

The next seven Locks conjoined to each other are placed in the crest of the hill.

Here we have an almost perpendicular ascent of 60 feet to overcome. There are two ways of doing it. First by short levels and separate Locks. The Welland Canal is formed upon this principle.

The line shewn by the dotted red line B on the Plan, which passes into the Ravine of the Ten Mile-Creek, does not afford greater facilities for this purpose than the line of the Welland Canal. The second way is as shewn on the section. I have already proved the inefficiency of Locking a Canal down a high and steep hill by making short levels to serve as Reservoirs between each Lock on account of the decrease in the depth of water in these levels, where the area of the surface does not bear a due proportion to the size of the Locks. If it is attempted to correct this deficiency by introducing a large current of water into the Canal, the waste which it will cause by washing the sides,—by forming deposits in the bottom,—and by other injuries to which the works will be exposed from its effects, as well as the increased power and cost of traction which it will cause, are circumstances calculated to mar the usefulness of the Canal, and eventually to become sources of expense which will not a little lessen its profits.

The number of vessels which may reasonably be expected to use this Canal as soon as it is opened, will require every possible dispatch. I have no hesitation therefore in recommending seven Double Locks to be placed on the hill as shewn on the section—to be constructed in such a manner as to economize the water as much as possible.

On the summit of the Hill there is a large extent of ground generally even, and sloping from South to North. The soil is tenacious clay. On this ground extensive Reservoirs should be constructed, for working these double Locks.

If these Reservoirs were formed on different levels, and made to communicate with each other by self-acting valves, the four upper Locks could be filled directly from the Reservoirs, when vessels were ascending, and when the vessel had passed the water could be drawn off from the higher part of each Lock into another Reservoir on its opposite side to be used again—an extension of this process might be made to fill the three lower Locks, and thus single Locks could be used. But from the delay and the waste of water which these would cause—and the expense which would be incurred in making and adapting these Reservoirs. I am firmly convinced that Double Locks ought at once to be constructed.