The next means of stiffness I have applied, are stays, above as well as below the floors. These as well as the suspenders are all made of wire rope, manufactured at my works at Trenton, N. J. There are 64 diagonal stays of \( \frac{1}{2} \) inch diameter rope, above the floors, equally distributed among the 4 cables. They are fastened to the suspenders by small wrappings, so as to form straight lines. Each of these stays represents the hypothenuse of a rectangular triangle of which the two cadets are formed by the towers and the floors. These two being solid and rigid in the direction of the lines they represent, by preserving the straight line of the stay and not allowing them to sag or deflect, we form as many triangles as we have stays. Now the triangle is the only geometrical figure whose corners cannot be shifted, consequently by keeping those stays under a good tension we form so many stationary points in the flooring, as we have stays. But these stays do not only stiffen, they are also a great assistance to the cables. Their number being limited, and the cables possessing an abundance of strength, I did not continue them over the towers to the anchorage. They are secured to the saddles, and allowed to move with them. No fear need be entertained, that they will pull the saddles forward. The friction of the cables in the saddles is at the lowest estimate equal to one third of the pressure. The constant pressure upon each tower is 500 tons. This would give 166 tons. The ordinary tension of each stay being about 4 tons, the united horizontal force of 16 stays applied to 2 saddles is found to be about 56 tons, to which a resistance of 166 tons is opposed, without taking into