

are practically absent over considerable areas, and, where they do occur, are mostly few and small. Yet such rocks are repeatedly found shading locally into others with much less apparent gneissoid structure, with feldspar augen quite frequent and with definite cataclastic structure; rocks whose original igneous textures are sufficiently well preserved to show their origin beyond a doubt.

In some cases, notably at Little Falls and Middleville in Herkimer county, where outliers of these rocks occur and where the augen are bigger and more numerous than at any other known localities, the rock seems to have originally been rather coarsely porphyritic. But for most of the rock in the region this does not seem to have been true.

*Mineral composition.* At the type locality, Loon lake, the rock is a quartzose augite syenite, and, since this is the prevailing character over much of the region, the description of the type will serve well for a general description of the rock.

In the Loon lake rock microperthite and oligoclase feldspars, augite and hypersthene (or bronzite), hornblende, magnetite, quartz, garnet, apatite and zircon are always present, and locally biotite, titanite, pyrite and allanite appear in addition. The rock is essentially composed of microperthite, augite and hypersthene, with quartz, oligoclase and garnet always present in varying and usually slight amount.

The feldspar is mostly microperthite. A little plagioclase always appears and seems universally to be oligoclase. Most of the plagioclase present is intergrown with orthoclase in the microperthite, and the chemical analysis indicates that this must be albite. The feldspar is usually perfectly fresh and contains to some extent minute, dustlike inclusions, as well as including small zircons, apatites and titanites and occasionally small augites and quartzes also. Orthoclase is only present as a constituent of the microperthite.

Both augite and hypersthene are usually present, the former mostly predominating. Parallel growths of the two frequently occur, often of repeated fine lamellae, the contact faces being as usual. The augite is deep green in thin section, quite like the green of the hypersthene.