

has been discovered by MM. Biot and Melloni that quartz impresses a circular polarization upon heat; and by Prof. Forbes that mica, of a certain thickness, produces phenomena such as would be produced by the impression of circular polarization of the supposed transversal vibrations of radiant heat; and further, a rhomb of rock-salt, of the shape of the glass rhomb which verified Fresnel's extraordinary anticipation of the circular polarization of light, verified the expectation, founded upon other analogies, of the polarization of heat. By passing polarized heat through various thicknesses of mica, Prof. Forbes has attempted to calculate the length of an undulation for heat.

These analogies cannot fail to produce a strong disposition to believe that light and heat, essences so closely connected that they can hardly be separated, and thus shown to have so many curious properties in common, are propagated by the same machinery; and thus we are led to an Undulatory Theory of Heat.

Yet such a Theory has not yet by any means received full confirmation. It depends upon the analogy and the connexion of the Theory of Light, and would have little weight if those were removed. For the separation of the rays in double refraction, and the phenomena of periodical intensity, the two classes of facts out of which the Undulatory Theory of Optics principally grew, have neither of them been detected in thermotical experiments. Prof. Forbes has assumed alternations of heat for increasing thicknesses of mica, but in his experiments we find only one *maximum*. The occurrence of alternate maxima and minima under the like circumstances would exhibit visible waves of heat, as the fringes of shadows do of light, and would thus add much to the evidence of the theory.

Even if I conceived the Undulatory Theory of Heat to be now established, I should not venture, as yet, to describe its establishment as an event in the history of the Inductive Sciences. It is only at an interval of time after such events have taken place that their history and character can be fully understood, so as to suggest lessons in the Philosophy of Science.]

*Atmological Theories.*—Hypotheses of the relations of heat and air almost necessarily involve a reference to the forces by which the composition of bodies is produced, and thus cannot properly be treated of, till we have surveyed the condition of chemical knowledge. But we may say a few words on one such hypothesis; I mean the hypothesis on the subject of the atmological laws of heat, proposed by Laplace, in the twelfth Book of the *Mécanique Céleste*, and published in 1823.