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| Table I.—*Distances of Sections of St Lawrence.* | | | | | | |
| Local  Name. | | From | To | Sections of Navi­gation. | Statute  Miles. | |
| ëi | Total from Source of St Louis. |
|  |  | Source of St Louis river | Fond du Lac | St Louis river | 152 | 152 |
|  |  |  |
|  |  | Fond du Lac | Pointe aux | Lake Superior | 390 | 542 |
|  |  | Pins |  |
|  | | Pointe aux Pins | St Joseph’s I. | St Mary’s river | 55 | 597 |
| Mary |  |  |
|  | St Joseph's I. Sarnia | Sarnia | Lake Huron | 270 | 867 |
| St Mary |  | Amerherst- | St Claire and Detroit | 76 | 943 |
| river |  | Amerherst- | burg  Port Colborne | river  Lake Erie | 232 | 1175 |
|  |  | burg |  |
| Niagara  river |  | Port Colborne | Port Dalhousie | Welland Canal | 27 | 1202 |
|  |  |  |
|  |  | Port Dalliousie | Kingston .... Prescott .... | Lake Ontario | 170 | 1372 |
|  |  | Kingston.... | Head of canal section | 59 | 1431 |
|  |  | Prescott .... | Montreal .... | St Lawrence Canal | 119 | 1550 |
|  |  |  |  | section |  |  |
|  |  | Montreal.. . | Three Rivers | Head of ocean navi- | 86 | 1636 |
| St Law- |  |  |  | gation to head of |  |  |
| reuce |  | Three Rivers | Quebec | tidal flow  Head of tidal flow to | 74 | 1710 |
|  |  |  | Quebec |  |
|  |  | Quebec .... | Cape Chat .. |  | 266 | 1976 |
|  |  | Cape Chat .. | Cape Gaspé .. | Mouth of river St | 124 | 2100 |
|  |  |  | Lawrence |  |  |
|  |  | Cape Gaspé .. | Belle Isle @@1 .. | Mouth of the Gulf of | 436 | 2536 |
|  |  |  | St Lawrence |  |  |

Its length is 390 miles, its greatest breadth 160, and its mean breadth 80. Its mean depth is 900 feet and its altitude above the sea-level 600 feet. Its coast is generally rock- bound. Numerous islands are scattered about the north side of the lake, many rising precipitously to great heights from deep water,—some presenting castellated walls of basalt and others rising in granite peaks to various eleva­tions up to 1300 feet above the lake. The Laurentian and Huronian rocks to the north along the shore abound in silver, copper, and iron ores. The United States side is generally lower and more sandy than the opposite shore, and is also especially rich in deposits of native copper and beds of red haematite iron ores. Both these minerals are extensively worked. Unfossiliferous terraces occur abun­dantly on the margin of the lake; at one point no fewer than seven occur at intervals up to a height of 33 feet above the present level of the water. Lake Superior is subject to severe storms and the effect of the waves upon the sandstone of the “ picture rocks ” of Grand Island pre­sents innumerable fantastic and very remarkable forms. The lake never freezes, but cannot be navigated in winter on account of the shore ice. At the west end of the lake, at the mouth of the St Louis, is situated the city of Duluth, a place of considerable importance as the eastern terminus of the Northern Pacific Railway, and of the St Paul and Duluth Railway, which runs to St Paul on the Mississippi, 155 miles south of Duluth.@@2

St Mary’s river, 55 miles long, is the only outlet from Lake Superior, and its course to Lake Huron is but a succession of expansions into lakes and contractions into rivers. St Mary’s rapids, which in a distance of half a mile absorb 18 feet out of the total fall of 22 feet between the two lakes, are avoided by a ship canal, constructed in 1855.

As originally built, the canal was 1 mile long, had a width of 100 feet at the water line and a depth of 12 feet. The locks were two in number, combined, each 350 feet in length, 70 in width, with a lift of 9 feet. At the time the canal was made these dimensions were sufficient to pass any vessel on the lakes fully laden, but by 1870 it became necessary to provide for more rapid lockage and for the passage of larger vessels. Accordingly the old canal was

widened and deepened, and a new lock constructed, 515 feet long and 80 wide,—the width of the gates being 60 feet, the lift of the lock 18, and the depth of water on the mitre sills 17. There is now everywhere a navigable depth of 16 feet from Lake Superior through St Mary’s Falls Canal and St Mary’s river to Lake Huron. In 1883 the registered tonnage passing the canal was 2,042,295 tons,—the annual increase of tonnage during the previous fifteen years having averaged 107,313 tons. The United States Govern­ment engineers have already presented a project for still further improvements, namely, to replace the old locks by one only with a length of 700 feet and a width of 70, and with a depth of 21 feet on the sill.

Lake Huron is 270 miles long and 105 broad and has an area of 23,000 square miles (the area of its basin, including the lake, being 74,000), a mean depth variously stated at from 700 to 1000 feet, and an altitude above the sea of 574 feet. Georgian Bay on the north-east lies entirely within the region of Canada, whilst Thunder Bay and Saginaw Bay on the west and south-west are in the State of Michigan. The north and north-east shores of Lake Huron are mostly composed of sandstones and lime­stones, and where metamorphic rocks are found the surface is broken and hilly, rising to elevations of 600 feet or more above the lake, unlike in this respect the southern shores skirting the peninsulas of Michigan and south-western Ontario, which are comparatively flat and of great fertility. As in Lake Superior, regular terraces corresponding to former water-levels of the lake run for miles along the shores of Lake Huron at heights of 120, 150, and 200 feet; and deposits of fine sand and clay containing freshwater shells rise to a height of 40 feet or more above the present level of the water. At several places these deposits extend to a distance of 20 miles inland. The chief tributaries of the lake on the Canadian side are the French river from Lake Nipissing, the Severn from Lake Simcoe, the Muskoka, and the Nottawasaga, all emptying into Georgian Bay; and on the United States side the Thunder Bay river, the Au-Sable, and the Saginaw.

Lake Michigan is entirely in the territory of the United States. It has a maximum breadth of 84 miles and its length is 345 miles from the north-west corner of Indiana and the north part of Illinois to Mackinaw, where it com­municates with Lake Huron by a strait 4 miles wide at its narrowest part. Its depth is variously stated at from 700 to 1800 feet. Its altitude above sea-level is 578 feet. Its basin is 70,040 square miles in area, of which the lake occupies 22,400. Five of its tributaries are from 135 to 245 miles in length. The country round Lake Michigan is for the most part low and sandy. The rocks are lime­stones and sandstones of the Sub-carboniferous groups, lying in horizontal strata and never rising into bold cliffs. Along the south shore are Post-tertiary beds of clay and sand lying a few feet above the level of the lake, the waters of which probably at one time found their way by the valleys of the Illinois and the Mississippi into the Gulf of Mexico.

Chicago (population, 503,185 in 1880) is situated at the south- west angle of the lake. In the receipt and shipment of grain and pork it is the largest market in the world. In 1883 12,015 vessels with a tonnage of 3,980,837 tons cleared from the harbour. Com­paring the decades of 1864-73 and 1874-83 the total export in quarters of wheat and corn from Chicago was as follows :—

|  |  |  |  |
| --- | --- | --- | --- |
|  | Lake. | Rail. | Total. |
| 1864-73 .... 1874-83 .... | 43,884,196  66,265,175 | 6,328,337  27,342,140 | 50,212,533  93,607,315 |
|  | 110,149,371 | 33,670,477 | 143,819,848 |

In 1883 the export of grain by the lakes amounted to 6,850,722 quarters (of which 68·1 per cent. were shipped direct to Buffalo and only 6·3 per cent. to Kingston and Montreal) as against 3,146,000 sent by rail. The first appropriation for the harbour of Chicago,

@@@1 The distance from Belle Isle to Liverpool is 2234 statute or 1942 geographical miles.

@@@2 Lake Nipigon is situated 50 miles to the north of Lake Superior, into which it drains by the river Nipigon ; it is still very little known except from the report of Professor Bell of the Geological Survey. It

is 313 feet above the level of Lake Superior, and in some parts is upwards of 500 feet in depth. The lake is thickly studded with islands ; its shores are undulating and sometimes hilly ; and owing to its numer­ous indentations its coast-line measures 580 miles.