

as in the case of the original incident ray, it will *not* be further subdivided, but refracted *singly*: if an ordinary ray, *ordinarily*; and if extraordinary, *extraordinarily*. Its refraction will also be single, if the second crystal be turned round *on the ray as an axis* exactly through a right angle; but in this case the second refraction, if an ordinary ray have been used, will be *extraordinary*, and *vice versa*. In every intermediate situation of the second crystal, it will be subdivided into two, the one ordinarily, the other extraordinarily refracted, *but the two fractions will be found to differ in relative intensity*: generally speaking, the more according as the conversion of the second crystal has been through a less angle from its first position, and they are equal when the angle of conversion is 45° , 135° , 225° , or 315° , *i.e.*, exactly half-way between the rectangular positions of the crystal.

(121.) All these particulars are easily and elegantly exhibited by means of two crystals of the mineral called Iceland spar (crystallized carbonate of lime), a mineral of perfect and colourless transparency, which, if fractured, will always separate itself along its three "planes of cleavage" (which in this mineral are singularly distinct and palpable) into forms whose type is the obtuse rhomboid (whose six faces, all equal and similar rhombs of $101^\circ 32'$ and $78^\circ 28'$, are united three and three, by their obtuse angles, at the opposite extremities of a line called the axis of the rhomboid, the shortest that

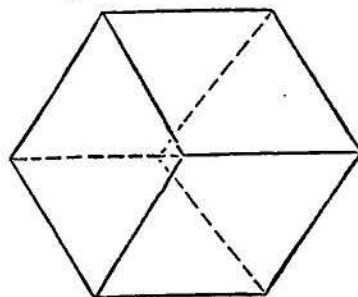


Fig. 11.