

son, and asked them to report upon the plan of Mr. Mills, and particularly to report on the Hoopes' Creek and Brownell's Bay route, that the utmost caution and circumspection should be observed before deciding upon the route. I propose to read to you, Sir, what Captain Cole said—and there can be no higher authority—upon that portion of the work which the present Chief Engineer of Canals to-day pooh-poohs:

"In altering their plan to meet the wishes of the country, Judge Wright and Mr. Mills stated that they were aware of the greater cost of No. 1 (the inland route), but preferred the latter as a more perfect work. The latter gentlemen thought the saving might be £30,000. I imagine that this will be found under the mark, but nothing certain can be given until a survey of the points to be improved has been made. The first and principal feature of the natural course about to be adopted, is the damming below Brownell's Bay. Having given the subject such consideration as imperfect accounts of the localities, and Mr. Ridout's map of Canada, enabled me to give, before I visited the spot, I concluded that we might construct these works advantageously, and I found the reality greatly surpassing my expectations. If an embankment be thrown across the passage above Brownell's Bay to Sheik's Island, the water lock may be finished without pumping, and the dams below constructed without the usual expense of an artificial waste weir, or the shifting of a temporary one in the dam itself as the work progressed. The water being thrown around the outer channel by this embankment, no difficulties remained to contend with. This bank, I advise, should be permanent, with a masonry waste weir of sufficient dimensions to feed the locks and mills, with a spur or jetty thrown forwards (as at present from the wooden lock) to catch the upper level of rapid as it passes at right angles across the mouth of the passage. This difference of level is about two feet. The extra expense of making this work permanent would scarcely exceed that of a temporary coffer-dam, independent of the masonry checks of the sluice-way—and a guard of three or four feet against the spring floods would be much less costly than the same guard placed on the dam and lock at Moulinette. The advantage would be acquired of relieving the works below at any time, in case of leak in the dam or lock, which may be required in spite of all previous care of the engineers, from the carelessness of the contractor, or from some defect in the lock itself which would require remedy; much, it is true, may be done by previous care in the foundation of dams, and the examination of the rock under them and the locks—all apparent fissures being filled with cement and covered with a little masonry. The advantage, also, will be given by the bank above, of letting in water by degrees and watching the effect produced, so that all defects may be remedied before the navigation opens. The backing might also be allowed some time to consolidate before the water is let in. This work I call embankment because it does not raise the level of the water, but merely retains it at the level required. All these details, and many more, will better be known to the resident engineer. I will merely state, that the masonry of dams should be arched key work, well wedged up; this saves extra masonry, and if well performed, there is no use in mortar or cement being added, but broken stones and shingle should in either case be placed about 4 feet thick on the back of masonry to prevent the passage of the gravel and clay of the slope above. The water should not run over, for several reasons, and a guard of 2 feet will be ample against the wash of the surface water. All these arrangements were concurred in by the engineer, and from hence downwards, no discrepancy of opinion appeared; all details being left to the judgment of the resident engineer, including the formation of sluices at each dam."