

BOOK VIII.

INTRODUCTION.

The Secondary Mechanical Sciences.

IN the sciences of Mechanics and Physical Astronomy, Motion and Force are the direct and primary objects of our attention. But there is another class of sciences in which we endeavor to reduce phenomena, not evidently mechanical, to a known dependence upon mechanical properties and laws. In the cases to which I refer, the facts do not present themselves to the senses as modifications of position and motion, but as *secondary qualities*, which are found to be in some way derived from those primary attributes. Also, in these cases the phenomena are reduced to their mechanical laws and causes in a secondary manner; namely, by treating them as the operation of a *medium* interposed between the object and the organ of sense. These, then, we may call *Secondary Mechanical Sciences*. The sciences of this kind which require our notice are those which treat of the sensible qualities, Sound, Light, and Heat; that is, Acoustics, Optics, and Thermotics.

It will be recollected that our object is not by any means to give a full statement of all the additions which have been successively made to our knowledge on the subjects under review, or a complete list of the persons by whom such additions have been made; but to present a view of the progress of each of those branches of knowledge *as a theoretical science*;—to point out the Epochs of the discovery of those general principles which reduce many facts to one theory; and to note all that is most characteristic and instructive in the circumstances and persons which bear upon such Epochs. A history of any science, written with such objects, will not need to be long; but it will fail in its purpose altogether, if it do not distinctly exhibit some well-marked and prominent features.