

him are concerned, appears as satisfactory as could reasonably be then expected; and much more so than anything which could, at that time, be produced on the side of the hypothesis of Huyghens, which, in fact, seemed incapable of giving any account whatever of them.

(278.) Another class of delicate and splendid optical phenomena, which had begun to attract attention somewhat previous to Newton's time, seemed to leave both hypotheses equally at a loss. These were the colors exhibited by very thin films, either of a liquid (such as a soap-bubble), or of air, as when two glasses are laid together with only air between them. These colors were examined by Newton with a minuteness and care altogether unexampled in experimental philosophy at that time, and with which few researches undertaken since will bear to stand in competition. Their result was a theory of a very singular nature, which he grounded on an hypothesis of what he termed *fits of easy transmission and reflection*; and which supposed each ray of light to pass in its progress periodically through a succession of states such as would alternately dispose it to penetrate or be reflected back from the surface of a body on which it might fall. The simplest way in which the reader may conceive this hypothesis, is to regard every particle of light as a sort of little magnet revolving rapidly about its own centre while it advances in its course, and thus alternately presenting its attractive and repulsive pole, so that when it arrives at the surface of a body, with its repulsive pole foremost, it is repelled and reflected; and when the contrary, attracted, so as to enter the surface. Newton, however, very cautiously avoided announcing his theory in this or any similar form, confining himself entirely to general language. In consequence, it has been confidently asserted by all his followers, that the doctrine of fits of easy reflection and transmission, as laid down by him, is substantially nothing more than a statement of facts. Were it so, it is clear that any other theory which should offer a just account of the same phenomena must ultimately involve and coincide with that of Newton. But this, as we shall presently