

The bridge is without lateral braces; its width appears to be sufficient to prevent lateral motion. The spur arches also assist in resisting the force of the wind.

DESCRIPTION OF AN IRON ARCHED BRIDGE OF
133 FEET SPAN,

ACROSS THE CANAL ON SECTION FIVE OF THE PENNSYLVANIA CENTRAL RAILROAD.

The chief peculiarity of this bridge consists in its *iron arch*, which is extended to a very considerable span, and furnishes a highly important practical test of the powers of resistance, both of the material itself and of the particular form in which it is employed. At the same time, the application of the principle upon which the structure is erected has been made under circumstances which render it perfectly safe; for in the event of the failure of the arch, the truss, without it, is more than sufficient to sustain the greatest load that can come upon the bridge.

The general arrangement of the truss is that of a Howe bridge, consisting of top and bottom chords of wood, with braces, counter-braces, and vertical rods. The braces are in pairs, and the arches pass between them. The counter-braces rest upon the arches, and are adjusted by means of set screws above and below.

The arch is constructed of a centre rib of cast-iron, 7 inches deep, with upper and lower horizontal flanches, 5 inches wide; two rolled iron plates are placed on the top, and two on the bottom of the cast rib, breaking joint with the rib and with each other, and secured by clamps at proper intervals. Below the chords are solid cast-iron skew-backs; and castings, of suitable form to connect with the skew-back and receive the ends of the arch, are placed on the top of the lower chord.

Believing that the failure of cast-iron bridges results gene