

ment," but that "they have not thought it right to delay any longer making known a work of which the difficulty is attested by the fruitless efforts of the most skilful philosophers, and in which are exhibited in the same brilliant degree, the talent for experiment and the spirit of invention."

In the meantime, however, a controversy between the theory of undulations and the theory of moveable polarization which M. Biot had proposed with a view of accounting for the colors produced by dipolarizing crystals, had occurred among the French men of science. It is clear that in some main features the two theories coincide; the intervals of interference in the one theory being represented by the intervals of the oscillations in the other. But these intervals in M. Biot's explanations were arbitrary hypotheses, suggested by these very facts themselves; in Fresnel's theory, they were essential parts of the general scheme. M. Biot, indeed, does not appear to have been averse from a coalition; for he allowed⁹ to Fresnel that "the theory of undulations took the phenomena at a higher point and carried them further." And M. Biot could hardly have dissented from M. Arago's account of the matter, that Fresnel's views "*linked together*"¹⁰ the oscillations of moveable polarization. But Fresnel, whose hypothesis was all of one piece, could give up no part of it, although he allowed the usefulness of M. Biot's formulæ. Yet M. Biot's speculations fell in better with the views of the leading mathematicians of Paris. We may consider as evidence of the favor with which they were looked upon, the large space they occupy in the volumes of the Academy for 1811, 1812, 1817, and 1818. In 1812, the entire volume is filled with a memoir of M. Biot's on the subject of moveable polarization. This doctrine also had some advantage in coming early before the world in a didactic form, in his *Traité de Physique*, which was published in 1816, and was the most complete treatise on general physics which had appeared up to that time. In this and others of this author's writings, he expresses facts so entirely in the terms of his own hypothesis, that it is difficult to separate the two. In the sequel M. Arago was the most prominent of M. Biot's opponents; and in his report upon Fresnel's memoir on the colors of crystalline plates, he exposed the weaknesses of the theory of moveable polarization with some severity. The details of this controversy need not occupy us; but we may observe that this may be considered as the last struggle

⁹ *Ann. Chim.* tom. xvii. p. 251.

¹⁰ "Nouait."