sequently parallel to the sides of the refracted ray. This view of the subject includes some of the leading features of the case, but still leaves several considerable difficulties.

No material advance was made in the subject till it was taken up by Malus,[2] along with the other circumstances of double refraction, about a hundred years afterwards. He verified what had been observed by Huyghens and Newton, on the subject of the variations which light thus exhibits; but he discovered that this modification, in virtue of which light undergoes the ordinary, or the extraordinary, refraction, according to the position of the plane of the crystal, may be impressed upon it many other ways. One part of this discovery was made accidentally.[3] In 1808, Malus happened to be observing the light of the setting sun, reflected from the windows of the Luxembourg, through a rhombohedron of Iceland spar; and he observed that in turning round the crystal, the two images varied in their intensity. Neither of the images completely vanished, because the light from the windows was not properly modified, or, to use the term which Malus soon adopted, was not completely *polarized*. The complete polarization of light by reflection from glass, or any other transparent substance, was found to take place at a certain definite angle, different for each substance. It was found also that in all crystals in which double refraction occurred, the separation of the refracted rays was accompanied by polarization; the two rays, the ordinary and the extraordinary, being always polarized *oppositely*, that is, in planes at right angles to each other. The term *poles*, used by Malus, conveyed nearly the same notion as the term *sides* which had been employed by Newton, with the additional conception of a property which appeared or disappeared according as the *poles* of the particles were or were not in a certain direction; a property thus resembling the *polarity* of magnetic bodies. When a spot of polarized light is looked at through a transparent crystal of Iceland spar, each of the two images produced by the double refraction varies in brightness as the crystal is turned round. If, for the sake of example, we suppose the crystal to be turned round in the direction of the points of the compass, N, E, S, W, and if one image be brightest when the crystal marks N and S, it will disappear when the crystal marks E and W: and on the contrary, the second image will vanish when the crystal marks N and S,

[2] Malus, *Th. de la Doub. Réf.* p. 296.

[3] Arago, art. *Polarization*, Supp. *Enc. Brit.*