

The main tide found in the Gulf undoubtedly enters by Cabot Strait (between Cape Breton and Newfoundland) from the general tidal wave in the Atlantic, which advances from the south-east. It is a remarkable fact that the tidal wave which enters here, does not lose itself in the great expanse of the Gulf area, but is again found with a range even greater than before in the passage between Gaspé and Anticosti, and from there continues its course, with ever increasing height, up the St. Lawrence to Quebec. This is well illustrated by the curves already recorded by the tide-gauges. The progress of the tidal wave in this leading direction, must be largely due to the existence of a deep channel, which crosses the whole extent of the Gulf from Cabot Strait to the passage referred to, between Gaspé and Anticosti; and thence extends up the St. Lawrence nearly to the Saguenay. This channel thus extends for a distance of 500 miles, with an average width of 35 miles, and a continuous depth of over 150 fathoms. It is this channel which forms an avenue of least assistance for the progress of the tidal wave.

This will explain in general the reasons for the positions chosen for the tide gauges. It was evident that observations at some point in Cabot Strait would furnish a key to the situation; but the rocky cliffs on both sides at Cape North, and Cape Ray, and the rocky character and exposed situation of St. Paul Island, made it appear impracticable to place a tide-gauge there. In locating the gauge on the Magdalen Islands, however, although it was placed on their eastern side, it soon became apparent that the tidal wave had already lost its full range in the expanse of the Gulf. A careful examination was therefore made to find if possible a position on St. Paul Island sufficiently sheltered to protect a gauge from destruction. The sheltered site at which the gauge now stands, was eventually discovered; and observations in Cabot Strait itself are thus secured.

On the main line of the progress of the tidal wave from St. Paul Island to Quebec, a distance of 650 miles, the intermediate tide stations which have been selected as most suitable are the South-west Point of Anticosti Island, and Father Point. These two points have the following important advantages: They are near to the edge of the main channel above described, which traverses the Gulf; and they are similarly situated with regard to it, as they are both within six or eight miles of the 100-fathom line; they are both situated on the open coast, where they are unaffected by such local conditions as might exist in a bay or inlet. On these grounds they are admirably adapted to follow the progress of the tide and serve as reference stations. The only position that can claim superiority to Father Point as commanding the mouth of the St. Lawrence, is Point des Monts on the north shore; as this stands more truly at the dividing line between the river and the Gulf. Against this, however, Father Point has the practical advantage of being the Pilot Station, where direct information regarding tides and currents is of the first importance and can be made directly available.

In this chain of tidal stations an important region is still omitted. The line of the main channel across the Gulf from Cabot Strait to Gaspé, is very direct with only a slight bend to the north-east in passing the Magdalen Islands. This main channel thus forms the deep water edge of the large semi-circular bay of comparatively shallow water, which is bounded by the wide sweep of coast from Gaspé along New Brunswick to Cape Breton; and in which Prince Edward Island lies. The depth of water throughout this bay averages only about thirty fathoms; and the tidal wave has to pass over an extent of about 200 miles of this shallow water to reach its shores. It is therefore most important to establish at least one tide station somewhere near the centre of the sweep of coast which bounds it. The position I would recommend would be in the vicinity of Miramichi Bay; as this is the point furthest removed from the deep-water and from the tidal entrance at Cabot Strait. The tide-gauge now on the Magdalen Islands will give, in a comparatively short time, a record sufficient to establish its tidal difference from St. Paul Island; and it can then be utilized for the more permanently important position at Miramichi. This change may therefore be made with advantage before the end of next season.

At Father Point the erection of the tide-gauge was not finished, up to the beginning of the present winter, when the ice stopped further operations. It is a position