

to be the largest individual loss on the Great Lakes.

British Columbia and Pacific Coast.

The C.P.R. s.s. Island Princess was withdrawn from the Gulf Islands service Nov. 19, for general overhaul. The ser-

vice is being performed by the company's s.s. Otter.

The C.P.R. resumed its Alaska steamship service, Nov. 17, with the sailing of the s.s. Princess Mary from Vancouver. This is the first of the company's vessels to be placed on that route since the loss of the s.s. Princess Sophia at Vanderbilt Reef.

The Naval Service Department's patrol steamship Galiano, foundered off the Danger Rocks, Queen Charlotte Islands, during a gale, about Nov. 18, all hands being lost. She was built at Dublin, Ireland, in 1913, and was screw driven by engine of 161 n.h.p. Her dimensions were: length 162.3 ft., breadth 27.1 ft., depth 13.1 ft.; tonnage, 393 gross, 129 register.

The Harbor of St. John, New Brunswick.

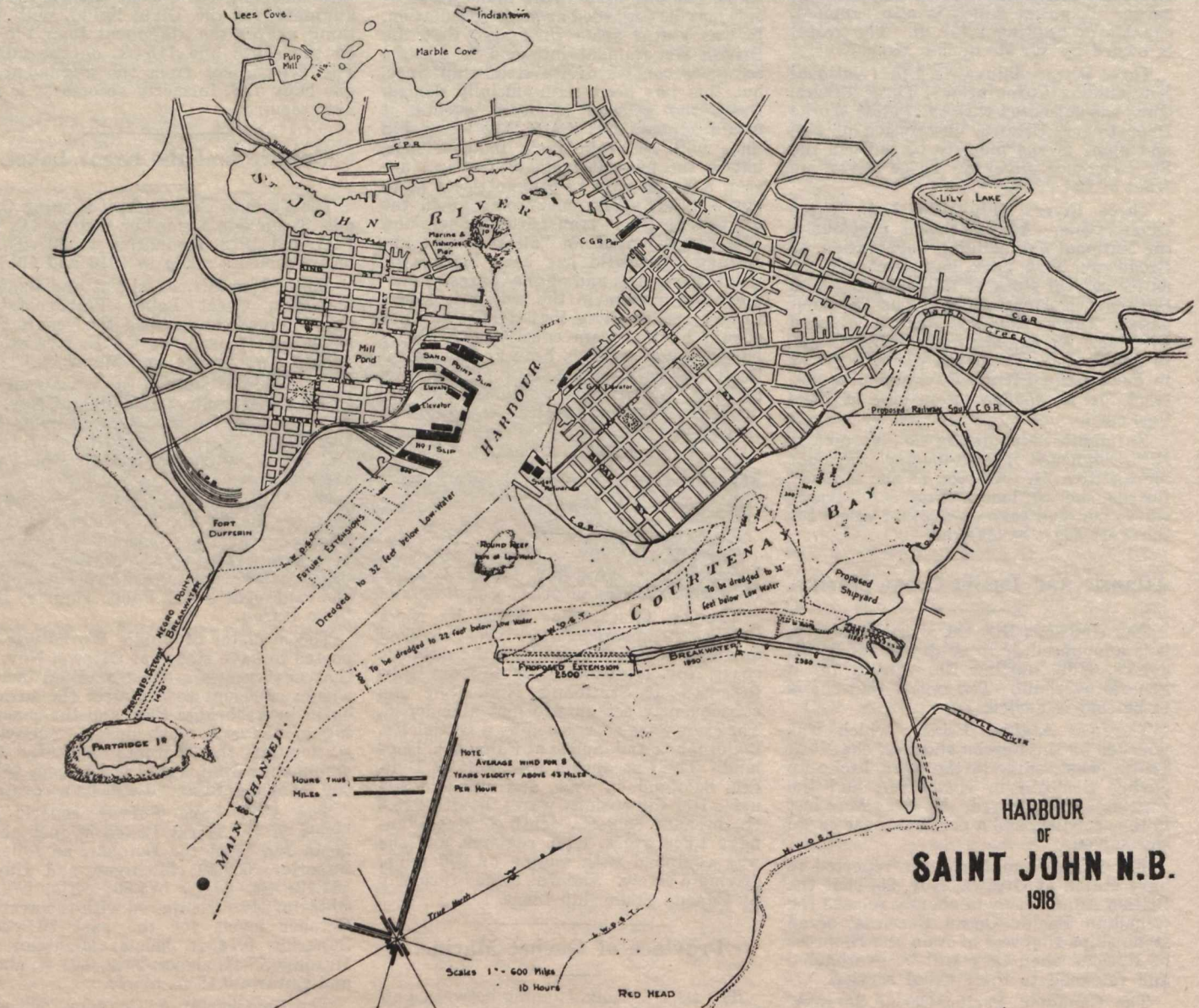
By Alex. Gray, Harbor Engineer, Dominion Public Works Department, St. John, N.B.

St. John harbor is situated at the estuary of the River St. John, which is about 460 miles long, with a drainage area of 26,000 square miles, and an average flow of about 20,000 c.f.s. Numerous articles have been published on the tidal phenomena in the Bay of Fundy, and St. John River, but it is unnecessary to deal with these in this paper, further than in

the water surface of the river is 15.0 ft. above low water datum of harbor, and the tidal range in the harbor is 13 to 30 ft. The variation of the sea level, therefore, at high water is from 2 to 14 ft. higher than the river, thus forming at every tide the Reversing Falls. The extreme high water of the river during spring freshet rises from 10 to 18 ft.

later than high and low water in the harbor. The average tidal rise at Indian-town, about half a mile above the falls, is about 1.3 ft.

The gorge at the head of the harbor, with its merged reef, forms a slack water reach, which is navigable for small craft from St. John to Fredericton, about 84 miles, and for a total of about 90 miles



so far as they affect the engineering features of harbor development.

The river discharges into the head of the harbor, through a rock gorge about 1,200 ft. long and 400 ft. wide. The small cross sectional area of the channel does not admit the flood as fast as it rises, or discharge the ebb as fast as it falls into the bay. The minimum summer level of

above the minimum. Navigation between the harbor and the river is only possible for a period of from half an hour to an hour, occurring before and after high water—the time generally being about 2½ hours ebb and 3½ hours flood. At Indian town, about a mile above the falls, high water occurs about 1 hour 6 minutes, and low water occurs 2 hours 20 minutes,

on several tributaries of the river. This slack water reach acts as a settling basin, in which the heavier silt is precipitated.

The exposure of the harbor is from the southeast to the southwest. The prevailing winds are from the northwest, from which quarter the severe storms generally originate, and afterwards change to the south, causing considerable inconvenience