

about a common centre, and intersected, not by the two arms of a black cross as in Iceland spar, but by one vertical dark bar cutting centrally across them. This dark bar is converted to a white one, and the colours of all the rings changed to their complementary ones, by turning the analyzing plate through 90° in its plane.

(170.) In mica, the angular separation of the optic axes is too large to allow both these sets of rings to be seen at once, so as to examine the nature of their mutual connexion. In nitre however, in which it is only about 5° (within the crystal), this may be very conveniently done, by cutting from the clear transparent portion of a large hexangular-prismatic crystal (such as may always be found in searching over a lot of the ordinary commercial saltpetre) a plate about a quarter of an inch thick, perpendicular to the axis of the prism, and polishing its faces. If this be placed between two crossed tourmalines, and held up against the light, the normal phænomenon of the biaxal rings will be seen in its utmost perfection, as in fig. 17, the upright and horizontal lines in which indicate broad brushes as it were of shadow, cutting across the system of ovals, and breaking them up into four similar quadrants. If, retaining the tourmalines in the same position, the nitre plate be turned round in its own plane, this cross breaks up into two curved arcs, as represented in fig. 18, corresponding to a movement through a quarter of a right angle,—then, as in fig. 19, corresponding to 45° of change, and so on till after a quarter of a revolution the original appearance of fig. 17 is restored. If the