

falling bodies and the motions of projectiles, to lay the foundation of a true system of dynamics, by which motions could be determined from a knowledge of the forces producing them, and forces from the motions they produce. Hooke went yet farther, and obtained a view so distinct of the mode in which the planets might be retained in their orbits by the sun's attraction, that, had his mathematical attainments been equal to his philosophical acumen, and his scientific pursuits been less various and desultory, it can hardly be doubted that he would have arrived at a knowledge of the law of gravitation.

(301.) But every thing which had been done towards this great end, before Newton, could only be regarded as smoothing some first obstacles, and preparing a state of knowledge, in which powers like his could be effectually exerted. His wonderful combination of mathematical skill with physical research enabled him to invent, at pleasure, new and unheard-of methods of investigating the effects of those causes which his clear and penetrating mind detected in operation. Whatever department of science he touched, he may be said to have formed afresh. Ascending by a series of close-compact-ed inductive arguments to the highest axioms of dynamical science, he succeeded in applying them to the complete explanation of all the great astronomical phenomena, and many of the minuter and more enigmatical ones. In doing this he had every thing to create: the mathematics of his age proved totally inadequate to grapple with the numerous difficulties which were to be overcome; but this, so far from discouraging him, served only to afford new opportunities for the exertion of his genius, which, in the invention of the method of fluxions, or, as it is now more generally called, the differential calculus, has supplied a means of discovery, bearing the same proportion to the methods previously in use, that the steam-engine does to the mechanical powers employed before its invention. Of the optical discoveries of Newton we have already spoken; and if the magnitude of the objects of his astronomical discoveries excite our admiration of the mental powers which could