is established in the system of nature, it is in vain to look for anything higher in the origin of the earth. The result, therefore, of this physical inquiry is, that we find no vestige of a beginning, no prospect of an end." The beginnings of the genetic view of geological phenomena, which in Hutton were still mingled with catastrophism, were further developed by Sir Charles Lyell in his celebrated 'Principles of Geology.' When he entered upon his geological researches, which were conducted during his very extensive travels all over Europe, a new element had already been introduced into science, of which neither Hutton nor Werner had been able to avail themselves extensively. This was the identification of geological strata according to the fossil remains which were contained in them,—a realisation of the plan of work already dimly foreshadowed in Leibniz's 'Protogæa,' but nevertheless accepted even by Humboldt as only a doubtful indication.[1] This valuable branch of geological science had been started by William Smith in his 'Tabular View of the British Strata' in 1790, and further elaborated in his geological map of England (1815), which was the fruit of his own unaided labours, "for he had explored the whole country

Lyell. 11.

[1] The Wernerian school are generally accused of having neglected the historical record afforded by fossil remains, and Humboldt, in his 'Essay on the Superposition of Rocks in both Hemispheres' (1823), says (Eng. transl., p. 52): "In the present age naturalists are no longer satisfied with vague and uncertain notions, and they have sagaciously observed that the greatest number of those fossils, buried in different formations, are not specifically the same; that many species which they have been enabled to examine with precision vary with the superposed rocks. . . . Ought we to conclude from this assemblage of facts that all the formations are characterised by particular species? that the fossil shells of the chalk, of the muschelkalk, of the Jura limestone, and of the Alpine limestone, all differ from each other? This would be, in my opinion, to carry the induction much too far."