COMPOUND GIRDERS.

For beams compounded from plates and angles, the process for determining R is precisely the same as for any other beam. Inasmuch as compound beams are specially designed for any given case, it is necessary to determine from R the area of the flanges and web, from which the proportions of the parts can be made out. It must be remembered that M or R do not represent *strain*, being independent of *depth*, but can be converted into flange strain by dividing by the depth in inches. Assume, therefore, any depth for the girder (bearing in mind that the effective depth is the distance between centres of gravity of the flanges*), divide R by this depth, and the result is the strain on either flange; and if the maximum allowable strain per square inch has not already been introduced in determining R, the strain above found must be divided by this maximum unit strain to determine the square inches that must be given to the flanges.

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* To find the centre of gravity of a flange composed as in Fig. 38, and representing a plate web-girder, assume any axis, as XY.

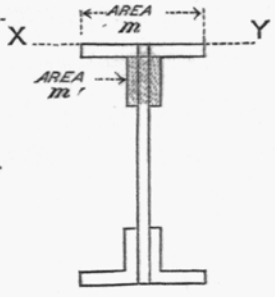

FIG. 38.

Area of the whole flange = M = $m + m'$.

Let l equal distance centre of gravity of m from axis.

" l' " " " " m' " "

" x " " " " M " "

To find x.

$$Mx = ml + ml' \text{ and } x = \frac{ml + m'l}{M}$$