

names would be best applied to some of the eruptive rocks of the older geological formations. The melaphyres, as thus defined, are somewhat dull, dark brown, reddish, or green rocks, often amygdaloidal and showing their porphyritic minerals in an altered condition, the olivines especially being changed into serpentine or replaced by magnetite or even by hæmatite.²⁰²

Nepheline-basalt (Nepheline-Basanite). — Zirkel proved that certain black heavy rocks, having externally the aspect of ordinary basalt, contain little or no felspar, the part of that mineral being taken in some by nepheline, in others by leucite.²⁰³ They are volcanic masses of late Tertiary age, but occur much more sparingly than the true basalts. They are found in the Odenwald, Thuringer Wald, Erzgebirge, Baden, etc. Mean composition—silica, 45.52; alumina, 16.50; ferric and ferrous oxides, 11.20; lime, 10.62; magnesia, 4.35; potash, 1.95; soda, 5.40; water, 2.68. Mean specific gravity, 2.9–3.1. Nephelinite is a form of basalt with no felspar or olivine.

Leucite-basalt (Leucite-Basanite) contains little or no felspar, but has leucite in place of it. Externally it resembles ordinary basalt. This rock occurs among the extinct volcanoes of the Eifel and of Central Italy, and forms the lavas of Vesuvius. Leucitite contains no felspar and no olivine.

Melilite-basalt.—In continuation of Zirkel's research, A. Stelzner has shown that in some basalts the part of felspar and nepheline is played by melilite.²⁰⁴ In outer appearance the rocks possessing this composition, and to which the name of Melilite-basalt has been given, cannot be distinguished from ordinary basalt. Under the microscope, the ground-mass appears to be mainly composed of transparent sections of melilite, either disposed without order, or ranged in fluxion lines round the large olivine and augite crystals; but it also contains chromite (?), micro-litic augite, brown mica, abundant magnetite, with perowskite, apatite, and probably nepheline. (Swabian Alb, Bohemia, Saxon Switzerland, etc.)

²⁰² For some account of the use of the word melaphyre see Brongniart, "Classification et Caractères minéralogiques des Roches homogènes et hétérogènes," 1827, p. 106. Naumann, "Lehrbuch der Geognosie," i. p. 587. Zirkel, "Petrographie," ii. p. 39. Rosenbusch, "Mikroskop. Physiogr." ii. p. 484.

²⁰³ "Basaltgesteine," 1870.

²⁰⁴ Neues Jahrb. (Beilageband), 1883, p. 369–439.