

of Fleuriau de Bellevue and Dolomieu, to pulverise the apparently homogeneous rock-varieties, to separate the particles by weight, and test them partly below the microscope, partly with the magnet, partly by chemical means; but this manner of research proved far from successful, as it was extremely difficult to identify the minute mineral particles. It showed, however, that basalt was a composite rock.

The Scottish geologist, Professor William Nicol, in 1827 introduced a method of preparing thin sections of fossil woods to be examined by the microscope, and about the same time constructed a polarising microscope for the special investigation of crystals. The insight of this gifted man in petrographical pursuits, no less than in respect of the difficult problems of the geology of the Scottish Highlands, failed to carry conviction into the minds of his contemporaries. A few petrographers certainly adopted his method of examining fossil woods, and it was by this means that Göppert was enabled to detect the important constituents of coal.

In the hands of Ehrenberg, the microscope proved of epoch-making significance. By its use Ehrenberg made the discovery that a number of widely distributed rocks, soft in character, such as chalk and tripolite, as well as certain limestones from the older formations, were entirely composed of the skeletons of lowly organisms (diatoms, foraminifera). Ehrenberg's work on chalk and chalk-marls was published at Berlin in 1839; fifteen years later, in his *Mikrogeologie*, he gave a complete account of his microscopic investigations on the composition of sedimentary deposits, the work being enriched by a very large number of excellent illustrations.

Although Ehrenberg's method of microscopic examination of friable and earthy rock-material had been so eminently successful, it did not seem as if it could be adapted for the investigation of the harder rocks. The thin splinters of a crystalline rock were not sufficiently transparent even when imbedded in Canada balsam, and Nicol's optical method of identifying the mineral fragments was little known. Besides Nicol himself, David Brewster and Humphrey Davy interested themselves in the microscopical examination of the structural relations of minerals, and the frequent fluid inclusions of rock minerals. Scheerer in 1845 identified the hemicrystalline structure of many apparently homogeneous rocks, and in transparent chips of crystals examined by transmitted light