observed, on turning it from right to left; in plates of the same thickness cut from other crystals the same succession is seen on turning it from left to right. Yet more singular, is the fact that this inversion—this right-and-left-handedness in the succession of tints, corresponds to, and is predictable beforehand from, the appearance of certain small obliquely posited facets on the crystal previous to polishing, which lean unsymmetrically in some crystals to the right, in others to the left hand of the axis held up straight before the eye. In all other respects the crystals are identical.* A similar right-and-left-handedness in the external form of their crystals, accompanied with the very same optical phænomena, has been remarked by M. Pasteur in the salts called *para-tartrates* and their crystallized acid.

(166.) The account given by the undulatory theory of these phænomena is this. Quartz (to adhere to our first, chosen instance) is uniaxal, but it differs from Iceland spar and others of that class in a most essential point first noticed by Mr Airy, viz.: that the sphere and spheroid representing the simultaneous surfaces of the ordinary and extraordinary waves propagated within them, though having a common axis, do not touch each other internally. Hence, in the direction of that axis, though there is, *at a perpendicular incidence*, no double refraction, there *is* a difference of velocity in the two rays. Now the theory at present adopted is, that owing to some peculiarity at present not understood; when a polarized

* Amethyst consists of thin alternate layers of right-handed and left-handed quartz superposed, parallel to their axes.