Cabot Strait,

or the south-eastern entrance to the Gulf of St. Lawrence between Cape Breton and Newfoundland.

This entrance to the gulf forms a portion of the deep channel or gully which runs in from the Atlantic between the St. Pierre Bank on the Newfoundland side and Banquereau and Misaine Bank on the Nova Scotia side, and thence traverses the entire width of the gulf, passes between Gaspé and Anticosti and into the mouth of the Lower St. Lawrence. This channel from the Atlantic inwards, has a width of 40 miles between the Banks on each side, and a continuous depth of over 200 fathoms. In passing through Cabot Strait, it is not contracted in width or diminished in depth except by the occurrence of St. Paul Island which lies near the western side of the deep water. This island rises abruptly from the bottom, and if left dry would probably present the appearance of one of the "Sugar-loaf" mountains of the adjacent coast. Allowing for the encroachment of this island on the western side of the channel, there is still left between it and Cape Ray a width of 32 miles in which the depth exceeds 200 fathoms; and for the greater part of this width it averages 250 fathoms.

The width of the strait lies east and west (magnetic) and the channel above described runs through it from south to north (magnetic), which makes the magnetic directions the most convenient for reference. The magnetic variation is 28° W. The currents were examined in August, between the 13th and the 31st with the interruption of the trip to North Sydney for supplies; and although the time was so short, much work was done by taking advantage of the calm weather for current measurement, and the rough days for temperature work. The record of the current was also taken continuously day and night. The stations at which the steamer was anchored, were kept to the north and south of the straight line joining Cape North and Cape Ray, to avoid the telephone and telegraph cables which lie along that line. The positions of the stations are shown on the accompanying map. The two principal stations were chosen near to the two sides of the deep channel; one of them (Station L) in 220 fathoms at 10 miles N. E. of St. Paul Island, and the other (Station M) in 230 fathoms at 13 miles W. of Cape Ray. They are thus symmetrical in position with respect to the deep channel itself; and each station was occupied twice to check any variation in the conditions.

The current, speaking generally, was found to run out of the gulf from the northward (magnetic) at Station L on the West side, and into the gulf from the south-east (magnetic) at Station M on the east side. On this account a third station P was selected where still water might be expected between these two currents; and a favourable opportunity found to ascertain whether the deep water at the bottom of the strait was in motion. The steamer was anchored at this station at the centre of the strait in 250 fathoms. The surface current was there found to be very variable in direction and at times very weak. On August 29, at a time when the surface current was almost inappreciable, the deep fan, weighted with an ordinary deep-sea lead, was lowered to a depth of 200 fathoms. This fan presented a surface of four square feet to the water, which was sufficient to indicate the slightest current, by the inclination of the line to which it was attached. This line showed an inclination of about 15° from the vertical as far down as 30 fathoms; between 30 and 50 fathoms it came within 5° of the vertical; and from 50 to 200 fathoms it remained perfectly plumb. The same indications were given again in raising it. Also on the following day, at a time when the surface current had a velocity of a little less than one knot an hour, the deep fan showed in a similar way that there was no motion below 20 fathoms. The layer of water in motion had thus a thickness of only about 20 to 40 fathoms from the surface, and below this the water was perfectly still. The relation of this thickness to the temperature at different depths will be referred to further on. This also shows that there is no constant bottom current of any appreciable velocity.

Station L, on the west side was occupied from August 13th to 15th. There was some trouble from dragging of the anchor at first; but a continuous record of the current for 32 hours was obtained. The velocity of the surface current measured at the standard depth of 18 feet, varied from 0·74 to 1·56 knots per hour, and the direction veered