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ing bank. The hill on the southern side rises abruptly from the edge of the water to the height of 80 or 100 feet. At Lock No. 27, where the Canal leaves the more even ground, and enters upon this shelving hill-side 1 found the height of the northern bank to be 57 feet, with a base not at all too wide for its great height. The Canal continues to wind along the side of this hill, the bank on the southern side encreasing in elevation, and the bank on the northern side decreasing, until near the place where it enters into the great Ravine.

The Locks in proceeding down the hill are placed at short and tolerably regular distances from each other, the intermediate spaces, about 250 feet in length and about 80 in width, serving as reservoirs for filling them. There are no waste-water races, but the water continually falls into the chamber of each succeeding Lock from one level to another.

The quantity of water required to fill one of the present Locks is 21,780 cubic feet. The quantity of water required to fill one of the Locks which I shall propose is 36,864 cubic feet. A vessel ascending through the Canal would reduce the depth of water in each of the intermediate reservoirs nearly one foot in filling one of the present Locks—and in filling one of our proposed Locks would reduce the depth 1 foot 10 inches, even if the sides were perpendicular—but if they have a reasonable slope, it would reduce the depth of water more than two feet. a circumstance which would prevent any vessel drawing more than 7 feet water from passing through the Canal, unless it is obviated as it now is by an evil nearly as great, viz—allowing a current of water equal in capacity to the quantity admitted through the valves into the Locks at the time they are filling, to flow constately through the Canal.

From the description of the situation of the Canal above given, it will be seen, that these reservoirs cannot be enlarged, and waste water races constructed, unless at an expense manifestly much greater than would be sufficient to excavate a new Canal in a more favourable location.

'The material of which the Locks are composed, and the manner in which they are constructed render it impossible that they can be' made efficient and durable, and I cannot recommend placing expensive and substantial Locks in such a situation.

Having satisfied myself that it is necessary in order to obtain a substantial and permanently efficient work, to carry a separate Canal over the hill, I proceeded to examine the Welland Canal, at and above Thorold, where the long level terminates at Lock No. 35.