tides, accompanied with gales of wind from the northeast, occasionally give from two to two-and-a-half feet more at high water, and a smaller range towards low water, but the mean for all practical purposes may be taken at seventeen feet. At neaps the tides range about eleven and a half feet, the low-water level both at spring and neaps, rarely varying more than eighteen inches. Spring tides are felt up the river as far as the entrance into Lake St. Peter, which for all hydrographical purposes may be described as the head of tidal navigation. From this point onwards the river has for some years past been the object of constant superintendence; and works of considerable magnitude have been carried out for improving this navigation, together with that of the river up to Montreal.

The depth of water existing on the Flats of St. Peter in 1845, is reported by the authorities as only capable of passing vessels drawing not more than eleven feet at low stages of the river, and other impediments existed in the river above. But under the direction of the Harbor Commissioners of Montreal, a general deepening of the whole of the fairway of the navigation, wherever necessary, is being carried out. The works consist of a channel dredged out of the clay and mud bottom of Lake St. Peter, three hundred feet wide, and is intended to afford a depth of water, when completed, of twenty-one [24] feet at low water.

[Lake St. Peter is 21 miles long. The improvement of its navigation was first suggested about the year 1836,—the work on the "straight channel" being commenced in 1844, but abandoned in 1847, after an expenditure of $300,000. Operations were begun on the natural channel on 12th June, 1857, and continued, with some interruptions, until now that the dredged channel is 11½ miles long, 300 feet wide, and 9 feet deep, at an expense of $1,250,000,—admitting of the large steamships of the mail line coming up to the wharves at Montreal. The quantity of silt taken up and deposited on the flats at more than a mile from the dredged channel, was about 4,500,000 cubic yards. A further deepening has been determined upon, so as to give a depth of 22 feet (and ultimately 25 feet or more) at low water, to admit of the largest steamships coming up to the wharves without lighterage.]

From this point to Montreal the general course of the river is direct, although the fairway of the channel is somewhat tortuous, and there are many islands of alluvium which divert the direction of the fairway, but all the courses are duly marked and lighted, and no difficulty is felt in clearing vessels through the improved channel between Montreal and Quebec.* The slope on the surface of the river from the head of Lake St. Peter to the foot of St. Mary's current (a small rapid at the lower end of the harbor of Montreal), is about two and three-quarter inches per mile, and the average velocity is one and a quarter miles per hour in the fairway channel. The rapid last mentioned is formed in a contracted part of the river between St. Helen's Island and the north shore, which

* See App. No. III. for statements of disasters and wrecks on Lake and River navigation.