It appears, therefore, that in general, the temperature of the surface water merely rises with the progress of the season; and it is also natural that the water should become warmer to a greater depth as the season advances. Even this has its limitations however; as at a depth of 50 fathoms no appreciable rise in temperature has been found between the month of June and the end of September.

In the Gaspé region, as well as in Cabot Strait, the coldest water forms a layer between the depths of 30 and 50 fathoms. Also in the vicinity of the Strait of Belle Isle, the same low temperatures are found at these depths; although there the temperature towards the surface is relatively lower, as a rule, than in the other regions. As these conditions, therefore, occur at all three angles of the Gulf, and have also been found at a few intermediate points where observations have been obtained, it appears not at all impossible that this cold layer may extend very generally over the Gulf area; and it cannot therefore be taken as an indication of direction of movement of the water.

On the other hand, the density of the water, which is a measure of its degree of saltness, or the amount of fresh water with which it is mixed, is of special value in the Gulf of St. Lawrence. 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 1·0255 to 1·0263. Again on the western side of Cabot Strait, the out-flowing 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 1·0235; and in the western portion of the Gulf, off the New Brunswick coast, areas were found in which the density was below 1·0220. Also between the Gaspé coast and Anticosti, the out-flowing water ranges in density towards the surface, from 1·0210 to 1·0225. This distinct difference in density, especially towards the surface, affords therefore an indication which is much more definite than difference of temperature, for the purpose of tracing any general set or current across the width of the Gulf.

The deep water of the Gulf. There is reason to believe that the water in the deep channel which traverses the Gulf has no direct relation to the currents at the surface, or any appreciable influence upon them. These currents were found as a rule to diminish in velocity with the depth as far down as 40 fathoms, which was as far as actual measurements of the velocity were obtained; and indications below this depth made it improbable that any appreciable movement of the water would be found to extend to 60 fathoms. Several indications obtained with the deep fan, at 100 and 150 fathoms, when the weather was most favourable for the purpose, also show that this deep water is entirely quiescent. These indications were obtained in the Gaspé region as well as in Cabot Strait.

The deep channel referred, to runs in from the Atlantic between the Grand Banks on the east, and Banquereau and Misaine Bank on the west, with a width of some 40 miles, and a continuous depth of nearly 250 fathoms. After passing through Cabot Strait, it maintains its width and depth entirely across the Gulf; passing north of Magdalen Islands and between the Gaspé coast and Anticosti. It then penetrates the Lower St. Lawrence nearly to the mouth of the Saguenay, where the depth has only diminished to 150 fathoms at a distance of 420 miles from Cabot Strait. A branch of this deep channel also extends from the Magdalen Islands for a certain distance towards the Strait of Belle Isle.

Beneath the cold layer which occurs at a depth of about 50 fathoms, the temperature in this deep channel is again higher; and from 100 to 200 fathoms it is found to range very constantly from 37° to 41°. This result was obtained in 1894 in Cabot Strait; and the same temperatures have since been found at these depths between the Gaspé coast and Anticosti, which is 220 miles further from the Atlantic than Cabot Strait, along this deep channel.

The density of this deep water as found from samples taken at depths of 100 and 150 fathoms, both in Cabot Strait and in the vicinity of Gaspé, ranges from 1·0255 to