utilized in this Survey to avoid the multiplication of the principal tidal stations. This method is fully explained, with tabulated examples, in a Paper on the subject contributed to the Royal Astronomical Society of Canada (16).

Tide Levels and Bench Marks.

As there is no general system of levels as yet throughout Canada, it has usually been necessary to establish a local Bench Mark and to originate a datum plane for the tidal observations. Wherever a plane of reference had already been established, it was made use of; but it is only in two harbours in Eastern Canada that Bench Marks exist to which the Admiralty low water datum is referred; namely, Quebec and Halifax. At St. John, N.B. all such marks were destroyed in the great fire of 1877, and although much trouble was taken to re-establish the datum of the harbour chart, the result was only approximate (17). At the head of the Bay of Fundy, a good datum was established by the engineers of the Baie Verte canal; and simultaneous observations in Northumberland strait connect this with the open sea level. To this datum the exceptional tides at the head of the bay are referred. An interesting result for mean sea level at the head of the Bay of Fundy has been deduced from these observations (18).

Bench Marks have almost always been established both at the principal and secondary stations, even when tidal observations have only been continued for a few months. These are valuable at present for local reference, and will be more so in future, when they are connected together by some general system of levels. The Bench Marks thus established along the St. Lawrence and throughout the Maritime Provinces, are described in a Paper communicated to the Canadian Society of Civil Engineers (19). The extreme levels of high and low water in the various harbours are there given; as well as the tide levels at the head of the Bay of Fundy, which are valuable for the security of the extensive hay lands in that region, known as dyked marshes.

The value of mean sea level at Quebec had long been desired by engineers; and accurate local data have now become available there, from tidal observations during eight complete years. The relation with Atlantic mean sea level at New York was accordingly worked out from connections recently made by geodetic surveys and canal levels, and from revised determinations made in the United States. The result is given in a Note communicated to the Canadian Society of Civil Engineers, the data on which the result is based being carefully explained (20).

In British Columbia the levels were in an unsatisfactory condition, especially at Victoria. In that harbour it was found that a new datum