

## MANGANESE DEPOSITS OF AROOSTOOK COUNTY, MAINE

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### RESUME OF 1971 RESEARCH ON MANGANIFEROUS DEPOSITS IN AROOSTOOK CO. MAINE, USA

Low-grade, lenticular, sedimentary ferruginous manganese deposits occur in 3 districts in northeastern Maine. They are enclosed in slate, siltstone, and graywacke of Silurian and Early Devonian (rare) age and are believed to have formed as impure chemical precipitates whose deposition was controlled by Eh-pH fluctuations [PAVLIDES, 1962]. The manganese occurs chiefly in carbonate (carbonate facies) and braunite, carbonate, bementite, and spessartite (local) in the hematitic (oxide facies) deposits.

Recently completed quadrangle mapping by LOUIS PAVLIDES in the southern manganese district of Aroostook County indicates that all the deposits except one (Lower Devonian) occur in the Silurian Smyrna Mills Formation of Llandoverly to Early Ludlow age. The deposits locally contain magnetite believed to reflect the regional chlorite grade of metamorphism they have undergone. They occur on the limbs of an anticlinal orocline, the south flank of which strikes into the contact metamorphic aureole of several granitic plutons. The contact aureole is characterized by positive magnetic anomalies, the largest of which are caused by the contact metamorphosed ferruginous manganese deposits that have been recrystallized to manganiferous ironstones. Such ironstones consist of black fine-grained thinly layered quartz-free rocks composed chiefly of magnetite, manganiferous cummingtonite-grunerite amphibole and manganiferous garnet in various proportions and combinations within the different thin compositional layers and laminae of the rocks. Other associated metamorphic minerals that are locally present include biotite, fayalite, pyroxmangite, and possibly perovskite(?) and spinel(?). This mineral assemblage resembles that of the eulysites (except for the absence of pyroxene) described by TILLEY [1936]. The fraction of the manganese in the metamorphic minerals of the Aroostook "eulysitic" meta-ironstones awaits electron probe analysis.

## REFERENCES

- PAVLIDES, LOUIS [1962]: Geology and manganese deposits of the Maple and Hovey Mountains area, Aroostook County, Maine: U. S. Geol. Survey Prof. Paper 362, 116 p.
- TILLEY, C. E. [1936]: Eulysites and related rock types from Loch Duich, Ross-shire: Mineralog. Mag., v. 24, p. 331—342.

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