PART I.

NATURE OF THE CURRENTS IN THE GULF AREA.

General Character.—These currents are of two kinds; (1) Constant currents which run more or less continuously in accordance with the general circulation of the water in the Gulf area; and (2) Tidal currents, which are produced or chiefly influenced by the tide. Both classes of currents are affected by the wind; the prevailing direction of the wind being west and south-west in summer, and north-west in winter.

Speed.—With the exception of the currents in the various straits and near the heads of the bays, ...e currents met with in the open Gulf seldom exceed one knot per hour. They are therefore the more easily influenced by strong winds, especially at the surface of the water. Currents which have a greater speed than this, are found in Belle Isle and Cabot Straits, in Northumberland Strait, off the Gapsé coast, in the Gut of Canso, and locally in channels between islands and at the mouths of rivers.

Water.—The water of the Gulf may be roughly divided by a line running from South-west Point of Anticosti, to the middle of Cabot Strait. Along the south-western side of this line, the water has a lower density; as it is apparently made a little fresher by the outflow of the St. Lawrence River. To the north-east of this line, throughout the north-eastern arm of the Gulf, the water has the same density, or saltness, as in the open Atlantic.

Constant currents.—The general drift of this water of lower density is outward, towards the Atlantic. This gives rise to two constant currents, one at the mouth of the St. Lawrence along the Gaspé coast, which may be called the 'Gaspé Current,' and the other on the west side of Cabot Strait around Cape North, which may be called the 'Cape Breton Current.' A third constant current is found on the west side of Newfoundland, making north-eastward from the Bay of Islands towards Rich Point.

It is to be noted that in calling these currents constant, it is only meant that they usually or most frequently run in the one direction. During certain winds, they may be much disturbed, or their flow may be checked, as will be seen when their behaviour is more fully explained.

Tidal currents.—The strongest of the tidal currents are found on the Lower St. Lawrence, where in places they attain a speed of five or six knots per hour. Also, the tidal current in the Gut of Canso runs at four knots; and in the narrowest part of Northumberland Strait, off Cape Jourmain, at three knots per hour. The currents in these localities have not been examined by this Survey, however.

The tide has a distinct influence upon nearly all the currents in the Gulf area. It may cause a variation in speed when the current runs in one direction, or the direction of the current may veer with more or less regularity in accordance with the tide. The effect of the tide in these respects will be explained when the various localities are described.

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