a summit, with an addition of about 15 per cent for lockgate leakage, (which is included by Mr. Trimble in his 75 feet, and by us in our 70 feet per minute.)

Mr. Trimble in passing the Seneca summit with its *numerous short levels*, estimates that 1½ locks-full will be enough with aid of his *twin* double locks. Here it will be proper to make a few remarks upon these *twin* double locks.

Upon a large canal, like the Seneca crosscut, with the amount of trade there will be on it, demanding for its accommodation, double locks; we consider *twin* double locks, as we have already remarked, to be a *theoretical*, not a *practical* expedient for the saving of water.

In the language of another, "numerous contrivances have been resorted to, some to save the whole, and others part of the lockage water; many of these are beautiful in theory and perfectly successful upon a small scale, but when they have been tried upon the full magnitude, they have uniformly failed," &c. &c.

We are aware that single locks, "with side ponds," have been resorted to upon small canals with small locks, or on canals with a limited trade, not to *save time*, but on the contrary, at a considerable loss of it; as any one given to theoretical calculations, may soon satisfy himself of in part, by calculating the difference in the time required for the filling or the emptying of a lock in the ordinary way, with the full head of water of the entire left, regularly diminishing to nothing, and the time required to do the same, first filling or emptying one half the lock, and after that the remaining half—and in each case, with the head of water of but one half the lift, diminishing as before to nothing. Besides this loss of time, from the use of "side ponds," that theory points out, there is in practice another—viz: the increase of time required for the opening and closing of a double set of filling and emptying valves and gates.

This can be fully appreciated only by those well acquainted with the practical operations of a navigable canal—for with the superintendants of these canals, one great aim has long been to simplify even the present fixtures of the ordinary lock.

We have noticed the single lock "with side ponds," as we think that this expedient, forced by necessity on canals of a limited trade, has led to the error of supposing that *twin double* locks would occasion a saving of *time* and water, where *double* locks are called for by the wants of a very extensive trade. Now, although *twin* double locks may cause a saving of *time and water*, compared with *single* locks, yet it is demonstrable by reference to practice, that *twin* double locks are not a saving of *time* compared with *double* locks.

For 1st.—There is loss of time in the emptying and filling of each of the twin double locks, and consequently in the passing of a boat, for precisely the same reasons as we gave when speaking of the single lock "with side ponds,"—viz: in consequence of di-