

1749 he examined the Cretaceous rocks in Schonen, and in the last edition (1768) of his *Systema Naturæ* he gave a complete list of the fossils known to him, and arranged them according to their occurrence in his system of the rock succession. He arrived also at remarkably clear conceptions about the accumulation of different kinds of sedimentary deposit upon the floor of the ocean.

While Linnæus was a true empirical observer, and may be regarded as the founder of constructive geology in Sweden, a contemporary of his, Tobern Bergman (1735-84), inculcated theories regarding mineral structure and the constitution of the earth's crust which were largely adopted by Werner, and were thus destined to wield a European influence. His *Physical Description of the Globe* (1769) was translated into German, and was the foundation of the Wernerian doctrine that the earth's crust was composed of successive strata of different thicknesses and constitution, but uniformly enveloping the spherical earth; further, that these have arisen as chemical precipitates, and not simultaneously, but gradually during protracted epochs of time. In addition there were deposits accumulated by mechanical means and volcanic rocks. He classified the rock-succession in four sub-divisions: (1) *Primitive* rocks, comprising the chemical precipitates; (2) the *Flötz* series, comprising sediments of mechanical origin; (3) *transported* rocks; (4) *volcanic* rocks.

Daniel Tilas (1712-72) made a special study of the erratic blocks and superficial pebble-beds of Sweden. He wrote strongly on the importance of petrography, and to his warm advocacy Sweden doubtless owes the preparation of its earliest geological maps: the map of West Gothland by Hisinger in 1797, and the maps of Nerike, Schonen, West and East Gothland by Gustaf Hermelin, published between 1797 and 1807. Both these authors contributed an explanatory text to their maps, and thus laid the basis of stratigraphy in Sweden. Hisinger (1766-1825) wrote a general description of the mineralogical relations of Sweden; and the second edition, soon after its appearance in 1808, was twice translated into German. This work contains a historical review of all the facts known about Swedish rocks up to that date, and applies Werner's systematic arrangement.

The oldest information about the geography, minerals, and rocks of Norway is to be found in Erich Pontoppidan's *Natural*