

light, we cannot retain the doctrine that heat radiates by the emanation of material particles, without supposing those particles of caloric to have poles; an hypothesis which probably no one would embrace; for, besides that the ill fortune which attended that hypothesis in the case of light must deter speculators from it, the intimate connexion of heat and light would hardly allow us to suppose polarization in the two cases to be produced by two different kinds of machinery.

But, without here tracing further the influence which the polarization of heat must exercise upon the formation of our theories of heat, we must briefly notice this important discovery, as a law of phenomena.

The analogies and connexions between light and heat are so strong, that when the polarization of light had been discovered, men were naturally led to endeavor to ascertain whether heat possessed any corresponding property. But partly from the difficulty of obtaining any considerable effect of heat separated from light, and partly from the want of a thermometrical apparatus sufficiently delicate, these attempts led, for some time, to no decisive result. M. Berard took up the subject in 1813. He used Malus's apparatus, and conceived that he found heat to be polarized by reflection at the surface of glass, in the same manner as light, and with the same circumstances.²⁶ But when Professor Powell, of Oxford, a few years later (1830), repeated these experiments with a similar apparatus, he found²⁶ that though the heat which is conveyed along with light is, of course, polarizable, "simple radiant heat," as he terms it, did not offer the smallest difference in the two rectangular azimuths of the second glass, and thus showed no trace of polarization.

Thus, with the old thermometers, the point remained doubtful. But soon after this time, MM. Melloni and Nobili invented an apparatus, depending on certain galvanic laws, of which we shall have to speak hereafter, which they called a *thermomultiplier*; and which was much more sensitive to changes of temperature than any previously-known instrument. Yet even with this instrument, M. Melloni failed; and did not, at first, detect any perceptible polarization of heat by the tourmaline;²⁷ nor did M. Nobili,²⁸ in repeating M. Berard's experiment. But in this experiment the attempt was made to polarize heat by reflection from glass, as light is polarized: and the quantity

²⁶ *Ann. Chim.* March, 1813. ²⁶ *Edin. Journ. of Science*, 1830, vol. ii. p. 303.

²⁷ *Ann. de Chimie*, vol. lv. ²⁸ *Bibliothèque Universelle*.