

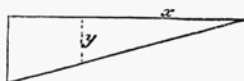
Make $z = 0$, we have for the ordinate $nc = y = \frac{wl^2}{2l}$.

To refer the curve to the point n , we must make $y' = nc - y$, or $y = nc - y' = \frac{wl^2}{2l} - y'$; hence, $\frac{w(l^2 - z^2)}{2l} = \frac{wl^2}{2l} - y'$.

Reducing, we have $y' = \frac{w}{2l} z^2$, which is the equation of a parabola.

PROP. 6. *If a beam is fixed at one end only, the breadth constant, and the weight uniformly distributed, the form of equal strength will be a triangle.*

FIG. 20.



The weight on x is $\frac{wx}{l}$, the moment is $\frac{wx^2}{2l}$, the moment of resistance y^2 .

Hence, $y^2 = \frac{wx^2}{2l}$, or $y = \sqrt{\frac{w}{2l}} \cdot x$, the equation of a straight line.

If the weight be all at one end we have $y^2 = wx$, a parabola.

If the sections be similar figures $y^3 = wx$, a cubic parabola.

PROP. 7. *The form of a suspension rod of equal strength is determined by the equation $x = 2a \log. y$.*

FIG. 21.

