always have their sines in a fixed proportion, the greater may increase up to a right angle, but the less cannot; since the contrary would require the sine of the greater to exceed the radius of the circle.

(31.) Within this limit, when the angle of incidence is such as to admit of the transmission of the ray, the reflexion is less than total. The incident beam is subdivided; a part only is transmitted, the rest undergoes reflexion. The total amount of incident light is divided between them, but very unequally, and *the more* so *the less* the difference between the refractive indices of the media; or, in optical language, between their "refractive densities." Thus, when light passes at a perpendicular incidence out of air into water, only 2 per cent. of the whole incident beam is reflected; when into plate-glass, about 4 per cent., but when out of water into such glass, the amount of reflected light is less than $\frac{1}{5}$ per cent. At oblique incidences, the reflexion is more copious, increasing in intensity as the obliquity increases, until the incident light but just grazes the surface.

(32.) The laws of reflexion and refraction being known, it is the part of geometry to follow them out in the several cases where light is incident on plane, spherical, or any other curved surfaces, reflecting or refracting, and thus to deduce the various theorems and propositions which the practical optician has need of for the construction of his mirrors, lenses, prisms, telescopes, and microscopes. All these, as beside our present purpose, we pretermit, confining ourselves entirely to the