

Mean Sea Level. From two year's observation, from April 1895 to April 1897...	Feet. 5.75
Harmonic Tide Plane; at a distance below Mean Sea Level given by the sum of the harmonic constants $M_2 + S_2 + K_1 + O$	0.89
Lower Low Water; including in addition to the above, the remaining harmonic constants which represent the diurnal inequality.....	0.06

The last elevation given, corresponds closely with the datum of the tide tables. The only elements in the tide which carry it below this level, are the influence of the moon's perigee when it coincides with the above extremes, and the annual variation in the tide.

This shows that the datum plane of the tide tables is as low as it can be put with any reason, and the probability seems to be that this is fully as low as the low-water datum of the chart soundings. This is also corroborated by the results deducible from the special soundings above referred to. It is the practice of the Admiralty also, where there is a pronounced diurnal inequality, to take the lower low water as the reference level. It therefore appears probable that the plane of reference for the height of the tide as used in the tide tables, corresponds with the original low-water datum of the charts, as nearly as can now be ascertained.

Further observations.—The observations at Vancouver, B.C., were resumed on March 1, to secure better tidal data for that port. Also, on the occasion of the visit of the Chief Engineer to that coast in July, he made arrangement with the officers of the Meteorological Service for the erection of two gauges to obtain records of the tide of the open Pacific. One of these was placed at Bamfield creek, in Barkley Sound, on the west side of Vancouver Island; at a sufficient distance from the entrance to Fuca Strait to be out of the influence of its currents. The other gauge was placed at Port Simpson, B.C., which is open to the Pacific in both directions through Heate Strait and Dixon Entrance. The recording instruments used at these stations are of the Richard type; a scale adapted to the range of the tide being obtained by a suitable alteration in the wheel-work.

The principal tidal station in the Strait of Georgia, situated at Sand Heads, has failed to record low water since June; on account of an alteration in the sand bars which now bank in the water at low tide. The neighboring tidal station at Garry Point will meantime be utilized by means of a double reference, in making comparisons with other harbours in the strait. Mr. G. A. Keefer, Resident Engineer of the Public Works department, will have the gauge at Sand Heads moved further out, where the water will have unimpeded access to it. Previous to the time of the above interruption, the length of tidal record which has been submitted to harmonic analysis, or tabulated in readiness for this analysis, amounts in all to five complete years.

THE PRINCIPAL TIDAL STATIONS.

The seven principal tidal stations in Eastern Canada have been maintained in operation throughout the year. At Quebec, Father Point, Belle Isle strait, and St. John, N.B., the tidal record secured has been continuous. At two of the stations only, serious interruption occurred. At Halifax there was a loss of several months on account of change of observers, before a satisfactory arrangement could be made. Also, at St. Paul island the trouble continued from the threatened choking of the inlet to the tide pipes, referred to in the last report; and finally in an exceptionally severe gale on November 25, 1901, the tide gauge was partially wrecked; the crib-work being carried away, and the iron cylinder displaced. It was braced up temporarily, however, and further record was secured until January 20 following, when the gauge ceased to work. At Yarmouth, N.S., the loss of record last winter extended from January 30 till February 26. There is a similar loss there each year, as this gauge is not heated.

The tidal observations secured last year at Sydney, Neil Harbour and Port aux Basques, on the two sides of Cabot strait, showed that St. Paul island itself, was much the most satisfactory station from which to deduce the tides in Northumberland strait