

Special Issue: Devono-carboniferous geology of Atlantic Canada

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**DEVONO-CARBONIFEROUS GEOLOGY
OF ATLANTIC CANADA**

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FOREWORD

The geological period spanning the Devonian-Carboniferous is of utmost significance in Atlantic Canada as represented, for example, by the Acadian Orogeny, widespread felsic \pm mafic magmatism and development of the large Carboniferous Maritime Basin. In addition, an integral part of each of these aforementioned processes is the association of mineralization, including metamorphogenic auriferous quartz-vein deposits, lithophile-element greisens and veins, and volcanic- and carbonate-hosted base metal deposits, to name just a few. This issue of *Atlantic Geology* presents a total of 14 papers and abstracts which together address a wide spectrum of geological phenomenon related to the Devonian-Carboniferous period. The abstracts are from a symposium held at the 1992 Annual Atlantic Geoscience Society Meeting and Colloquium held in Fredericton, New Brunswick, January 31 to February 1, 1992.

Several papers and abstracts in the issue resulted from recent work conducted on the large (7300 km²), peraluminous South Mountain Batholith (SMB) as part of the Canada-Nova Scotia Mineral Development Agreement (1984-1989). MacDonald *et al.* present a synthesis of their regional mapping and follow-up petrological studies of the SMB. This is the first detailed map ever produced for the SMB and the work demonstrates that the batholith represents the coalescing of several plutons (n=13) which are clearly distinguished on the basis of petrological features. Horne *et al.* discuss the structure and emplacement of the SMB by examining the role of primary and secondary structural features. These phenomenon reflect the presence of convection cells within some plutons, the role of pre-existing structures in controlling the emplacement of plutonic centres and the pivotal role of structure in controlling specific types of mineralization (U versus Sn \pm W \pm base metal). Corey summarizes the complex magmatic and metasomatic processes involved in the evolution of one of the plutonic centres in the eastern SMB. This study includes the first documentation of cumulate(?) features in the SMB. Finally, Kontak and Dostal discuss the petrology of the metasedimentary wall-rocks at the East Kemptville Sn-Zn-Cu deposit and their role in the formation of the deposit. Of petrogenetic importance to the SMB is the paper by Douma discussing the geology of the Port Mouton pluton which also represents the first detailed study of this intrusion. The paper demonstrates the cyclic nature of the magmatism and the presence of tonalitic units within the intrusion.

Barr and MacDonald provide an excellent overview and synthesis of a large data base accumulated for several plutonic centres in southern Cape Breton Island. The geological setting, petrological features, petrogenesis and related mineralization of the suites vary considerably despite their close spatial and temporal association. Similarly, Dickson *et al.* (abstract) summarize the results of their extensive work on the Paleozoic granites of Newfoundland and demonstrate how the petrological features of the granites and related mineralization reflect the different protoliths which reflect the different terranes comprising insular Newfoundland. Several papers address the theme of magmatism and mineralization in northern New Brunswick, including abstracts by McCutcheon *et al.* on endogranitic Sn mineralization beneath the Nigadoo River base metal deposit and Gardiner on metallogeny of the Jacquet River area. A more extensive account of magmatism and mineralization in this area is given by Wilson in his paper describing the physical volcanology and nature of associated base-metal mineralization at the recently discovered Sewell Brook massive sulphide deposit.

In conclusion, Grammatikopoulos and Barr (abstract) discuss the petrogenesis and related mineralization of some layered mafic intrusions in Cape Breton and southern New Brunswick which they suspect to be of Devonian age, and Kontak (abstract) summarizes recent geological, geochemical and fluid inclusion work at a Carboniferous carbonate-hosted Pb-Zn deposit (Gays River) in Nova Scotia.

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Guest Editor