2.8C: Power of a Mirror

In Figure II.13 shows a reflecting surface of radius of curvature r submerged in a medium of index n. I show a real object at O, a virtual image at I and the centre of curvature at C. We see that $h = \alpha p = \beta q = \gamma r$. By Euclid, $\theta = \alpha + \gamma$ and $2\theta = \alpha + \beta$. Remember again that all angles are supposed to be small (even β!), in spite of the drawing. From these we obtain

$$\frac{1}{q} = \frac{1}{p} + \frac{2}{r}. \tag{2.8C.1}$$

On multiplying this by $-n$, we find that the power is $-2n/r$. Again the reader should try this for other situations, such a concave mirror, or a real image, and so on. The same result will always be obtained.

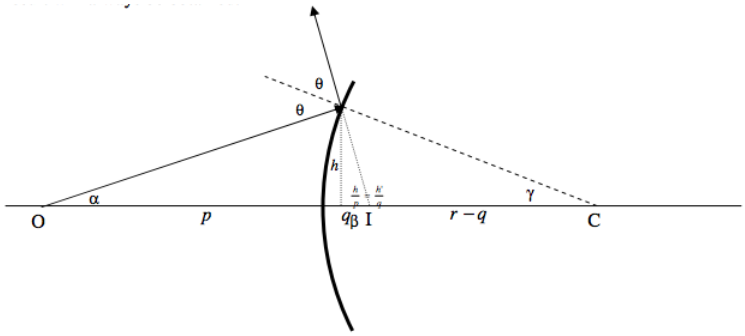

FIGURE 11.13