

had taken place somewhat earlier; and that law which is more particularly expressed in D'Alembert's Principle (*the equality of the action gained and lost*) was, it has been seen, rather led to by the general current of the reasoning of mathematicians about the end of the seventeenth century than discovered by any one. Huyghens, Marriotte, the two Bernoullis, L'Hôpital, Taylor, and Hermann, have each of them their name in the history of this advance; but we cannot ascribe to any of them any great real inductive sagacity shown in what they thus contributed, except to Huyghens, who first seized the principle in such a form as to find the centre of oscillation by means of it. Indeed, in the steps taken by the others, language itself had almost made the generalization for them at the time when they wrote; and it required no small degree of acuteness and care to distinguish the old cases, in which the law had already been applied, from the new cases, in which they had to apply it.

CHAPTER VI.

SEQUEL TO THE GENERALIZATION OF THE PRINCIPLES OF MECHANICS.—
PERIOD OF MATHEMATICAL DEDUCTION.—ANALYTICAL MECHANICS.

WE have now finished the history of the discovery of Mechanical Principles, strictly so called. The three Laws of Motion, generalized in the manner we have described, contain the materials of the whole structure of Mechanics; and in the remaining progress of the science, we are led to no new truth which was not implicitly involved in those previously known. It may be thought, therefore, that the narrative of this progress is of comparatively small interest. Nor do we maintain that the application and development of principles is a matter of so much importance to the philosophy of science, as the advance towards and to them. Still, there are many circumstances in the latter stages of the progress of the science of Mechanics, which well deserve notice, and make a rapid survey of that part of its history indispensable to our purpose.

The Laws of Motion are expressed in terms of Space and Number; the development of the consequences of these laws must, therefore, be performed by means of the reasonings of mathematics; and the science