

inadequate, and it was incontestably proved that crystalline rock might originate from molten rock when slowly cooled under pressure.

Hall also conducted experiments on the bending and folding of rocks. He spread out alternate horizontal layers of cloth and clay, placed a weight upon them, and subjected them to strong lateral pressure. These and similar experiments have been often repeated within recent years, and it is well known that in this way phenomena of deformation can be artificially produced which bear the closest resemblance to the phenomena of rock-deformation under natural conditions.

Hall, in his desire to vindicate Hutton's theory, became himself one of the great founders of experimental geology. At the same time, John Playfair,<sup>1</sup> whose interest in geology had been roused by Hutton's companionship, became the enthusiastic exponent of Hutton's theory.

It was Playfair's literary skill that opened the eyes of scientific men to the heritage Hutton had left for them. He did for Hutton's teaching what fifty years after was done for Darwin's doctrines by the gifted Huxley. The brilliant exponent and successful combatant, no less than the deep student and enlightened thinker, is required to establish a new system of thought, for such a system is always bound to be in a measure reactionary to older doctrines that have received the stamp of usage and authority.

Playfair's *Illustration of the Huttonian Theory* (1802) is a lucid exposition of that theory in the form of twenty-six ample discursive notes. Playfair's work differs in no essential point from the views held by his master and friend, but many subjects which receive a subordinate treatment in the *Theory of the Earth* are brought into prominence by Playfair, and placed for the first time on a firm scientific basis.

Among the subjects fully discussed are the uprise and bending of strata, the origin of crystalline rocks at low

<sup>1</sup> John Playfair, born 1748, in Bervie, Forfarshire, son of a minister, showed in his early years a remarkable genius for mathematics. He studied in Aberdeen and Edinburgh, in 1773 became minister in Bervie, in 1785 Professor of Mathematics in the University of Edinburgh, and twenty years after Professor of Philosophy in the same University. Led by Hutton into the study of geology, he devoted his holidays to geological tours throughout Great Britain and Ireland, and in 1815 and 1816 made longer tours to Auvergne, Switzerland, and Italy; he died in 1819 in Edinburgh.