

Special Issue: Late Paleozoic sedimentation and tectonics of the northern Appalachians

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**A SPECIAL ISSUE OF
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**LATE PALEOZOIC SEDIMENTATION AND TECTONICS
OF THE NORTHERN APPALACHIANS**

Edited by

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FOREWARD

Since the early 1980s there has been a renewed interest in the late Paleozoic geology of eastern Canada. This resulted partly from a resurgence of exploration and development work in the Sydney, Pictou, and Cumberland coalfields. Several studies were funded by recent federal-provincial Mineral Development Agreements. Much of the emphasis of recent work has been on basin analysis and petrology of coals and oil shales, but related studies have included structural analyses, deep seismic profiles, petrology of igneous plutons, paleomagnetic studies of redbeds, invertebrate paleontology, paleobotany, and palynology. Results of several such studies were presented at a special session on Late Paleozoic Sedimentation and Tectonics of the Northern Appalachians, organized by G.M. Yeo and R.S. Hyde as part of the May 1988 Geological Association of Canada Annual Meeting in St. John's, Newfoundland. This was followed by a five-day field trip, led by R.S. Hyde, to the Carboniferous Deer Lake and St. Georges Basins of western Newfoundland. Several of the papers from this meeting are presented in this special issue of *Atlantic Geology*.

The scope of these papers ranges from regional overviews to detailed investigations of individual beds. This reflects the necessity of studying problems at a range of scales.

The first three papers in this issue show how contrasting sedimentary styles characterize the two major late Paleozoic tectonic events, the late Devonian Acadian event and the Carboniferous Alleghanian event. Devonian-Carboniferous clastic strata of the Gaspé Peninsula are shown by Rust, Lawrence, and Zaitlin to be related to convergence of Avalonia with eastern North America. Hyde shows how middle Carboniferous sedimentation in the Deer Lake Basin of western Newfoundland was controlled by major dextral wrench faults. Van de Poll summarizes the stratigraphy of the post-Alleghanian redbeds of Prince Edward Island and proposes revisions to regional stratigraphic nomenclature, which has long needed updating.

Two papers relate late Paleozoic igneous activity and local deformation to regional tectonism. Pe-Piper, Murphy, and Turner describe early Carboniferous granites in the Cobequid Highlands of Nova Scotia, emplaced during regional extension; possibly related to convergence of the Meguma and Avalon Terranes. Waldron, Piper, and Pe-Piper describe deformation in the early Carboniferous Cape Chignecto pluton in the western Cobequid Highlands, which indicate early Carboniferous northward overthrusting, not previously recognized. Like the Cobequid granites, this deformation may reflect Meguma-Avalon convergence.

Two papers deal with paleontologic problems. Dewey shows how lower Carboniferous ostracode assemblages from Newfoundland and Nova Scotia reflect fluctuating paleoenvironmental conditions, and how they may be used as predictors of paleoenvironment. Zодrow refines the paleofloral zonation of the Westphalian C to Cantabrian Sydney Basin.

The last three papers concern the Pictou Coalfield, Nova Scotia. Paul, Kalkreuth, Naylor, and Smith document the petrology and organic geochemistry of the McLeod Seam and show how these reflect rapid environmental shifts during deposition. On the basis of organic geochemical variation of an oil shale - coal interval, Püttmann and Kalkreuth show that aromatic hydrocarbons are sensitive organo-sedimentary facies indicators. Yeo shows how a coal facies analysis scheme using microlithotypes can be applied to the thick Foord Seam, to document short-term paleoenvironmental fluctuations.

Each of these papers was read by at least two independent reviewers. The editor is very grateful for their efforts, which resulted in improvements to the papers in this issue. The quality of a journal is as much a reflection of the conscientiousness of its unsung reviewers as of its contributors. Thanks are also due to Darlene Feener, Production Manager of *Atlantic Geology*. Publication costs were partly supported by a grant from the Geological Survey of Canada.

Gary M. Yeo