

CHAPTER I.

PRELUDE TO THE EPOCH OF GALILEO.

Sect. 1.—Prelude to the Science of Statics.

SOME steps in the science of Motion, or rather in the science of Equilibrium, had been made by the ancients, as we have seen. Archimedes established satisfactorily the doctrine of the Lever, some important properties of the Centre of Gravity, and the fundamental proposition of Hydrostatics. But this beginning led to no permanent progress. Whether the distinction between the principles of the doctrine of Equilibrium and of Motion was clearly seen by Archimedes, we do not know; but it never was caught hold of by any of the other writers of antiquity, or by those of the Stationary Period. What was still worse, the point which Archimedes had won was not steadily maintained.

We have given some examples of the general ignorance of the Greek philosophers on such subjects, in noticing the strange manner in which Aristotle refers to mathematical properties, in order to account for the equilibrium of a lever, and the attitude of a man rising from a chair. And we have seen, in speaking of the indistinct ideas of the Stationary Period, that the attempts which were made to extend the statical doctrine of Archimedes, failed, in such a manner as to show that his followers had not clearly apprehended the idea on which his reasoning altogether depended. The clouds which he had, for a moment, cloven in his advance, closed after him, and the former dimness and confusion settled again on the land.

This dimness and confusion, with respect to all subjects of mechanical reasoning, prevailed still, at the period we now have to consider; namely, the period of the first promulgation of the Copernican opinions. This is so important a point that I must illustrate it further.

Certain general notions of the connection of cause and effect in motion, exist in the human mind at all periods of its development, and are implied in the formation of language and in the most familiar employments of men's thoughts. But these do not constitute a *science* of Me-