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The Marmora, Ontario Skarn Deposit

RUTSTEIN, M. S. and VOLLMER, F. W.,
Geology Department, State University of New York, College at New Paltz, New Paltz, NY 12561.

The Northwest Adirondack Lowlands have abundant and well-described exposures for teaching geological principles. A traverse to the northwest across the Frontenac Axis is a very worthwhile side trip from this region.

Approximately 125 km from the Thousand Islands area is the former Bethlehem Steel Marmora Iron Mine. The operation is presently closed and the quarry is slowly filling with water, but arrangements may still be made for class visits. The massive dump piles have abundant, large samples of ore and country rock, including iron oxides, iron sulphides, and calc-silicates (andradite and epidote). Excellent examples of various fold styles can be collected in samples from the tailings piles. In the quarry, varied diabasic lithologies and textures are well-exposed.

The contact zone between the intrusive gabbro and the highly altered and folded Grenville marble is presently accessible for direct study. Ore localization and skarn mineralogy can be mapped horizontally and vertically. The Precambrian joint and fault systems can be mapped and correlated with structures in nearby road cuts.

Precambrian rocks are overlain by carbonates of the fossiliferous Black River Group. Lower Paleozoic marine transgression over the Eocambrian-Cambrian erosion surface swept up the deeply developed laterite zone, coloring the basal several meters of the limestone a deep red. Observers can readily follow unweathered igneous and metamorphic rocks into the paleosol zone and through the basal carbonate sequence. Abundant sedimentary structures illustrate the rapidly changing depositional environment.