the averaged value thus obtained is used in establishing the new Bench-mark, and as a starting point for the extended levels around Cumberland Basin.

Bench-marks around Cumberland Basin, as established in 1901.—New Bench-mark on north end of engine house at Fort Lawrence dock, Chignecto Marine Railway. Cut on the string-course of yellow sandstone, at the foot of one of the brick pilasters. Elevation above the Marine Railway datum, 101·42.

Original Bench-mark at the west end of a masonry box culvert on the Marine Railway, at 2,120 feet south of the crossing of the Intercolonial railway. The bench-mark was made by dressing a small square on the top of the coping at the south-west corner. Elevation above the Marine Railway datum as shown on the original profile, 97·42. Elevation adopted, to average the discrepancy as explained above, 97·45.

Original Bench-mark on a masonry box culvert, on the north side of the Intercolonial railway track. This culvert is one of a pair at each side of the track, where the Marine Railway crosses it, to carry the water in the side ditches. A small square as above, on the south-west corner of the coping at the west end of the culvert. Elevation as shown on the original profile, 100·86. Elevation adopted, to average the discrepancy as explained above, 100·84.

On the masonry abutments of the Missiquash River railway bridge. East bridge seat, under the centre of the track ; elevation 99·16.

Ditto :—West bridge-seat ; elevation 99·28.

Bench-mark at Aulac. Head of a railway spike, in the top of an old cedar telegraph pole, cut short ; in swamp behind west end of platform, Aulac railway station; at 65 feet from west side of station building, and 35 feet from the front of station platform. Elevation, 91·65.

On the masonry abutments of the Tantramar River railway bridge. East bridge-seat at the centre of the track ; elevation, 102·45.

Ditto :—West bridge-seat, elevation, 102·38.

Bench-marks at Sackville. Broad arrow cut on the masonry foundation at the south end of a white wooden house occupied by William Hicks. The house is north of the Sackville railway station, and is at 160 feet from the corner of the station road. Elevation of bench-mark, 99·86.

In Sackville station yard. Head of a railway spike in the top of an old cedar telegraph pole cut short ; which is beside fence on south side of station yard, at 190 feet east of railway station building, and nearly opposite east end of station platform. Elevation, 93·89.

Extreme levels of High Water and Low Water at the head of the Bay of Fundy.—As observed in Cumberland Basin at the Fort Lawrence dock at the south end of the Chignecto Marine Railway, and at Sackville ; and now reduced to the uniform datum of the Marine Railway for comparison.

The level of extreme High Water is of the first importance with reference to the dyked marshes, and last spring this was further emphasized by wash-outs on the Intercolonial railway, occasioned by the dykes being overflowed. It is chiefly important to know the highest level which it is possible for the tide to reach, when not affected by storm disturbance ; as this will recur periodically under conditions which admit of its prediction. Last autumn and this spring such tides have occurred. The highest levels reached were marked at Sackville, and also at the end of the Marine Railway on Cumberland Basin, when this locality was visited by me early in June. The wash of the recent high tides was then still visible, and the points reached by the water were shown to me by Mr. F. S. Hanford, who is in charge of the unfinished works of the Marine Railway, and resides there. These points were marked, and their elevation determined when the extended levels were taken in September.

A continuous series of observations of the heights of high and low water was made by the Engineers of the Marine Railway at Fort Lawrence dock, at the mouth of the Missiquash river, which extended from August to December, the year being probably 1893. These have already been published in the Tidal Survey Report of December, 1898, and are given as a diagram in Plate III therewith. The extreme values of high and low water then observed are now given again for comparison; and it is to be noted that these extreme tides always occur in the autumn, which is included in the period