PROBLEM LIV.

To divide the same triangle (see Problem L.) into two parts which are in the ratio $m : n$.

$$x = \sqrt{\frac{m\,a^2}{m+n}} \qquad \text{N. S.}$$

$$= \sqrt{a \times \frac{m\,a}{m+n}}$$

$$\text{make } \frac{m\,a}{m+n} = y \text{ (by formula 2).}$$

$$\text{then } x = \sqrt{a\,y} \qquad \text{G. S.}$$

PROBLEM LV.

To divide a trapezoid $\frac{p\,(m+n)}{2}$ (see Intro. I.), into two equivalent parts by a line x parallel to the bases m, n.

$$x = \sqrt{\frac{m^2 + n^2}{2}} \qquad \text{N. S.}$$

$$\text{make } m^2 + n^2 = y^2 \text{ (by formula 4).}$$

$$\text{then } x = \sqrt{\frac{y^2}{2}}$$

$$= \sqrt{\frac{y \times y}{2}} \qquad \text{G. S.}$$

N.B.—The length of the dividing line being known, its position in the figure will be easily found.

PROBLEM LVI.

Having given a circle, whose radius $= R$, to find the radius r of another circle, whose area shall be to that of the first circle in the ratio of $m : n$.

$$r = \sqrt{\frac{m\,R^2}{n}} \qquad \text{N. S.}$$

$$= \sqrt{R \times \frac{m\,R}{n}} \qquad \text{G. S.}$$

PROBLEM LVII.

Having a given circle πR^2, to find the radius r of a concentric