

mica", while olivine, titanite, apatite, and other accessories are often present; "nephelite is present only in very small amount and hastine can be occasionally detected". The second intrusion occurred on the north side of the essexite body, where a mass of nephelite-syenite cuts the essexite and sends off arms into it; the contact is well exposed at the Corporation quarries. This rock is "composed essentially of orthoclase, nephelite, and green hornblende, with small quantities of plagioclase, pyroxene, garnet and nosean, and other accessory minerals"; Dr. Harrington has also found sodalite in it in some places.¹

These main intrusions were followed by the formation of great masses of breccia in sheets and dykes intruded into the sediments surrounding the igneous core of the mountain, and by a complementary set of dykes of the bostonite-tinguaite-monchiquite series, cutting all the earlier rocks and one another. In the excavation for the Montreal reservoir on McTavish street, Dr. Harrington was able to determine five distinct sets of dykes, and to recognize their relative order of intrusion. There is also a dyke of alnoite² found at Ste. Anne de Bellevue, "which is probably also connected with the Mount Royal intrusion." The breccias of Mount Royal have been investigated by Robert Harvie,³ who finds them to be of intrusive origin; they contain fragments of all the local formations from the Potsdam to the Oriskany, and are well exposed in many places, perhaps best on St. Helen island. The churning action which brought together in this breccia, fragments of rock of such widely different horizons (Oriskany to Potsdam) would suggest that the conduit of the magma extended right to the surface.

In referring to the origin of Mount Royal, Dr. Adams says,⁴ "In a recent paper by Buchan (Can. Rec. Sci., Vol. VIII, 1901, p. 321) the view was put forward that Mount Royal represents the remnant of a denuded laccolite—on the ground that on one side of the mountain, towards the summit, there is an isolated mass of flat-lying, altered Palaeozoic limestone, evidently a part of the sedi-

¹ Drs. Harrington and Adams as recorded in the Ann. Rept., Geol. Surv. Can., Vol. VII, Pt. J, pp. 74-75.

² Adams, F. D. Dr., Am. Jour. Sci. 3rd Ser., Vol. XLIII, pp. 269-279.

³ Proc. Roy. Soc. Can., 3rd Ser., Vol. III, Sec. 4, pp. 249-299, 1910.

⁴ "The Monteregian Hills.—A Canadian Petrographical Province," Jour. of Geol., Vol. XI, No. 3, p. 253.