

The standard values for the tide levels, as adopted by the Engineers of the Ship Railway, are as follows:—

Elevation of the Tide from the Ship Railway Profiles:	Cumberland Basin, Bay of Fundy.	Baie Verte, Gulf of St. Lawrence.
Saxby tide, highest known; occurred 5th Oct., 1869.	100.00	
Exceptional H. W., highest known		79.00
High water, spring tides	96.00	
Ordinary high water	89.00	74.00
Ordinary low water	52.59	68.40
Extreme low water to which the Ship Railway soundings are reduced	47.20	65.60

LEVELS REQUIRED FOR THE CONNECTION OF MEAN SEA LEVEL, IN THE BAY OF FUNDY, THE GULF OF ST. LAWRENCE AND THE ATLANTIC

At several ports, mean sea level has already been determined by the Tidal Survey, and the observations of this summer afford further material for this purpose. Although these determinations are by no means the primary object of this Survey, they result, with little additional labour, from the careful and continuous observations required for the determination of a uniform datum level for the tidal record itself, this being essential to make the record of use as a basis for tide tables. In this climate, readings on exposed tide scales can be obtained for summer observations, but they cannot be had throughout the winter, on account of the accumulation of ice. The datum has therefore to be determined from comparisons with sight gauges which are sheltered and supplied with heating in winter, in the same way as the recording instrument itself. The arrangements used for this purpose have already been described in these Reports. The sight gauges are connected by instrumental levels with permanent bench marks.

As regards the comparison of tide levels in the Bay of Fundy with the Gulf of St. Lawrence and the Atlantic coast, determinations of mean sea level have already been made at the following ports:—

At St. John, N.B., from two years of continuous tidal record; mean sea level is referred to the Tidal Survey Bench Mark on the Custom house.

At Halifax, from tidal record during one complete year, referred to the Admiralty Bench Mark in the Dock yard.

The results obtained there, as well as those for Quebec, are given in the report on this Survey for last year. The further material now available is as follows:—

At Yarmouth and Digby in the Bay of Fundy, five months of continuous tidal record in 1898, the datum of the observations being referred to permanent bench marks as described in this report. Also, in Cumberland Basin, the determination of mean sea level from four months observation of tide levels, as above given; and connected with this, by the levels of the Ship Railway, the determination at Baie Verte from observations of tide levels during a period amounting to $2\frac{1}{2}$ months in all.

To make connection between these determinations, accurate instrumental levels would be required from St. John to Moncton, 90 miles; and from Moncton to the Ship Railway bench marks near Amherst, 48 miles. By taking this route, connection would

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