

SURVEY OF TIDES AND CURRENTS

IN

CANADIAN WATERS

OTTAWA, 15th December, 1898.

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SIR,—I have the honour to submit the following report on the progress of this Survey. With regard to the investigation of the currents on our coasts, the regions in which this is most required at present, were pointed out in my last report; but no arrangements were made for carrying on this branch of the Survey during this season. Some information on the behaviour of the currents in the Bay of Fundy, however, was obtained incidentally, while carrying on tidal work in that region.

Two of the principal tidal stations were put in thorough repair this year; and improvements were made in the method of calculation and in the publication of the tide tables, which are now issued by this Survey.

During the summer season, an investigation of the tides in the Bay of Fundy was made; and eight secondary tidal stations were established in that region; and from these, three to five months of continuous record have been obtained. The tide levels at several of these stations have been referred to permanent bench marks. The question of mean sea level in the Bay of Fundy has also been investigated; and the values as determined from the best available surveys, are given in this report.

The leading marine periodicals and geographical publications, which give reviews of the reports of this Survey and summaries of the results obtained, were mentioned in my last report. In addition to these, two further summaries have appeared in the Dutch periodical, "De Ingenieur." These occupy five quarto pages, and are accompanied by two maps, reproduced from the reports. The Liverpool "Journal of Commerce," in a review of the last annual report of this Department, continues to express its high appreciation of the work of this Survey, and the importance of the results from a commercial point of view.

The tide levels at St. John, N.B., which were given in my last report, with reference to the Tidal Survey bench mark on the Custom house, have been of much service there. By connecting his levels with this bench mark, Mr. Wm. Murdock, C.E., the Superintendent of Water Works, has obtained the true elevation of mean sea level, low water datum, &c., for his purposes. The tide levels required in the construction of wharves this season, have also been obtained in the same way, from this bench mark. The tide gauge at St. John has also afforded the level of the tide, moment by moment, for the reduction of an extensive series of soundings in the harbour, taken this season by Mr. E. T. P. Shewen, Resident Engineer of Public Works. For this purpose 3,800 special readings have been taken from the gauge-record by Mr. D. L. Hutchinson, the tidal observer; during September and October, 1898.

The tidal record at the mouth of the Fraser River has also been of service in the construction of an important coaling wharf at Vancouver. The record was examined for this purpose by Mr. H. J. Cambie, Resident Engineer on the Pacific division of the C. P. Railway; the object being to ascertain the level of the loading stages which would secure the greatest number of hours of work. The irregular and unequal character of the Pacific tide, makes this difficult to determine without a tidal record for reference; and the difference of a foot in the wharf level, one way or the other, would make a wide