date they had only been used in fresh water, and there was much difficulty in making them work satisfactorily at sea. By their use, however, constant observations could be secured day and night, which was essential in dealing with tidal streams which show so much inequality in strength. The velocity of the current was measured at the standard depth of 18 feet (three fathoms). This was adopted to place the meter below the keel of the surveying steamer when lying between wind and weather, and as this depth may be considered to be the average draught of an ocean steamer, it thus represents the actual effect of the current upon a vessel. The appliances used for all the purposes in view are described in the Reports of Progress (3). Special attention was also given to the study of the under-current, as normal conditions often continue below the surface during times of wind disturbance (4). The other observations taken, included the temperature and density of the water, and meteorological data for comparison with the behaviour of the current. The wind record was obtained from an anemometer on board, and the barometric variations were registered by a barograph.

In carrying on the work of the Survey, the surveying vessel was anchored at carefully selected stations, and the vessel itself served as a fixed point from which to determine the direction and velocity of the current. In this way as much information can be obtained in 24 hours of continuous work, as in a week by running measured courses. Interruption from fog is also avoided, as it does not interfere with the continuity of the observations.

Investigation of the Currents.

Gulf of St. Lawrence.—In the first three seasons, 1894, 1895 and 1896, a general investigation of the Gulf of St. Lawrence was made. The relation of the Gulf area to the ocean was ascertained by observations in Cabot strait, between Cape Breton and Newfoundland, and also in Belle Isle strait. Similar observations were carried on at the mouth of the St. Lawrence, north and south of Anticosti, to determine the relation of the St. Lawrence estuary to the Gulf. The temperature and density of the water were taken throughout the Gulf, which proved a valuable means of tracing the general circulation of the water. The results of these investigations have been fully reported in the Reports of Progress, and they are also summarized in a special pamphlet (5).

It will therefore suffice to note regarding the results, that no currents exceeding one knot were found in the open waters of the Gulf, apart from local straits and passages. This in itself served largely to dispel the supposed dangers to navigation in these waters. Erroneous