

the teachings of the several natural philosophers who initiated the genetic conception of natural phenomena. One of the earliest who broke with the older and introduced the modern methods was James Hutton, who towards the end of the preceding century led that school in geology which is called after him, and which violently opposed the ideas introduced from the Continent. The controversy culminated in the wrangle of the Neptunists and Vulcanists, those who looked to the agency of water and those who upheld that of fire as the principal cause of geological change. This difference, which at the time impressed the popular mind, is hardly that by which, in a history of scientific thought,¹ this controversy has become important. Hutton's position is marked rather by his opposition to catastrophism, and by his doctrine that geological changes, such as the decay and reproduction of rocks, were going on with the utmost uniformity, being always in progress. This he opposed to the Wernerian view, which believed in the existence of certain "fundamental rocks," which were "triumphantly

¹ The great merits of James Hutton, his extensive and original geological studies, his opposition to catastrophism, were overlooked through the theoretical discussions and the unfortunate title of his book. The world had grown tired of 'Theories of the Earth' and the discussion of fundamental problems. A spirit of observation had set in; the Geological Society was formed, and theories were for the time discountenanced. (See vol. i. p. 290, note 1, of this 'History.') The attacks also of Kirwan and De Luc, which turned upon the stale argument that Hutton's ideas were opposed to the scriptural records, had their

effect in circles in which everything connected with the revolution against Church and State was distasteful. As Huxley has told us, Hutton came before his time. To him belongs the merit of having initiated the line of research and reasoning which, through the brilliant labours of Charles Lyell a generation later, swept away the older geology, and prepared the way for the genetic study of nature on a large scale. (See the "Historical Sketch" in the first volume of Lyell's 'Principles of Geology,' and Huxley's address on "Geological Reform," 1869.)