

in them provided an inestimable complement to Werner's system, since the latter rested in the main upon mineralogical distinctions. William Smith has received the merited appellation of "father of historical geology." Two French scientists, Alexandre Brongniart and Cuvier, attained similar results, independently of William Smith, from their examination of the fossils in the rocks of the Paris basin.

Thus the knowledge and comparative investigation of fossil faunas and floras came to be recognised as a leading feature in the study of rock-formations. Rapid studies were made in the new direction of research by Cuvier, Brongniart, Lamarck, Schlotheim, Sowerby, and others. The name of Palæontology was given to the special department of zoological and geological science that treated of extinct organic forms.

During this period (1780-1820), while advances were being made in empirical methods of study, the theoretical aspect of geology remained for the most part on the old lines.

The theories of the universe presented by De Luc and De la Métherie are largely imaginative. Cuvier's Catastrophal Theory still betrays the dominating influences of the older literature. Werner's hypotheses about the origin and development of the earth scarcely rise above the ideas current in the seventeenth and eighteenth centuries. Indeed, the erroneous views held by Werner with regard to the origin of basalt and of volcanoes, together with the one-sided character of his Neptunistic doctrines, appreciably retarded the progress of geology.

The opponents of the Neptunistic doctrines were the Plutonists and Volcanists, who numbered in their ranks many observers of world-wide repute—*e.g.*, Hutton, Dolomieu, Von Humboldt, Von Buch, Breislak. Yet the early Plutonists had no great array of facts before them, and their teaching was necessarily inadequate for purposes of generalisation.

On the whole, however, the close of the eighteenth and beginning of the nineteenth century was a period made memorable in geology by the pioneer labours of a brilliant phalanx of scientific men—Werner, Saussure, Humboldt, Hutton, W. Smith, Cuvier, Brongniart, and others. Their works and teaching stirred new activity and interest in this branch of research in the mining-schools of Europe, and numerous adherents gathered round the intellectual heroes of the age. Students were attracted by the freshness of the