

RICHELIEU AND LAKE CHAMPLAIN  
CANALS.

Connecting the St. Lawrence at Sorel with Lake Champlain by means of the Richelieu River and the Chambly Canal and St. Ours Lock and Dam, 81 miles to Province line.

*St. Ours Lock and Dam* is  $\frac{1}{2}$  mile long. In the Spring of 1873 they were inundated by the freshets and the pier at the entrance was damaged.

*The Chambly Canal* is 12 miles long with 9 locks, avoiding the rapids between St. Johns and Chambly. It has been put in thorough repair.

## ST. PETER'S CANAL.

Between St. Peter's Bay, on the S. coast of Cape Breton, and Bras d'Or lakes, crosses an isthmus half a mile long and gives access to and from the Atlantic. The canal is 2,400 feet long. A number of repairs were executed during the season.

## BAIE VERTE CANAL.

By an Order in Council of the 9th May, 1873, the different surveys and reports of this Canal were submitted to Mr. Page, the chief engineer of the Public Works, for his investigation and advice. After carefully going over all the documents submitted, Mr. Page made a personal examination of the routes. He states that the work will necessarily be one of unusual difficulty both from the nature of the work and the great difference in the elevation of the tides. The tides in Cumberland Basin, on the Bay of Fundy, rise from 35 to 46 ft., while those of Baie Verte range from 5 to 9; some times the water in the Basin is fully 18 $\frac{1}{2}$  ft. higher than at Baie Verte, at others that of Baie Verte 19 $\frac{1}{2}$  ft. higher than in the Basin. The tide waters approach each other within 6 $\frac{1}{2}$  miles. The dividing ridge at the lowest place is only from 5 to 9 ft. higher than tides that have been observed. The surface of the ridge is soft and marshy, under which is clay resting on red sandstone. During heavy gales from the E. sand is washed inwards at Baie Verte, and the water in parts of it are less deep than 30 years ago. The Bay of Fundy waters are always heavily loaded with dark brown mud and sand. None of the lines that have been proposed were deemed by Mr. Page practicable, except at enormous cost. The southerly side of Au-Lac Point is recommended for the western terminus of the canal. Two parallel piers to be constructed 250 ft. apart 1,100 and 1,500 feet long, and the channel to be excavated to the level of 31 feet. Two or three locks to be built at this end of the canal, which will cross the Intercolonial at an angle of 6° and then pass along the valley of the Missisquoi. For 7 miles from the terminus the depth of cutting through the marsh land will be about 22 ft. The next 5 $\frac{1}{2}$  miles are through a floating bog 6 or 10 ft. deeper, the surface of which is a live moss 10 to 15 inches deep, with a foot deep of closely matted roots under it. Below this is chiefly clay. From the end of the bog  $\frac{1}{2}$  of a mile to the summit, the elevation is 100 to 105 ft., moss and black muck 2 ft. deep with clay and sand beneath. The next  $\frac{1}{2}$  mile are through muck from 3 to 6 ft. deep at an elevation of 92. A mile and a quarter, at a height of from 83 to 95 brings the line to the Fish river. The remaining distance the height

varies from 70 to 94 ft. The total distance is 19 $\frac{1}{2}$  miles. At Baie Verte a triangular shaped basin to be formed by 2 piers 4,000 feet long embracing an area of 11 acres, the water to be dredged from 51 to 61 ft., an outlet lock to be placed near the shore line with another 600 ft. inward. The channel will have to be formed in the ordinary way, by steam excavators, manual labor, &c. The supply of water would almost certainly have to be drawn mainly from the Bay of Fundy, the waters of which are always charged with mud. It is proposed to convert the Rivers Au-Lac and Missisquoi into reservoirs by making earthen dams at their mouths, connecting them with the canal by channels 100 ft. wide. The cost of construction of the canal available on the Bay of Fundy side at half tide at Baie Verte at all times, is estimated at \$7,700,000. \$400,000 more would be required to make the Bay of Fundy entrance accessible at low water. From fourteen to fifteen million cubic yards of excavation would have to be made, about forty-five thousand of it rock, to give a canal 100 ft. at bottom with 16 feet of water.

## WORKS ON NAVIGABLE RIVERS.

*River St. Lawrence.*—Surveys are still in progress for the deepening of the channel of this river throughout, so as to admit vessels drawing twelve feet of water.

*River St. Croix, N. B.*—This river forms the boundary with the United States, and a conference has been held with the Engineer representing that Government to determine the proper mode of improving the river.

*River St. John, N. B.*—The Roncocto shoals have been dredged, and the channel deepened. The eastern and western landing slips of the ferry at St. John have been deepened, and the S. point of Navy Island has been dredged. The channel between Fredericton and Andover, 110 miles is being improved.

*River Thames, Ont.*—Channel improved and mouth dredged.

## PROTECTION OF NAVIGABLE STREAMS.

An act has been passed forbidding the throwing of slabs, edgings, bark or rubbish of any description into navigable waters, either above or below the point at which it ceases to be navigable.

## HARBOURS, PIERS AND LIGHTHOUSES.

*Harbours of Refuge Ont.*—Port Dover at the mouth of Pattersons Creek, Lake Erie, having fallen into an unsatisfactory condition, an order in Council was passed for its sale by auction. The improvements in Chantry Harbour at the mouth of the river Sturgeon, Lake Huron, are nearly completed. Additional works are being proceeded with at Goderich, on the E. coast of Lake Huron at the mouth of the River and for enlarging the harbour and improving the basin accommodation. The works for the improvement of Rondeau, N. shore of Lake Erie are completed. Kincardine Harbour, mouth of the river Pentstangore, Lake Huron is being dredged and additions have been made to the cribbing. The channel at the entrance of Pre-quiet Harbour, Lake Ontario has been dredged out. The Harbours of Kingston, Napanee, Belleville, (Lake Ontario), Port Stanley, (Lake Erie), Port Albert, Kincardine, Inverhuron (Lake Huron), and Mea-