

composed of granite, and whose outer layers comprise porphyry and the primitive rocks. This crude conception of Heim's has certain points of analogy with the much later theory of "central massives" promulgated by mountain geologists.

Heim sub-divided the sedimentary or stratified deposits in four main groups as follows:—

4. Newer limestone, including Muschelkalk and Jurassic limestones.
3. "Bunter" or variegated sandstone (including the sandstone of Fücksel).
2. Older limestone or Upper Dyas ("Zechstein" of Lehmann).
1. Red Underlyer or Lower Dyas ("Rothe Todtliegende" of Lehmann).

He also made a special inquiry into the origin and distribution of basalt, and wrote strongly in favour of its eruptive origin. He regarded it as younger than all four sub-divisions of the sedimentary deposits, and supposed that its eruption had been accompanied by violent crust-movements, during which the rocks were bent and fractured and the mountain-systems were upheaved.

The subjects of denudation and erosion also attracted Heim's attention, and he gave a full description of the erosion of valleys by the agency of running water, enumerating many good examples in confirmation of his ideas ("On the Formation of Valleys," *Voigt's Magazine*, 1791).

One of the most loyal and gifted of Werner's scholars was Johann Karl Freiesleben (1774-1846). He was born and educated at Freiberg, and enjoyed the intimate companionship of his master and patron. While attending Werner's classes he formed the friendship of Von Humboldt, Von Buch, and Von Schlotheim; he afterwards travelled with Buch in Saxony, with Schlotheim in Thuringia, and with Humboldt in the Bohemian mountains, the Alps, and the Swiss Jura mountains.

His first large work, *Description of the Harz Mountains* (2 vols., 1799), contains chiefly mineralogical and technical information, and a later work, *Contributions to the Mineralogical Knowledge of Saxony*, published in 1817, is of the same nature.

As a geologist, Freiesleben accomplished memorable work