

the properties of light remained confined to these, there would have been no occasion to have resorted to any other mode of conceiving it.

(276.) A very different hypothesis had, however, been suggested about the same period by Huyghens, who supposed light to be produced in the same manner with sound, by the communication of a vibratory motion from the luminous body to a highly elastic fluid, which he imagined as filling all space, and as being less condensed within the limits of space occupied by matter, and that to a greater or less extent, according to the nature of the occupying substance. Thus, in place of any thing actually thrown off, he substituted waves, or vibrations, propagated in all directions from luminous bodies, through this medium, or ether, as he called it. Huyghens, being himself a consummate mathematician, was enabled to trace many of the consequences of this hypothesis, and to show that the ordinary laws of reflection and refraction were represented or accounted for by it, as well as by Newton's. But the hypothesis of Huyghens has not been fully successful in accounting for what may be considered the chief of all optical facts, the production of colors in the ordinary refraction of light by a prism, of which the theory of Newton gives a complete and elegant explanation; and the discovery of which by him marks one of the greatest epochs in the annals of experimental science. This, which has been often urged in objection to it, remains still, if not quite unanswered, at least only imperfectly removed.

(277.) Other phenomena, however, were not wanting to afford a further trial of the *explanatory powers* of either hypothesis. The diffraction or inflection of light, discovered by Grimaldi, a Jesuit of Bologna, seemed to indicate that the rays of light were turned aside from their straight course by merely passing near bodies of every description. These phenomena, which are very curious and beautiful, were minutely examined by Newton, and referred by him to the action of repulsive forces extending to a sensible distance from the surfaces of bodies; and his explanation, so far as the facts known to