

10% to 25% of minerals other than feldspar. Much of it is very gneissoid and finely granular, with great development of garnet. Elsewhere it becomes tolerably coarse with frequent, often very large feldspars remaining. It varies very rapidly in character from place to place, so that practically all varieties of the rock may be collected within a small area. This, together with the accessibility of the locality and the frequent exposures, make it a magnificent collecting ground.

The Rand hill rock departs somewhat from the ordinary type and is a most interesting rock. It is mostly thoroughly gneissoid and with no feldspar augen, these only appearing in quantity at the northern edge of the exposures. Since this is the more likely condition of the central part of the mass, and since further exposures in this direction are cut off by the overlying Potsdam sandstone, it is probable that the rock extends considerably farther northward under the Potsdam covering.

The most important difference between this rock and the usual anorthosite gabbro consists in the constant presence of quartz in considerable amount, forming from 5% to 10% of the rock. Another difference is found in the comparatively large amount of apatite present, the average of the rock holding from 3% to 5% of this mineral and the amount not infrequently rising to 10%. Aside from these the minerals are those of the usual anorthosite gabbro, though the minerals other than labradorite form from 30% to 35% of the rock.

The primary minerals which have been noted in the rock are feldspar (usually labradorite), augite, quartz, hornblende, hypersthene, apatite, ilmenite, zircon, pyrite, pyrrhotite and titanite. Secondary minerals are garnet, hornblende, biotite and quartz. There are other minerals present which have resulted from surface alteration of the foregoing, but they are the usual decomposition products formed under such circumstances. The order of crystallization was the usual one, first the zircon and apatite followed by the iron ores, then the hypersthene, augite and hornblende, then the feldspar and finally the quartz. The periods of formation of the pyroxenes and feldspar largely overlap. Augite is