

FORMAL OPTICS.

CHAPTER I.

PRIMARY INDUCTION OF OPTICS.—RAYS OF LIGHT AND LAWS OF REFLECTION.

IN speaking of the Ancient History of Physics, we have already noticed that the optical philosophers of antiquity had satisfied themselves that vision is performed in straight lines;—that they had fixed their attention upon those straight lines, or *rays*, as the proper object of the science;—they had ascertained that rays reflected from a bright surface make the *angle of reflection* equal to the *angle of incidence*;—and they had drawn several consequences from these principles.

We may add to the consequences already mentioned, the art of *perspective*, which is merely a corollary from the doctrine of rectilinear visual rays; for if we suppose objects to be referred by such rays to a plane interposed between them and the eye, all the rules of perspective follow directly. The ancients practised this art, as we see in the pictures which remain to us; and we learn from Vitruvius,¹ that they also wrote upon it. Agatharchus, who had been instructed by Æschylus in the art of making decorations for the theatre, was the first author on this subject, and Anaxagoras, who was a pupil of Agatharchus, also wrote an *Actinographia*, or doctrine of drawing by rays: but none of these treatises are come down to us. The moderns re-invented the art in the flourishing times of the art of painting, that is, about the end of the fifteenth century; and, belonging to that period also, we have treatises² upon it.

But these are only deductive applications of the most elementary optical doctrines; we must proceed to the inductions by which further discoveries were made.

¹ *De Arch.* ix. *Mont.* i. 707.

² Gauricus, 1504.