

of these rocks, and his clear exposition of their volcanic nature.

After the publication in 1788 of Werner's work on the occurrence of basalt at the Scheibenberg Hill, the difference of opinion between these two geologists began to assume a more personal aspect, and unfortunately ended in a rupture of their friendship.

Voigt published several important papers on the geology of Thuringia in later years, chiefly in mineralogical journals, and he was also the author of the first practical *Text-book of Geognosy* (Weimar, 1792). In the description of the rocks and the order of rock-formations in the crust, Voigt follows Werner's teaching, but he has a more just appreciation of the causes of volcanic phenomena and the origin of volcanic rocks.

His last large work was entitled *Attempt at a History of Coal, Brown Coal and Turf* (Weimar, 1802-5). This contains, in addition to the geological data, practical advice on the determination of workable coal-seams, and the industrial uses of the various kinds of combustible deposits.

A detailed account of several localities in the Thuringian Forest was also given by Johann Ludwig Heim, a Privy Councillor in the Duchy of Meiningen. Heim (1741-1819) was tutor to the Princes of Meiningen, and during occasional journeys he made a large mineralogical collection, and wrote a number of papers compiled into one larger work, *Geological Descriptions of the Thuringian Forest* (Meiningen, 1796-1812). These are distinguished by the independence of his views, acute powers of observation, and his clear descriptions; but there is no geological map, and the stratigraphical details are only illustrated by rough sketches. Hence the work, careful though it was, never received much recognition, and was much less instructive in character than that of Voigt.

Heim referred the origin of the primitive rocks to chemical crystallisation from an indefinite mixture or "fluidum," possibly gaseous in constitution. He allowed that the slates and greywackes ("transitional rocks" of Werner) might have been precipitated from a watery fluid, but he thought it impossible to trace any difference in the ages of the various precipitates. His idea was that all these rocks are arranged in the crust as spherical or elliptical masses whose kernel is