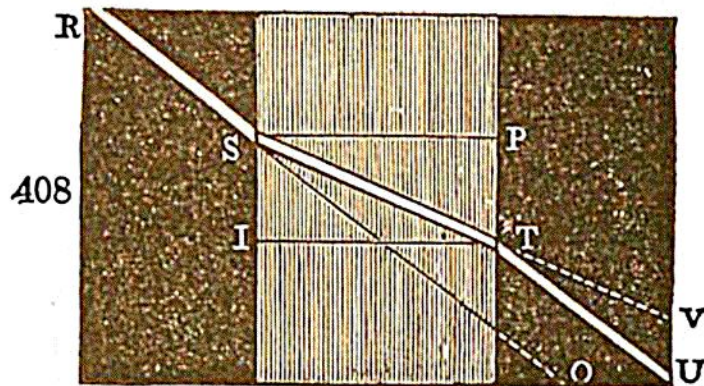


which they are collected is called a *focus*. For the purpose of collecting a pencil of rays into a focus, it is evident that all of them, except the one which proceeds in a straight line from the object to that focus, must be *deflected*, or bent from their rectilinear course. This effect may be produced by *refraction*, which takes place according to another optical law; a law of which the following is the exposition.

It is only when the medium which the rays are traversing is of uniform density that their course is constantly rectilinear. If the density change, or if the rays pass obliquely from one medium into another of a different density, they are refracted; each ray being deflected towards a line situated in the medium of greatest density, and drawn from the point where the ray meets the new medium, perpendicular to the refracting surface. Thus, the ray, *r*, Fig. 408, striking obliquely on the surface of a denser medium, at the point *s*, instead of pursuing its original course along the line *s o*, is refracted, or turned in the direction *s τ*, which is a line situated between *s o*, and *s p*; this latter line being drawn



perpendicularly to the surface of the medium, at the point *s*, and within that medium. When the ray arrives at *τ*, and meets the posterior surface of the dense medium, passing thence into one that is less dense, it is again refracted according to the same law; that is, it inclines towards the perpendicular line *τ i*, drawn from *τ*, within the denser medium, and describes the new course *τ u* instead of *τ v*. The amount of the deflection corresponds to the degree of ob-