

The Canada side on the contrary is almost in every respect advantageously situated, and presents all the facilities for the construction of a Canal that could reasonably be expected, when the nature and extent of the undertaking is considered.

The present line of connection between the lakes is probably the shortest that under the circumstances, could have been selected—the whole length of the main line being $27\frac{1}{2}$ miles, or about 25 per cent. over that of the most direct line.

In its location the principal difficulty experienced was not so much the height to be overcome by lockage, as the comparatively short distance in which it had to be done, nearly the whole ascent having unavoidably to be made within a few miles.

The brow of the so-called "Mountain" is, in this vicinity, only about 6 miles from the shore of Lake Ontario. This remarkable geological feature can be traced for many miles into the northern part of the State of New York—at the side of the Niagara River, at Queenston, and in a westerly direction to Hamilton, where it sweeps to the north and continues until it forms the promontory known as Cabot's Head on Lake Huron.

Where this escarpment is traversed by the deep chasm, through which the Niagara River flows, or wherever its face is exposed, a series of layers of limestone rock, shale, &c., are presented, the upper strata of which, for the most part, yield excellent stone for building purposes; and a lower stratum can be manufactured into a superior class of hydraulic cement, materials which will doubtless be of at least equal importance for the projected works, as they were found to be in the construction of those now in use.

Towards Lake Ontario the land has a gentle inclination, and the drainage of the surrounding country flows in that direction through numerous channels, the largest of which in this vicinity is the Twelve Mile Creek.

Advantage was taken of the valley of this stream to form a line for the present canal; and by a dam and lock at the outlet, it has been converted into a deep water basin of considerable area, the level of which extends $3\frac{1}{2}$ miles up to the town of St. Catharines.

The line continues through the valley of this Creek, and along the eastern branch of it up to the 10th lock, where the bottom of the Canal is very little below the natural surface of the ground, and the sides consist principally of embankments.

From this point up to the 21st lock, the canal for fully one-half the distance ascends in a line nearly parallel with the northern face of the high ground forming the upper plateau, and from the head of one lock to that of another, the distance varies from 586 to 800 feet.

Through the village of Thorold the distance between the locks is greater, there being from 1163 to 1350 feet from the head of one to that of another up to the 25th, which is situated fully 9 miles above the northern outlet of the canal, and the water level above it is about 318 feet over the mean surface level of Lake Ontario.

This level is continued for a distance of $3\frac{1}{2}$ miles to Allanburg, where the greatest height is reached by a lock of 15 feet lift—the bottom width of the canal for this stretch varies from 26 to 40 feet.

The present water supply is furnished from the Grand River, raised nearly 9 feet by a dam thrown across it, at 5 miles above its outlet, which, at ordinary times, gives a general depth of 9 feet in the feeder, and admits of the level of the canal being maintained at about 8 feet over that of Lake Erie.