$$f_t = \frac{s_t}{s_e} f_c = \frac{2\sqrt{\Delta_r\Delta_e} - \Delta_e}{\Delta_e} f_c = \left(2\sqrt{\frac{\Delta_r}{\Delta_e}} - 1\right) f_c \qquad (5)$$

$$y_t = \frac{s_t}{s_t + s_c} \,.\, h = \frac{2\sqrt{\Delta_e\Delta_r} - \Delta_e}{2\Delta_r} \,.\, h = \sqrt{\frac{\Delta_e}{\Delta_r}}\left(1 - \tfrac{1}{2}\sqrt{\frac{\Delta_e}{\Delta_r}}\right)h \qquad (6)$$

$$y_c = \frac{s_c}{s_t + s_c} \,.\, h = \frac{\Delta_e}{2\Delta_r} \,.\, h \qquad (7)$$

$$C = T = \tfrac{1}{2}y_t f_t = \tfrac{1}{2}\sqrt{\frac{\Delta_e}{\Delta_r}}\left(1 - \tfrac{1}{2}\sqrt{\frac{\Delta_e}{\Delta_r}}\right)\left(2\sqrt{\frac{\Delta_r}{\Delta_e}} - 1\right)hf_c = \left(1 - \tfrac{1}{2}\sqrt{\frac{\Delta_e}{\Delta_r}}\right)^2 hf_c \qquad (8)$$

$$\bar{y}_t = \tfrac{2}{3}y_t = \tfrac{2}{3}\sqrt{\frac{\Delta_e}{\Delta_r}}\left(1 - \tfrac{1}{2}\sqrt{\frac{\Delta_e}{\Delta_r}}\right)h. \qquad (9)$$

$$\bar{y}_c = \frac{\tfrac{1}{2}(h - y_t) \times \text{Area } OQMH - \tfrac{1}{3}y_c \times \text{Area } OQN}{\text{Area } ONMH}.$$

$$= \frac{\tfrac{1}{2}(h - y_t)^2 - \tfrac{1}{6}y_c^2}{(h - y_t) - \tfrac{1}{2}y_c} = \tfrac{1}{2}\frac{(h - y_t)^2 - \tfrac{1}{4}y_c^2}{(h - y_t) - \tfrac{1}{2}y_c} \text{ nearly.}$$

$$= \tfrac{1}{2}\{h - y_t + \tfrac{1}{2}y_c\} = \tfrac{1}{2}\left\{1 - \sqrt{\frac{\Delta_e}{\Delta_r}}\left(1 - \tfrac{1}{2}\sqrt{\frac{\Delta_e}{\Delta_r}}\right) + \tfrac{1}{4}\frac{\Delta_e}{\Delta_r}\right\}h$$

$$= \tfrac{1}{2}\left(1 - \sqrt{\frac{\Delta_e}{\Delta_r}} + \tfrac{3}{4}\frac{\Delta_e}{\Delta_r}\right)h \qquad (10)$$

$$\bar{y}_t + \bar{y}_c = \tfrac{2}{3}y_t + \tfrac{1}{2}(h - y_t) + \tfrac{1}{4}y_c = \tfrac{1}{2}h + \tfrac{1}{6}y_t + \tfrac{1}{4}y_c$$

$$= \left\{\tfrac{1}{2} + \tfrac{1}{6}\sqrt{\frac{\Delta_e}{\Delta_r}}\left(1 - \tfrac{1}{2}\sqrt{\frac{\Delta_e}{\Delta_r}}\right) + \tfrac{1}{8}\frac{\Delta_e}{\Delta_r}\right\}h = \tfrac{1}{2}\left(1 + \tfrac{1}{3}\sqrt{\frac{\Delta_e}{\Delta_r}} + \tfrac{1}{12}\frac{\Delta_e}{\Delta_r}\right)h \qquad (11)$$

$$M = (C\bar{y}_c + T\bar{y}_t)b = (\bar{y}_c + \bar{y}_t)T.b.$$

$$= \tfrac{1}{2}\left(1 + \tfrac{1}{3}\sqrt{\frac{\Delta_e}{\Delta_r}} + \tfrac{1}{12}\frac{\Delta_e}{\Delta_r}\right)\left(1 - \tfrac{1}{2}\sqrt{\frac{\Delta_e}{\Delta_r}}\right)^2 bh^2 f_c \qquad (12)$$

$$W' = \frac{4M}{l} = 2\left(1 + \tfrac{1}{3}\sqrt{\frac{\Delta_e}{\Delta_r}} + \tfrac{1}{12}\frac{\Delta_e}{\Delta_r}\right)\left(1 - \tfrac{1}{2}\sqrt{\frac{\Delta_e}{\Delta_r}}\right)^2 \frac{bh^2}{l} f_c \qquad (13)$$

or $$W' = n\frac{bh^2}{l}f_c \qquad (13)$$

where n is a numerical co-efficient, $= 2\left(1 + \tfrac{1}{3}\sqrt{\frac{\Delta_e}{\Delta_r}} + \tfrac{1}{12}\frac{\Delta_e}{\Delta_r}\right)\left(1 - \tfrac{1}{2}\sqrt{\frac{\Delta_e}{\Delta_r}}\right)^2$

Unfortunately no tests have been made to study the application of these formula directly and in particular. The tests on beams made by the U. S. Division of Forestry were made for a different prepurpose, and Neely's theory was not worked out until after the present series of tests had been completed.

The following table exhibits the results of applying the formula to the data from these tests.