

vibrations by which light is propagated will be *transverse* vibrations, that is the motion to and fro will be athwart the line along which the undulation travels; and from this circumstance all the laws of polarisation necessarily follow. And the properties of transverse vibrations, combined with the properties of vibrations in general, give rise to all the curious and numerous phenomena of colours of which we have spoken.

If the vibrations be transverse, they may be resolved into two different planes; this is *polarisation*: if they fall on a medium which has different elasticity in different directions, they will be divided into two sets of vibrations; this is *double refraction*; and so on. Some of the new properties, however, as the fringes of shadows and the colours of thin plates, follow from the undulatory theory, whether the vibrations be transverse or not.

It would appear, therefore, that the propagation of light by means of a subtle medium, leads necessarily to the extraordinary collection of properties which have recently been discovered; and, at any rate, its propagation by the transverse vibrations of such a medium does lead inevitably to these results.

Leaving it therefore to future times to point out the other reasons (or *uses* if they exist) of these newly discovered properties of light, in their bearing on other parts of the world, we may venture to say, that if light was to be propagated through transparent media by the undulations of a subtle fluid, these properties must result, as necessarily as the rainbow results from the unequal refrangibility of different colours. This phenomenon and those, appear alike to be the collateral consequences of the laws impressed on light with a view to its principal offices.

Thus the exquisitely beautiful and symmetrical phenomena and laws of polarisation, and of crystalline and other effects, may be looked upon as indications of the delicacy and subtlety of the mechanism by which man, through his visual organs, is put in