

This deep water, from such indications as have been obtained, appears also to be entirely quiescent, and to have therefore little direct relation to the currents in the gulf, in so far at least as they affect navigation.

From a limited number of determinations made in the eastern portion of Cabot Strait, and also along the west coast of Newfoundland and in the Strait of Belle Isle, the density of the surface water in that region appears usually to range from 1.0233 to 1.0245. This is much the same as in the open Atlantic; as the density of the surface water off the coast of Nova Scotia was found to range from 1.0235 to 1.0245. The deep water however, as found from samples taken at depths of 100 and 150 fathoms, both in the vicinity of Gaspé and in Cabot Strait, ranges in density from 1.0254 to 1.0261. Again, on the western side of Cabot Strait, the outflowing water which occupies a width of about 10 miles on the side next Cape North, has a density at the surface of 1.0220 to 1.0227; and in the western portion of the gulf, off the New Brunswick coast, areas were found in which the density was even lower than 1.0220. These densities are in all cases the true specific gravity of the water, reduced to 60° Fahrenheit, and determined by hydrometers specially designed for the purpose.

The density of the deep water, from 100 fathoms downwards, is very interesting in affording an explanation for the otherwise anomalous fact that the colder water at 50 fathoms is found to float upon it. It also corresponds with the density at similar depths, off the coast of Nova Scotia, as reported by the "Challenger" expedition. It would, no doubt, be very interesting to trace the connection of this deep water with the ocean, as the channel in which it lies runs out into the Atlantic basin with uninterrupted depth. But this investigation does not promise any result of immediate practical importance.

On the other hand, the density of the water towards the surface, which is a measure of the degree of saltness of the water, or the amount of fresh water with which it is mixed, is of special value in the regions under consideration. The distinct difference in density as above described, affords an indication which is much more definite than difference of temperature, for the purpose of tracing any general set or current across this portion of the gulf.

The temperature and density of the water may also serve indirectly to throw light upon the distribution of fish; as it has been found on other coasts that their movements depend largely upon these elements. The depth at which the cold layer occurs may have a bearing in this connection, as the fish have usually a preference for cold water. It may also be noted that at the greater depths of 150 to 250 fathoms the bottom as shown by samples brought up by the anchor, is soft mud from brownish-blue to slate colour; and the marine life there, judging by such specimens as came up, consists chiefly of sea-pens and other stalked creatures, which root themselves in the muddy bottom. There does not therefore appear to be at these depths much food of an inviting character for fish. An examination of such conditions might well prove useful, in view of the large annual value of the Canadian fisheries.

As the indications above mentioned were sufficient as a preliminary, a careful examination was made of the Gaspé current itself. This occupied the month of July; and the region selected for the purpose was that lying between the Gaspé coast and the Island of Anticosti. This region is limited by the shore lines extending from Fame Point to Cape Rosier on the Gaspé side, and from West Point to South-west Point on the Anticosti side. These shore lines are parallel to each other at a distance of 40 miles apart; and the currents were therefore likely to be more regular and less disturbed than in either of the more open areas lying immediately to the north-west and south-east. The currents in the Mingan channel north of Anticosti were also examined, and information was thus obtained regarding both passages by which the St. Lawrence River communicates with the gulf.

As had been anticipated, the water flowing south-eastward along the Gaspé coast proved to be distinctly lower in density or fresher than ordinary sea water, especially towards the surface. The movements of the current and its other characteristics were first ascertained; and the endeavour was then made to trace

the water by its lower North. The density of depths between the surface and the coldest water had been chiefly relied upon there are considerable banks; and on the other less marked at these depths.

These section lines in the vicinity of the Magdalen Islands. It was time, as it was a question of less density, without being found. Also in the west coast of Cape Breton to ascertain more definitely Cape North to the south of the Magdalen Islands what extent the result they might be considered.

This work was done at the time available was spent in the region, for comparison.

The results of the work show the distribution of circulation which may be wind must also be considered as a considerable complication.

In the meantime it was found that the south-western side of the gulf out towards the centre limited by a line from Cape Rosier in the direction of this across the gulf area.

It may also be of use along the Gaspé coast, current, as to which, available.

On the Admiralty chart 1621, a current is shown westerly direction at the mouth of the gulf. It is stated that this may be a line of constant current between the Gaspé coast and the Magdalen Islands, to the south-west. It is explained, however, that both these lines at the mouth of the gulf are attributed to the same current.

The first of these currents along the Gaspé coast is an alternate direction which at which the current be-