

THREE CENTURIES OF FRENCH HYDROGRAPHY IN CANADA

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THE GREAT DISCOVERIES AND CANADA

It is well known that the aim of Christopher Columbus in 1492 was to reach China and Japan by navigating continuously westward — and that he was convinced he had landed there. The truth had to be faced a few years later when Nunoz de Balboa saw the South Sea for the first time in 1513, in the region of Panama and when Magellan sailed through into the Pacific Ocean on 28 November 1520 : the barrier formed by the coasts of America was an obstacle for mariners of the Renaissance period seeking Cipangu and Cathay. The myth of a sea route to the West to reach China by cutting through the American continent was thus born following the discoveries of Magellan. Belief in a “North-West Passage”, which the French imagined to be in the region of Canada, lasted until the end of the 18th Century. After Jacques Cartier, Champlain, Jolliet, Father Marquette, Cavalier de la Salle and de la Varendrye, Chateaubriand still set out with this intention in 1791.

The “land of marvels”, source of spices and precious metals, that Marco Polo had described at the end of the 13th Century, became a veritable nautical mirage in the minds of the western powers.

The forerunners of Jacques Cartier

Official expeditions, of which we will speak later, represented only one aspect of the true picture. Fishermen were the first discoverers of the “New Lands”, as they called them; that is to say, the shores of the northern American continent

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(Newfoundland). The widespread famine of the early 16th Century and the 150 “meatless” days per year imposed on Christians easily account for the popularity and success of whaling and cod-fishing enterprises off the shores of the New World. From 1506 onwards, subsequent to the breaking of the alliance with Castile in 1475, the French and the Portuguese were present in all the coastal provinces of Canada, fishing for whale and cod. The fact that Portuguese pilots and cosmographers settled in France must certainly have favoured the creation of the



FIG. 1. — “La pesche des morues vertes et sèches” (Bank and shore cod-fishing), inset from “Chart of Americas” by N. de Fer, 1698 [Fr. Bibl. Nat. Ge DD 2987 (8511 B)].

famous “Dieppe School”, to which we will return later. It is significant, in this context, to recall that Jacques Cartier was also an interpreter of Portuguese. In the first half of the 16th Century, nearly 150 ports or harbours — in Normandy, Brittany, in the regions of Saintonge and Bordeaux and in the Basque country — were fitting out fleets for whaling and cod fishing. Fishing of “morue verte” (salt cod) — or “fishing on the move” — took place over the Banks, out of sight of land, whilst fishing of what was termed “morue sèche” (dried cod) — or sedentary “shore” fishing — took place within sight of the coast.

Fishermen played an important part in the birth of French hydrography in Canada. They were at the source of the need for surveying and from the great maritime movement they generated came the cartographic information that served as a basis for the first Norman hydrographers.

Jacques Cartier (1491-1557)

It is to Jacques Cartier that must fall the honour of having taken possession of "New France" — or Canada — in the name of his sovereign, since those who had preceded him — John Cabot, a Venitian in the service of the King of England, in 1497, and Gaspard Corte Real in 1501 — left no official record of their voyages.

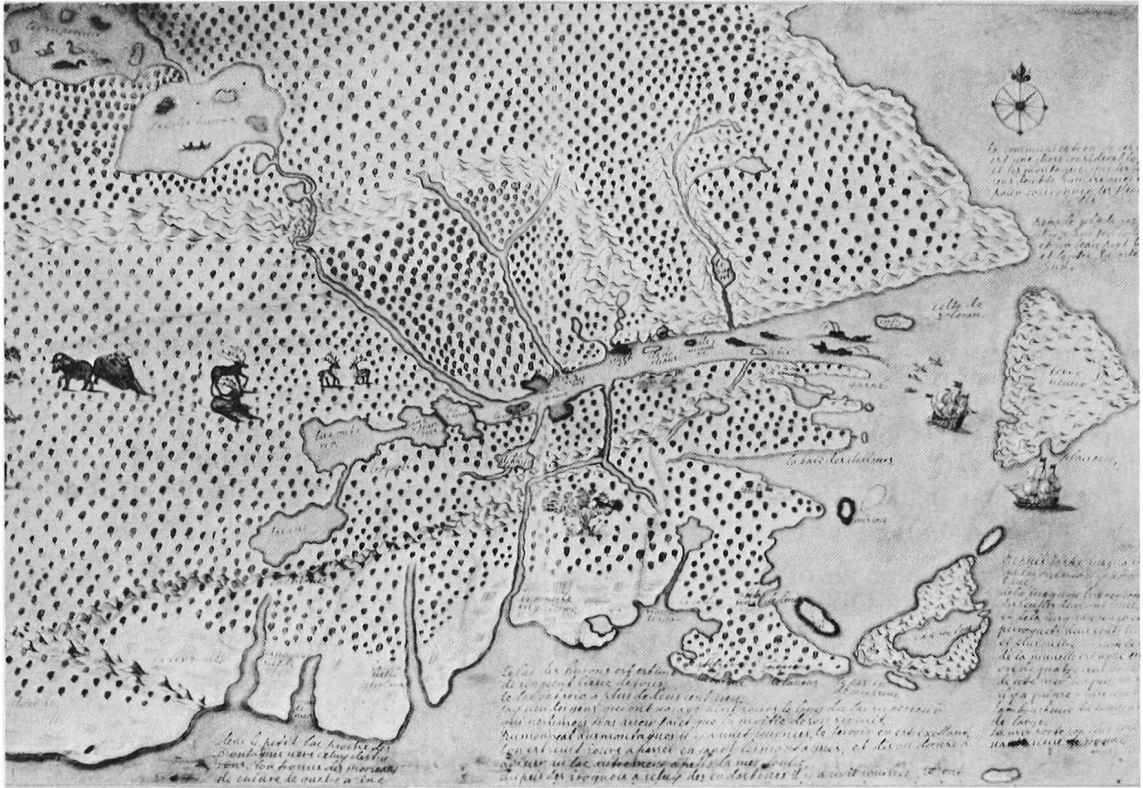


FIG. 2. — Chart of "New France" (anonymous), 1665 (Fr. Ste Historique des Armées, Marine, series 67, item 2).

An experienced pilot, an expert in topography, presumed to have accompanied Verrazano in 1524 during his expedition to Nova Scotia and Newfoundland, Jacques Cartier had over 15 years' navigational experience behind him when he was presented to François I and commissioned to direct an expedition with the purpose of discovering the famous "North-West Passage".

Jacques Cartier set sail from Saint-Malo on 20 April 1534 for his first voyage, with two 60-ton vessels and 60 men. Reaching Newfoundland after a crossing of only 20 days, he entered the Gulf of Saint Lawrence through the Strait of Belle Isle, returning through the same Strait and sailing back to Saint-Malo, where he arrived on 5 September 1534.

On 19 May 1535, Jacques Cartier put to sea for a second voyage, with three ships and 110 men. The expedition party wintered at Quebec (Stadaconé),

ice-bound and suffering from scurvy. They began the return journey by sailing along the south coast of Newfoundland, and arrived back at Saint-Malo on 6 July. Twenty five sailors had died but Jacques Cartier had proved that Newfoundland was an island and that the Saint Lawrence was a river.

Jacques Cartier died on 1 September 1557 at the age of 66, ignored by his contemporaries.

The beginnings of French hydrography : the Dieppe School and Canada

Dieppe was, from the late 15th century onwards, the cradle of a School of Hydrography of great renown. The Dieppe pilots, inheritors of the Lusitanian tradition, were, at one and the same time, explorers, teachers, and authors of treatises on hydrography and navigation, besides being cartographers. They have left us wonderful globes from which it is possible to trace the development of the charting of Canada, especially of Newfoundland.

Newfoundland was originally charted as a peninsula attached to Labrador. Following Jacques Cartier's discovery of the Strait of Belle Isle in 1534, the Dieppe cartographers made it into an archipelago or an island, as can be seen on the globe of Desliens in 1541 and that of Desceliers in 1546.

After it had been portrayed in the form of a peninsula, then as an archipelago, real progress was accomplished when Newfoundland was shown as a compact triangular shape. This was done on the Chart of the World by Nicolas Desliens in 1566 and on another by Pierre de Vaulx in 1613.

The beginnings of colonization in Canada, in 1605, mark the end of this first stage of discovery and conquest, characterized, as regards hydrography, by the very small scale globes of the Dieppe School and the charting of itineraries along the great waterways penetrating inland.

THE 17th CENTURY : THE HEIGHT OF FRENCH INFLUENCE AND PRESTIGIOUS CARTOGRAPHY

Champlain and the early stages of colonization

The colonization of Canada did not begin until the arrival of Samuel Champlain, early in the 17th Century. He first directed his efforts towards the Acadian region (Nova Scotia), where he founded Port Royal (Annapolis) in 1605. He then encouraged the first settlers along the banks of the Saint Lawrence on the very site where the French were to settle in greater and greater numbers, and he founded Quebec in 1608. After the death of Champlain, in 1635, the creation of Montreal in 1642 and the setting up of religious missions and trading posts along the route to the Great Lakes and the Mississippi were further milestones in the French occupation of Canada.



FIG. 3. — Map of the World by Jean Guérard, 1625 (Fr. Bibl. Nat. HO Arch. No 10).

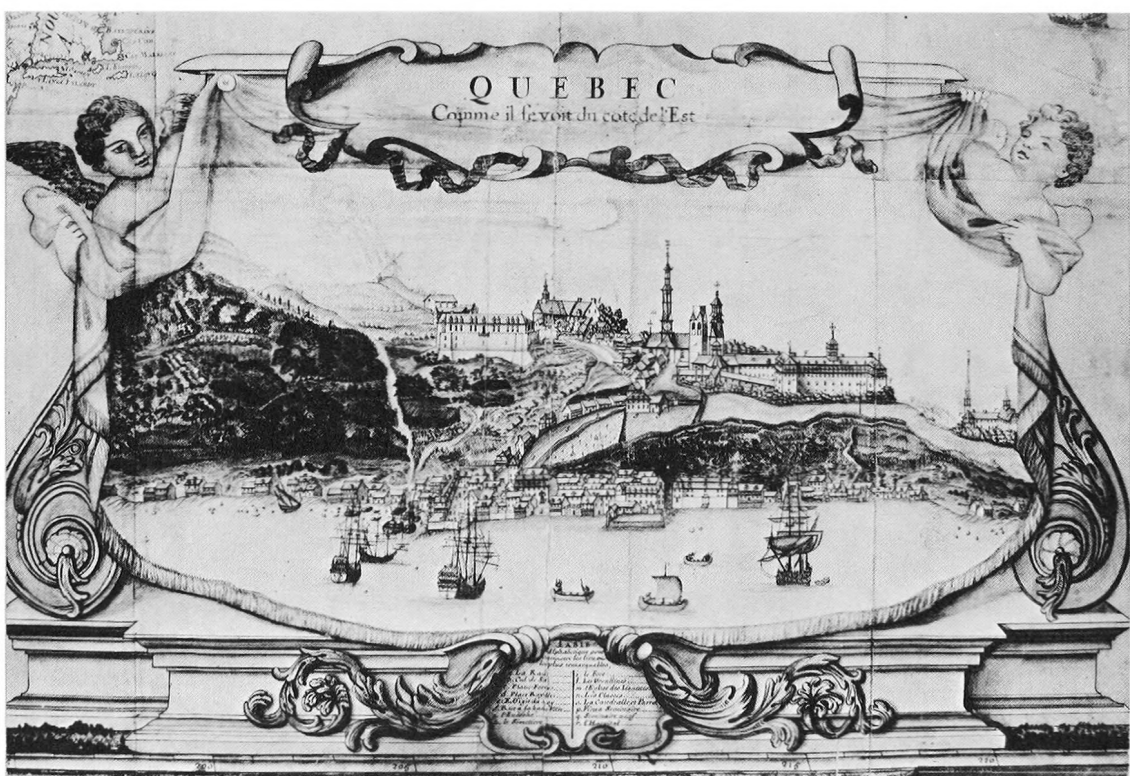


FIG. 4. — Chart of Northern America (inset) by Jean Baptiste Louis Franquelin, 1688 (Fr. Ste Historique des Armées, Marine).

Colbert promotes the development of hydrography

The results of colonization remained mediocre, however, until the advent of Colbert, the great Minister of Louis XIV, in 1661, and the annexing of "New France" to the royal possessions (1663). Unfortunately, the ambition to own permanent settlements in "New France" clashed with similar, rival ambitions on the part of Britain. The temporary fall of Quebec in 1629 and of the Acadian region in 1659 were important events highlighting this situation, prior to the bitter struggles between the French and British colonies in Newfoundland, based at Plaisance and Saint-John's, respectively, during the wars of the League of Augsburg (1688-1697) and the Spanish Succession (1702-1713)

In the maritime field, it is relevant to stress France's remarkable sea power between 1680 and 1688, and the promotion of "shore" fishing, which encouraged recruitment into the Royal French Navy.

This was the background against which hydrography developed in Canada. The Dieppe School had given the Navy its best pilots, and Colbert took care to include hydrography in the great efforts he deployed in reorganizing the Navy. In 1661, he had his Department take responsibility for the Dieppe School of Hydrography. Then he created the Academy of Sciences in 1666 and the Paris Observatory in 1667.

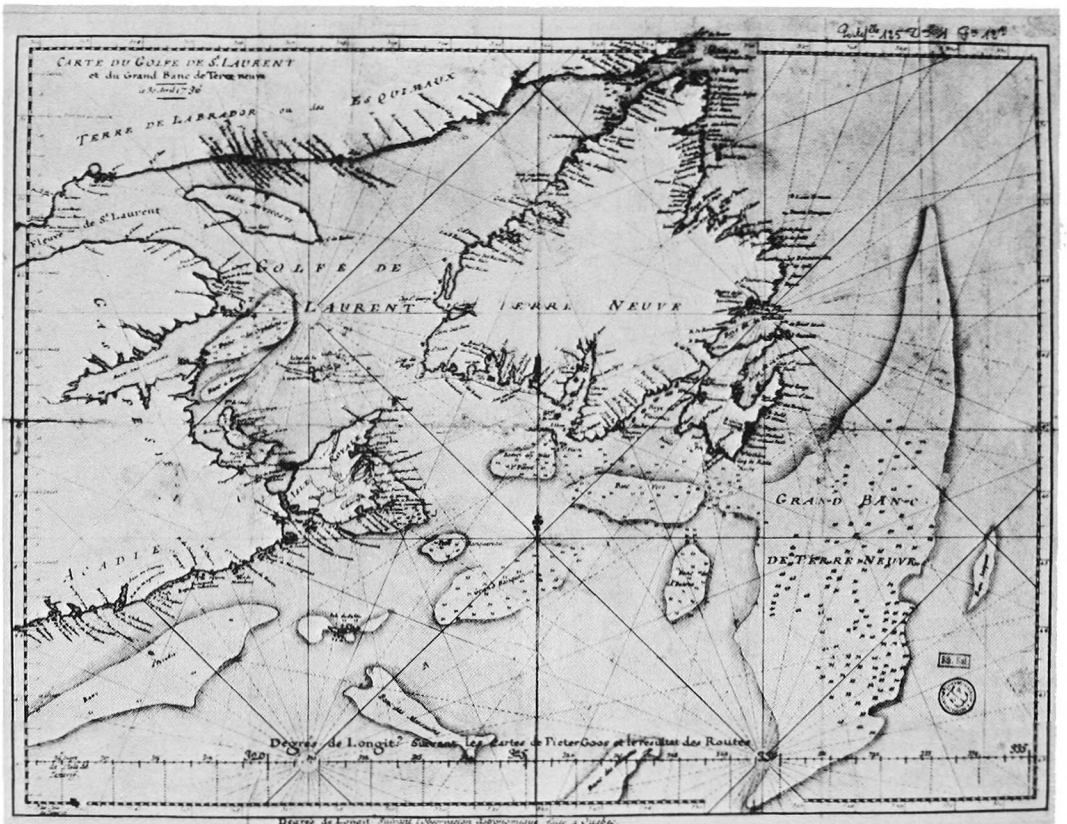


FIG. 5. — Chart of the Gulf of Saint Lawrence and the Grand Bank of Newfoundland, 1736 (Fr. Bibl. Nat. HO series 125, div. 1, item 12').

The mapping of Canada in the 17th Century essentially consisted of reconnaissance and exploratory cartography based on the keeping of navigational records in order to provide sea charts. Very gross errors of longitude subsisted, but these were of merely relative importance in the portrayal of the coasts and the sea bed, which gradually became more refined simply by the use of compass, log and sounding lead.

The immense territory discovered offered boundless scope to hydrographers. They played a major part in the spread of settlers, who more often than not travelled inland along the waterways. One remarkable fact springs to mind : in Quebec itself, in the last quarter of the century, a French-Canadian school of hydrography and cartography was created, which was rendered illustrious by J.B. Franquelin. The prestigious cartography which developed during this period showed the value placed by the royal powers of the time on that very evocative and symbolic form of sovereignty — the chart.

THE 18th CENTURY : DECLINE OF FRENCH INFLUENCE IN CANADA AND ADVANCES IN HYDROGRAPHY

France's territorial losses

The Treaty of Utrecht (1713), which put an end to the Spanish War of Succession, sanctioned the first losses of territory suffered by France in northern America. France recognized the supremacy of Britain over Hudson Bay, Newfoundland and Nova Scotia; it kept its territories along the Saint Lawrence, in the region of the Great Lakes and the Mississippi, and the islands of Saint-Jean (Prince Edward Island) and Royale (Cape Breton), as well as the fishing rights along the coasts of Newfoundland between Cape Bonavista and Pt. Riche, with access from the north to the coastal strip known as the "French shore".

To compensate for the loss of the capital of the Acadian region, Port Royal, which had been used as a base in the warring race against the Navy of New England, France lost no time in setting up fortifications at Louisburg, on Ile Royale, which thus became the main centre of French defence in Canada. Considered to be impregnable, Louisburg's existence was, however, short-lived (1720-1758). It was taken by the British for the first time in 1745, then again in 1758, during the Seven Years' War, and this time it was razed to the ground. The town of Louisburg was built with stone and bricks brought from Europe. Traffic through the port was heavy : 500 ships carrying fifteen to twenty thousand men anchored there each year.

After the fall of Louisburg, the way to Quebec lay open for the British. The surveys guaranteeing the safety of navigation for the fleet of over 200 ships which sailed up the Saint Lawrence were executed by Captain Des Barres. He had under his orders the famous Cook, aboard the *Pembroke*. During the night of 12 September 1759, the British troops attacked the Plains of Abraham, the final

bastion before Quebec. Wolfe, the British Commander-in-Chief, and Montcalm, the town's defender, were wounded in the encounter and both died on the same afternoon of 13 September.

The Treaty of Paris, signed by Britain, France, Spain and Portugal on 10 February 1763, put an end to the Seven Years' War and signified the surrender of the French colonies in northern America. France relinquished to Britain : Canada and what is now New Brunswick and all the adjacent islands, including Ile Royale (Cape Breton) and Ile Saint-Jean (Prince Edward Island). In Newfoundland, France retained its fishing rights and received the islands of Saint-Pierre and Miquelon.

The American War of Independence ended twenty years later, in 1783, with the Treaty of Versailles between France and Britain, giving France full sovereignty over Saint-Pierre-et-Miquelon and modifying the French fishing rights on the eastern and northern coasts of Newfoundland. The new rights extended from Saint John's Cape to Cape Ray (instead of from Cape Bonavista to Pt. Riche).

Great steps forward in hydrography

The 18th Century was the richest period as regards progress in hydrography and navigation. Colbert had had the great merit of appreciating that the volume and importance of the techniques and resources required for hydrography warranted direct intervention by the State. The decisions he made bore fruit throughout the 18th Century, amplified by similar efforts on the part of the British. The great problem remained that of determining longitudes : it was not until 1770 that the final difficulties were overcome, by measuring hour angles directly using a chronometer. At about the same time, Borda modified Hadley's octant, making it into a reflecting circle, the use of which was even more convenient and accurate. This step forward made it possible to substitute the hydrographic circle (or sounding sextant) for the compass for measuring horizontal angles, thus obtaining excellent positioning accuracy. Mackenzie Junior (1774) and Beautemps-Beaupré (1791-1792) were the promoters of this vital innovation in the technique of hydrographic surveying.

It was in this technical context that hydrography in Canada developed. The gradual improvement in astronomical position fixing made it possible to link up partial results into coherent wholes, especially in the second half of the 18th Century. On the French side, a young lieutenant, the Marquis de Chabert, was commissioned in 1750 and 1751 to conduct a series of astronomical and geodetical observations in Canada. At the same time, the Minister of the Navy had about fifteen vessels fitted out in Quebec with officers and pilots who were assigned the task of surveying the coasts and waterways. Finally, each of the King's ships was required systematically to complete a hand-drawn chart allotted to it for the purpose of collecting information.

If it was young Chabert who gave the initial send off to scientific surveying in northern America, it is to the famous Captain James Cook that falls the honour for having given a correct overall view — although essentially based on estimations — of the coasts of Newfoundland (1765-1767). It was he, again, who, during

his third voyage in 1778, carried out the first thorough reconnaissance survey of the west coast of northern America.

A few years later, in 1786, La Pérouse was assigned the mission of carrying out reconnaissance surveys of the parts of the coasts which had not been seen by Cook, of seeking a possible way through into Hudson Bay, and of studying the possibilities of fur trading with China. Although his reconnaissance surveys were very rapid ones, La Pérouse was the first to suspect the existence of the string of islands along the coast of northern America. A few years after La Pérouse, during the summer campaigns of 1792, 1793 and 1794, and taking all the time necessary, Vancouver surveyed these coasts in much greater detail.

THE 19th CENTURY : FRANCE CONTINUES ITS HYDROGRAPHIC EFFORTS IN CANADA

The political events of the 19th Century affected France less and less in Canada. Indeed, all that was left to France was Saint-Pierre-et-Miquelon and fishing rights in Newfoundland.

In the maritime field, three important factors are relevant :

— Firstly : the gradual replacement, from 1820 onwards, of sail by steam, illustrated by the first regular trans-Atlantic service started in 1840 by the "Cunard", from Halifax.

— Secondly : the gradual fall-off, from 1850 onwards, of the "shore" fishing in Newfoundland, following the revival it had enjoyed just after the wars of the "Empire" period in France. The Parliament which Newfoundland had in 1833, and the increase in population, made it more and more difficult to maintain a French community on the "French shore". The "Entente Cordiale", signed in 1904 between France and Britain, put an end to France's exclusive fishing rights in Newfoundland. But on the other hand, Saint-Pierre-et-Miquelon had become an important centre and the cod-fishing vessels working on the Banks went there to unload their fish.

— Thirdly : the laying down of certain regulations for maritime traffic approaching northern America. The famous Maury, who invented "Pilot Charts", was the initiator of the recommended routes to and from landfalls in Canada. Already in 1855 he was aware of the danger to Newfoundland fishermen and their boats from trans-Atlantic traffic in the area. Four great routes were officially fixed in 1898, for two different periods of the year and two directions of traffic (Europe → America and America → Europe), respectively. However, from 15 August until the month of October, the system in force exposed fishermen on the Grand Bank, at night and in fog, to collisions with steamships. For that reason, the French "Compagnie Générale Transatlantique", despite the expense and the delays involved for its ocean liners, stopped sailing over the Grand Bank during the fishing season from about 1900 and took routes which went further south of the area.

The 19th Century saw few changes in surveying techniques once the new methods invented by the British and the French had been recognized and adopted. The problem of determining longitudes had at last been overcome. Triangulations and progress in topography served as a framework for positioning at sea, carried out using a sextant, or hydrographic circle. The lead line continued to be used for sounding depths.

On the other hand, the increase in sea traffic created new needs. For ships of greater draft, able to travel at greater speeds, it was necessary to undertake systematic surveys, seeking out shoals and marking fairways, and to keep nautical documents up to date by means of notices to mariners (from about 1850).

French surveying continued very seriously in Newfoundland, Saint-Pierre-et-Miquelon and on the Banks, especially during the second half of the 19th Century.

The work carried out along the same lines by the British and the French resulted in detailed charting of all Canadian waters. Cook and Lane had been the authors of the first modern chart of Newfoundland, at the end of the previous century. They were also the authors of the first Sailing Directions for Canada. But the French made their contribution in the sectors for which they were responsible.

CONCLUSION

Retracing the history of French hydrography in Canada leads us to conclude by highlighting the following :

- Canada appears to be both the first country in northern America discovered by the French and also the region presumed to be the most likely for a sea passage to the Far East. Jacques Cartier was seeking this famous passage when he took possession of Canada.
- French hydrography in Canada, because it extended over a very long period, is a typical example of the development of this technique through the ages.
- France had the privilege of being the first country to chart Canada, but the slow decline in French influence in the 18th Century, following the Treaty of Utrecht, which coincided with the period of the greatest technological advances in hydrography, gave the British the advantage of producing the first complete modern cartographic portrayals of Canada.
- By being present for over three centuries in Canadian waters, French hydrographers set up an absolute record for work carried out beyond the shores of the metropolis. And if one adds the fact that French possessions in Canada were limited, from 1763, to the islets of Saint-Pierre-et-Miquelon, one realizes that the Canadian page of the history of French hydrography illustrates in its own way the role played by France in the past as a nation with a maritime calling.