

tion of them. They occur for the most part in very irregular dikes, often of very small width. They belong to the peridotite class of igneous rocks, the most basic of any. Such rocks are prone to rapid decay, and these are no exception, all of the known exposures being considerably, and many of them highly altered and rotted.

In general their mineralogic make-up is of biotite, olivin, pyroxene and melilite, with accessory magnetite, perovskite and apatite. Wherever sufficiently fresh material has been forthcoming, the presence of melilite has been noted, Smyth having early shown its presence in the Manheim rock and having recently detected it in some new material from the Syracuse vicinity. Alnoite is the name applied to a melilite holding peridotite. All the rock contains biotite and olivin in quantity, but the pyroxene is much more irregular in its occurrence. It is rare or else absent in the Manheim rock; while Kemp has shown that it is the main mineral of the ground-mass in the Dewitt dike near Syracuse. Likely some glassy base was present in nearly all occurrences. In all except the freshest rocks the olivin has gone to serpentine, and Smyth has described in detail the processes of alteration and decay.

*Chemical analyses.* Since these rocks are all considerably altered, analyses of them are not trustworthy if what is sought is the actual composition of the fresh rock. Yet, if the analyses are made from the freshest possible material they will give good evidence of the general character of the igneous magma, and of the closeness of correspondence of the rocks from the separate occurrences.

	1	2	3	4
SiO <sub>2</sub> .....	36.8	33.8	35.25	37.44
Al <sub>2</sub> O <sub>3</sub> .....	4.16	6.84	6.1	28.6
Fe <sub>2</sub> O <sub>3</sub> .....	n. d.	12.26	8.53	11.92
FeO .....	8.33	n. d.	5.6	n. d.
MgO .....	25.98	21.38	20.4	1.97
CaO .....	8.63	9.5	7.4	5.45
Na <sub>2</sub> O .....	.17	n. d.	.7	.97
K <sub>2</sub> O .....	2.48	n. d.	2.88	1.02
Loss <sup>1</sup> .....	12.25	15.2	12.4	12.67
Sum .....	100.27	98.98	99.26	100.04

<sup>1</sup>In no. 1 includes H<sub>2</sub>O + 6.93, H<sub>2</sub>O - .51, CO<sub>2</sub> 2.95, TiO<sub>2</sub> 1.26, P<sub>2</sub>O<sub>5</sub> .47, MnO .13; in no. 3 includes TiO<sub>2</sub> 2.25.