

THE HUDSON BAY ROUTE

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IN Newfoundland, occupied by a sea-faring people familiar with ice conditions and especially with the problems of navigating ice-laden waters, the agitation in Canada in favor of the Hudson Bay route and the arguments advanced in support of the movement are incomprehensible. For fully a generation past, Newfoundland steamers, masters and crews have been employed, more or less frequently, in the navigating of this region, and their testimony is almost unanimous in support of the argument that as a commercial venture the navigation of Hudson Bay has little, if anything, to commend it.

Moreover, this country saw, some twenty-five years ago, a scheme developed for the winter navigation of the St. Lawrence to such an extent that a steamer, the *Gaspesia*, was despatched from England in January to negotiate the Gulf to the Gaspé Peninsula. She got frozen amid the floes, and remained there until April, when she was cut out and towed to St. John's by the Newfoundland sealing steamer *Kite*, which in March entered the region in pursuing the annual seal hunt. This small, but stoutly-built wooden steamer of the Arctic whaler type was able to get about and navigate under conditions in which the *Gaspesia* was helpless, and such practical demonstration of the difficulties of the region proved the complete futility of the experiment of winter traffic there.

Yet, again, four times in the past forty years the Newfoundland Legislature has granted concessions to promoters of railroads from the settled portions of Canada, eastward through the Labrador Peninsula to the coast at the eastern end of Belle Isle Strait; but in no instance has the scheme ever been carried out, nor is it likely to be carried out in the future, unless the conditions of navigation change entirely.

In the early eighties an agitation for the Hudson Bay route first developed in Manitoba; and in 1886 the Newfoundland sealing steamer *Neptune*, with Commander Gordon, R. N. in charge, and Capt. Wm. Sopp, of St. John's, as ice pilot, was sent to the region to determine, if possible, the period of its navigability. It is admitted that Hudson Bay itself is not ice-bound at any period of the year except along the shore; and the difficulty is entirely in

Hudson Strait, which is choked for seven or eight months with ice from the Arctic archipelago north of Canada's mainland. Commander Gordon, after careful observation, reported Hudson Strait navigable only from about July 15 to October 15, by specially built steamers of about 2000 tons gross, fortified for combatting ice and so constructed as to be fair freight-carriers. The difficulties of the situation were set out by him in these words:

Having now made voyages in three years to Hudson Strait, and having examined the reports by the observers as to the formation and movements of the ice in Hudson Strait, I have the honour to submit this statement in regard to the navigation of these waters. I give the following as season during which navigation may in ordinary years be regarded as practicable for the purposes of commerce; not, indeed, to the cheaply built freight steamer, commonly known as the "ocean tramp," but to vessels of about 2,000 tons gross, fortified for meeting the ice, and of such construction as to enable them to be fair freight-carriers. These vessels must be well strengthened forward, should have wooden sheathing, and be very full under the counter. The propeller should be of small diameter, and be well down in the water, and I place the limit of size at about 2,000 tons, because a larger ship would be somewhat unwieldy, could not make such good way through the loose ice, and—being unable to turn so sharply—would get many a heavy blow that the smaller ship would escape. I consider that the season for opening for such vessels will, on the average, fall between 1st and 10th July. The closing of the season would be about the first week in October, partly on account of the descent of old ice from Fox Channel into the western end of the Strait, this old ice being rapidly cemented into solid floes by the formation of young ice between the pans; in which ice no ship, however powerful, could do anything to free herself. At this time, too, the days are rapidly shortening and snowstorms are frequent, though not of great duration. The tidal currents in Hudson Strait add very considerably to the risks of navigation. These currents vary in velocity from three to six knots per hour, and the uncertainty of their effect on ships has already been pointed out in the case of the *Fury* and the *Hecla*. The last, and indeed the most serious difficulty that I anticipate is in the faulty working of the compasses, especially about the critical ground of Digges Island. Mansell Island can, under most circumstances, be kept clear of by the lead; but about Digges Island nothing but the most sleepless vigilance and the greatest care will save a ship from disaster. Steamships built for the Hudson Bay trade would be constructed largely of iron, and only repeated observations for compass error can ensure adequate safety. In making a voyage from the United Kingdom to Hudson's Bay the dip changes from 67 deg. to 87 nearly. Further, in an iron ship, any severe concussion changes the magnetic condition of the ship; hence, when working through ice, constant changes would be

taking place in the ship's attraction, and consequently in the compass errors. I am further of opinion that in an iron ship making the voyage between say Liverpool and Hudson's Bay, on arrival off the western straits, the compass will not work. Altogether, I consider the navigation of Hudson's Strait as being more than ordinarily difficult, with shores inhospitable and bleak, presenting such a picture of loneliness and desolation that it takes some time to get accustomed to it. The only safety in thick weather lies in the constant use of the lead and keeping a bright lookout, as the dead reckoning is frequently in error to a considerable extent. In concluding these notes on the ice, it may not be out of place to state that whilst I am of opinion that there will always be more or less fluctuation in the opening of practical navigation for the purposes of commerce, the ship-owner who sends in a freight-carrying steamer before the 15th of July will almost certainly be subjected to such delay as will add very seriously to the cost of the voyage; indeed, it is by no means unlikely that given two similar steamships, one entering Hudson's Strait on the 15th of July and the other on the 5th, the first steamer might pass the second and get through with little delay. In regard to the closing of the season, so far as obstruction from ice is concerned, the end of October seems to be the time when the heavy old ice comes down in force; and although in 1886 this ice was driven eastwards by a heavy gale and the Strait remained open for some time longer, the temperatures have in November fallen so low and the days have become so short that the risks of navigation are seriously augmented.

Few of those actively promoting the agitation at the present time for the establishing of this route appear to be familiar with the investigation given to it nearly forty years ago, or to realize that so thorough a test was made at that time of its possibilities, or that the *Neptune* spent three summers cruising in and out of Hudson Bay with scientists making observations of the tidal, meteorological and other conditions that would have to be coped with; and they equally ignore the fact that similar investigations have been pursued at intervals since without materially modifying the conclusions reached at that time. Nor do they endeavour to disprove by any counter demonstration the soundness of the conclusions then sought or since confirmed.

After this report of Commander Gordon the project languished until 1896, when the Canadian Liberal Party, in the campaign which saw Laurier first elected Premier, promised a Hudson Bay railroad. Next year the Newfoundland sealer *Diana*, a consort of the *Neptune*, was sent to the region in charge of Commander Wakeham, with Capt. James Joy, of St. John's, as ice-master, and a representative of the Manitoba Government, Mr. James Fisher, K. C., on board. Commander Wakeham's report concurred sub-

stantially with Gordon's, fixing the opening of navigation as early in July, and stating October 20 to be "the extreme limit of safe navigation in the fall." He said:

I absolutely agree with Capt. Gordon in fixing the date for the opening of navigation in Hudson Strait, for commercial purposes, by suitable vessels, at from July 1 to 10. I do not consider that the Strait can be successfully navigated in June. I consider that navigation should close from October 10 to 15. Capt. Hause, an old sailor, and an exceedingly observant and intelligent man, who had navigated the Strait since 1864 and of recent years has been settled at Churchill as agent in charge, fixes the date for the closing of Churchill Harbor for shipping at October 15, and I consider October 20 as the extreme limit of safe navigation in the fall.

Again nothing was done until 1903-04, when the strong feeling in the West on this subject obliged the Laurier Government to despatch a third expedition, this time in the sealer *Neptune* again, with Professor Low the Dominion geologist in command, and Capt. Samuel Bartlett, of St. John's, as the ice pilot. Commander Low, in turn, gave the period of open navigation, "for ordinary iron steamships, through Hudson Strait and across Hudson Bay to the port of Churchill, at from July 20 to November 1st, which period might be increased without much risk by a week earlier in the season and by perhaps two weeks at the close."

Once more, nothing was done; but in 1911 the demand from the West was so great that the Laurier Government bowed to it, and shortly afterwards steps for the construction of the railway were taken, though the actual work was begun by the Borden Ministry. Port Nelson was chosen for the terminal instead of Fort Churchill, mainly because the line to Nelson would be sixty miles shorter, and apparently without due regard for the constructional problems which Nelson involved. The building of the marine works there for the shipping part of the venture was pushed forward also; and activity both on the construction of the railway and on the waterfront improvements was continued in the earlier years of the war, until the demands on Canada's men, money, and materials became so great that further work on this project had to be abandoned. Latterly, however, the agitation for the completion of the road has been revived; and it will, no doubt, be maintained as long as it is taken seriously.

These views are confirmed by the report of the officers of the Dominion Government's steamer *Stanley*, which likewise visited Hudson Bay in 1912 to make surveys of the Port Nelson anchorage. She was constructed for the navigation of Northumberland Strait

during the winter, so as to maintain daily traffic between P. E. Island and the mainland, and she is sheathed for ice work, though she is not as strong or as suitable for that business as the wood or steel ships of the Newfoundland sealing fleet. She left Halifax in July for Churchill, and arrived there on July 27. This would be about the most favourable season of the year, and yet her report shows that she met much ice on the inward trip, and that the cold was all the time about freezing point. She found the schooner *Chrissie Thomey* stuck in the ice. This last vessel had been chartered by the Canadian Marine Department to undertake other surveying work at Nelson, and the *Stanley* towed her to within fifteen miles of that place, meeting ice so heavy that a twelve inch hawser was broken once. On her return trip the *Stanley* met more ice than on going in. It extended for miles into the Bay, and at times was so heavy as to bring her to a full stop. Incidentally, it may be observed that this same year a steamer was carried up and down James Bay in the ice for eighteen days before reaching Churchill.

After construction work was actually started, ships of the Newfoundland sealing fleet were employed during five seasons, carrying to Port Nelson all the material required for the construction of the terminal system there. These terminals consisted of breakwaters, docks, piers, warehouses, etc., and the facts respecting these ships, which—it must be remembered—are specially designed to cope with ice, are as follows.

In the summer of 1912 the first boat reached Port Nelson on July 27, an unusually early date; in 1913 on August 7; in 1914 on August 14; in 1915 on August 10, and in 1916 on August 1st. The last boat to leave Port Nelson in 1912 sailed on October 16, and barely succeeded in getting through the Strait before the icepack closed it. In 1913 the last departure was on October 10; the last departure in 1914 was on October 14, when conditions were good for at least a week longer. In 1915 the last date ship sailed on October 12, and made a safe passage, and in 1916 the last sailing was on October 11, with conditions adverse. From these dates it will be observed that the maximum season for navigation in these waters is a little over three months. The minimum season is only two months, and it probably would be reasonable to estimate that shipping companies would base their calculations on a season of two and a half months' duration, since it would not be profitable to have ordinary grain freighters attempting to negotiate waters thickly strewn with ice masses. It is important, moreover, to remember that the length of the navigation season is not governed by the climatic conditions around Port Nelson and Fort Churchill

some sixty miles farther south, but by the flow of ice coming down from the Arctic Circle and blockading Hudson Strait so as to retard the passage of ships coming through that waterway. Again, it is stated that marine insurance for these waters runs from twenty to twenty-five per cent, which would be prohibitive for any Company whose ships were not chartered by the Government at a high rental, as those sealing steamers were.

On the other hand, it is only fair to say that the records show that for 185 years the Hudson Bay Company's ships have traversed these waters without missing a year, save one, and that for three hundred years it has been resorted to by ships of all sizes, from pinaces of twenty tons, frigates of seventy tons, whalers of three hundred tons, and latterly by freighters of one thousand and two thousand tons. To be sure this statement, in turn, has to be qualified by the proviso that the Hudson Bay Company's ships were small wooden crafts very stoutly built, and that the modern steam freighters were mostly Newfoundland sealers and especially designed for ice work. Nobody can tell how the ordinary commercial tramp steamer would accommodate itself to the conditions which prevail in that region, especially in the opening part of the season and towards its close.

All authorities combine in declaring that under any circumstances, in order to make the route safely navigable, it will be necessary to equip it thoroughly with lighthouses, fog-alarms, and other coast aids; a hydrographic survey of the Strait, the eastern section of the Bay (which contains many islands), and the approaches to Churchill and Nelson, will be indispensable also; and authorities lay stress likewise upon the difficulties which exist with regard to the unreliability of the compass, the uncertainty of the tides and currents, and the existence of what is known as "frozen fog," experienced there late in the autumn.

The consensus of opinion of experienced shipmasters in Newfoundland is that the Hudson Bay route will probably be available for about two months with reasonable prospect of safety for ocean freighters, that is to say, from the latter part of July until the latter part of September, but they do not consider that there is much prospect of its being safely operated after the end of September, because of the approach of winter, the lack of coast aids, and the need for training the class of shipmasters and seamen to utilize it.

The Montreal Star of May 9th last, in a report of a meeting of the Montreal Branch of the Engineering Institute of Canada held the previous evening to discuss the question, said this:

Impressive arguments against the project were given by H. R. McLellan, a marine engineer, who dealt with the Hudson's Bay route problems from a standpoint of navigation. Reading from the log book of a captain of a ship that had cruised these waters in a period from August 11 to the end of the month, he showed where the ship had encountered dense fogs, huge ice-fields, had drifted from its course innumerable times, and had damaged its propeller three times and was compelled to put back to Port Nelson and tilt the ship, a dangerous procedure for repairs. On one occasion the ship reached the straits, with the assistance of an ice-breaker, but was in no condition to proceed on a Northern Atlantic voyage. The captain, according to his log, stated that had he been carrying grain, two-thirds of the cargo would have undoubtedly been ruined before the straits were reached. The passage to the straits, on this particular occasion, took 14 days to complete. Snowstorms were encountered in the month of August, heavy gales, and the only vessel that could be practicable for the voyage was that of a deadweight of 5,000 tons. To properly combat the icefields, the speaker said, these vessels would have to carry an extra tonnage of 120 tons in steel plate, and this would require more steam poundage. A round trip from Port Nelson to Liverpool would take 33 days at the best possible rate, and therefore at the outside only two trips could be taken in a season. It was doubtful, the speaker said, if ships of this type could be secured, as the owners would doubtless wish to put them in some other trade following the grain season, and he also pointed out that they would practically be unable to obtain a return cargo for Port Nelson. Dealing with marine insurance, the speaker stated that this would be very high; if it could be obtained at all, and referred to Montreal's case as an example. In conclusion he declared that while navigation was feasible in Hudson's Bay, it was not commercially feasible.

The contingency that ordinary commercial concerns may not be disposed to undertake the navigation of this route is already being presented to the Canadian authorities, and it is urged in some quarters that the Dominion Government should construct, own and operate its own system of steamers, in conjunction with the railroad, bearing—if necessary—the cost of insurance itself. The reason for this is that in all likelihood, if the service is to be satisfactory, ships of special construction will have to be provided, since the ordinary tramp freighter of commerce, which is lightly built and entirely unsuited for Arctic work, cannot be safely employed in such a trade; nor would it pay shipowners to undertake the cost of constructing vessels of the design required for this route when they could be employed there for only two or three months of each year. Hence it is thought that vessels suitable for the route will not soon, nor in sufficient numbers, be provided by private

enterprise, and that the Government will have to undertake this work on its own account, with the further drawback that if the grain of a given season is to be got out that year before navigation closes, an exceptionally large number of vessels will be required, because not more than one trip or at most two trips in the short time intervening between the harvesting of the crop and the closing of navigation will be possible for such vessels.

Canadian government officials, engaged in the survey of Hudson Bay, report many serious difficulties in the way of making Hudson Strait a feasible commercial waterway. They advocate the use of hydroplanes operated in connection with the wireless stations to be erected along the route, as being likely to be of more use in informing shipmasters as to ice conditions and where open leads of water may be found than sea-going tugs previously suggested. The information will be obtained with no danger to the crafts being caught in the ice, though, of course, there will be the risk of accident and of the hydroplane crew being cast away on icefloes, while in the autumn frequent snowstorms and heavy winds may hamper the operations of these machines, and in the spring fogs caused by the sun on the icefloes may likewise prove a drawback. These officials do not take an optimistic view of the navigability of Hudson Strait under any conditions. Describing their investigations during 1915, one of them observed that navigation is sometimes greatly impeded by ice until late in August for vessels entering the Strait from the east, and from early in October for those entering from the west, because ice from the far north begins to appear at the west entrance about the latter date, greatly interfering with the vessels. He adds with regard to the ending of the season, that "during the past season, after the middle of September, snowstorms were the order of the day, and this, taken in conjunction with the ice conditions detailed above, rendered the period during which ordinary tramp steamers could have navigated the Strait with safety very limited."

One of the most serious drawbacks to the possible success of the route is the unsatisfactory terminal at Port Nelson. Here the Nelson River is from half a mile to fifteen miles wide, nineteen or twenty feet deep at low water, with a six-foot rise at spring-tide, while the enterprise requires the cutting out of a channel through shoals, and the construction of large terminal facilities, and at its outlet now an area of mud flats exists extending for many miles off the port, sometimes indeed almost beyond the horizon. When Earl Grey, as Governor-General, visited the region in 1910, travelling overland by trail and canoe, the steamer on which he was

to embark to return home by crossing the Bay, passing out through Hudson Strait, down the coast of Labrador, and up the St. Lawrence to Quebec, was not visible from the terminal when he and his party left in her launch to join her, as she had to lie twenty miles to sea because of the shoals. The unusual tides keep the track of the river mouth permanently free from ice, and so affect other areas that the ice is never more than ten to twelve inches thick. The rest of the area is gripped in winter by an icepack which may be many feet thick, and which has formed one of the most serious difficulties in the way of construction. Another Canadian geologist familiar with the region points out how it is not generally realized that the Nelson is one of the big rivers of the world, as big as the St. Lawrence, but bell-mouthed, with a very narrow channel, and that what makes navigation so difficult is that there is about six miles of water on either side, and also a very fast tide running between six and eight knots an hour. Thus until there are lights and buoys, navigation will inevitably be attended with considerable danger.

The foregoing arguments are presented as those which would impress sea-faring communities such as those of Newfoundland, and especially sea-faring communities which understand, perhaps better than any others in the world, the difficulties of navigating ice-laden waters. To complete this article it may not be amiss to give a few of the arguments which apply against the enterprise as viewed from other standpoints. Recently the report of Chief Engineer MacLachlan, in charge of dredging operations at Port Nelson, was tabled in the Canadian House of Commons. A summary of this was given to the *Toronto Saturday Night* of July 12th, from which the following extract is made:

Mr. MacLachlan estimates the average season of navigation into Port Nelson at two months; that is, between the actual docking of the first ship and the departure of the last. He submitted an estimate based on the tariff of that day, showing that the rate of grain from Saskatoon to Liverpool via Fort William and Montreal was 26.4 cents per bushel. It would have been 19.9 cents per bushel to haul the grain from Saskatoon to Port Nelson, including haulage charges, leaving a margin of 6.5 cents for the ocean rate, extra insurance and interest on the cost of works. The average rate obtained by tramp steamers carrying grain from Montreal to Liverpool was 7 cents. He points out that tramp steamers would inevitably choose the Montreal route, unless there was a considerably higher margin to induce them to go to Port Nelson. Liners, he says, could never successfully run into Port Nelson, nor could package freight be handled in large quantities. He was also of the opinion that it would cost twice as much to handle cargoes at Port Nelson as it would at Fort William or Montreal.

Summing up the year 1917, he said the first signs of spring came on June 4. On June 17 a dory was able to go up to the mouth of the river. The docks were damaged during this month by ice pressure. As late as September 8, spring ice still drifting in the harbor moved some buoys from their places. The first winter ice appeared on October 11. The river was closed owing to the quantity of slush ice on October 18. On this date the dredges were pulled up and beached for the winter.

Mr. J. L. Busfield, at the Engineering Institute's meeting already mentioned, gave the difference in the cost of shipping via the great lakes to Montreal, by rail and water to Montreal, by rail and water via Buffalo and American ports, and the Panama canal via Vancouver. All these routes varied from 10 to 15 cents per bushel cheaper for shipping than, under the best possible conditions, were the Hudson's Bay route to become an accomplished fact. Mr. Busfield also pointed out that allowing the Hudson's Bay route to be open 15 weeks in the year, and allowing for first-class conditions on the line, at the most optimistic estimate only eighteen million bushels per season could be shipped by the northern route, and a ship would be compelled to make the best possible trip on the basis of his calculations.

The moral to be drawn from a study of the foregoing facts and figures seems so obvious as not to need emphasizing. Even he who runs may read the lesson which is embodied in this story of the strength of the case against the expenditure of public money on a venture which has so little claim to be regarded as a practical proposition.