## REPORT OF PROGRESS

## SURVEY OF TIDES AND CURRENTS IN CANADIAN WATERS

## OTTAWA, 15th December, 1894.

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Chief Engineer, Department of Marine and Fisheries.

SIR,—I have the honour to submit the following report on the progress of the Survey of Tides and Currents in Canadian waters.

As the work done falls naturally into two divisions, it may be well to mention first the improvement and extension of the system of tidal stations; and then to describe the survey of the currents as commenced this season, with the results already obtained.

## TIDAL OBSERVATIONS.

The range of the tides is so varied on our coasts, that the tide gauges or instruments used to record the tides, were originally designed with a special scale to suit each locality. On examining the records made by these instruments, it appeared that an important improvement could be made at some of the stations by giving them a larger scale with greater range. A uniform scale could also be adopted for the stations in the Gulf of St. Lawrence. Accordingly three new recording instruments were ordered to replace some of the present ones, and their scale was altered to make them serve for the new stations to be established this season. These instruments are of Lord Kelvin's design, of which Mr. James White of Glasgow is the maker.

At two of the stations, situated on islands, it had been necessary to make a telegraphic exchange of time once a week, to regulate the driving clock of the recording instrument. To avoid this expense, meridian instruments (named dipleidoscopes) are now employed, which when once set correctly in the meridian, give the exact time of the sun's meridian passage. One of these of a rather primitive type was already in use at Anticosti ; and after considerable inquiry, three others of modern construction were obtained from a Paris maker. Two of these were defective when received ; but out of the three, two efficient ones were made, which were placed at St. Paul Island and at the new station in the Strait of Belle Isle. The third one, intended for Anticosti, after being repaired, was received too late to place this season.

The tide-gauge at St. John, N. B., had given some trouble from the beginning, although not such as to interfere with the record of the tide. This gauge has a timber column three feet square, forming an open well in which the vertical tide pipes are placed. By this arrangement the pipes are surrounded by an open space which can be heated to prevent them from freezing up in winter. The column requires to be longer than the whole range from lowest to highest tide, which at St. John is over 28 feet. 13