

is of great interest to Manitoba, of the condition of the strait in autumn. The strait is liable to be visited by the ice pack even in September when the waters of the strait are at their highest temperature, but it would not obstruct navigation for any length of time. There is much more danger attending a ship caught in the ice in the fall. "On the whole I conclude that while the pack undoubtedly comes into the west end in October, the probabilities are greatly against the channel being blocked with it in those months. I believe the chief difficulty in the way of navigating the strait in October arises from heavy weather, and especially from snow storms."

Mr. Fisher points out that in the season of 1897 "there was a remarkable absence of ice in northern waters and a decidedly higher temperature in the strait than in the average season."

#### THE CONCLUSIONS STATED.

"It is upon facts and considerations such as those above set forth and upon the observations and opinions of others above recorded, coupled with my own observations, that I have based my conclusions on the whole question. I have no confidence whatever in the possibility of navigating Hudson's Strait in June. Were it possible to do so the bold and enterprising whalers from New England who have carried on their hunt in the northern part of the Bay for so many years would undoubtedly have discovered the fact. They would not be exposing themselves and their ships to the risks and rigours of so many winters in the arctic waters nor would they submit to bear the heavy expense of maintaining idle crews and idle ships there during the eight weary months that they are tied helplessly in the pack. If it were possible to get into the Bay in the month of June. We have seen what perils assailed the few vessels that tried to make the passage in that month."

"It is not to be questioned, too, that throughout the month of July generally, and during part of August very frequently, a ship is liable to meet an impenetrable pack in the Strait. Indeed all the facts that I have narrated might apparently justify the conclusion that the navigation of the Strait in July without serious interruption cannot be at all relied upon. And beyond doubt it is true that up to the latter part of that month a ship is very often subject to peril, and is constantly subject to delays. But before many days of July have passed, in the average season, the warm waters and the heat of the sun begin to make themselves felt."

"In view, then, of the probable frequency of delays, both in the Bay, and in the strait, at that season, I doubt much that vessels coming from across the Atlantic will be able as a rule to tie up at Churchill or York much before the 15th of July. I do not believe that freighters will winter at these ports. It would be too great a waste of money to keep ships and ships' crews there doing nothing during the long season of ice. I therefore put the very earliest time that a ship, after loading, can leave a Hudson's Bay port for Liverpool at from the 15th to the 20th of July."

"As to the period during which navigation can be kept open in the fall, I confess I have a greater difficulty in forming an opinion, and I shall not venture to give a positive one. The passages that have been made outward through the strait as late as the end of October are so few that

little information is available as to the conditions at that time. The natural conditions are such as to make the strait liable to visitations of the pack much earlier than the end of October. I have shown that its presence in the west end in September is not uncommon."

#### THE LATEST DATE.

"These conditions, together with the short days, the difficulty in distinguishing the land or judging accurately the distance when all is covered with snow, makes the navigation of the strait during October extremely difficult and hazardous." The commander on a review of the whole situation considers that the 20th of October is the latest period the strait can be considered navigable with safety. Commander Gordon thought the risks of navigation after the 15th of October are so great that the question of insurance would probably settle the date. The masters of the Hudson's Bay company ships and of the New England whalers do not consider it safe to be in the Strait even at so late a period as the middle of the month. Bearing in mind that no part of the route is liable to be blocked in the autumn earlier than at and near the Atlantic entrance to the Strait whether that time be about the end of October or in the early days of November manifestly the ship must leave the Hudson's Bay port at a date considerably earlier, and that must be a date which will give a good deal more than time to make an unimpeded passage to the eastern part of the channel. In fixing the latest possible date of sailing the forwarder and the carrier alike will have it in his mind that delays by ice are liable and delays by storm are certain to await the ship, and these must therefore be reckoned for. There may be not one delay, but a series of them. The Fox Channel pack may have got down as it often does in September between the islands of Coates and Mansfield, or it may be between Mansfield and the East Main. Or the ship may meet the pack between Digges and Nottingham. The government observers found it there in September. And if the ice should cause little delay between that and the eastern part of the Strait there is the possibility of snow storms and the dark mist that accompanies them, which are practically sure to make the passage through the channel in October very slow, and after all this there remains the risk of being caught in the Davis Strait pack in the east. The prudent skipper and the prudent skipper will think of all these possibilities, as well as the serious consequences of the ship and cargo being held for the winter. The careful navigator is not to be always classed as a "timid" one and if careful he will leave Churchill or York, as the case may be, sufficiently early to avoid the risks or at least to minimize them as much as possible. I have a doubt whether in view of all these difficulties and possible dangers ships will leave one of these Hudson's Bay ports to cross the Atlantic later than the 15th of October."

#### AS IT AFFECTS MANITOBA.

Having thus expressed my conclusions on the general question, I propose now to say a word as to the feasibility and advantage of the route specially from a Manitoba standpoint. As to the grain of the province it is apparent that even in the normal season but a small part, and in a year like this of 1898 none at all of the proceeds of any harvest could be

shipped via Hudson's Strait in the season of its growth. Nearly all of it would have to be stored for the winter. Grain dealers and forwarders would hesitate to store it at the Bay where it would have to lie until the last half of July and until August and September of the following year. They would hesitate to do so because it would then be impossible to take advantage of a rise in the markets. Once stored at Hudson's Bay no shipment in the late fall, none in the winter and none in the summer until near the latter part of the following July can be made, and no holder can take advantage of a rise whether it be sudden or gradual. There are other reasons that I need scarcely mention why grain would not probably be stored in the north in any considerable quantities—though I might just mention this—that the storing at the Bay would be attended with much extra expense. The storing then would be done in the province.

I have pointed out that a special class of ships would have to be constructed for the service. They would have to be particularly strong and, for the tonnage they would register, the cost of construction would be at least as high as that of any class of ships. They could not be built so as to carry the heavy loads that are taken on the transatlantic liners on the existing routes. If they were calculating to traverse Hudson's Strait only in August and September this condition against large ships carrying great cargoes would not be so strictly demanded. In those two months doubtless many of the ordinary ships of commerce could in an average season pass through the Strait with safety. But we have to provide ships that will enter the Strait from the Atlantic in the early part of July. Not only then must they be strongly built and of comparatively small capacity, but they must be constructed with rounded hull, avoiding the pattern which Commander Wakeham describes as 'waisted.' I am told by expert navigators that ships suitable for ice navigation constructed on that model are not good ships for the open sea. Their use in the Hudson's Bay service will be limited to a period of perhaps six months. For the remainder—the longer part—of the year they can not, I am assured, compete with advantage for traffic on other waters. Those ships then would not be very good stock. To Dr. Bell's practical mind, one of the first thoughts to suggest itself was that the whole question was at an end unless a profitable traffic could be done. The profit must be made out of earnings from freight rates. To make the route possible at all, these rates must be so low that traffic will be drawn from existing routes. I confess I see a difficulty in making all these conditions work together so as to give at the same time a profitable traffic and low rates. Expensive ships of a special class, with a season of service in their own special line, limited to about five months; not making more than two complete voyages in the year, and at a disadvantage in competing during the remainder of the year for the traffic of other waters, the season for doing good work and making good profits being for the short half of the year, while the interest on the cost of construction and the expenditure for maintenance is payable for the whole year round—these are conditions that seem to me