from one thousand to three thousand five hundred acres, which would be in the proportion of one acre of water to thirty-nine acres of land.

We cannot properly pass from this subject without referring to Lake St. Clair, which is only a shallow depression in the drift. It consists of an expansion of the straits leading down from Lake Huron to Erie, and may be assumed as twenty-one miles in length, by eighteen and a half in width. Its depth is only twenty feet, and Lake Erie, which does not exceed eighty-four feet, is the recipient of the alluvial deposits of the rivers which flow into it. The inlet to Lake St. Clair is an interesting delta, and islands of alluvium are constantly forming, which tend to choke up its numerous channels. Although the average depth of Lake St. Clair is about twenty feet, the navigation through it has to pass a channel which is naturally about ten feet.

A moderate gale of wind soon raises a sea in this shallow lake, causes the whole to become turbid, and tends thus to distribute the detrital matter, and to convey it through the Detroit straits into Lake Erie, where similar accumulations, on a larger scale, occur. The depth of Erie over its upper end scarcely averages eighty feet, its deepest part being near the east end, where it begins to narrow towards the outlet, in the direction of Niagara. Here, too, an ordinary storm raises a very heavy and somewhat dangerous sea, and soon disturbs the bottom, and favors the distribution of natural deposits which settle in calmer weather in the upper portion of this shallow basin.

Reflecting upon the relative levels of these upper lakes, and the peculiar character of the water-shed which limits the basin on the west side of Lake Michigan, it appears that if the barrier new regulating the discharge through the Niagara River were lifted to the extent of about thirty feet, the whole of the great lakes would be converted into one vast sea, on a uniform level, which, while placing under water from eight to nine thousand square miles in Western Canada and Michigan, and the other borders of the lakes, would determine the direction of the outlet of this great basin towards the Mississippi, and place the present dividing ridge from seven to eight feet below the surface of this expanded sheet of water.

## RIVER ST. LAWRENCE. \*

The whole of the River St. Lawrence, from its entrance at Pointe des Monts to Montreal, has been elaborately surveyed by Admiral Bayfield; and the charts and sailing directions which are published by the Admiralty are so extensive and so well known, that it is deemed wholly unnecessary to make any statements with respect to the navigation of the tidal part of the river.

The tides at Quebec range, upon the gauge which is there fixed, from eighteen feet at spring tides to thirteen feet at neaps. Unusually high spring

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<sup>\*</sup> See App. No. I. for a number of interesting particulars relative to opening and closing of navigation, &c., at Quebec and Montreal.