

emancipate himself from the astronomical view of phenomena. In France the matter stood quite differently, and nothing better proves the genius of Augustin Fresnel than the fact that he ventured against the opposition of great authorities to go his own way, starting from the beginning and devising many ingenious appeals to nature herself—*i.e.*, to experiment—in order to establish a correct view. It is well known that his labours had to wait many years for their deserved appreciation.¹ It is, however, only just to remark that Arago, an admirer of Laplace and an intimate friend of Biot, the great supporter of the projectile theory of light, was the first to recognise the importance of Fresnel's work, and that it was largely owing to his co-operation and influence that the undulatory theory of light triumphed in the end. Fresnel's own labours began with the study of the same phenomena which had led Young to the discovery of "interference"—*viz.*, the bands and coloured fringes observable round the shadows of small screening objects, or the images of small apertures through which rays of light are allowed to enter: the phenomena of diffraction or inflection of light. But whilst Young still explained these phenomena as arising from the interference of direct "portions" of light and such as were reflected at the edge of the screening obstacle, Fresnel showed that the principle of interference had a much wider application, that it was adequate to explain why a periodic wave-motion, such as was conceived by Huygens, only sent out rays of

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Fresnel.

experiment, since he has not demonstrated that a similar coincidence might not be obtained by proceeding on totally different

grounds" ('Quarterly Review,' No. 1, p. 109).

¹ See the first volume of this work, p. 241 note².