

Capt. Markham further goes on to make the following quotation from Sir Edward Parry, who was a noted explorer in 1835 or 1836:—

"Long experience has brought those who frequent this navigation to the conclusion that, in most seasons, no advantage is to be gained by attempting to enter Hudson Strait earlier than the first week in July. The annual disruption of the ice, which occupies the upper and middle parts of the strait, is supposed not to take place till about this time. In the course of one single year's experience in these parts we have seen nothing to recommend a practice different from that at present pursued by the ships of the Hudson Bay Company."

Capt. Markham then adds:

"I heartily concur with every word in this quotation, for it so exactly corresponds with my own experience. But the fact must not be overlooked that this advice is addressed to those who attempt the navigation of the strait in sailing ships. Steam has made a great revolution in ice navigation. A well-found steamer is able to make her way with ease through the ice encountered in Hudson Strait in June and July, when a sailing ship would be hopelessly beset and incapable of pushing on. With regard to the practice pursued by the ships of the Hudson Bay Company, alluded to by Sir Edward Parry, it stands to reason that the captains of those ships would actually delay their passage across the Atlantic, so as not to reach the strait before July or August; for they are well aware that every extra day spent on the passage is a day nearer the disruption of the ice. Their experience tells them that a policy of waiting is wisest, until the chances are more in their favor of getting through without hindrance from the ice."

"I have in my possession an official record of the voyages out and home of the Hudson Bay Company's ship 'Prince Rupert' for a period of eleven consecutive years, namely, from 1835 to 1846, inclusive. I find that the average time of getting through the strait in the outward voyages during this period (and it must not be forgotten that the strait is 500 miles in length) was 16 days. The longest time was 31 days, when there was probably an exceptionally bad ice year. The shortest time was 8 days. But the delays in getting through the strait were caused by calms and adverse winds, and not by the ice. On the homeward passage no difficulties were met with from ice in the strait, and the vessel usually reached London in about five weeks after leaving York Factory. The earliest date for sailing from York Factory was the 6th of September, and the latest the 3rd of October. In the latter case the 'Prince Rupert' was 38 days on the passage to London; so that it is impossible she could have had any serious detention from ice in the strait."

"It must be remembered that this vessel, and all others then employed by the Hudson Bay Company, were sailing ships, dependent entirely upon sails for their motive power. Without wind they were helpless; with a foul wind their progress was of course proportionately slow. Wind, therefore, was a matter of the first importance in those days, when a vessel was endeavoring to make way through floes of loose ice; for when the wind falls the ice invariably loosens, or, as the technical expression is, 'goes aboard.' But under such circumstances the unfortunate sailing vessel, being deprived of its only propelling force, is unable to take advantage of the ice being loose to push on. On the other hand, when a breeze springs up, which on ordinary occasions would possibly enable her to make good way, the wind has the effect of packing the ice, thus rendering progress nearly impossible."

"Steam has now, however, effected a complete revolution in ice navigation, and the most advantageous time for pushing on is, of course, in calm weather, when the ice is loose. Under similar conditions a sailing vessel would be utterly hopeless. It is, therefore, only reasonable to infer that what has been performed regularly, and year after year, by sailing ships, can be accomplished with greater regularity and certainty by well-found steamers, specially constructed for ice navigation, and provided with powerful machinery. A channel which has been navigated for 270 years, first by the frail little fly-boats of the seventeenth century, then by the bluff-bowed, slow-sailing, exporting vessels of Parry's days, and for a long period by the Hudson Bay Company ships, cannot be very formidable, and if sailing ships can annually pass through it *a fortiori* steamers will find less difficulty in doing so. But it would, of course, be necessary that such steamers should be specially built and equipped for the service, and it is desirable that despatch should be used in making the voyage."

"The result of all the experience, gathered from voyages during two centuries, and from observation at the stations, is that Hudson Strait is perfectly navigable and free from ice in August and later in the season. It must be remembered that this passage has been successfully accomplished nearly every year for the last two centuries, while the vessels which have been employed on the service have been ordinary sailing ships, dependent entirely on wind and weather. It is very rare indeed that they have failed to get through, and still more rare that any of them have been destroyed by the ice. It appears from the official records of the Hudson Bay Company that Moose Factory, on the southern shore of the bay, has been visited annually by a ship since 1735, with but one exception, namely in 1779, when the vessel for once failed to achieve the passage of the strait. The percentage of losses by wreckage among the vessels employed in the Hudson Bay is far less than would have to be recorded in a like number of ships engaged in general ocean traffic. Since the keel of Hudson's good ship the 'Discovery' ploughed the waters of the strait the passage has been made over 500 times, whilst the losses due to the ice might be summed up on the fingers of one hand; for some of these losses were due to causes with which the ice had nothing to do—for instance, the recent loss of the 'Cams Owen' was in no way connected with the ice."

These two clauses, I think, contain a statement of the main difficulties with which the navigation of Hudson Straits has been surrounded in our minds. As Capt. Markham says there, only sailing vessels have had the experience, so far, of the navigation of these straits, and when it calms and the ice is loose, conditions which would be favorable for a steamer pushing its way through, a sailing vessel, having no propelling force, is stopped. But the steamers that are now to be had would overcome these difficulties, and the very calm which loosens the ice would be the means of enabling them to navigate these straits for a much longer period than we have any idea of. So far as the navigation of James' Bay is concerned, there are difficulties, I believe, in connection with it, on account of the bay being shallow; but the northern portion of Hudson Bay is a deep sea,