Hypotenuse of skew-back 33 in
Perpendicular " 29.2 "
Base " 15.3 "
Height of truss from out to out of chords 18 ft.

After the 14th span had been raised, a violent tornado occurred, March 27th, 1849, which carried off six spans. These spans were in an unfinished condition. The contractor was engaged at the time in putting in the arches, and as the diagonal braces could not be permanently introduced until after the arches were in place, he had omitted them, except over the piers and in the middle of the spans. The direction of the storm was nearly at right angles to the bridge. The failure commenced at the extreme end which was supported on trestles. The bridge gave way by falling together in the direction of the diagonal. The only arrangement that could have secured the bridge in so violent a tornado, would have been a complete system of diagonal bracing, but the accident occurred before these could be introduced, in consequence of the unfinished condition of the arches.

Experiments were made by the writer to ascertain whether it would have been possible for the wind to carry away the bridge by sliding along the top of the pier or wall plate, but the least friction, in an average of 15 or 20 experiments, was \frac{7}{12} of the pressure, which was sufficient to produce a resistance 4 times as great as the force of the wind upon the exposed surface, at that time, estimating the force of wind at 14 pounds per square foot.*

*It is desirable that further experiments should be made to ascertain the force of the wind in violent storms. It is probable that it is generally underrated. The writer addressed letters to gentlemen who had been engaged in making observations with the anemometer. The most satisfactory answer was given by Professor Bache, who stated that, "on Saturday, August 5th, 1848, at 8 o'clock P.M., a tornado passed within a quarter of a mile of the Observatory (Girard College), and the force of wind was so great as to exceed the range of the spring, and to break the wire connecting it with the plate of the anemometer; the force required exceeded 42 pounds to the square foot, which was the range of possible movement of the registering arm. The next greatest force of wind was 14 pounds to the square foot, from 4 to 5 o'clock, A.M., on the 17th Feb. 1842. From 0 to 5 hours, A.M. on the same