

them performed in planes at right angles to each other, no such mutual destruction or reinforcement of movement can take place. Two movements at right angles to each other, communicated at the same instant to the same material molecule, combine, in virtue of the mechanical principle of the composition of motions, to produce a movement intermediate in direction; and can in no case destroy each other.

(147.) It follows from this, that if such be really the nature of the luminous vibrations and such the true explanation of the phænomenon of polarization—interference can only take place between rays polarized in the same plane—such complete interference at least as shall result in the extinction of both, in the manner above described. This conclusion is, happily, capable of being brought to the test of experiment, and the result is found to be in exact accordance with the *à priori* reasoning. The experiment is simple and direct. Let two small holes, or, better, parallel slits very near each other in a thin opaque screen, be placed between the eye and a very minute and brilliant point of light; and viewed through a lens, as described in a former paragraph; so as to see the diffractive fringes. Now over the holes or slits let two plates of tourmaline of precisely equal thickness and in every respect similar be applied (to secure which conditions, the two halves of a single plate worked to exact parallelism and cut across, may be used). Then if the axes of these plates be parallel, in which case the light passing through both the apertures will be similarly polarized, the fringes will continue to be seen. If one.