BRIDGE MATERIALS.

First cost of wooden structure, .................. $500
Capital invested at 5 per cent to produce $500
once in 9 years for renewal, ..................... 909

Total for perpetual maintenance, .................. $1409
The same for iron structure, as above, ........ 1280

Balance in favor of the iron bridge, ........... $149

Finally, since theoretical calculation and general comparison show a probable advantage, for a long term of time, and experience, as far as it has gone, shows a decided advantage in favor of iron, it would seem very unwise to discard the latter, without at least a fair trial of its merits. If in the first essays at iron bridge building, the iron bridge has competed so successfully with wooden bridges, improved by the experience of ages, may not the most satisfactory results be anticipated from an equal degree of experience in the construction and use of iron bridges?

LXXXIV. Presuming the affirmative to be the only rational answer to the above question, I have arranged the details of plans for carrying into practice the preceding principles and suggestions in the construction of rail road bridges of iron.

I have also made careful detailed estimates of the expense of bridges of different dimensions and in different circumstances, some of the more general results of which I will here state.

In proportioning the parts of a rail road bridge, I have assumed that it may be exposed to a load of 2,000 lbs. per foot run, for the whole, or any part of its length, in addition to its own weight; and in case of tension, have allowed one square inch cross section of wrought iron for every 10,000 lbs. of the maximum strain produced.