pendicular, or in the present case, as 50 is to 42. It is therefore 35,700 lbs. And as the cross section of the two braces $2\frac{1}{4}$ square inches, the strain per square inch will be 15,800 lbs.

Recapitulation.

Strain per square inch on upper chord = 8,000 lbs.
" " " lower chord = 10,712 "
" " " end suspension rods = 12,000 "
" " " braces = 15,800 "

Maximum load on middle truss 1847 lbs. per square foot.
Weight that would make the greatest strain, 10,000 lbs. per square foot, would be 1169 lbs. per foot.
Breaking weight, if good malleable iron, 60,000 lbs. per square inch.
Greatest strain on bridge $= \frac{2}{3}$ the breaking weight.

LITTLE JUNIATA BRIDGE. (Plate 6.)

Description.

The span of this bridge is 60 feet. Its peculiarity consists chiefly in the manner of constructing the arches and the arrangements of the details. The arches are made of iron rails of the U form, such as are frequently used for railroad tracks. Two lines of these rails are placed base to base, breaking joints with each other, and between them is a cast plate with projections on the top and bottom to fit into the cavities of the rails, effectually preventing any lateral separation. The cast pieces are of sufficient length to extend from post to post of each panel, and are varied in size from the middle to the end, so as to be at every point proportioned in cross section to the strain which they are required to bear. This condition ren-