SELECTED STUDIES OF ARCHAEAN GNEISSES AND LOWER PROTEROZOIC ROCKS, SOUTHERN CANADIAN SHIELD. Edited by G. B. Morey and G. N. Hanson, Geological Society of America, Special Paper 192, 1980, 175 pp.

This special volume, representing a collection of thematic papers on the Lake Superior region, is a fitting tribute to Sam Goldich whose work in Minnesota River Valley has won him wide acclaim. G. B. Morey and G. N. Hanson, the editors of this volume, are to be congratulated for their excellent effort in assembling papers from renowned scientists working in this classic region.

The volume lays considerable stress on the petrochemistry and geochronology of the Archaean high-grade terrain of Minnesota River Valley. The index map of southern Minnesota River Valley on page 2 and the general geological map of Lake Superior region on page 115 provide the geographic setting for this volume. There are three important papers by Sam Goldich and his co-workers on the origin of the Ancient Morton Gneiss, with special reference to its lithology, geochemistry and geochronology. The mafic enclaves in these gneisses are described by Nielsen and Weiblen. Goldich and his colleagues have also described the granitic rocks of Granite Falls – Montevideo area, where multiphase deformation and metamorphism are evident (R. L. Bauer) and late to post tectonic granites are common (Doe and Delevaux).

Archaean tonalitic gneisses from Michigan are described in two papers by Peterman, Zartman and Sims, and McCulloch and Wasserburg. Granitic rocks involved in the Proterozoic-Penokean orogeny (1800-1900 m.y.) from Wisconsin are covered in three papers by Sims and Peterman; Maass, Medaris and Van Schmus; and Van Schmus. A solitary paper by Nikic and co-workers from the adjacent Slave Province gives a clue to the ancient pre-greenstone crust sampled by a basic diatreme from the Yellowknife area.

The emphasis of most papers is on the repeated deformation, metamorphism and related granitic activity affecting the region over a protracted period (3500-1100 m.y.) which is the hallmark of a permobile, Archaean high-grade terrain, in strong contrast to the more passive greenstone terrain adjacent to it. The controversial relationship between the greenstone and gneissic terraines is elaborated with examples from Wisconsin and Michigan in a paper by Sims, which is an extension of his earlier work (Morey and Sims, 1976) from Minnesota. These authors rule out the presence of a convergent plate boundary in the area, and describe a large granite batholith occurring close and subparallel to the boundary. The similarity of this setting to Closepet Granite which marks a comparable boundary between two tectonic subprovinces, but in a low-grade terrain, is striking. Both batholiths denote an extensional tectonic regime, whose fundamental importance to Archaean tectonics is still enigmatic.

The compendium of papers is well got-up. Some photographs lack clarity and a few tables are nearly unreadable because of the thin and small lettering, although most tables and line diagrams are nicely reproduced. Some modal data are plotted on the obsolete Johannsen (1939) diagrams, when a later IUGS classification (1973) is available to facilitate a world wide comparison. These minor short comings do not detract from the value of this good volume of collected papers.

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