a convex surface diverged, yet in every case the angle of reflection is equal to the angle of incidence. To prove this statement we must refer to a mathematical diagram. Let A B G be the direction in which a ray of light is moving, and C D a plane mirror by which it is stopped and reflected, it will pass off in the direction B F, and the angle A B E, which is the angle of incidence, will be equal to the angle E B F, which is the angle of reflection. But if a ray should fall upon the mirror in a direction perpendicular to the reflecting surface, it will be thrown back in the same line as that in which it came, though in an opposite direction.

REFRACTION.

The phenomenon of refraction, or the influence of fluids in bending the rays of light from their usual direction, must have been observed as early as those appearances which result from reflection. The bent or broken appearance of a stick, or the stem of a plant, when plunged into water, must have been frequently noticed, and it is possible that the whole science of dioptrics may have arisen from this observation.

When light passes through a fluid medium it is bent, or refracted, from its rectilinear path, the amount of refraction being always governed by the nature of the substance. There are some fluids that refract more than others, but still there is a general law which holds good in all cases in relation to the same medium. Alcohol refracts light more than water, oil more than alcohol, and glass more than oil. But, on whatever medium a ray of light may fall, there is a constant relation between the sine of the angle of incidence and the sine of the angle of refraction. This law may be otherwise expressed in the following manner; when any two rays of light fall upon the same medium at different angles of incidence, the sines of the angles of refraction will have a constant proportion to the sines of their respective angles of incidence.

Let A B be the surface of a medium having a greater density than that by which it is superposed; and let C D, H D, be two incident rays, and D F, D E, their respective refracted rays; *g* C and *h* H are the sines of the angles of incidence, and *e* E, *f* F, are the sines of the angles of refraction. Now, it may be proved by experiment, that there is a constant relation between the sines of the angles of refraction and the sines of the angles of incidence. The proportion in water