

## OTTAWA AND FRENCH RIVER NAVIGATION.

|                                          | Distances.        |         | Levels.       |               | Cost.         |
|------------------------------------------|-------------------|---------|---------------|---------------|---------------|
|                                          | Rivers and Lakes. | Canals. | No. of Locks. | Feet Lockage. |               |
| Lachine Canal.....                       |                   | 8.50    | 5             | 43.75         | Not estimated |
| Lake St. Louis.....                      | 13.31             |         |               |               | do do         |
| St. Annes.....                           |                   | 1.19    | 1             | 1'            | 409,672       |
| Lake of Two Mountains.....               | 24.70             |         |               |               |               |
| Carillon to Grenville.....               | 7.73              | 5'      | 7             | 58.5          | 1,649,000     |
| Green Shoals.....                        |                   | 1.0     |               |               | 130,105       |
| Ottawa River.....                        | 55.97             |         |               |               |               |
| Chaudière and des Chênes.....            | 3.75              | 2.61    | 6             | 63.00         | 816,733       |
| Des Chênes Lake.....                     | 20.00             |         |               |               |               |
| Chats.....                               | 1.70              | .00     | 5             | 50'           | 681,932       |
| Chats Lake.....                          | 19.28             |         |               |               |               |
| Snow's to Black Falls.....               | 18.32             | 1.05    | 11            | 104'          | 1,256,840     |
| River and Lake Coulonge.....             | 24.93             |         |               |               | 262,514       |
| Chapeau and l'Islet.....                 | 4.85              | .14     | 2             | 18'           | 243,597       |
| Deep River.....                          | 33.58             |         |               |               |               |
| Joachim's to Mattawan.....               | 51.74             | 2.20    | 14            | 148.20        | 1,757,653     |
| River Mattawan.....                      | 16.22             | 1.08    | 11            | 144           | 1,102,154     |
| Summit level and cut.....                | 51.15             | 5.07    |               |               | 2,100,360     |
| French River.....                        | 47.52             | 0.82    | 7             | 77'           | 886,117       |
| Add Engineering and Superintendence..... |                   |         |               |               | 574,175       |
|                                          | 401.41            | 29.32   | 64            | 663.70        | 12,057,680    |

There are, exclusive of the Lachine Canal, 20.82 miles of Canals, costing \$12,057,680, which is equal to \$579,139 per mile of Canal. But the cost of the whole navigation, from St. Annes to Lake Huron, 408.76 miles, is but a trifle under \$29,500 per mile.

Such are the results of the Survey. The manner in which they have been attained will be described under the following general heads.

I.—Physical characteristics of the Ottawa.

II.—Methods of Improvement proposed.

III.—Character of work and material in locks, dams, canals, &c.

IV.—Scale of Navigation.

V.—Special description.

VI.—General Remarks.

## I.—PHYSICAL CHARACTERISTICS OF THE OTTAWA.

Before taking up in detail the method of improvement proposed for this chain of waters, I shall sketch briefly the physical geography of the Ottawa Valley, and some of its prominent geological features. Nor is this foreign to an Engineering report, for, in order to clearly understand the matter of the changes proposed, we must first get a correct idea of things as they are.

Rivers have been well defined as the channels by which the water, originally evaporated from the sea, and falling upon the land, is returned to the sea again, and the volume of water discharged is the excess of precipitation over evaporation throughout the valley of any river, varying directly with the area of drainage, the rain-producing character of the atmosphere, and the nature of the soil.

Their position is determined by the laws of gravity, and they always follow, from the interior portions of continents to the sea, the line of quickest descent,—that is, the line of lowest level, whether resulting from upheaval, denudation, or the combined effects of both.