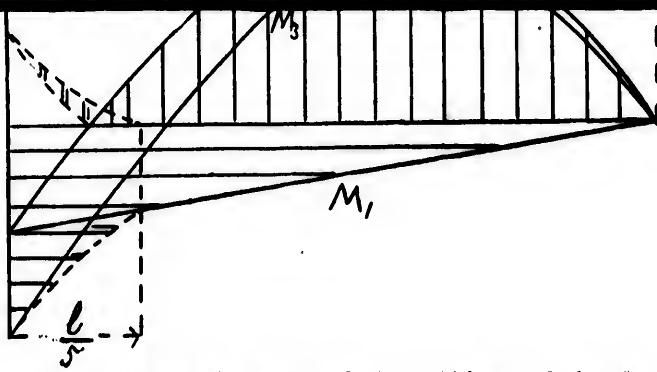
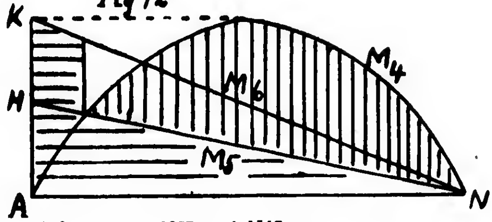


If a complete discussion were made, it would be found that for a length $\frac{l}{5}$ from the centre, an hyperbola intervenes, increasing the negative moments, and giving also positive moments as shown by double lines. But the results would not be changed materially.

If M_4 is the bending moment produced by a distributed load p on a single span l we have a parabola

$$M'_4 = -\frac{pl(l-z)}{2} - \frac{p(l-z)^2}{2}$$

Fig 12



If $AH = HK$ the lines NH and NK are

$$M_5 = \frac{pl}{16}(l-z) \text{ and } M'_6 = \frac{pl}{8}(l-z)$$

and it is easy to see that

$$M_2 = M_4 - M_5$$
$$M_1 = -M_5$$
$$M_3 = -(M_6 - M_4)$$

which gives an easy method to have the bending moments.

The author thinks that the first formula given may have some practical value, and he would like to have the opinion of bridge engineers about it, as well as the opinion of mechanical engineers as to the value to be given to the constants.

The coefficients to be determined are Pp and V. In the Canadian Pacific Ry. specification p is taken at 3000, and in calculations of many bridges the writer has taken $P = 3730$ and $V = 105'0''$ and has found very little difference when taking every wheel into account.

For spans under 105 feet and over 21 feet he has taken

$$P = 4600,\ p = 3240,\ V = 21'\text{-}0''$$

and the formula becomes

$$R = 3730 - 730\left(1 - \frac{105}{nl}\right)^2 \quad \text{for spans over } 21'$$

$$R = 4600 - 1360\left(1 - \frac{21}{nl}\right)^2 \quad \text{for spans over } 21'$$

$$R = 4600 \quad \text{for spans under } 21'$$