

influence. The results for this region and for Belle Isle strait are fully given in pamphlets issued by this Survey (6). In the seasons of 1904 and 1907 the outer part of the Bay of Fundy was examined, chiefly on the lines of the International and Atlantic steamship routes, from St. John N.B. to Cape Sable. As a result, the direction and strength of the current at each hour of the tide, has been published in the form of tables (7). This is the first region of extended area in North America for which detailed information is available, of a similar character to that published for the English channel and the North sea.

The currents in Northumberland strait were investigated in the season of 1908. These proved to be exceedingly complex, owing to tidal interference from its two ends; which occasions a large diurnal inequality in the maximum velocity and in the time of slack water. The strength of the current amounts to three knots in some of the narrower parts. Its general characteristics are explained in a report of progress (8).

The character of our tides and currents, as described in the reports of this Survey, have been extensively republished, especially in Germany; and the reports have also been noticed in British and French magazines, and periodicals in the United States. Some general articles by the writer have also appeared in "Nature" (9).

#### WIND DISTURBANCE.

When the writer first began these investigations, the general impression derived from books was that the current would always be found to set in the same direction as the wind. But the longer the investigations were carried on, and the greater the care to assign each movement of the water to its true cause, the less residuum there remained to ascribe to the wind, as otherwise unaccounted for.

This impression seems to have gained currency chiefly because of a faulty method of observation, by which the drift of small floating objects was taken to represent the set of the current. The drift of the mere surface or skin of the water cannot be accepted; as the direction of the current should mean its movement at a depth of at least half the draught of an ordinary vessel. The impression may also be due in part to the difficulty of distinguishing leeway from current drift, especially in the old sailing-ship days. It is also noteworthy that in obtaining information from fishermen, only the least observant men speak in a vague way of the current running with the wind. The more intelligent men attribute less to the direct action of the wind, and distinguish the various effects more carefully.

The effects of the wind in disturbing the current, as observed throughout the eight seasons above noted, have been collected and