Again, the adoption of iron bridges for rail roads, is a new thing, which many regard in the light of an “experiment,” about which many wise doubts are entertained; and to reduce the chances of failure in this incipient stage of the matter, which would serve to weaken confidence, and delay the introduction of the change, as well as be attended with disastrous consequences to life and limb, perhaps; I have thought proper to provide bountifully of the means for sustaining all the forces, both actual and contingent, that can ever come to act in the premises.

For that purpose, I have adopted the general rule for R. R. bridges, of estimating wrought iron to sustain only 10,000 lbs. positive strain to the square inch, (only one-sixth the absolute capacity,) and cast iron hollow cylinders, of a length equal to 18 diameters, from 10 to 12,000 negative strain, or about a fourth part of the actual capacity; and in like proportion for other forms and dimensions of pieces. Consequently, in estimating for R. R. bridges, I diminish the quantities given in the table for the practical strength of cast iron by about one quarter.

As to the gross load for a R. R. bridge, the heavy engines now used in this country, comprise about 20 tons of weight within as many feet of length. The heavy freight trains weigh, in general, not over 1000 lbs. to the foot run. But I have thought proper to estimate bridges as liable to a load of 2000 lbs. to every foot, upon the whole or any part of their length.

The providing of abundant strength seems the more proper, as the tendency has been and still is, to increase the weight of engines and loads to the utmost capacity of the track, and hence an iron bridge, intended as a durable structure, should be proportioned with reference to such changes and tendencies.

I have now given such details of the plans I propose for the construction of Iron Truss Bridges, as appeared to