The weight upon the half span has been shown to be 262,500 pounds.

The distance of the centre of gravity from the skew-back is 38 feet.

The moment of the weight will therefore be $262,500 \times 38 = 9,975,000$.

This is resisted by
\[
\begin{align*}
400 \ R \times 11 & = 4,400 \ R \\
+ 144 \ R \times 6 & = 864 \ R \\
+ 904 \ R \times 9.75 & = 8,815 \ R \\
+ 1,051 \ R \times 11.25 & = 11,824 \ R
\end{align*}
\]

\[
\left\{ \begin{array}{l}
4,400 \ R \\
864 \ R \\
8,815 \ R \\
11,824 \ R
\end{array} \right\} = 15,909 \ R.
\]

The equation of equilibrium between the acting and resisting forces will then be

\[
15,909 \ R = 9,975,000
\]

\[
R = 627 \text{ pounds.}
\]

The average strain per square inch, upon each of the resisting surfaces, will therefore be,

Upon the upper chord $627 \times 0.977 = 613 \text{ pounds.}$

" lower " $627 \times 0.533 = 334 "$

" arch at crown, $627 \times 0.866 = 543 "$

" skew-back, $627 \times 1 = 627 "$

The calculations for the Susquehanna Viaduct have been extended to minute details, in order to illustrate the principles of calculation, and test the strength of every part of this important structure.

The following summary of results, will be convenient for reference.

**GENERAL SUMMARY.**

<table>
<thead>
<tr>
<th>No. of feet B. M.</th>
<th>white pine, in one span,</th>
<th>56,944 feet.</th>
</tr>
</thead>
<tbody>
<tr>
<td>cubic feet timber, per lineal foot,</td>
<td>2,070 &quot;</td>
<td></td>
</tr>
<tr>
<td>Weight of timber per lineal foot, in pounds,</td>
<td>1,105 pounds.</td>
<td></td>
</tr>
<tr>
<td>cast-iron, in one span,</td>
<td>10,551 &quot;</td>
<td></td>
</tr>
<tr>
<td>&quot; per lineal foot,</td>
<td>66 &quot;</td>
<td></td>
</tr>
<tr>
<td>bolts, exclusive of arch-bolts and nuts,</td>
<td>11,352 &quot;</td>
<td></td>
</tr>
</tbody>
</table>