would have been wholly extinguished at each quarter revolution.

(157.) Another mode of communicating circular polarization to a ray, is to transmit it at a perpendicular incidence through a parallel plate of any perfectly colourless and transparent doubly refracting crystal, of such thickness, that in the passage through it of the two waves, parallel to its surfaces, into which the incident wave (supposed plane) is divided, (the one conveyed by ordinary refraction, the other by extraordinary, and therefore travelling with different velocities in the crystal,) the one shall have gained or lost, after emergence, exactly a quarter of an undulation on the other. For as the corresponding rays emerge of equal intensity, and oppositely polarized, they here also fulfil all the conditions of circular polarization. If the thickness of the plate be such, that the difference of phases is more or less than an exact quarter (or any number of quarters) of an undulation, the compound ray will be elliptically polarized, and the degree of ellipticity will be determined by the thickness of the plate.

(158.) It may be asked, in what does a ray so circularly polarized differ from an ordinary unpolarized ray, seeing that the latter may always be regarded as compounded of two ordinary rays of half the intensity oppositely polarized? We reply, *in this:* viz., that if again transmitted through another such glass parallelopiped, *similarly situated*, the difference of phase will be doubled. The emergent ray then will consist of two equal rays oppositely polarized (and therefore not interfering), dif-