

CURRENT IN THE STRAIT OF BELLE ISLE.

This strait has a width of 10 to 12 miles for 35 miles of its length; and is entirely free from any rock or shoal throughout. It lies east and west (magnetic). The north shore is bold and the water off it is deep; the south shore is low, but dips off rapidly into about 30 fathoms.

There has been a wide-spread impression that the current in the Strait of Belle Isle runs constantly inwards. A branch from the Arctic current which runs southward along the outer coast of Labrador, has been supposed to run into the Gulf of St. Lawrence through the Strait of Belle Isle, and to find its way out again through Cabot Strait, between Cape Breton and Newfoundland into the Atlantic. On some physical maps, and also on the weather charts issued by the Meteorological Service, this is definitely represented. The description given in the latest edition of the *Sailing Directions* (1894) although less positive than formerly, still favours this view. It is there stated:—"Under ordinary conditions of wind and weather a current enters the Strait of Belle Isle and flows westward.....but with south-west gales the current may be reversed." The remark on the Admiralty chart is, however, as follows:—"The movements of the water in Belle Isle Strait are made up of a general westerly set affected by tidal streams and winds. The resulting set may be in either direction." This remark gives little countenance to the theory of a constant inward flow; and is in itself sufficiently non-committal to cover almost any conditions. There is no attempt made, however, to describe the conditions under which the flow in either direction may take place.

On the other hand the fishermen along the coast seem to believe that the current is usually in the same direction as the prevailing wind at the time. From the report on the wreck of the ss. "Mexico" this season on Belle Isle, its loss appears to have been due to the over-running of its reckoning in proceeding eastward through the Strait of Belle Isle, which shows that the current sometimes runs in that direction. It was already explained in the report of this survey for last year, that the current runs through the Strait of Belle Isle in both directions, and that there are times when it may be nearly as strong in the outward direction from the west, as inward from the east.

The idea of a constant inward flow appears to be based on the drift of icebergs, and as they are most usually seen drifting inwards, it has been inferred that this is the constant direction of the current. The converse of this is, however, much nearer the truth; and it may be stated in general, that when icebergs are numerous at the outer end of the Strait of Belle Isle, and are also found within the strait, this indicates that the direction of the current has been predominantly inwards from the east during the few days previous, while the absence of icebergs indicates a current predominantly outwards from the west. This of course refers to the presence or absence, in the strait, of floating bergs, and not to bergs which may be aground near either shore. It may also be noted that only a very small percentage of the bergs off the outer end of the strait ever enter it. Captain Vaughan, who resided four years on Belle Isle, states in a pamphlet on the subject that for ten icebergs which enter the strait, there are fifty that pass the mouth and go southward. In doing so they follow the general drift of the Arctic current which passes Belle Isle; and the larger bergs also ground at the entrance to the strait.

It may be stated in general terms that the current in the Strait of Belle Isle was found to be fundamentally a tidal one. The best comparisons of the current with the tide showed a complete correspondence between the two, especially in moderate weather and during the prevalence of moderate westerly winds. On such occasions there were several days during which the current ran east and west for an equal length of time in each direction and turned regularly in correspondence with the rise and fall of the tide. This may therefore be considered as the normal condition of the current. With a heavy and long continued wind the current would first run for a longer time with it and a shorter time against it; and eventually would run continuously in the same direction as the wind, with a fluctuation in