bour Commission of Montreal. Tide tables are now published by him for the use of the river pilots; and a signal station had been established to indicate the depth of water in the new channel. A detailed account of these tides is also given by Mr. E. Stockel, C.E., of the Public Works Department, which is based upon observations taken while carrying out his system of levelling operations. The results are given and fully illustrated in his Report of December, 1891, addressed to Mr. L. Coste, Chief Engineer of Public Works.

In the estuary below Quebec, throughout the Gulf of St. Lawrence and on the Atlantic coast, the tidal information which we possess is still based on Admiral Bayfield's survey of nearly 60 years ago; and these data, as the Hon. G. E. Foster recognized while Minister of Marine, are not sufficently accurate for the present time.

To obtain the required information, tidal stations must be established at commanding points, in order to follow the general course of the tides; and from these the local differences for the smaller ports can afterwards be determined. In the choice of the main stations, the chief difficulty is that the large harbours are often the least suitable to use as stations from which to determine the tidal differences for other points along the coast. The reason for this is, that many harbours such as Quebec, St. John, N.B., and New York, are at the mouths of tidal rivers; and this has the effect of complicating the times of the tide with local conditions. To avoid this difficulty, Sandy Hook has been chosen instead of New York harbour, as a point of reference for other places along the Atlantic coast. At Quebec and St. John, the same local difficulties occur; and although it is necessary to observe the tides at these harbours on account of their own importance, it is doubtful whether St. John will answer satisfactorily as a port of reference for the Bay of Fundy. On this account it is advisable to establish an additional tide gauge as soon as possible at Yarmouth, which is the best available point. It is free from local influences, and the tides have a more medium range than at St. John, making results more reliable; and it best commands the entrance to the Bay of Fundy, as the tides enter the bay from the southwest. For the Atlantic coast of Nova Scotia, Halifax is undoubtedly the locality to select, as it has the advantage of combining both the objects referred to. It is a question, however, whether it would be best to place the gauge in the harbour of Halifax, where the influence of the accumulated tide in Bedford Basin may have an appreciable effect. It may be found on examination that a point outside the harbour, such as Chebucto Head, may give better results for the actual tide of the Atlantic.

In recommending the establishment of a tidal gauge at Halifax, it may be well to explain that to obtain a satisfactory basis for tide tables at so important a point the observations should be continued for a period of 19 years. This is the period of revolution of the moon's nodes, and the period in which eclipses recur successively in the same order. Although there is a recurrence in each year of unusually high tides at the equinoxes in the spring and autumn, due to the combined influence of the sun and moon at those seasons, yet the declination of the moon is different at each succeeding equinox until the period of 19 years has elapsed. At the end of that time the sun and moon are again in positions with respect to the earth which are practically identical with those which they had at first; and the whole of the associated phenomena, including the tides, recommence again in the same sequence.