

natural, and allow us to make them subservient to our purposes.

Whoever grasps the significance of the change which the exact or mathematical treatment of knowledge has worked in our life and thought, will readily place that name at the entrance of a history of modern thought, which is identified with a few simple mathematical formulæ, by which ever since his time the progress of science has been guided. Though belonging to an earlier period, the full meaning of Newton's work has only been recognised in the course of our century. In fact the Newtonian philosophy can be said to have governed at least one entire section of the scientific research of the first half of this period: only in the second half of the period have we succeeded in defining more clearly the direction in which Newton's views require to be extended or modified. Newton's greatest achievement was to combine the purely mechanical laws which Galileo and Huygens had established with the purely physical relations which Kepler—following Copernicus and Tycho—had discovered in the planetary motions, and to abstract in so doing the general formula of universal attraction or gravitation. Newton looked upon the motion of the moon round the earth, or the planets round the sun, as examples on a large scale of the motion of falling bodies—studied by Galileo—on the surface of the earth. Delayed in the publication of this simple rule of planetary motion through the absence of correct measurements, and through the necessity of inventing a new calculus by which the mathematical results of the formula could be ascertained, Newton did not publish his 'Principia' till 1687. The

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When first
introduced
into science.