to 800 feet in width at surface, with two locks at each end, one for the larger and one for the smaller vessels, each keeping its own side of the canal, And lastly, in order to construct the enlarged locks on the line through Thorold there is no more necessity for drawing off the water in winter than there would be at Allanburg or at any point along the line of the canal where new works have to be constructed. If necessary it would be easy to point out the way in which the enlargement can be accomplished without recourse to such extreme measures.

TUNNELS THROUGH LOCK WALLS.

(Clauses 84 to 97 of Reports)

That it is quite practicable to fill and empty the chamber of a lock either through its gates or through its walls, there can be no doubt, as might easly be proved by reference to numerous examples. The former of these methods was uniformly adopted by me, in all the locks constructed in Canada after my plans up to the year 1852. In that year, however I was called upon by the Government to furnish plans for the Sault Ste. Marie Canal, and then proposed a longitudinal tunnel, or culvert through both walls, through which the lock was to be filled and emptied. If Parliament had then granted an appropriation there can be no doubt that the locks built after this plan would now be in successful operation. Since then, amongst other locks of the same class, one has been built in the Port of London, connecting the south dock of the the Surrey commercial docks with the Thames, in which a similar managment for filling the chamber through a culvert in the walls has been adopted. The same arrangement is found to answer a good purpose in the new combined locks on the Erie Canal at Lockport.

The advantages to be derived from the pratical working of this plan are as follows: —1. The quicker passage of the vessel, by the facilities afforded of filling and emptying the lock, both through the walls and through the lock gates. 2. The safer passage of the vessel, and greater safety to the gates, by admitting the water in an even manner, as before stated, under and along its keel on both sides at the same time, so that surging is avoided, and the vessel rises on an even keel to the upper level. 3. There is no increase in the quantity of masonry, because it is disposed of in the most advantageous manner to resist pressure, but more security for a better class of it in the place where it is most required, while the mass of dead wall, is better placed to resist the impact of vessels. 4. The spreading out of the base gives greater stability to the wall, since its centre of gravity is thereby thrown more towards the back, and hence counterforts are unnecessary. In fact, where walls are high, and great masses of masonry necessary to retain the earth behind them, it is a more scientific way of employing it than the one adopted by the Chief Engineer, which consists in the assemblage of large masses of inert material at the base of the wall and in the counterforts.

It was but reasonable to suppose that a practical suggestion of this kind concerning the best interest of the navigation would be fairly and candidly considered. Such, however, was not the case.

In No. 89 it is stated that on the Ottawa canals, owing to the action of the water and frost, the tunnelled walls were injured to such an extent "that in order to save them from being entirely destroyed it became necessary to fill up the tunnels and introduce water through sluices placed in the gates." This statement is made without any qualification, as a sweeping condemnation of the plan, and then the general conclusion is drawn that "although tunnels, no doubt, answer well in some countries, they are nevertheless found to be quite objectionable where the action of the frost is so trying and severe as in Canada."