

miles, which, at the rate of 2½ miles per hour, will be travelled in about	136 hours
The ascent and descent, amounting together to 3158 feet, will require, at the rate of 1 minute per foot, about	52

Distance, in time, from Georgetown to Pittsburg, 188 hours.

Though a number of canals, selected among those executed to this day, might afford together the distance and lockage found for the Chesapeake and Ohio Canal, yet there is not, within our knowledge, any line of the same extent requiring even 1800 feet of ascent and descent taken together; the Erie Canal requires 688 feet for 362 miles; the line from Liverpool to London, 1451½ feet, for 264 miles; the canal from the Rhone to the Rhine, connecting Lyons with Strasbourg, has about 1458 feet of lockage for a length of 200 miles. The proposed canal has, therefore, as to time, a decided inferiority, when compared to a canal of the same length, but having a less amount of lockage; and it becomes, in the present case, indispensable to remedy this inconvenience. The means we propose consists in the increase of the dimensions of the cross section of the canal, with a view to compensate, by a greater weight, [transported without additional power,] for the virtual increase of distance caused by so great an amount of lockage.

We have shown that this section ought to be 261 square feet, with a water line of 60 feet, to procure a boat 13 feet 6 inches in breadth, the advantage of moving on the canal, as on an indefinite extent of water. After many trials and minute calculations, we have concluded to adopt, for the contemplated canal, the 4-5 of the foregoing results, viz: for the cross section, 208 square feet; and for the water line, 48 feet; and from these data, we have framed, with a depth of 5 feet, the general transverse profile of the canal, as exhibited on the sheet No. 3.

Let us now compare this profile to one having 40 feet at the surface, 28 feet at the bottom, and 4 feet in depth—the boat used being the same for both, and having 13½ feet in breadth, and 3 feet draft.

We find, by calculations, that the velocity remaining the same, the resistance to the boat moving in the 48 feet canal, is to the resistance to the same boat moving in the 40 feet canal, as 1.21 to 1.58, or as 100 to 130. Therefore, at the same rate of velocity, 100 horses will, on the