

Steamboat Inspection.

the surface and 10 fathoms was 1.0230 or more; except in the immediate vicinity of Cape Gaspé, where the usual northerly current was found, and the mean density fell to 1.0226. This section therefore serves to limit the course taken by the water of least density, as it shows that it circled back to form the return current from the south-east, without going so far east as to cross this line. It is thus clear that at this time there was no water with the usual low density flowing from the mouth of the St. Lawrence into the Gulf area. A comparison of the density charts, Plates III, IV, and V, makes this plain; for in Plate III there is a belt of water 25 miles in width, extending from West Point, Anticosti, past Cape Gaspé, which has a surface density below 1.0225; and a belt in the same position with nearly the same width in Plate V, has a density at 10 fathoms which is below 1.0235. On the other hand, in Plate IV, which shows the densities at 10 fathoms at the dates referred to, the contours of 1.0235 and 1.0240 run from West Point, Anticosti, and pass close to Cape Gaspé; while the next contour 1.0230, is doubled back in the offing of the Gaspé coast, in correspondence with the reversal of the current as already described. There is thus too little width between Cape Gaspé and these contours for any appreciable quantity of water of low density to pass out into the Gulf area. Hence the circulation at this period, including the reversal of the current in the offing of the Gaspé coast, must be regarded as an exceptional occurrence.

Period of disturbance of the Gaspé current. When the next opportunity occurred to examine the Gaspé current, in the early part of September, the winds were stronger, from southerly and north-westerly directions alternately, and the current ran mostly from westerly directions; although it was much disturbed and even ran as a cross-current at the middle of the passage.

On the 31st of August there was strong S. wind, followed on the 1st and 2nd of September by heavy wind from the N.N.W. This was accompanied on the Lower St. Lawrence by heavy W. wind, with a mileage during the three days of 1950 miles, as recorded at Father Point. It is to be noted that winds which have directions between W. (magnetic) at Father Point, and S. at Anticosti, are off-shore along the Gaspé coast, and tend to carry the current away from the coast. There were strong southerly winds on the 4th and 5th, and again on the 7th and 8th; which were also accompanied by moderate westerly and south-westerly winds on the Lower St. Lawrence. This was followed on the 10th by strong N. wind, which then averaged 25 miles per hour for 24 hours. On the following days the wind fell off. On the 8th and 9th a storm centre was passing in the offing of the Nova Scotia coast.

The barometer as recorded at South-west Point during the period of the observation of the currents, was as follows: From September 6th to 13th the barometer fell gradually from the mean height of 30.23 on the 7th to 29.58 on the 13th, and afterwards rose rapidly to 30.13 on the 15th. The average height for the month of September 1895, was 29.84.

At the station $4\frac{1}{2}$ miles N.E. by N. from Fame Point, (in practically the same position as the stations of July 3rd and 30th), the current on September 9th and 10th was found to be slack and variable. During a period of 16 hours, it ran first for 3 hours from the S.E. and S., then for 10 hours from directions between N.N.W. and W.N.W. veering once as far as W.S.W., and again for 3 hours from southerly directions. Its velocity throughout was considerably below one knot per hour. While the current was slack, during a change from S.S.E. to N.N.E., the under-current also fell off to nothing as far down as 50 fathoms; which shows that there was no deep under-current in any constant direction. Although the prevailing current was from the usual north-westerly direction, it would appear that the inshore tide occupied a greater width than usual at this time, and that its influence extended as far out as to this station; as on the morning of the 9th the tide within three miles of the shore from Cape Rosier to Fame Point, was found to have a velocity of 1.40 knots per hour from N. by W.

It was therefore advisable to ascertain the direction of the current in the middle of the passage. As the heavy weather of the 10th had made it necessary to take shelter under Cape Rosier, a course was carefully run N.E. by N. from there on the morning of the 11th, on which a series of points were accurately fixed as far out as 12