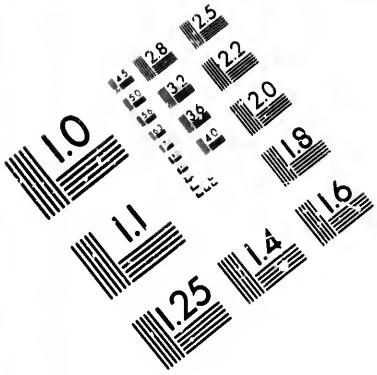

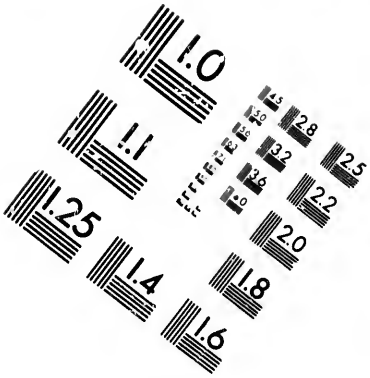

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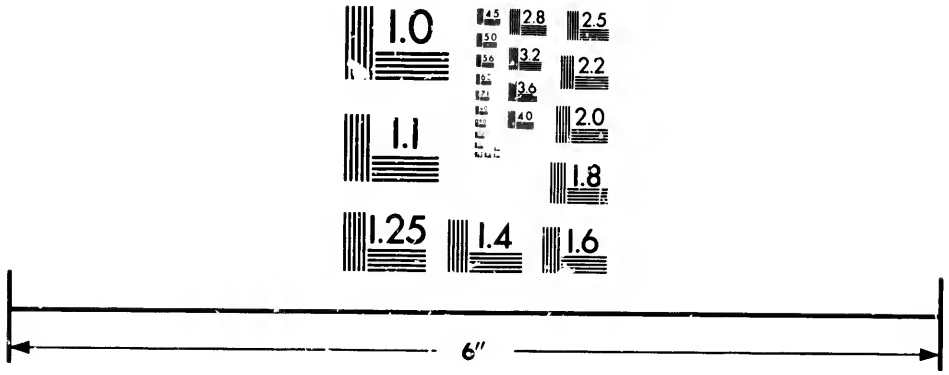

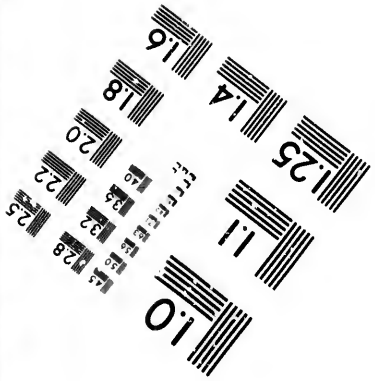

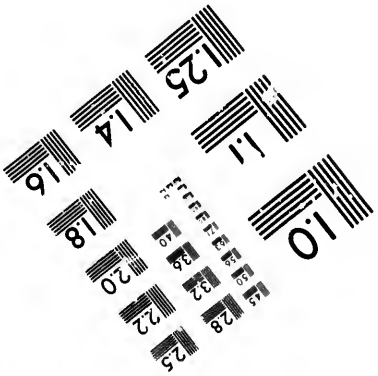

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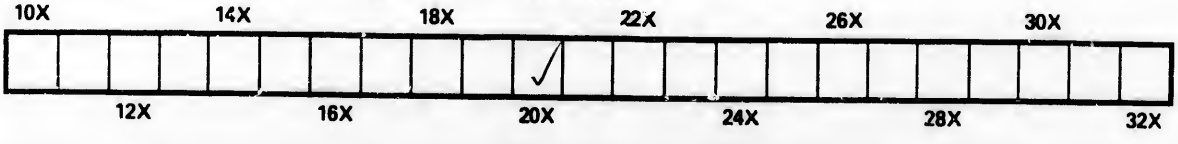

THE BEGINNINGS

OF THE

St. Lawrence Route

BY

Arthur Weir, B. Ap. Sc.

A LECTURE DELIVERED BEFORE THE SCIENCE STUDENTS OF McGILL UNIVERSITY, JANUARY, 1899.

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THE BEGINNINGS

OF THE

ST. LAWRENCE ROUTE.*

(REPRINTED FROM THE CANADIAN ENGINEER).

There is a river which contains more salt water than fresh, which has a seaport almost a thousand miles from any ocean, a river that twice in the day flows backwards. At one season it affords navigation to the largest vessels, and at another it has upborne upon its crystal surface a train of loaded cars, with busy locomotives. It flows past virgin woodland, past cultivated fields, and past cities, is sentinelled for hundreds of miles by the oldest mountains in the world, expands into vast lakes, swept by sudden storms, and contracts in narrow gorges, toothed with rock, where its wrath and strife are titanic. It penetrates a continent like a wedge, and makes a maritime people where the phenomenon of the tides is wanting. It has been the haunt of pirates, of smugglers, the route of heroes and of savages, the scene of wreck and the arena of glory. It is to the Canadian what the Tiber is to the Roman, the Nile to the Egyptian, the Rhine to the German; for that river is the St. Lawrence.

The St. Lawrence gives the Province of Quebec a seacoast of 2,500 miles or 500 miles more than that of England. From the Straits of Belleisle to Duluth it has a length of 2,384 statute miles. Montreal, at the head of ocean navigation, is 986 miles from Belleisle, and the river is salt as high as St. Thomas, 766 miles from the ocean, while the tides are regular as high as Three Rivers. The great lake system with connecting waterways has an area of 98,000 square miles, a coast of 2,112 miles and the basin area of the system is 330,000 square miles, a generally fertile country cap-

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*Abridged by the author, Arthur Weir, B.Sc., from a lecture delivered before the Applied Science students of McGill University, Montreal, January, 1899.

able of accommodating 108,500,000 inhabitants if as densely populated as the United Kingdom. From the ocean to Quebec the river varies from seventy to ten miles in width, with a proportionate depth. It is, however, dotted with reefs and islands and subject to fluctuating currents and summer fogs, which render necessary the present magnificent system of lighthouses, sirens and buoys. From Quebec to Montreal the river is rarely less than two miles in width, and its depth is never less than thirty feet, except where a score of shoals aggregating fifty miles in length have had to be dredged, giving at present a navigable channel of 27.5 feet.

The current of the river is usually gentle, but in its descent of 235 feet from Lake Ontario it traverses a series of steps creating about forty miles of rapids, which have had to be overcome by the construction of some seventy odd miles of canals. The continuity of navigation on the great lakes is interrupted by the Niagara Falls, to overcome which a canal nearly 28 miles long has been constructed, and by the Sault Ste. Marie, where there is a canal, short, but otherwise on a gigantic scale, to accommodate vessels almost as large as those that brave the tumult of the Atlantic.

The St. Lawrence route in whole or in part is the natural outlet of the interior of the continent to the Atlantic seaboard. Its headwaters are equi-distant between the Atlantic and the Pacific, and engineering work of an easy nature might render continuous navigation possible from the foot of the Rockies to Montreal. The old canoe route by way of Georgian Bay, Lake Huron, French River, Lake Nipissing and the Ottawa, while studded with difficulties, is even shorter than the Great Lake and St. Lawrence route for traffic originating west of Lake Huron, but would use the St. Lawrence from the mouth of the Ottawa downwards. A short distance below Montreal the Richelieu enters the St. Lawrence, giving access to Lake Champlain and the Hudson Valley, and to New York, the distance from Montreal to the United States metropolis being 457 miles by this route, of which 372 miles would be natural navigation. The present objections to the St. Lawrence route are several. In the first place there is no Canadian lake harbor sufficiently equipped or deep enough to compete for trade with the United States lake ports, many of which have been deepened at large

expense. Secondly, the river cannot be said to be open more than seven or eight months in the year. And thirdly, the existence of tolls militates against the natural advantages of the route. The competition of railroads and of the Erie Canal, which is free of tolls, renders the advantage of the St. Lawrence route almost useless to stay the tide of traffic by way of the United States. Of course, the Erie Canal is not navigable in winter.

Champlain's escapade on the lake named after him, in which he shot an Iroquois chief, closed the St. Lawrence against the French until 1653, and in that year it was open only for a short time.

In Champlain's day, Tadousac was the leading harbor of Canada, subsequently being displaced by Quebec and then by Montreal, for it is a rule of trade that it will ever go to the head of navigation.

During the French regime the St. Lawrence was the centre and not the boundary of Canada. Her trappers had over-run the country south to the Gulf of Mexico, had skirted the flanks of the Rocky Mountains, and d'Iberville had performed feats of valor against the British posts on Hudson's Bay. Lake Mistassini was known, and there was scarcely a pellucid stream west of the Alleghanies which had not rippled to the paddle of the courier de bois. The trade of Canada was chiefly in furs, and but for the expenditures from the military chest the country would have been in a state of chronic bankruptcy. Foreign trade was prohibited, and anyone engaged in it was treated as a pirate. Huguenots were forced to leave the country every fall, the more important trades were always in the hands of a monopoly, prices of commodities were fixed by Government officials; as also were freight rates. Non-resident merchants were not permitted to trade with the Indians, and could do business only below Quebec, and then only during three months of the year. But there was nevertheless some traffic in the country. The fur trade just before the outbreak of the war of the Conquest averaged from 200,000 to 300,000 livres per annum, and in 1615 there were, according to the Jesuit Biard, fully 500 French ships engaged in the fur, whale and codfish trade. Licenses for the fur trade were ultimately issued, costing from 500 to 1,000 livres at first hand, and good for one canoe. In 1754 the trade with the western posts amounted to 90 canoes. According to Lt. Gov. Miles the beaver

trade never exceeded £ 140,000 stg. per annum, and it was not half that in 1754 and 1755. In 1688 Canada produced 101,000 bushels of wheat, increased by 1734 to 738,000 bushels. The exports of wheat at the latter period were about 60,000 bushels. At the close of the French period the exports were still only raw materials, furs of all kinds, porpoise oil, cod, salmon, eels, lumber, and such like, while even bacon and flour were imported, the imports amounting to about 8,000,000 livres, against 2,500,000 of exports. During 1759 the requirements of the colonists were met by 12,000 tons of shipping, although they were in the throes of war and depending almost entirely upon external support. I may here remark that these figures are not entirely reliable. The science of statistics did not come to anything like perfection in Canada until after Confederation. The imports of 1765 are placed by a memorial of the time at 4,000,000 livres and the exports at 1,500,000. I give the figures I find to hand, merely because they will in a measure give some idea of the early trade via the St. Lawrence.

The intendant Talon, to whom all honor, came to Canada in 1665 and may be looked upon as the father of commerce in Canada. He established a brewery that the money the people spent on liquor might at least be kept at home. In 1667 he built the first Canadian built ship at Quebec, the beginning of a very important trade, carried to particular extent in the Maritime Provinces. This ship he sent to the West Indies to open a trade with those islands. It carried out salt cod, pease, salmon, eels, fish oil, staves and planks, and brought back sugar. Later, wheat was exported, of which 54,000 bushels were sent out in 1685. Attempts were also made to establish an export trade to France, exclusive of peltry. The season of navigation on the St. Lawrence has been placed at about eight months. During the French regime it was only four months, the ships from France arriving in July, August and September, and sailing again in November. The duration of a voyage in those days was uncertain. The Jesuits Biard and Masse were four months between France and Canada, from January to May. Talon himself was 117 days en route, and de Levis was to be congratulated in crossing the ferry in 56 days in 1756. Sometimes the ships were blown back to France after sighting America,

as was de la Roche in 1598; sometimes they became plague stricken, as was the "Rubis" in 1740; and wrecks were frequent, that of "la Providence" in 1718, "le Chameau" in 1725, "l'Elephant" in 1729, the "Beauharnois" in 1731, "la Trinite" in 1752, and the "Chamelion" in 1753. The ships of the day were of very small tonnage. Champlain crossed in one of 12 tons. One could wash in the sea from the deck of the vessel of "la Roche."

The cost of a passage in one of these ships was 33 livres in 1664, increased to 40 livres by 1672. In 1740 freight charges were 25 francs per ton. Every ship coming to Canada from France, and it might come only from a French port, had to conform to the tariff of prices in selling its cargo, had to bring out, if desired, one immigrant for every ton of its burden, refrain from trade with the Indians, and carry a certain proportion of salt, iron and coal, although the St. Maurice forges were in operation and the outcrops of coal in Acadia were utilized by the French in that district. From the Gulf of St. Lawrence to Quebec during the French regime there was not a single friendly light to guide the mariner through the sometimes tortuous channels. And the Gouffre and the Traverse, still somewhat boisterous at certain stages of the tide, were then as dangerous as the maelstrom. These once dangerous spots, a little below Quebec, have now been largely silted in, and are of small consequence to vessels of to-day. In the days of sailing vessels, however, many a wreck took place there and the first buoying of the St. Lawrence was done at the Traverse.

As already stated, the lower portion of the St. Lawrence is a seacoast with all the dangers of one; and it was early charted. There is a chart of the river in the Archives Department at Ottawa, bearing date 1695. It was, however, between 1717 and 1737 that the charting of the St. Lawrence was first developed to any extent. In 1723, l'Hermite, the father of charting on the river, began his labors. He and Richardiere, harbor master at Quebec, took soundings in the Gulf and river, and in 1737 the latter was busy cutting landmarks for the mariner. In the same year was first lit the fire tower of Louisburg, the only beacon that flamed along those shores for maritime purposes during the French regime. In passing, I may mention that the Indians in early times in crossing from

Cape North to Newfoundland and back were wont to light beacons upon that towering mass, which they called Sakpeediah or Smoky Point in consequence.

Above Quebec there were no impediments to the vessels of the day, as far as Montreal, although Jacques Cartier ran aground in Lake St. Peter. The usual means of conveyance was by canoe and subsequently by rude batteaux, which were days and sometimes weeks upon the trip. The usual duration of a voyage between Quebec and Montreal was six days, Three Rivers being the midway point. It was customary to land each night and billet upon some seignory. The luxurious Bigot had a most sumptuous barge with silken awnings when he made his customary visits to the future metropolis.

The only important engineering work begun in connection with the St. Lawrence route during the French regime was the attempt to construct a canal between Montreal and Lachine, to overcome the Sault St. Louis or Lachine Rapids. In 1700 a contract was signed by Dollier du Casson on the one part and Sieur de Catalogne on the other to construct a canal some twelve hundred feet long and twelve feet wide from Lachine to connect with a little lake, called St. Pierre, which in turn connected with two streams, one of which ran through what is now Craig street. The work was interrupted in 1701 by the death of Du Casson, and although many attempts were made to complete it, the Seminary spending some 20,000 francs in work begun in 1717, a heavy rock cutting that was encountered finally brought all operations to a standstill.

It may be interesting to remark in view of the present endeavor to find a winter outlet for the St. Lawrence that during the French regime the harbor of Bic was designed to be improved and fortified to make it what Louisburg was to Acadia and what Halifax is to-day, a naval depot and winter port for trade. French shipping on the great lakes began as we all know with the journey of LaSalle, who built a vessel to navigate Lake Ontario, left it at the upper end of the lake, passed Niagara and on Lake Erie built the "Griffon" in 1679. She made one trip into Lake Michigan, and was lost on her return journey. As early as 1700 there were two or three brigantines on Lake Ontario, and in 1756 from six to ten schooners and brigs, as well as a number of large batteaux.

I will close this sketch of the French regime by remarking that the priesthood, who do all things decently and in order, had a series of regulations regarding travel which read quaintly to-day. They were to tuck up their robe on getting into a canoe, and were not to wear their shoes or stockings, though they might don these when portaging. Above all, they were to be careful that they took no sand into the canoe upon their feet and that the brim of their hat should not annoy the savages, an item which might bear quotation to-day in theatres, although the alternative that they should wear their nightcaps because there is no such thing as impropriety among savages, might be asking too much of the ladies.

The first canals of Canada were constructed for military purposes, by the royal engineers. They were the direct result of the American Revolution. During this war there were about six thousand troops in the Great-lake region who depended upon Montreal for supplies, no fewer than 670 boats being required to transport provisions in six months. These batteaux sailed in brigades of ten or a dozen to aid one another in surmounting the sluicing cataracts of the upper St. Lawrence, particularly the Long Sault, which required an entire day to ascend. This was an object lesson not lost upon the authorities, and improvements were begun at these rapids in 1779 by Captain Twiss, R.E. The first canal was begun at Coteau du Lac, the first plan being to make the lock walls of timber, but they were subsequently made of masonry. It was begun in 1779 and completed by 25th October, 1780, with three locks and iron flood gates. The locks were forty feet long, six feet wide and less than thirty inches of water covered the sills. It would have been useless to make them deeper without undertaking a much greater length of canal. Mr. de Longueuil, who had built a mill a little above the Cascades, had thereby somewhat improved navigation, but Captain Twiss further improved the canal here, which was designed merely to overcome the current, and he was shrewd enough to make Mr. de Longueuil defray part of the expense. In 1781 work was begun on canals at the Cascades and Cedars, and the Split Rock channel was deepened. Cornish miners were employed upon the various rock cuttings and blasting work, which was carried on in various perilous places throughout the series of rapids, dangerous rocks being blown to atoms. The

Cascades Canal was at Cascades Point, where a shallow and rapid channel discharges from the St. Lawrence into the Ottawa, known as Les Faucilles, between the main river and Ile le Moyne. It was a batteau canal with two locks, and about 200 yards long. The Split Rock Canal was at a point where the current is greatly accelerated by the projection into the stream of Point au Buisson, on the southern bank. The remains of this lock are still to be seen.

These canals were all batteau canals. The batteau had about the dimensions of the Venetian gondola, but there the resemblance ended. It was built of pine wood, about 5½ feet beam, 35 feet long, was flat bottomed, pointed at both ends, and drew very little water. A batteau containing 25 persons, their baggage and 25 barrels of flour, is said by a traveler of the time to have drawn only eight inches. But this must have been a very large batteau, as the average batteau load was 30 barrels of flour and the crew of four or five men. When these canals were constructed the annual traffic on the upper St. Lawrence to Carleton Island amounted to from 240 to 320 batteaux. On the completion of the Coteau du Lac Canal, Twiss, with the cordial consent of the merchants, imposed a toll of ten shillings currency per batteau, increased to twenty-five shillings when the series of canals was completed. Ten barrels of flour being reckoned as a ton, we find that the early canal tolls were $1.66 per ton. The present rate on the Beauharnois Canal, which replaces these canals, is $0.15 per ton.

The canals remained in this condition until 1800, after the formation of Upper Canada, which took place in 1793. The effect of the improvement in the rapids is well shown by the toll receipts, although we must not forget that Upper Canada was being rapidly populated by exiled United Empire Loyalists. In 1781 some 263 batteaux, two canoes and one boat used the Coteau Canal. The tolls for a time declined, probably because no ships were permitted upon the Great Lakes except the King's vessels, but subsequently increased and in 1799 were double what they had been in 1795. By 1800 the traffic was so great that improvements were demanded, and although to detail these here is to trespass upon our third period, it may be well to do so and complete the history of canals at this point prior to the Union. In 1800, Col. Gother Mann proposed to increase the capacity of these canals. The

Coteau Canal was to be widened to 9½ feet in the lock gates, the lock itself to be widened four feet and the canal prism two feet. This would make the locks ten feet wide, and the dimensions are from the report of our Archivist, although Mr. Keefer in his admirable monograph on the canals of Canada states that they were enlarged to twelve feet. So also the two differ as to the length of the locks, which Mr. Keefer places at 110 feet and Dr. Brymner at 120 feet, the first probably allowing for the opening of the gates. Col. Mann proposed to replace Mill rapid and Cascades canals by one canal across a neck of land from the St. Lawrence to the Ottawa about 900 yards above the Cascades, and 300 yards wide. His suggestions were accepted and work was commenced, the work being completed by 1805. Old documents enable us to estimate the depth of the enlarged canals at 3½ feet, and Mr. Keefer places them at four feet. Rock cutting was here encountered, the first of importance since the ill-fated French Lachine Canal.

The Durham boat was introduced after the war of 1812, and compared with its predecessors it was a leviathan. How the habitant must have swelled with pride to see a ship ascend the St. Lawrence with ten times the capacity of the early batteau. The Durham boat was flat bottomed, with keel and centreboard, rounded in the bow and decked at bow and stern with a wide gunwale running its entire length for purposes of poling. Its capacity was 350 barrels of flour, or 35 tons. To accommodate these vessels it was necessary to further enlarge the canals in 1817, to 12 feet between the gates. By that time nearly 900 batteaux passed the canals annually, and in 1833 some 863 batteaux and 612 Durham boats carried the trade of the Upper St. Lawrence. In early days the western country had to be fed from the east. Where now waves the golden wheat of Manitoba the traders were exposed to starvation if the supply boats did not arrive at the grand portage in due season. The first shipment of wheat from Chicago did not take place until 1838. This must be borne in mind in connection with what I now propose to review, the struggle for supremacy on the Great Lakes between the navy and the fleets of commerce. Before describing this struggle, however, it will be desirable to review briefly the history of the great fur-trading days, in order to show the volume of commerce that depended upon the result.

In 1802 the Montreal North-West Fur Company had 117 trading posts, 20 partners, 161 clerks and interpreters, 877 common employees in addition to 100 free hunters and 540 canoe men on the Ottawa. The London sales of 1801 were £371,139 stg. and they paid £22,000 stg. in duties. In 1780, according to Charles Grant, the trade from Montreal was from 90 to 100 canoes, and the furs brought down were estimated at £200,000, or $8 per capita of the population. Each canoe load cost £300 stg. in England. The freight charges across the Atlantic were fifty per cent. To transport it from Montreal to Machillimackinac cost fifty per cent. more on the original price, so that each canoe load was valued at over £700, much over $3,500 as compared with the present day; no inconsiderable treasure to trust to the rush of impetuous rapids day after day for weeks at a time. The work of the voyageur was highly specialized. His skill has not entirely passed from among us, but it is not now an integral portion of the trade of the day. He engaged as "devant" or in the bow, or "Gouverneuil," that is as steersman, or if not quite so skilled as the others as "milieu," or in the midships seats. The pole was quite as much in vogue as the paddle, and anyone using it had to keep the bow true against the current or the boat would be swept round and capsized, perhaps where no man could fall in and live.

In connection with cost of transportation I may say that the Hudson's Bay route to the interior in those early days, was 25 per cent. less, that is, it was 75 per cent. of the original price. Some three hundred men were employed west of the carrying place, men who exposed themselves to hostile Indians, to rapids and starvation so keen that cannibalism was not unknown among them. They straggled from the peaks of the Rockies, from the shores of the Saskatchewan and from the far north, even from the Mackenzie River, back to the carrying place between 10th June and 10th July each year, laden with rich furs, but with scarcely a mouthful of food, and if the supply canoes were delayed the results were terrible to think of. It was this that made the conflict for supremacy upon the lakes so bitter, and which ultimately led to the triumph of the merchants.

In 1755 the British built two sloops at Oswego on Lake Ontario, naming them after lake and site respectively, and in the same year General Shirley placed a sloop and

schooner, each of ninety tons, on the same lake in addition to a number of whale boats and galleys, which we might call batteaux. After the Conquest, merchants began to establish themselves to tap the rich fur routes, and Oswego was for some years the most important fur trading post on the continent. The Lake Superior copper mines attracted the attention of English capitalists and in 1770-71 a sloop of forty tons was built at Point aux Pins and sailed to Ontenagon. There was no difficulty in opening up the fur trade, so far as navigation of the lakes was concerned, until the outbreak of the United States revolution, almost immediately after which all private trade on the lakes was prohibited, and merchants' goods were permitted to be transported only on the king's ships. One may regret, but should not unduly complain of the hardships which war imposes upon trade, and the merchants of Canada, while very much put out by the new regulation, bore it with some equanimity until peace was restored, but while the number of ships of the navy was reduced to two ships on each lake after the war, the authorities refused to accord the merchants their former rights of free navigation. Then the storm broke. The merchants did all in their power to make the authorities see reason. They even offered to have their vessels commanded by a naval officer and pay his salary. Haldimand, on the other hand, thought it sufficient to place a third war vessel on Lake Ontario and Lake Erie. It will save time to quote Haldimand's own words in connection with the matter:

"The navigation of the Great Lakes by the king's vessels only," he said, "is an object so nearly connected with the entire preservation of the fur trade, that I have withstood various applications for building and navigating private vessels and boats upon the lakes; the rivers and outlets from them to the American States are so numerous that no precautions which could be taken in that case, would be effectual in preventing a great part of the furs from going directly into the American States. . . . I would therefore recommend by all means that a sufficient number of king's vessels be kept up on the lakes, and all other craft whatever prohibited not only for foregoing reasons, but in all events to preserve a superiority upon the waters of that country."

That sufficient of the king's ships were not kept up on the lakes is indicated by the fact that in 1784 the goods

intended for the interior trade were so long delayed at Kingston and Niagara that they could not be sent forward, while on the 16th July, 1785, there was little, if anything, short of 100 batteaux loads of goods to cross Lake Erie, besides thirty or forty loads at Kingston. Some of these goods had been awaiting transport for twelve months. Benjamin Frobisher put the case of the merchants in a nutshell when he wrote, sending a memorial: "All the company (N.W. Fur Co.) wishes for is on any terms to be left to the management of its own business." The merchants of Detroit (then under the British flag) declared that they were paying £3,700 stg. interest upon the goods detained at Carleton Island, and that the action of the Government would involve them in ruin. It required five years in those days to begin and complete a transaction in furs in Canada. The goods were ordered from England in one year, they came out the following year, went west the third year, the furs for which they were bartered reached Montreal in the fourth year and were sold in London in the fifth year, during all of which period interest was accumulating. An extra year's delay meant a great deal to the merchants, many of whom went into debt for their goods.

By 1785 a relaxation in the regulation was made by St. Leger at Detroit, and merchant vessels were once more spreading their sails on the lakes in 1791. The "York," one of the pioneers of the now gigantic fleet, was launched at the mouth of the Niagara in 1792. One of the historic vessels of the lake trade was the "Beaver," built in Detroit in 1784. She was built for the navigation of Lake Superior, by the North-West Fur Company, but could not be got up the Sault Ste. Marie. As the company declared that she was built at inconceivable cost ($7,374), and altogether looked upon her as a phenomenon, you may like to learn her dimensions. She was 34 feet long in the keel, 13 feet beam and 4 feet deep in the hold. On Lake Superior to-day are vessels exceeding 300 feet in keel length, 42 feet in the beam, and drawing 16 feet; I am speaking of the "Pope," which has carried 126,000 bushels of corn, weighing 3,527 tons. In 1797, by the way, was launched the first United States vessel on Lake Erie, the "Washington," which after one season was bought by a Canadian, taken on wheels—you can imagine her size—around the Niagara Falls, and sailed for Kingston from Queenston in 1798 as the "Lady Washington."

Let us now pass to the consideration of the early coasting and foreign trade of Canada by way of the St. Lawrence. Quebec was then the metropolis, the great seaport. In its narrow streets the drunken sailor staggered, and the press gang snatched him from the siren's lure. Often the merchant vessels had to put to sea dangerously short-handed because His Majesty—God bless him—wanted sailors and took them when he would. The brandy dram of the Elizabethan age had now become rum. It was part of the wages of a sailor. Tommy Atkins must needs have rum also, and the roll of the kegs followed the roll of the drum into the western country, and the commissariat was often hard pushed to satisfy his wants.

While glad to throw off the colonial yoke, the United States was not willing to relinquish colonial advantages, and it may seem strange to you to be told that United States traders made a strong effort to continue enjoying the advantages of the Navigation Act. The Navigation Act was an act under which trade to British ports was permitted only in British ships, and when at last the United Statesians found themselves formally and by legal opinion declared foreigners and not eligible to come into Canada under the act, they resorted to forging the registers of their vessels, some two hundred being issued between 1788 and 1790, being chiefly Mediterranean certificates, with which region Canada had for many years a fairly extensive trade. The Navigation Act was repealed for Canada in 1849.

Canada's trade with the rest of the continent towards the close of the eighteenth century was not very extensive. From 1768 to 1783 inclusive, the entries at Quebec averaged only twenty-four per annum, the average burden being 64 tons. The largest number of arrivals was 76 in 1774, and the largest average tonnage was 97 tons in 1780. The average annual clearings during that period was 26, and the average tonnage cleared was eighty tons. The largest number of clearings was 38 in 1778 and the largest average tonnage was 136 in 1781. In 1782 there were only two arrivals and in 1780 only twelve vessels cleared. The average tonnage in 1769 was 41 tons and the lowest yearly average of tonnage cleared was 49 tons in 1771 and 1773. Such were the cockle shell coasters of a century ago. These vessels brought in the bulk of the rum used in the country, and a very large portion of the coffee, sugar and molasses, although the last two were most extensively brought from

the West Indies. Large quantities of pease were exported between 1770 and 1775, with much lumber, wheat, biscuit and flour. The exports of flour between 1768 and 1783 averaged 2,334 barrels per annum. In 1802 Canada exported 1,010,033 bushels of wheat, all countries, 28,301 barrels of flour and 22,051 cwt. of biscuit. The average tonnage of the ships that entered at Quebec from Great Britain from 1768 to 1780 was 145 tons and the average crew was ten men. In 1793 two fairly large vessels, one of 299 tons and the other of 301 tons cleared from that port, but there was one mere jolly boat of 72 tons and the average had risen only to 176 tons. Great Britain was Canada's chief port for potash, fish oil and lumber. Before the United States revolution thirty-four ships and four hundred men satisfied the commerce of Britain with Canada annually. The West Indian trade and trade to ports other than British or American was not large in those days, and was confined chiefly to codfish, salmon, boards, planks and wheat exported; and imports of molasses, sugar and salt. Wines and teas were brought usually from England. Canada did a good trade in masts in those early days, these being usually sent to Gibraltar.

The position of Governor-General of Canada was by no means a sinecure in these early days. Canada was cut off for the six winter months from all communication with the Motherland, except via Halifax by couriers to Acadia. Mails were not frequent even in summer, and the Governor was a Governor indeed. One of Haldimand's first proposals was the establishment of a line of fast vessels, to sail once a month or every six weeks for the conveyance of the mails to and from Europe. It was not, however, until 1787 that a monthly mail was established between London and Halifax. The European news of the Quebec Gazette in 1764 was seventy days old. The trade fleet usually left Great Britain for Canada towards the end of March, and a second fleet followed in July. It may be inferred from the register of shipping at Quebec that the season of the port opened 1st July and closed 1st October, a period of three months, now doubled. Mention has already been made of the early efforts of the French to chart and landmark the St. Lawrence. Under early British rule further progress was made. It is not generally known that the celebrated Captain Cook was with Wolfe at the capture of Quebec and aided that commander

very greatly by taking soundings in and about the harbor of Quebec, being so nearly captured on one occasion that his foes had leaped into one end of his boat as he sprang out of the other. He also charted the river below Quebec in places that had been found intricate and dangerous, and, so said his biographer in 1788, "his work was so accurate that it hath not since been found necessary to publish any other." He surveyed Miquelon and St. Pierre and the coast of Newfoundland in 1763-7, and held from the latter year the title of Marine Surveyor of Newfoundland and Labrador. Captain Bayfield, who charted the river very extensively, was no unworthy successor.

As early as 1785 the London Merchants trading to Canada offered to place buoys in the Traverse, if the authorities would maintain them, and the proposal was received with favor. As early as 1783 the buoying and lighting of the river had been proposed, and attached to the recommendation was a report showing that sixty vessels had been wrecked in the river between 1776 and 1783. In 1788 the Council declared that it could not afford the expense of lighting Green Island, and it was not until 1809 that a light shone upon that dangerous strand, which is almost opposite the Saguenay. This, I believe, was the first lighthouse in the St. Lawrence.

We come now to a period which we cannot treat in such detail as has hitherto been done. Improvements began to come rapidly. The influx of exiles from the United States had begun to give the upper country an air of civilization, and in 1793 the province of Upper Canada was created. Its wonderful prosperity had all to do with the development of the St. Lawrence route, up to Confederation at least, and we will begin our consideration of the third period by describing the advance of shipping on the Great lakes up to the Union of the provinces in 1841. The first canal on the lakes was built by the North West Fur Company, at Sault Ste. Marie about 1800: Mr. Keefer says, in 1798. The United States had a canal in 1800 from the Mohawk river to Wood's Creek, the first effort to establish communication with the Hudson river, that is to say, forerunner of the Erie canal. The canal of the Fur Company was built at the lower end of the rapid on the northern or Canadian side, and supplemented a road by which the goods of the company were transported to the landing on Lake Superior. The commerce on Lake

Superior was developed later than that on the other lakes. Canadian companies navigated it from about 1800, one of the first vessels being the "Recovery," owned by the British Northwestern Company. She was of 150 tons burden and a brigantine. The "John Jacob Astor," the first United States vessel on this lake, was launched in 1835.

Coming to the next obstruction in navigation on the lakes, there is the historic Niagara portage, which was in a good state of development in the French regime and over which the bulk of the carrying remained in the hands of Canadians until the United States passed the embargo and non-intercourse acts of 1807 and 1809. This portage was usually leased to one firm, which had a fixed tariff. There was another portage from Toronto to Georgian Bay, avoiding the navigation of Lake Erie.

For many years there were no roads worthy the name in what is now Ontario. All travel was by water, and in time a class of packet schooners arose which reached a high state of development. Then came steam, first used in Canada at Montreal, by Hon. John Molson in 1809, and used on the great lakes by Canada before it was used by the United States. The "Frontenac," built in 1815, and the "Queen Charlotte," built in 1816, both antedate the United States vessel the "Ontario," which was so poorly constructed that her paddle shaft was thrown from its bearings during the first trip. But the heat of the furnaces, the clank of the engines, and the smell of the whale oil lamps in the cabins of the early steamboats were not conducive to hearty appetites, and it was not until the thirties that the competition of a line of steamers from Toronto to Prescott was able to place the schooners in the background. The speediest of these steamers made four miles per hour against a stiff breeze, and her walking beam was as broad as it was long. She was subsequently transferred to the lower lakes on the St. Lawrence proper, and the "Sir Robert Peel" took her place on the route from Cobourg to Toronto.

In 1841 the propeller came into use on the lakes through the instrumentality of a Canadian, who had read of Ericson's invention, and urged an Oswego friend, then in New York, to look into the invention and let him know the result. The friend took one Van Cleve, of Lewiston, N.Y., to see the invention, and Van Cleve left the place with the monopoly of propeller traffic on the lakes in his pocket, the result of which was the "Vandalia"—such is the consequence

sometimes of consulting one's friends on matters of importance.

In the early years of the century there was not a lighthouse on the great lakes and the harbors were still in a state of nature. Some charting had been done, and it had been ascertained that the harbor of Toronto was rapidly shoaling. Measures to prevent this were proposed by Captains Richardson and Bonnycastle, but nothing was done until after 1841. Towards the close of the twenties some of the harbors, such as Port Stanley, Port Hope, Cobourg and Oakville, had been supplied with wharves, chiefly by private enterprise. The Queen's wharf at Toronto had been constructed prior to 1841, 1,091 feet long, with a depth of water varying from 9 to 12 feet. There was not a lighthouse on the lakes until after 1825, and the total expenditure of Upper Canada upon lighthouses, beacons and buoys, prior to the Union, was less than $100,000.

We all know that steam navigation in Canada began with the Molson line between Montreal and Quebec, the pioneer of which was the "Accommodation," launched in 1809.

In 1826 the firm now known as that of David Torrance & Co. purchased from John Handyside & Co. the tug and passenger steamer "Hercules," and placing Captain Brush in command began a competition with the Molson line. This was the origin of the Richelieu and Ontario Navigation Company.

Steam navigation speedily spread beyond Quebec and Montreal. Above the latter city on Lake St. Louis, a steamboat was placed as early as 1824, and there was one on the Ottawa above Carillon in 1819, followed by one on the lower Ottawa in 1826. The first steamer to run the Lachine Rapids was the "Ontario," Capt. Hilliard. She made the perilous trip 19th August, 1841. The name of this vessel was subsequently altered to the "Lord Sydenham." In 1814 Lower Canada had a population of 335,000 and Upper Canada had 95,000, increased by 1825 to 479,188 and 157,923 respectively, an increase of nearly 70% for Lower Canada and quite 60% for Upper Canada. Side by side with this increase in population came an increase in trade, which added to the need of good communication experienced during the war of 1812, led to the devotion of a good deal of attention to the improvement of the St. Lawrence route and of the connections between the upper lakes.

The first important improvement in the St. Lawrence route was the construction of the Lachine Canal. Adam

Lymburner in 1791 had proposed a canal from Montreal to Lachine, and as a compromise, in 1805 a vote of $4,000 for the improvement of the river had been applied by the Commissioners to improvements in the Lachine rapids. In the following year a similar sum was applied to further improvements as well as for work between Montreal and Laprairie, at Point St. Charles and in the rapids above Lachine. In 1815 a company was incorporated to construct the canal, but failing eventually to secure the requisite capital, the Legislature took over the work in 1821, ground being broken 17th July by Hon. John Richardson. The canal was opened as far as the outskirts of Montreal by August, 1824, and the first vessel passed through in 1825. The canal was a barge canal with five feet depth of water and locks 100 feet by 20 feet. The advisability of canal construction by Government instead of a private company is well shown in the history of the Welland canal, which was begun in 1824, and completed after much mismanagement and many difficulties, including the falling in of the Deep Cut, in 1829, but so poorly that much subsequent work was requisite.

We now approach the period when Quebec lost to Montreal the proud and lucrative position of the ocean port of Canada. This came about through the construction of the lake St. Peter channel, which is one of the most unique canals in the world. Its length is about eighteen miles, and it affords a depth of twenty-seven and a half feet, its submarine walls being sometimes sixteen feet deep, and ranging from one hundred to one hundred and fifty yards in width. The history of its construction is interesting. In 1826 the merchants of Montreal presented a petition that aid be granted in clearing the St. Lawrence at Ile Plat and in Lake St. Peter. The matter was referred to a committee of the Legislature, who examined pilots and ship captains, all of whom thought that any channel which might be dredged would be almost immediately refilled by the quicksands. In 1830 Capt. H. W. Bayfield surveyed the lake, and in his reports of 1831 and 1835 expressed the opinion that it was doubtful whether a channel for vessels of deep draught were possible. Montrealers, however, do not acknowledge that anything is impossible to them, and in 1838 the Committee of Trade again brought the matter forward and asked for a sixteen feet channel in place of the natural one of only eleven feet and a half. A new survey

was ordered immediately after the Union of 1841, and the engineer, D. Thompson, declared a sixteen feet channel practicable. In that year the Legislature appropriated fifty-eight thousand five hundred pounds sterling towards the undertaking. The machinery and dredges required for the work were completed by 1843, and work was begun in the following year, a straight channel 150 feet wide and 14 feet deep being projected through the flats. This appears to have been an injudicious proceeding, as the currents drifted large quantities of sand into the excavations. Work was, however, continued until it was ascertained in 1845 that the appropriation would not be sufficient. A committee visited the work and decided that it would be better to abandon it and enlarge the natural but crooked channel, a proposal in which Capt. Bayfield concurred, only that he thought it more economical to complete the straight cut now that it had been so nearly finished. He advocated increasing the width to a hundred yards. The work was resumed, and discontinued in 1847 for want of funds, some seven miles out of nine having been dredged and seventy-one thousand pounds sterling having been expended.

Montreal would not accept its defeat. Its citizens kept up their agitation, and an act was passed in 1850 empowering the Harbor commissioners of the city to excavate a channel through the lake to a depth of sixteen feet, they being authorized to raise the necessary funds by a toll of not more than one shilling per ton on vessels drawing ten feet of water and upwards, and by borrowing thirty thousand pounds currency. The commissioners abandoned the straight cut and adopted the natural channel eleven and a half miles long, which by the following year they had dredged to a depth of thirteen feet, an increase of two feet, at low water. It was with pride and keen anticipation of a bright future that the people of Montreal in that year watched the "City of Manchester" pass down the river en route for sea, drawing fourteen feet. In 1852 the commissioners were authorized to effect an additional loan of $160,000, supplemented in 18_5 by a further authorization for $400,000. In 1852 the depth of the channel was 15 feet 2 inches at low water, and by the end of 1855 an additional foot had been gained, bringing the channel to the depth which had been contemplated. But ocean vessels had been growing larger, and the commissioners had

determined not to stop there. In 1855 they had received authorization to excavate a twenty feet channel, and proceeded with the work with energy. In 1859 the Government advanced them $60,000, on their plant. By 1860 a channel of seventeen and a quarter feet at low water had been reached, and the Harbor commissioners had contracted a debt of $680,000, not including the $60,000 due the Government. It is with some surprise that the writer notes a considerable difference in the statistics given by the Board of Trade and the Government on this subject. He has followed the Government report, although the Board of Trade declares that there was an eighteen feet channel by 1857. In 1860 the Government determined to reduce the toll imposed by the commissioners, and assumed the debt of $680,000, an action confirmed by Act of Parliament in 1864. When the channel had been brought to the depth mentioned, it was decided to make it twenty feet, the Government consenting to wipe out the $60,000 indebtedness and pay a further sum of $160,000 on the completion of the works, leaving the plant, which they had loaned the commissioners, in the hands of the latter. The twenty feet canal was completed by the autumn of 1865. But again it was determined to deepen the channel, and by 1878 it had reached 22 feet 6 inches. A depth of twenty-five feet was reached in 1882, and by 1888 a great celebration was held in honor of the passage of a vessel drawing twenty-seven and a half feet from Montreal to Quebec, making Montreal by the energy of her citizens the most inland seaport of the world. In that year the Government took over the works.

Canadians are too familiar with the history of the "Royal William" for me to more than refer to it here. Let it suffice to say that this was the first bona fide ocean steamship to cross the Atlantic, that she was built at Quebec, engined at Montreal, and performed her memorable voyage in 1833, sailing from Pictou on 18th August and arriving at Gravesend, seventeen days later. She was subsequently sold to the Spanish Government. The first company to run a regular line of steamers between Montreal and Great Britain was chartered in 1853, being granted a subsidy of $19,000 per annum by Government to carry a fortnightly mail. It also received $4,000 from the St. Lawrence & Atlantic Railway and $1,000 from Portland, which city it

made a port of call. On 10th May of that year the "Geneva," 350 tons, arrived in port, the pioneer of Montreal's ocean steamships, if we except the "Royal William." The "Geneva" was followed by the "Lady Eglinton" and the "Sarah Sands." The Canadian Steam Navigation Company did not, however, succeed, and was replaced as a mail carrier in 1856 by the Allan Line.

This famous Canadian line was founded by Captain Alexander Allan, of Saltcoats in Ayrshire, whose ship "Jane" carried stores to the Duke of Wellington in the Peninsula in 1815, and shortly after the peace began running between Montreal and the Clyde. His business prospered, and packet after packet was added to his fleet. When the deepening of the channel to Quebec had been partly accomplished, the Allans began to build steam vessels, the first in 1853, and were carrying a weekly mail to England by 1856. Their sailing fleet had reached sixteen in number. From 1857 to 1864 inclusive, the line suffered the loss of nine vessels by wreck, but the cloud passed away, and there is perhaps no line more fortunate in this respect to-day and for years back than that of the Allans, whose commanders never assume the risks which United States liners take. The line owes its rapid advancement to the labor of Sir Hugh Allan, son of the old sea captain, who came to Montreal about 1826 and there received his business training.

Prior to the development of steam navigation on the Atlantic, the sailing vessel had been brought to a high state of development, in the form of clipper ships, whose races with one another across the ocean were as much subject for excitement then, as a big ocean race to-day. I understand that Montreal has owned the fastest sailing ship ever built, the "Thermopylae." She was built by Walter Hood & Co., of Aberdeen, and ran from the Lizard to Melbourne, Australia, in sixty days, a distance of 13,222 knots. On one day she made 380 statute miles. Her run from Foo Chow, China, to London, 91 days, has been beaten by sail only by the "Sir Lancelot," which accomplished the voyage in 89 days.

I have already occupied too much of your time. We must hasten to a conclusion. The Union of the Provinces took place in 1841 and attention was at once turned to the completion of the various canals projected by the two provinces. During the period of the Union, notwithstanding

the political deadlock which ultimately rendered Confederation necessary, a very great deal was accomplished. At the time of the Union the Erie canal and the Rideau navigation were overshadowing the St. Lawrence route from the lakes. The Rideau was the freight route to the great lakes. But work upon the St. Lawrence canals was pushed forward. The Lachine canal had been opened in 1824 with seven locks 100 x 20 x 5 feet. In 1843 an enlargement was begun with locks 200 x 45 x 9 feet, five in number, the lowest two of which by urgent request of Montreal were altered to 16 feet of water on the sills, to admit ocean vessels. The canal prism was 120 feet wide at the surface and 80 feet wide at bottom, when Confederation took place.

The necessary plans for the Beauharnois canal were prepared in 1842, work was begun in 1843, and completed in 1845. It had at the time of Confederation a length of 11¼ statute miles, 9 locks 200 by 45 feet by 9 feet, and the prism was the same as that of the Lachine canal. The Cornwall canal to overcome the Long Sault was begun in 1834 and completed in 1842, the first vessel through being the steamboat "Highlander." The canal was formally opened in June 1843. The depth of water on the sills was the same as in the Lachine and Beauharnois canals, 9 feet, but the locks, seven in number, were ten feet wider, and the canal prism 100 feet at bottom and 150 at the water surface. The Farrans Point canal lock completed in 1847 had the same dimensions as that of Lachine, and the Rapide Plat canal, opened in 1847, the Galops canal, opened in 1846, and the Point Iroquois canal opened in 1847, were of the same demensions also, the canal prism in all three cases being, however, only 50 feet at bottom and 90 at top. Thus at the time of Confederation there was a channel for ocean steamers to Montreal 20 feet deep, the two lower locks of the Lachine canal had a depth of sixteen feet, and the rest of the navigation on the St. Lawrence was only on a 9 feet basis. The Welland canal was on a 10¼ feet basis, and the only canal in use from Lake Huron to Lake Superior was that of the United States.

In 1793, 114 vessels, of 15,758 tons and 933 men, arrived at Quebec. By 1841 this shipping had increased to 1,221 vessels, 425,118 tons, and 16,443 men, of which 13 ships and 5,057 tons were steamers. The "Unicorn" navigated between Quebec and Nova Scotia from 1840 to 1844

inclusive. In 1866 the shipping was 1,041 ships, 590,120 tons, and 15,695 men, 73 of the ships being steamers. The dangers of the route may be exemplified by the statement that between 1840 and 1849 inclusive 238 ships were wrecked of those engaged in the Quebec trade. In 1854 258 seagoing vessels arrived at Montreal, with a tonnage of 70,910 tons, and the river vessels in the port were 3,047 of 234,866 tons. In 1866, 516 seagoing ships of 205,775 tons arrived and 4,016 river ships of 417,349 tons. The million ton mark was first passed in 1892.

From comparatively early days it has been the ambition of the interior provinces and states to secure a direct route to Europe without trans-shipment, an ambition which the future may see realized. As early as 1858 a vessel passed from Chicago to Liverpool. This was the "Dean Richmond," which left Chicago on 17th July and arrived at Liverpool by the St. Lawrence route and the Straits of Belle Isle on 17th September, in sixty-two days and a half, about 12 of which were consumed in lightering and other delays. Her trip from Quebec to Liverpool consumed 29 days. The canal tolls on the St. Lawrence route during the Union may be taken as sixty cents per ton, a reduction of over 64% from the period of the Twiss canals, still farther reduced 75% in these modern times. I am taking the tolls upon flour and wheat.

The improvement of the St. Lawrence route opened up a fertile territory. The canals were to early Canada what the railroads have been since Confederation. In 1838 the exports of wheat from Canada were 296,000 bushels; in 1852 this had risen to nearly 5,500,000 bushels. Instead of the bulk of the trade going up the river, the shipments downward began that preponderance which have since characterized them. In 1854 the following was the relative standing of our exporting cities: Quebec, Montreal, Toronto, Coaticook, Dalhousie, Kingston, St. John's (Que.) and Whitby. In imports Montreal led, followed by Quebec, Toronto, Hamilton, Kingston, Stamford, Prescott and Port Stanley. The period closing with Confederation witnessed the establishment of the railway in Canada, which has since been an important rival and support of the water route The earliest railway and railway station, that at Laprairie, was opened in 1836 to connect with St. John's, Quebec. It closed down in winter, there being no traffic. There was also very short-

ly after a railway from Montreal to Lachine, and the Grand Trunk railway had united Montreal and Toronto with their present winter port at Portland. In 1868-69 the trade of Canada amounted to $127,876,000, exports and imports entered for consumption. As already stated there was only one lighthouse in the St. Lawrence in 1809. By Confederation there were no fewer than two on Labrador, 22 between the Gulf and Quebec, 27 between Quebec and Montreal, and 80 others above Montreal on the river, the great lakes and the Ottawa, a total of 131, of which 11 belonged to private individuals and companies. During the Union, over $1,000,000 was spent on lighthouses, beacons and buoys.

Before Confederation Canada possessed within her own boundaries no winter port, nor any satisfactory communication with her sister colonies in Acadia. Civilization stopped at the head of Lake Superior. The far west was in the hands of the Hudson Bay Company. At the time of the Union, Quebec and Ontario had a population of 2,500,000 souls, yet with the exception of the canal at Sault Ste. Marie, they had developed the St. Lawrence route to a point which left it necessary only for the new Dominion to carry out the plans and develop the trade of our fathers.