

have sides, the phenomena of "laterality" (misleadingly called polarisation). The believers in the emission theory studied them with predilection, Biot at their head. Although to Young their explanations were unconvincing, their results were so perplexing that he wrote to Brewster in September 1815, "With respect to my own fundamental hypotheses respecting the nature of light, I become less and less fond of dwelling on them, as I learn more and more facts like those which Mr Malus discovered; because, although they may not be incompatible with these facts, they certainly give us no assistance in explaining them."<sup>1</sup> When Young wrote this, Fresnel had not yet presented his first memoir on Diffraction to the Institute; his own labours on that matter were more than ten years old; the phenomena of polarisation had meantime absorbed the attention of opticians. In the summer of 1816 Arago and Gay-Lussac paid a visit to

mediately after the reading of Arago's report, Laplace, "who had thought for a long time that his analysis had made the phenomena of double refraction depend on his emission theory," proclaimed the great importance of the memoir, and declared that he placed these researches above anything that had for a long time been communicated to the Academy ('Œuvres de Fresnel,' vol. i. p. lxxxvi., and vol. ii. p. 459). We are indebted to M. Verdet for having shown that the discovery of this law by Fresnel is independent of the theoretical considerations by which he tried synthetically to prove it. On this point he says: "En révélant la série de généralisations et de conjectures par lesquelles Fresnel est arrivé peu à peu à la découverte des lois générales de la double ré-

fraction, ils font disparaître une difficulté qui ne pouvait manquer de résulter de toute étude tant soit peu approfondie de ses écrits imprimés. . . . On a vu au contraire que cette loi s'est manifesté à Fresnel comme le résultat d'une généralisation toute semblable aux généralisations qui ont amené la plupart des grandes découvertes. Lorsqu'il a voulu ensuite se rendre compte de la loi par une théorie mécanique, il n'est pas étonnant qu'il ait, peut-être à son insu, conduit cette théorie vers le but qu'il connaissait d'avance, et qu'il ait été déterminé, dans le choix des hypothèses auxiliaires moins par leur vraisemblance intrinsèque que par leur accord avec ce qu'il était en droit de considérer comme la vérité" (ibid., vol. ii. p. 327. Cf. vol. i. p. lxxxiv.)

<sup>1</sup> Works, vol. i. p. 361.