

horizons of the crust and under very great pressure, and the occurrence of granite as dykes in various British localities. His treatment of valley and lake erosion is extremely able. And Playfair was the first geologist who realised that *the huge erratic blocks might have been carried to their present position by former glaciers*. His insight in this respect would alone have won for him a lasting fame, for the erratics on Alpine slopes and plains had long been observed by geologists and an explanation vainly sought. Playfair also studied the raised beaches on the coast-line of Scotland, and rightly concluded that they afforded evidence of an actual uprise of the land, in opposition to the views of Linnæus and Celsius, who had explained a similar series of phenomena in Sweden as a result of the retreat of the ocean. Playfair gave the first complete account of the evidences of oscillations of level in European lands.

Playfair's style is a model of clearness and precision, and his arguments are always thoroughly logical, and in agreement with physical laws. His *Huttonian Theory* was translated into French by C. A. Basset in 1815.

*Theories of the Earth's Origin proposed by De Luc, De la Métherie, Breislak, Kant, Laplace, and others.*—Although Hutton had enunciated his theory of the earth without introducing any personal element, it was a foregone conclusion that a doctrine which undermined the whole foundation of Werner's Neptunian teaching, was bound to meet with adverse criticism. Mention has already been made of the attacks made by Kirwan, Professor of Mineralogy in Dublin (*Geological Essays*, 1799). His arguments are based upon chemical and physical objections to Hutton's theory, and culminate in a bitter denunciation of a theory inimical to religion, and at variance with the Mosaic account, inasmuch as it demanded immeasurable epochs in place of the Biblical chronology, and even denied the universal deluge, to which Kirwan mainly ascribed the present configuration of the earth.

Another antagonist of Hutton's theory was the versatile Jean André de Luc, a Genevese by birth, who came into public notice during the political struggles in Geneva in the middle of the last century, and afterwards attained to a favoured position in the court of Queen Charlotte of England. De Luc wrote on all manner of scientific subjects, and his