non; and to study it in its simplicity, we must in idea break it up into its component elements, and examine their phænomena *per se.* Now it results, from a series of experiments too extensive and refined to be here detailed, and from reasonings upon them which the generality of our readers could hardly be expected to follow, that when a ray, polarized in any plane, undergoes reflexion in a different plane, the reflected portion comes off in all cases more or less elliptically polarized—that is to say, that it consists of, or can be resolved into, two rays, the one polarized in the plane of incidence, the other in a plane at right angles to it—that both these portions have undergone a change of phase at the moment of reflexion, but *not the same for both*, so that arriving at the surface in the same phase, they quit it in different, and therefore constitute by their superposition an elliptically polarized ray. The amount of ellipticity varies, for each reflecting medium (according to the nature of its material) with the angle of incidence at which the reflexion takes place, and also with the inclination of the plane of incidence to that of the primitive polarization of the incident ray. If the reflexion take place on ordinary transparent media of not very high refractive power, as glass, or water, and at the polarizing angle, the degree of ellipticity is so slight that the vibration may be considered as rectilinear, and the reflected ray as completely polarized in the plane of incidence. As the refractive power of the surface increases, the ellipticity impressed is greater, and in some substances, of very high refractive power, such as dia-