

than the total range above mentioned. It is to be noted in this case that the observations were taken at the spring tides, as the moon was full on the 6th. The velocity of the under-current was measured at four different times, at which the surface velocity itself varied only from 1.23 to 1.83 knots per hour. The mean of the four determinations gives the following percentage ratios for the undercurrent at different depths :—

Surface, actual	1.23 to 1.83 knots per hour.
At 10 fathoms	77 per cent of surface velocity.
At 20 "	38 " " "
At 30 "	29 " " "

This rate of decrease indicates a depth of about 45 fathoms as the total thickness of the current. At another station $9\frac{1}{2}$ miles E. from Griffin Cove, where an anchorage was made for 3 hours on the morning of the 11th, or immediately after the heavy N.W. wind of the 10th, the current was found to average a little over three knots per hour. The vessel was dragging anchor at the time with the current; but the distance it dragged was measured and allowed for, in the velocity as stated.

Further out, at a station $11\frac{1}{2}$ miles E. $\frac{1}{2}$ N. from Griffin Cove, continuous observations during 25 hours on July 11th and 12th, showed that the current was there more distinctly influenced by the tide. During the two complete tides included in this period, the current veered with remarkable regularity in correspondence with them. During the rise of the tide, it veered from N.N.W. to E.N.E., and during the fall of the tide it backed again from E.N.E. to N.N.W. It thus ran from these extreme directions at the time of high and low water. It is to be noted that the direction of the current at high water was directly on shore; but on account of the importance of the on-shore and off-shore directions of the current, these will be classed together, further on. The velocity of the current ranged from 0.65 to 1.27 knots per hour; but without any regular fluctuation to correspond with the tide.

While the current ran from the E.N.E. or towards the shore, with a velocity at the surface of 1.15 knots per hour, it was found that the direction of the under-current was the same to a depth of 25 fathoms, and its speed was there about half as great as at the surface. From 25 fathoms to a great depth, it ran from the E.S.E., but was much weaker. Again on two occasions when the current was from the N. and N.W. and at its weakest, its total thickness was 20 and 25 fathoms, and its direction the same as at the surface.

At a station still further out, 23 miles E.N.E. from Griffin Cove, or somewhat beyond the middle of the passage from the Gaspé side, the current as observed during 22 hours on July 12th and 13th was found to run from the two opposite directions alternately. This showed a greater preponderance of tidal influence; but the change in direction did not correspond in time with the tide. It may be said in general that during the fall of the tide the current usually ran from directions between W.N.W. and N.N.W. and during the rise of the tide, from directions between S.S.E. and S. On the whole, during the period of 22 hours the current veered between W. and N.N.W. for 14 hours, and between S.S.E. and S. for 8 hours; and the total time during which the tide was falling was 12 hours 10 minutes, and rising during 9 hours 50 minutes. This will serve best to show the general relation in the case. The velocity was much the same in each direction; and ranged from 0.35 to 0.64 of a knot per hour. There is therefore no difference of flow in favour of the constant direction of the Gaspé current, as far out as this station.

It thus appears that in the offing of Griffin Cove at that time, the current for a width of about 12 miles ran either constantly outwards from the N.W. or had a large preponderance of flow from that direction. It had a thickness of some 45 fathoms near the Gaspé coast, and only 25 fathoms at 11 miles off shore. It was thus on the whole narrower and deeper than at Fame Point, but had an average surface velocity which was very much the same. The influence of the tide was increasingly marked towards the outer edge of the current; until midway between Gaspé and Anticosti, it became entirely tidal in its character, and without any preponderance of flow in one direction rather than the other.