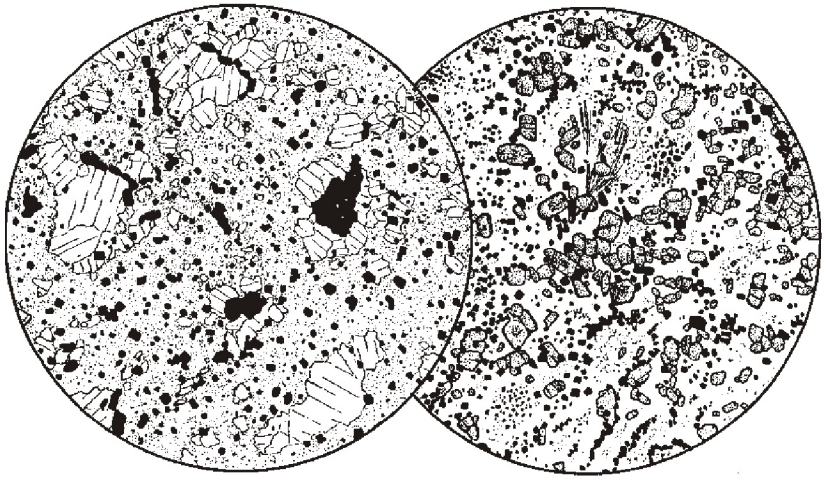
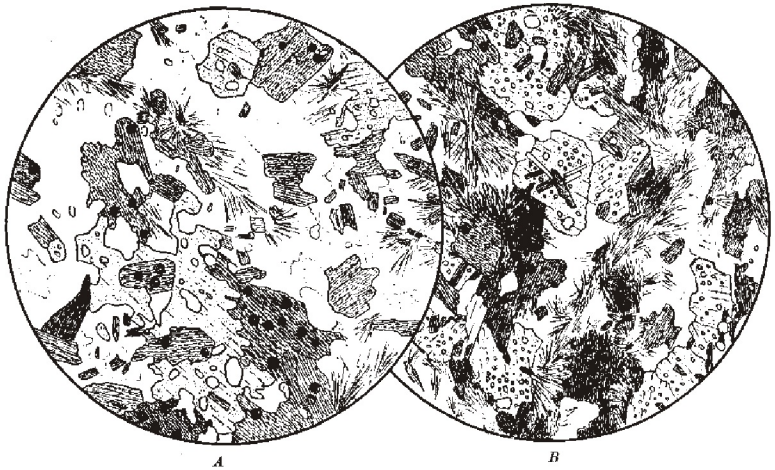


A B

FIG. 16.—HIGH-GRADE TYPES OF HORNFELS POOR IN SILICA, from the aureole of the Càrn Choìs diorite, near Comrie, Perthshire; × 23.

*A*. Pleonaste-Orthoclase-Cordierite Hornfels. The nearly opaque octahedra are of a spinel near pleonaste; the clear crystals showing cleavage are of orthoclase; the rest is a granular aggregate of cordierite.

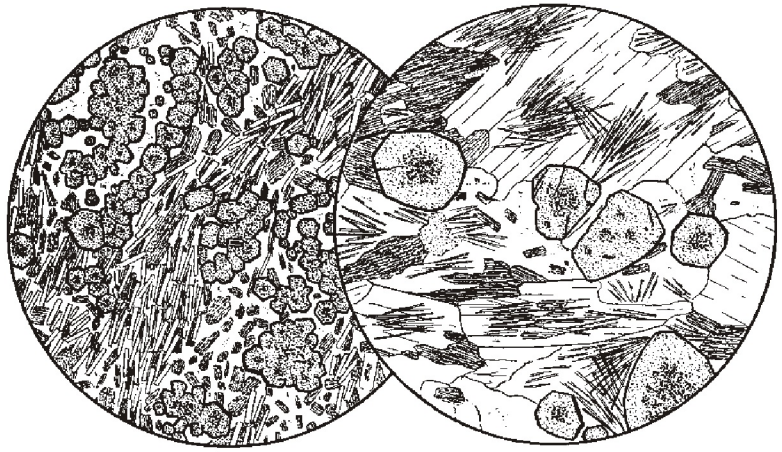
*B*. Corundum-Cordierite Hornfels. The conspicuous crystals showing in relief are of corundum; the opaque mineral is pleonaste; and the other constituents are alkali-felspars and cordierite. This is the rock analysed by Tilley, *Quart. Journ. Geol. Soc.*, vol. lxxx (1924), p. 46.



A B

FIG. 15.—SILLIMANITE-CORDIERITE-GNEISS, M'Phatleles Location, Northern Transvaal; × 23.

From the aureole of the Bushveld plutonic complex (Hall, *Tsch. Min. Pet. Mitt.*, vol. xxviii (1909), p. 135). The sillimanite, in closely packed bundles of fine needles, is forming at the expense of the biotite. Cordierite, enclosing quartz-granules, is conspicuous (over-emphasized in the drawing). Other constituents of the rock are orthoclase, quartz, some andalusite and muscovite, and minute zircons, causing dark haloes in the biotite.



A B

FIG. 17.—HIGHLY METAMORPHOSED ARGILLACEOUS SEDIMENTS of Silurian age bordering the Cairnsmore of Fleet granite at New Galloway; × 25.

*A*. Garnet-Gneiss. This has been a rather siliceous shale, and contains abundant quartz. The other chief constituents are garnet, muscovite, and biotite.

*B*. Sillimanite-Gneiss: a very coarse-grained rock consisting of garnet, two micas, quartz, and some felspar, with abundant needles of sillimanite, mostly enclosed in the muscovite.