fortifications.²³

Plaster

Liger described gypsum and plaster in these words:

Le *plâtre* est une pierre fossile, qui, pour l'ordinaire, est d'une couleur grisâtre; il est très commode et d'un grand usage pour les bâtiments; on l'y emploie cru et cuit: le plâtre cru, autrement dit pierre de plâtre, sert pour les fondements; il se conserve entier aussi bien que le moellon. On emploie plus souvent le plâtre cuit, et dans ce cas on le délaie avec de la chaux; il sert aussi aux enduits, à lier les pierres, à garnir les murs, les plafonds et les cheminées. On en fait aussi toutes sortes d'ouvrage au moule. On appelle plâtre au sac, celui qui est fort menu et passé par le tamis.²⁴

Afin que le plâtre fasse un bon ouvrage, il doit être employé s'il est possible, au sortir du four et tout chaud. Il ne faut point le mettre dans les lieux humides ou très aérés, ni au soleil, encore moins à la pluie: l'humidité en affaiblit la force, le soleil le dessèche, et le grand air en dissipe les esprits; de sorte que quand il est battu, ce n'est plus qu'une cendre sans aucuns sels, dans lesquels consistent sa bonté.²⁵

22. Bélidor, Livre III, p.10. For a summary of the *Encyclopédie* article on "Mortier", see Francis, *op. cit.*, p.34.

23. Clément, V, p.165, note 2: Colbert to Breteuil, 9 June 1675.

24. Liger, I, p.23. For more information on gypsum and plaster, see Francis, *op. cit.*, p.23. Francis had consulted the article "Plâtre" in the *Encyclopédie*.

25. *Ibid.*, p.24.

Slate

Slate roofs were common in France. They were used increasingly in the Canadian towns after the spread of some disastrous fires had been blamed on the inflammability of wooden shingles. Here is Liger's description of slate:

L'ardoise est une pierre bleue, brune ou rousse-noire, tendre et fossile au sortir de la carrière, et qu'on coupe en feuilles déliées pour en faire des couvertures. Celle qui est d'un rouge noir est la plus estimée. Il y en a de onze pouces de longueur sur six ou sept pouces de largeur et deux lignes d'épaisseur; on l'appelle la carrée forte. On en fabrique d'un autre échantillon, qu'on nomme la carrée fine; elle a douze à treize pouces de largeur, et une ligne d'épaisseur. Le millier fait quatre toises de couvertures, en lui donnant trois pouces et demi de pureau: quand on sait bien la ménager, elle peut faire quatre toises et demie.²⁶

Liger had high praise for the slate of Angers, which was in fact the slate used in the citadel barracks and other buildings of Ile Royale.

Glass

The windows of Louisbourg's citadel barracks and hospital alone required large quantities of glass. All of it was imported from France, which had been encouraging the glass industry since the mid-17th century. The government had assisted glass manufacture in Colbert's time by allowing producers of "ordinary" glass (mirrors, for example, were excluded) to purchase firewood from the royal forests at cut rates, and

26. *Ibid.*, p.29.

by levying moderate tariff duties. A tariff of 1664 levied an import tax of two *livres* for each four baskets²⁷ of sheet glass. Venetian glass techniques were borrowed in an endeavour to stimulate the French industry. At Nivers, two Italian immigrants, Castellan (Castellano) and Perot (Perotti), were protected from competition when they imported craftsmen from their own country to give the lead in quality production. New techniques were developed there for making sheet glass; a new fuel was successfully used.²⁸ Liger wrote in praise of French glass,

....surtout quand il est choisi bien droit et éloigné du bossage du plat.Quoique le verre fin soit d'une matière différente du verre moyen, cependant il s'en trouve du moyen parmi, qui est verdâtre, et qui par conséquent n'est pas si blanc ni si clair; il doit coûter moins. Il s'en trouve aussi de rebut, qui est celui où tiennent les boudines ou bossages: on ne s'en sert que pour les endroits de peu de conséquence.²⁹

Metals

Lead, Liger tells us, "est un métal pesant, luisant, noirâtre, sans ressort, et qu'on peut étendre aisément par le moyen du marteau ou autrement."³⁰ As a building material, it was used in the Gulf colonies for leaded windows and other purposes, as in France:

Dans les bâtiments, le plomb sert à faire les faîtages, les noues et noquets, les chaîneaux, bavettes de chaîneaux et les gouttières, les descentes et cuvettes, les lucarnes de demoiselles

27. A "basket" contained twenty-four sheets.

28. Cole, *op. cit.*, II, p.315.

29. Liger, I, p.31.

30. *Ibid.*

et oeils de boeuf, les réservoirs, bassins et tuyaux, les terrasses, les vases ou autres ornements; et suivant les ouvrages auxquels on les destine, on lui donne différentes épaisseurs.³¹

Lead was mined in France and England; but some of the English lead was of a type not found in France, and so was imported there.³² During the development of the supply port of Rochefort, Colbert never succeeded in making the price of French lead, copper and tin competitive with the English products, though he was able to have enough of it produced to fill the needs of the port's workshops.³³

France imported much of her iron and steel in the 17th and 18th centuries. The best of it came from Sweden, Germany (presumably the Rhine states) and Spain. While the imported products were too fine for construction purposes, several French types were not good enough.³⁴ References to steel in the correspondence of the supply ports are mainly to the German and Spanish product. Colbert was able, through state intervention, to force down the price of French iron and steel; since this and other efforts (such as importing a Swedish expert to direct the development of iron mines in three regions) never resulted in a product that matched the foreign one in quality, real parity was never achieved. Officials of the western ports of France bought their iron and steel at the best prices they could obtain; domestic sources prevailed for

31. *Ibid.*

32. *Ibid.*

33. R. Mémain, *Le Matériel de la marine de guerre sous Louis XIV* (Paris, 1936), pp.785-792.

34. Liger, I, pp.32-33.

periods between 1670 and 1690, but thereafter they failed to hold their own against foreign ones.³⁵ Generally in France, during the period with which we are concerned, "...la métallurgie ne joue qu'un rôle très médiocre, en dépit du nombre de ses forges et de ses fourneaux, évalués à plusieurs centaines."³⁶ Pierre Léon has remarked that the demand for iron ore in France far exceeded her mining industry's capacity to satisfy it. After discussing the importation of other raw materials in quantity, he writes:

Non moins contraignant devenait le besoin en minéral, surtout en minéral de fer. D'autant que les exploitations restent très dispersées, en des centaines de centres, du Dauphiné à la Normandie, des Vosges au comté de Foix, et que les conditions techniques et sociales demeurent celles du passé. L'approvisionnement des forges devient aléatoire, et les doléances recueillies, lors de l'enquête de 1772, sont générales, tandis que se multiplient les conflits entre propriétaires de forges, qui s'efforcent de détourner, à leur profit, la production minière. Aussi, la France importe-t-elle 8,5 millions de livres pesant de fer brut en 1685, 42 millions en 1787, fers allemands, russes, espagnols, surtout anglais et suédois.³⁷

Most of the tools and implements of construction were made at least partly of metal. Either they were sent to the colonies from France, or the metal³⁸ was provided and the tools fashioned in the colonies.

35. Mémain, *loc. cit.*

36. Braudel and Labrousse, *op. cit.*, II, p.218.

37. *Ibid.*, p.231; see map at p.228.

38. Iron was sometimes wrought, sometimes pig-iron.

Placentia, 1695-1713

L'Hermitte advocated the use of Acadian plaster, French freestone and limestone, and even some French lumber in the construction of the Placentia forts. Acadian coal could be used as a fuel. The Ministry hoped that Canada could provide the quality of lumber required. L'Hermitte's survey of the resources of the Avalon peninsula, or at least that part of it under French control, could not be termed exhaustive; he lacked the time and the expert assistance that a better survey would have required. Whatever its thoroughness, however, it pointed to one conclusion: Placentia would have to import most of its building materials. Rubble stone was available, as was timber of limited value. Suitable limestone and freestone were in very short supply.³⁹

Under the circumstances, the supply of building materials and equipment from France and elsewhere had to be organized. While the War of the League of Augsburg continued, the task was supposedly carried out by one monopolist or another from among the *armateurs* of the French Atlantic ports; but the service so provided was less than satisfactory to the colony as well as unprofitable to the *armateurs*.⁴⁰ Since no one

39. AN, Col., C^{11C}, 2, ff.72-73v.: L'Hermitte, 14 October 1695; ff.145-148v.: L'Hermitte, n.d.; B, 19, f.67v.: to Champigny, 7 April 1696; Marine, B², 115, ff.511v.-514: to Bégon (Rochefort), 29 February 1696. Brisacier, sent from Rochefort in 1698, reported that the only plentiful material was rubble stone; he did, however, recommend more research on local materials: AN, Col., C^{11C}, 2, ff.188-199v.: Brisacier, 2 December 1698.

40. Charles de la Morandière, *La Pêche française de la morue dans l'Amérique septentrionale* (3 vol., Paris, 1963, 1966), I, pp.461-470. Summarized very briefly in my paper "Fish, Forts and Finance: the politics of French construction at Placentia 1699-1710", in the Canadian Historical Association's *Historical Papers*, 1971, p.53.

was willing to assume the monopoly in 1698, the government resolved then to involve all of the *armateurs* in the supply and transport of materials and equipment, just as it was doing in the matter of recruiting and transporting skilled labour.⁴¹

The policy had actually begun before the end of the war. In 1696, the government thought the merchants of the Basque ports should furnish two mules the colony required for carrying sand, and settle among themselves the cost of the animals, their transport and their fodder *en route* to Placentia. When the merchants protested they could find no mules, the port officials were instructed to find the animals for them.⁴² In 1695, the Ministry, following the governor's advice, had asked that fishing vessels carry a minimum of four barrels of quicklime each, the amount depending on size; and the following year Canada was asked to furnish as much lime or limestone as possible.⁴³ It was thought that the Canadian lime could be dropped off at Placentia by ships proceeding from Quebec to France.⁴⁴ None of these measures appears to have been crowned with great success; certainly the transport of lime or limestone by merchant vessels did not become routine as a result. From 1698, the question became one of subtle political relations.

41. See Chapter VI.

42. AN, Marine, B², 115, ff.457-459: to Argoud, 22 February 1696; f.675: to Argoud, 17 March 1696.

43. *Ibid.*, 106, ff.694v.-695v.: to Gastines, 30 March 1695; B³, 89, ff.62-65: Gastines, 2 April 1695; Col., B, 19, ff.67v.-68: to Champigny, 7 April 1696.

44. AN, Col., C^{11C}, 2, ff.141-142: Brouillan, 22 December 1697.

As has been seen, the government had two objectives: it wished to make the French cod fishery prosper, which meant encouraging the merchants of the Atlantic ports to continue their investment in it; and it wished to persuade or oblige those same merchants to share in the cost of the fortifications of Placentia. The government saw these two aims as perfectly compatible: the fortifications would protect the fishery. The merchants were less convinced than the government that the fortifications would perform that function: protected harbours near the fishing grounds were desirable, but their effectiveness depended on naval power, which the government of Louis XIV was unwilling to rebuild. To further its second aim, the government exerted pressure on the shipowners through its agents in the ports; when the merchants resisted, the government stopped short of outright coercion for the sake of its first aim, since some merchants had hinted they would withdraw from the fishery in favour of other areas of investment. For eleven or twelve years (most of it in wartime) limestone, freestone, beasts of burden, and hardware became the subject of delicate see-saw negotiations in which each side bargained from positions that were at once strong and weak. For its part, the government had the King's general authority and the specific power to refuse sailing permits to merchant vessels. This was tempered by its desire to encourage trade. The merchants understood that policy, but realized that complete failure to co-operate might earn them, as individuals, the King's displeasure---which could be most unprofitable. Circumstances, however, were on their side: there were usually valid economic or administrative reasons for not following the Ministry's

instructions to the letter, and these often provided them with plausible shields behind which to hide their temporizing.

Lime and limestone were the commodities most urgently required: field or rubble stone was plentiful at Placentia, but useless without mortar. The other requiring ships to carry a minimum of four barrels of lime was repeated in 1697.⁴⁵ In 1698, after merchants had raised difficulties about that procedure, the Ministry adopted a different approach. Ships were to carry limestone as ballast. Since they required ballast anyway, they could serve their own purpose and the government's at the same time. A cry of anguish arose: the *armateurs* of St. Malo protested that this would reduce the amount of salt they could carry for the preservation of their catches, for they used salt as their ballast on the outward voyage. They offered to carry limestone in the ships that went to Placentia, if the others could be excused. Since only four to five ships out of about forty stopped at the colonial capital, the amount of limestone reaching Placentia would be a meagre 15 to 20 tons. The port intendant made a counter-proposal that the Ministry approved, subject to the merchants' concurrence. The *armateurs* would pool their resources and outfit a ship of 20 tons' capacity to carry only limestone on the outward voyage; it would be available for fishing duties after it had delivered its cargo.⁴⁶ Through their mayor, the merchants protested that the scheme was too expensive, though they had given the

45. AN, Marine, B², 124, ff.245-246: to Argoud, 30 January 1697.

46. *Ibid.*, B³, 101, ff.397-399v.: Benech, 26 February 1698; B², 113, ff.343v.-344: to Benech, 5 March 1698.

intendant the impression that they would accept it. In the interests of encouraging the fishery, the minister of marine did not insist.⁴⁷

At Nantes, for the same reason, the minister agreed to the shipment of slaked lime in place of limestone or quicklime. Some of his advisers were skeptical about its usefulness after a long ocean journey.⁴⁸ In 1699, he expressed a preference for quicklime, unless the shipowners protested that it was too dangerous to carry; in that case, "...il faudrait se contenter de l'avoir éteinte."⁴⁹ Ships that did not normally call at Placentia would not be expected to do so in order to deliver fortification supplies.⁵⁰ Nor would the Ministry insist that sailing dates and times be delayed so that all limestone ballast could be loaded: so much depended on favourable tides and winds that much fishing time could be lost in such cases.⁵¹ In view of a continuing need for pack animals at Placentia, the minister was prepared to excuse a ship or two from carrying limestone or lime, if they would carry two or three mules instead.⁵² He and his agents could hardly be accused of political inflexibility under the circumstances.

Increased allocations for fortifications in 1699 and 1700 were of

47. *Ibid.*, B², 131, ff.447v.-448: to Benech, 26 March 1698.

48. *Ibid.*, f.345: to Desgrassières, 5 March 1698.

49. *Ibid.*, B², 139, f.168: to Richebourg, 11 February 1699.

50. *Ibid.*, ff.224v.-225v.: to Fontaine, 25 February 1699.

51. *Ibid.*, 131, f.273v.: to Desgrassières, 19 February 1698.

52. *Ibid.*, 139, ff.255v.-256: to Fontaine, 4 March 1699. The offer was declined: *ibid.*, ff.347v.-348: to Fontaine, 25 March 1699.

little value unless the materials could be found nearby. L'Hermitte continued to search for suitable limestone near Placentia. In 1699 he reported that three types of local stone tried in the kiln had failed to produce lime: one melted, leaving a sort of slag; another, that resembled alabaster, bleached and left drops that crystallized; and a third burned entirely away. The French stone sent that year yielded forty barrels of quicklime; to L'Hermitte, it was worth more than the 120 barrels shipped in that form from France. He urged the Ministry to oblige every fishing ship to carry limestone; lime was desperately needed.⁵³

The Ministry was still very far from obliging the *armateurs* to do anything. Though some of the ships that called at Placentia in 1699 or visited nearby harbours failed to carry lime, and though the Ministry recorded their names and had their captains questioned concerning the reasons for their negligence, the authorities at the beginning of 1700 were unwilling to go beyond asking that those bound for Placentia in the spring carry "a certain quantity" of limestone. They did not wish to specify the amount, lest it impede the loading of cargo indispensable to fishing operations. Port officials were instructed to discuss with the *armateurs* how much stone their ships could carry, then to draw up an agreement with them in confirmation.⁵⁴

53. AN, Co1., C^{11C}, 2, ff.256-259: L'Hermitte, 20 October 1699; ff.226-232v.: L'Hermitte, 21 September 1699; ff.239-246v.: Costebelle, 20 October 1699.

54. AN, Marine, B², 146, ff.68-69v.: to Argoud, 20 January 1700.

Among the merchants of all the ports, the response of the Malouins⁵⁵ was the most subtle. They would obey the minister's orders without question. However, both their fishing ships and those sent for the "truck" trade were always heavily laden with salt (the usual ballast), food for the crew, trade goods for the colonists, shallops and fishing gear. To carry the requisite quantity of limestone, they would have to reduce their cargoes of salt accordingly. Furthermore, they asked that the limestone be shipped to St. Malo quickly enough to be loaded before the salt, and that ships going to Saint-Pierre be allowed to unload the limestone there instead of having to take it into Placentia.⁵⁶ Thus, while paying formal respect to the minister's authority, the merchants of St. Malo reminded him that the government must accept responsibility for actions that might harm the primary industry it was trying to protect. The minister's quick reply, while very conciliatory, justified government policy and reminded the merchants of their moral duty:

Vous pouvez les assurer que je n'ai nulle intention de leur faire de la peine et qu'au contraire je ne cherche qu'à leur faire plaisir et à leur pouvoir établir des retraites certaines pour le temps de la guerre; ainsi, je ne les obligerai à rien si cela les embarrassait trop, mais j'espère qu'ils trouveront le moyen de nous aider....⁵⁷

Despite these words, it was the Ministry of Marine, not the merchants,

55. I.e., those of St. Malo.

56. AN, Marine, B³, 108, ff.142-145: Saint-Sulpice, 26 January 1700.

57. *Ibid.*, B², 138v.-140: to Saint-Sulpice, 3 February 1700.

that worked hard at seeking the "means": its agents of St. Malo and Granville co-operated in arranging for the shipment of from 80 to 100 tons of limestone from Rénierville to St. Malo, as the merchants had requested. Bad weather delayed the barges that carried it, however, and so the *terreneuviers* had either sailed or loaded their cargoes before it arrived. Most of the limestone was sold to St. Malo fortifications contractors at cost; about 40 tons were kept for ships that were leaving later to conduct the "truck" trade.⁵⁸

The government, acting in good faith, may have helped to create a local supply problem for the colony in 1700 by having ships that did not call at Placentia drop limestone off in various harbours and coves near their fishing grounds.⁵⁹ Placentia had no craft of its own in which to collect stone left at these places "15 to 20 leagues" away,⁶⁰ until the Crown purchased a brigantine from Monic in 1702 for 2,500 *livres*.⁶¹

58. *Ibid.*, B³, 108, ff.174-175: Saint-Sulpice (St. Malo) to Bonnaire (Granville), 7 February 1700; ff.153-158v.: Saint-Sulpice, 7 February 1700; B², 146, f.225: to Bonnaire, 17 February 1700; ff.266v.-268: to Saint-Sulpice, 24 February 1700; ff.271-272v.: to Bonnaire, 24 February 1700; B³, 108, ff.202-208v.: Saint-Sulpice, 3 March 1700; B², 146, ff.367v.-368: to Saint-Sulpice, 17 March 1700. Bonnaire, at Granville, was instructed by the minister to assist St. Malo "autant que cela se pourra sans faire tort au commerce des marchands de Granville"; but he was admonished for excusing the barges from obtaining permits for their journey from the admiralties of Coutances and of Saint-Brieuc, though he had done so in an attempt to hasten delivery of the stone! He had exceeded his authority, he was told; as it happened, he had done so in vain. The ships engaged in "truck" bought back fish in exchange for ships' stores, fishing gear, food, etc.

59. See, for example, the instructions to officials at Bayonne: AN, Marine, B², 146, ff.166v.-167v.: to Argoud, 10 February 1700.

60. *Ibid.*, B³, 108, ff.474-479v.: Saint-Sulpice, 28 November 1700; Col., C¹¹C, 3, ff.3-6: Monic, 18 July 1700.

61. AN, Col., C¹¹C, 3, ff.227-256: extracts of letters from Placentia, 1702.

By then, the limestone that had accumulated for two years in various harbours was more than enough for a season's work: three trips by the "brig" were necessary to collect it.⁶² But this method of supply was haphazard, slow and expensive, and unlikely to solve the normal shortage of lime.

L'Hermitte continued to experiment with local stone. In 1702, after successful tests on a newly-discovered type, he expressed hope that it would produce lime in significant quantities,⁶³ and raised the Ministry's hopes.⁶⁴ They were not to be fulfilled: neither the local nor the imported material met the demand, and so the "limestone crisis" (if one may call it that) continued throughout the War of the Spanish Succession. From time to time, Canadian stone was shipped to Placentia, but transport for it was uncertain.⁶⁵ The arrival of French limestone, or lime in one form or another, became more erratic as the war progressed; the Ministry of Marine continued its policy of trying to persuade the *armateurs* to carry the material in their ships. The original reluctance of the merchants stiffened into resistance; the colony's supply of lime

62. *Ibid.*, ff.238-240v.: summary of letters from L'Hermitte dated 29 September and 26 December 1702.

63. *Ibid.*, ff.312-313v.: L'Hermitte, 20 December 1702.

64. *Ibid.*, B, 23, ff.293-295v.: to L'Hermitte, 17 March 1703.

65. The government attempted to rely on its own or merchant vessels that happened to call at Placentia on the way from Quebec to French ports. Nothing came of a Bayonne merchant's offer to assume responsibility for the task if the government provided a *flûte* for his use. AN, Col., C¹¹C, 4, ff.80-82: L'Hermitte, 17 November 1703; 5, ff.156-166: Costebelle, 15 December 1707; ff.259-267: Durand, December 1707; B, 29, f.147v.: to Costebelle, 30 June 1707.

became almost exhausted by 1707; and the government threatened to withhold sailing permits.⁶⁶

The crisis reached its peak in 1709. In 1708, Basque ships brought thirty-four barrels of lime to Placentia; those of Nantes, eighteen.⁶⁷ Fifty-seven tons were loaded on the ships of St. Malo, but did not reach their destination.⁶⁸ The shortage of lime at Placentia remained desperate. The minister of marine, now at the end of his patience, gave orders that the owners of Basque and St. Malo ships failing to carry lime in 1709 would be not only denied permits, but also heavily fined.⁶⁹ The *armateurs* of St. Malo were singled out for special criticism because their eagerness to take advantage of safe fishing grounds contrasted sharply with their continual attempts to evade responsibility for contributing to the region's defence.⁷⁰

Though the shortage of lime was the most acute supply problem, the provision of other materials and equipment was also indispensable

66. Limestone was bulky; quicklime was thought dangerous to transport; and slaked lime seemed less useful for mortar after the long ocean voyage. AN, Col., C¹¹C, 4, ff.111-133: Subercase, 26 October 1704; Marine, B³, 145, ff.55-58: Lempereur, 6 March 1707; 146, ff.49-54: Lusançay, 22 February 1707; Col., C¹¹C, 5, ff.228-233v.: L'Hermitte, 26 October 1707.

67. AN, Col., C¹¹C, 6, ff.149-154v.: L'Hermitte, 15 November 1708.

68. AN, Marine, B³, 169, ff.46-49v.: Lempereur, 6 February 1709. Lempereur (commissary at St. Malo) surmised that the lime had been deposited somewhere on the Newfoundland coast if it had not been dumped overboard at sea. He told the minister that Costebelle should have arrested the delinquent captains in Newfoundland waters and punished them.

69. AN, Col., B, 30, f.239: to Laudreau, 19 January 1709; f.248: to Lempereur, February 1709.

70. *Ibid.*, f.264: to Lempereur, 27 March 1709.

to the successful completion of the Placentia fortifications. Since local woods were of limited use, lumber was imported from Canada, France and New England. Transport facilities between Quebec and Placentia were unreliable because they were arranged only on an *ad hoc* basis, probably because the volume of trade in other goods did not warrant a regular service. In 1696, the Ministry had to send a small crew from France to man a brigantine going from Placentia to Quebec to pick up boards for gun platforms.⁷¹ In 1699 and 1700, ships with home ports in France carried quantities of lumber from Quebec to Placentia as part of Bochart de Champigny's undertaking to send materials "par les occasions qui se présenteront".⁷² In 1701, a cargo of shingles was expected from Quebec.⁷³ Ten thousand of them were shipped from there the following year, along with quantities of lumber.⁷⁴ Thereafter, the supply dwindled to a trickle, chiefly because of the shortage of transport.⁷⁵ In peacetime, New England lumber was occasionally bought at or near Placentia.⁷⁶

The stonecutters at Placentia had little success with the free-stone of the Avalon peninsula. Though some that could be worked was found by 1702,⁷⁷ it was exceptional: most of the stone for quoins, door

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71. AN, Marine, B², 115, ff.511v.-514: to Bégon, 29 February 1696; Col., B, 19, f.67v.: to Champigny, 7 April 1696.
72. AN, Col., C^{11C}, 3, ff.33-35: Durand, 26 August 1700.
73. *Ibid.*, ff.172-183v.: Durand, 5 October 1701.
74. *Ibid.*, ff.268-276: Durand, 10 October 1702.
75. AN, Col., B, 29, f.147v.: to Costebelle, 30 June 1707.
76. See, for example, AN, Col., C^{11C}, 2, ff.247-249v.: Durand, 20 October 1699. Monic traded with the Faneuils of Boston, Huguenots originally from La Rochelle.
77. AN, Col., C^{11C}, 3, ff.312-313v.: *loc. cit.*

and window frames, and cordons, was imported from France, particularly from the Charente district near Rochefort. In 1701, after a frustrating previous season during which the stonecutters had been able to cut little Newfoundland stone for a cordon, the Ministry of Marine sent 100 *toises* of Charente cut stone, and a promise of 200 more in succeeding years.⁷⁸ Some ships' captains were instructed to carry freestone as ballast, as others had been asked to carry limestone.⁷⁹ It too had to be collected from the outports where fishing vessels had unloaded it.⁸⁰ Yet the quantity shipped from Rochefort barely met the need, even when measures were taken to economize on its use by substituting other structures for those requiring it.⁸¹ Though Subercase reported in 1703 that a local freestone had been found that responded more satisfactorily to the hammer even than that sent from France,⁸² the quantity that could be quarried was disappointingly small. In 1708, the King's ship that visited Placentia was instructed to bring an adequate amount of Charente stone.⁸³

Pack and draught animals had to be imported from France, but the

78. *Ibid.*, ff.39-42: Monic, 30 September 1700; ff.43-52v.: L'Hermitte, 1 October 1700; B, 22, f.155v.: to Bégon, 16 March 1701; f.187v.: to Monic, 13 April 1701.

79. B, 27, f.117v.: to Subercase, 1 May 1705.

80. AN, Col., B, 23, ff.161-162v.: to L'Hermitte, 15 March 1702.

81. *Ibid.*, f.165: to Monic, 22 May 1702.

82. C^{11C}, 4, ff.26-51: Subercase, 21 October 1703.

83. B, 29, f.430: to Costebelle, 8 February 1708. Brick was imported from Canada and France. About 6,000 were shipped from Quebec in 1700; 100 barrels of crushed brick (used in cement) was brought by Basque vessels in 1703. Since the demand in either form was not very great, the supply appears to have satisfied it. C^{11C}, 3, ff.33-35: *loc. cit.* AN, Col., B, 23, ff.293-295v.: to L'Hermitte, 17 March 1703.

merchants who were expected to provide them demurred (as with building materials). Mules that arrived between 1696 and 1699 were worked hard carrying sand and lime.⁸⁴ By 1706, the three animals still in the colony were old and weak; yet an appeal by Subercase three years before for two mules and two pairs of oxen had not been answered.⁸⁵ Finally, in 1707, the commissary at St. Malo was instructed to obtain four mules: if possible, he was to persuade the shipowners to provide them; otherwise, he was to purchase them out of public funds.⁸⁶ Evidently he was successful in neither venture, for the animals failed to arrive.⁸⁷ The *armateurs* who were asked to help procrastinated. Those of the Basque ports, though willing to pay for the beasts and their harness, complained that they lacked space for them on their ships. In 1708, after some negotiation, they provided 1,038 *livres*, which were applied to transport costs.⁸⁸ Though officials at Bayonne and Rochefort were then instructed to purchase animals wherever they could, at the best possible price, there is no record of their having arrived in the colony. Years were therefore wasted in correspondence about a supply problem that was hardly insurmountable, yet was not overcome.⁸⁹ Furthermore, as Costebelle pointed out in 1706

84. C^{11C}, 2, ff.226-232v.: L'Hermitte, 21 September 1699.

85. *Ibid.*, 4, ff.26-51: *loc. cit.*; 5, ff.75-77: Costebelle, 8 November 1706.

86. B, 29, f.141: to Lempereur, 16 February 1707.

87. C^{11C}, 5, ff.90-97: Costebelle, 10 July 1707.

88. B, 29, f.433: to Costebelle, 22 February 1708; Marine, B², 207, ff.1076v.-1078: to Laudreau, 27 June 1708.

89. The Ministry of Marine considered sending pairs of donkeys that would breed, as Costebelle suggested. Perhaps this was not done because the climate was thought too cold for donkeys; perhaps also, mules were considered more useful. See AN, Col., C^{11C}, 5, ff.156-166: Costebelle, 15 December 1707; B, 29, f.433: *loc. cit.*

and 1707, a great deal of productivity was lost by having men do the work of animals.⁹⁰

Placentia lacked the facilities for building small water craft that could be used as local transport. At first it was proposed to build the boats in the workshops at Rochefort if the carpenters there were sufficiently familiar with the type required.⁹¹ This does not seem to have been done. In 1703, officials at Bayonne were instructed to send a carpenter to Placentia especially for the purpose.⁹²

Manufactured building materials and supplies were imported from France, particularly from Rochefort. Nails, for example, were made either in the naval shops or contracted out to nailers in the Rochefort district. Ships' nails were used wherever this was feasible; roofing and flooring nails were made in quantity for local and colonial use. The colony could expect to import from France naval supplies for boats and small ships, construction tools, glass and locks. Any of these commodities could be drawn from the shops of the supply ports or furnished by metropolitan contractors.⁹³ No crisis seems to have developed in furnishing them, but that may be due simply to the fact that building was constantly delayed by the shortage of basic materials, such as lime.

90. *Ibid.*, ff.75-77: Costebelle, 8 November 1706; ff.90-97: Costebelle, 10 November 1707.

91. Archives du port de Rochefort, 1E43, f.18: to Bégon, 13 January 1700.

92. AN, Col., B, 23, ff.293-295v.: to L'Hermitte, 17 March 1703.

93. *Ibid.*, C^{11C}, 4, ff.13-16v.: Costebelle, 20 March 1703; 5, ff.259-267: Durand, December 1707; B, 29, f.425v.: to Laudreau, 25 January 1708; Archives du port de Rochefort, 1E599 [P.A.C. transcript pp.15, 16, 30-31, 34]: Bégon, 18 February 1696. The names are extant of suppliers in 1696 of several of these commodities.

Slow communications, poor administration and leaving the initiative to the colony could nevertheless lead to such ironical situations as when craftsmen arrived without suitable tools because the engineer or someone else had failed to place an order for them.

Despite a sincere desire to carry out policy, the poor administration of supply contributed very largely, therefore, to France's inability to complete the forts at Placentia. In a positive sense, however, it influenced policy in the new colony of Ile Royale: an attempt was made, at least in the early stages, to make greater use of local resources.

Ile Royale, 1713-1719

In their survey report of the natural resources of Ile Royale, dated 20 September 1713, Saint-Ovide and L'Hermitte forecast that the future Louisbourg would be extremely expensive to fortify because of the distance over which building materials would have to be transported. Neither freestone nor limestone was in evidence in the district; though there was plenty of rubble stone, it was inferior: "ce n'est que du grison et d'autres pierres qui au premier coup de marteau se cassent en plusieurs morceaux." Though two small pieces of stone produced good lime, L'Hermitte had no idea where more of it could be found.⁹⁴ In the Mira Bay (*Baie de Miré*) district there were, according to Saint-Ovide, trees that could furnish woods suited to various construction purposes.⁹⁵

94. C.T.G., archives, art. 14, pièce 1: Saint-Ovide and L'Hermitte, 20 September 1713, f.2v.

95. *Ibid.*, f.3.

Coal was found at Cap Percé, at Spanish Bay (*Baie des Espagnols*, now Sydney), at the entrance to Big Bras d'Or Lake, and in the vicinity of St. Ann's Bay.⁹⁶ Gypsum was observed in quantity near the entrance of Big Bras d'Or and around the coast between St. Ann's Bay and Ingonish (*Niganiche*). In the same places limestone was expected. Around St. Ann's Bay, the forest was rich in timber suited to construction: pine, spruce and other softwoods; oak, elm, yellow birch (*mérissier*), maple and aspen.⁹⁷ Near Hâvre Sainte-Marie (now Arichat), the forest included yellow birch, maple, birch, spruce and fir; and the best brick-clay the two officers had seen on the island was also to be found there.⁹⁸

Despite the reported scarcity of resources adjacent to the Louisbourg site, the minister of marine portrayed them in glowing terms to his colleague the finance minister, from whom he was trying to pry funds for the establishment of the new colony. "Il y a de la terre abondante," he wrote, "et le plâtre n'en est pas éloigné. Ainsi on y pourra bâtir solidement."⁹⁹ L'Hermitte was expected to find stone suitable for lime, to quarry building stone, to gather other materials, and to prepare stone, lime, lumber and iron in readiness for an early start on construction.¹⁰⁰

96. *Ibid.*, ff.3-5.

97. *Ibid.*, f.4v.

98. *Ibid.*, f.5v.

99. AN, Col., B, 36, f.28: Pontchartrain to Desmarets, 24 January 1714.

100. *Ibid.*, f.419: to L'Hermitte, 26 January 1714; f.462: to Costebelle and Soubras, 18 April 1714.

It was an impossible task. Saint-Ovide's "fine stand of timber" in Mira Bay had "dissolved", according to L'Hermitte, before the latter's arrival there in 1714, but there was enough for planks and boards for two barrack huts. As for building stone, L'Hermitte had seen none, from the Strait of Canso to Port Dauphin, that was suited to cutting. The limestone, in his opinion, was inferior even to that of Newfoundland. He suggested that the whole northeastern part of the continent must be poorly provided with that material, since the New Englanders were reputed to use sea-shells in the making of lime.¹⁰¹ In 1715 and 1716, other resource deposits were discovered. This gave grounds for undue optimism concerning the quantity and quality of native materials available. In 1715, the discovery of "good" limestone near Canso and of "good" brick-clay in the vicinity of Port Toulouse was confirmed.¹⁰² Orders had already been issued to build a brickyard at the latter place.¹⁰³ In 1716, two limestone deposits suitable for quarrying were found near Port Dauphin, close to where gypsum was already being mined. Costebelle immediately had a limekiln built at Port Dauphin in order to hasten the production of mortar.¹⁰⁴ As yet, no one seems to have seriously considered the use of the large local coal deposits for limeburning; instead, quantities of the fuel were sent back to France for other purposes, while wood was used in the kilns.¹⁰⁵

101. AN, Col., C^{11B}, 1, f.67: L'Hermitte, 29 August 1714.

102. *Ibid.*, ff.189-192: Soubras, 28 November 1715; ff.141-148: Costebelle, 5 November 1715; ff.165-166: Costebelle, 30 November 1715.

103. AN, Col., B, 37, ff.226-237v.: to Costebelle and Soubras, 4 June 1715.

104. AN, Col., C^{11B}, 1, ff.404-406: Costebelle, 8 October 1716.

105. AN, Marine, B¹, 8, f.577v.

As government priorities concerning the fortification of Port Dauphin, Louisbourg and Port Toulouse changed between 1715 and 1717, the Court issued fresh instructions each year respecting the provision and stockpiling of materials and supplies. Each order was as categorical as its predecessor. Supplies were consequently diffused to such an extent that when the decision to emphasize Louisbourg was taken, most of the necessary goods were stored inconveniently far from where they were needed. One decision remained relatively unchanged: most of the building stone was expected to be rubble derived from the excavation of ditches and foundations.¹⁰⁶ Otherwise, each of the three ports was considered to be strong in certain native materials: Port Toulouse in building stone, brick-clay and slate; Port Dauphin in limestone; and Louisbourg in wood.¹⁰⁷

Various *devis* prepared by Verville or under his direction provided for stockpiling large quantities of supplies. Some were obtainable locally; the available quantity of others was uncertain; and there were still others that could only have been imported. Verville undoubtedly assumed that supplies would be forthcoming regardless of their source, and that large quantities would be imported. For all the ports taken together, the specifications in 1716 called for almost 23,000 square *pieds* of cut stone, about 12,300 panes of window glass, 120 door

106. AN, Col., F³, 51, pp.119-127: "Dispositifs des effets et de quelques ouvriers qu'il est nécessaire de transporter à l'Ile Royale....", [24] May 1717.

107. *Ibid.*, pp.11-30. Fir, yellow birch, birch and beech. There was said to be enough firewood for 100 years within more than a league from the harbour.

locks, 480 small locks and some 480,000 nails of all types, as well as local fieldstone, squared local timber, lime from local stone burned in new kilns set up for the purpose, local sand washed in fresh water and shingles made from local woods.¹⁰⁸ Ile Royale lacked the facilities for making so many nails; no proven quarries of freestone had been discovered; glass had to be imported; and the few locksmiths brought to the colony would have been unable to fill an order of that size; so there was scope early in the colony's development for the use of metropolitan industry.

As early as 1714, the number and variety of tools and other supplies required even for beginning construction in a new colony must have increased business, at least for craftsmen near the western supply ports.¹⁰⁹ Even such articles as wooden shoes, greatcoats, old sailcloth for improvised shelter, and cooking utensils were a charge against the fortifications account if they were to be used by or for personnel engaged in construction.¹¹⁰ The first requisitions called for Spanish steel---for axes, for other tools, and to some extent as a building material. The Danzig steel in stock at Rochefort was unsuitable, and there was no Spanish steel, so a mixture of Limoges and Piedmont steel was proposed. The government was in such serious financial straits in

108. *Ibid.*, pp.31-93.

109. AN, Col., B, 36, ff.17-19v.: "Etat des marchandises et outils nécessaires pour l'Ile Royale" [1714].

110. *Ibid.*, ff.51v.-52v.: "Etat des munitions et marchandises nécessaires à envoyer à l'Ile Royale par les vaisseaux du Roi" [1714].

1715, however, that the suppliers refused credit.¹¹¹ This could not fail to delay work at Ile Royale.

Once the Marine Council had decided in 1717 to assign an absolute priority to the future fortress of Louisbourg, orders were given to transfer materials and equipment gradually from Port Dauphin and Port Toulouse. Thorough inventories were to be made of supplies on hand. Some goods could be sold to raise cash for excavation and removal of earth; those being kept for use were to be well protected from the weather. Verville and his assistants continued to assume that several building materials native to Ile Royale would be used: various types of wood, fieldstone, freestone, brick, gypsum for plaster, and limestone for lime. At least some of the limestone would now be burned in kilns fired by coal.¹¹² Cement, made from powdered tile passed through a sieve, mixed with quicklime and water, and then beaten until homogeneous, was specified for the most important structures.¹¹³ Though scarce, native oak was specified for such uses as floors and even shingles. There were no specifications for slate. Window panes (8 *pouces* by 6) were of course to be imported, and set in imported lead.

111. *Ibid.*, 37, f.98: to Besnard, 14 May 1715; ff.108v.-109v.: to Montholon, 4 June 1715.

112. AN, Col., F³, 51, pp.128-147.

113. *Ibid.*, pp.193-226: "Devis et conditions des ouvrages que le Roi a ordonné de faire exécuter au Port de Louisbourg...." 10 June 1718. Liger, *op. cit.*, differentiates between two kinds of cement: "le ciment des maçons", made of tile or brick powdered and mixed with slaked lime, and "ciment des fontainiers" or "ciment éternel", in which quicklime was mixed not only with brick or tile but possibly also with coal or iron filings.

Despite careful inventories, materials and supplies were "siphoned off" at the three ports, as Verville found in 1718. Most of the goods found their way into private hands (with the connivance of the governor, Verville implied), leaving too little for the work at hand. Upon Verville's firm recommendation, about twenty tons of limestone were sent from Toulon by way of Rochefort. Though part of the construction was accelerated by this shipment, other parts were delayed by shortages of brick, shingles and plaster that should have been plentiful in the colony, and by the disappearance of almost all but the least serviceable of the tools.¹¹⁴

Ile Royale and Ile Saint-Jean, 1719-1745

Several factors influenced the character of supply between 1719 and 1745: construction was carried out by general contractors who were expected to provide their own materials and equipment; the first of these was not responsible for transport; the government assisted with procurement, because it was anxious to accelerate building; during all but the last few years of the period, peace prevailed in the northwest Atlantic; there was no great reliance on local resources; and illicit trade with British possessions was extensive. These factors are all closely interrelated. The government accepted responsibility for

114. AN, Col., C^{11B}, 4, f.71: Verville, [1] February 1719; Marine, B¹, 50, ff.5-12: meeting of Council discussing letter from Verville of 30 October 1719. The price of the Toulon stone at that particular time was lower than that of Charente stone. When used as ballast, it cost the government nothing in transport charges; wages must have been paid, however, for transshipment at Rochefort.

transport in the contract with Isabeau, because experience had made commercial means appear uncertain: it was more important to try to follow construction timetables than to best the contractor in financial negotiation. Officials in the colony regretted the decision; and in fact it proved to be not only costly, but also inefficient. It was reversed in the contracts with Ganet and Muiron. Even then the government frequently provided transport in its own supply ships, deducting freight charges from the amounts it owed the contractors. The government's role in procurement during the period was to obtain certain goods in bulk, using its own sources of supply, more cheaply than the contractor could do alone; and to order special items. Trade with New England introduced a good quality of relatively inexpensive brick and lumber into Ile Royale, without affecting the essentially metropolitan French character of the supply business.

In effect, the supply of most commodities was a matter of organization in France. The general contractors dealt with metropolitan suppliers they had known while building civil and military structures for the government and for private clients. The Ministry of Marine drew upon stores in its own bases or placed orders with its regular suppliers nearby. It was logical for naval administrators to use for buildings on land any suitable supplies that were stock items in naval stores and were regularly replenished from government workshops or by private suppliers. Nails were such a commodity. Large quantities of upper-deck and deck or "weight" nails, each in three sizes, as well as "railing" and "scupper"

nails, were sent to Louisbourg for use in various structures.¹¹⁵

When reliance on shingles from native woods for roofing the principal buildings of Louisbourg was modified in favour of fireproof materials, slate from the quarries at Angers was ordered in large quantities. In 1721 the Ministry tried to organize the shipment of 60,000 slates in two lots (35,000 and 25,000) by merchant vessels at St. Malo, instead of through the usual port of Nantes. One *armateur* of St. Malo agreed to take the first lot in return for a business favour by the Marine Council. Another, from Saint-Servan, undertook to carry the second lot. The two lots did not reach St. Malo until May 12th. The first ship had space for only 24,000 out of 35,000, so the remainder were sent aboard another vessel. The ship designated for the second lot was found unfit for the voyage, so 10,000 of the 25,000 were sent on a government ship, leaving 15,000 slates still in storage at St. Malo in September.¹¹⁶ Eventually all of this slate reached the colony, but it was of inferior quality, and half of it was broken because of improper crating.¹¹⁷ In 1722, the route through St. Malo was abandoned in favour of the customary method of shipping in bulk from Nantes to Rochefort, crating and transshipping for despatch to the colony.¹¹⁸

115. Archives du port de Rochefort, 1E92, ff.289-295: "Etat des marchandises...." 29 March 1719. For the names of some suppliers of nails in 1722, see Archives de la Charente-Maritime, C, 163, ff.9-19: March-December 1722.

116. AN, Marine, B³, 269, Marine to Council, 1721: f.392: 14 March; f.396: 26 March; f.400: 7 April; f.412: 12 May; f.415: 13 June; f.421: 9 July; f.424: 9 July; f.431: 21 September; 280, f.288: Bigot de la Mothe, 10 September 1722.

117. AN, Col., C^{11B}, 5, ff.414-416: Verville, 9 October 1721.

118. Slates were expensive to ship: to avoid breakage, they required crates measuring 4 *pieds* by 1, weighing about 500 lbs., carrying

Even when general contractors were responsible for their own transport the government assisted them from time to time in the interest of construction progress. Ganet's orders for slate provide one illustration of this. In 1726, he paid for the delivery of a large quantity of it to Rochefort, where it was loaded on a government vessel. The contractor was required to pay for only the part of the load that exceeded his free freight allowance on King's ships (in Ganet's case, two tons).¹¹⁹ In 1727, since space on a government vessel was not available, Ganet arranged to have his slate shipped directly from Nantes to Louisbourg on merchant vessels; the intendant at Nantes persuaded the *armateurs* to accept a moderate freight charge.¹²⁰ In 1729, it appeared that the *directeur des fermes* at Angers might not allow 90,000 slates to leave the quarry for Ile Royale because of an expired permit. The Ministry of Marine enlisted the aid of the Department of Finance; as a result, the *fermiers-généraux* instructed the office at Angers to release the slate.¹²¹ In 1730, Ganet was permitted to send a quantity of slate on a government ship free of charge, in return for paying his passage and that of his entourage on a merchantman out of Nantes.¹²²

500 slates, and costing from one-third to one-half the value of the contents. One lot in 1722 cost 30 *livres* a thousand: the price seems to have varied between 23 and 32 at that time. See Archives du port de Rochefort, 1E351, f.31: Beauharnois, 7 February 1722; f.64: Beauharnois, 28 March 1722; 1E99, f.283: to Beauharnois, 18 March 1722; f.361: to Beauharnois, 2 April 1722.

119. *Ibid.*, 1E355, f.322: Beauharnois, 22 June 1726.

120. AN, Marine, B³, 315, ff.157-158: Renault, 4 February 1727; f.163: Renault, 18 February 1727.

121. *Ibid.*, 334, ff.144-145: Le Peletier to Maurepas, 23 August 1729.

122. Archives du port de Rochefort, 1E359, f.185: Beauharnois, 6 June 1730. Normally, he was entitled to free passage.

The government arranged for the procurement of various kinds of manufactured goods. Nails have already been mentioned. Several other examples can be cited. In 1721, the intendant at Rochefort made a contract to purchase from suppliers 8,000 panes of window glass.¹²³ In 1737, following the lighthouse fire, the Ministry of Marine placed an order with the *Manufacture Royale des Glaces* for 624 panes of special glass.¹²⁴ In 1732, at Rochefort, the special oil pan for the original Louisbourg lighthouse was made to order.¹²⁵ Drafting supplies, such as stationery, mathematical instruments, quill pens, ink, pencils and lighting materials were provided as a matter of course.¹²⁶ Tools and other building equipment, such as rope of various sizes, and materials to be worked by craftsmen in the colony, such as iron and "the finest German steel", were provided in 1721 from naval stores at Rochefort.¹²⁷ In 1722, the same port provided miners' tools and equipment for the specialists constructing the mine gallery under the glacis of the King's Bastion at Louisbourg, and tools for the company of Swiss mercenaries added to the garrison. The goods were made in the government ironworks

123. *Ibid.*, 1E96, f.430: to Beauharnois, 7 May 1721; 1E350, f.110: Beauharnois, 17 May 1721. It measured 8 *pouces* by 6.

124. Its dimensions were $9\frac{11}{12}$ by $7\frac{7}{12}$ by $\frac{1}{6}$ *pouces*. AN, Col., B, 65, f.48v.: to Orry, 16 April 1737; ff.50v.-51: to Orry, 3 May 1737; Marine, B³, 383, f.41: Orry to Maurepas, 25 April 1737. The Ministry of Marine offered to purchase the glass at the same price as in 1735 (for the original lighthouse): 2 *livres* a pane.

125. Archives du port de Rochefort, 1E361, f.10: 12 January 1732.

126. *Ibid.*, 1E96, f.641: to Beauharnois, 29 June 1721; AN, Col., F^{1A}, 21, ff.79-81: Montholon, 22 April 1719.

127. Archives du port de Rochefort, 1E96, f.261: to Beauharnois, 12 March 1721; f.641: *loc. cit.*

because in 1721 local suppliers had failed to deliver a similar order, intended for Martinique, in time for sailing.¹²⁸ In 1723 and 1724, the port of Rochefort supplied Isabeau with various tools and equipment; he paid for them out of that part of his advance released in France.¹²⁹

Since all transport was the government's responsibility in the contract with Isabeau, it was expected to provide boats and vehicles for use within the colony. While the royal supply vessel fulfilled some of these functions as time permitted, there was a need for coastal vessels of 100 to 120 tons, and boats of 40 to 50 tons' capacity.¹³⁰ Little was done to satisfy it. Even a light boat for Verville's personal transportation was not ordered until 1722.¹³¹ Pack animals continued to be a minor administrative problem. The Basque country was considered to be the best source of supply for donkeys. Since officials at Rochefort were responsible for shipping the animals to the colony, they were to reimburse those at Bayonne out of the Ile Royale fortifications account for any

128. *Ibid.*, 1E99, f.521: to Beauharnois, 5 May 1722; f.527: to Beauharnois, 10 May 1722; f.643: to Beauharnois, 27 May 1722; f.696: to Beauharnois, 11 June 1722; 1E351, f.107: Beauharnois, 16 May 1722; f.179: Beauharnois, 7 July 1722. AN, Col., B, 45, ff.1102v.-1112: to Saint-Ovide and Mézy, 12 May 1722. For an indication of who were the regular suppliers of the port of Rochefort in the early 1720s, see Archives de la Charente-Maritime, C, 163, ff.9-19.

129. Archives du port de Rochefort, 1E103, f.173: to Beauharnois, 23 May 1724; 1E352, f.212: Beauharnois, 10 June 1723; 1E353, f.31: Beauharnois, 10 June 1724.

130. AN, Col., C^{11B}, 5, ff.3-7: Saint-Ovide and Mézy, 27 November 1719; Marine, 4JJ, liasse 7, no.16: Journal du *François*, 18 June - 20 December 1720.

131. Archives du port de Rochefort, 1E99, f.283: to Beauharnois, 18 March 1722.

donkeys purchased and delivered by way of Rochefort. For the sturdy mules of Poitou, a representative of the intendant at Rochefort was expected to bid at the market at Niort.¹³²

Freestone for fine masonry work was quarried at Sainte-Même and Saint-Savinien in the Charente valley. Sometimes it was shipped as quarried, but on other occasions specific orders were placed for sizes and quantities from particular quarries. In 1725, 900 cubic *pieds* were sent from Rochefort to Louisbourg.¹³³ In 1726, at least that much was ordered from the Sainte-Même quarry alone.¹³⁴

New England became the main---almost the only---source of brick after the brickyard at Port Toulouse proved disappointing. In early October 1731, five shiploads of New England brick arrived at Louisbourg.¹³⁵ In a single year (1732), 119,400 New England bricks were reported delivered at Louisbourg by thirty ships---that incidentally brought almost 330,000 *pieds* of boards and over 410,000 shingles.¹³⁶ The total

132. *Ibid.*, 1E350, f.68: Beauharnois, 25 March 1721; f.107: Beauharnois, 13 May 1721. Actually, four donkeys (three females and a male) were purchased in Poitou in 1722, after an extensive search, at a total cost of 666 *livres*, 12 *sols*. They were relatively inexpensive. *Ibid.*, 1E351, f.72: Beauharnois, 14 April 1722; f.93: Beauharnois, 7 May 1722.

133. *Ibid.*, 1E105, f.151: to Beauharnois, 13 February 1725; ff.161-162: to Beauharnois, 13 February 1725; f.203: to Beauharnois, 13 March 1725.

134. *Ibid.*, 107, f.629: to Beauharnois, 28 May 1726.

135. AN, Col., C^{11B}, 13, ff.247-255v.: Desmarest, 15 November 1732.

136. Dilys Francis, *op. cit.*, p.20..

volume of the contractors' purchases of New England materials throughout the period cannot, however, be measured.

Most government purchases in the colony, related to construction not carried out by the general contractors, were for relatively small amounts. Wood in various forms (firewood, logs, boards, shingles and stakes) was the most common commodity; several lots of nails and a few of glass were purchased.¹³⁷ Records of the general contractors' purchases are not extant, but the specification of local materials for parts of structures, and archaeological confirmation that they were used there, provide some evidence. Local freestone was used in the lighthouse in 1730; fireplaces in the Louisbourg citadel barracks were repaired with it, and in 1733 those in the buildings of Port La Joie constructed of it; it was used at Port Toulouse in the same year. The chief source of supply for freestone until 1741 was L'Indienne;¹³⁸ after that, it was Port Hood, where the quarry was in operation from 1727.¹³⁹ In general, however, French freestone was preferred for the most important structures because it was considered to be of higher quality.¹⁴⁰ Gypsum was so plentiful in Ile Royale that only the local material was used.¹⁴¹ The contractors

137. See Appendix at the end of this chapter for materials, suppliers and source references.

138. Now called Lingan.

139. Francis, *op. cit.*, p.7.

140. Miss Francis (*op. cit.*, p.8) wonders why *more* French freestone was not used. The answer seems to be that it was considered necessary only in the vital parts (quoins, etc.) of important structures. Given its cost, the supply was adequate. The use of the local stone was largely confined to buildings of lesser concern.

141. *Ibid.*, p.23.

came to rely also on limestone from quarries at Port Dauphin, Mira Bay (from 1726) and Spanish Bay (from 1733). Though the scarcity of local transport contributed to the high cost of producing lime, the local stone was preferred, for reasons of even greater economy and convenience, to the superior French material.¹⁴²

Ile Royale and Ile Saint-Jean, 1749-1758

The most significant developments during the final period were a re-evaluation of the native resources of the colony and the introduction of techniques previously disregarded or unknown. They resulted in a greater use of local materials than before. This did not prevent French and New England building materials and processed goods from entering the colony much as they had done before 1745.

Franquet was the chief moving force behind the thorough review of local materials. Not only was he new to the colony, but also he was in a position to benefit from about fifty years of French building experience in the Gulf region. He undertook a completely fresh survey, more extensive than any carried out before.

Both the type of local stone that had been selected before 1745, and the way it had been used, were criticized. Smooth stone collected from the seashore was unsuitable, even when combined with good mortar: no satisfactory bond could ever be achieved.¹⁴³ Stones used before had

142. *Ibid.*, pp.25-27.

143. C.T.G., Bibliothèque, ms. in-fol. 205^b, ff.4-7: Franquet to Rouillé, 24 August 1750; AN, Col., C11B, 29, ff.110-115: Prévost, 14 December 1750.

been too small and not fashioned with a "tail", or projecting piece, so they had not been well joined. The red marl of Ile Saint-Jean (with tuff clinging to it) was promising: it was light, and could be quarried in whatever size was desired; it remained to be determined whether the stone could resist the weather and bear the required loads. Quarrymen from Givet in the Ardennes district of northeastern France, "qui passent pour les plus adroits du Royaume," would be sent to the colony to decide how to make better use of it.¹⁴⁴ There was also a bluish stone on Ile Saint-Jean, more compact, more dense, and harder than the red stone; when baked it produced a brown clayey lime. It was rare, however, and therefore perhaps too expensive to be quarried. The stone near Louisbourg was found to be inferior to that of the Mira valley.¹⁴⁵ The latter could be quarried in large pieces, but would be expensive after delivery to the fortress.¹⁴⁶ Tests were made on the freestone of Justaucorps Island: it proved to be of high quality.¹⁴⁷

The composition and use of mortar were carefully examined. Franquet found that the sand used before 1745 had not been properly washed with fresh water, and that too much water had been added to the mortar, reducing the lime content from the required one-third to an

144. AN, Col., B, 95, ff.272-275v.: to Franquet, 15 March 1752.

145. With the exception of some hard rock mined near the fortress to remove obstructions: this provided "le moellon le plus beau qui ait encore été employé dans les ouvrages de cette place." AN, Col., C¹¹B, 32, ff.265-268: Boucher, 7 November 1752.

146. AN, Col., C¹¹A, 126, pièce 36: Franquet, 25 May 1752.

147. *Ibid.*, see also Francis, *op. cit.*, p.5.

actual one-sixth.¹⁴⁸ Limestone was quarried in quantity at Spanish Bay.¹⁴⁹ Since it was near coal deposits, and since Franquet imported Flemish limeburners experienced in the use of coal-fired limekilns,¹⁵⁰ the chief question was whether to burn the limestone at Louisbourg or at Spanish Bay. The former course might obviate the dangers of shipping quicklime, but the bulk would be costly. The latter option, if combined with slaking the quicklime, might be preferable.¹⁵¹ Undoubtedly, the kilns at Louisbourg continued to operate, but there is evidence that at least one was used at Spanish Bay.¹⁵²

Experience had taught that good mortar and good stone did not guarantee solid walls. Tests were required to determine the effect of weather, particularly the thaw-freeze cycle that was so common during the Louisbourg winters, on both the mortar and the stone.¹⁵³ Franquet was also a firm advocate of protecting masonry by covering it with planks. Senior engineers in France suggested that the precaution taken before 1745, to embed into the walls the uprights on which the planks were nailed, did more to hold the revetments together than the planks themselves. Franquet thought that there was some justification for thinking that the masonry would be dry and weather-resistant after the

148. C.T.G., Bibliothèque, *loc. cit.*, ff.30-33: Franquet to Regemorte, 25 June 1751.

149. AN, Col., C^{11B}, 32, ff.265-268, *loc. cit.*

150. See Chapter VI.

151. AN, Col., C^{11B}, 32, ff.66-71: Raymond, 19 November 1752.

152. Francis, *op. cit.*, p.32.

153. AN, Col., B, 95, ff.272-275: *loc. cit.*; C^{11A}, 126, pièce 36: *loc. cit.*

planks had rotted away: tests made after the winter of 1750-1751 led him to such a conclusion. In his view, it would be a mistake not to apply the planks. Furthermore, he thought they should be applied throughout the works, whereas the Court had directed, for reasons of economy, that they should be reserved for walls exposed to winds from the east and southeast. He had found that disintegration of masonry took place almost anywhere, whether the wall was vertical or on a slope; whether or not it had been given enough time to dry; and whether or not masonry under cover hardened as it aged.¹⁵⁴

Thorough surveys of timber resources were undertaken. Their main purpose was to establish what was available for palisades, but other uses were kept in mind. The wood in the vicinity of Louisbourg was of very poor quality. It tended to rot in storage, which was a great disadvantage, since palisades must be stockpiled and put up when an emergency occurred. White cedar was the best wood for palisades, but there was none on either Ile Royale or Ile Saint-Jean, or in fact anywhere in the Gulf region; and none below Ile aux Coudres on the St. Lawrence. Oak was less durable in the ground than cedar and, because of its weight and hardness, would cost more to transport and to fashion. Larch was not known to exist in either Ile Royale or Ile Saint-Jean. At Quebec, suppliers would mix the little there was with other, useless woods. Inferior to oak and cedar, its weight lay somewhere between theirs. Among the woods that were accessible in Ile Royale, *épinette* and *prusse*

154. *Ibid.*

were considered the best for palisades, even though they spoiled in storage. If oak or cedar, free of wormholes, could be purchased at Quebec at a fairly reasonable price, Franquet recommended its purchase, because the good oak found in the north cape of Ile Royale, and in Ile Saint-Jean, would be expensive timber to fell and to deliver to Louisbourg. Oak was the first choice for gun barriers and platforms; for the former, pine was a second choice, because tenon and mortise joints could be fashioned from it, but a poor second because it wore less well.¹⁵⁵

Earlier disappointments in the brick made at Port Toulouse did not discourage Franquet from searching again for suitable clay. If Ile Royale proved completely unproductive, Ile Saint-Jean was certain to provide good material, he believed.¹⁵⁶ The search began in 1752 in the Louisbourg area, which proved fruitless. Brickmakers sent from France then looked for a suitable brickyard site near the coalfields of the Spanish Bay-Lingan area. A brickyard was built at Spanish Bay, and in 1752 enough clay was extracted to begin work in the spring of 1753. The master brickmaker assured Boucher that seven to eight thousand bricks would be made by the end of the summer. Boucher thought that those, and a few made in the Mira valley, would suffice to provide a layer of good brick revetment to replace the boards throughout the whole enceinte.¹⁵⁷

155. *Ibid.*

156. AN, Col., C^{11A}, 126, pièce 36: *loc. cit.*

157. AN, Col., C^{11B}, 32, ff.265-268: *loc. cit.* The Mira valley also had suitable clay, but shipping coal there raised production costs.

By October 1753, about 138,350 bricks were produced, but at the exorbitant cost of 27 *livres* a thousand, or about 3,735 *livres*, 9 *sols*, not including tools and implements. New England brick, in contrast, was costing 21 *livres*, 10 *sols* a thousand at Louisbourg.¹⁵⁸ In 1754, the colony purchased 110,420 bricks from New England merchants, 34,600 from suppliers at Louisbourg, and 22,000 from Spanish Bay shipped in a locally owned schooner. Thus, in the year following the attempt to make a brickyard in the colony viable for the sole purpose of providing for government construction, almost twice as many bricks were imported from a foreign source.¹⁵⁹

Brick was not the only building material purchased by the government in 1754 from New England suppliers. It purchased 156 *boucaux* of quicklime from various merchants; 15,100 *pieds* of Boston pine boards were bought from one Nathaniel Woodbury; and Richard Graham was paid for twelve copper locks, with their keys, for the house occupied by Prévost.¹⁶⁰ In 1756, 350 *pieds* of Boston boards were purchased.¹⁶¹

Local suppliers provided all manner of materials and processed goods. The shop of Jean Claparède, master locksmith, was very active fashioning locks, keys and other hardware for the government buildings.¹⁶²

158. *Ibid.*, 33, f.237: Prévost, 12 October 1753.

159. AN, Col., C^{11C}, 14, ff.43-65v.: Laborde, 15 December 1757.

160. *Ibid.* Recorded imports in that year from British colonies totalled 6,195 *livres*.

161. AN, Col., C^{11B}, 36, ff.212-245: Prévost, 20 December 1756.

162. *Ibid.*, 13, ff.68-88: Laborde, 13 November 1751; ff.170-199v.: Laborde, 15 July 1754; Claparède sold 3,000 nails to the government in 1756. C^{11B}, 36, ff.212-245: Prévost, 20 December 1756.

Louis Logier, master joiner, supplied quantities of finished wood.¹⁶³

In 1753, window panes were purchased from a glazier called Duhaget, and craftsmen from Port Dauphin (a joiner and a carpenter) sold the products of their trades.¹⁶⁴ In 1754, local suppliers furnished more than 200,000 panes of glass, some 98 *boucaux* of quicklime, 46,700 nails, 410 French pounds of shingle and slate nails, quantities of lumber for construction, 353 barrels of coal for the limekilns, and office supplies for the engineers and draftsmen.¹⁶⁵ In 1756, 5,600 *livres*' worth of handles for various tools were purchased from Charles LeClerc, and in the following year Clairépée of Louisbourg furnished tools and equipment, such as wheelbarrows, wheels, wooden shovels, handles and picks, for 5,400 *livres*.¹⁶⁶

From Canada, iron (presumably from the Saint-Maurice forges) was imported in quantity in two schooners, one based at Louisbourg, the other at Quebec. Its quality was so inferior that the craftsmen refused to use it.¹⁶⁷

Manufactured goods for construction purposes were imported in large quantities from metropolitan France. Initially, basic supplies arrived with the new garrison in 1749. For several years, Claude Coeuret

163. *Ibid.*, ff.128-159: Laborde, 15 November 1753; 14, ff.12-41: Laborde, 20 October 1755.

164. *Ibid.*

165. *Ibid.*, 14, ff.43-65v.: *loc. cit.*; ff.67-119: Prévost.

166. *Ibid.*, ff.67-119: Prévost, 16 December 1757.

167. *Ibid.*, ff.43-65v.: *loc. cit.*; C^{11B}, 36, ff.249-250: Franquet, 20 April 1756.

seems to have been responsible for furnishing his own materials and supplies under a contract for the upkeep of public buildings concluded in August 1750.¹⁶⁸ An exception were pumps supplied through government auspices in France in 1751.¹⁶⁹ Once the policy of direct management had been established---in 1754---the colony imported materials and supplies in the quantities required. Franquet made an arrangement with a colleague at Dunkirk for obtaining the necessary tools and equipment. They bought wheelbarrows from the contractor at Dunkirk and sent them by coaster to Brest. Also at Dunkirk, bolts for the barrows, 175 spades and 200 shovels were procured. Elsewhere in France, shovels, pickaxes and picks were ordered; some of them were made in the ironworks of Rochefort and Brest to save time.¹⁷⁰ The razing of Black Rock (Cap Noir) cost, in equipment, 51 wheelbarrows, 28 pickaxes, 100 shovels, 595 handles for various tools.¹⁷¹ Building materials ordered from France in 1754 included 100,000 slates, 400,000 shingle nails (diamond head), 400,000 shingle nails (flat head), 50,000 nails for boards (three *pouces*), 30,000 deck nails, 12,000 pounds of lead *en table*, 3,000 pounds of lead *en saumon*, 15 quintals of German steel, 100 locks, 100 locks with 200 pairs of flat bolts, 200 pairs of pegs for *armoires*, 2,000 panes of

168. AN, Col., C^{11B}, 29, ff.152-159: Prévost, 4 November 1750; ff.276-299: Boucher, 31 December 1750.

169. AN, Marine, B³, 501, letters from the port of Le Havre: ff.151-152: 3 May 1751; f.192: 26 June 1751; and f.258: 13 July 1751.

170. AN, Col., C^{11B}, 34, ff.201-202: Franquet, 19 April 1754; f.214: "Etat des brouettes et outils de toutes espèces...." [Franquet] n.d.; C.T.G., Bibliothèque, ms. in-fol. 205^b, ff.135-136: Franquet to Rouillé, 6 April 1754.

171. AN, Col., C^{11B}, 34, ff.218-219: Franquet, 2 November 1754.

glass (8 by 9 *pouces*), 2,000 panes (7 by 8 *pouces*), 12 baskets of round panes of glass, and 15,000 nails (6 *pouces*).¹⁷²

In 1756, one building used for construction stores was completely demolished by fire, and another damaged with some of its contents destroyed. Both slate and iron would have to be replaced by importations from France.¹⁷³ Orders were placed in 1756 and 1757 for 600 iron shovels, 300 pickaxes for earth, 600 picks for rock, 1,500 pounds of German steel, 100 quintals of iron for fashioning miners' tools, 200 quintals of iron for other purposes, axes, saws of all types, and other carpenters' tools.¹⁷⁴

Conclusion

By deciding that the fortifications and buildings would be built in a European manner, the French government predetermined much of the character of supply. At the outset, its servants knew little or nothing of the properties of the region's natural resources. Though by 1758 they understood considerably more, their experience was slight when compared with the centuries of accumulated knowledge of French materials. Consequently, doubt brought about by ignorance or bad experience often led them to set aside local resources and to import the European building

172. *Ibid.*, f.238: "Matériaux nécessaires pour les fortifications et demandés par M. Franquet", n.d. [Franquet, 1754].

173. *Ibid.*, 36, ff.247-248: Franquet, 19 April 1756; ff.249-250: Franquet, 20 April 1756.

174. *Ibid.*, 35, f.286: Franquet, 11 November 1755; 36, f.151: Prévost, 2 October 1756; ff.212-245: Prévost, 20 December 1756; C^{11C}, 14, ff.67-119: *loc. cit.*

supplies with which they were familiar. This would unleash a chain of difficulties. French engineers, contractors and administrators were accustomed to using French materials in a French, rather than a North American, setting; they were continually forced to adjust to the unexpected effects of climate. More complex was the basic problem of ensuring that the goods reached their destination when they were required and in a usable condition.

During the period 1695-1713 lime, freestone, other vital materials, and tools and equipment were imported from France for the construction work at Placentia. The government attempted to rely on negotiations with the merchants who fitted out the annual fishing fleets in order to have the supplies carried to the colony. We have seen that the Court was not crowned with success in this endeavour. Politically it could not use outright coercion to force the shipowners to assist with transport, nor was it prepared to assume that role itself. The role the government had assumed---that of procuring the materials---was itself fraught with difficulty: negotiations with suppliers did not always result in filling the requirements approved by the Ministry.

After 1713, in establishing Ile Royale, the government having learned its lesson decided to undertake not only the procurement of the materials but also their transport. Despite this change in policy, it was not always possible to deliver the materials on time and in the quantity required. Sometimes they were as much as a year late. The credit of the French state after the Peace of Utrecht was low, so funds

were not forthcoming when required; and negotiations between officials in the ports and suppliers often took so long that the materials could not be loaded before the ships were obliged to sail.

The first of the general contractors received assistance in obtaining building materials and had them transported for him to the site. This meant that several of the supply problems remained the King's responsibility. After 1724, new contractors were responsible for procurement and transport, while the Ministry of Marine continued to assist them in finding the materials and supplies they required, especially those that were sought in Europe.

Surveys of Ile Royale and Ile Saint-Jean after 1713 revealed the existence of apparently suitable building materials. During the period before 1719, these were expected to fulfil most construction requirements. Yet, after cursory studies, many materials were considered to be either inferior in quality or insufficient in quantity. We have seen that, among building materials, local rubble stone, local woods, and eventually local lime were used, but freestone, brick, some lumber, slate and all kinds of processed and semi-processed goods were imported. This situation prevailed with little prospect of change until the arrival of Franquet in 1750 after the re-establishment of French rule. During the thirty years of peace after 1713, there was time and opportunity to study the resources of the islands more thoroughly and to establish more self-supporting workshops for the fashioning of tools and equipment. Alternatively, there would have been time to organize the more populous

colony of Canada as the chief external supplier of Ile Royale: brick, slate, lumber and a number of manufactures might have come from there.

The reasons for not taking these steps were political: they were partly accidental, partly deliberate. The French government never looked upon the construction programs of the period after 1719 as "permanent": they were projects that would be undertaken with due despatch. Once completed, the buildings would require only minor upkeep. Consequently, it made no sense in official eyes to "waste" a great deal of time in thorough surveys of local resources or in setting up permanent workshops beyond what seemed immediately necessary. It was therefore reasonable simply to extend to the Gulf the supply systems that already existed in France, in order to complement the local resources that could be used. The organization of construction in Ile Royale was ideally suited to this kind of expedient. The engineers in charge and the general contractors had metropolitan construction experience and metropolitan administrative and business connections. It was natural for them, and for their metropolitan associates, to stimulate trade with the usual suppliers of the engineer corps and its contractors. They were a closely knit group: the Maréchal d'Asfeld selected Verville and Verrier; the engineers influenced the choice of Isabeau, Ganet and Muiron; and all of them had metropolitan supply contacts. Thus, while there is no evidence of a clear-cut government plan to favour metropolitan over colonial building materials, these appointments caused policy to drift in that direction. The authority of the Ministry of Marine over colonies, of course, meant that supply ports like Rochefort, and the

merchants and craftsmen from whom the port officials purchased materials and equipment, loomed larger than the interior of France as sources for materials and equipment. But, as we have seen, these were obtained wherever they could be found.

Basically, the situation did not change after 1749. Franquet carried out more thorough surveys of local resources than had been done before. Coal replaced wood as the usual fuel for limeburning; more thought was put into how local rubble stone could best be used; and there was a serious attempt to test the quality of local freestone. There was still a great deal of confusion about the properties of various types of wood and their ability to resist the climate. Oak, though relatively scarce and heavy, was considered the best for several construction purposes; yet reports about its location and quantity were so conflicting that they seem to have been little more than guesses. Canadian slate was not used; the iron sent from Canada was evidently of poor quality. In the final analysis, there was little increase in the use of local materials and equipment. The proportion of metropolitan to local investment in materials and supplies remained approximately the same as it had been for decades.

APPENDIX

LIST OF LOCAL BUILDING MATERIALS AND SUPPLIERS, 1728-1744

<i>Year</i>	<i>Material</i>	<i>Supplier</i>	<i>Amount in livres</i>	<i>Reference</i>
1728	lumber		2,000	C ^{11C} , 11, ff.41, 43: [Mésy, 1729]
1729	lumber	Jacau	1,780	C ^{11C} , 11, ff.39-40: Mésy, 2 March 1730
1732	various	various	311	C ^{11C} , 11, ff.67-72: Rondeau, 14 October 1733
1732	firewood	Dugas	660	<i>Ibid.</i>
1733	lumber	Jacau	1,015	C ^{11C} , 11, ff.77-83: Rondeau, 28 October 1734
1733	pine boards	Duran	90	<i>Ibid.</i>
1733	various	Berlon	133	<i>Ibid.</i>
1733	various	Dechamps	13	<i>Ibid.</i>
1733	wood	Dugas	660	<i>Ibid.</i>
1733	nails	Lopinot	266	<i>Ibid.</i>
1733	various	Rahau	73	<i>Ibid.</i>
1733	various	various	237	<i>Ibid.</i>
1733	various	Lopinot	156	<i>Ibid.</i>
1733	various	Delort	339	<i>Ibid.</i>
1734	various	various	86	C ^{11C} , 11, ff.84-90: Rondeau, 20 September 1736
1735	various	various	287	C ^{11C} , 11, ff.100-107v.: Rondeau, 3 October 1736

<i>Year</i>	<i>Material</i>	<i>Supplier</i>	<i>Amount in livres</i>	<i>Reference</i>
1735	oak, yellow birch and pine	Lelarge	3,215	<i>Ibid.</i>
1735	boards of yellow birch and maple	various	351	<i>Ibid.</i>
1735	firewood	Dugas	660	<i>Ibid.</i>
1735	palisades	Emter	759	<i>Ibid.</i>
1735	scaffold nails	Richard	63	<i>Ibid.</i>
1735	nails	Les religieux de la Charité	108	<i>Ibid.</i>
1735	nails	Genier	56	<i>Ibid.</i>
1736	firewood	Dugas	660	C ^{11C} , 11, ff.124- 125v.: Rondeau, 31 October 1737
1736	lumber	Gourville	53	<i>Ibid.</i>
1737	red "yellow birch"	Lenoire	1,226	C ^{11C} , 11, ff.132- 135: Rondeau, 1 October 1738
1737	firewood	Dugas	612	<i>Ibid.</i>
1737	various	Lascoret	125	<i>Ibid.</i>
1737	various	various	45	<i>Ibid.</i>
1737	freestone	Carrerot	512	<i>Ibid.</i>
1737- 1739	palisades	Ganet	258	C ^{11C} , 11, ff.144- 147v.: 22 October 1741
1739	planks of yellow birch	Fizel	3,379	<i>Ibid.</i>
		Daccarette	75	<i>Ibid.</i>
1739	nails	Delort	110	<i>Ibid.</i>

<i>Year</i>	<i>Material</i>	<i>Supplier</i>	<i>Amount in livres</i>	<i>Reference</i>
1739	pine boards	Hamelin	197	<i>Ibid.</i>
	firewood	Dugas	584	<i>Ibid.</i>
1739	logs	Dorfontaine	78	C ^{11C} , 11, ff.181v.- 184v.: Rondeau, 12 November 1739
1739	boards	Duchambon	72	C ^{11C} , 12, ff.34v.- 37: Rondeau, 22 October 1741
1739	firewood	Richard	667	<i>Ibid.</i>
1740	various	Carrerot	60	C ^{11C} , 12, ff.56v.- 59v.: Rondeau, 20 October 1741
1740	various	Lenoire	150	<i>Ibid.</i>
1740	firewood	Richard	573	<i>Ibid.</i>
1741	glass	Viment	61	C ^{11C} , 12, ff.82-85: Rondeau, 30 October 1743
1741	nails and bolts	Claparède	682	<i>Ibid.</i>
1741	boards, oak and yellow birch	Le Poupet de la Boularderie	4,761	<i>Ibid.</i>
1741	firewood	Morin	580	<i>Ibid.</i>
1742	glass	Barat	220	C ^{11C} , 12, ff.100v.- 104: Rondeau, 25 October 1743
1742	various	Morin	61	<i>Ibid.</i>
1742	wooden stakes	Decoux	150	<i>Ibid.</i>
1742	oak, yellow birch and pine	Le Poupet de la Boularderie	5,548	<i>Ibid.</i>

<i>Year</i>	<i>Material</i>	<i>Supplier</i>	<i>Amount in livres</i>	<i>Reference</i>
1742	old iron hangers	various	454	<i>Ibid.</i>
1742	firewood	Morin	580	<i>Ibid.</i>
1743	fir stakes	Coste	60	C ^{11C} , 12, ff.113v.- 117: Rondeau, 25 August 1744
1743	brick	various	233	<i>Ibid.</i>
1743	firewood	Courville	506	<i>Ibid.</i>
1743	boards	Le Poupet de la Boularderie	3,501	<i>Ibid.</i>
1744	nails	Rodrigue	208	C ^{11C} , 12, ff.167- 172v.: Laborde, 2 April 1746
1744	shingles	Lamelongue	125	<i>Ibid.</i>
	nails	Martissans	799	<i>Ibid.</i>
1744	nails	Poirier	406	<i>Ibid.</i>
1744	glass	Morel	120	<i>Ibid.</i>
1744	nails	Claparède	290	<i>Ibid.</i>
1744	nails	La Goannare	62	<i>Ibid.</i>

CHAPTER VIII: CONCLUSION

Reviewing the construction achievements described in this study, the reader may well ask to what avail were the expense and the political, administrative and technical frustrations they entailed. Why, he may inquire, did funds continue to flow into these programs after experience had shown that the structures were rarely finished and that repair and upkeep were much costlier than had been expected? Such is the primary purpose of this work: to consider why policies were adopted and developed. Its secondary purpose is to examine how policy was implemented. In the following pages, after a recapitulation of these reasons and methods, possible lines of further research will be proposed.

(1)

Construction began as the means to an end. The encouragement of

the fishery was always the government's primary goal. After a decision taken in 1716, however, construction was destined eventually to become an end in itself. In 1713 the Court realized that the method of scheduling, paying for and supplying construction at Placentia had been inadequate. On Ile Royale materials and funds were to flow faster and in larger amounts; construction was to be on a larger scale. It was, however, to be on a smaller scale than that prevailing in France, so that when the Marine Council in 1716 sent Verville to examine the principal ports of the colony and to recommend the installations required, it cautioned him to think in "colonial" rather than in "European" terms. His interpretation of these instructions differed from the Council's: his plans for Louisbourg were reminiscent of ports in France of medium size, not of any existing French establishment in North America.¹ They were, it is true, less complex and expensive than what might have been proposed for an exceptionally significant European site. What was important about the incident was the Council's decision to assign to the engineer corps the task of recommending a solution. In so doing, the government endowed the program on Ile Royale with a metropolitan character lacking in colonies where metropolitan investments were politically less significant. Administratively, the Marine Council could have rejected or substantially modified Verville's plan. Politically, it had probably gone too far to do so. The Council recognized the national importance of the fishery and the political advantage of encouraging continued investment in it by the *armateurs* of the western ports of France. Since the Council, one of whose

1. Chapter II, pp.27-29.

members was the Maréchal d'Asfeld, head of the engineer corps, equated this encouragement with fortifications and other real estate, it turned to the Corps---the nation's experts on fortifications---for advice.² Advice led naturally to involvement; and the involvement of the Corps was a key to the self-perpetuating nature of the projects. Policy-makers did not foresee a thirty-year program; otherwise they might have ordered a more thorough search for suitable local building materials in the hope of reducing costs. The use of metropolitan materials in the first instance was a sort of emergency resulting from disappointment with local ones. As the projects grew in scope, however, the custom of importing certain commodities became well established. In France, where the construction and maintenance of fortresses had become an industry of no little consequence, builders and their suppliers depended for contracts on officers of the engineer corps. The involvement of the Corps made construction on Ile Royale an extension of the metropolitan industry.

This was quite compatible with the established practice of using private enterprise as an important instrument of public policy. The practice is discernible earlier in Placentia: in the food-supply monopolies negotiated before 1697 with various *armateurs*, and in the attempts before 1713 to persuade all the *armateurs* to supply materials and equipment or to transport skilled labour. It was evident on Ile Royale in the recruitment of craftsmen and the purchase of materials and supplies through private contractors, and after 1724 in the use of

2, *Ibid.*, p.27.

privately-owned transport to convey them to the colony. Though the impetus for these activities came from the state, the medium (contrary to traditional interpretations) was the private sector in partnership with the state. The Court believed that by constructing fortifications, buildings, harbour installations and roads, the Crown was making its proper contribution to the economic and social well-being of the area. Public construction, which had failed before 1713 to bring settlement to Placentia, was expected to foster it after that date on Ile Royale; but private enterprise was expected to contribute its full share. Merchant-men---other than fishing vessels this time---were obliged to carry those settlers that might be available. The proprietorship of Ile Saint-Jean was granted to the Comte de Saint-Pierre, who was to develop agriculture on that island; yet his failure to induce many Acadians to leave their ancestral homes, and the subsequent reversion of the island to the Crown, did not lead to state intervention on a significant scale. As has been noted, the potentiality of the "second" island as a source of the colony's food supply, was not exploited. The state failed to act until the 1750s because it was unwilling to bear a responsibility it believed to be clearly that of private enterprise. When it acted, it did so in response to new policies adopted by the British adversary.

The awarding of construction contracts to metropolitan builders furthered these state policies. The first of these contractors, Isabeau, was very likely a protégé of the engineer corps. Like Verville, members of the Isabeau family had worked on military installations in Flanders.³

3. Isabeau was born at Avesnes-sur-Helpe. See P. Mayrand, "La Renaissance de Louisbourg", *Vie des Arts*, no. 46 (1967), p.35.

Verville and his contractor co-operated fully; indeed they were a faction opposed to the governor and the officers of the garrison. The governor accused them of collusion,⁴ a commonplace misdemeanour against which the Court repeatedly warned engineers because their close relations with contractors presented many such opportunities.⁵ On various occasions Verville served as Isabeau's advocate at Versailles. The last of these was in 1723, when the government was considering to whom it should award the contracts for the Royal and Island Batteries. Verville made strong representations for extending Isabeau's contract to include the new structures, in effect to make the builder responsible for all public construction in the colonial capital. The governor, for his part, argued for awarding the contract to builders with Canadian experience, supervised by Beaucours, a colonial engineer. In February 1725, a few months after Isabeau's death, the contract for the batteries was awarded to another metropolitan contractor, Ganet, while the direction of the work passed from Verville to Verrier, another officer of the engineer corps.⁶ By 1731, Ganet's contractual responsibility was extended to include all projects at Louisbourg.⁷ In 1737, the contract passed to a former roads and bridges contractor for Burgundy and Champagne, Bernard Muiron, who held it until the fall of Louisbourg in 1745.⁸ Both Ganet and Muiron co-operated closely with Verrier. At the latter's request, Ganet remained

4. Chapter V, p.210.

5. *Ibid.*, p.196.

6. *Ibid.*, pp.210-212; Chapter IV, p.180.

7. *Ibid.*, pp.213-214.

8. *Ibid.*, p.216.

in the colony after Muiron began working, to complete certain structures excluded from the agreement with Muiron.⁹

In 1754, five years after the repossession of Ile Royale by France, the difficulty in finding a metropolitan builder to bid against Coeuret (who was already working at Louisbourg) was an important factor in the Court's decision not to return to the contract system of project management.¹⁰ What appears at first glance to be a departure from established practice---the abandonment of the contract system still considered in France the most economical method of managing construction---is seen on reflection to be entirely consistent with policy. Metropolitan contractors selected by senior officers of the engineer corps in France, and sent to the colony to co-operate with the officers of the Corps directing construction there, were agents from the private sector through whom public policy was effected. As long as there were such contractors to be found in France who were prepared to devote a period of time in Ile Royale to this role, the established contract system was compatible with the policy of metropolitan control. It was undesirable, moreover, that the contractors' commercial roots in the colony should become too deeply implanted lest they competed with the metropolitan interests instead of serving them. Could this have been a factor in the restriction of Ganet to two terms, and to Muiron's neglect of his tannery once he obtained the general construction contract? In any event, in the 1750s when a search for suitable metropolitan contractors proved fruitless

9. *Ibid.*

10. *Ibid.*, p.227.

(probably because of increased military and civil construction in France), supervision was put into the hands of the engineer corps officer directing the fortifications of the colony, other officers of the Corps were sent out to assist him, and he was given a free hand in the selection of various kinds of foremen to supervise the craftsmen and labourers, foremen who under usual circumstances would have been the contractor's employees. By these means both managerial control and metropolitan patronage remained firmly in the hands of the engineer corps.

The fact that three metropolitan contractors in Ile Royale were responsible for procuring their own building materials and supplies, and recruiting their own skilled labour, strengthened the link to the supply system in France. They imported such commodities as lime, freestone, slate, some of the brick, nails by the hundreds of thousands, other kinds of building hardware, and glass; boats, vehicles and animals for local transport; and other kinds of building supplies. The engineers imported drafting, office and surveying supplies. Suppliers located near the Marine Department bases in western France, particularly Rochefort, were the most convenient.¹¹ For reasons of economy, Isabeau, Ganet and Muiron used this established patronage network of the Marine Department, although it was less familiar to them than the parallel networks associated with the engineer corps and the *Ponts et Chaussées*. When they were unable to obtain what they required through the protégés of the port officials, they resorted to their own channels. Without the account books of the building contractors, the proportions in which these respective channels were used

11. Chapter VII, pp.298-306.

cannot be established. Government accounts for the period 1754-1757, however, show that Franquet, directing construction without a contractor, ordered materials and equipment through the western ports, except for tools and equipment he knew to be available to him through a colleague at Dunkirk. The original source of supply is rarely shown, although steel was usually Spanish, slate was invariably from Angers and freestone was customarily quarried at Sainte-Même.¹² Skilled craftsmen willing to emigrate, always in short supply in France, were recruited either through the western ports or among men known to the engineers and contractors. The Marine Department experienced great difficulty in recruiting them for Placentia, and then only at high wage rates. On Ile Royale no real crises seem to have developed; the contractors managed to induce enough men to emigrate---again at wages higher than those prevailing in France.¹³

Coinciding with the manifest priority of metropolitan institutions, both public and private, was the stimulus that construction gave to local trade. Apart from the local fieldstone which, with mortar, was the principal building material used in both fortifications and public buildings, a wide variety of local materials complemented those imported from France. Among those noted in government accounts during the period 1728-1744 were lumber used for construction, nails, brick and glass.¹⁴ Lacking the account books of the general contractors, we have no precise idea of the volume of their purchases from local suppliers; but it could have been considerable. Government accounts for the period 1749-1757,

12. *Ibid.*, pp.306-314.

13. Chapter VI, *passim*.

14. Chapter VII, pp.319-322.

particularly those for 1754 after the Court had decided against a general building contract, give evidence of extensive local purchases. For that matter, public construction stimulated local private enterprise in other ways. Indirectly it induced private construction, of both dwellings and commercial buildings; the consequent demand for skilled labour in the building trades, at a level that seems always to have exceeded supply, encouraged the growth of entrepreneurial craftsmen who undertook construction and maintenance contracts both with government and with private parties. The wages paid to construction workers benefited local as well as metropolitan merchants, not only in profits from consumer goods, but also in the discount from the general contractor's notes which circulated in the colony as currency. The inordinate number of drinking establishments at Louisbourg, and frequent documentary references to drunkenness among the soldiery, suggest that the tavern owners may have been among the chief beneficiaries of this trade. Their main competitors were the officers of the garrison and the general contractors themselves.

Public construction made a similar contribution to the thriving trade with New England. As has been noted, large shipments of New England bricks, boards and shingles were imported in the early 1730s,¹⁵ while in the mid-1750s not only those materials, but also quicklime and even hardware were purchased from the same general source.¹⁶ Again because the private accounts have not been found, it is impossible to estimate the extent of the purchases by contractors from New England merchants that were

15. *Ibid.*, p.304.

16. *Ibid.*, p.311.

not reported by someone to the metropolitan authorities. Given the methods by which the latter gathered information from the colonies, the volume of this illicit trade must have been insignificant. In any case, it must be emphasized that not even the importation of materials from Anglo-American colonies appreciably affected the metropolitan character of construction on Ile Royale.

In sum, metropolitan investment was an underlying reason for perpetuating construction, but there is as yet much to be learned about its sources. The large number of small investors probably had too little capital of their own for some of their enterprises. Did the money they borrowed ultimately come from private bankers who helped to finance the annual expeditions of the fishing fleets? If it did, there was no simple link between the fishery and construction, but rather a complex web of which fisheries and construction were but two strands. The concept of Louisbourg as a transatlantic extension of the French "fortress industry", in which great and small had their shares, fits well into this pattern. Included in such a scheme would be the powerful group of international "Protestant" moneylenders who were the source of large loans;¹⁷ the royal accountants who could make profitable short-term loans to government or to individuals on anticipated public revenues;¹⁸ smaller moneylenders; operators of stone quarries, slate quarries and foundries; and a large

17. H. Lüthy, *La Banque Protestante en France de la révocation de l'édit de Nantes jusqu'à la révolution française* (2 vol., Paris, 1958-1963), *passim*.

18. J.F. Bosher, *French Finances, 1770-1795* (Cambridge, 1970), pp.67-110.

number of entrepreneurial craftsmen and suppliers, in France and in the colony, who depended on fortress construction and maintenance for their livelihoods. It is likely also that the king's servants, engineers and administrators with control over patronage, supplemented their relatively low salaries by sharing in the profits of their protégés. The government tended not to notice such illicit activity unless it became blatant and reached large and scandalous proportions.

Though metropolitan investment explains the scale at which construction was maintained, the survival and expansion of the fishery and the entrepôt trade justified the policy at the time. Approval in 1737 of the east front of fortification to complete the Louisbourg enceinte, and the development over the years of extensive harbour facilities, represent a continuance of French policy that began in 1695 with the decision to fortify Placentia in stone and mortar. The government believed that the expansion of fortifications and other facilities would accomplish its purpose and was, to a certain extent, right. Of positive commercial value was the construction of a lighthouse and of installations for loading and careening ships, storing goods and improving colonial and port administration. The value of the fortifications, on the other hand, is less easy to define. Under their guns was a haven for fishing vessels that reached port; the same vessels could be armed as privateers, using the fortress as their base for offensive warfare. For decades the government looked upon Louisbourg as a *substitute* for naval power in the region. As Professor G.S. Graham has written, "For three centuries France was....torn between continental and maritime ambitions, and the periods of maritime

ardour were never long enough to compensate for the prolonged intervals of indifference and neglect."¹⁹ Though the navy was slowly reconstructed during the first half of the 18th century, France's European preoccupations were such that the Court's policies were much influenced by military advisers who assumed that a fortress built on a European model was the most exalted form of defence with which an important colony might expect to be provided. Louisbourg was such a fortress, and the economic interests it was supposed to protect were vital to France. Contrary to historical tradition, Louisbourg was not built to defend one of the approaches to Canada. To do so, it would have had to be supported by a large enough naval force to prevent an enemy fleet from entering the Gulf of St. Lawrence, since it was hardly a suitable base from which to engage one that had already entered. To prevent an approach to the Gulf, a fleet would have had to be powerful: indeed, the British were unable to prevent France from supplying Quebec during the Anglo-American occupation of Louisbourg between 1745 and 1749. In 1717, in any case, the French Court had no interest in spending large sums on the defence of Canada. The fishery and general trade of the northwestern Atlantic had a higher priority in government policy than the fur trade of the North American interior. The former was steady and reliable; the latter fluctuating and unpredictable---dependent for its demand upon the vagaries of fashion, and for its supply upon a complex system of intertribal trading relationships and a dwindling resource. When the fortress of Louisbourg was being conceived, the strategic role of Canada and Louisiana in blocking the

19. G.S. Graham, *Empire of the North Atlantic* (2nd edition, Toronto, 1958), p.40.

westward expansion of the Anglo-American colonies was a less important policy-determining factor than it later became. Official statements from Versailles assigning to the fortress a strategic role in the defence of Canada were intended primarily to deflect pleas from Quebec for greater government expenditure on fortifications in the capital of New France, in Montreal, and in the interior.

Whatever strategic importance Louisbourg's ramparts acquired by mid-century was essentially psychological. In Europe, fortresses of the period were usually besieged not by-passed. By 1700, this had already become a well-established convention. There is no evidence for assuming that the Marine Council's decision in 1717 to build a fortress at Louisbourg was calculated to induce a siege that would delay or forestall an expedition up the St. Lawrence to Quebec. Yet the two sieges decades later, one of which was followed by an attack on Quebec, have given historians the wisdom of hindsight and led them to conclude that Louisbourg was designed to be a sentinel guarding the Gulf.²⁰ They have confused the role France intended for Louisbourg in 1717 with that ascribed to the fortress by the British in the 1740s. By that time, Louisbourg's commercial prosperity, imposing appearance, and notoriety as a privateering base, moved the British, particularly New England colonists, to look upon it as a menace that must be eliminated. Though the British were not renowned for their prowess in siege warfare, the

20. Their interpretation seems reinforced by various ministerial pronouncements intended, as noted, for Canadian consumption. See those cited in T. Crowley, "France, Canada and the Beginnings of Louisbourg...." *op. cit.*, pp.45-69.

fortress by its mere existence seemed to present a challenge that they must take up. The fabled prosperity of the port was an added attraction: there was booty in the town to be appropriated, and ships in adjacent waters to be taken as prizes. These were important elements in the siege of 1745. In 1757, some British officers favoured by-passing Louisbourg and proceeding directly to attack Quebec.²¹ Had Louisbourg been successfully blockaded, this might have been possible. After the blockade had failed, Pitt ordered that Louisbourg should be taken prior to any attempt on Quebec in order to remove a supposed threat to British lines of communication. The captured port, somewhat closer to Quebec than Halifax was, was then to be used as an assembly and supply base for the expedition up the St. Lawrence. The first part of these instructions were followed in 1758; ice conditions prevented the second part from being implemented on schedule in 1759.²² Thus the great European fortress in North America, that the British might have by-passed, performed at the end of its days the classical role of fortresses, that of delaying the enemy's achievement of his objective.

(2)

The administration of construction during the period was characterized by extremely thorough metropolitan control. It was exercised on the technical level by requiring engineers to submit to Versailles at

21. L.H. Gipson, *The British Empire before the American Revolution* (9 vol., New York, 1936-1956), VII, p.93.

22. *Ibid.*, pp.376-377.

the end of each year detailed plans, profiles and elevations, and very detailed cost estimates for materials and labour, to be reviewed during the winter by engineering and architectural specialists and approved or altered by the Ministry or Council of Marine in time for the following construction season. It was practised on the financial level by a careful scrutiny of the annual accounts and financial despatches rendered by the *commissaire-ordonnateur*, followed by detailed criticism and close questioning prior to royal approval of the new year's expenditures. On the managerial level it was implemented by maintaining a balance of authority among the senior officers of the colony concerned with construction---the governor, the financial commissary, and the engineer in charge. To achieve this, in view of the strong influence at Court of the engineer corps, the Marine Department was frequently obliged to support engineers like L'Hermitte (and Chaussegros de Léry in Canada) who had no strong patrons in the Corps, against governors such as Monic and Pastour de Costebelle. On the other hand, it took steps to replace Verville, an officer of the Corps in good standing, when he consistently ignored the authority of the governor; significantly, however, it placed another (but more conciliatory) officer of the Corps in charge. The dispute between another governor, the Comte de Raymond and Franquet, a distinguished veteran of the Corps, was clearly resolved in the latter's favour by Raymond's recall. That case differed from the others in that Raymond used his high office in the colony not only to overrule the engineer's recommendations, but also to try to prevent them from reaching Versailles. Once senior advisers at Court had decided to accept Franquet's

proposals, Raymond's position in the colony became untenable.²³ The degree of control was surprisingly high by 18th-century standards in view of the distance and the limited navigation season in the North Atlantic. As has been shown, the system was far from perfect; on the other hand, it does not deserve the traditional interpretation of an authoritarian ambition-stifling centralism lacking even the saving grace of efficiency. Some five hundred surviving plans and maps, not to mention the voluminous correspondence on construction, bear witness to the close attention paid to detail. The metropolitan authorities, though not always wise, were vigilant in ensuring that their policies were implemented.

Measures to ensure financial control by the home government gradually evolved throughout the period as more was learned about administering construction in the region. The first step taken in that direction (in 1710) was expressly to forbid the use of construction funds for non-construction purposes. This proved a difficult rule to enforce, but a rule observed more than it might have been had it been left quite undefined. The next step was to establish in 1718 a special account for construction, completely separate from the general colonial account.²⁴ The principle underlying this act was the "temporary" and "exceptional" nature of the construction program that was approved at the same time! The Marine Council's failure to oblige Verville to follow its own rules of accountability, Mézy's "borrowing" of fortification funds for other purposes with the governor's frequent connivance, Mézy's incompetence,

23 Chapter IV.

24. Chapter III, p.131.

and possibly Goutin's dishonesty, all combined to confuse the accounts until the late 1720s. Yet it was the Ministry's annual scrutiny of accounts and correspondence that revealed the disorder and inspired the corrective measures taken. Any student of 18th-century administrative history would do well to examine the documents in which the intendant's delegate is questioned and criticized each year on his account of how he has managed the previous year's funds.²⁵ This was a feature of the Maurepas era. The frequent changes of ministry during the following decade (1749-1759) seem to have resulted in a loosening of auditing procedures during the last phase of the colony in Ile Royale,²⁶ thereby allowing some improper activities to remain, as in Canada, officially undetected for several years. The difference between the Maurepas and post-Maurepas eras, however, was one of degree: financial control was stringent throughout the whole period.

Policy implementation could be impaired not only by poor co-operation among officials at the colonial level, but also by technical shortcomings and inefficient methods of employing labour and materials. The decision to build the fortifications of Placentia piecemeal suited the dictates of finance, labour and supply; it did not take into account a climate that ruined exposed unfinished structures. The faulty design of the citadel barracks at Louisbourg, causing the roof to leak and the basement to be flooded, increased costs and forced changes in plans for occupancy; nevertheless, the building was never satisfactory. Ignorance

25. *Ibid.*, particularly pp.142-146.

26. *Ibid.*, p.146.

of the effect of the thaw-freeze cycle on mortar and the inexcusable use of salty sand in its preparation, resulted in its disintegration and the crumbling of walls. The bad design of the Royal Battery rendered that large, expensive fort useless to the French who built it, but beneficial to their enemies when its guns were trained on Louisbourg. Failure to use more fireproof material in the Louisbourg lighthouse made it necessary to rebuild part of the structure four years after its original completion.²⁷ Though the population of Ile Royale could have supported a small number of indentured apprentices in the building trades, no such system was organized. As for unskilled labour, it comprised soldiers paid labourers' wages for working on the fortifications and buildings. Their meagre but steady pay became the target, as we have observed, of both the contractors and military officers, who competed with each other to sell them necessities and luxuries at rates somewhat lower than prevailing retail prices. Despite the deleterious effect on their work, large quantities of brandy were supplied to men who were bored and miserable from working long hours in a depressing climate, and who turned to drink as a temporary escape from reality.²⁸ The building materials of Ile Royale, Ile Saint-Jean and Canada were neither adequately studied for their effectiveness nor sufficiently employed. Construction in the long run might have benefited if the extraction, transport and use of such resources had been organized sooner and better. Even though the materials of Ile Royale proved disappointing during the early years of the

27. Chapter II.

28. Chapter VI, p.254.

colony, the resources of Canada were much neglected in the Gulf region, largely because regular transport was not arranged.²⁹

These faults must not be allowed to obscure the relative harmony that prevailed among most of the local officials, the technical and esthetic accomplishments of the builders, the steady growth in the number of self-employed craftsmen and the increase under Franquet's direction in the study of local building resources. The quarrels of some individuals were so stormy that one might overlook the co-operation achieved throughout most of the period among engineers, governors and commissaries. Architectural and other technical faults cannot overshadow the care that went into the planning of Louisbourg, its esthetically tasteful public buildings (largely the work of Verrier), the impressive appearance of its fortress, its extensive port facilities, and the construction of essential buildings and defences for its dependent ports on Ile Royale and Ile Saint-Jean. Nor can technical errors diminish the ability of engineers and contractors to benefit from their own mistakes and those of others and to improvise good solutions to problems for which there were no text-book answers. The lack of a system of indentured apprentices did not prevent craftsmen brought to Ile Royale by contractors, or induced to go there by the prospect of lucrative work, from setting up independent shops and obtaining steady contracts from the colonial administration and probably private individuals. Finally, Louis Franquet deserves credit for his endeavour to mobilize local natural resources for use in the reconstruction of the Louisbourg fortifications between 1750 and 1757, and in particular for his surveys which

29. Chapter VII, pp.316-317.

were much more thorough and systematic than any conducted by his predecessors.

(3)

One might profitably investigate the source of the money which was necessary to finance construction and the cod fishery at Placentia and on Ile Royale. Charles de la Morandière has published two thick volumes on the French cod fishery to the end of the 18th century³⁰ without investigating the sources for the capitalization of that industry. Was there any connection, for example, with the money invested in the West Indies trade? A group of French historians is conducting a monumental study of *le bâtiment* in France from the 14th to the 19th century. To date, they have published one volume on houses.³¹ If they investigate the large number of military buildings such as barrack blocks, storehouses, hospitals, powder magazines and chapels---not to mention fortifications---that were found in fortresses such as Lille, Briançon and Neuf-Brisach, will they examine relations among civil and military officers, contractors and suppliers? If so, it will be interesting to find out whether they are able to explore the sources of funds behind the private entrepreneurs who carried out construction for the War Department. The same questions

30. Charles de la Morandière, *La Pêche française de la morue en Amérique Septentrionale* (3 vol., Paris, 1962-1966). The first two volumes deal with the period 1500-1800.

31. Jean-Pierre Bardet et al., *Le Bâtiment: enquête d'histoire économique, XVe-XIXe siècles* (1 vol., published, Paris and The Hague, 1971-), Tome 1, *Maisons rurales et urbaines dans la France traditionnelle*.

may be raised with respect to naval arsenals such as Rochefort, Toulon and Brest. Mémain's thick tome on Rochefort³² does not enlighten his reader on the sources of the capital for its construction. Undoubtedly the French "building historians" will study civilian buildings constructed for national, regional and local authorities. It would be interesting to know of direct or indirect links between the contractors for those structures and those responsible for military and naval buildings. Did they deal with same bankers and if so, can the latter be identified? Another group of builders, who may justifiably be neglected by the historians of *le bâtiment*, are the contractors for the *Ponts et Chaussées*. Petot³³ devotes a chapter to contracts, and another to budgets, in his history of that administration. Predictably, they tell us nothing of the sources of loans and investment.

The scholar whose research, though much broader than that of this thesis, comes closest to the kind of investigation suggested, is Dr. John Bosher. His excellent monograph *French Finances, 1770-1795*,³⁴ although concerned with a later period, clearly defines for the first time the relationship between private enterprise and public finance throughout the 18th century. He has demonstrated the need for evaluating the actions of officials who mingled their public and private interests. Such evaluations, Bosher shows, must be made from a contemporary point of view rather than

32. R. Mémain, *Le Matériel de la marine de guerre sous Louis XIV* (Paris, 1936).

33. Jean Petot, *Histoire de l'administration des ponts et chaussées, 1599-1815* (Paris, 1958), pp.201-213, 229-241.

34. Bosher, *French Finances, 1770-1795*, *op. cit.*

a 20th-century one. As a result of this emphasis, the independent role of the treasurers who managed the funds of the Ministry of Marine, and that of their agents in the colonies, is clearer than before. To take the subject a step further, detailed biographical studies of the various treasurers-general would have to be undertaken in the hope of tracing their business relations with other members of the financial community.³⁵ The success of such a study might depend on the survival of private papers. Meanwhile, Dr. Boshier's current research on the financial interests in France that underwrote private and public activity in New France³⁶ should furnish interesting leads to answers---if not the answers themselves---to questions concerning the fishery and public construction in the Gulf of St. Lawrence area.

35. This was not done by Legoh  rel in his study, *Les Tr  soriers-g  n  raux de la marine*, (*op. cit.*)

36. Heralded by his article, "Government and private interests in New France", *Canadian Public Administration*, X (1967), pp.244-257.

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THE POLITICS OF FRENCH PUBLIC CONSTRUCTION
IN THE ISLANDS OF THE GULF OF
ST. LAWRENCE, 1695-1758

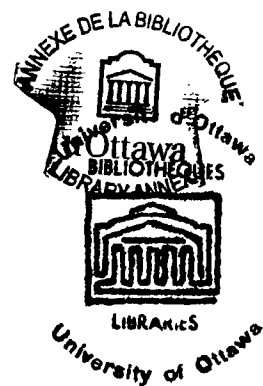
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BIBLIOGRAPHY

Primary Sources, Manuscript

The most important manuscript sources for this thesis are found in French repositories, particularly the Archives Nationales (Colonies and Marine) and the Comité technique du génie. Most, but not quite all, of the French manuscripts consulted have been transcribed or microfilmed by the Public Archives of Canada and may be consulted there. Transcribed documents are used with care, because errors have been found in them. Of course various materials not mentioned below were examined and found to contain nothing relevant to the thesis. Some documents from the Public Record Office, London were found to be of value and are listed; so also are a few documents found only in the Public Archives of Canada.

Archives de la Charente-Maritime, La Rochelle

Série C 161, 163, 164.

These volumes contain lists of goods consigned to Ile Royale from 1722 to 1724.

Archives Nationales, Paris

Fonds des Colonies

Séries B 17-110.

Outward letters and despatches of the Court of Versailles to the colonies, the ports administered by the Ministry of Marine, and other places, when colonial subjects were discussed. Used in conjunction with Marine B² and other series, it is the main source for the overt policy of the Court.

Sous-série C^{11A} 36-101, 113-119, 126.

This sub-series, comprising correspondence between Canada and the Court, was used for the following purposes: accounts pertaining to Placentia, Ile Royale and Ile Saint-Jean in volumes 113-119; maps, plans and documents in volume 126; documents pertaining to construction in Canada during the period of Chaussegros de Léry (1716-1756), used as the basis for remarks in Chapter I concerning construction in Canada.

Sous-série C^{11B} 1-38.

This is the main sub-series in the general correspondence (inward) pertaining to Ile Royale and Ile Saint-Jean. These documents contain all manner of reports and information sent

to the Court by the officials and officers in the colony. The sub-series also contains letters and despatches from the Court to the colony not found in series B. (In 1723, for example, the manuscript material for series B is completely missing; it is possible to reconstruct at least a part of it, for Ile Royale, from documents in C^{11B}.) As a source of information emanating from the colony, however, sub-series C^{11B} does not stand by itself: it must be supplemented for this work by material from a number of other manuscript sources.

Sous-série C^{11C} 1-16.

This sub-series was useful for this thesis for various reasons: volumes 1-7 inclusive comprise the letters inward from Placentia to the Court; the remaining nine volumes pertain to Ile Royale and Ile Saint-Jean. Volumes 11-14 contain the accounts of Ile Royale throughout most of its history, and comprise primarily the statements of receipts and disbursements submitted annually (except when they were neglected!) for study by the financial clerks of the Ministry of Marine.

Sous-série C^{11D} 4-6.

This sub-series pertains to the colony of Acadia. It was used only slightly, and that for the purpose of examining relations there between engineers and other officials.

Sous-série C^{11G} 12.

The last volume of this sub-series was consulted for information concerning private property grants in the colony of Ile Royale. It was not particularly useful.

Sous-série D^{2C} 1-222.

Scattered documents of this sub-series were consulted for biographical data on personalities that figure in the present work.

Série E.

This series comprises the *dossiers personnels* of the Fonds des Colonies. Used in conjunction with Fonds de la Marine C⁷, it provided useful biographical information on various personalities figuring in this thesis. Series E also provides, incidentally, information that is not strictly of a biographical character: many documents in Dossier 9 (D'Arrigrand) are actually copies of documents pertaining to D'Arrigrand's litigation with Ganet and Muiron.

Sous-série F^{1A} 10-45.

This sub-series comprises documents pertaining to colonial finance. Used in conjunction with C^{11A} 113-119 and C^{11C} 10-14, it was particularly useful in tabulating the amounts authorized by the Court for expenditure on fortifications and public buildings.

Sous-série F³ 50, 51, 54, 250.

This collection of documents assembled by Moreau de St. Méry contains volumes 50 and 51 on Ile Royale and volume 54 on Newfoundland. The general correspondence it contains complements the relevant volumes of series B and sub-series C^{11B} and C^{11C}. Volume 250 (folios 221-225) contains under the date of 11 November 1703 a document printed in 1751 entitled "Lettres patentes concernant les fonctions, privilèges et droits des contrôleurs généraux de la Marine, des galères et des fortifications."

Archives Nationales, Section Outremer

(Note: this repository, formerly a part of the Fonds des Colonies continues the series where A.N., Colonies stops.)

Sous-série G¹ 406-411, 462, 466, 467.

Comprises vital statistics. The volumes cited refer to Ile Royale, Ile Saint-Jean and French Newfoundland. They were used occasionally but were not a major source for this thesis.

Sous-série G² 178-212.

This sub-series comprises legal records. Certain documents pertain to cases involving persons (e.g. contractors) having to do with the fortifications and public buildings of Ile Royale. Not widely used for the thesis.

Sous-série G³ 2037-2039, 2041-2047, 2055, 2056-2058, 7/175,
8/176.

This sub-series comprises notarial records of French Newfoundland and Ile Royale. They did not remain in the colonies after the cessions, because the French population was removed, but were returned to France. The volumes cited were examined carefully but only a few documents were useful. They are notarized business transactions between persons having to do with the fortifications and public buildings of Placentia and Ile Royale.

Dépôt des fortifications des Colonies, Amérique Septentrionale, cartons 1-5; Atlas Colonies.

Formerly article 9 of the Archives du Comité technique du Génie (q.v.), this sub-series contains many documents, plans and maps pertaining directly to fortifications and public construction. It is by no means complete by itself but, used in conjunction with other sources, is invaluable. A few documents contain useful information on policy. "Atlas Colonies" is a bound collection of manuscript maps and plans.

Archives Nationales, Fonds de la Marine

Sous-série A¹ 54-61.

Nine documents in this sub-series comprise ordinances, etc. on fortifications and related subject.

Sous-série B¹ 1-55.

The first fifty-five volumes of this series comprise the record of decisions of the Marine Council from 1715 to 1721. Though most of these decisions are recorded elsewhere, some of them appear only in this sub-series.

Sous-série B² 103-360.

Letters and despatches from the Court primarily to the officials of the ports, but also to other persons. Indispensable for questions of policy and supply.

Sous-série B³ 88-542.

Letters inward from the ports and from various persons. While incomplete on a number of topics, provided useful information on the implementation of policy in the home ports.

Sous-série B⁴ 37-39, 43, 56, 57, 59, 62-65, 67, 68, 76, 80, 91.

This sub-series was widely examined but the only documents used from it were a few having to do with supply.

Sous-série C⁷.

This sub-series, comprising *dossiers personnels*, complements Colonies E as a source of biographical information concerning various officers who served in the colonies in question. Comments made about Colonies E apply also to this sub-series.

Sous-séries 3JJ-4JJ.

These two sub-series comprise ships' logs and other documents

of that sort. A few were useful for research on supply questions.

Archives du Port de Rochefort

Série 1E 43-144, 345, 375, 599.

The most significant documents in this series are those pertaining to building supplies shipped from Rochefort. In this respect, they complement A.N., Marine, B³.

Archives du Séminaire de Québec

Papiers de Surlaville (Polygraphie 58, no.3).

Two documents were useful from this collection, both of 1753. One contains specifications for construction; the other, a contract with Claude Coeuret approved by the *commissaire-ordonnateur*, Prévost, but subsequently vetoed by the Court.

Bibliothèque de l'Arsenal, Paris

Archives de la Bastille 12200, 12480.

These documents concern the arrest, imprisonment and trial of Jean de la Borde and Jacques Prévost, treasurer and financial commissary respectively of Ile Royale at the time of its fall to the British in 1758. Included are the accounts for the closing years of the French régime on Ile Royale.

Bibliothèque Nationale, Paris

Département des cartes et plans.

Série GeBB

Service hydrographique de la Marine, portefeuilles 125, 131.

Département des Estampes.

Série Vd.

Département des manuscrits.

Nouvelles acquisitions françaises 21306-21444.

This group of documents, known as the *Collection Arnoul*, contains a small amount of material on the fishery during the Placentia period and the formative years of Ile Royale.

Comité technique du Génie, Paris

Archives

Articles 3, 14, 15.

These documents were particularly useful. Article 3 contains interesting documents about the duties of various grades of engineer (which in turn reveals information about how they are expected to deal with contractors, etc.), as well as data on particular engineers. Article 14 includes many valuable documents on Ile Royale and Ile Saint-Jean. Article 15, devoted to campaigns and sieges, contains information about preparations for the siege of Louisbourg in 1758.

Bibliothèque

Ms in-4^o 66, ms in-folio 205^b, ms in-folio 207, mss in-folio 208^a, 208^b, 208^c, 208^d, mss in-folio 210^b, 210^e, 210^f.

These bound manuscripts, except 208^a to 208^d (which are lists of engineers in the *Corps du Génie* at different dates)

comprise diaries, correspondence, etc. on the period 1750-1758. The main authors are Louis Franquet and Grillo de Poilly. Of particular interest are some of the letters from Franquet to Regemorte (which reveal Franquet's opinions more candidly than his official despatches to the minister of marine) and the assessment by Grillo de Poilly in 1758 of various officers and civil officials at Louisbourg.

Public Archives of Canada, Ottawa

Manuscript Group 11, Nova Scotia "A" 28, 34.

A transcript based mainly but not entirely on Colonial Office 217. Volume 34 contains documents on the British reconstruction of 1745 to 1749.

Manuscript Group 18 K2.

This is a treatise on fortifications dated 1714 by Gaspard-Joseph Chaussegros de Léry, chief engineer of Canada 1716-1756. It is of marginal interest as part of the published and unpublished literature of the 18th century on fortifications.

Public Record Office, London

Colonial Office 5, 900.

A few useful documents pertaining to British reconstruction during the periods 1745-1749 were found in this series.

War Office 55, 352^b.

Other useful documents on the British occupation 1745-1749.

Service historique de l'armée, Paris

Archives

Sous-série A¹ 3338, 3392, 3393, 3404, 3405, 3408-3411, 3417,
3449, 3450-3452, 3457, 3498, 3499, 3509.

This sub-series contains scattered documents of interest.

Série "Mémoires" nos. 1702, 1752.

Mémoire no. 1702, comprising four folios, is called
"catalogue pour le choix des cartes de géographie et pour les
livres, ou bibliothèque d'un homme de guerre". Mémoire no.
1752, comprising 85 folios, is a treatise by Cormontaigne, a
senior engineer of the Corps, on the materials required to
withstand a siege.

Sous-série X^e (Génie)

Contains documents on various engineers, including some who
served in Ile Royale.

Sous-série Xⁱ, Troupes coloniales.

Contains one document indicating the replacement on 1 April
1758 of Pontleroy by Daubertin, both engineering officers.

Sous-série Y^b 685. Contrôle des officiers du Corps du Génie.

Contains information concerning engineering officers who
served in Ile Royale.

Archives des cartes.

A few plans from this repository were used.

Primary Sources, Printed

A. Documentary Collections

Clément, P. (ed.) *Lettres, instructions et mémoires de Colbert.*

(10 vol., Paris: Imprimerie Impériale, 1861-1882.)

Volume 5 on fortifications was consulted: some letters were useful for the introduction to the administration of contracts.

France, Ministère de l'Instruction Publique. Collection de

documents inédits sur l'histoire de France. 3e série:

Archéologie. J. Guiffrey (ed.) *Comptes des bâtiments du roi sous le règne de Louis XIV.* Tome 1er, Colbert

1664-1680. (Paris: Imprimerie Nationale, 1881.)

Great Britain. *Calendar of State Papers, Colonial Series, America*

and West Indies. (London: H.M.S.O., 1860- .) Forty-

four volumes of this work were published to 1969. More

than a calendar, it contains large numbers of documents

published in full. Documents from volumes 14-26 were

used to complement French sources for the Placentia

period.

Nish, C. (ed.) *The French Régime.* (Canadian Historical Documents

Series, 3 vol., Scarborough, Ont.: Prentice-Hall of

Canada, 1965; vol. I.)

Roy, P.G. (ed.) *Inventaire des Papiers de Léry*. (3 vol., Québec: Archives de la Province de Québec, 1939-1940.) This is an important primary source on the career of Gaspard-Joseph Chaussegros de Léry, chief engineer of Canada 1716-1756. It complements documents contained in AN, Colonies.

Shortt, A. *Documents Relating to Canadian Currency, Exchange and Finance During the French Period*. (2 vol., Ottawa: King's Printer, 1925.)

B. *Technical Works before 1800 on Engineering, Architecture and Related Subjects*

No definitive study of the level of competence of 18th-century French military engineers in fortifications and civil architecture has yet been published. To gain a general idea of the subject, therefore, I had recourse to many of the manuals of the period and to some of their predecessors. The following list while extensive, is by no means exhaustive. In examining these works, I paid closest attention to the nature and organization of the content and to the prefaces or introductions. This study formed the basis of a summary of the subject in Chapter I. Some of the books listed below are of interest only for the history of the literature on fortifications: this is especially true of works written before 1680. Most the manuals written after that date were useful in a general sense; there are no individual comments about

them. Specific comments are reserved for works of particular value or interest.

Bardet de Villeneuve, P.P.A. *Cours de la science militaire, à l'usage de l'infanterie, de la cavalerie, de l'artillerie, du génie et de la marine.* (10 vol., The Hague: J. Van Duren, 1740-1757.) This voluminous textbook includes a volume on practical geometry, two on architecture (one civil, one military), one on attack on fortresses, another on their defence.

Bélair, A.P.J. de *Elements de fortification....suivis d'un dictionnaire militaire, où l'on trouvera des définitions et des renseignements qui n'existent dans aucun ouvrage....* (Second edition, Paris: Magimel, 1793.)

_____. *Nouvelle science des ingénieurs.* (Berlin and St. Petersburg: Société du Pôle arctique, 1787.)

Bélidor, B.F. de *Architecture hydraulique.* (2 vol., Paris: Jombert, 1737-1739.) The sub-title of this work, published in several editions until 1819, is "Ou l'art de conduire, d'élever et de ménager les eaux pour les différents besoins de la vie." Eighteenth-century military engineers were expected to know how to deal with such problems as the construction of coffer-dams, docks, careening wharves and various types of channel.

———. *Dictionnaire portatif de l'Ingénieur et de l'Artilleur.*
(Second edition, Paris: Jombert, 1768.)

———. *Nouveau cours de mathématique à l'usage de l'artillerie et du génie.* (Paris: Jombert, 1725.)

———. *La Science des ingénieurs dans la conduite des travaux de fortification et d'architecture civile.* (Paris: Jombert, 1729.) An important source for the quality of instruction given to military engineers, this textbook was also used extensively for the introductory section of Chapter VII (on building materials).

Briquet, Pierre de *Code militaire, ou compilation des ordonnances des rois de France concernant les gens de guerre.* (Third edition, 3 vol., Paris: Coignard, 1734; there were six editions.)

Bullet, P. *L'Architecture pratique.* (Paris: E. Michallet, 1691.)
A detailed work on all aspects of construction; published in ten editions down to 1825.

Clairac, L.A. de La Mamie, Chevalier de *L'Ingénieur de campagne ou traité de la fortification passagère.* (Second edition, Paris: Jombert, 1757; second edition of English translation by John Muller, London: J. Millan, 1773.)
A textbook on field fortifications as distinct from permanent works.

Coehoorn, Menno, Baron van *The New Method of Fortification.*

English translation from the Dutch. (London: for Daniel Midwinter at the Rose and Crown in St. Paul's Churchyard, 1705.) See also the French editions, of which the first was *La Nouvelle fortification* (The Hague: H. Scheurleer, 1711).

Cormontaigne, Louis de *Architecture militaire, ou l'art de fortifier.* (The Hague: J. Neaulme & A. Moetjens, 1741.)
Treatise written during the reign of Louis XIV but not published until 1741.

———. *Mémorial pour la défense des places.* (Paris: Barrois l'aîné et fils, 1806; see also second edition, Paris: Anselm et Pochard, 1822.)

Cugnot. *Eléments de l'art militaire ancien et moderne.* (2 vol., Paris: Jombert, 1766.) By an engineer retired from the service of the Habsburgs.

———. *La Fortification de campagne, théorique et pratique, ou traité de la science, de la construction, de la défense et de l'attaque des retranchements.* (Paris: Jombert, 1769.)

———. *Théorie de la fortification, avec des observations sur les différents systèmes qui ont paru depuis l'invention de l'artillerie, et une nouvelle manière de construire des places.* (Paris: Jombert fils aîné, 1778.)

Deidier (Abbé) *L'Arithmétique des géomètres*. (Paris: Jombert, 1739.) A textbook used in the instruction of military engineers.

———. *Eléments généraux des principales parties des mathématiques nécessaires à l'artillerie et au génie*. (2 vol., Paris: Jombert, 1745; see also second edition, 2 vol., Paris: Jombert, 1773.)

———. *Le Parfait ingénieur français, ou la fortification offensive et défensive*. (Paris: Jombert, 1742.)

Errard de Barleduc, J. *La Fortification réduite en art et démontrée*. (Paris: J. Messager, 1604.)

———. *La Géométrie et pratique générale d'icelle*. (Paris: D. le Clerc, 1594.)

Fougeroux de Bondaroy, A.D. *Art de tirer des carrières la pierre d'ardoise, de la fendre et de la tailler*. (Paris: Saillant et Nyon, 1741.)

Fritach, A. *L'Architecture militaire, ou la fortification nouvelle*. (Translation from the Polish, Leyden: les Elzéviérs, 1635.)

Goulon. *Mémoires pour l'attaque et la défense d'une place*. (Second edition, The Hague: P. Gosse, 1730.) Goulon was the pseudonym of a Protestant engineer called Le

Goullon who deserted in 1685. His book, first published in 1706, includes verbatim the "Mémoires de M. de Vauban concernant les fonctions des différents officiers employés dans les fortifications."

Jombert, C.A. *L'Architecture moderne, ou l'art de bien bâtir.*

(2 vol., Paris: Jombert, 1764.) The prolific publisher under government protection was himself the author of a number of works on architecture.

———. *Bibliothèque portative d'architecture élémentaire à l'usage des artistes.* (2 vol., Paris: Jombert, 1764-1766.) Extensive treatment of architectural history, particularly of the Italian Renaissance.

Jousse, M. *L'Art de charpenterie.* (Paris: T. Moette, 1702; Second edition, G.P. de la Hire, ed., Paris: Jombert, 1751.)

Lacombe, J. *Dictionnaire portatif des beaux-arts, ou, abrégé de ce qui concerne l'architecture, la sculpture....avec la définition de ces arts, l'explication des termes et des choses qui appartiennent....* (Paris: La veuve Estienne et fils, 1752.)

Lalonde, de *L'Arithmétique des ingénieurs, contenant le calcul des toisés de la maçonnerie, des terres et de la charpente.* (Paris: Veuve Nion, 1685.)

———. *Eléments de fortification....* (Paris: Veuve de D. Nion, 1685.)

LeBlond, G. *Eléments d'algèbre ou du calcul littéral avec un précis de la méthode analytique appliquée à la résolution des équations du premier et du second degré.* (Paris: Jombert, 1768.) The author was tutor in mathematics to the Dauphin and other royal children.

———. *Eléments de fortification.* (Fifth edition, Paris: Jombert, 1764.) There were eight editions of this book, extending from 1739 to 1786. It was an official manual for French engineering officers.

———. *Eléments de la guerre des sièges.* (3 vol., Paris: Jombert, 1743.)

Liger, L. sieur d'Auxerre. *La Nouvelle maison rustique, ou, économie générale de tous les biens de campagne, la manière de les entretenir et de les multiplier....* (Third edition, 2 vol., Paris: Prudhomme, 1721.) The author died in 1717. A section of the book concerning house construction was useful for its remarks on the properties of certain commonly-used building materials.

Manesson-Mallet, A. *Les Travaux de Mars.* (2 vol., Paris: the author, 1671. Second edition, 3 vol., Paris: D. Thierry, 1684-1685.)

Marchi, F. di. *Della architettura militare*. (Brescia: ad
istanza G. dall'Oglio, 1599.)

Montalembert, M.R. Marquis de *La Fortification perpendiculaire*.
(11 vol., Paris: Philippe Denys Pierres, 1776-1798.)
First written in 1761, this work was suppressed by the
French government until 1776, ostensibly because it
would assist France's enemies, really because it challenged
the orthodoxy of Vauban's disciples.

Muller, J. *A Treatise Containing the Elementary Part of Fortifi-
cation*.... (Fifth edition, London: F. Wingrave, 1756.)
The textbook used at the Royal Academy of Artillery at
Woolwich, near London. Published in five editions.

———. *A Treatise Containing the Practical Part of Fortifi-
cation*.... (London: for A. Millan, 1755.)

Naudin. *L'Ingénieur français, contenant la géométrie pratique
sur le papier et sur le terrain avec le toisé des travaux
et des bois; la fortification régulière et irrégulière;
sa construction effective; l'attaque et la défense des
places*. (Paris: E. Michallet, 1695.)

———. *Le Toisé et le tarif général des bois, contenant ce
qu'il faut observer en coupant les bois pour bâtir*.
(Paris: E. Michallet, 1696.) An important part of an
engineer's training.

Ozanam, J. *Cours de mathématique*. (5 vol., Paris: J. Jombert, 1693.)

———. *Dictionnaire mathématique ou idée générale des mathématiques*. (Paris: E. Michallet, 1691.)

———. *La Géométrie pratique*. (Paris: the author, 1684.)

———. *Méthode de lever les plans et les cartes de terre et de mer*. (Paris: E. Michallet, 1693.)

———. *Traité de l'arpentage et du toisé*. (Paris: Jombert, 1758.)

———. *Traité de fortification contenant les méthodes anciennes et modernes pour la construction et la défense des places*. (Paris: J. Jombert, 1694.)

Pagan, B.L., Comte de *Divers ouvrages....* (Paris: C. Besongne, 1669.) Posthumous works of seventeenth century author on fortifications.

———. *Les Dix livres des théorèmes géométriques....* (Paris: C. Besongne, 1654.)

———. *Les Fortifications....* (Paris: C. Besongne, 1645.)

Pfeffinger, J.F. *Fortification nouvelle ou recueil de différentes manières de fortifier en Europe*. (The Hague: A. Van Dole, 1740.)

Querelles (Chevalier de) *Nouveau traité sur les fortifications dans lequel on se propose de renforcer quelques ouvrages de la fortification de M. de Vauban et d'en établir une nouvelle.* (Paris: Savoye, 1749.) First published in 1745. Despite the title, it contained little that was new.

Roland le Virloys, C.F. *Dictionnaire d'architecture civile, militaire et navale, antique, ancienne et moderne et de tous les arts et métiers qui en dépendent....* (3 vol., Paris: Libraires associés, 1770-1771.) An encyclopedia of terms in French, Latin, Italian, Spanish, English and German.

Rozard, M. *Nouvelle fortification française.* (2 vol., Nuremberg: J.G. Lochner, 1731.)

Stevin, S., de Bruges. *Les Oeuvres mathématiques....Le tout revu, corrigé et augmenté par Albert Girard.* (Leyden: B. & A. Elsevier, 1634.)

Sturm, L.C. *Le Vêritable Vauban se montrant au lieu du faux Vauban....* (The Hague: N. Wilt, 1708.) Though Vauban's disciples disputed with one another after his death about who was truly following in his footsteps, the title of this book is misleading. It contains little of Vauban, being merely an elementary textbook on mathematics, chiefly arithmetic.

[Valière] *Traité de la défense des places par les contremines, avec des réflexions sur les principes de l'artillerie. Par un officier général très célèbre.* (Paris: Jombert, 1768.)

Vauban, Sébastien Le Prestre de *De l'Attaque et de la défense des places.* (2 vol., The Hague: P. de Hondt, 1737-47; 2 vol., The Hague: P. de Hondt, 1742-1743.)

———. *Mémoire pour servir d'instruction dans la conduite des sièges et dans la défense des places, dressé par Vauban, présenté au roi Louis XIV en 1704.* (Leyden: J. and H. Verbeek, 1740.) A modern edition of this in English translation by George A. Rothrock is entitled *A Manual of Siegecraft and Fortification* (Ann Arbor: the University of Michigan Press, 1968). Rothrock's introduction and bibliographical essay are very useful for any background study of the subject.

———. *Récits dieppois. Projets....pour fortifier....Dieppe, 1694-1699.* (Dieppe: chez A. Marais, 1864.)

Ville, A. de *Les Fortifications du chevalier Antoine de Ville.* (Lyon: P. Borde, 1640.)

C. *Other Works*

The following works were of general interest, except where particular usefulness is noted.

Almon, John. *A New Military Dictionary....an Essay on Fortification....*

(London: J. Cooke, 1760.) A useful reference work.

Aubert de la Chesnaye-Desbois, F.A. *Dictionnaire militaire*. (Second edition, 2 vol., Dresden: G.C. Walther, 1751.) An 18th-century reference work useful for military construction definitions and terminology. First edition, Paris: Gisse, 1745.

Augoyat, A.M. *Mémoires inédits du Maréchal de Vauban sur Landau*.

(Paris: J. Corréard, 1841.) Includes a letter of 1706 from Caligny to LePeletier de Souzy concerning the type of training that should be given to engineers.

Chambon ("receveur des fermes"). *Traité général du commerce de l'Amérique*. (2 vol., Amsterdam: M.M. Rey, 1783.)

Charlevoix, P.F.X. de *Histoire et description générale de la Nouvelle-France, avec le journal historique d'un voyage fait par ordre du roi dans l'Amérique septentrionale*. (First published: 3 vol., Paris: Rolin fils, 1744. The edition consulted was that edited and translated by J.G. Shea: 6 vol., New York, 1866-1872, reprinted Chicago, 1962.)

Considerations on the state of the British fisheries in America and their consequence to Great Britain, with proposals for their security by the reduction of Cape Breton, etc.
(London: for W. Bickerton, 1745.)

DeForest, L.E. (ed.) *Louisbourg Journals, 1745.* (New York: Society of Colonial Wars in the State of New York, 1932.)

Diderot, Denis and J.L. d'Alembert. *L'Encyclopédie, ou dictionnaire raisonné des sciences, des arts et des métiers, par une société de gens de lettres.* (35 vol., Paris: Briasson, 1751-1780.) The articles "fortification", "génie", and "ingénieur" were of particular interest.

Furetière, A. *Dictionnaire universel.* (Second edition, 3 vol., The Hague and Rotterdam: Arnoud and Reinier Leers, 1701.)

Gibson, James. *A Journal of the Late Siege by the Troops from North America....* (London: J. Newbery, 1745.)

Lahontan, L.A. de Lom d'Arce, Baron de *Mémoires de l'Amérique septentrionale....* (2 vol., The Hague: Frères Honoré, 1703; the English edition of 1709 was republished and edited by R.G. Thwaites, as *New Voyages to North America*, 2 vol., Chicago, 1905.)

Maigret ("ingénieur en chef"). *Traité de la sûreté des états par le moyen des forteresses.* (Paris: E. Billiot, 1721.)

A Military Dictionary, explaining and describing the technical terms, phrases, works and machines.... (London: G. Robinson, 1778.) A useful reference work for terminology.

Ordonnance de Louis XIV pour les armées navales et arsenaux de marine. (Paris: E. Michallet, 1689.)

[Pichon, T.] *Lettres et mémoires pour servir à l'histoire naturelle, civile et politique du Cap Breton, depuis son établissement jusqu'à la reprise de cette île par les Anglais en 1758.* (The Hague: Pierre Gosse, 1760. Reprinted, New York: Johnson Reprint Corporation, 1966.)

[Plumard de Dangeul, L.J.] *Remarks on the Advantages and Disadvantages of France and of Great Britain.* (London: T. Osborne, 1754.) A pamphlet also published in a French version the same year at Leyden.

The Present State of the British and French Trade to Africa and America considered and compaired, with some propositions in favour of the trade of Great Britain. (London: printed for E. Comyns at the Royal Exchange, 1745.)

Recueil de passe-ports pour les différentes fournitures de la marine, classés par ordre chronologique 1679-1698. (N.p., n.d.) This government publication of some fifteen pages mentions the names of Pierre Montagnac, J.B. Meusnier and a certain Boyer as suppliers of the navy in 1679, 1681,

1695 and 1698. Presumably these persons had monopolies.
This pamphlet is to be found in the Bibliothèque Nationale,
Paris, under the call number or *cote* 4^o Lf⁷³ 1.

Recueil de traités pour la fourniture des vivres de la marine,
classés par ordre chronologique 1692-1729. (N.p., n.d.)
The names of suppliers Pierre Domergue, J.B. Guichard,
Michel Parent and Jean de la Coste appear in this publication.
It is to be found in the Bibliothèque Nationale, Paris,
under the call number or *cote* 4^o Lf⁷³ 2.

Savérien, A. *Dictionnaire historique, théorique et pratique de marine.*
(2 vol., Paris: Jombert, 1758.)

Smith, G. *A Universal Military Dictionary, or, a copious explanation*
of the technical terms etc., used in the equipment,
machinery movements and military operations of an army.
(London: J. Millan, 1779.) All fortification terms are
fully explained.

Torchet de Boismêlé, J.B. and B. de Richebourg. *Histoire générale*
de la marine contenant son origine, chez tous les peuples
du monde, ses progrès, son état actuel et les expéditions
maritimes anciennes et modernes. (3 vol., Paris, 1744-
1758: Vol. I, Prault, 1744; Vol. II, A. Boudet, 1746;
Vol. III, Boudet, 1758.) Volume III contains the complete
text of the "Code des Armées Navales ou Recueil des édits,

déclarations, ordonnances et règlements sur le fait de la Marine du Roi, depuis le commencement du règne de Louis XIV, jusques y compris l'ordonnance de 1689, conférés avec les ordonnances postérieures sous le même règne et sous celui de Louis XV jusques en 1757."

Turner, G. *An Inquiry into the Revenue, Credit and Commerce of France*. (London: J. Roberts, 1742.)

Turpin de Crissé, L., Comte *Essai sur l'art de la guerre*. (2 vol., Paris: Prault fils l'aîné et Jombert, 1754.) This work was translated into English, German and Russian. The English translation by Captain Joseph Otway, entitled *An Essay on the Art of War* was published at London by W. Johnston in 1761.

Valin, R.J. *Nouveau commentaire sur l'ordonnance de la marine du mois d'août 1681*. (2 vol., La Rochelle: Légiér, 1760.) A consolidation of the laws down to 1760, with notes by the author.

Secondary Sources

A. Works of Special Interest

These are works dealing with subjects closely related to that of the thesis or providing particular background information.

Aboucaya, C. *Les Intendants de la marine sous l'Ancien Régime. Contribution à l'étude du département, du port et arsenal de la marine de Toulon.* (Gap: Imprimerie Louis-Jean, 1958.) A doctoral thesis accepted in 1951 by the Faculty of Law of the University of Aix-en-Provence. Though the sub-title is a more accurate description than the main title, the work does provide interesting background material on the administration of the Marine Department. The first part entitled "L'Intendant de la Marine", comprising four chapters, is useful in this respect. In applying it to a colonial post, one has to bear in mind that the author was thinking primarily of the naval function of the intendants.

Augoyat, A.M. *Aperçu historique sur les fortifications, les ingénieurs et sur le Corps du Génie en France.* (3 vol., Paris: C.I. Tanera, 1860, 1862, 1864.) The first two volumes are of interest for the period ending 1760. There is no up-to-date history of the engineer corps in France, except Guttin (q.v.) on the period to 1715. Augoyat adheres closely to the sources (although he rarely cites them) and provides an almost year-by-year chronicle of the history of the Corps du Génie.

Baudry, R. "Les Plans en relief de Québec, Montréal et Louisbourg", *Revue d'Histoire de l'Amérique Française* XVI (1962-1963), pp.213-218.

Bosher, J.F. *French Finances, 1770-1795*. (Cambridge: University Press, 1970.) Though this work concerns a later period, the author's study of French financiers (including royal accountants) throughout the 18th century as well as earlier makes the first few chapters valuable for any student of French metropolitan and colonial administrative history under the Ancien Régime.

———. "Government and private interests in New France." *Canadian Public Administration*, vol. 10 (1967), pp.244-257. An article giving new direction to research on the administration of New France.

Braudel, F. and E. Labrousse. *Histoire économique et sociale de la France*. (One volume published, Paris: Presses universitaires de France, 1970.) Volume II, 1660-1789. This is the best synthesis to date on French economic and social history for the period studied. It was extensively used both for background and for specific topics.

Delumeau, J. *Le Mouvement du port de St-Malo, 1681-1720, bilan statistique*. (Paris: C. Klincksieck, 1966.) Useful for statistics on the fishing trade of St. Malo to the end of the formative years of Ile Royale.

Dunton, J. "Building hardware excavated at the Fortress of Louisbourg", unpublished report, Fortress of Louisbourg Restoration Section, Department of Indian and Northern

Affairs, Louisbourg, N.S., 15 March 1972. This analysis of excavated material did not modify the assessment of supply based on documentary evidence.

Durand, Y. "Recherches sur les salaires des maçons à Paris au XVIIIe siècle." *Revue d'histoire économique et sociale*, XLIV (1966), pp.468-480.

Francis, D. "The mines and quarries of Cape Breton Island during the French Period, 1713-1760." Report prepared for the Fortress of Louisbourg Restoration Section, Department of Northern Affairs and National Resources, Ottawa, November 1965.

Frégault, G. "Essai sur les finances canadiennes." *Revue d'histoire de l'Amérique française*, vol. 12 (1958-1959), pp.307-322, 459-484; vol. 13 (1959-1960), pp.30-44, 157-182.
Republished in *Le XVIIIe siècle canadien* (Montréal: Editions HMH, 1968), pp.289-363.

———. *François Bigot, administrateur français*. (2 vol., Montréal: I.H.A.F., 1948.) Excellent for Bigot's career at Louisbourg. Makes certain assumptions about Ile Royale during preceding decades, however, that are not substantiated by the evidence.

Guttin, J. *Vauban et le corps des ingénieurs militaires*. (Paris: the author, 1957.) A thesis in the Faculty of Law, University of Paris. Based mainly on printed sources.

Harvey, D.C. *The French Régime on Prince Edward Island*. (New Haven: Yale University Press, 1926.) Still the only study of the subject available.

Humphreys, J. *Plaisance*. (Ottawa: National Museums of Canada, National Museum of Man, Publications in History no. 3, 1970.) An excellent brief monograph on Placentia to 1690, explaining the precariousness of the colony's survival.

Innis, H.A. *The Cod Fisheries*. (New Haven: Yale University Press, 1940; revised edition, Toronto: University of Toronto Press, 1956.)

La Morandière, C. de *La Pêche française de la morue dans l'Amérique septentrionale*. (3 vol., Paris: Maisonneuve and Larose, 1963, 1966.) This long and detailed work is excellent for the technology of the fishery and good for the events. It is rather weak on analysis and quotes too extensively from the documents, suggesting that the author was not always sure of the real meaning of his sources. Used in conjunction with Innis's *Cod Fisheries*, it provides in greater detail the history of the industry. However, the definitive analysis is yet to be written.

Leblant, R. *Un Colonial sous Louis XIV Philippe de Pastour de Costebelle*. (Dax: Pradeu, 1935.) An informative study of the last governor of Placentia and first of Ile Royale.

———. "Un Entrepreneur à l'Ile Royale, Gratien d'Arrigrand",
Revue des Questions Historiques, vol. 64 (July 1936).

(The version used was an extract published at Blois in
 1936 and held by the Public Archives of Canada library.)

The useful article based primarily on the D'Arrigrand
 dossier in AN, Colonies E 9. A good summary of the
 relations between D'Arrigrand and the contractors at
 Louisbourg Ganet and Muiron.

Legohérel, H. *Les Trésoriers généraux de la marine (1517-1788)*.

(Paris: Editions Cujas, 1965.) A law thesis. Seems
 rather strangely organized, but proved useful for the
 introductory portion of the chapter on financial policy.
 The author is only slightly aware of the role of the
 treasurers-general of marine to 1749 in colonial financial
 administration.

Marion, M. *Histoire financière de la France depuis 1715*. (4 vol.,
 Paris: Arthur Rousseau, 1914-1925.) Volume I, 1715-1789,
 was read for the period 1715-1760. A chronicle with a
 strong anti-monarchical bias, it contains great detail on
 taxes, borrowings and the administration of expenditures.
 Used extensively for the introductory portion of Chapter
 III (Financial Policy).

McLennan, J.S. *Louisbourg from its Foundation to its Fall, 1713-1758*.

(London: MacMillan, 1918; reprinted without appendices,

Sydney, N.S.: Fortress Press, 1957.) Still the only reliable general study of Louisbourg and Ile Royale.

Mémain, R. *Le Matériel de la marine de guerre sous Louis XIV.*

(Paris: Hachette, 1936.) The title is misleading: this is a study of the foundation of Rochefort as a port and arsenal of the Marine Department. It was useful for what it had to say about supply and contracts during the period of Colbert and Seignelay.

Proulx, J.P. "Histoire militaire de Plaisance: étude sur les fortifications françaises." M.A. thesis, University of Ottawa, 1968. An excellent chronology of the fortifications of Placentia.

Thorpe, F.J. "Fish, Forts and Finance: the Politics of French Construction at Placentia, 1699-1710", Canadian Historical Association, *Historical Papers 1971* (Ottawa 1972), pp.52-63. An earlier paper on the Placentia portion of this study.

B. *Other Works*

These are works mentioned because they provided general background information.

Antoine, M. *Le Conseil du roi sous le règne de Louis XV.* (Paris: Droz, 1970.)

- Arbaumont, J. d' "L'Organisation de l'artillerie et du génie au XVIIIe siècle", *Revue Historique de l'Armée*, vol. 18, no. 4, (1962), pp.36-44. Thin piece of work with an atrocious bibliography.
- Bardet, J.P. (ed.) *Maisons rurales et urbaines dans la France traditionnelle*. Vol. I of *Le Bâtiment* (Paris: Mouton, 1971).
- Bézar, Y. *Fonctionnaires maritimes et coloniaux sous Louis XIV: Les Bégon*. (Paris: Albin Michel, 1932.)
- Boutaric, E. *Institutions militaires de la France avant les armées permanentes*. (Paris: Plon, 1863.)
- Careless, J.M.S. "Frontierism, Metropolitanism and Canadian History", *Canadian Historical Review*, vol. 35 (March, 1954), pp.1-21.
- Cavignac, J. *Jean Pellet, commerçant de gros 1694-1772*. (Paris: SEVPEN, 1967.)
- Chassignet, L.M.M. *Essai historique sur les institutions militaires*. (Paris: V. Rozier, 1869.)
- Cole, C.W. *Colbert and a Century of French Mercantilism*. (2 vol., New York: Columbia University Press, 1939.)
- Corvisier, A. *L'Armée française de la fin du XVIIe siècle au ministère de Choiseul---le soldat*. (2 vol., Paris: P.U.F., 1964.)

Dechêne, L. *La Correspondance de Vauban relative au Canada.*

(Québec: Ministère des affaires culturelles, 1968.)

Deschard, A. "Le contrôle de la Marine", *Revue Maritime et Coloniale*,
vol. 81 (1886), pp.226-294.

———. "Notice sur l'organisation du Corps du Commissariat de
la marine", *Revue Maritime et Coloniale*, vol. 59, pp.472-
511; vol. 60, pp.288-335, 759-797; vol. 61, pp.179-200;
(1878-1879).

*Dictionary of Canadian Biography / Dictionnaire biographique du
Canada* (3 vol. published [I, II, X], Toronto: University
of Toronto Press, and Québec: Les Presses de l'Université
Laval, 1966, 1969, 1972). A number of articles from Vol.
II deal with personalities that figure in this thesis.

Dubé, J.C. *Claude-Thomas Dupuy, intendant de la Nouvelle-France,
1678-1738.* (Montreal and Paris: Fides, 1969.)

Duchêne, A. *Histoire des finances coloniales de la France.* (Paris:
Payot, 1938.) Disappointing. It would have been most
useful to have had a good monograph on the subject.

———. *La Politique coloniale de la France....* (Paris: Payot,
1928.)

Esmonin, E. *Etudes sur la France des XVIIe et XVIIIe siècles.*
(Paris: Presses universitaires de France, 1964.)

- Fauteux, J.N. *Essai sur l'industrie au Canada sous le régime français*. (2 vol., Québec: L.A. Proulx, 1927.)
- Filion, M. *Maurepas ministre de Louis XV (1715-1749)*. (Montréal: Les Editions Leméac, 1967.)
- Fontaine de Resbecq, H. "L'Administration centrale de la marine et des colonies", *Revue Maritime et Coloniale*, mars 1886, pp.412-461. (The version used was a photocopy in the Public Archives of Canada library of an extract in the Bibliothèque Nationale, France.) Useful background material.
- Frégault, G. *La Guerre de la Conquête*. (Montreal and Paris: Fidès, 1955.) An excellent work on the period it covers. (English translation by M.M. Cameron, Toronto: Oxford University Press, 1969.)
- Gille, B. *Les Ingénieurs de la Renaissance*. (Paris: Hermann, 1964; English translation, London: Lund Humphries, 1966.)
- Gipson, L.H. *The British Empire before the American Revolution*. (15 vol., New York: A.A. Knopff, 1936-1969.)
- Graham, G.S. *Empire of the North Atlantic*. (Second edition, Toronto: University of Toronto Press, 1958, reprinted 1966.)
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- Hitsman, J.M. and C.C.J. Bond. "The Assault Landing at Louisbourg, 1758", *Canadian Historical Review*, Vol. XXXV (1954), pp.314-330.
- Lacour-Gayet, G. *La Marine militaire de la France sous le règne de Louis XV*. (Second edition, Paris: H. Champion, 1910.)
- Lambert de Sainte-Croix. *Essai sur l'histoire de l'administration de la marine de France, 1689-1792*. (Paris: Calmann-Lévy, 1892.)
- Lanctôt, G. *Histoire du Canada*. (3 vol., Montréal: 1959-1962; English translation *A History of Canada*, 3 vol., Cambridge, Mass.: Harvard University Press, 1963-1965, II, 1663-1713, III, 1713-1763.)
- Legendre, P. *Histoire de l'administration de 1750 à nos jours*. (Paris: Presses universitaires de France, 1968.) The introduction is instructive.
- Lüthy, H. *La Banque Protestante en France de la Révocation de l'Édit de Nantes à la Révolution*. (2 vol., Paris: SEVPEN, 1959-1961.)

Mandrou, R. *La France aux XVIIe et XVIIIe siècles*. (Second edition, Paris: Presses universitaires de France, 1970.)

Marion, M. *Dictionnaire des institutions de la France aux XVIIe et XVIIIe siècles*. (Paris: A. Picard, 1923; reissued 1968.)

Matthews, G.T. *The Royal General Farms in 18th-Century France*. (New York: Columbia University Press, 1958.)

Mayrand, P. "La Renaissance de Louisbourg", *Vie des Arts*, no. 46, (1967), pp.32-35. Footnotes contain biographical information on engineers and contractors at Louisbourg but do not give complete primary sources. In general, citations are poor.

Nadon, P. "Le Fort Beauséjour, 1755-1833: une étude technique." M.A. thesis, University of Ottawa, 1968.

Parkman, F. *A Half-Century of Conflict*. (Boston: 1892; republished New York: Collier, 1962.)

———. *Montcalm and Wolfe*. (Boston: 1884; republished New York: Collier, 1962.)

Pauliat, L. *La Politique coloniale sous l'ancien régime*. (Paris: Calmann-Lévy, 1887.)

Petot, J. *Histoire de l'administration des ponts et chaussées*. (Paris: Rivièrre, 1958.)

- Porter, W. *History of the Corps of Royal Engineers*. (2 vol., London: Longmans, Green, 1889.)
- Rawlyk, G.A. *Yankees at Louisbourg*. (Orono, Maine: University of Maine Press, 1967.)
- Robert, H. *Les Trafics coloniaux du port de la Rochelle au XVIIIe siècle*. (Poitiers: P. Oudin, 1960.)
- [Rochas d'Aiglun] *Vauban. Sa famille et ses écrits; ces oisivetés et sa correspondance*. (2 vol., Paris: Berger-Levrault, 1910.)
- Roy, A. *Les Lettres, les sciences et les arts au Canada sous le régime français*. (Paris: Jouve, 1930.) There is a non-analytical section on architecture in Chapter V, pages 151-229.
- Roy, P.G. *Les Officiers d'état-major des gouvernements de Québec, Montréal et Trois-Rivières sous le régime français*. (Lévis: n.p., 1919.)
- Salone, E. *La Colonisation de la Nouvelle-France*. (Paris: E. Guilmoto, [1905]; reprinted Trois-Rivières: Boréal Express, 1970.)
- Stanley, G.F.G. *New France: The Last Phase, 1744-1760*. (Toronto: McClelland and Stewart, 1968.)

Trocmé, E. and M. Delafosse. *Le Commerce rochelais de la fin du
XVe siècle au début du XVIIe.* (Paris: A. Colin, 1952.)

Veillechêze de la Mardière, F. de *L'Evolution historique du
contrôle de la marine.* (Poitiers: Société française
d'imprimerie et de librairies, 1912.) A doctoral thesis
for the Faculty of Law of the University of Poitiers.

FOREWORD

The plans and maps reproduced here are offered not as an integral part of the thesis (which in any event is not a chronology of construction), but as a supplementary aid to the reader, particularly for Chapter II. They have been selected from some five hundred extant maps, plans, profiles and elevations concerning Ile Royale and Ile Saint-Jean during the period 1713-1760, the contemporary versions of which are to be found in repositories in France, Great Britain, Canada, the United States and elsewhere. No plans of French Newfoundland were found other than those already provided by Jean-Pierre Proulx in his "Histoire militaire de Plaisance: étude sur les fortifications françaises." (Unpublished M.A. thesis, University of Ottawa, 1968.) They have not been repeated here. The plans contained in this volume have been chosen primarily because most of them have not been published. Those of Ile Royale and Ile Saint-Jean published in Volume IV, numbers 1-2 (1972) of the *Bulletin* of the Association for Preservation Technology* have been deliberately omitted.

Some of the photocopies herein are of indifferent quality, because they have been made from photographs or other photocopies, many of which are not reproduced in the original size. Estimates of the cost of providing the same number of plans and maps in the form of glossy prints, not necessarily in the original size, convinced me that the project was unfeasible, even in black and white. Scholars who wish to

* Secretary-treasurer, Box 2682, Ottawa 4, Ontario.

make a deeper study of the rich store of graphic evidence afforded by these plans must have recourse to originals or good copies preserved in archives and libraries. It is understood that an extensive selection of colour transparencies of Louisbourg plans has been produced for the Fortress of Louisbourg National Historic Park. These should prove especially valuable for researchers interested in architectural history, urban planning and similar subjects. It is hoped, however, that an atlas in colour will eventually be produced, because the chronology of construction can best be understood from the uniform colour code used by French draftsmen to distinguish construction work completed from that proposed.

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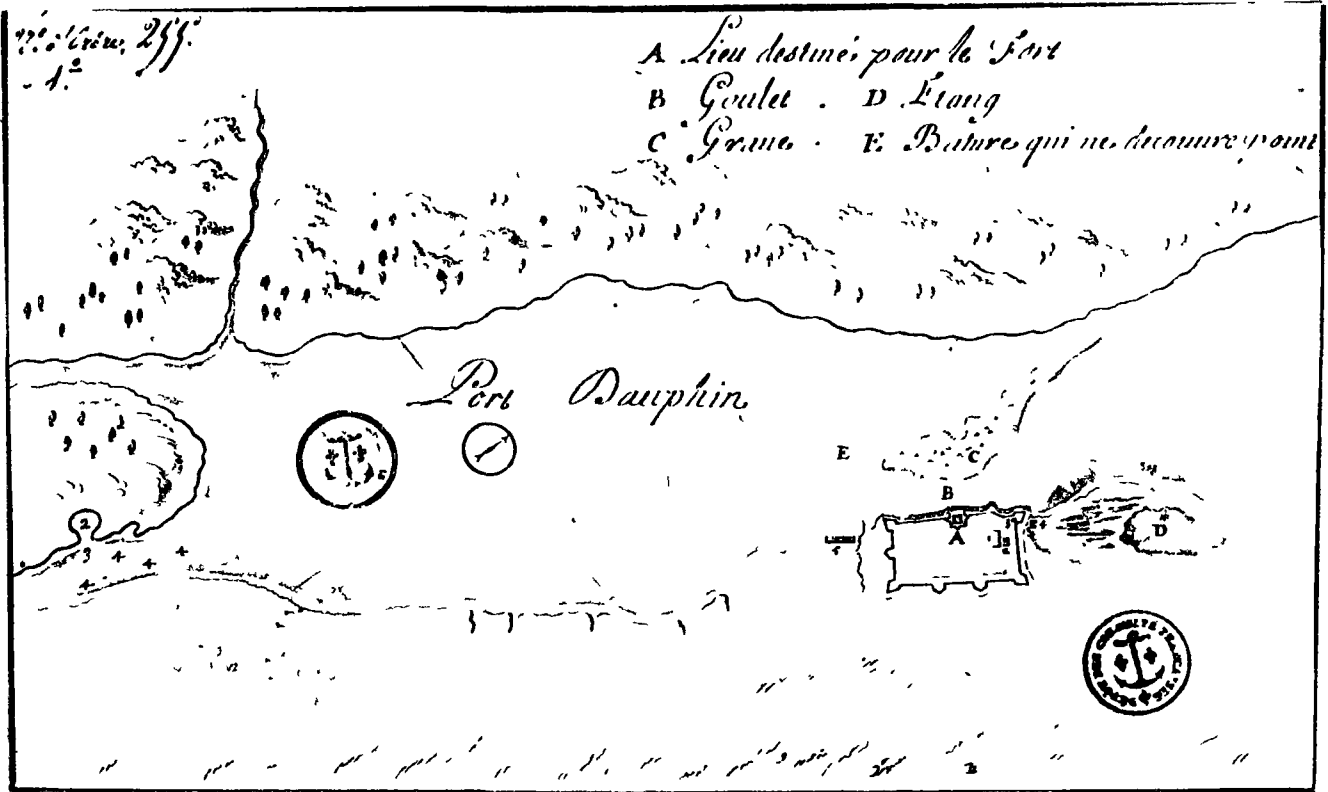
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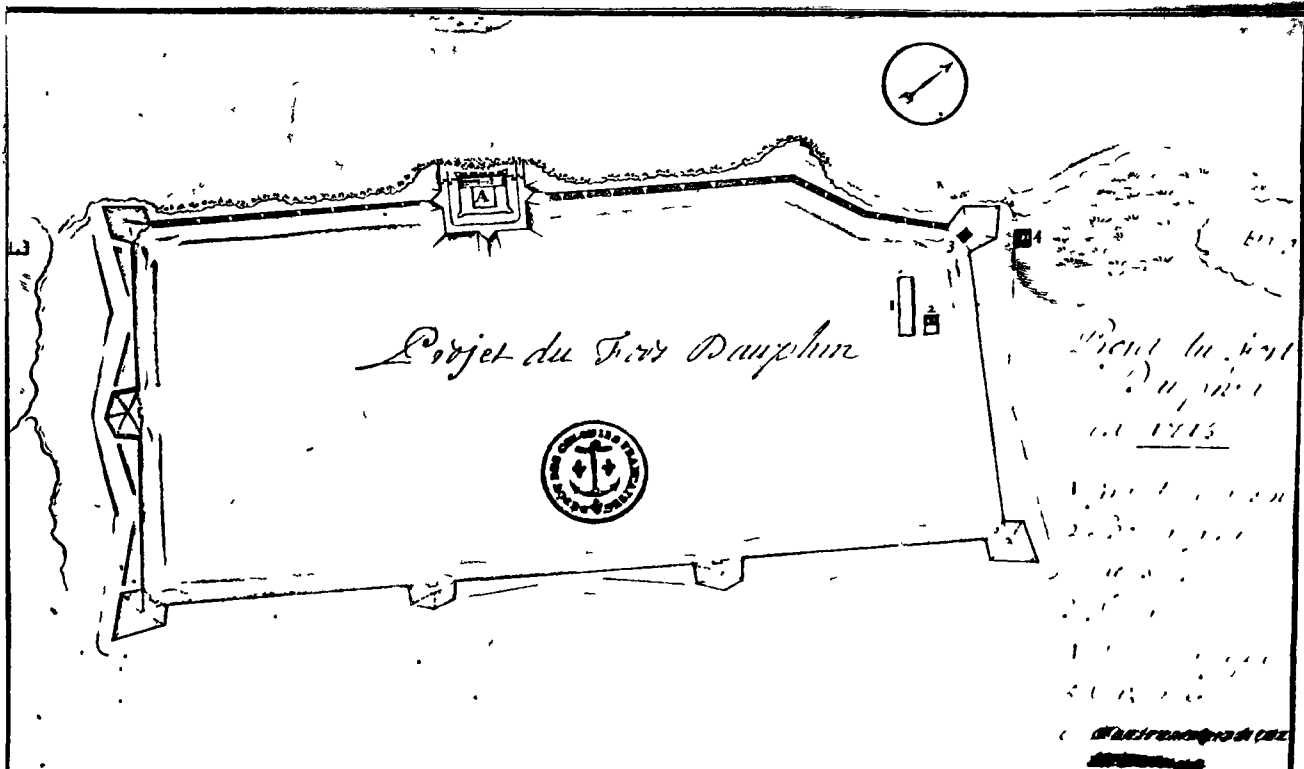


Louisbourg Harbour, 1714

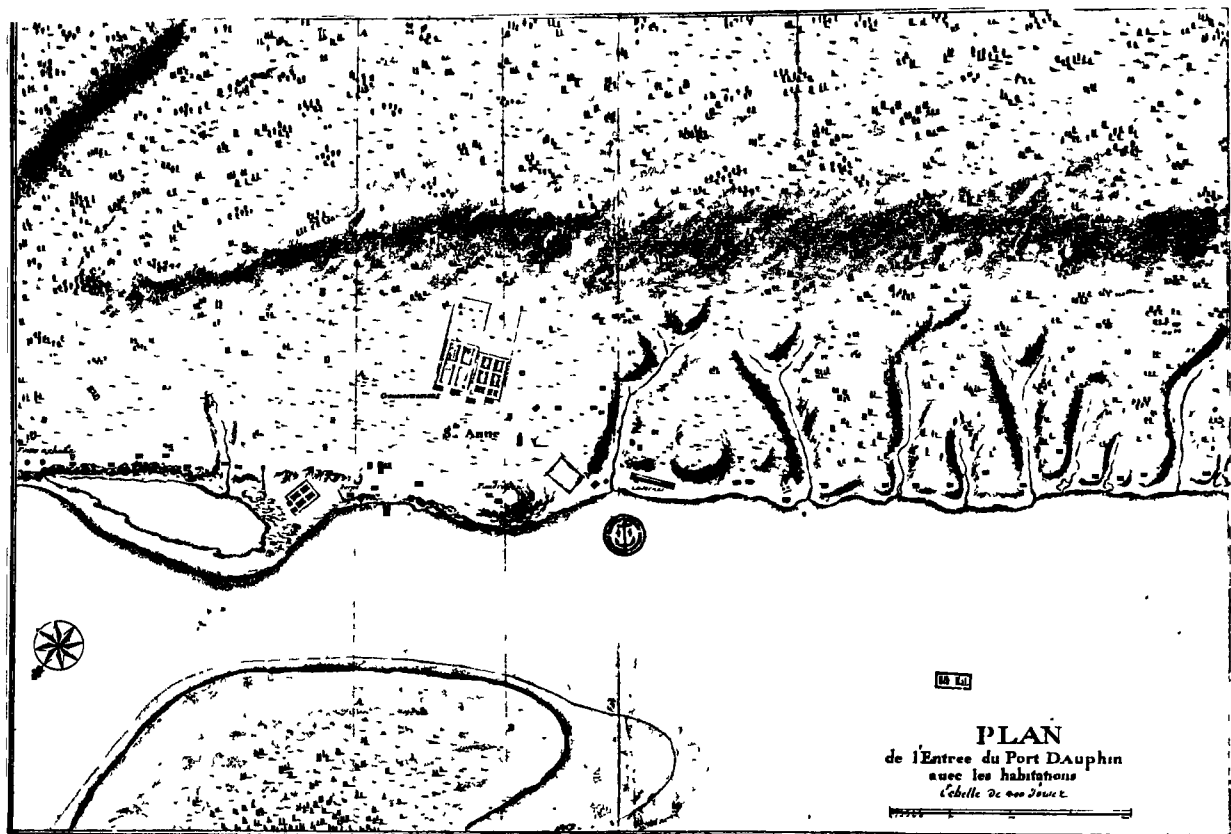
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*Plans faits à l'usage qui ne servent que
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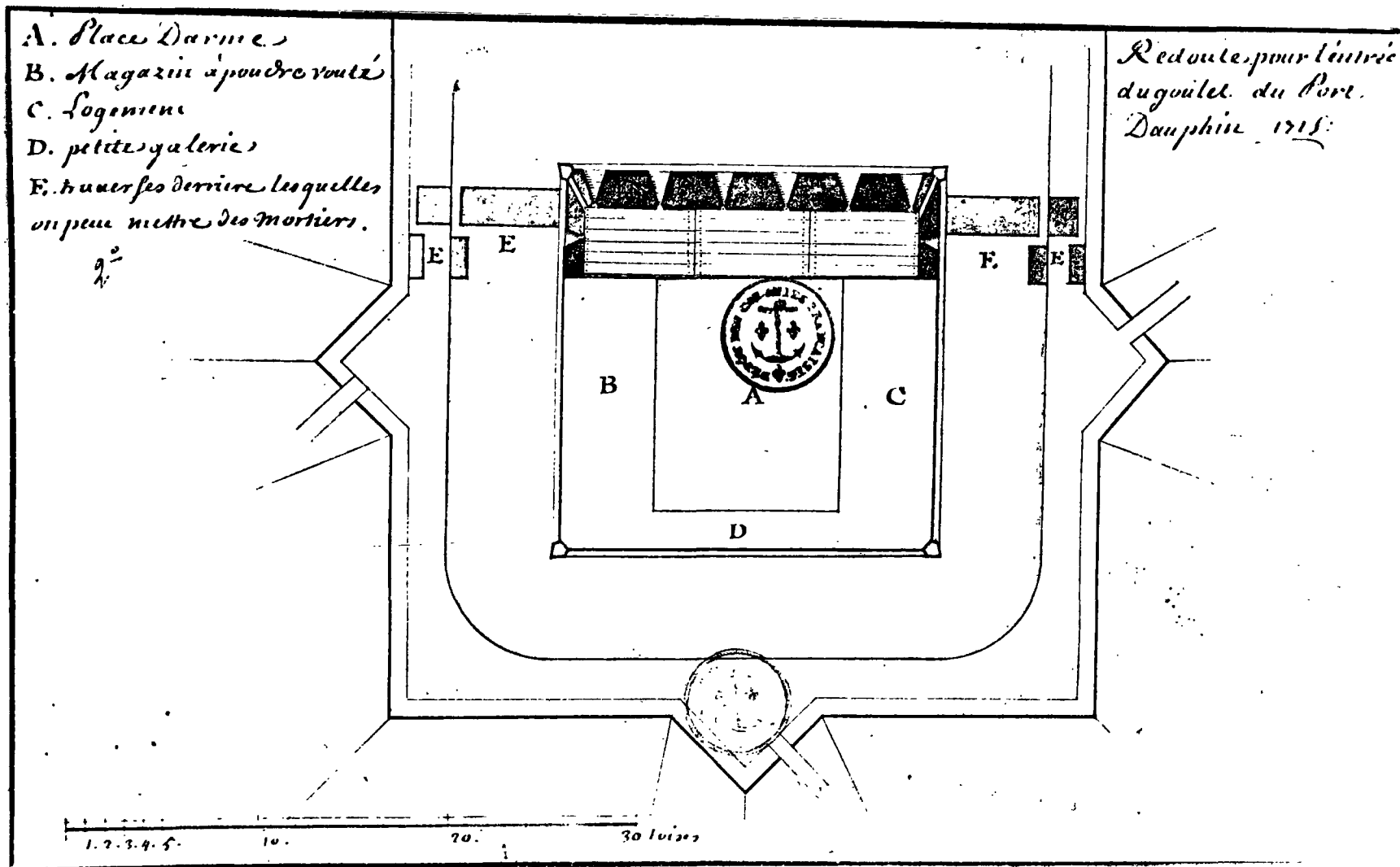


Plan of the terrain of Port Dauphin, and plan of the projected fort of Port Dauphin. 1715 (Vol. I, p.25. note 25)



Entrance to Port Dauphin Harbour [1715-1717]

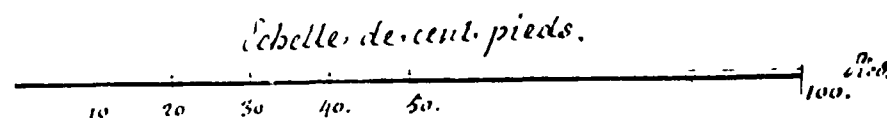
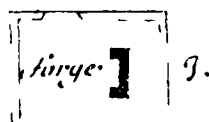
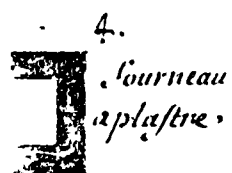
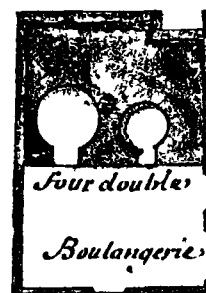
(Vol. I, p.26, note 27)



Plan for Redoubt at the entrance to Port Dauphin Harbour, 1715

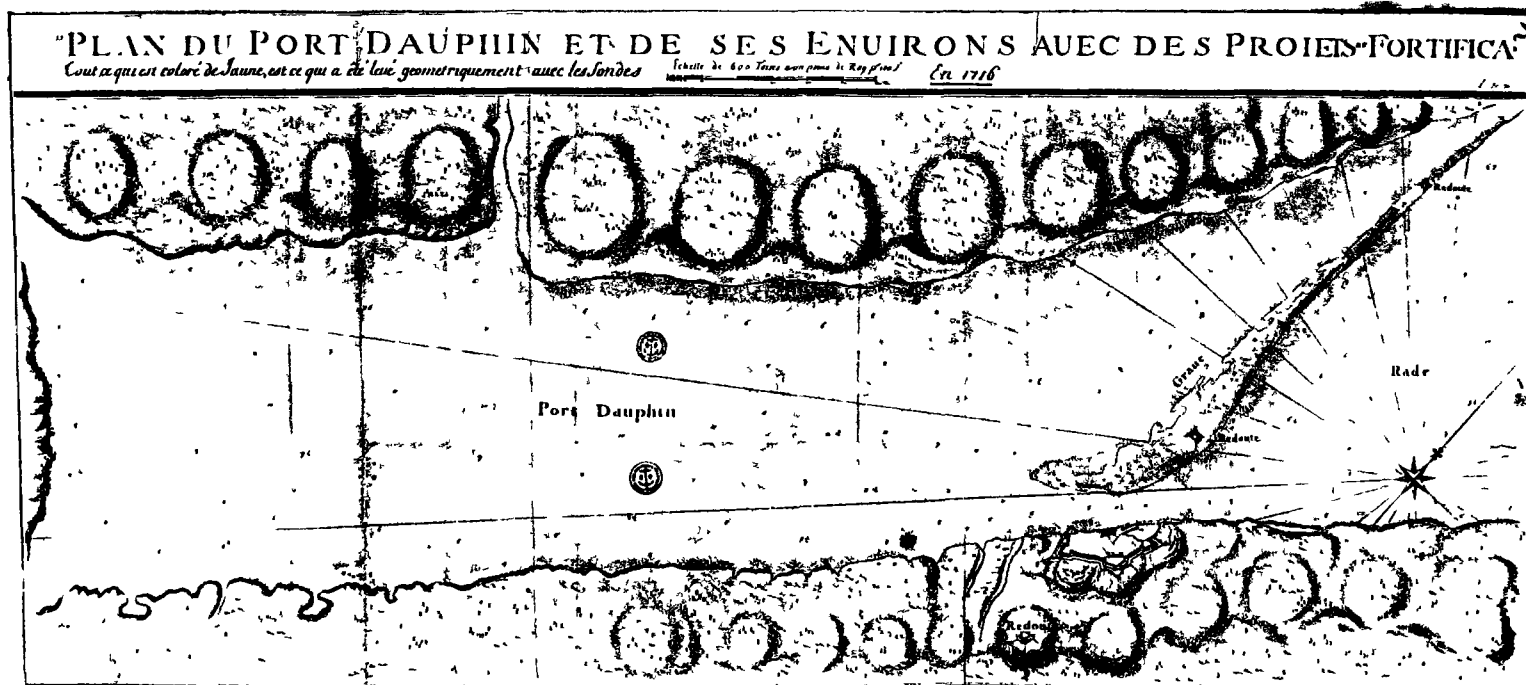
(Vol. I, p.26, note 27)

*Plan des Bâtimens finis, & travaillé, Solidement.
au port d'auphin En Isle Royale. en 1715.*



Buildings erected at Port Dauphin, 1715

(Vol. I, p.26, note 27)



Plan of Port Dauphin area in 1716 to show proposed fortifications

(Vol. I, p.29, note 36)

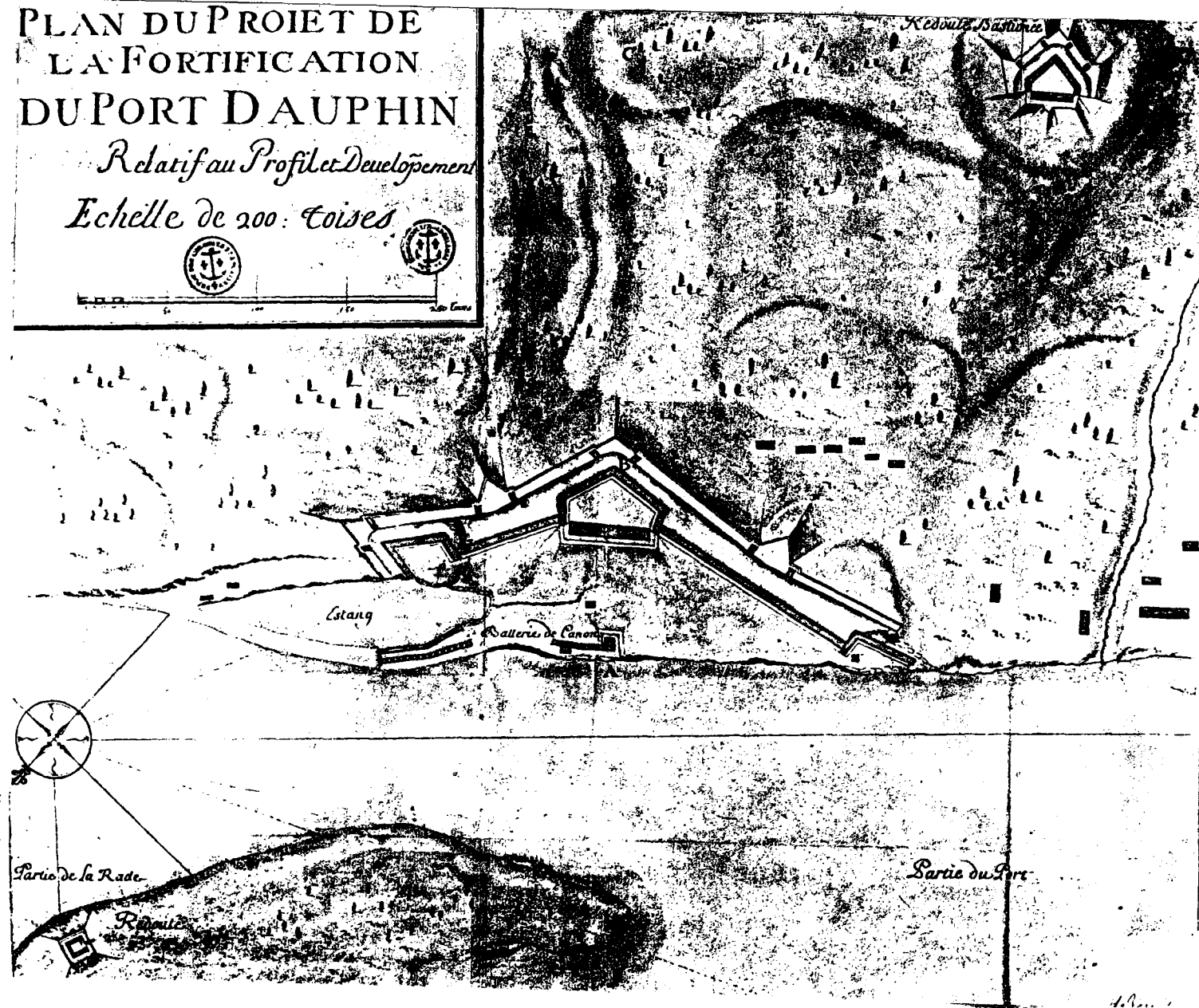
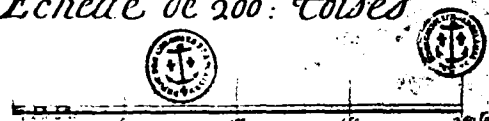
On page 8 is a plan of 1717 showing the fortifications in detail

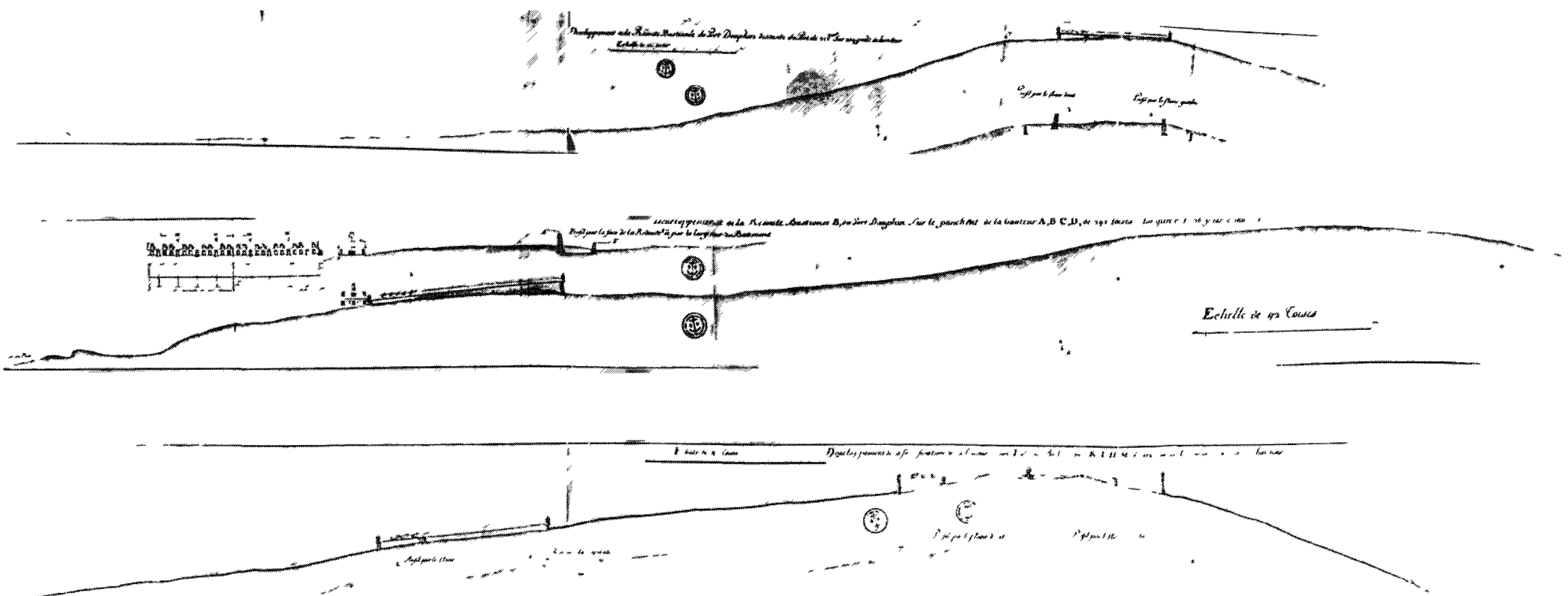
(Vol. I, p.29, note 38)

PLAN DU PROJET DE LA FORTIFICATION DU PORT DAUPHIN

Relatif au Profil et Développement

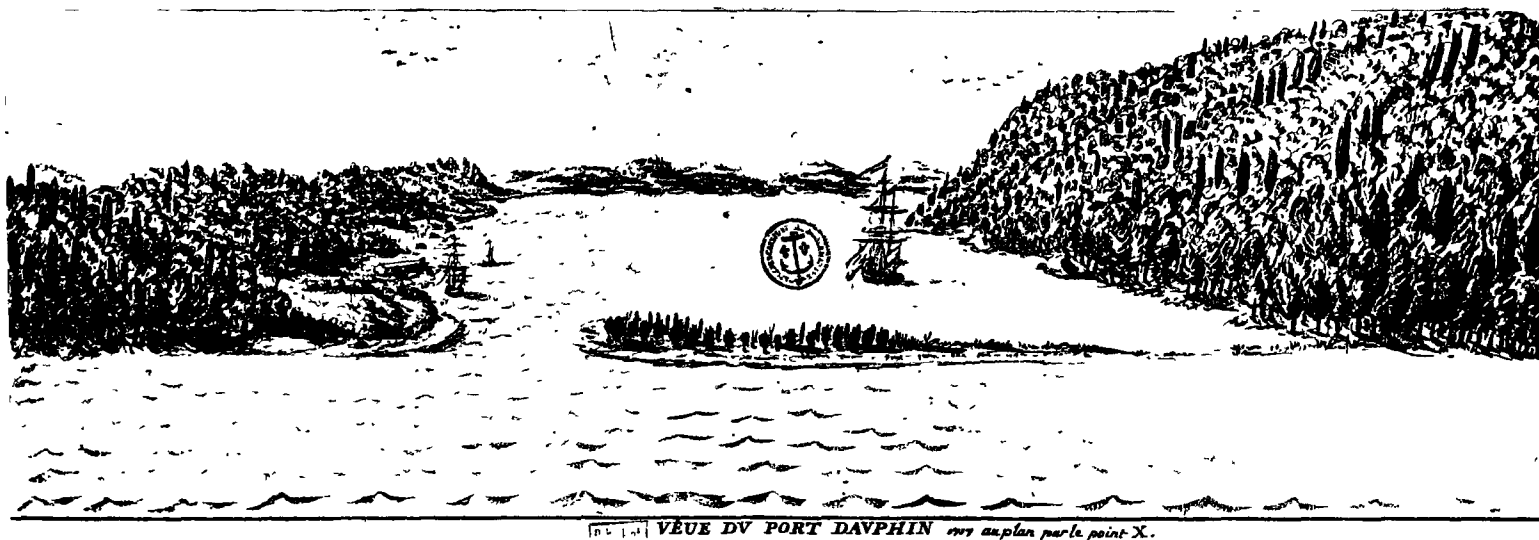
Echelle de 200 Toises





Sections, Fortifications of Ports Dauphin and Toulouse

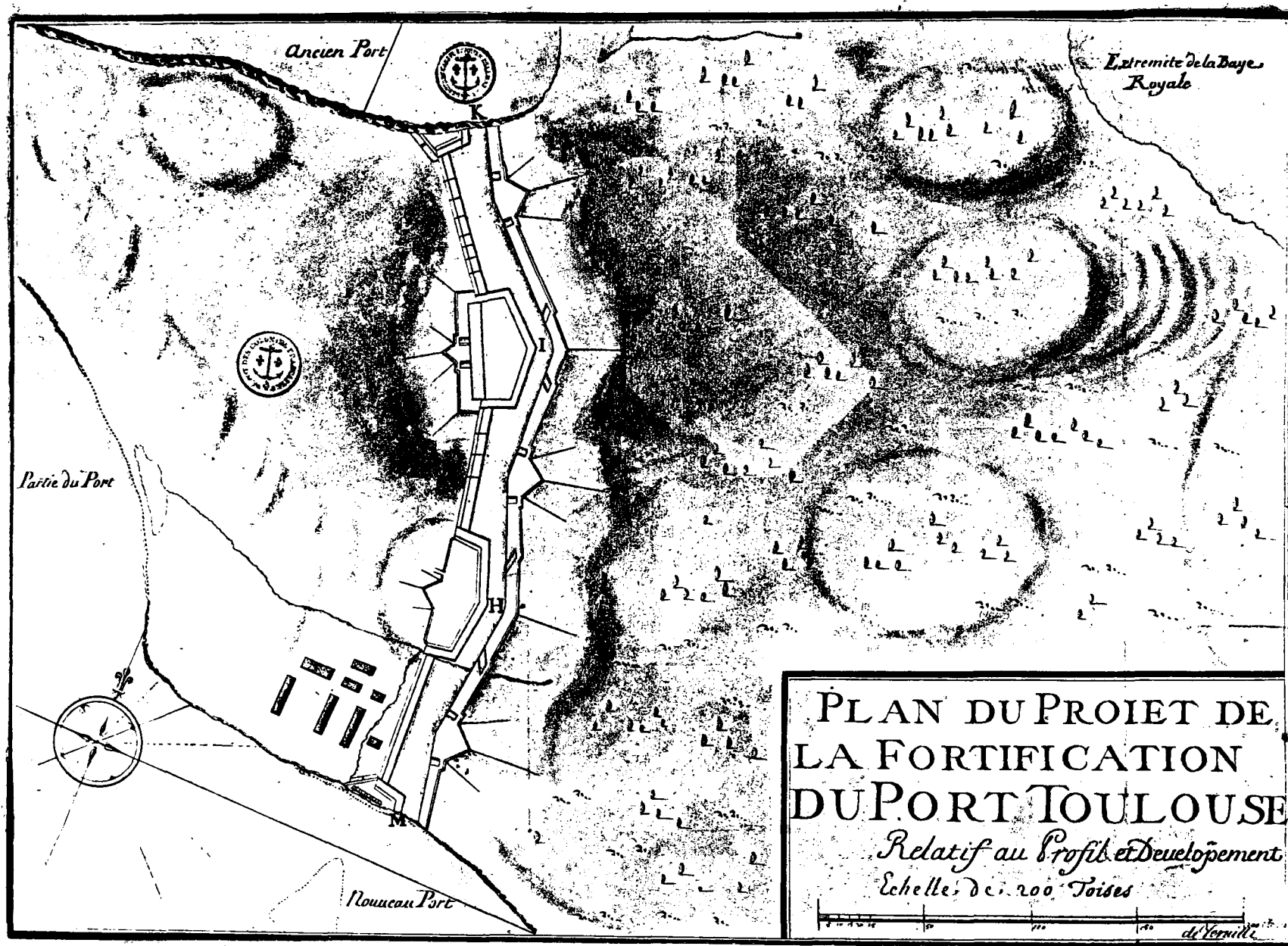
(Vol. I, pp.29-30, note 38)



VUE DV PORT DAVPHIN *vue au plan par le point X.*

View of Port Dauphin in 1717

(Vol. I, p.30, note 38)



Fortifications planned for Port Toulouse (Vol. I, p.30, note 38)

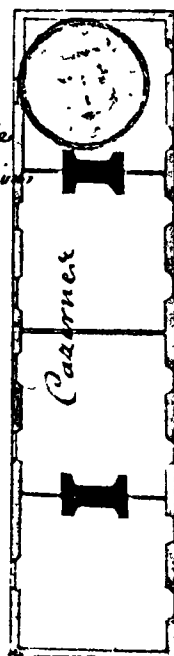
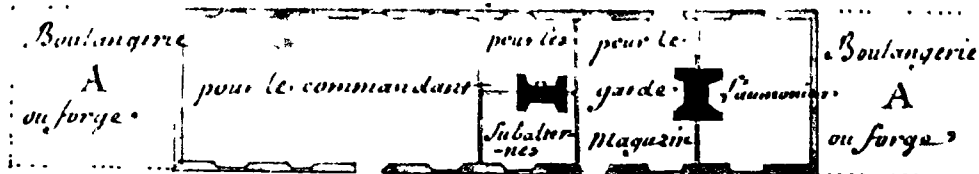
Endroit pour
les poudres

Plan des Bastiments que l'on
peut faire, et de ceux qui sont
fait au port Toulouse, dans
l'Isle Royale.

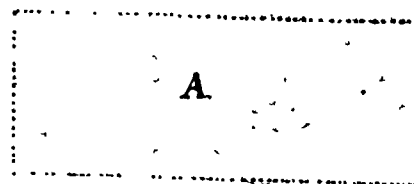
A logements que l'on peut faire,
sans augmenter l'enceinte
du fort.

Nota que les dits Bastiments se
peuvent servir par une fortification
régulière. Et que l'échelle est
commune au plan des deux
forts.

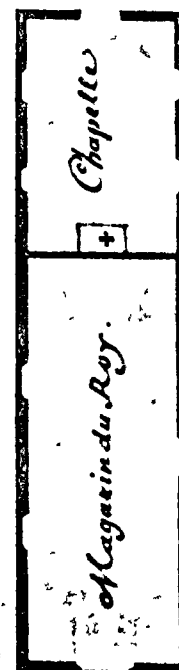
B. cheminé double.

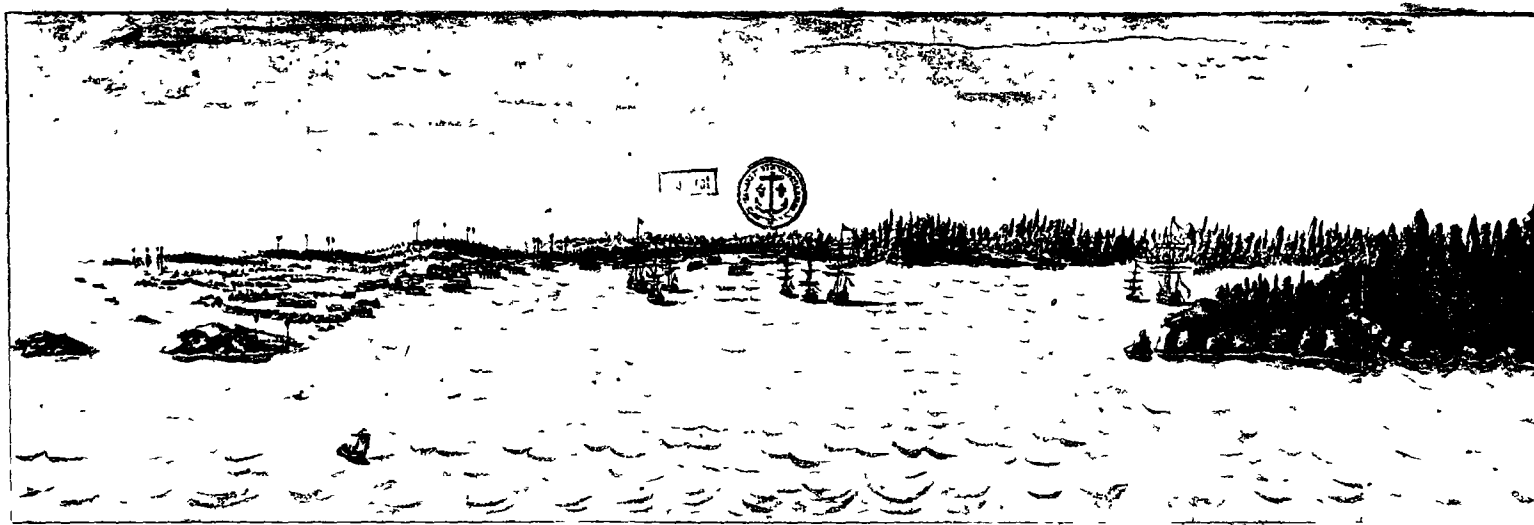


Place d'Armes



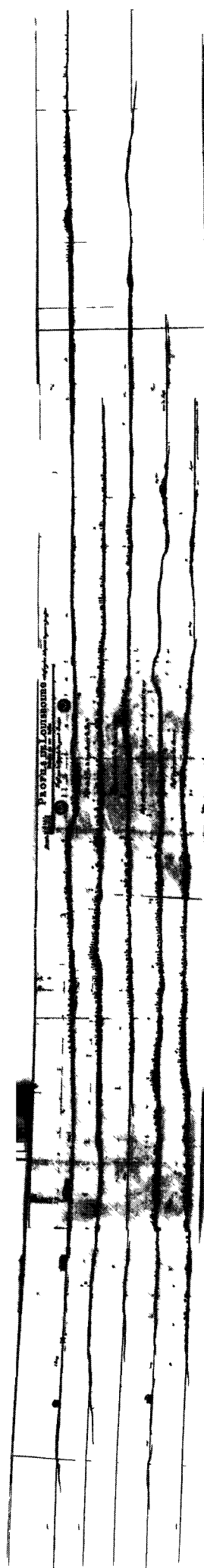
Côté du Port de l'Eau

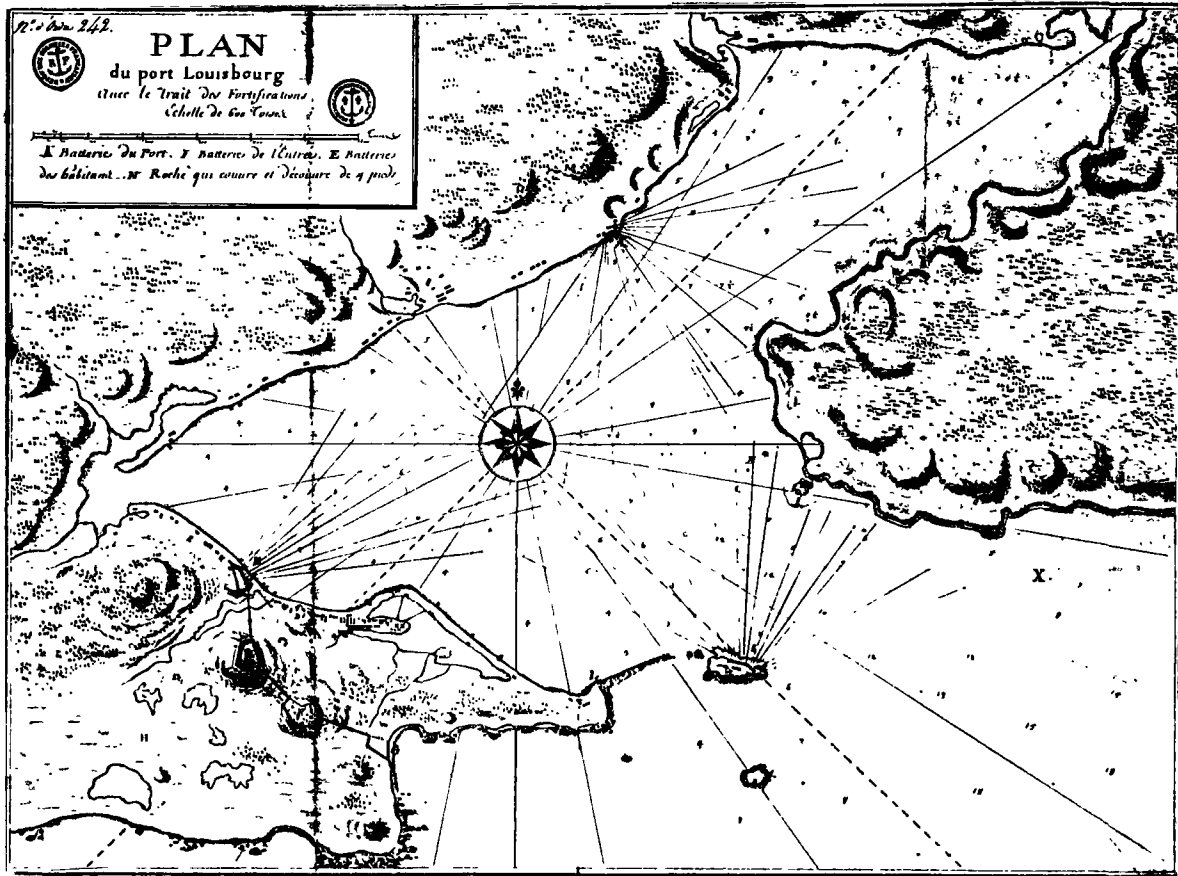




View of Louisbourg Harbour in 1717

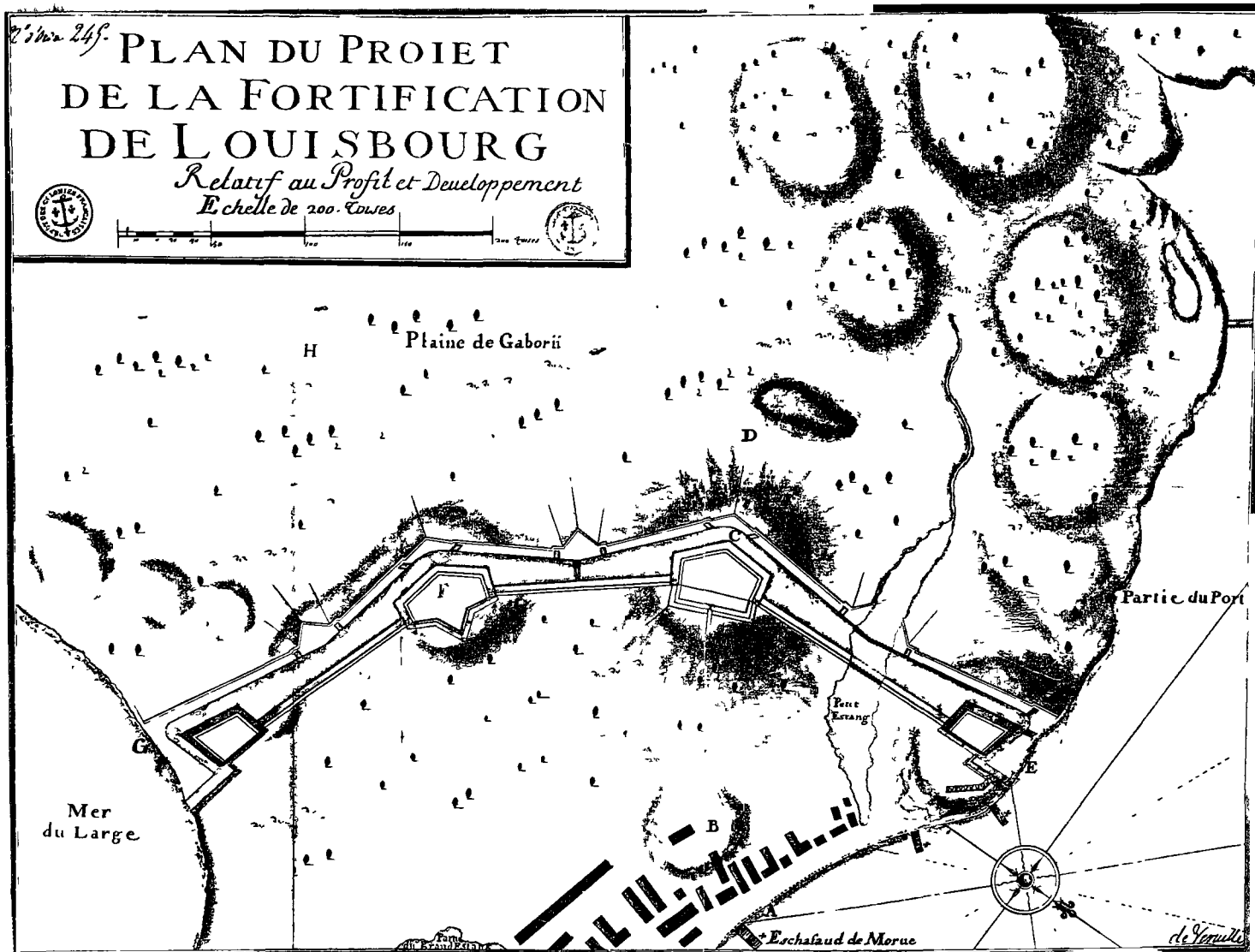
(Vol. I, p.31, note 40)





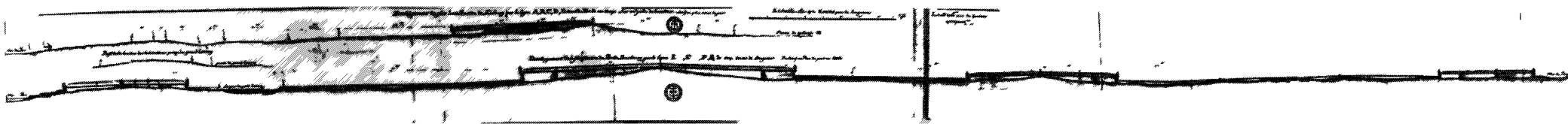
Louisbourg Harbour

(Vol. I, p.32, note 45)



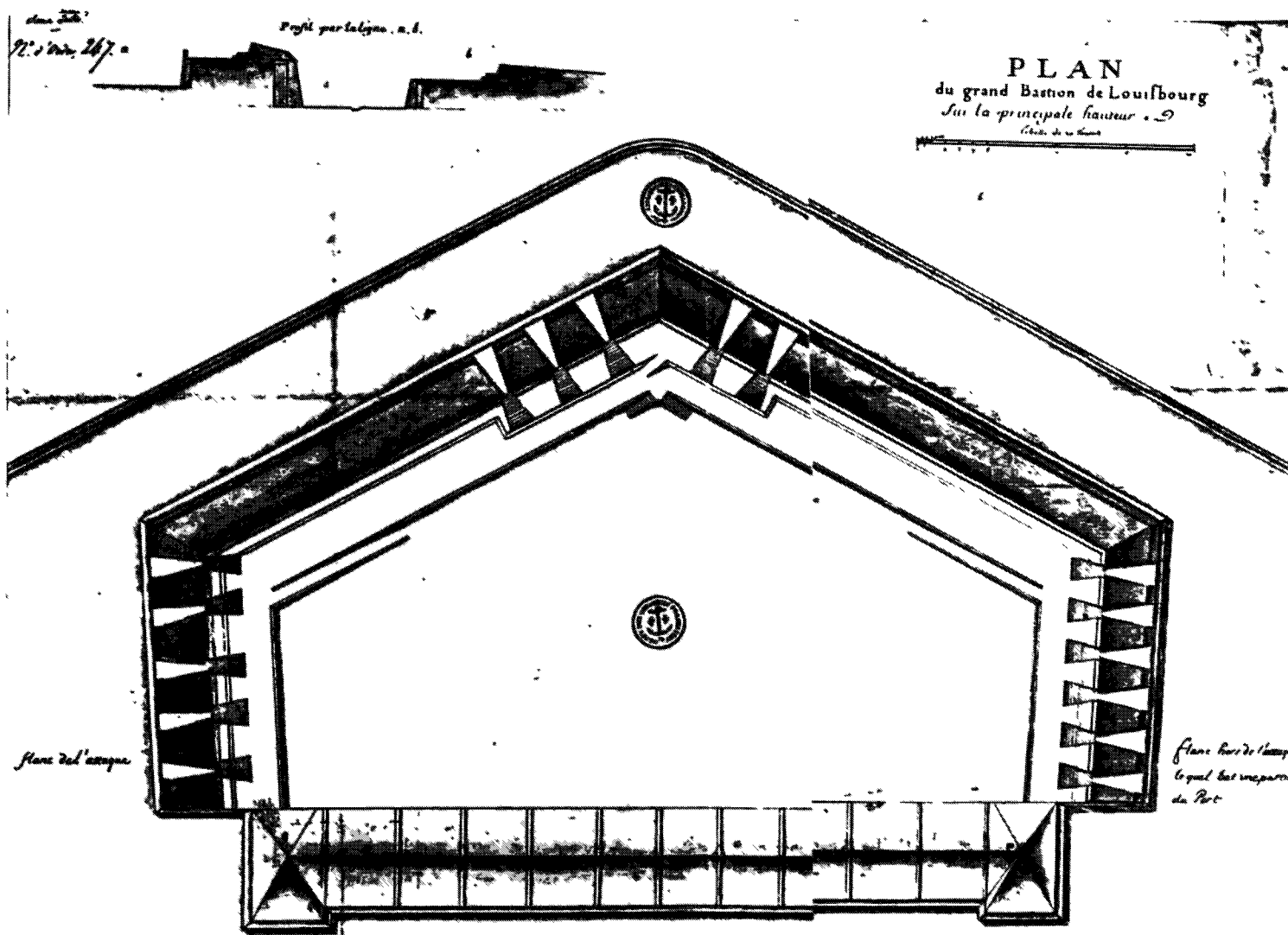
Plan of Louisbourg Fortifications

(Vol. I, p.32, note 45)



Three sections, Louisbourg Fortifications

(Vol. I, p.32, note 45)



Early plan of King's Bastion, Louisbourg

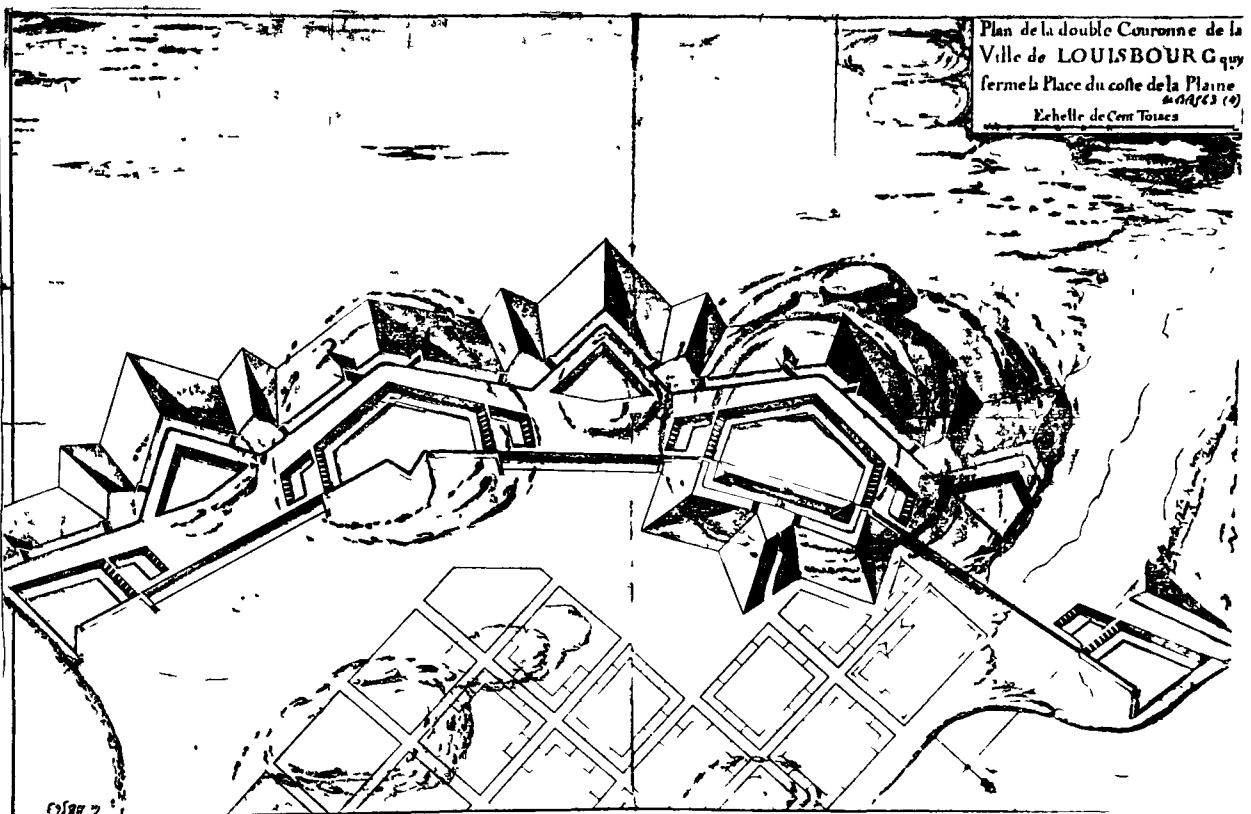
(Vol. I, p.32, note 45)

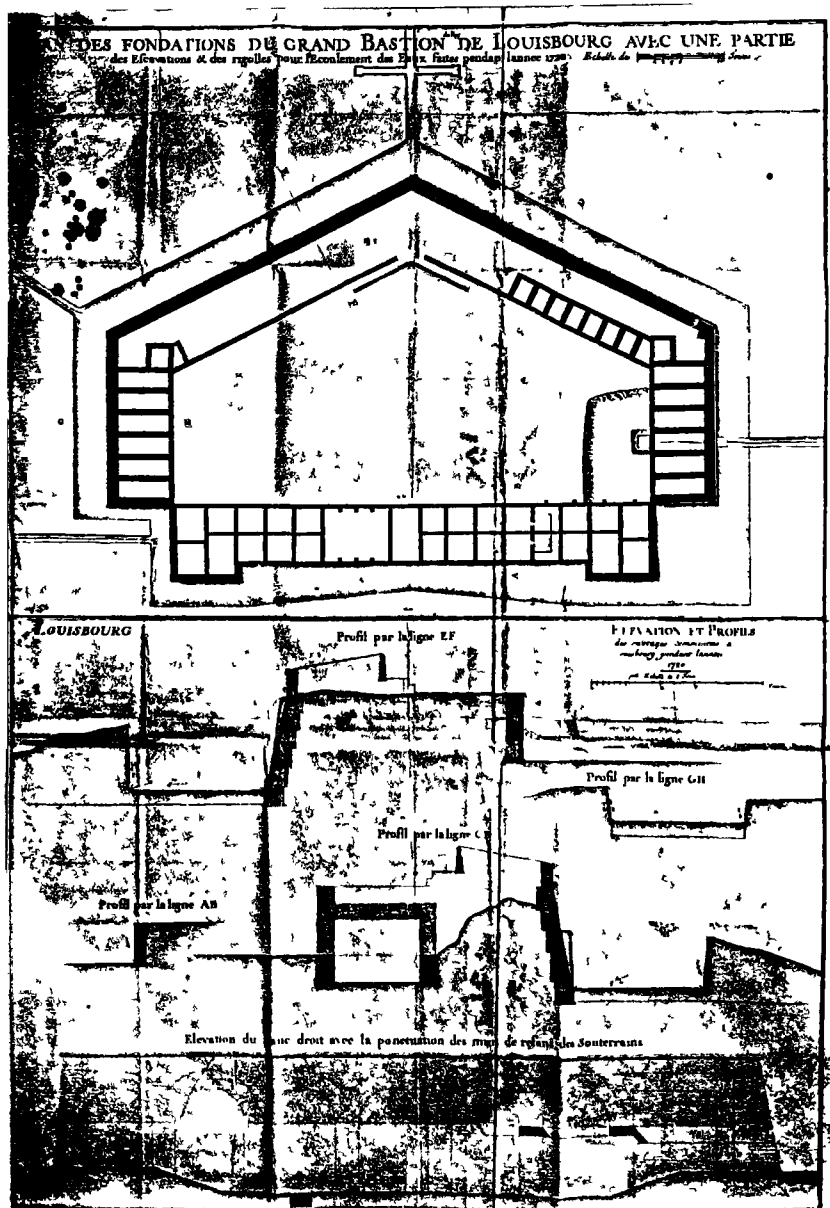


Louisbourg Plans.

Left,
King's Bastion,
about 1718;
below,
projected *enceinte*.

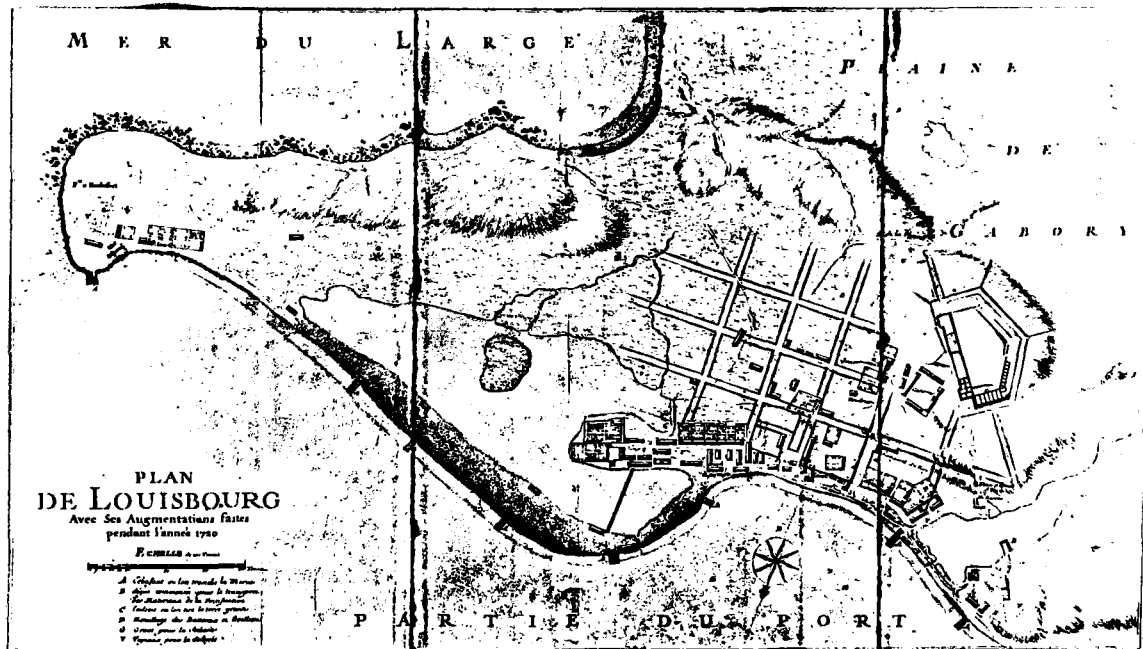
(Vol. I, p.32,
note 45)





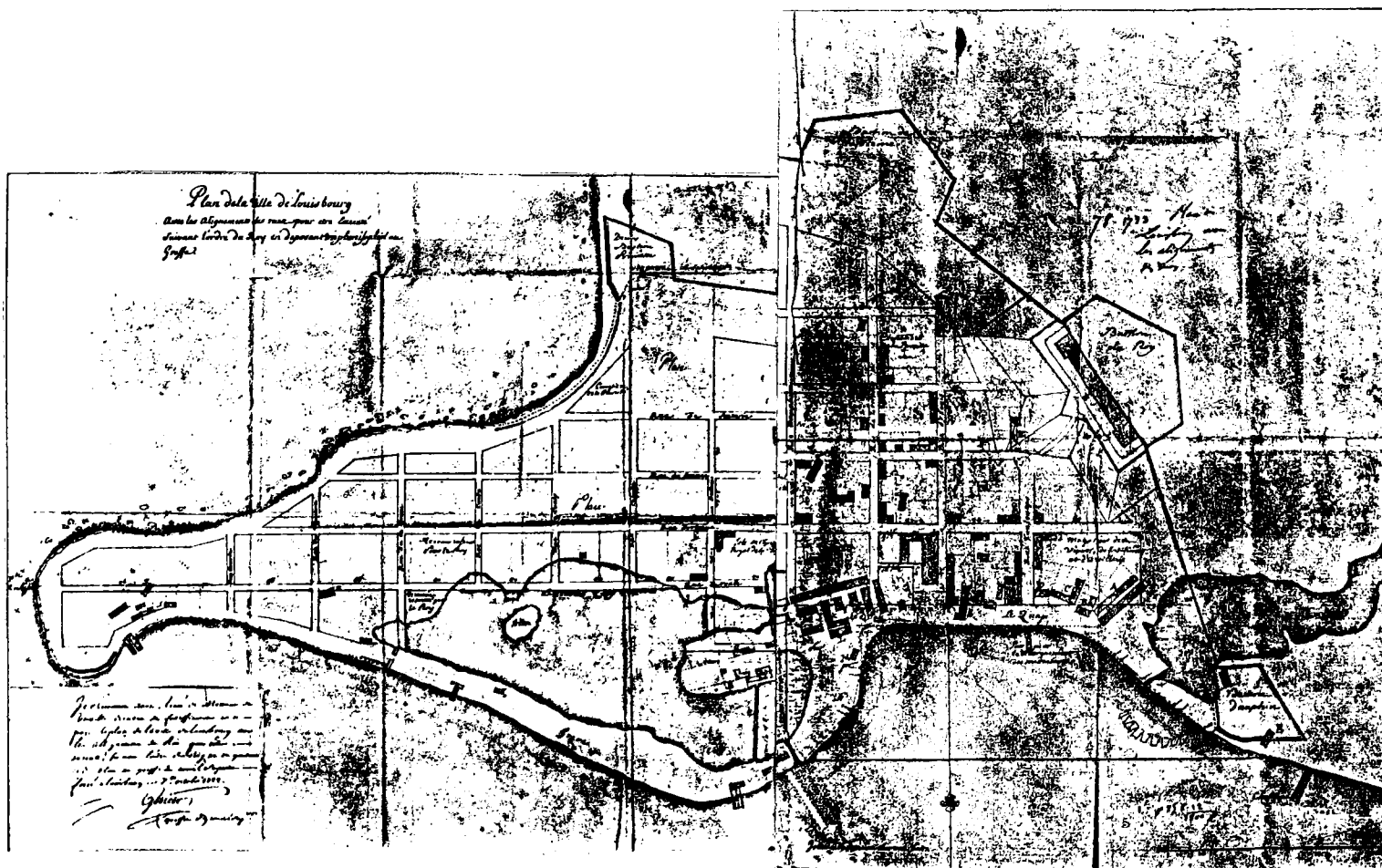
Louisbourg: Foundations of the King's Bastion, 1720

(Vol. I, p.35, note 54)



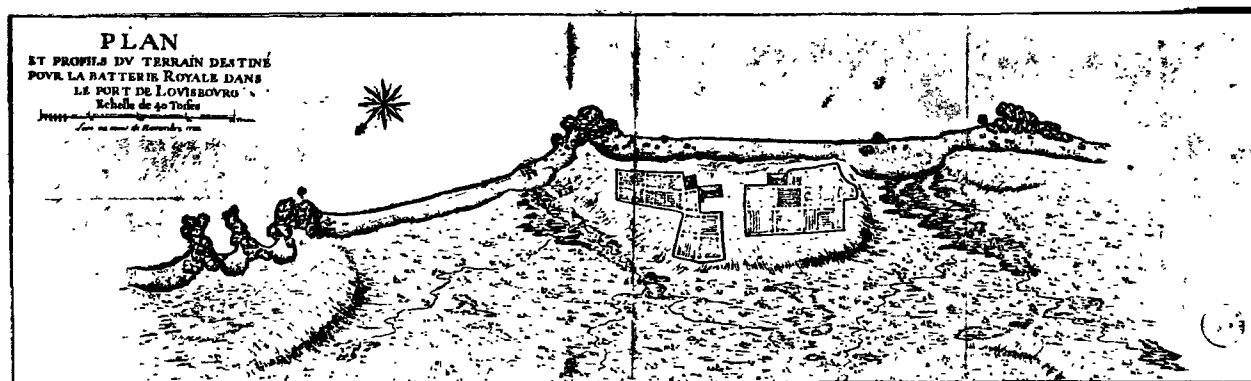
Plan to show work done at Louisbourg in 1720

(Vol. I, p.35, note 55)



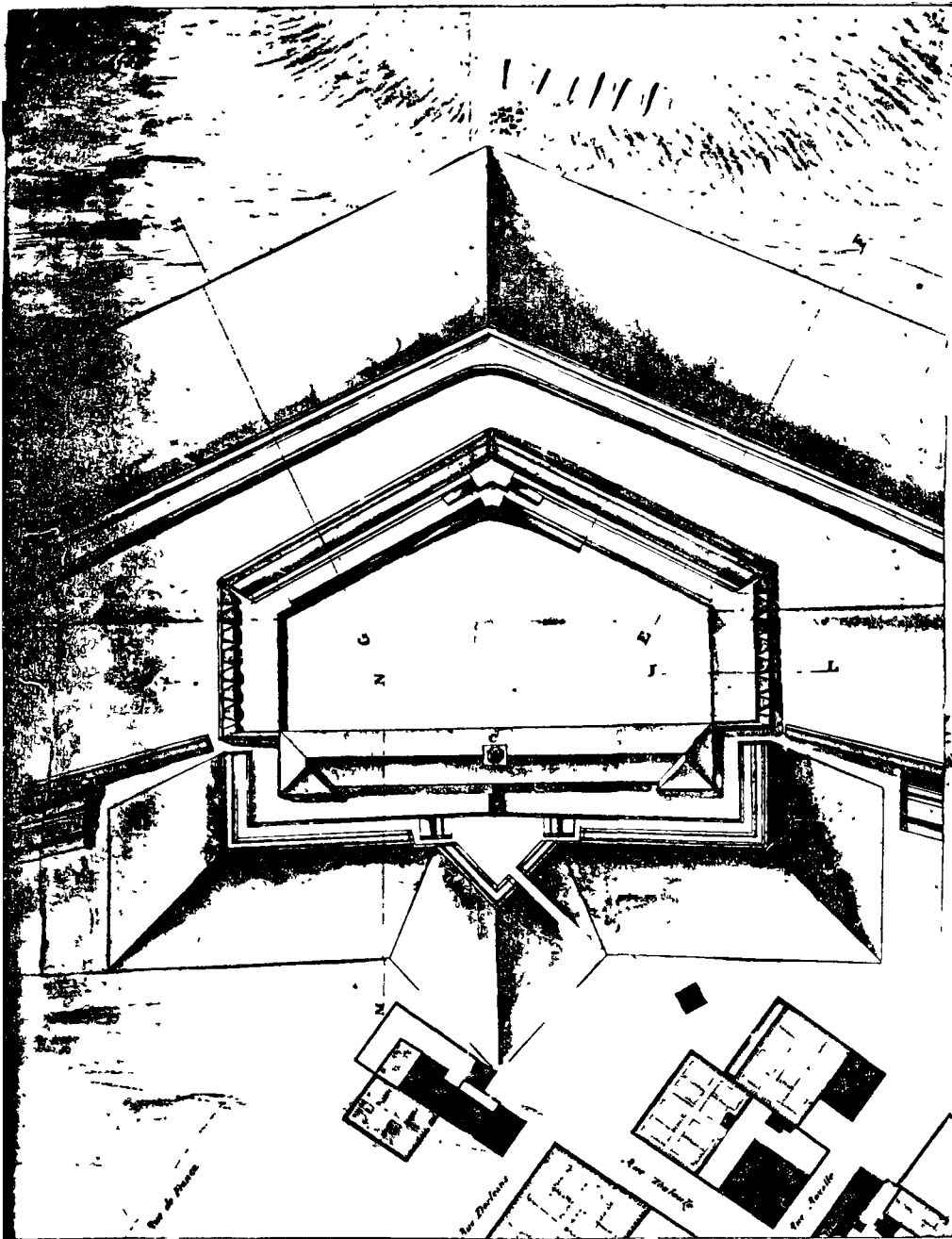
Plan of Louisbourg, ca. 1722

(Vol. I, p.35, note 56)



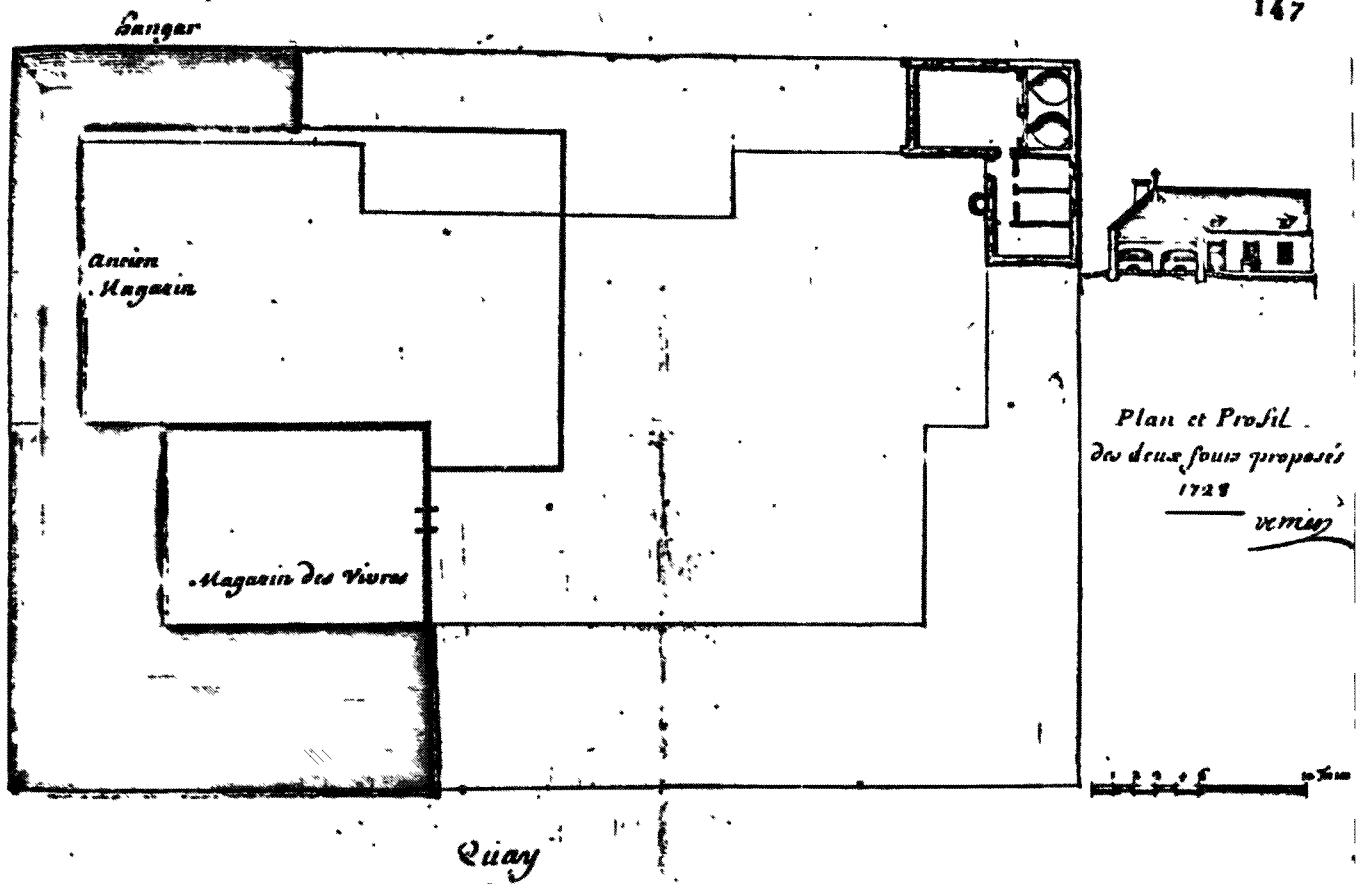
Site of the Royal Battery, Louisbourg, in 1722

(Vol. I, p.37, note 62)



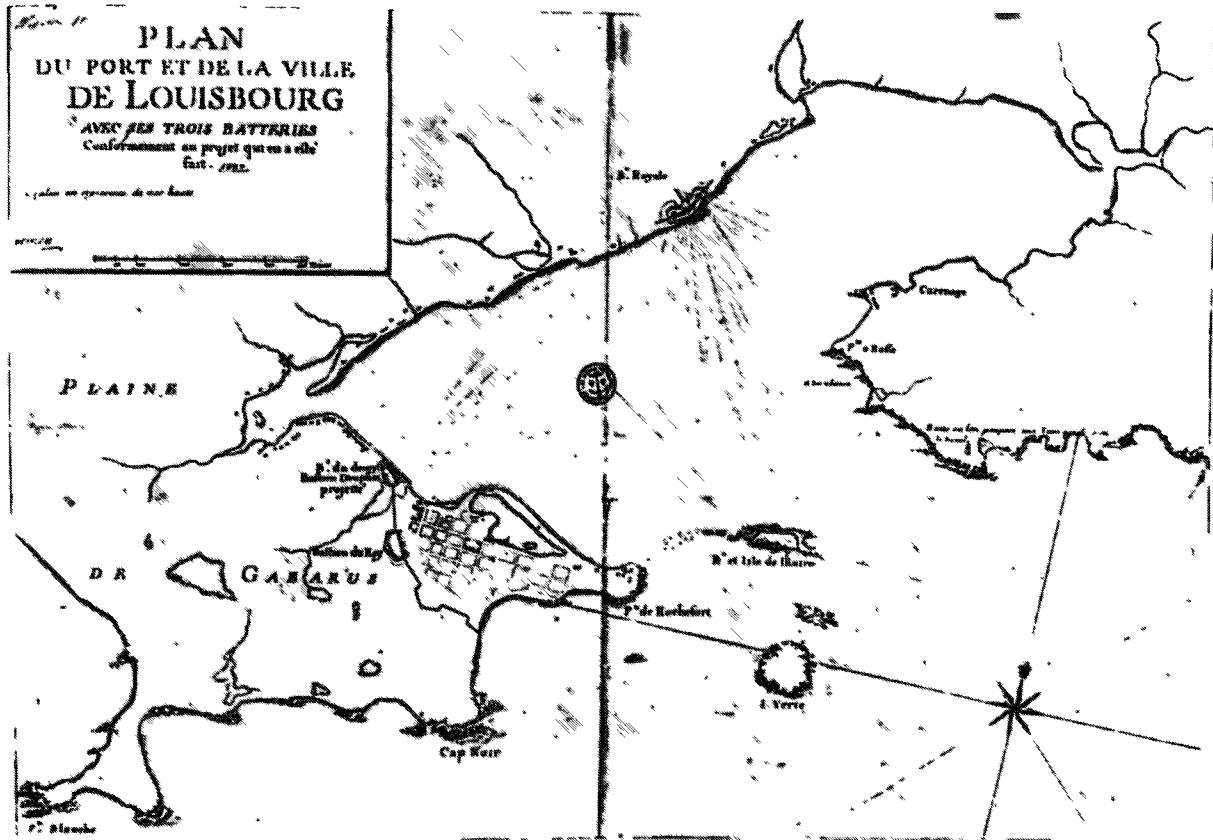
King's Bastion, Louisbourg: work finished in 1725

(Vol. I, p.38, note 73)



Plan of Ovens, Louisbourg Stores Building, 1728

(Vol. I, p.42, note 85)



Harbour Defences of Louisbourg, 1727

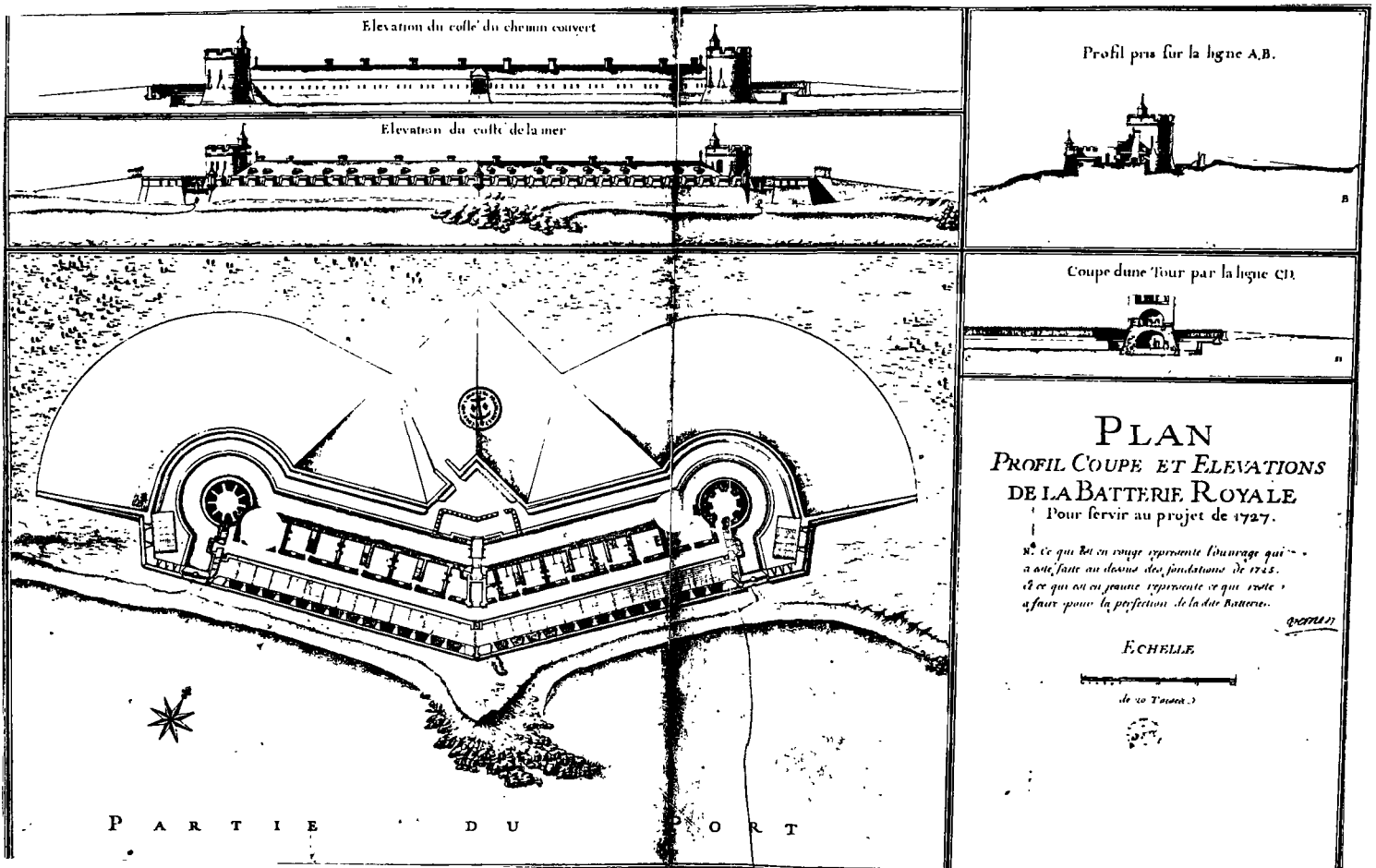
(Vol. I, p.44, note 95)

72-2000-152



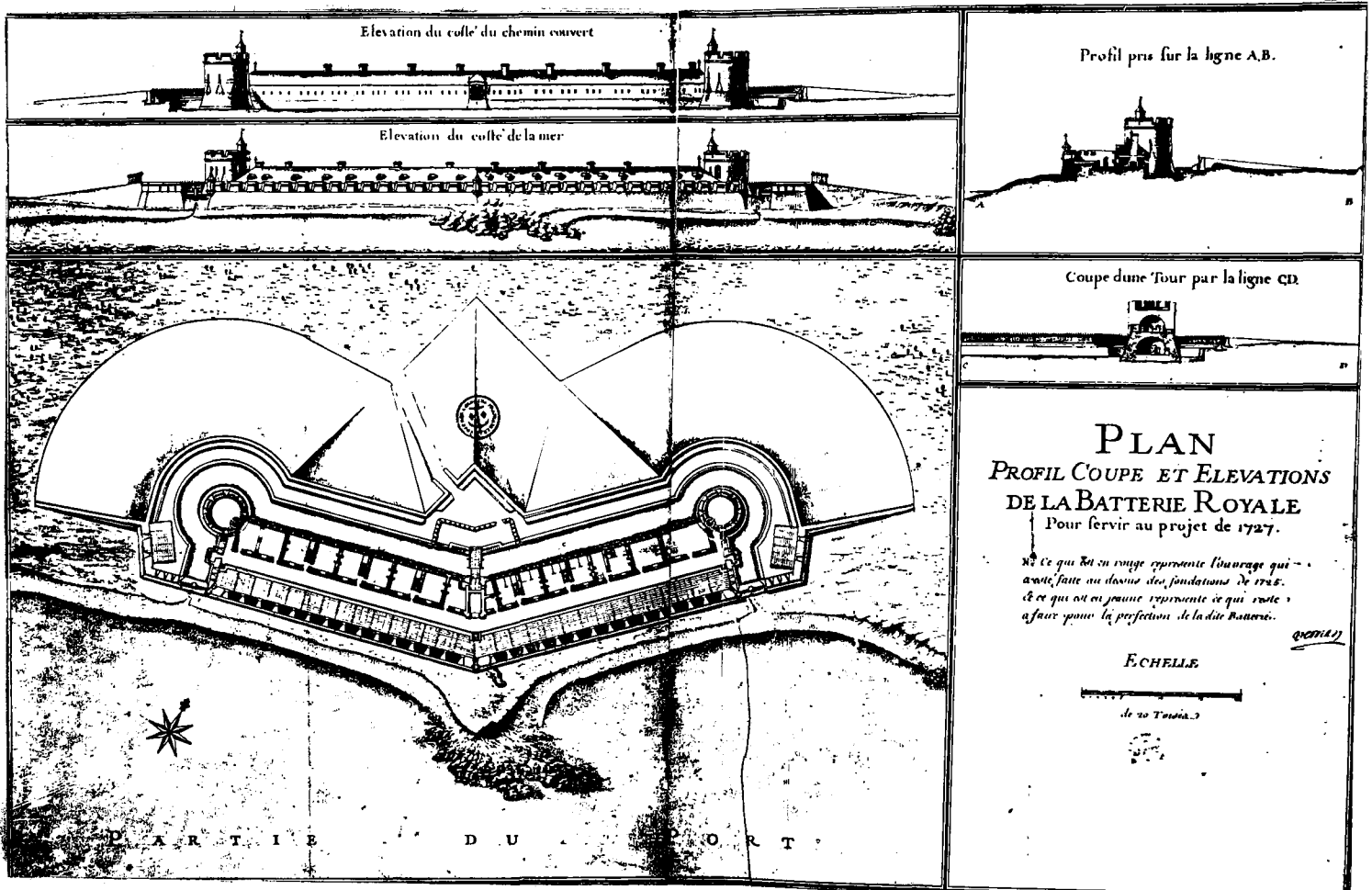
Louisbourg: Royal Battery, 1725
(Vol. I, p.44, note 96)

28(a)



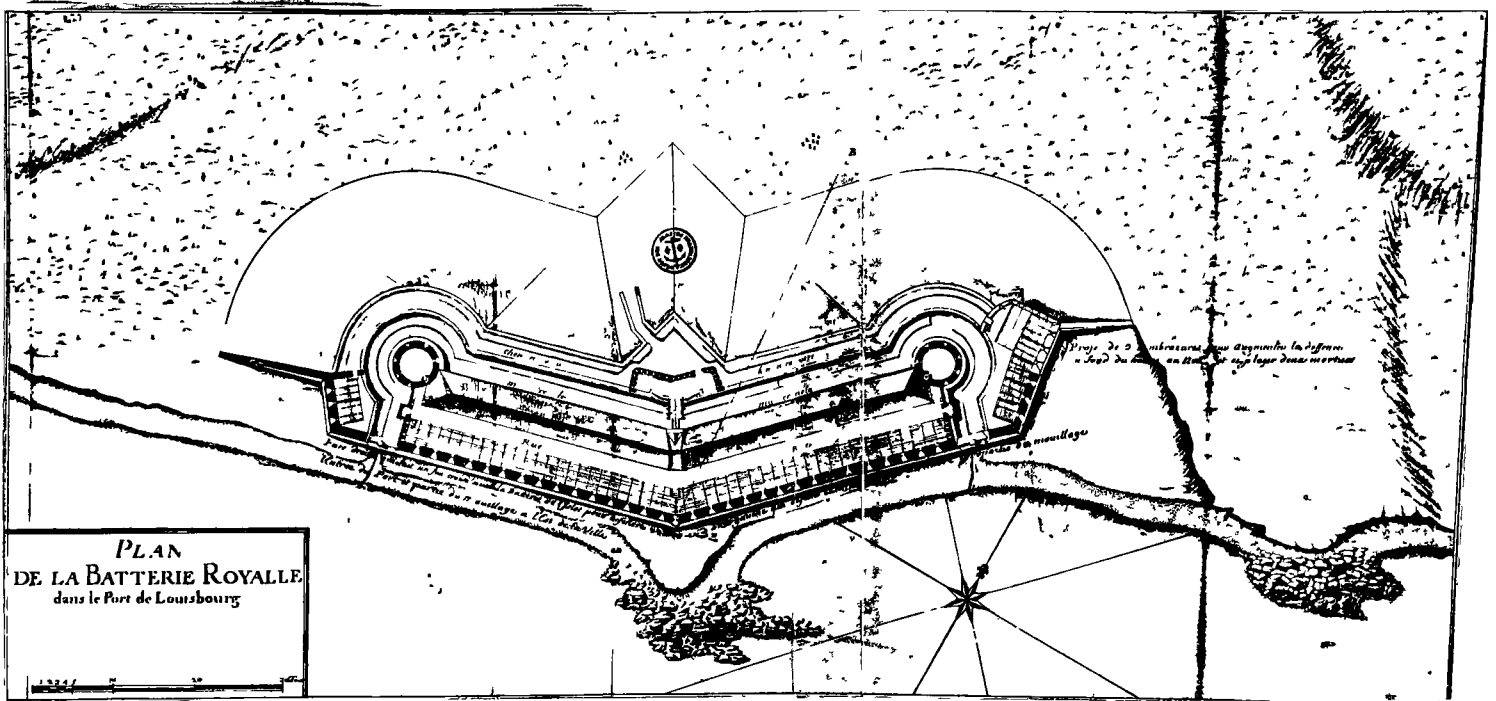
Louisbourg: Royal Battery, 1726

(Vol. I, p.45, note 97)



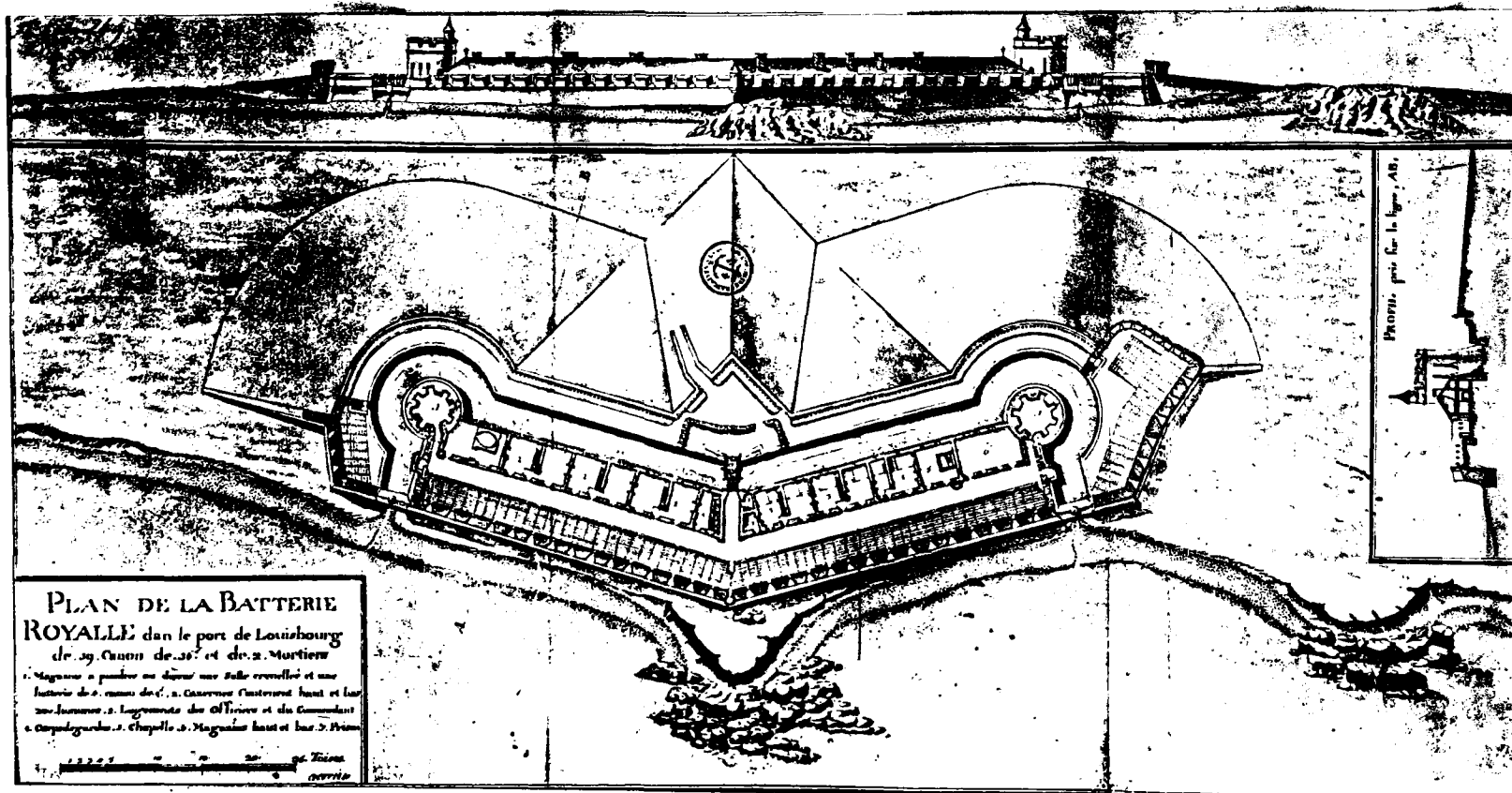
Louisbourg: Royal Battery, plans for 1727

(Vol. I, p.45, note 97)



Louisbourg: Royal Battery, 1728

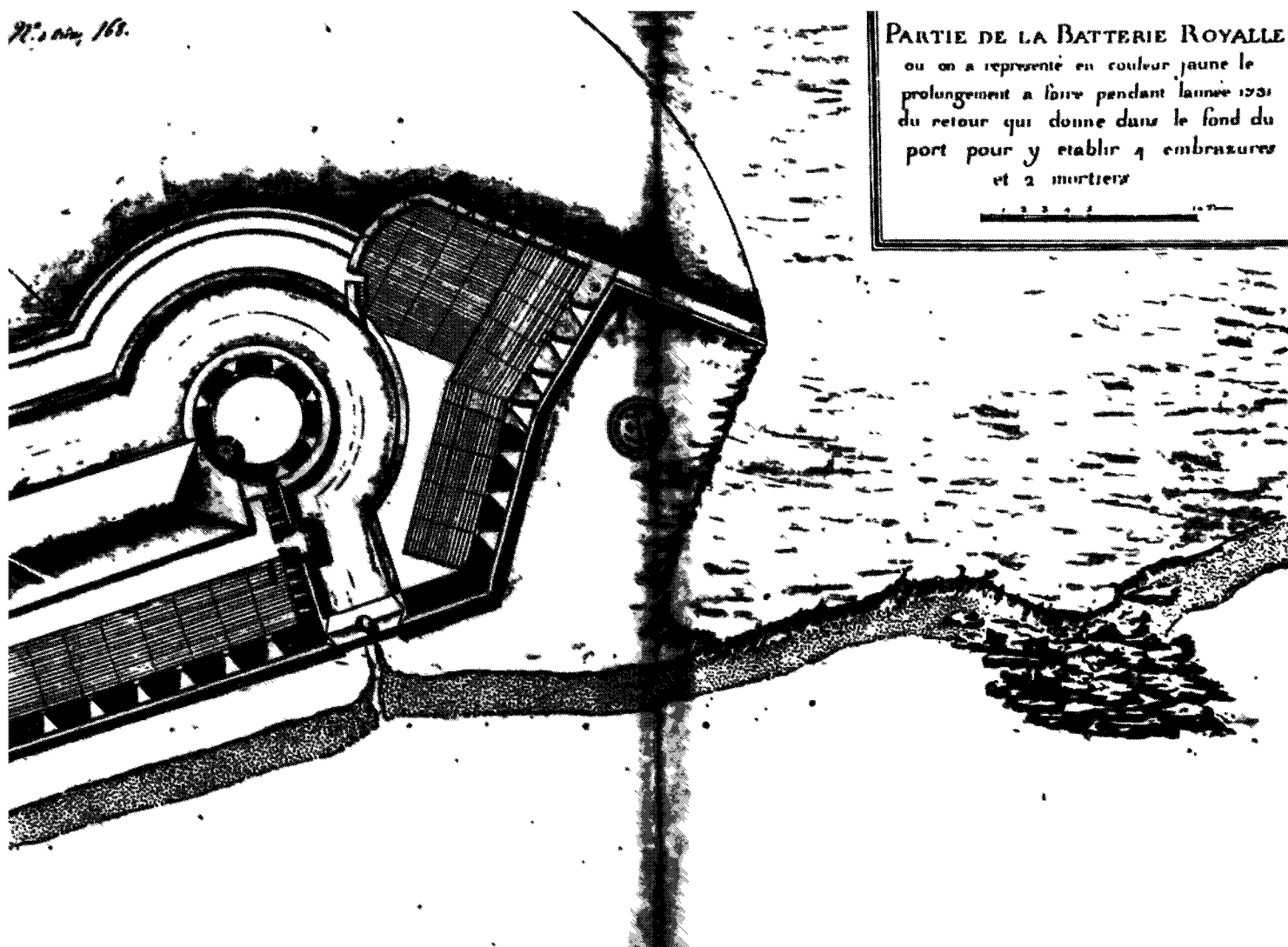
(Vol. I, p.46, note 100)



Louisbourg: Royal Battery, [1727]

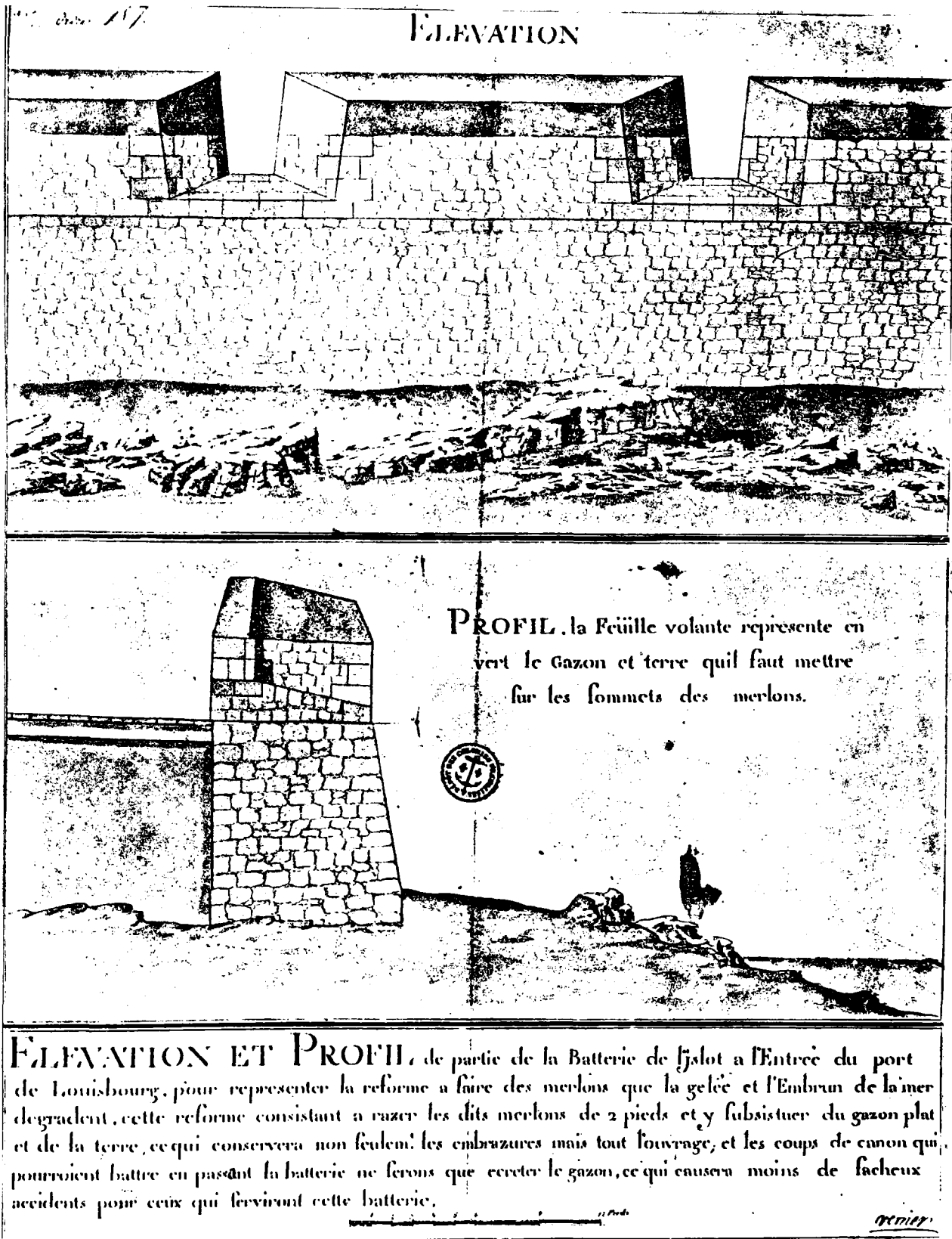
(Vol. I, p.46, note 100)

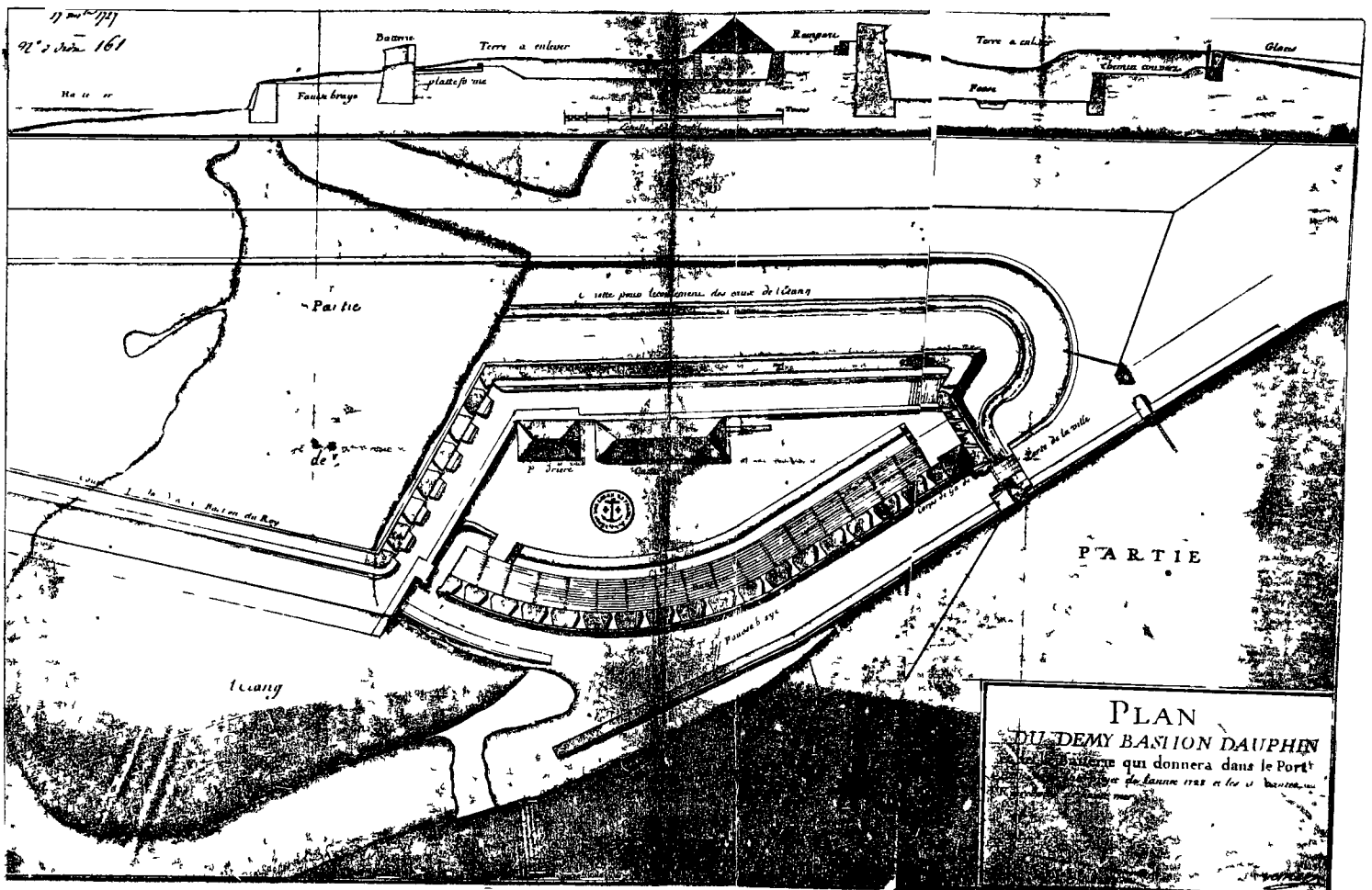
N° 168.



Louisbourg: Royal Battery, 1730

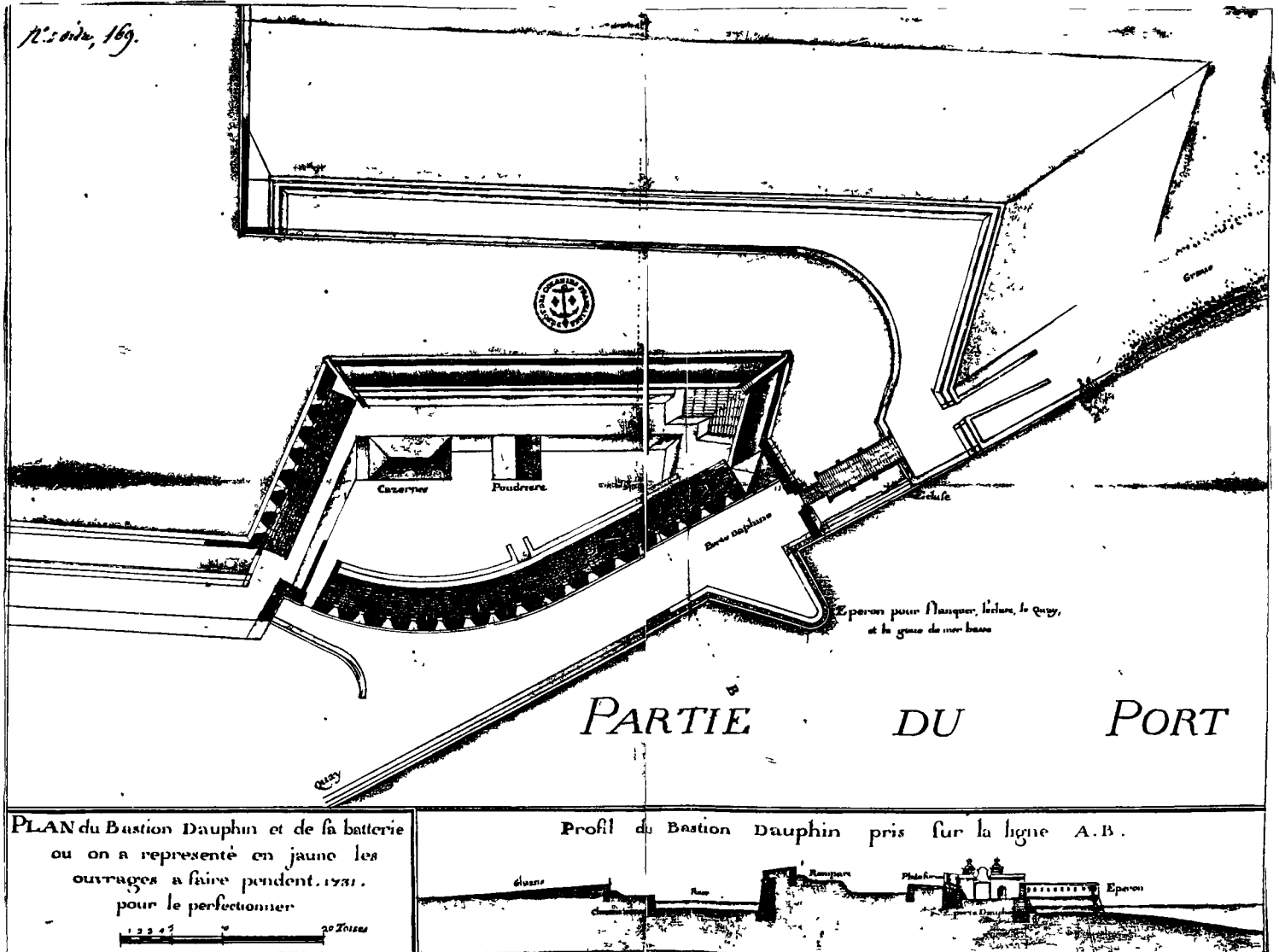
(Vol. I, p.46, note 100)





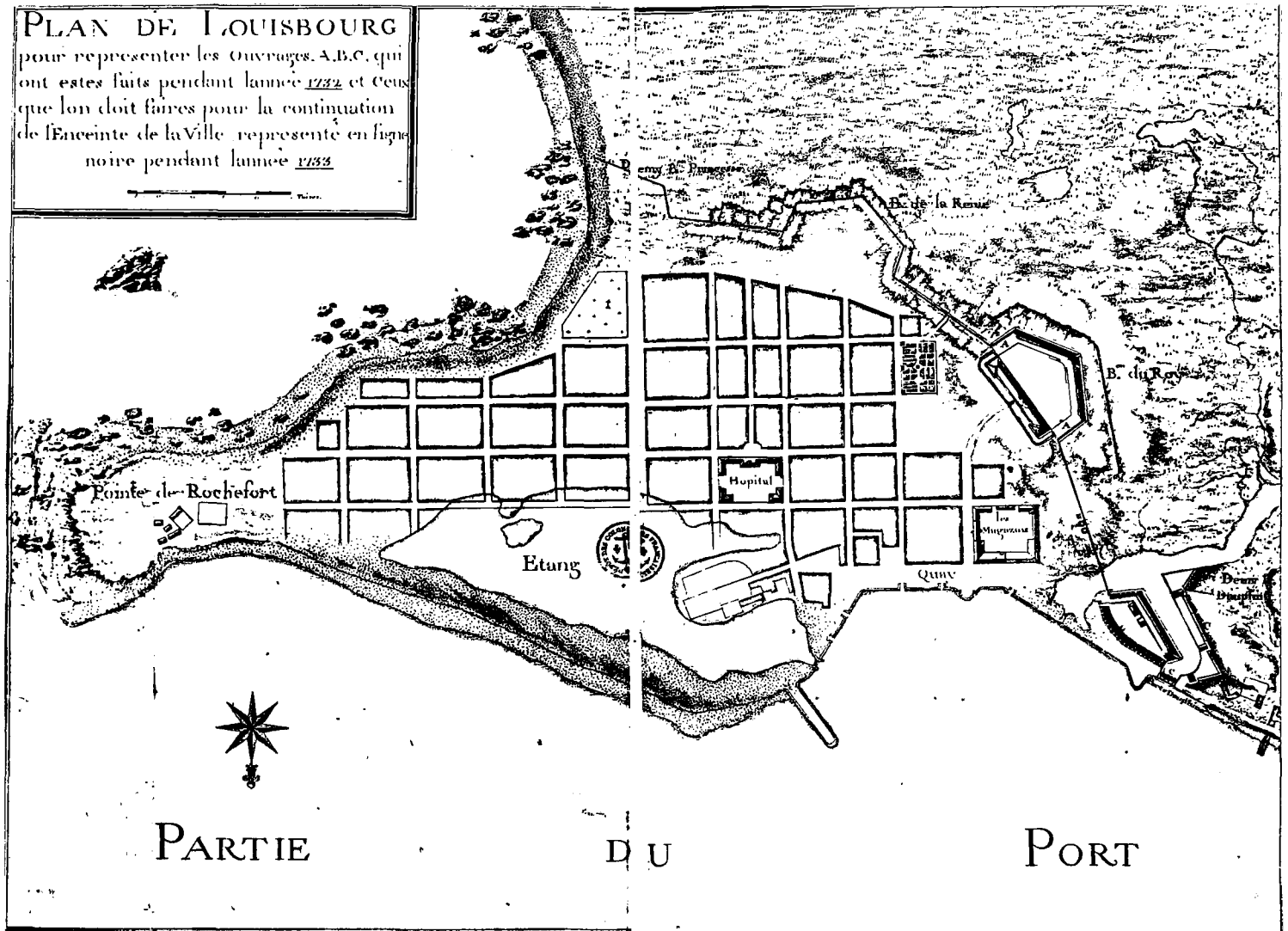
Louisbourg: Dauphin Demi-bastion, 1727

(Vol. I, p.50, note 117)



Louisbourg: Dauphin Demi-bastion, 1730

(Vol. I, p.50, note 117)

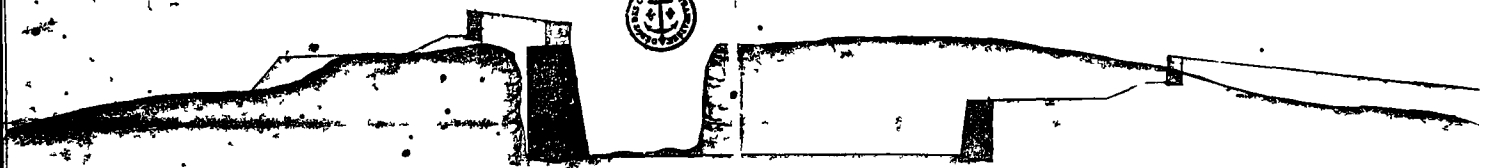


Louisbourg: West Front, 1732

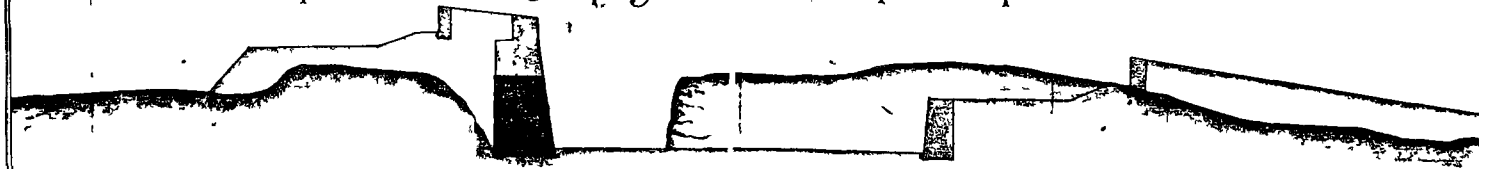
(Vol. I, p.55, note 134)

N. 173.

PROFIL pris sur la ligne .K.L. de la face droite
du Bastion de la Reine pour représenter en rouge la
maçonnerie qui a esté faite pendant l'Année 1732 et la couleur
jaune représente l'ouvrage qui y reste à faire
pour sa perfection

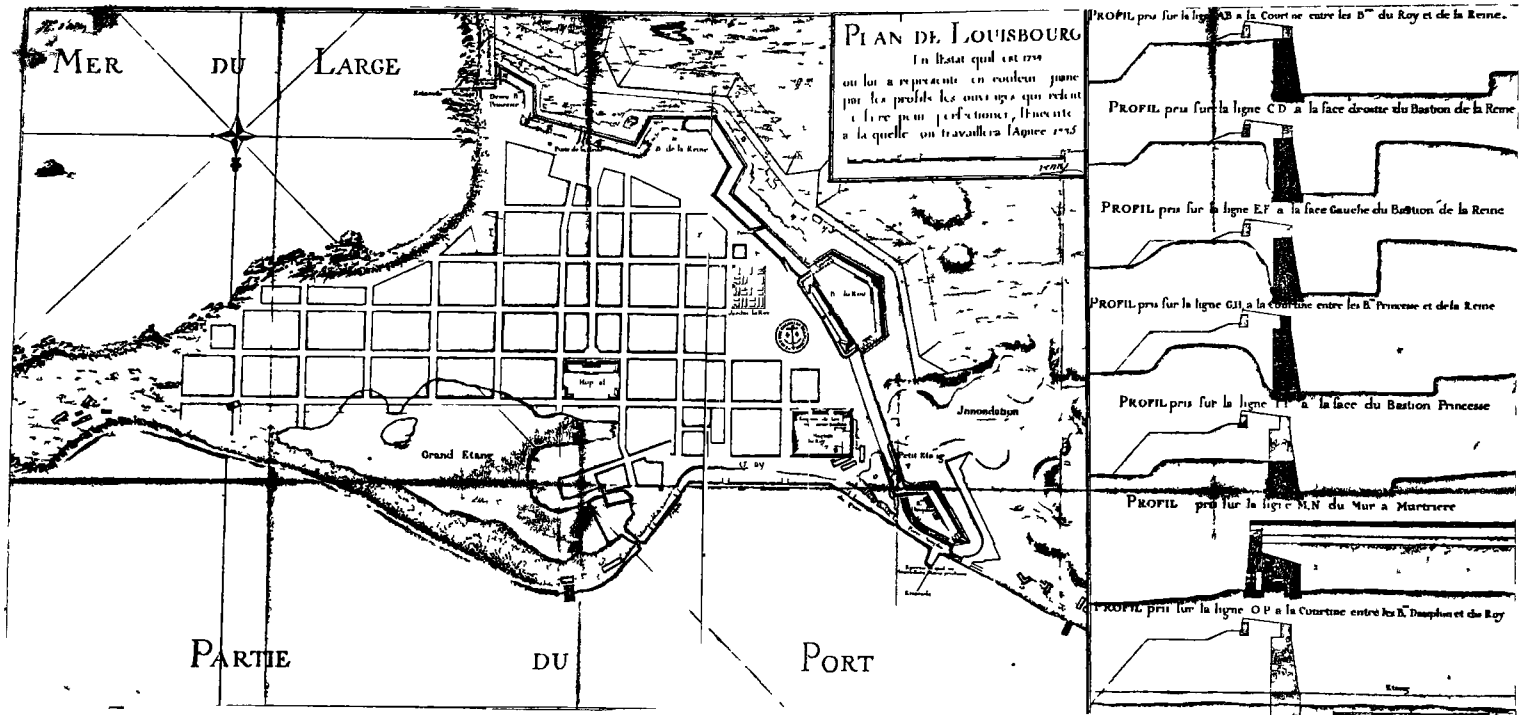


PROFIL pris sur la ligne .M.N. de la Courtine
entre les Bastions du Roy et de la Reine pour représenter en rouge la
maçonnerie qui a esté faite pendant l'année 1732 et la couleur jaune
représente l'ouvrage qui y reste à faire pour sa perfection



Louisbourg: Sections, West Front, 1732

(Vol. I, p.55, note 134)



Louisbourg: West Front, 1734

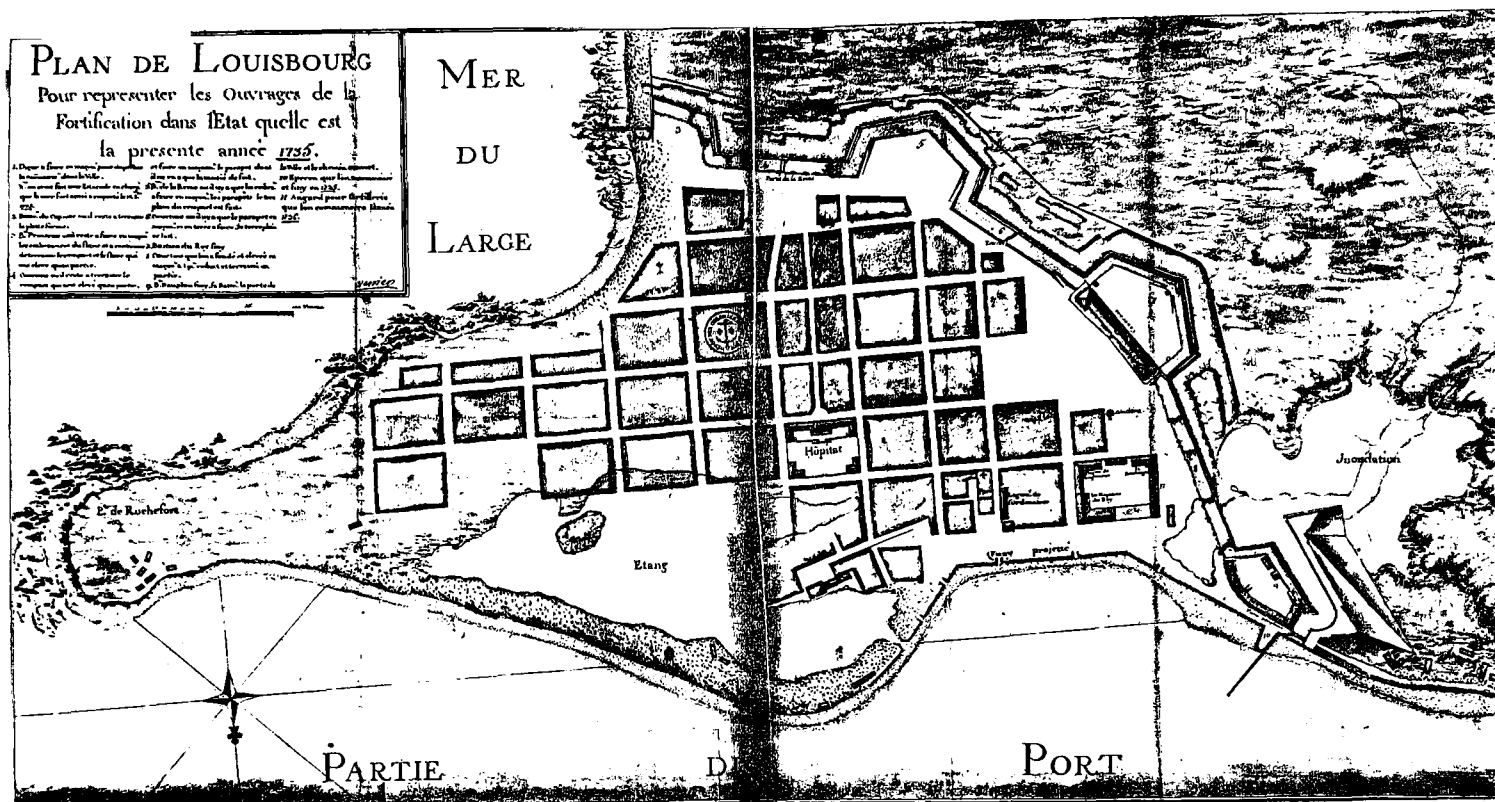
(Vol. I, p.56, note 137)

PLAN DU PORT
DE LOUISBOURG
DAN L'ISLE ROYALE
Représenté de basse mer



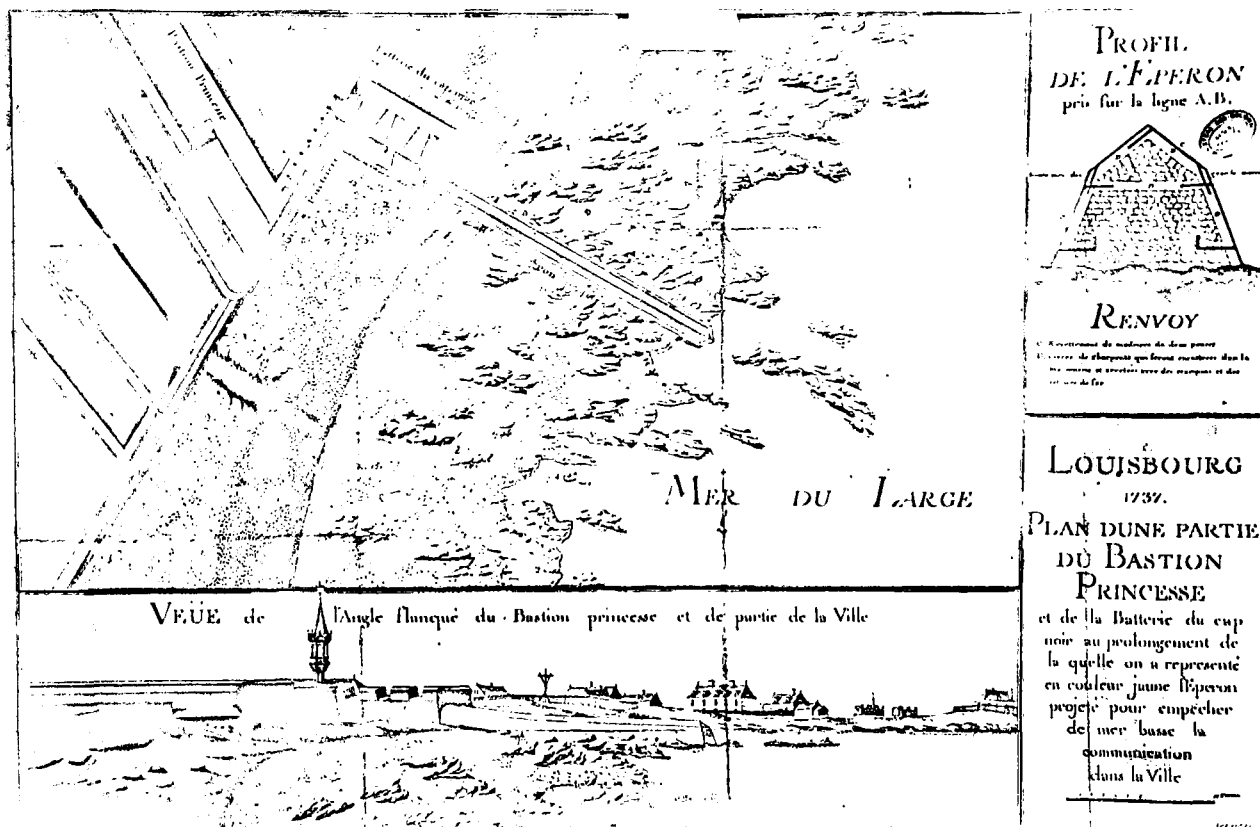
Louisbourg Harbour at Low Tide, 1735

(Vol. I, p.56, note 138)



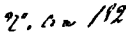
Louisbourg: West Front, 1735

(Vol. I, p.56, note 138)



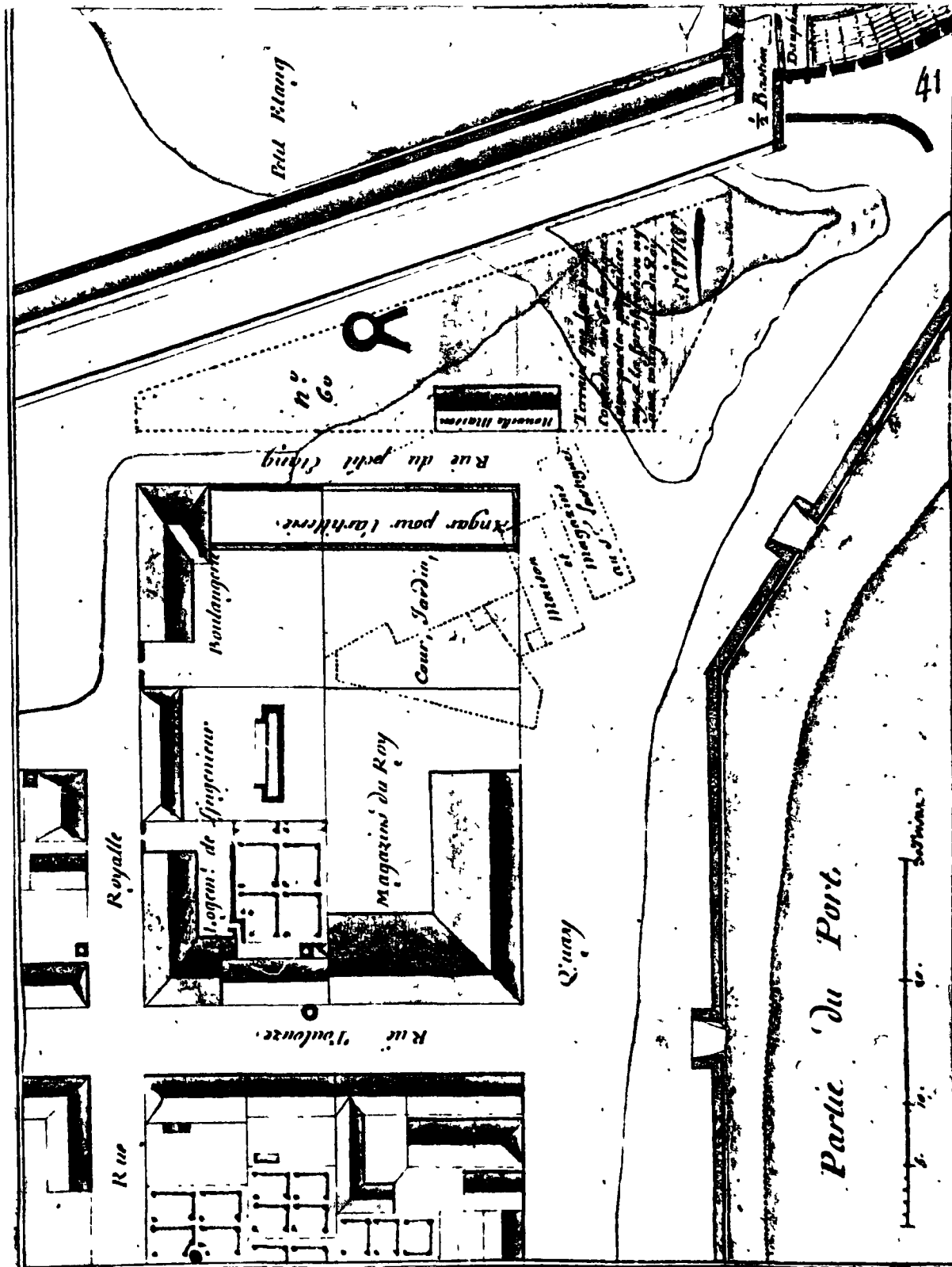
Louisbourg: Princess Demi-bastion, 1737

(Vol. I, p.57, note 139)



Louisbourg: Plan of Town and Harbour, 1734

(Vol. I, p.68, note 193)

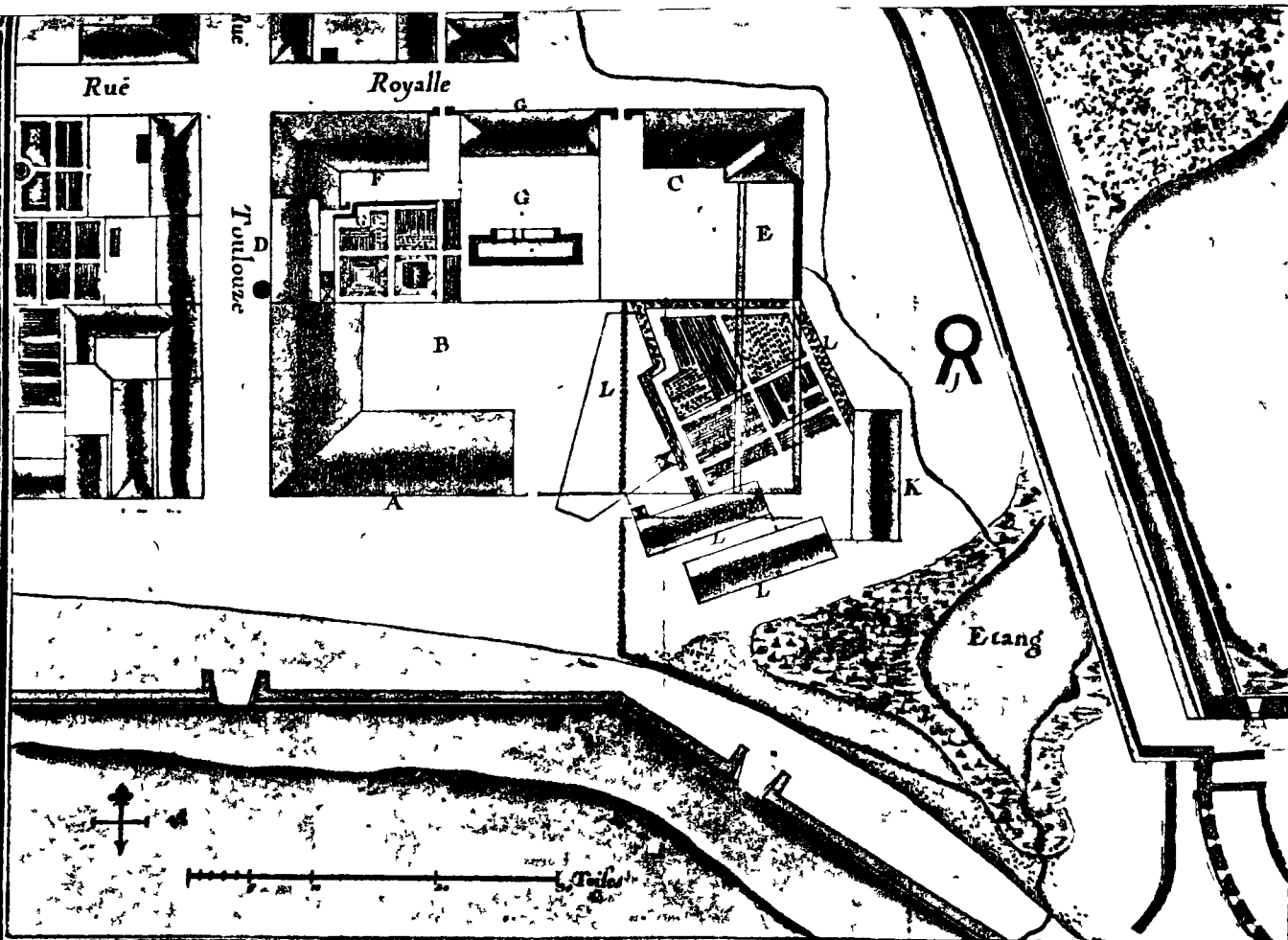


Louisbourg: town planning, 1735 (Vol. I, p.69, note 195)

PARTIE

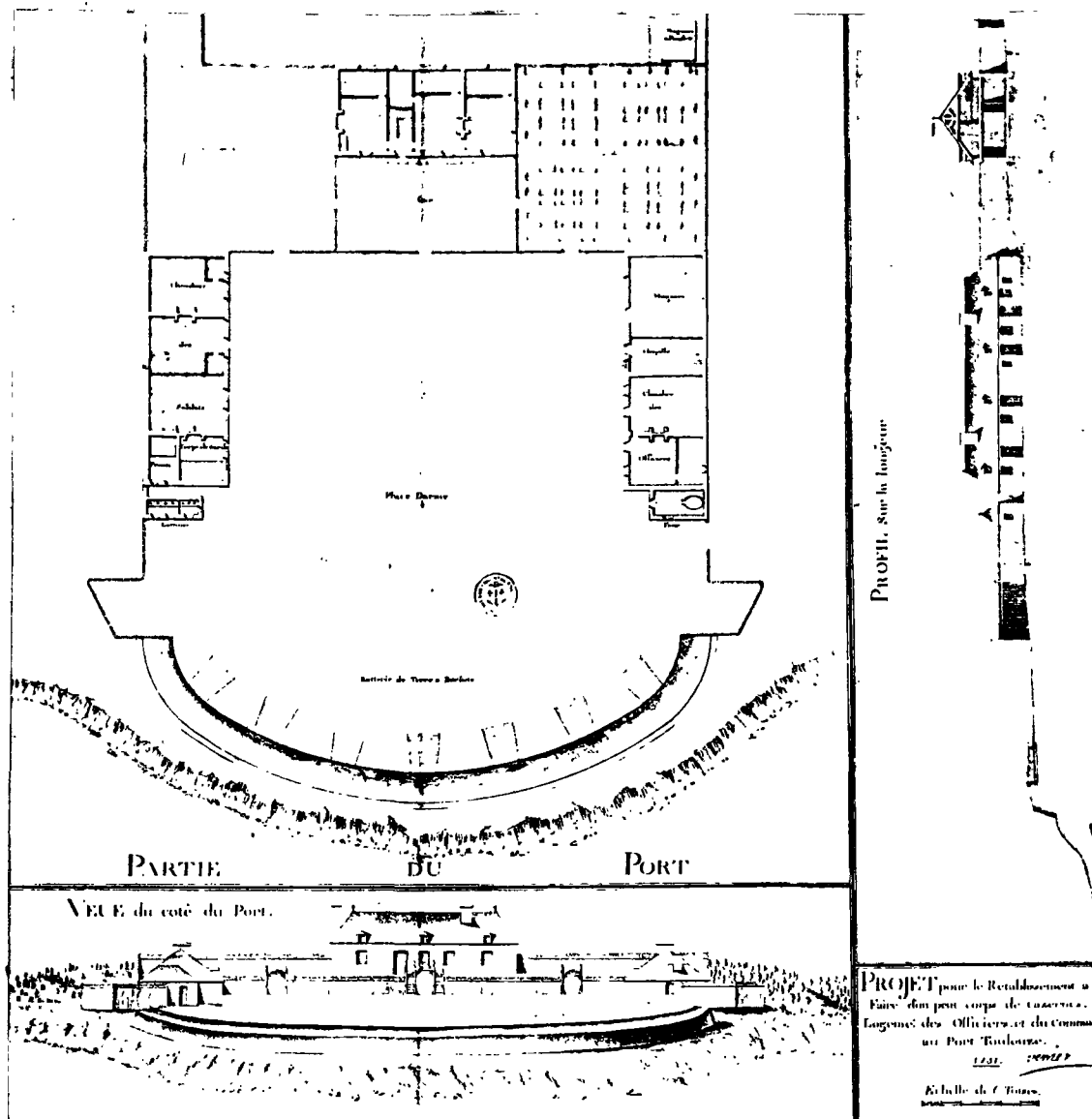
DE LA VILLE DE LOUISBOURG

- A* magasin du Roy
- B* cour du d' magasin
- C* boulangerie & cour
- D* hangard d'artillerie
- E* terrain destine pour un hangard d'artillerie
- F* maison de l'ingenieur
- G* magasin, Jardin & Cour de l'ingenieur
- H* ballin
- J* four a chaux
- K* maison neuve du s^r l'artigue
- L* maisons cour & Jardin au meme



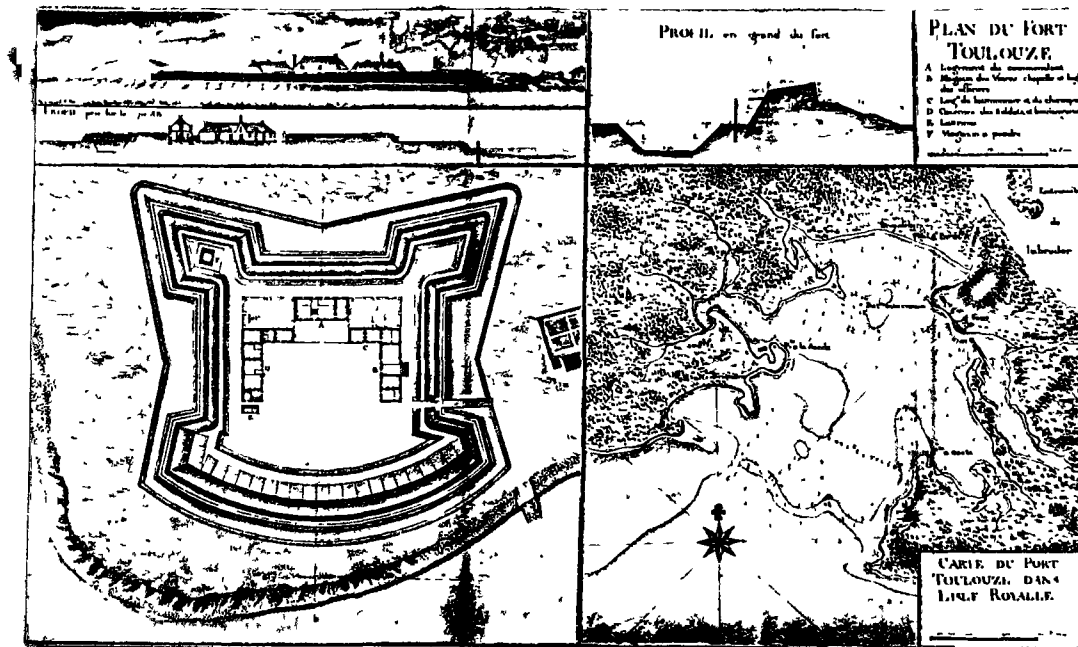
Louisbourg: town planning, 1735

(Vol. I, p.69, note 195)



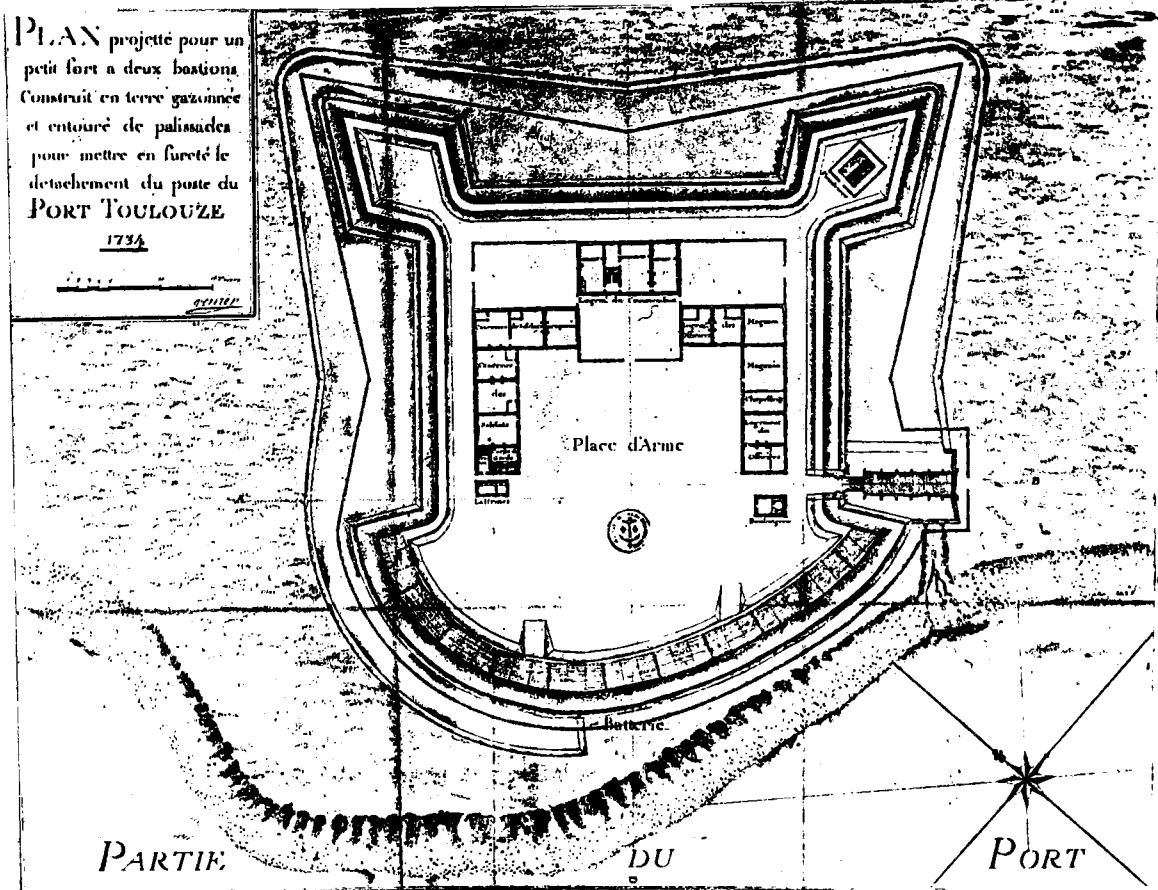
Port Toulouse: Barracks, 1731

(Vol. I, p.70, note 200)



Port Toulouse: Harbour and Fort, 1733

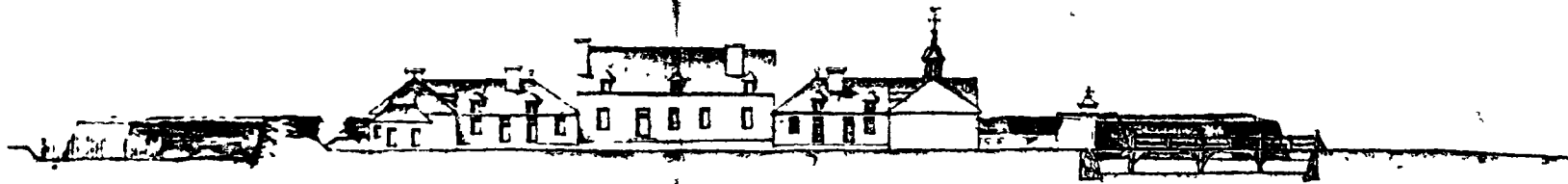
(Vol. I, pp.71-72, note 203)



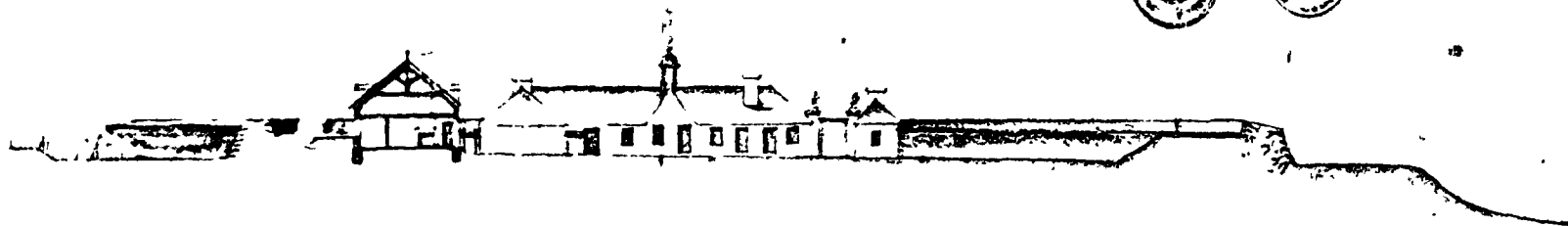
Port Toulouse: Fort, 1734

(Vol. I, p.73, note 205)

PROFIL pris sur la ligne A.B. du Fort projeté du PORT TOULOUZE. 1734.

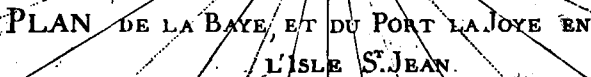


PROFIL pris sur la ligne C.D.



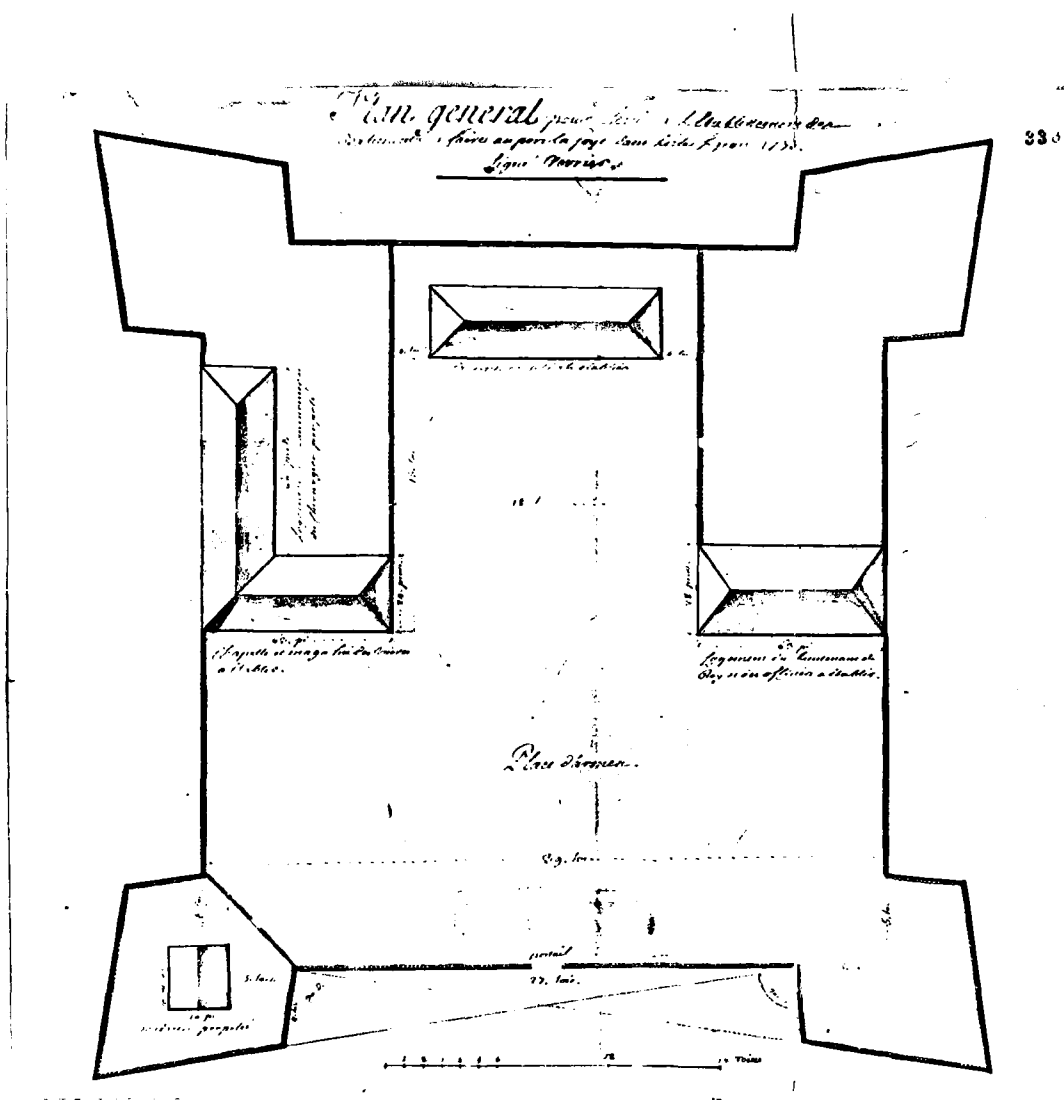
Port Toulouse: Sections through Fort, 1734

(Vol. I, p.73, note 205)



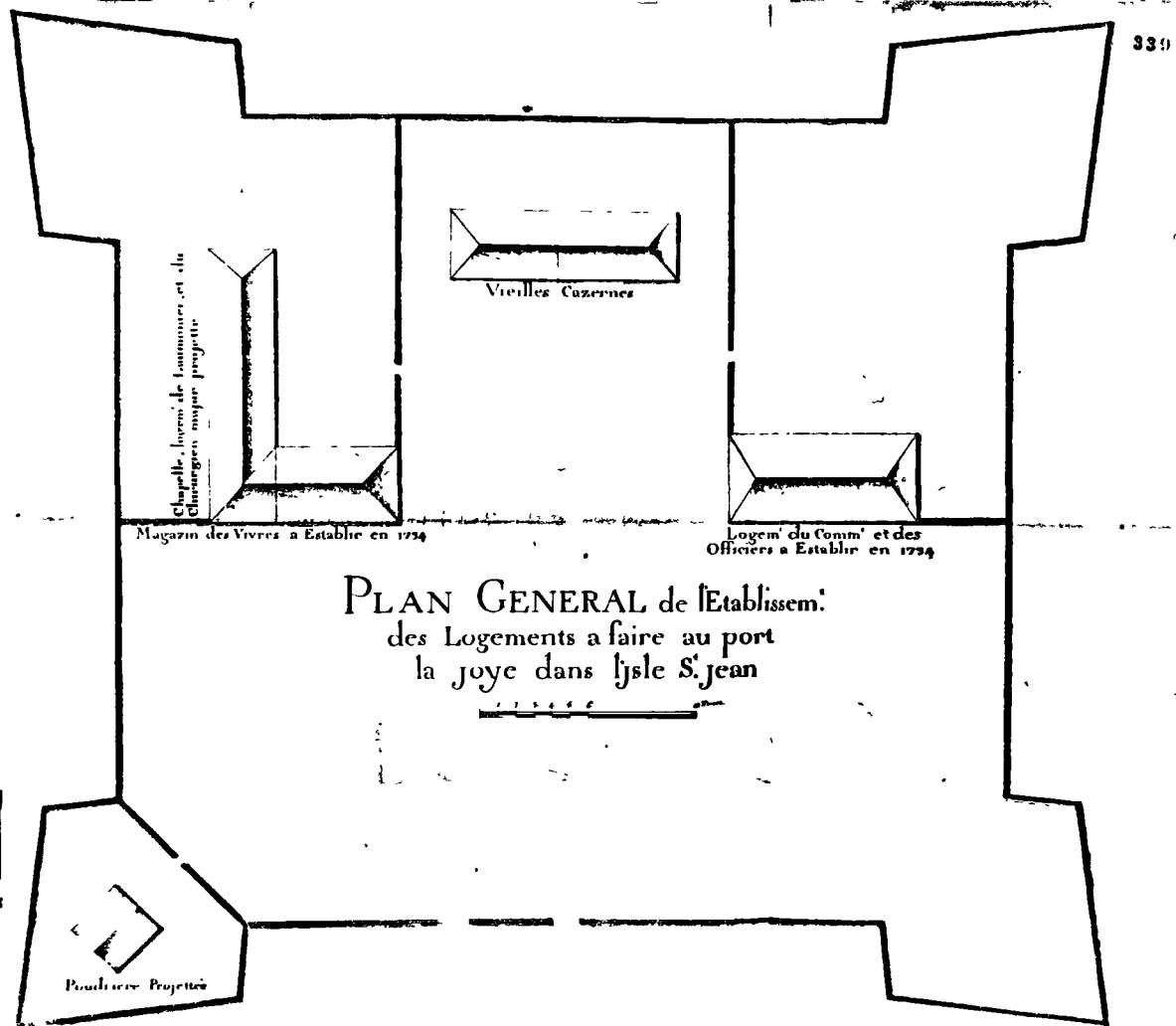
Port La Joie, Ile Saint-Jean

(Vol. I, p.73, note 207)



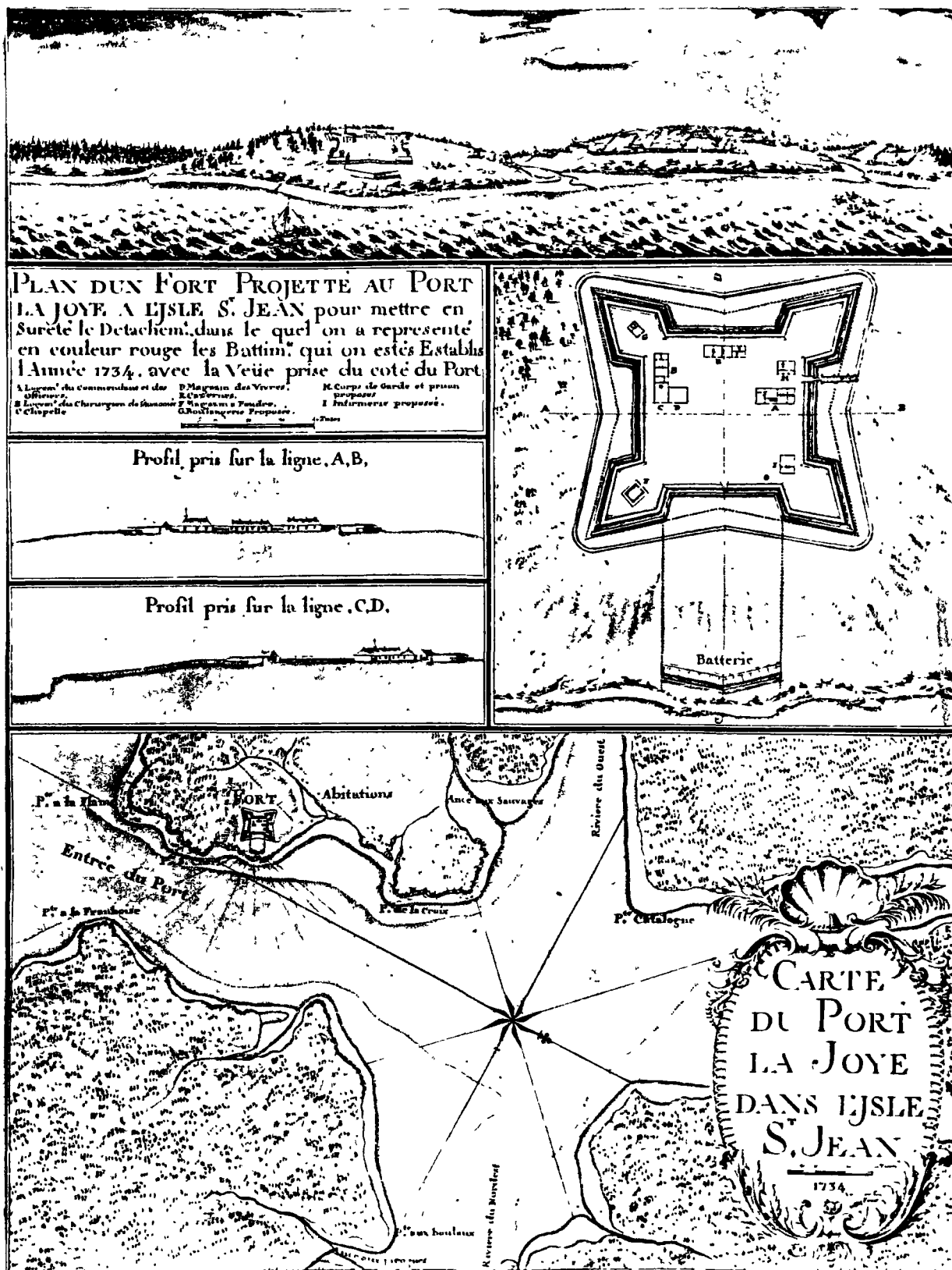
Port La Joie, Ile Saint-Jean: Plan, 1733

(Vol. I, p.74, note 210)

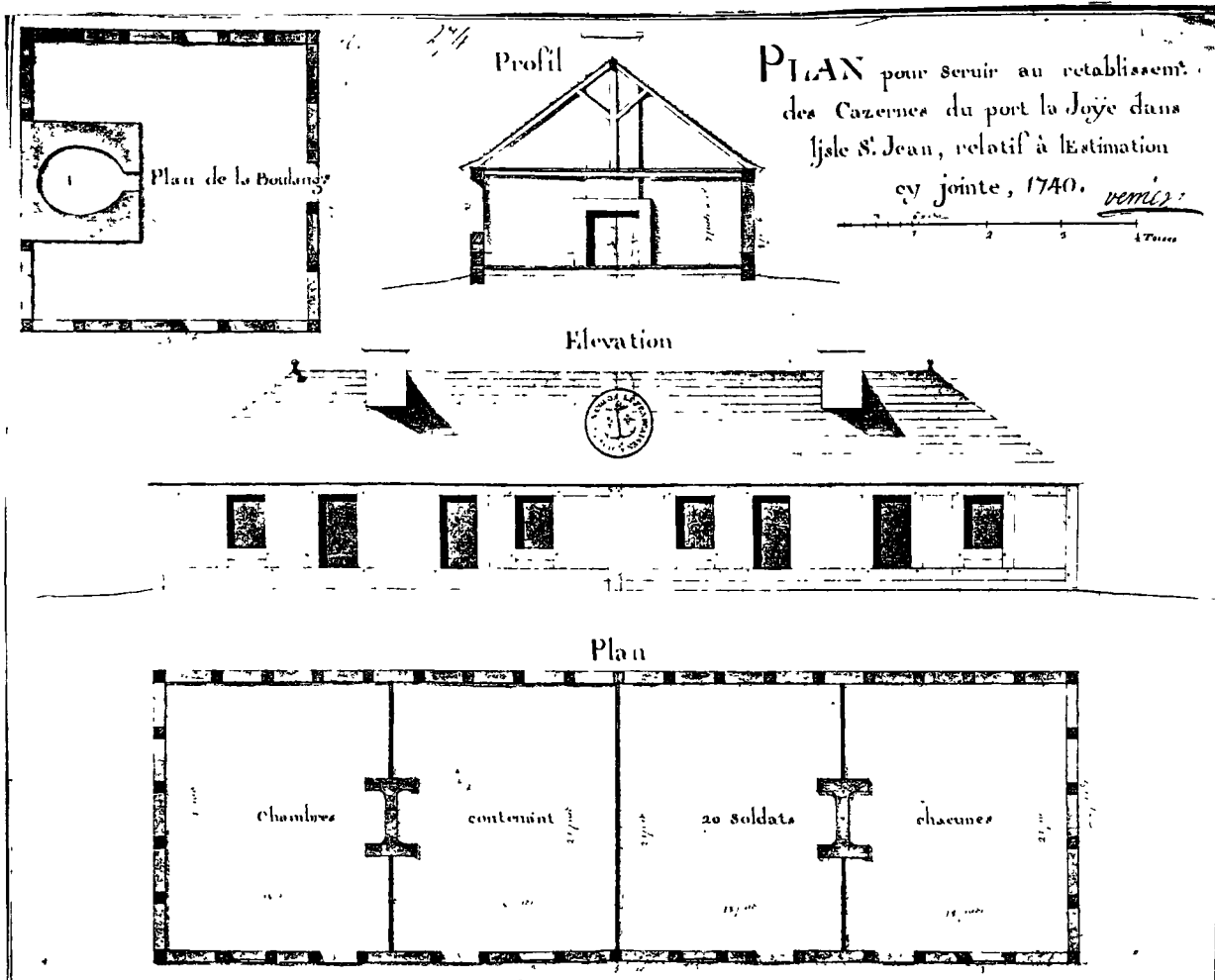


Port La Joie, Ile Saint-Jean: Quarters [1733]

(Vol. I, p.74, note 210)

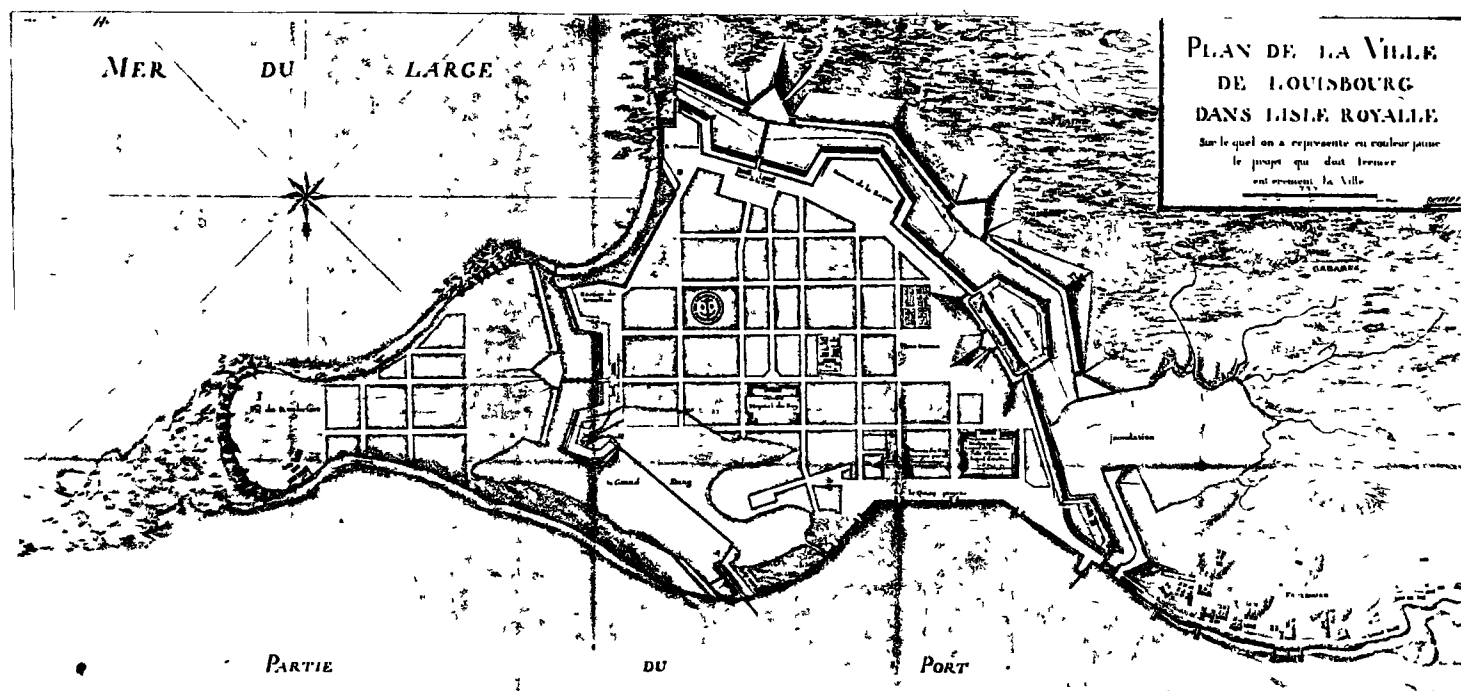


Port La Joie, Ile Saint-Jean: map, plan of fort, profiles and elevation, 1734 (Vol. I, p.75, note 212)



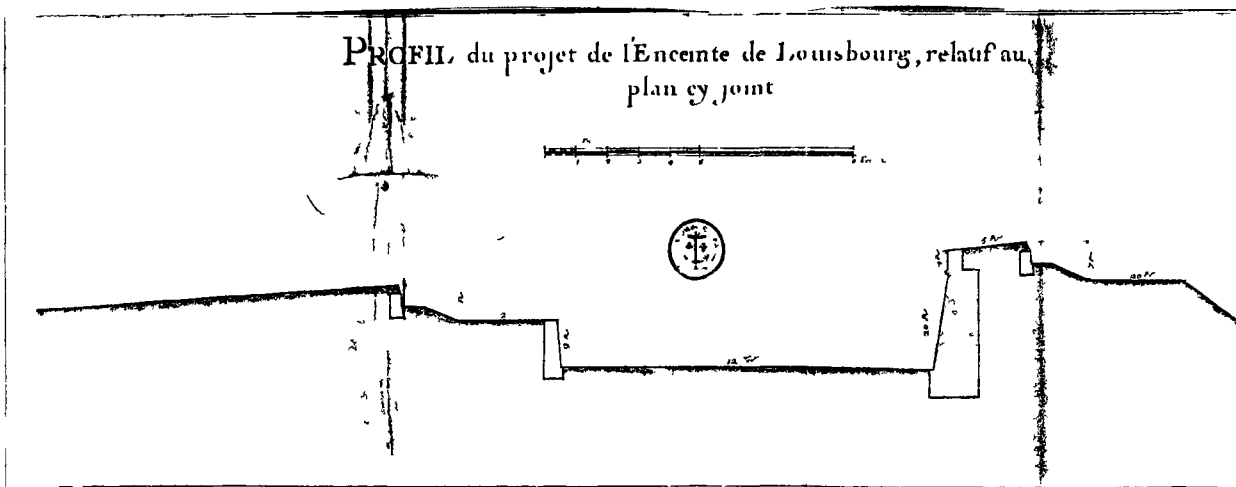
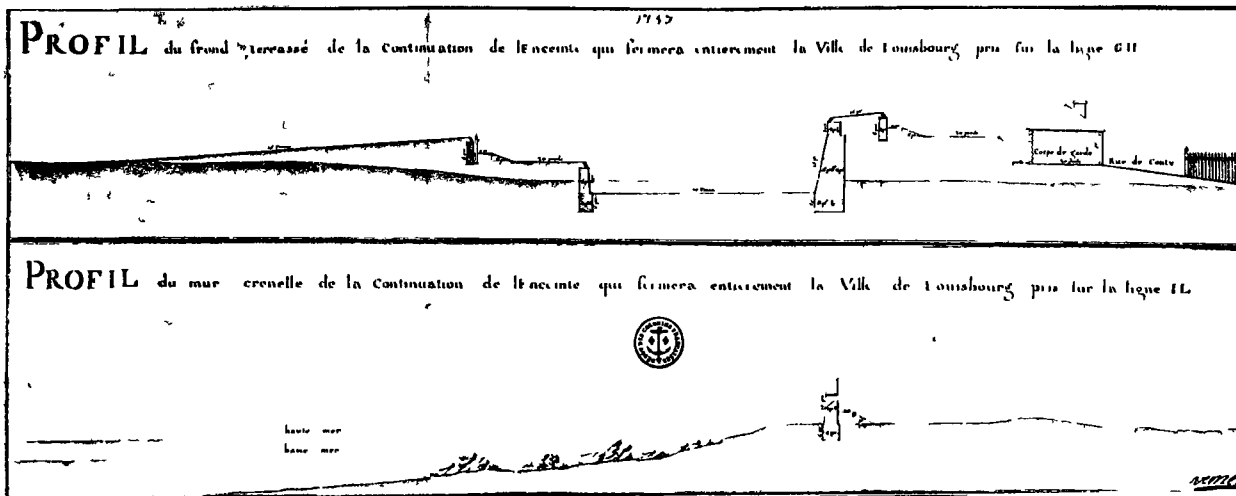
Port La Jolie, Ile Saint-Jean: Barracks, 1740

(Vol. I, p.76, note 215)



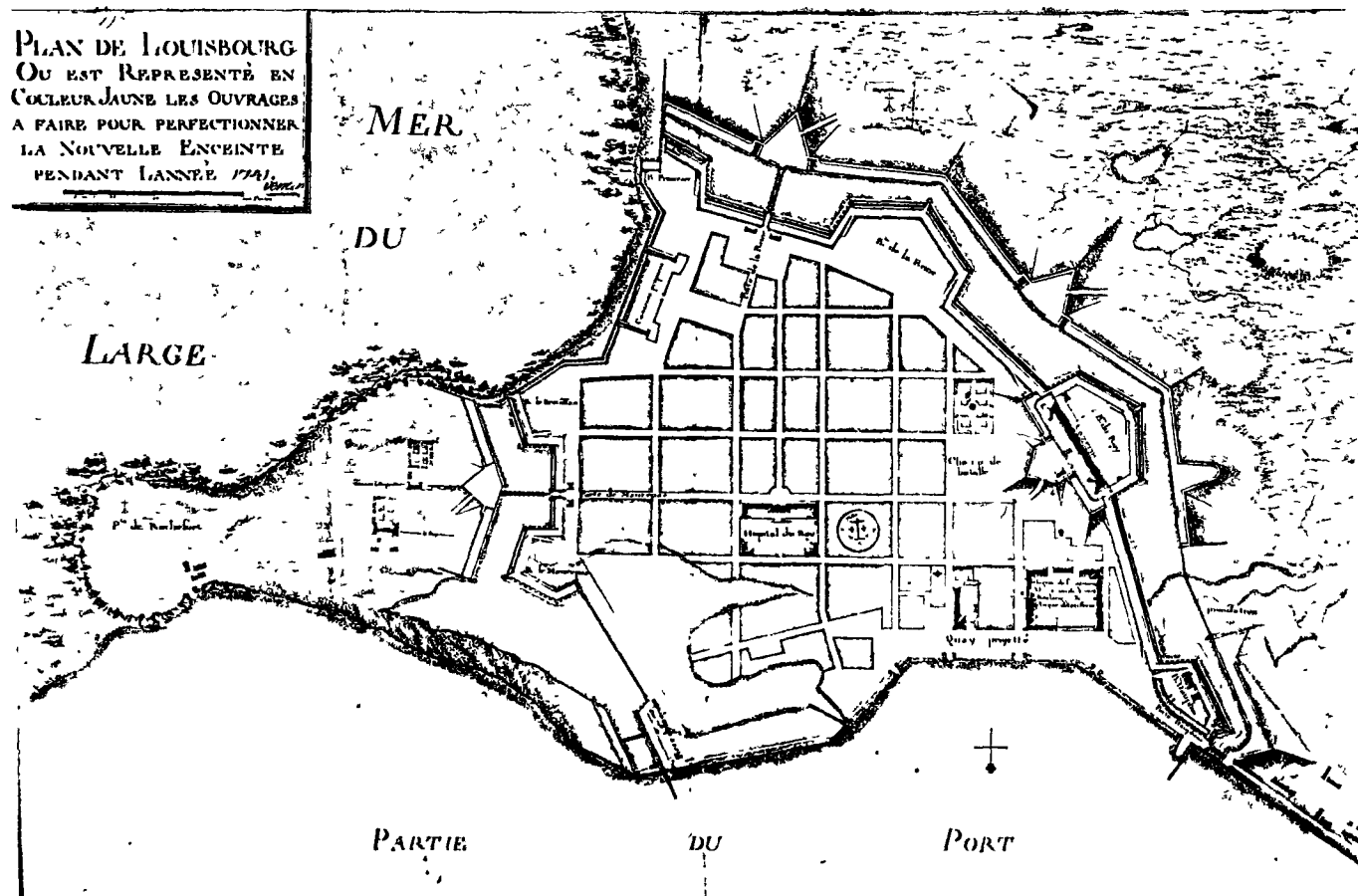
Louisbourg, showing plan for East Front, 1737

(Vol. I, p.78, note 221)



Louisbourg: Profiles of East Front, 1737

(Vol. I, p.78, note 221)



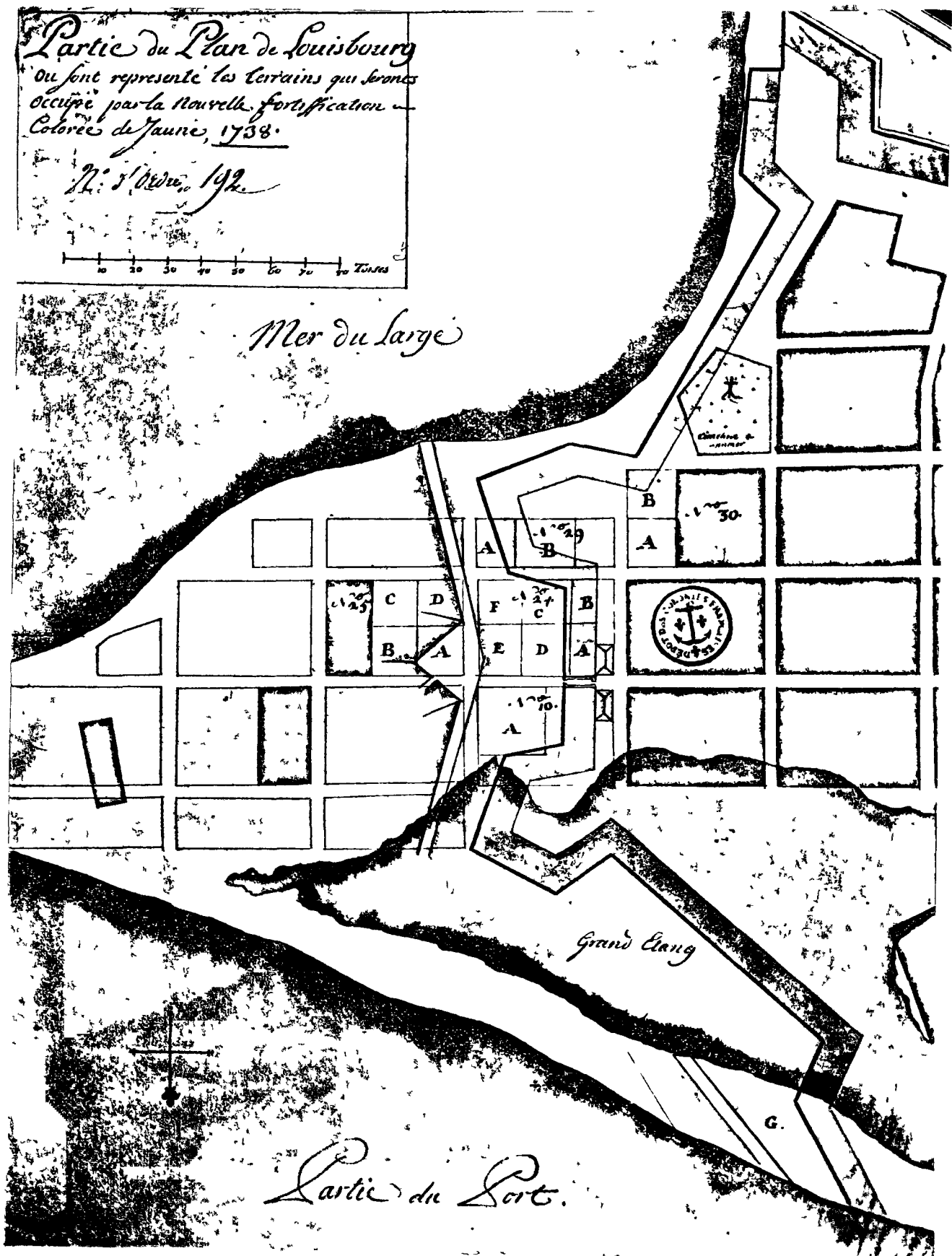
Louisbourg: plan showing work on East Front, 1740

(Vol. I, p.79, note 226)



Louisbourg: Work on East Front, 1742

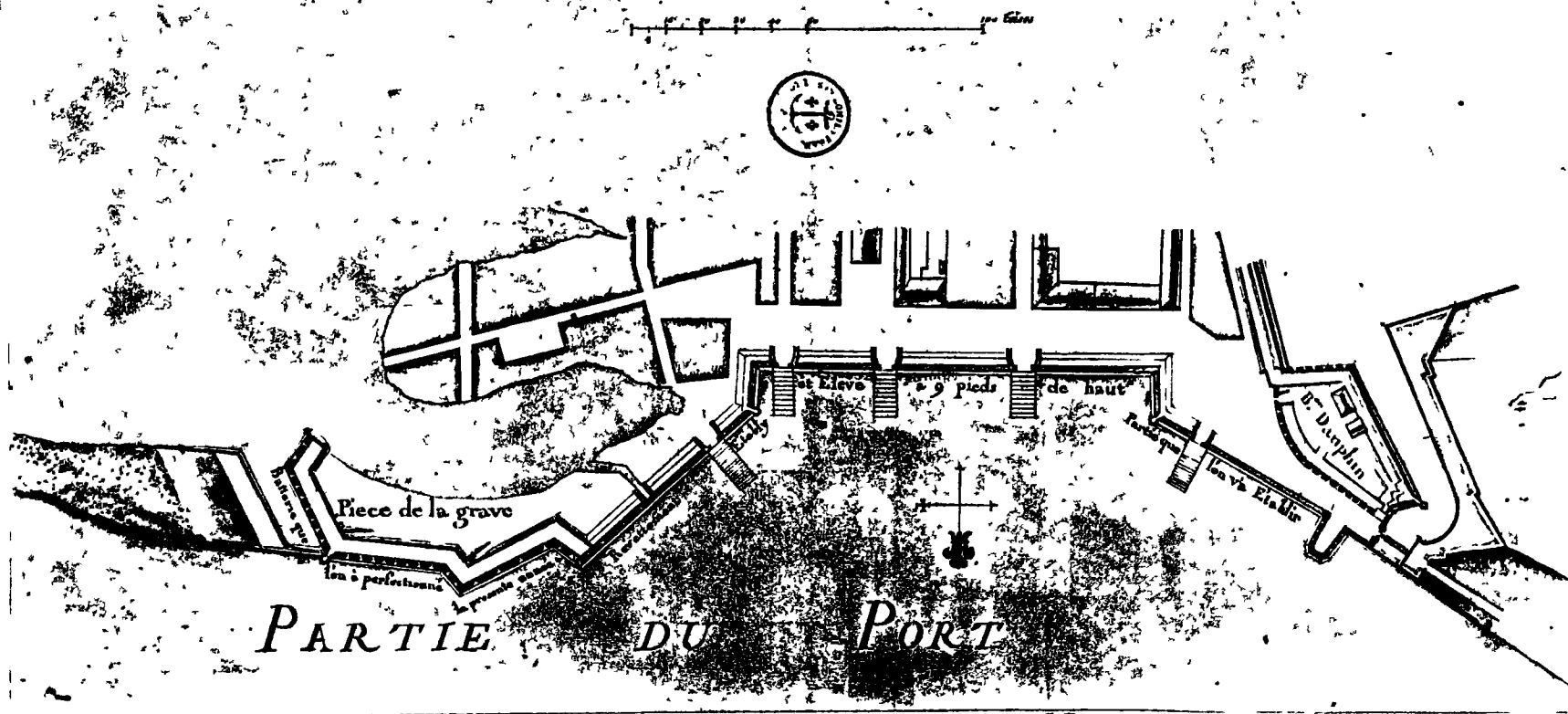
(Vol. I, p.79, note 226)



Louisbourg: properties in path of construction on the East Front, 1738
 (Vol. I, p.79, note 227)

16:00, 197.

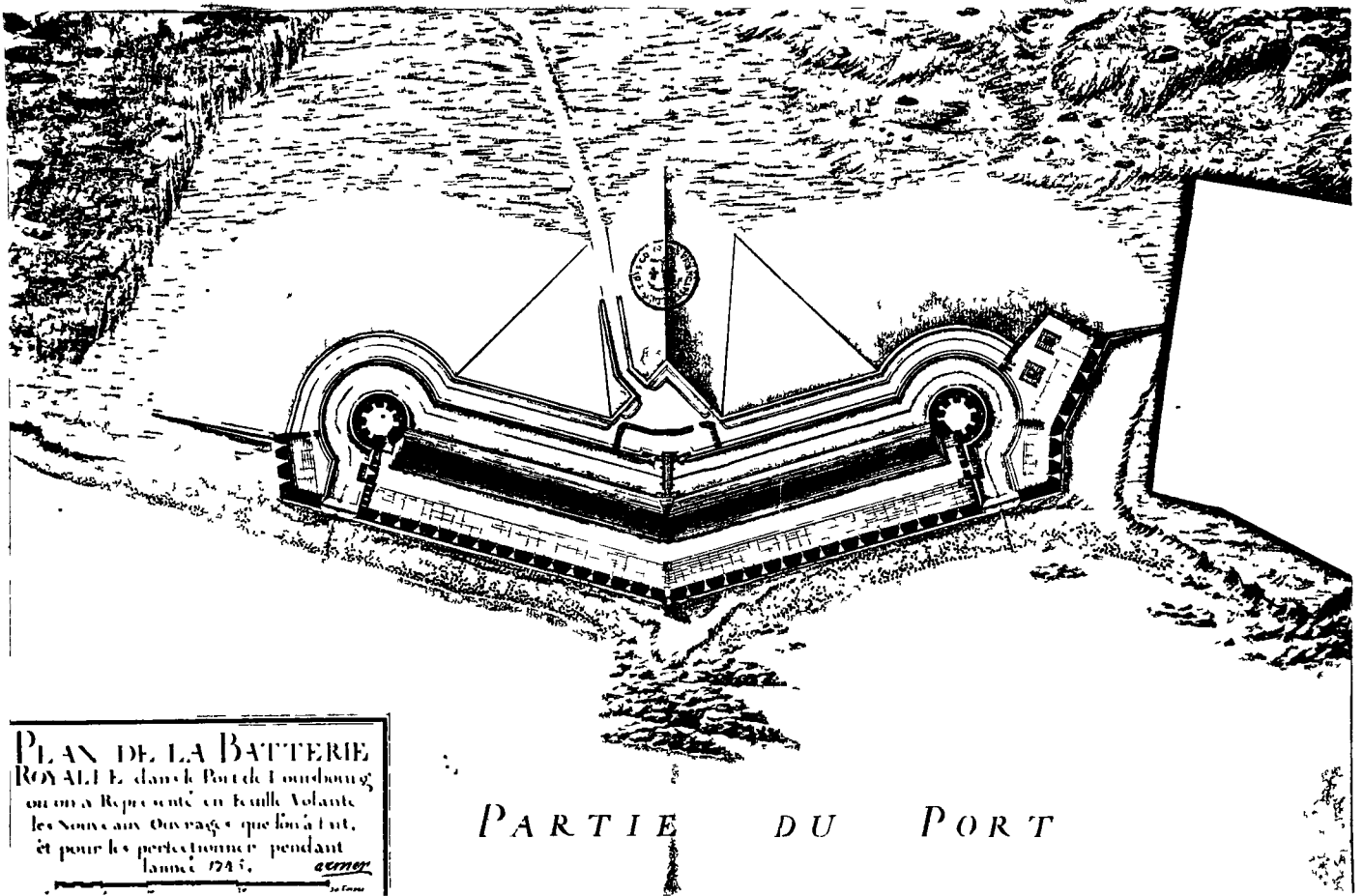
PARTIE DU PLAN DE LOUISBOURG ou est représenté
Les Ouvrages qui ont été faits du Côté du Port pendant le Commencement
de la Campagne Jusqu'à ce Jour 20^e Aoust 1742. *vernis*



Louisbourg: construction of harbour facilities and defences, 1742

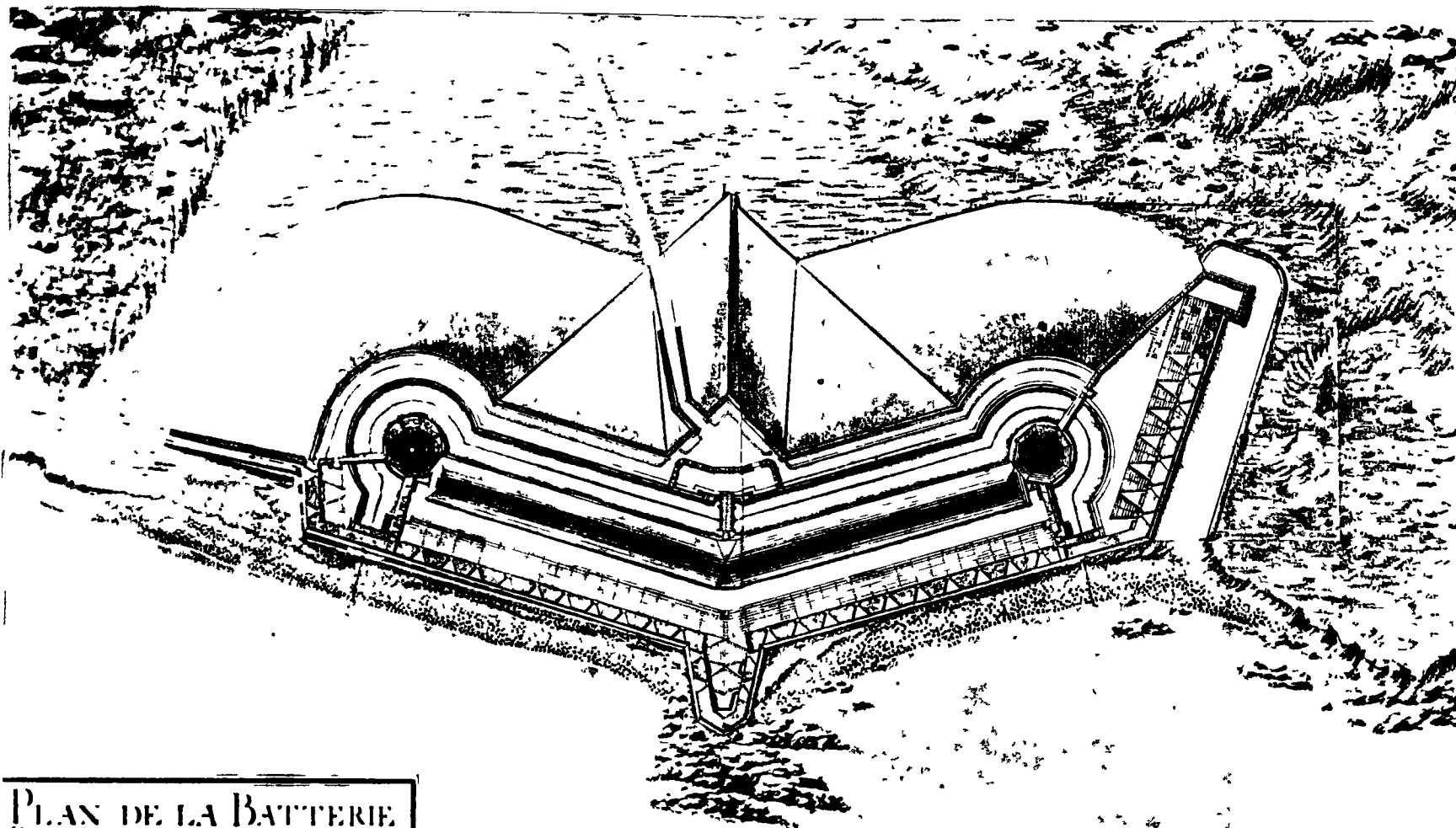
(Vol. I, p.82, note 236)

60(a)



Louisbourg, Royal Battery: state in 1744

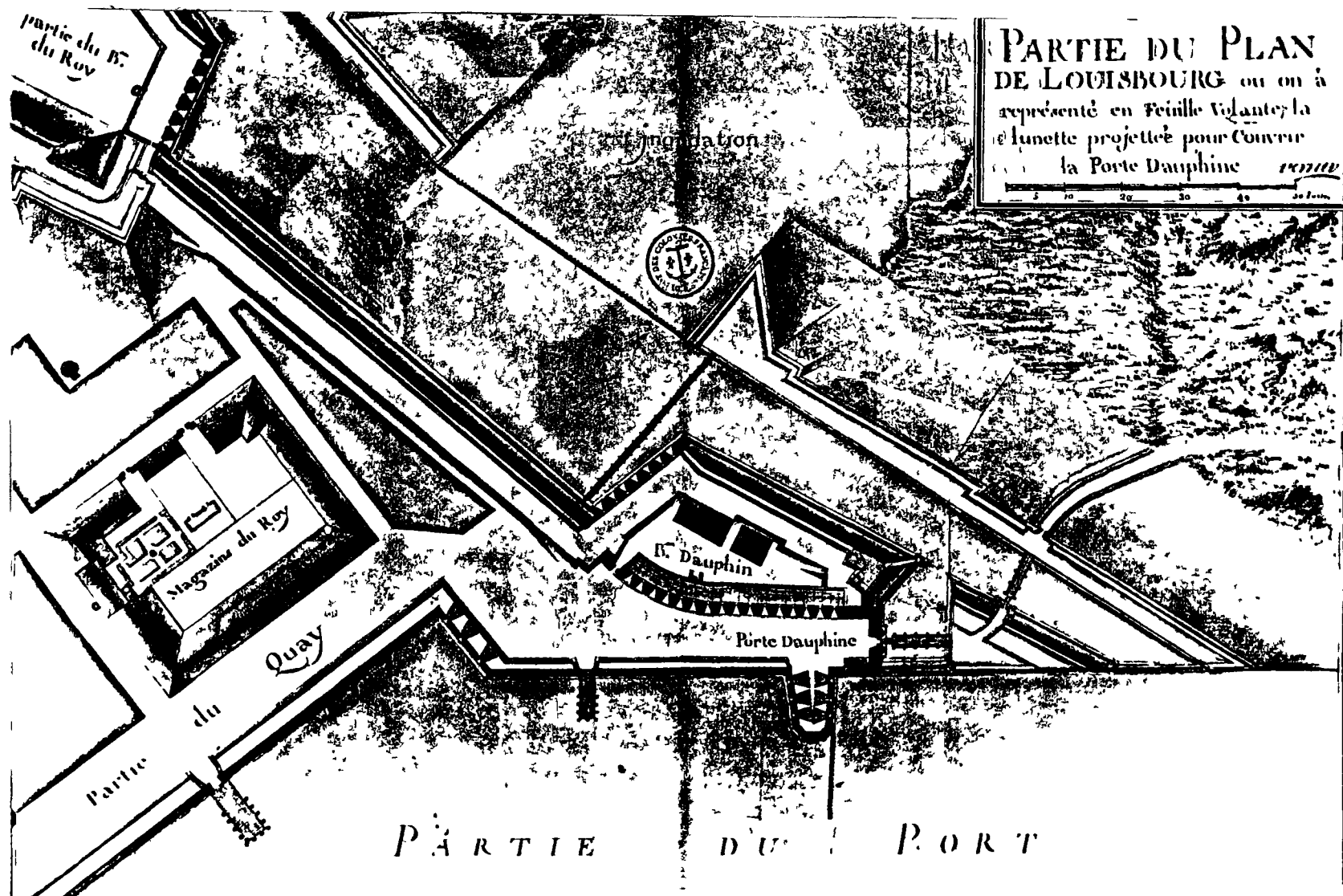
(Vol. I, p.92, note 255)



PLAN DE LA BATTERIE
 ROYALE dans le Port de Louisbourg,
 ou on a Représenté en Feuille Volante
 les Nouveaux Ouvrages que l'on a fait,
 et pour les perfectionner pendant
 l'année 1745. *exm*

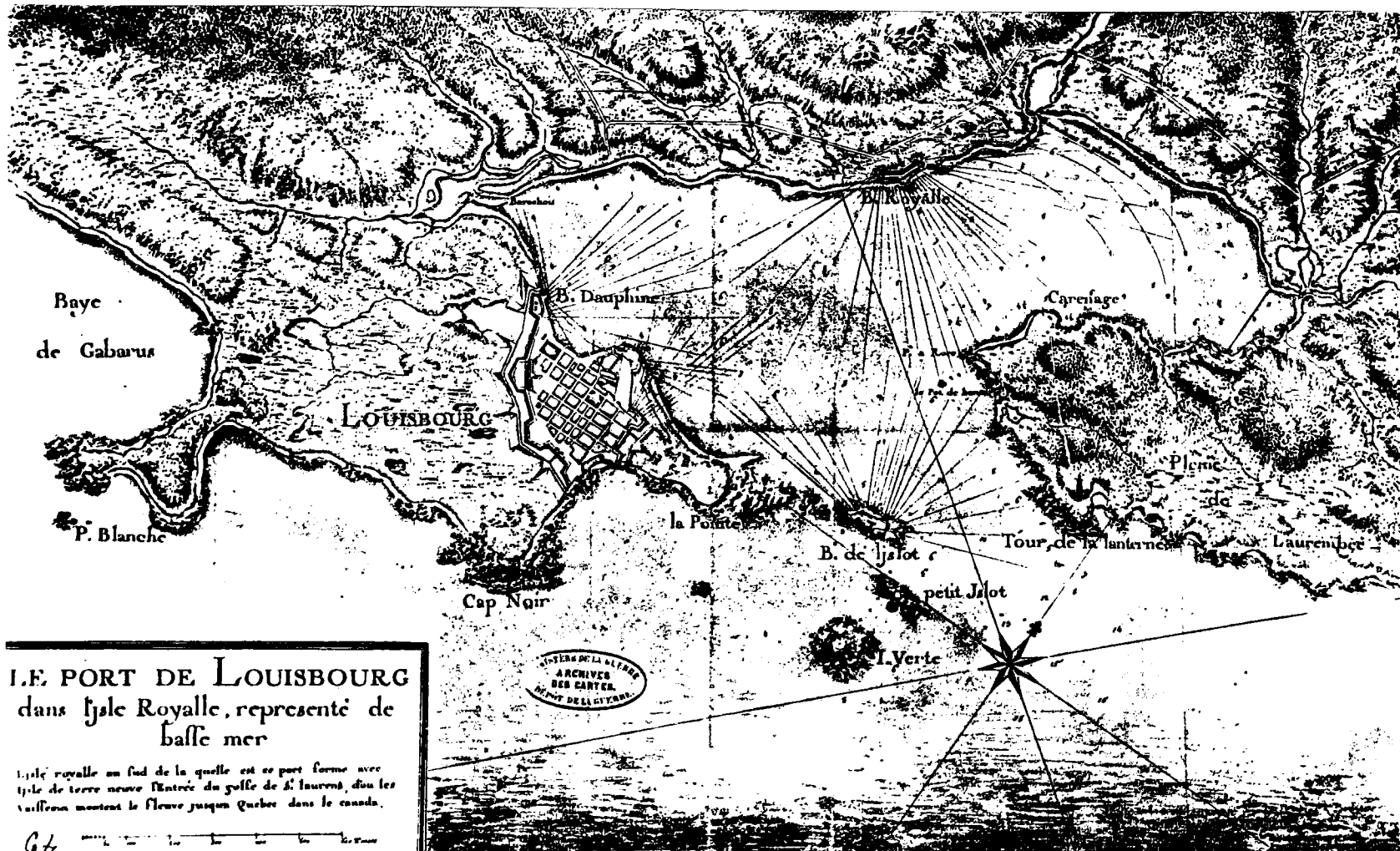
PARTIE DU PORT

Louisbourg, Royal Battery: works proposed for 1745 (Vol. I, p.92, note 255)

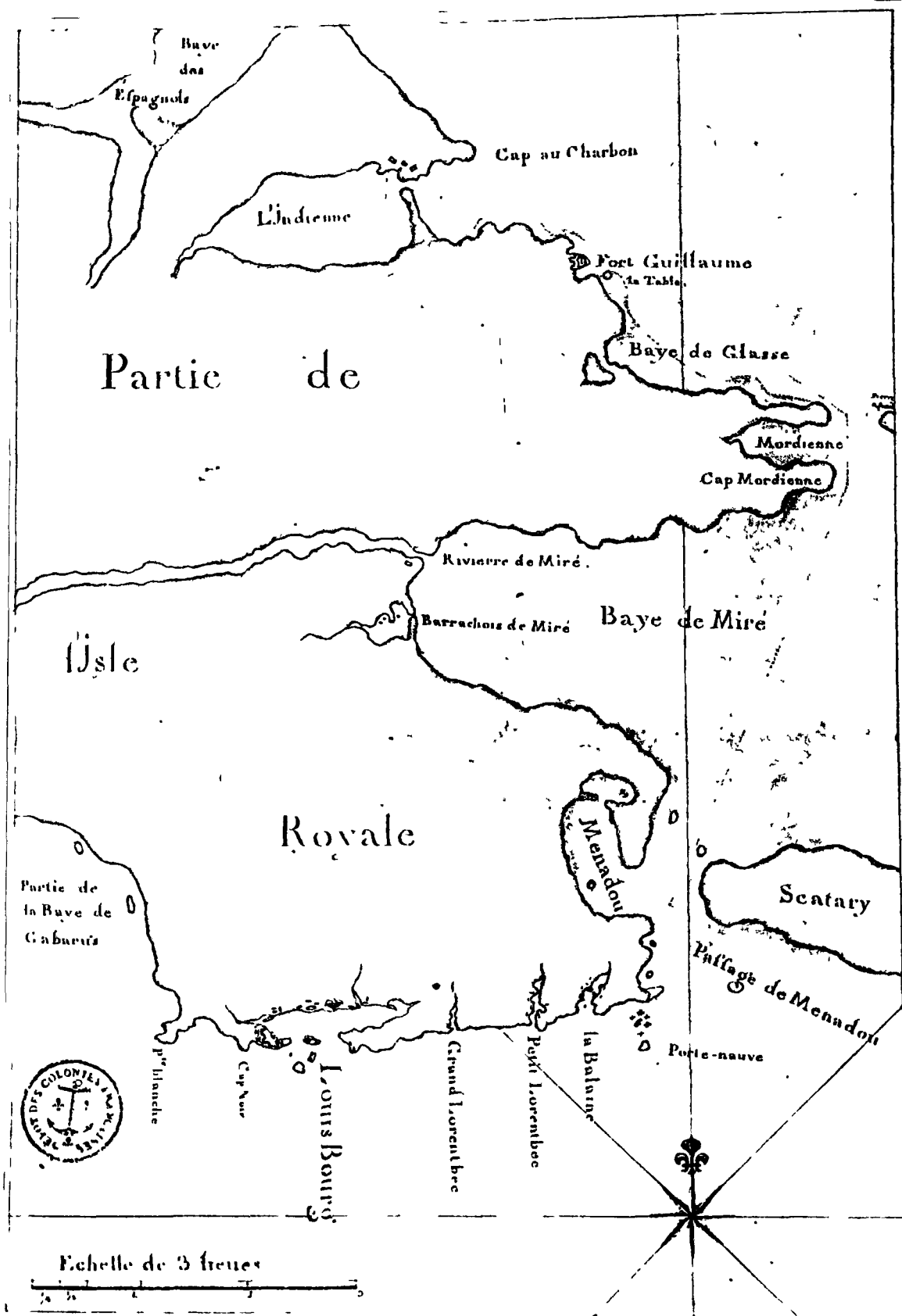


Louisbourg: the Lunette covering the Dauphine Gate, 1740

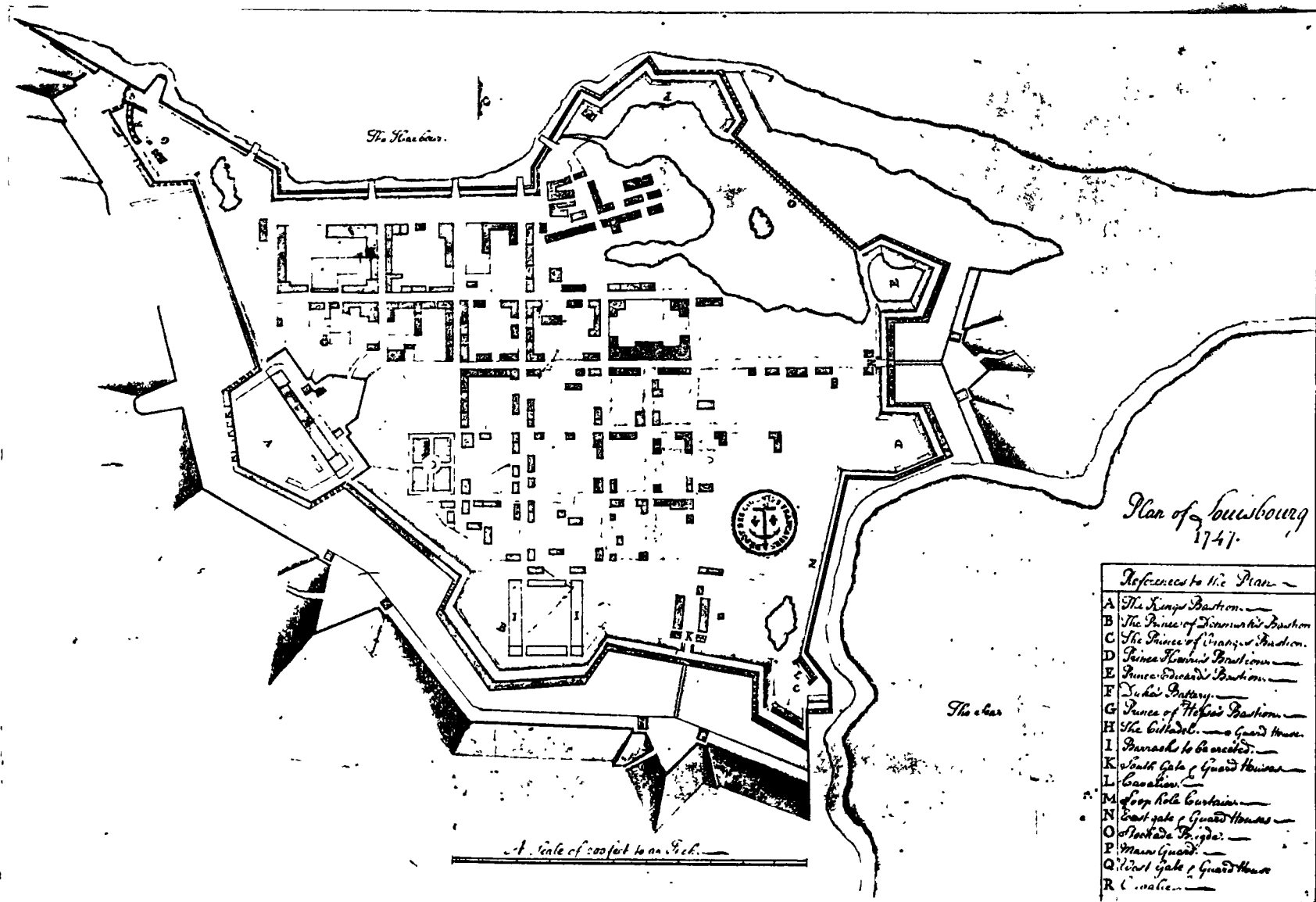
(Vol. I, p.93, note 257)



Louisbourg, just prior to the siege of 1745 (Vol. I, p.95, note 263)



Ile Royale, from Spanish Bay to Gabarus Bay, 1746 (Vol. I, p.95, note 263)



Louisbourg under British occupation, 1747 (Vol. I, p.95, note 263)

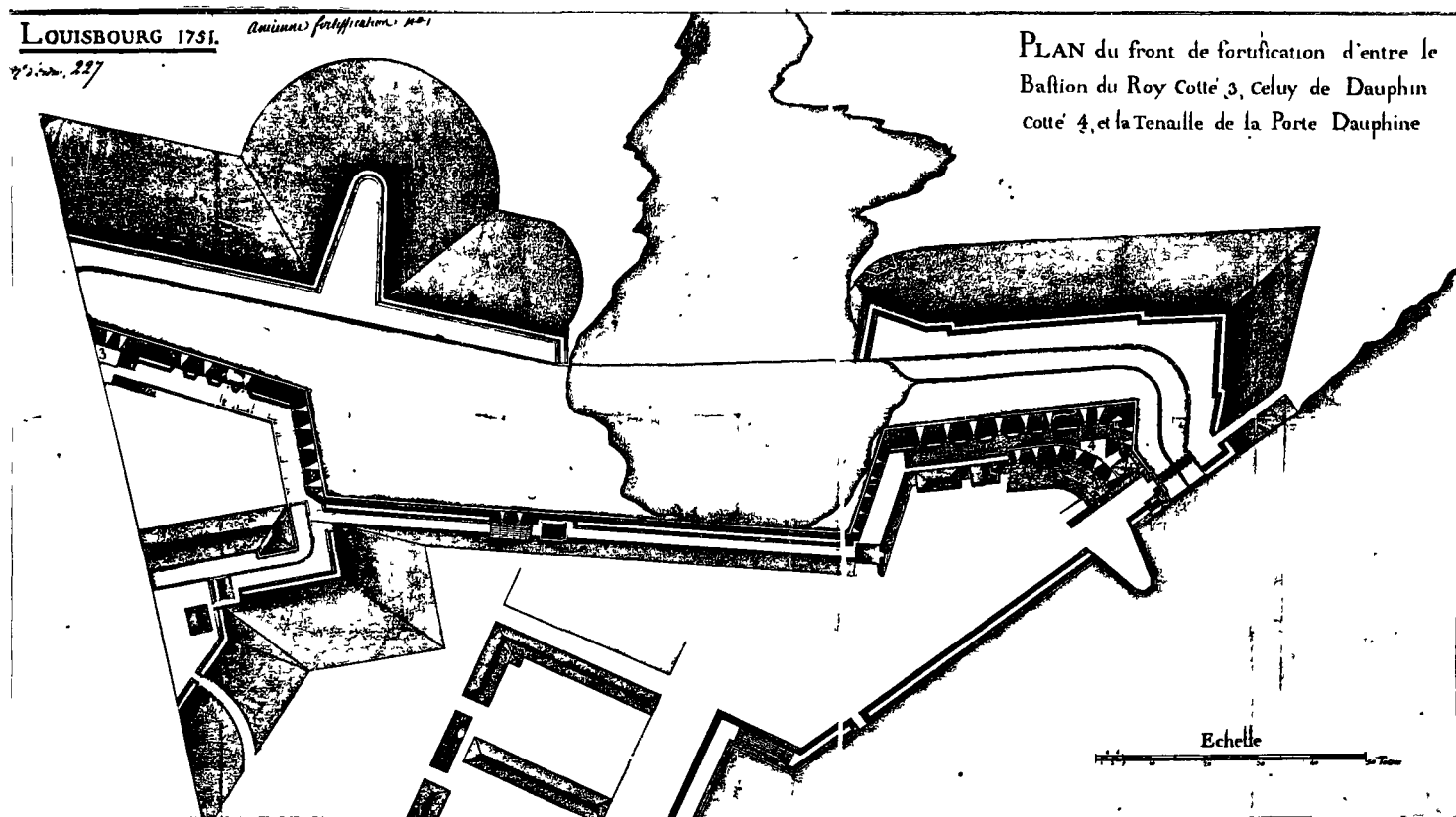


Loulsbourg: Franquet's first proposal, 1751, with two
overleaves shown (Vol. I, p.105, note 275)

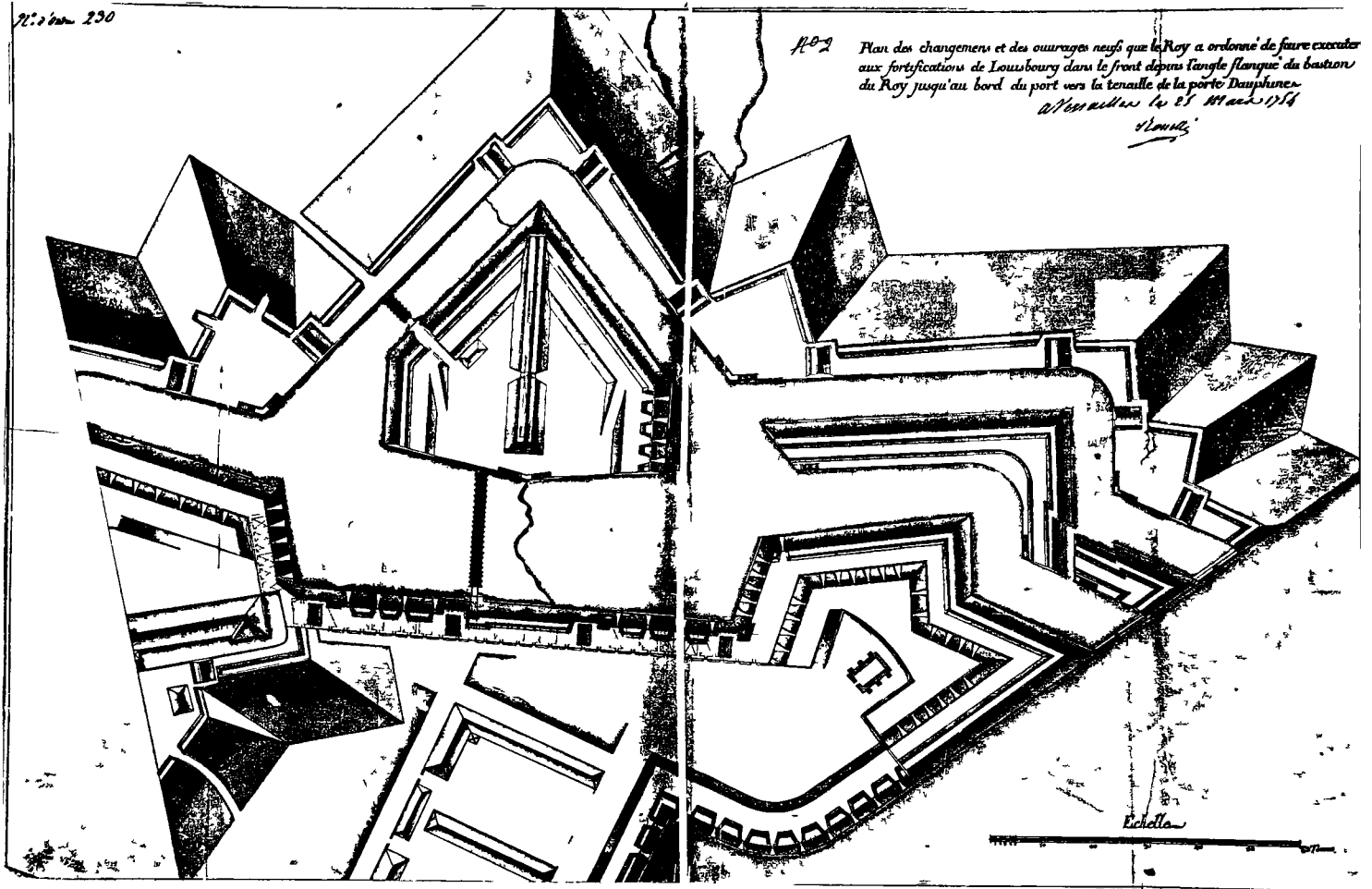
Louisbourg: Franquet's first proposal, 1751, with one
overleaf shown (Vol. I, p.105, note 275)



Louisbourg: Franquet's first proposal, 1751, without overleaves
(Vol. I, p.105, note 275)



Louisbourg: West Front from King's Bastion to
 Dauphine Gate, 1751 (Vol. I, p.106, note 275)



Louisbourg: Works proposed from King's Bastion to
 Dauphine Gate, 1754 (Vol. I, p.106, note 275)

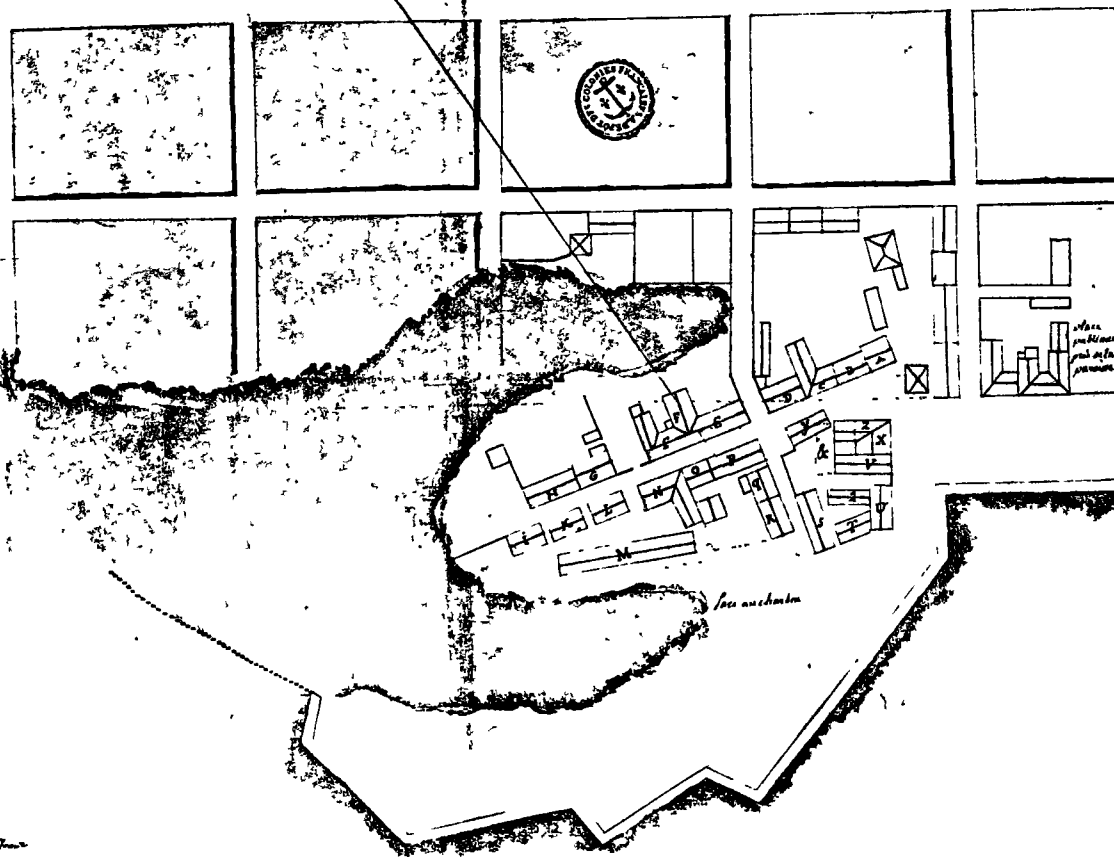


Louisbourg, showing defensive batteries, 1751

(Vol. I, p.106, note 275)

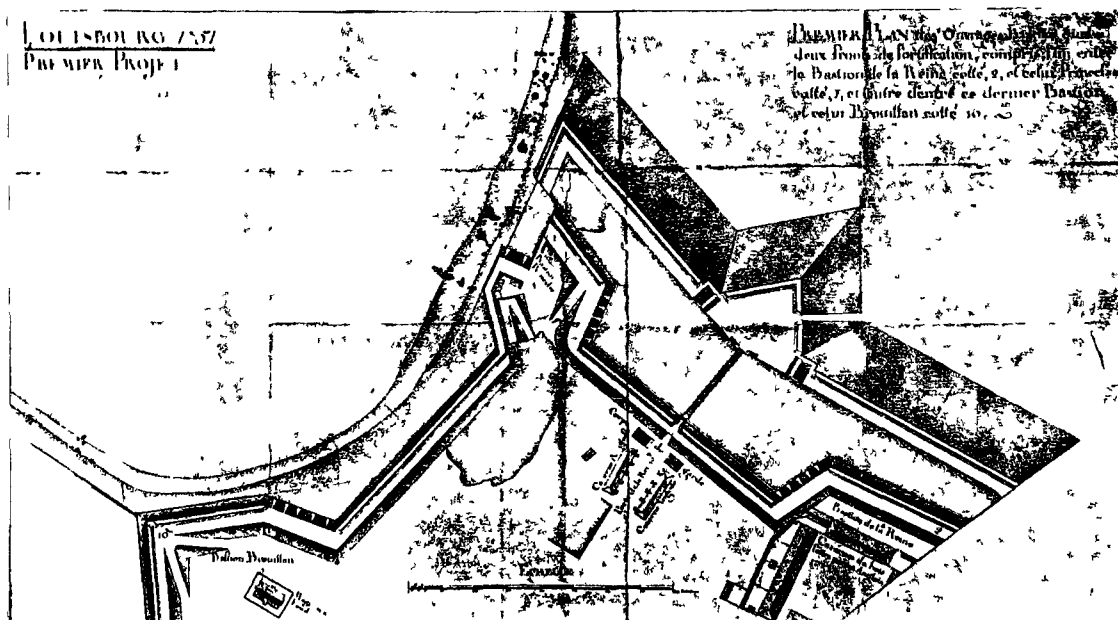
N.º 229.

Plan des quai et de la presque île du quai de Louisbourg
avec celui de la partie des plan n.º 2 et n.º 5 qui en propose de faire
rapu pour faire une place vis à vis de la flaque d'eau qui est
entre la pile de la grande et le bastion de M. aux p. de.

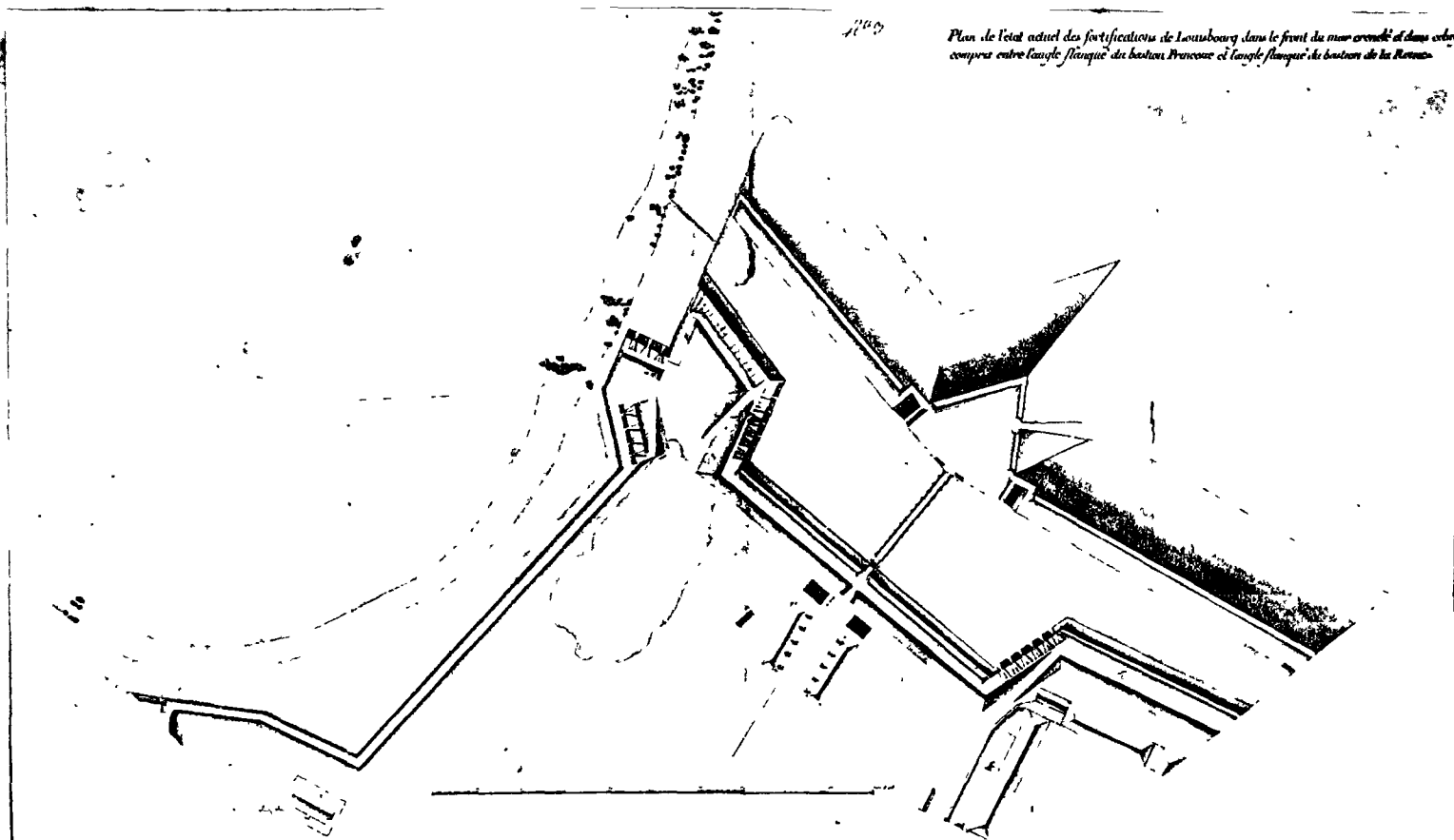


Louisbourg: Buildings to be removed from the district adjacent to the Quay, 1752

(Vol. I, p.106, note 275)

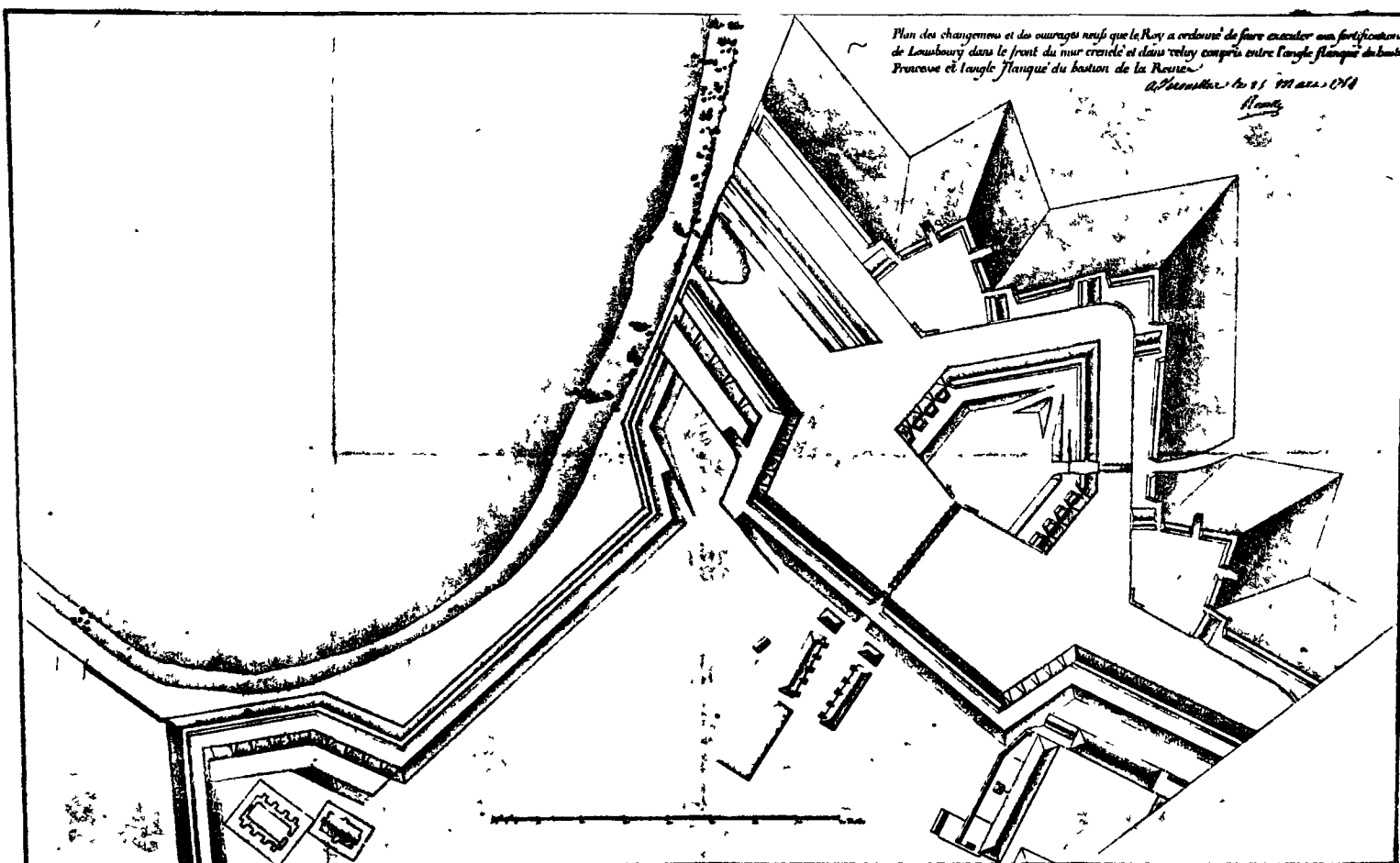


Louisbourg: Works proposed to be done from
Queen's Bastion to Brouillan Bastion, 1751
(Vol. I, p.105, note 275)



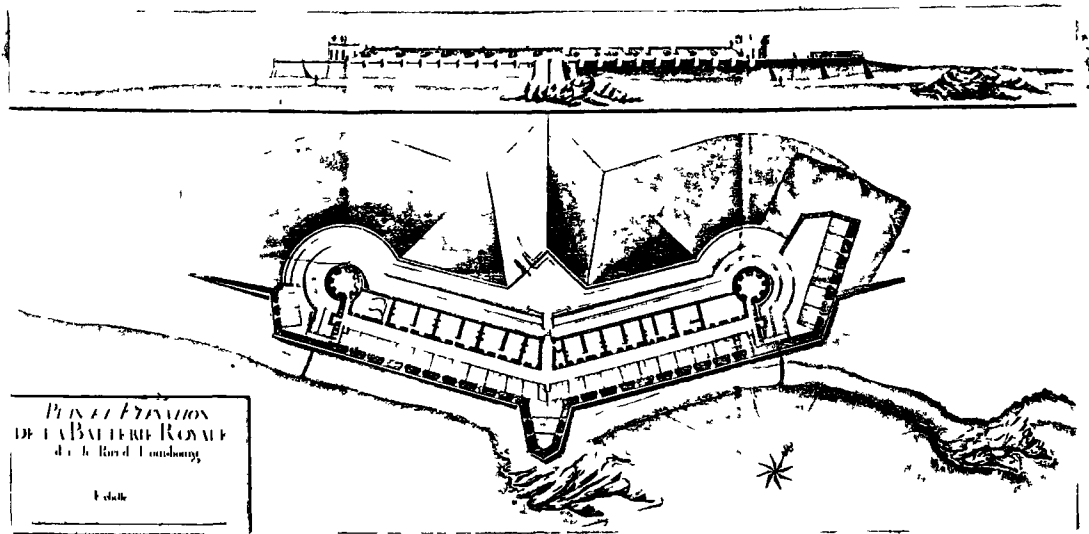
Louisbourg, from Crenellated Wall to the Queen's Bastion, 1754

(Vol. I, p.106, note 275)



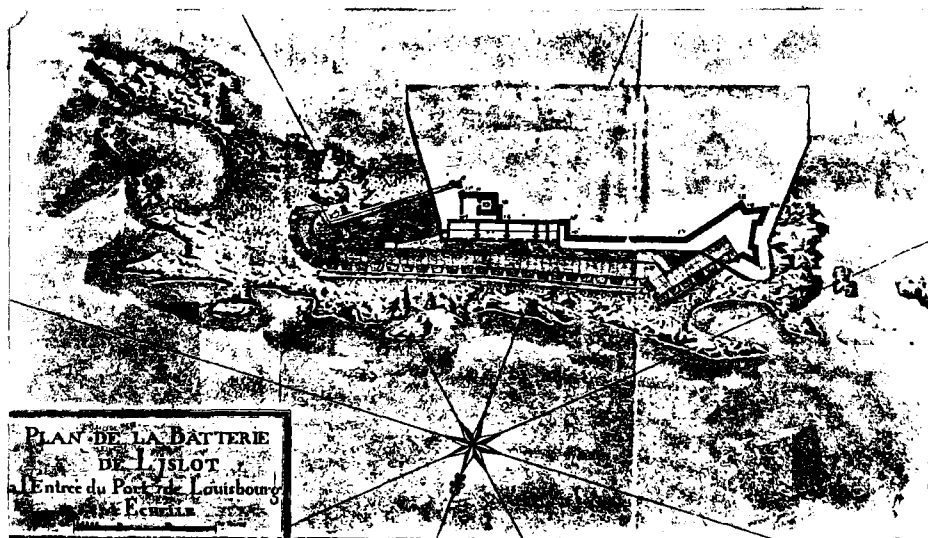
Louisbourg: Works ordered to be done from Crenellated Wall to Queen's Bastion, 1754

(Vol. I, p.106, note 275)



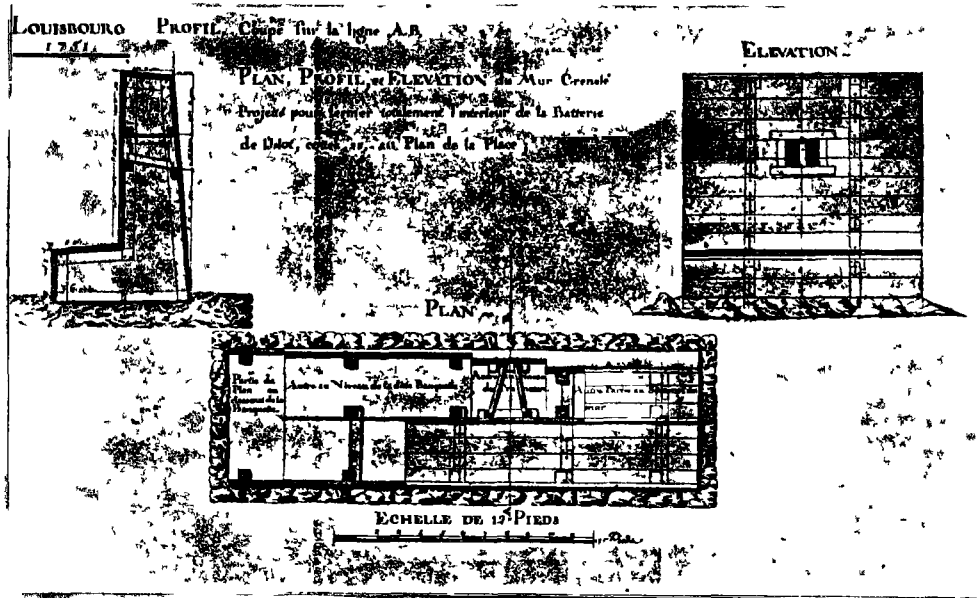
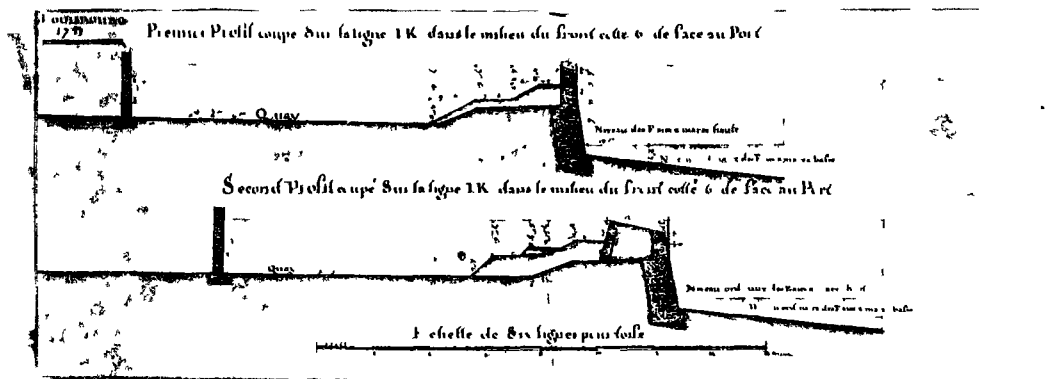
Louisbourg: Royal Battery, 1751

(Vol. I, p.106, note 275)



Louisbourg: Island Battery, 1751

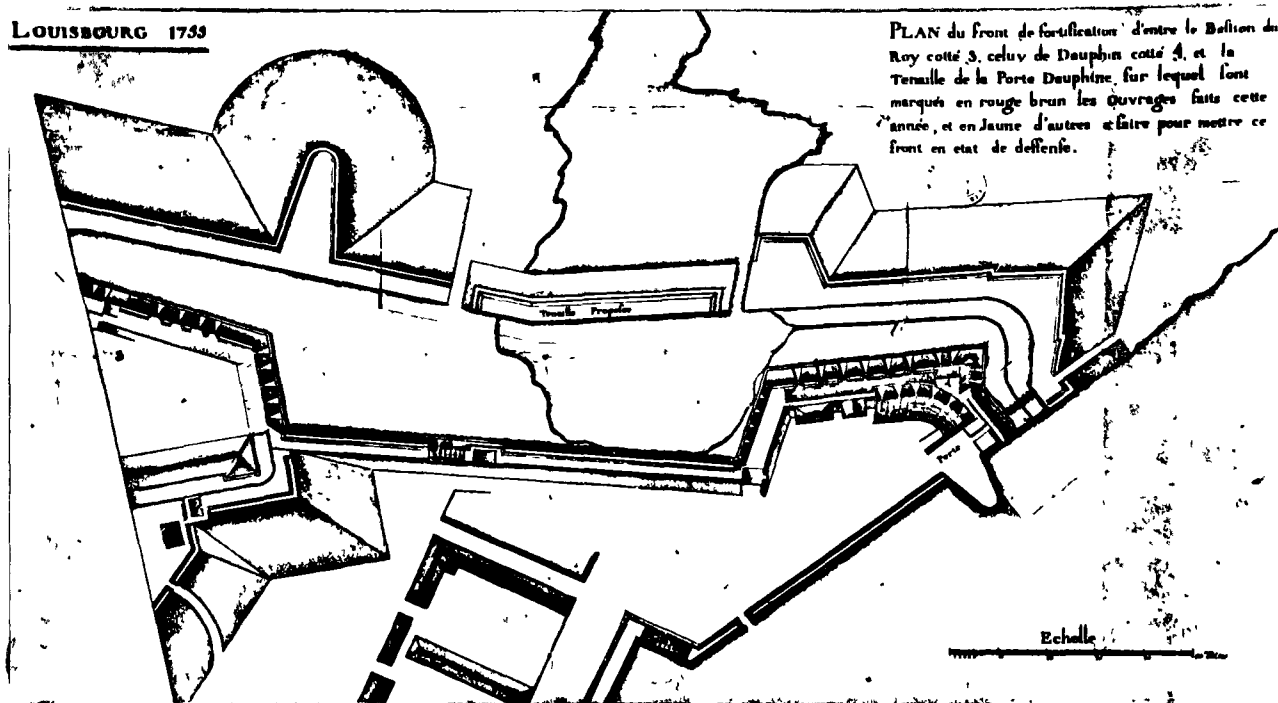
(Vol. I, p.106, note 275)



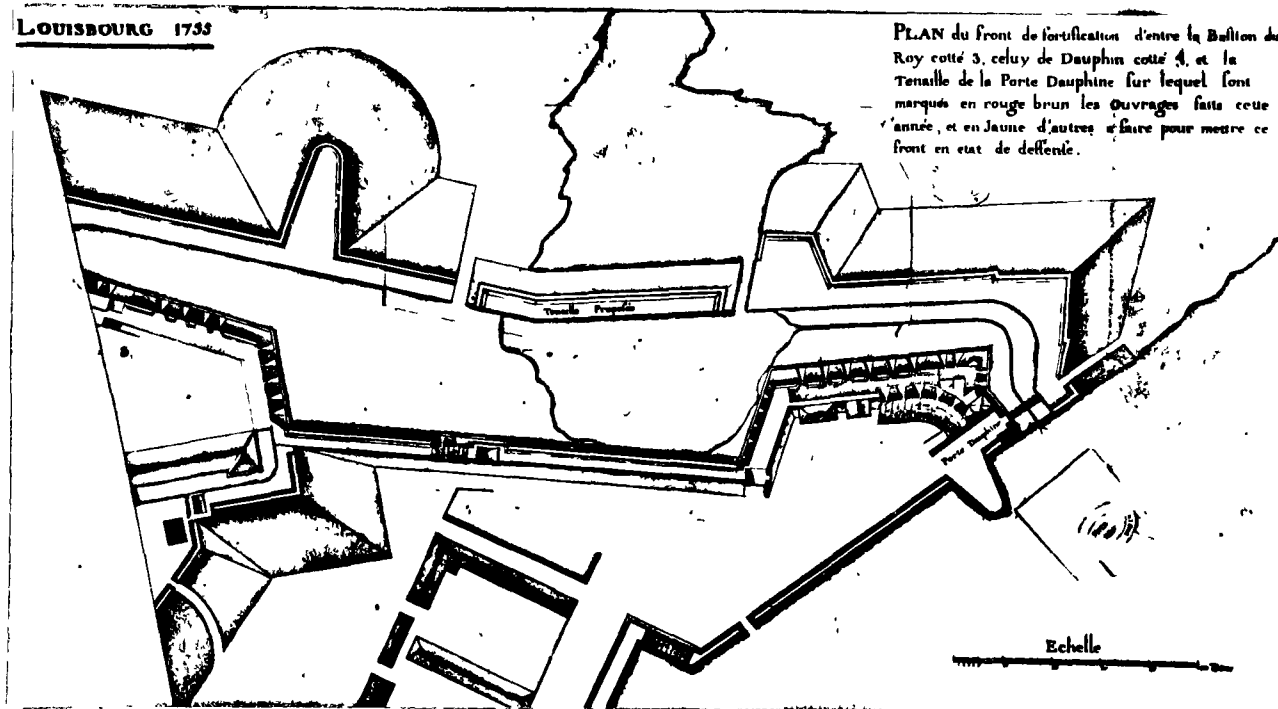
Louisbourg: Island Battery, 1751

(Vol. I, p.106, note 275)

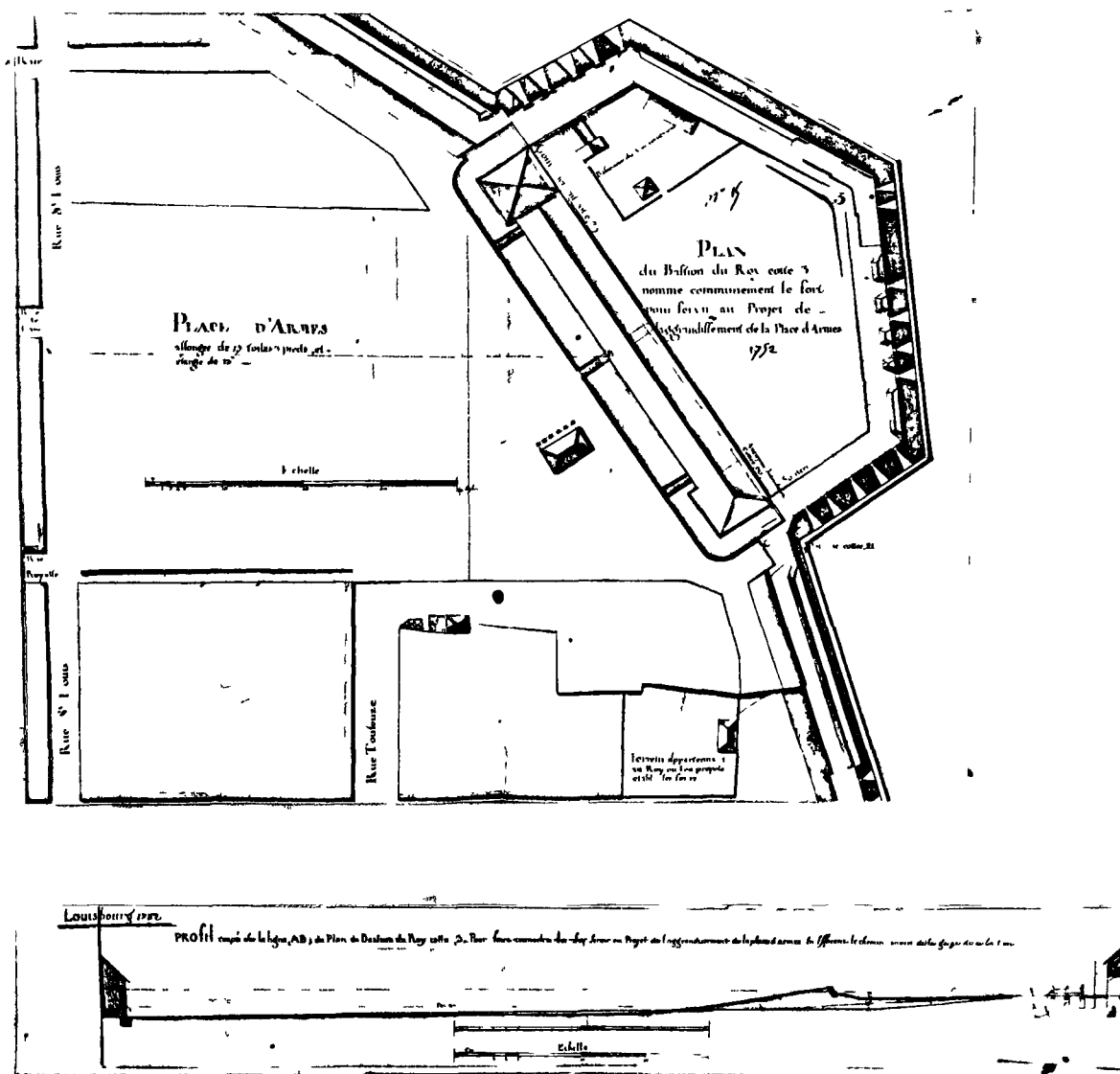
LOUISBOURG 1755



LOUISBOURG 1755

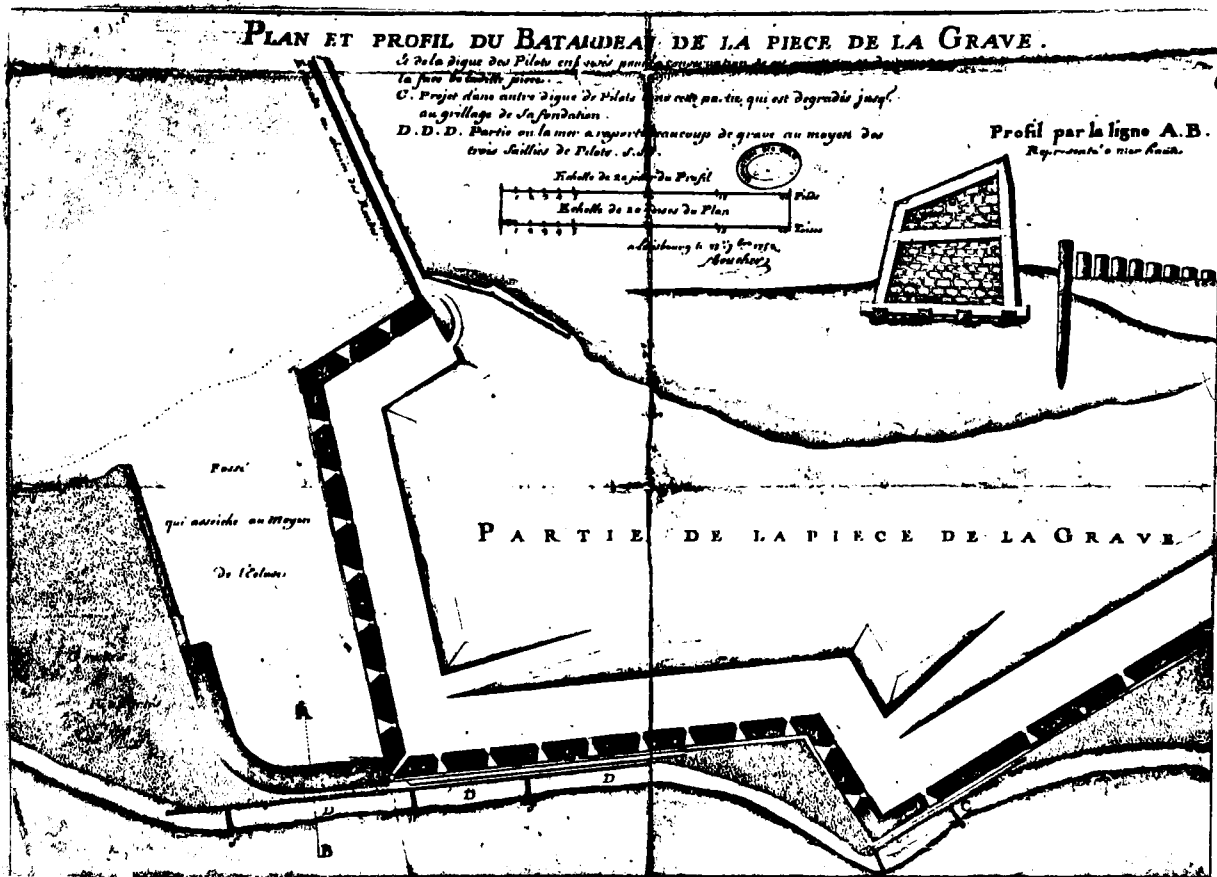


Louisbourg: West Front, from King's Bastion to Dauphine Gate, 1755;
 above, without overleaf; below, with overleaf (Vol. I, p.106, note 275)



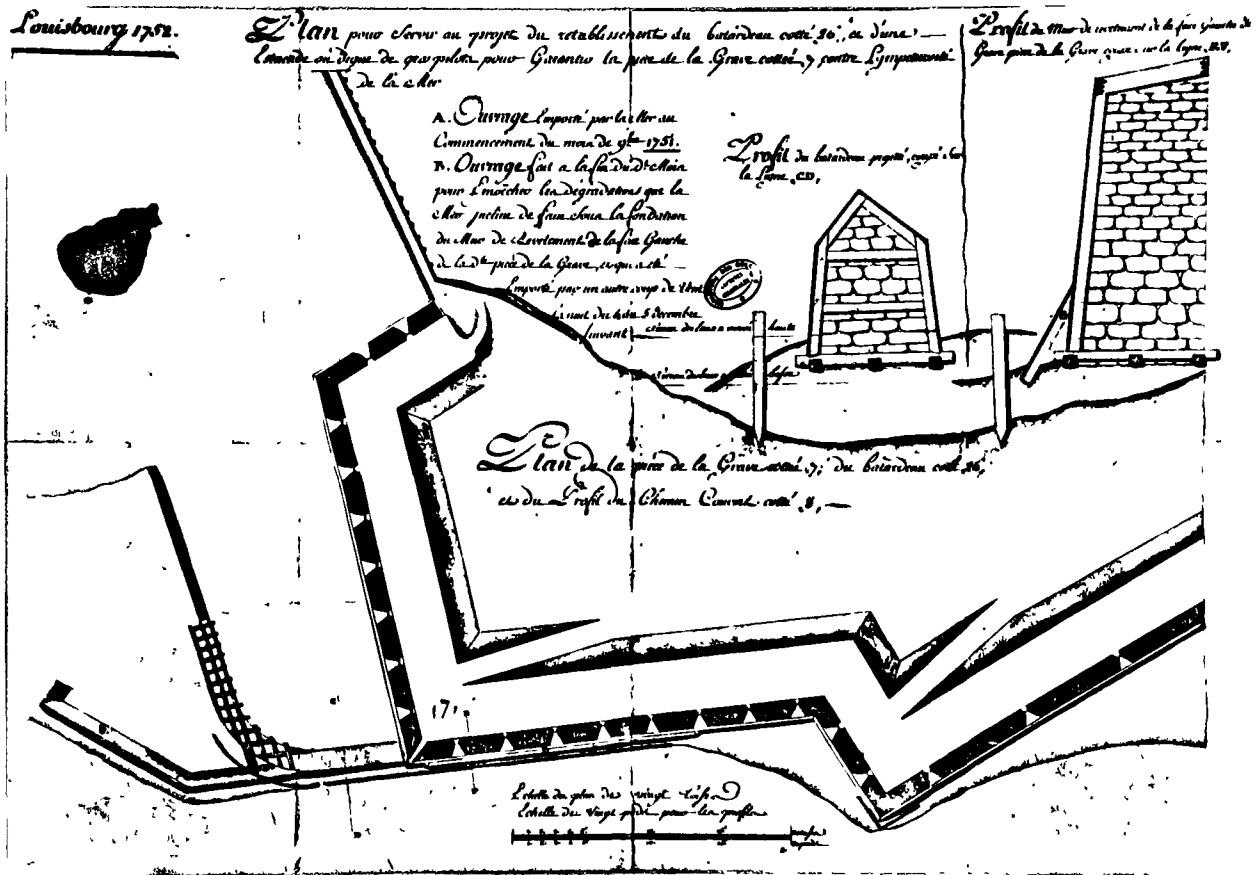
Louisbourg: Plan and section of King's Bastion, 1752

(Vol. I, p.106, note 275)



Louisbourg: Pièce de la Grave, 1752

(Vol. I, p.109, note 278)



Louisbourg: Pièce de la Grave, 1752

(Vol. I, p.109, note 278)