In the case of this great theory, as in that of gravitation, by far the most remarkable of these confirmatory researches were conducted by the authors of the discovery, especially Fresnel. And in looking at what he conceived and executed for this purpose, we are, it appears to me, strongly reminded of Newton, by the wonderful inventiveness and sagacity with which he devised experiments, and applied to them mathematical reasonings.

1. *Double Refraction of Compressed Glass.*—One of these confirmatory experiments was the production of double refraction by the *compression* of glass. Fresnel observes,[1] that though Sir D. Brewster had shown that glass under compression produced colors resembling those which are given by doubly-refracting crystals, "very skilful physicists had not considered those experiments as a sufficient proof of the bifurcation of the light." In the hypothesis of moveable polarization, it is added, there is no apparent connexion between these phenomena of coloration and double refraction; but on Young's theory, that the colors arise from two rays which have traversed the crystal with different velocities, it appears almost unavoidable to admit also a difference of path in the two rays.

"Though," he says, "I had long since adopted this opinion, it did not appear to me so completely demonstrated, that it was right to neglect an experimental verification of it;" and therefore, in 1819, he proceeded to satisfy himself of the fact, by the phenomena of diffraction. The trial left no doubt on the subject; but he still thought it would be interesting actually to produce two images in glass by compression; and by a highly-ingenious combination, calculated to exaggerate the effect of the double refraction, which is very feeble, even when the compression is most intense, he obtained two distinct images. This evidence of the dependence of dipolarizing structure upon a doubly-refracting state of particles, thus excogitated out of the general theory, and verified by trial, may well be considered, as he says, "as a new occasion of proving the infallibility of the principle of interferences."

2. *Circular Polarization.*—Fresnel then turned his attention to another set of experiments, related to this indeed, but by a tie so recondite, that nothing less than his clearness and acuteness of view could have detected any connexion. The optical properties of quartz had been perceived to be peculiar, from the period of the discovery

[1] *Ann. de Chim.* 1822, tom. xx. p. 377.