REPORT OF PROGRESS

SURVEY OF TIDES AND CURRENTS IN CANADIAN WATERS

OTTAWA, 31st October, 1895.

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SIR,—I have the honour to submit the following report on the progress of the Survey of Tides and Currents in Canadian waters. In it I will endeavour to state fully the progress made in the extension of the system of tidal stations, and in the preparation and publication of Tide Tables; and also to describe the character of the current in the Strait of Belle Isle, and its relation to the Gulf of St. Lawrence in general, as some additional light has been thrown indirectly upon this, by the work of the present season. With regard to new results obtained this year in the survey of the currents, it will only be possible at this early date, immediately at the conclusion of the season, to give an outline of the work as undertaken. To this some notes of unusual directions of the current between the Gaspé coast and Anticosti are added, which may be of practical service in the meantime, until the results obtained can be fully worked out and made clear by suitable illustration.

TIDAL STATIONS AND OBSERVATIONS.

At the present date there are seven tidal stations in operation; and these are now supplied with a complete outfit of the necessary instruments. The recording instrument in use at all of these stations is the self-registering tide-gauge of Lord Kelvin's design, to which some improvements have been added in the endeavour to meet our special requirements. These instruments give a continuous record of the tide, day and night throughout the year. (For description of these instruments see Annual Report, Department of Marine and Fisheries, for 1893; Appendix No. 4, page 33.) For the adjustment of these instruments it is necessary to have correct time, and also to obtain direct measurements from a plane of reference or datum.

At isolated stations, where the time cannot be otherwise obtained, dipleidoscopes or meridian instruments have been erected, which give the exact time of the sun's meridian passage; or apparent noon. In this way the driving clock of the recording instrument can be correctly regulated; and the necessity for telegraphic time signals has been dispensed with. The other requirement is supplied by means of a sight gauge; which consists either of a graduated staff standing on a float, or of a metal tape attached to a float and passing over a pulley-wheel. The choice between these forms of sight gauge depends upon the range of the tide at each station; and they serve to give the direct measurement required from a datum plane of reference. Where the range of the tide is so great as to require a metal tape for the sight gauge, Chesterman's steel tapes have been used. These answer admirably in themselves,