A single engine of 20 tons weight causes a movement of $\frac{1}{32}$ to $\frac{1}{16}$ inch. This conclusively proves, that in no case will a horizontal force of ten tons be directed upon one tower, in consequence of difference of tension between the suspension and the land cables.

The experimental freight train, which passed over the bridge on the 18th of March, and covered its whole extent, weighed about 326 tons of 2000 lbs. each, and caused the saddles to move forward 0.041 ft., or nearly half an inch. The tension which results from this weight is 590 tons. Now according to my own experiments, which I have made with wires of 1000 ft. long, to ascertain their contractions and expansions, caused by changes of temperature, as well as by weights or tension, and which agree with those of Barlow and others, wire will stretch $\frac{1}{1000}$ part of its length for every gross ton of 2240 lbs. per square inch of section. The average length of the land cables and chains is 266 feet, their elongation, caused by one gross ton per square inch, therefore is $\frac{266}{10,000} = 0.0266$ ft. The aggregate section of the 4 cables is 240 square inches, therefore the tension, caused by the above load is

$$\frac{590 \times 2000}{240} = 4917 \text{ lbs},$$

and we find the elongation $x$

$$2240 : 4917 = 0.0266 : x$$

$$x = 0.0583 \text{ feet}.$$

Now the actual movement of saddles was 0.041 or 0.0173 less than calculation. Considering that the chains would only be partially affected, calculation approaches the fact very near. This examination also shows, that the whole strain of the suspension cables