

attention to the subject of the canal system of British North America and appointed a commission to report thereon.

Pending its action, a consideration of the whole subject, which has hitherto attracted very little general attention, will be advisable, and it will facilitate a due appreciation thereof if the navigation of the St. Lawrence and Great Lakes with their connections are first considered. The area drained by the great lakes through the St. Lawrence River, falls very little short of 800,000 (eight hundred thousand) square miles, of this not more than 300,000 belong to the United States and fully 500,000 to Canada; in addition to this the newly acquired territory of Rupert's Land will give at least 500,000 (five hundred thousand) square miles, whose commerce must pass down what will for all practical purposes be its natural highway.

Point des Monts, in north latitude  $49^{\circ} 18'$ , west long.  $67^{\circ} 13'$ , at the head of the Gulf, may be said to be at the mouth of the river St. Lawrence. The distance from that point to Kingston, at the foot of Lake Ontario in north lat.  $44^{\circ} 13'$ , west lon.  $76^{\circ} 22'$ , is 610 (six hundred and ten) miles, and this is the length of the river, its width varying from one mile to thirty. Of this length about forty-four miles are wholly or partially obstructed, requiring an elaborate system of canals and the excavation through Lake St. Peter of a length of  $11\frac{1}{2}$  (eleven and one-half) miles additional partially obstructed.

Lake Ontario is 180 (one hundred and eighty) miles in length, 58 (fifty-eight) miles in greatest width; its greatest depth is 600 (six hundred) feet and it is 234 feet above the level of the sea, it covers an area of 8,100 (eight thousand and ten) square miles. The most westerly point of this lake is in  $43^{\circ} 20'$  north lat. and  $79^{\circ} 52'$  west long. It is joined to, or rather receives the surplus water from the upper lakes, through Lake Erie by the Niagara River on which the magnificent falls of the same name are situated, and which render it unnavigable. Its length is thirty-two miles and its width varies from two miles to eight hundred and fifty feet.

Lake Erie has its eastern extremity in north latitude  $41^{\circ} 50'$  and west longitude  $78^{\circ} 50'$ ; its western in north latitude  $41^{\circ} 41'$  and west longitude  $83^{\circ} 32'$ . It is 250 (two hundred and fifty) miles in length, 60 (sixty) miles in width, has a depth of 254 (two hundred and fifty-four) feet, is 569 feet above the level of the sea, covering an area of 11,800 (eleven thousand eight hundred) square miles and is joined to Lake St. Claire by the Detroit River, twenty-four miles in length and from one and one-half miles to twenty-six hundred feet in width.

Lake St. Clair is the smallest and shallowest of the great lakes; it is properly only an expansion of the river connecting lakes Huron and Erie. It lies nearly north and south, it is only twenty miles in length by twenty-five miles in its greatest width, with

a depth of from eight to twenty feet. It covers an area 392 (three hundred and ninety-two) square miles. Its southern end is in north latitude  $42^{\circ} 25'$ , west longitude  $82^{\circ} 20'$ , its northern or upper end is in north latitude  $42^{\circ} 55'$  and west longitude  $82^{\circ} 20'$ . The river St. Clair flows into it from Lake Huron with a length of twenty-eight miles, and an average width of one mile.

Lake Huron lies nearly north and south. It is divided into two parts by the Manitoulin Islands, the eastern division is the smallest and known as the Georgian Bay. The whole lake has an area of 23,500 (twenty eight thousand five hundred) square miles. It is 260 (two hundred and sixty) miles in length and 166 (one hundred and sixty-six) miles in width; its greatest depth is 705 feet. The Straits of Mackinaw connect it with Lake Michigan in  $45^{\circ} 50'$  north latitude,  $84^{\circ} 48'$  west longitude; the southern end of Lake Huron is in  $43^{\circ} 00'$  north latitude,  $82^{\circ} 25'$  west longitude.

Lake Michigan lies parallel to Lake Huron. Its general course lies N.N.E. and S.S.W., its southern end is in north latitude  $41^{\circ} 37'$ , west longitude  $86^{\circ} 40'$ . It is 230 miles in length, 82 miles in width, with a maximum depth of 900 feet. It is nearly on the same level as Lake Huron, the latter being 572 feet above the level of the sea while Lake Michigan is 574 feet above the same. Its area is twenty-one thousand two hundred square miles.

Lake Superior, the largest of all the lakes, has a length of 420 (four hundred and twenty) miles with a width of 160 (one hundred and sixty) miles, its greatest depth is 1000 (one thousand) feet, its level is six hundred feet above the sea and its area is 52,000 square miles.

The St. Mary's River flowing from this lake into Lake Huron is forty-five miles in length, with a width of over one mile. Its navigation is obstructed by rapids known as the Sault Ste. Marie,—those occur at the head of the river, and are passed by the largest canal on the continent. It is in the territory of the United States, with a length of one mile. The size of its locks are three hundred and fifty feet in length, seventy-five feet in width between the gate posts or quoins, with twelve feet depth of water on the sills. Vessels of 2,000 tons burthen can pass this channel—it is now being enlarged to fifteen feet depth of water.

The western extremity of Lake Superior is in north latitude  $46^{\circ} 40'$ , and west longitude  $92^{\circ} 20'$ , and the eastern in north latitude  $46^{\circ} 23'$ , west longitude  $84^{\circ} 32'$ . From the extreme western prolongation of this lake to navigable water on the Red River at Georgetown, in the State of Minnesota, is a distance of 254 miles, across a comparatively level prairie. A railway is now in process of construction between those two points, and will be completed in August next. Red River is navigable from Georgetown to Lake Winnipeg for over 220 days in

each year, so that a line of communication may be said to extend from Pont des Monts, at the head of the Gulf of St. Lawrence to Lake Winnipeg, a distance of at least 2,500 miles. About 404 miles of this line, including the railway are in the United States, consequently in a foreign territory. Northwards of it the boundary between Canada and the United States passes along a chain of waterways reaching within forty-one miles of Thunder Bay on Lake Superior, and passing by the Winnipeg River into the Lake of that name the surplus waters of the intervening country. As the latter river is very much obstructed, its consideration as a means of communication must be postponed till the surrounding country is filled with a population whose trade will demand an outlet by it. But the chain of waters from the north-west angle of the Lake of the Woods to the head of Lake Shobandowan will require two short lines of railway, one between the latter lake and Thunder Bay of forty one miles in length, another between the north west angle and Red River at Fort Garry of ninety-seven miles to render it available as a line of communication through British territory. The improvement of the water ways between those places is not of sufficient moment to require present consideration, especially as the Canadian Government are rendering the line available by temporary appliances.

The present condition of the navigation on the eastern division of this great chain would be as follows:—From Point des Monts to Montreal, vessels drawing twenty feet of water can navigate the lower St. Lawrence throughout the season, which may be taken at 220 days in each year; between the level of tide waters at Three Rivers, and Lake Ontario, a height of two hundred and thirty-three feet has to be overcome. Two hundred and eight feet of it is concentrated in the one hundred and six miles which intervene between the foot of theachine Rapids at Montreal and the head of the Galops Rapids. In this distance there are seven distinct canals—the first of the number, known as theachine Canal, overcomes the obstacles to navigation imposed by the "Sault St. Louis," known as theachine Rapids. The canal is eight and a-half miles in length, having five locks, each two hundred feet in length by forty-five feet in width between the quoins, with a depth of water of nine feet on the sills of the locks. The height of lift to be overcome is forty-four feet nine inches. The dimensions of those locks are the same as the remainder of the series, known as the St. Lawrence canals. Twenty-four miles above Montreal the Beauharnois Canal, of eleven and one-fourth miles in length with nine locks, overcomes a lift of eighty-two feet six inches; it enables the following rapids to be passed—the Cascades, the Cedars, and the Côteau. Sixty-seven and one-half miles above Montreal the Cornwall Canal overcomes the Long Sault Rapids by a lockage lift of forty-eight feet—