

Steamboat Inspection.

The density section shown on Plate VIII was made at this time, when the current was running as above described ; and the direction of the section is along the line of the above stations.

Reversal of the Gaspé current. On the next opportunity of making a series of observations of the Gaspé current, towards the end of July, the current was found to lie midway between the Gaspé coast and Anticosti ; and between it and the Gaspé coast the current ran in the reverse direction, or from the south-east.

The weather, dating from a few days before the observations began, or for a period of 15 days from July 21st to August 4th inclusive, was on the whole quiet, although showery and sometimes foggy. There was sometimes considerable swell running up from the south-east ; on some of the calmest days. The actual conditions were as follows : The barometer fell gradually from the mean height of 29·94 on the 21st to 29·54 on the 29th and rose again to 29·90 by the 4th of August. Its average height during the 15 days was 29·78 ; while the average for the two months of July and August, 1895, was 29·76. During the fall of the barometer as above, the wind was almost constantly from the S.S.W. and the velocity did not exceed 15 miles per hour on the average for any one day. While the barometer rose, the wind continued southerly, except when interrupted occasionally by moderate N.W. winds. The strongest wind during the whole period was on the 31st when it averaged 19 miles per hour for 24 hours. The total mileage of S.S.W. winds during the 15 days, was 3498 miles ; and from other directions, chiefly N.N.W., it was 731 miles. The height of the barometer given is the daily average in each case ; and both the wind and barometer are from the continuous observations taken at South-west Point, as already explained. These southerly winds are usual during July and the early part of August ; but at this time they were very continuous, and they were also accompanied by strong westerly winds on the Lower St. Lawrence. The wind was thus blowing in upon the waterway in this region from both ends, which may help to account for the behaviour of the current ; although the weather in the region itself was quiet and not marked by anything unusual ; and there were no storms in the Gulf region or along the Atlantic coast. It will be excusable to describe fully the behaviour of the current at this time ; as there is at present no published information regarding the reversal of the current as then observed.

The current on July 25th at a station midway between the Gaspé coast and Anticosti, was found to be running constantly from a north-westerly direction. This station was 24 miles N.E. from Fame Point and 18 miles from Ellis Bay. It was so chosen in order to be on the line marked "Constant current" from the W.N.W. which was shown on the large scale chart No. 1621, entitled "Entrance to the St. Lawrence." At another station however, also on this line, and 20 miles further to the E.S.E. (situated 15 miles N.N.W. from South-west Point) which had been occupied immediately before during 26 hours, the current was found to veer and back irregularly through all points of the compass. Accordingly on the following day, July 26th, a density section was run across the whole width of the passage from Ellis Bay to Fame Point, to ascertain for comparison with the current, the position occupied by the water of least density. This section is shown in Table A. ; and it was found that the water of least density occupied a width of 17 miles in the middle of the passage, lying between 10 miles and 27 miles from the Gaspé coast. The mean density of this water, between the surface and 10 fathoms, was 1·0217 ; while beyond it on each side, it was 1·0220 or more. The water of least density thus occupied the same position in the passage as the current from the north-west.

The same station in the middle of the passage was again occupied on the afternoon of the 26th, as nearly as it could be found by dead reckoning during a thunderstorm, to ascertain whether this direction of the current would prove to be continuous. The record obtained altogether, was from the afternoon of the 25th throughout the following night, during 13 hours ; and again from the afternoon of the 26th during 21 hours. The current throughout that time ran from directions between N.N.W. and W. with the exception of five hours in all, at different times, when it veered to the south of west as far as S.S.W. while the current was at its weakest. The velocity ranged from 0·49 to 1·30 knots per hour ; and the greatest velocity was from directions between N.N.W.