

which the resistance of fluids increases causes that resistance, in a medium so dense as water, soon to be in equilibrio with any impelling power which can be employed.

The force of the wind and of steam has been the most successful in propelling vessels upon water; but the maximum velocity under the most favorable circumstances (not in canals,) but in seas, bays and large rivers, is not known to have exceeded about 13 miles per hour, whilst on a rail way, in the present yet almost infant state of that kind of improvement, more than four times than velocity is known to have been obtained.

The inference therefore is, especially if canals are included, that locomotion upon land by means of rail roads will take place with quadruple the velocity that can possibly be attained upon water. I say *possibly*, for if any one should say that he imagines improvements will yet be made in the conveyance upon water, I answer, that the probability is much greater that further improvements will yet be made in the conveyance upon land. The law of resistance is decisive of this matter, and being a law of nature, it must always continue to operate.

Seeing therefore that the capital invested will be less, and that the celerity and ease of movement will be vastly greater on a rail way than on a canal, and supposing, which will not be doubted when the velocity is considered, that the capacity of rail ways will be ample for all the wants of trade and intercourse, what can prevent the advantages of a rail way being as great, nay greater, to the State and to the community, than those to result from a canal.

If it be said that goods can be conveyed cheaper on a canal, it may be remarked that the abundance of fuel in this country will always give to steam a preference as the cheapest moving power, and that this agent will secure to rail ways their full effect, and cannot fail to place them pre-eminent above all other modes of inland communication.

A locomotive engine and its train conveying 30 tons of goods 120 miles in a day, would cause a daily expense of about ten dollars. This would be 3,600 tons conveyed one mile for 100 cents, that is at the rate of 278 or a little over 1-4 of a cent per ton per mile. The operation of the locomotive at Charleston S. C. will justify this conclusion, without reference to what has been demonstrated in England.

The cost of transporting Coal on the Hudson and Delaware Canal, during the last season was \$1.50 per ton, exclusive of any charge for toll—the length of this canal is 108 miles. The Engineer stated however, that the company expected to reduce the charge to one dollar and twenty-five cents, which would be at the rate of 1 1-6 cents per ton per mile. This canal has considerable lockage, but not more than an average quantity.