

tide tables of 1899, but with some modification for the advantage of the region on the south-western side of the Gulf of St. Lawrence, to which the tidal directions extended that accompanied the tables. Copies were also sent to ten Lower Province newspapers and to twenty-six vendors of almanacs and marine publications abroad, to make known these tables, as they were then issued for the first time. The number of copies thus sent out was 242.

#### TIDE TABLES FOR 1899; PUBLICATION, &c.

The tide tables for Halifax and Quebec have become well known by their publication in the *Canadian Almanac* since 1896; and also in the *Star Almanac* for 1896, which was the last year that it was issued. The Quebec tables have also appeared in the publication issued by the Harbour Commissioners of Montreal, and have thus become known to the Pilot service and the steamship companies of the St. Lawrence. There was less facility for making known the new St. John tables; and their publication in 1898 was unsatisfactory. The only almanac in Canada in which they appeared, was McMillan's, published in St. John itself; but the abstract of the tables which was given in it, was very meagre. The tables appeared in full in the *St. John Telegraph*, which served to make them known in New Brunswick; but the St. John papers have little circulation on the Nova Scotia side of the Bay of Fundy, and from a tidal point of view, St. John is the principal station for the whole of that bay.

In order to make the tide tables more widely known, it was arranged to have them reprinted from *Greenwood's Almanac* for 1899, as an 8-page pamphlet. This almanac published in full the tide tables for the three ports, Halifax, Quebec and St. John; and 350 of the copies reprinted from it, have been widely distributed. These have been sent to the agents of this department, harbour commissioners, harbour masters, port wardens and collectors of customs, corporations of pilots and pilot commissioners, boards of trade, and to thirty-seven steamship companies and their agencies, running to our eastern ports. Also to twenty-six leading vendors of almanacs and nautical publications, in Great Britain, Europe and the United States, and twenty nautical and allied periodicals, mostly foreign; as well as to the newspapers in our eastern cities. It is hoped that these tide tables will thus become better known. The *Canadian Almanac* will also publish in full the tide tables for 1899 for all three ports.

On the other hand, further improvement in the accuracy of the tide tables themselves has come to a standstill, for want of sufficient assistance, and the means to meet the expense of the analysis of further tidal record. This affects the tide tables as far forward as 1900, as they have to be calculated so long in advance. The tables up to that year have thus only two years of tidal record, at Quebec and St. John respectively, as their basis. At Halifax the tide tables up to 1897 were based upon four years of old record obtained between 1851 and 1861, and only one year of new record has yet been incorporated for the improvement of the tables there. The tide tables for St. Paul Island are based upon one year's record only. On these four principal tide tables, the others which are computed for the season of navigation, necessarily depend for their accuracy.

#### SECONDARY TIDAL STATIONS IN THE SEASON OF 1898.

In this season, an investigation of the tides in the Bay of Fundy was made. This bay has a length of 154 miles from Bryer Island to Cumberland Basin, and a width of 36 miles. The chief object of the investigation was to determine the relation between the tides in the bay, and the principal tidal station at St. John, N.B., by means of simultaneous observations at a series of points around the bay, obtained with self-registering tidal instruments. Another object was to ascertain where the dividing line should be drawn, on the south-western coast of Nova Scotia near the mouth of the bay, between the ports that can be referred to St. John on the one hand, or to Halifax on the other, as their port of reference. The tidal data obtained will also serve as a basis for the investigation of the tidal currents of the Bay of Fundy, when this is undertaken.

In making a selection of the places around the bay most suitable for the purpose, the points at which the Establishments had already been determined by the Admiralty,

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