

few reports that had been given by travellers merely confirmed the presence of volcanoes in one locality or another, or mentioned the occurrence of the more striking varieties of rock.

*Progress of Petrography—Neptunists, Volcanists, and Plutonists.*—In the older mineralogical literature the rocks also received a passing notice. As a rule, authors limited these remarks to a description of their external features. Cronstedt removed them from this subordinate position, and paved the way for Werner's creative work in establishing the study of the rocks as an independent branch of Geognosy. Werner's classification and description of rock-varieties, published in 1786, comprised all existing knowledge of rocks, and replaced the vague conceptions of former years by a series of exact definitions and the introduction of a new, precise nomenclature. Werner distinguished simple and composite rocks; the former were discussed both as minerals and rock-forms, *e.g.* quartz, gypsum, salt, etc., the latter were identified and classified according to their mineralogical composition and their age, *e.g.* granite, basalt, sandstone, marl, etc.

Each rock was defined in respect of its texture, stratigraphical position, jointing, age, origin, and occurrence. In the case of composite rocks, the *essential* components were distinguished from the *accessory* and the rock was classified solely upon the ground of the *essential* components.

The rapid advance of petrographical knowledge during the first two decades of the nineteenth century was undoubtedly the direct result of Werner's precise methods. All observers during those decades gave marked attention to the determination of petrographical features. Saussure's descriptions of the crystalline massive and schistose rocks in the Swiss Alps can scarcely be surpassed. Monographs appeared from time to time on special varieties of rock. Faujas de Saint-Fond, for example, wrote a monograph on the "trap-rocks," in which he showed how loosely this name had been applied in the literature, so that rocks of many different kinds were embraced under it.

Ferber and Dolomieu investigated the volcanic products of Southern Italy. Desmarest, Faujas, and others examined the Egyptian porphyries and so-called basalts. Leopold von Buch introduced the name of *gabbro*, and described *leucite*.