

cal instruments, *diacaustic* curves, (that is, the curves of intense light produced by refraction,) and to various other cases; and was, of course, tested and confirmed by such applications. It was, however, impossible to pursue these applications far, without a due knowledge of the laws by which, in such cases, colors are produced. To these we now proceed.

[2nd Ed.] [I have omitted many interesting parts of the history of Optics about this period, because I was concerned with the *inductive* discovery of laws, rather than with mathematical *deductions* from such laws when established, or *applications* of them in the form of instruments. I might otherwise have noticed the discovery of Spectacle Glasses, of the Telescope, of the Microscope, of the Camera Obscura, and the mathematical explanation of these and other phenomena, as given by Kepler and others. I might also have noticed the progress of knowledge respecting the Eye and Vision. We have seen that Alhazen described the structure of the eye. The operation of the parts was gradually made out. Baptista Porta compares the eye to his *Camera Obscura* (*Magia Naturalis*, 1579). Scheiner, in his *Oculus*, published 1652, completed the Theory of the Eye. And Kepler discussed some of the questions even now often agitated; as the causes and conditions of our seeing objects single with two eyes, and erect with inverted images.]

CHAPTER III.

DISCOVERY OF THE LAW OF DISPERSION BY REFRACTION.

EARLY attempts were made to account for the colors of the rainbow, and various other phenomena in which colors are seen to arise from transient and unsubstantial combinations of media. Thus Aristotle explains the colors of the rainbow by supposing¹ that it is light seen through a dark medium: "Now," says he, "the bright seen through the dark appears red, as, for instance, the fire of green wood seen through the smoke, and the sun through mist. Also² the weaker is the light, or the visual power, and the nearer the color approaches to the black; becoming first red, then green, then purple. But³ the

¹ *Meteor.* iii. 3, p. 373.

² *Ib.* p. 374.

³ *Ib.* p. 375.