

Hence with single locks (which case only I shall here consider) if the canal were working at its utmost capacity, it would upon the supposition of uniform motion, bear upon its bosom during the season of trade, an ascending and a descending procession of boats moving at intervals of 10 minutes apart, passing each other alternately, and locking in alternation: consequently 12 boats, or 6 proceeding in each direction, would pass a fixed point during every hour.

Having thus premised I will observe that it is so evident that in order to save time boats must pass the tunnel in convoys of several, that it is unnecessary to establish that fact by calculation; the only question is how many boats ought each convoy to consist of when the canal is working at its maximum rate with single locks, and consequently when boats are successively arriving at both portals, at intervals of 10 minutes apart?

The answer is—that the proper number will depend directly upon the time requisite to move twice through the contracted canal and draw out past a waiting convoy, or in fact directly upon double the length of the single boatway and convoy in waiting.

For the sake of brevity, I will assume the length necessary to accommodate a waiting convoy at 1200 feet, then as this convoy by lying along the beam side, would contract the canal to a single boatway for that distance, we shall have :

	<i>Feet.</i>
Length of tunnel and canal contracted to a single boatway,	4212
Length of convoy in waiting (and also contracting the canal)	1200
	—
Total length of single boatway in effect,	5412

Now to traverse 5412 feet, *twice*, or 10824 feet, at our assumed pace of $2\frac{1}{4}$ miles per hour or 198 feet per minute would require 55 minutes, and allowing 5 minutes for starting the convoys at both ends and for lost time, we shall have as the period occupied in a double transit, 60 minutes.

To prevent meeting, evidently no boats can be permitted to enter either portal from the moment a convoy in one direction leaves, until the returning one moving in the other, has drawn out of the tunnel; hence if we imagine a boat to arrive at one portal the instant a convoy has departed, she would be compelled to wait 60 minutes before her time for passage as the lead-