truss were removed, and it was noticed that the braces nearest the middle became loose. In order to remedy this evil, the entire load was removed and iron tie-rods introduced alongside of the braces, and in order to make room for them, their entire section had to be cut out of the chords, top and bottom. After this had been accomplished, and all the parts brought to a proper bearing, the uniform load of 3500 pounds was again applied, but, singularly enough, the truss scarcely deflected \( \frac{1}{2} \) of an inch, and more remarkable still, the rods which had lately been introduced in the direction of the main braces, were evidently carrying a certain proportion of strain. This was manifest to all who witnessed the experiment, both from the tightness of the rods themselves, and the crushed appearance of the wooden washers upon which their bolt heads rested. Feeling confident that some new element of strength had been introduced, it was determined to gradually increase the applied load to the breaking point, if possible, in order to ascertain the conditions of failure; but after occupying all the available space on the chords with castings to the weight of 7600 pounds, and noting a deflection of only one inch, it was thought best to test the effect of time upon the structure under such a load, and in the mean time prepare a Howe truss of same dimensions for comparison. This was accordingly done, but in order to make this truss complete by the introduction of a counterbrace at once, it was found impracticable to retain more than two pieces in the main braces of each panel, while the isometrical retained three, thus giving it a superiority of one-third the amount of brace timber; in all other respects both trusses were alike, so far as the nature of their designs would permit. Although this single exception is to be regretted, it is not believed that the vast difference between the results obtained can be attributed, even in part, to it, since the tensile system was the same in each, and the Howe truss had not had its chord section decreased one-ninth by the addition of brace-rods, as in the case of the first model. After being set up in place close to its fellow, this truss was loaded in the same manner as