

the supposed judges of science and letters. Its author went on laboring at the completion and application of the theory in other parts of the subject; but his extraordinary success in unravelling the complex phenomena of which we have been speaking, appears to have excited none of the notice and admiration which properly belonged to it, till Fresnel's *Memoir On Diffraction* was delivered to the Institute, in October, 1815.

MM. Arago and Poinsot were commissioned to make a report upon this *Memoir*; and the former of these philosophers threw himself upon the subject with a zeal and intelligence which peculiarly belonged to him. He verified the laws announced by Fresnel: "laws," he says, "which appear to be destined to make an epoch in science." He then cast a rapid glance at the history of the subject, and recognized, at once, the place which Young occupied in it. Grimaldi, Newton, Maraldi, he states, had observed the facts, and tried in vain to reduce them to rule or cause. "Such³ was the state of our knowledge on this difficult question, when Dr. Thomas Young made the very remarkable experiment which is described in the *Philosophical Transactions* for 1803;" namely, that to obliterate all the bands within the shadow, we need only stop the ray which is going to graze, or has grazed, one border of the object. To this, Arago added the important observation, that the same obliteration takes place, if we stop the ray, with a transparent plate; except the plate be very thin, in which case the bands are displaced, and not extinguished. "Fresnel," says he, "guessed the effect which a thin plate would produce, when I had told him of the effect of a thick glass." Fresnel himself declares⁴ that he was not, at the time, aware of Young's previous labors. After stating nearly the same reasonings concerning fringes which Young had put forward in 1801, he adds, "it is therefore the meeting, the actual crossing of the rays, which produces the fringes. This consequence, which is only, so to speak, the translation of the phenomena, seems to me entirely opposed to the hypothesis of emission, and confirms the system which makes light consist in the vibrations of a peculiar fluid." And thus the Principle of Interferences, and the theory of undulations, so far as that principle depends upon the theory, was a second time established by Fresnel in France, fourteen years after it had been discovered, fully proved, and repeatedly published by Young in England.

An. Chim. 1815, Febr.

⁴ *Ib.* tom. xvii. p. 402.