

Geology of Canada (6th Edition): Canadian Contribution to DNAG

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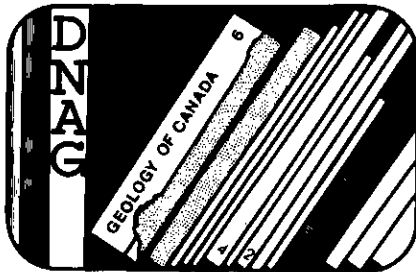
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Articles



Geology of Canada (6th Edition): Canadian Contribution to DNAG

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Preparation of the new edition of the Geology of Canada is well under way. In fact, the manuscript of the first volume, *Quaternary Geology of Canada and Greenland*, was submitted in July 1985. The organization and content of the 6th Edition differs in many ways, however, from previous editions prepared entirely by staff of the Geological Survey of Canada.

This Edition is a multi-volume work comprising six regional volumes and three of national, topical interest. It involves more than 230 authors and contributors, of which nearly half are from 60 institutions outside the Geological Survey of Canada. The nine volumes of the 6th Edition, in addition to being the Geological Survey's periodic review of the geology of Canada, are also Canada's contribution to the Geological Society of America's Centennial Project — The Decade of North American Geology (DNAG) — which culminates in 1988, the centennial year. This project, which will result in at least 28 volumes, will be the first comprehensive synthesis of the geology of North America. Canada has the special additional responsibility of incorporating the geology of Greenland into the relevant volumes. This is being done with the co-operation of the Geological Survey of Greenland.

Thematic maps of North America at 1:5 million scale are being prepared to display the geology, tectonics, magnetic anomalies, gravity, seismicity, geothermal anomalies, crustal stress and neotectonics. Canadian maps at 1:5 million scale are being prepared of surficial materials and of mineral deposits. The regional volumes will include various larger scale maps to display themes such as physiographic subdivisions, metamorphic facies, times of deformation, plutonic rocks, and tectonic assemblages.

Each hard-cover volume will be about 400 quarto-size pages with provision for up to 10 pocket items such as maps, structure sections, and correlation charts. The front cover will carry an appropriate photograph or engraving. The text will include numerous half-tone plates and a few in colour. By judicious use of two colours — black and red — for the text and line drawings we hope to produce informative, readable and attractive volumes at reasonable cost.

Outlines of the contents of the regional and Quaternary volumes appeared in the GSA DNAG Special Publication 1: *Perspectives in Regional Geological Synthesis*. From this volume, it is clear that the presentation of the geological evolution of Canada in the context of plate tectonics will be a major departure from the last edition of the Geology of Canada, published in 1970, just as the new theory was becoming widely accepted. Moreover, the subsidiary concept of "terrane tectonics", in which large fragments of orogens are believed to have originated elsewhere before being accreted to the continent, has further reshaped the way in which Canadian geology is now interpreted.

The last edition was largely descriptive, recording the geology at the time the reconnaissance mapping of Canada was nearly finished. The new edition, however, will reflect our increased knowledge in light of completion of the geological reconnaissance, substantial revision mapping, increased geophysical coverage, notably availability of extensive regional magnetic anomaly and gravity maps and of deep, high-resolution seismic profiles, and an improved understanding of geological relationships previously poorly known. This improvement results from many

advances over the last 20 years such as: better dating of geological formations and events from a variety of recently applied micro-paleontological, palynological, isotopic, chemical and lichenometric methods; new information from paleomagnetic studies and from the provinciality of faunas indicating large horizontal displacements; geobarometric, geothermometric and fission-track techniques that reveal significant vertical movements; as well as numerous stratigraphic studies that yield new insights into the geological and tectonic environments of deposition. Accordingly, this edition will include an expanded treatment of the processes by which rocks and unconsolidated sediments were deposited and emplaced. Considerable attention will also be paid to the interpretation of geophysical and geochemical data and to the linking of mineral and fossil fuel deposits with the treatment of the regional geology.

The volumes, in the order in which they will appear, are listed below; volume leaders in brackets.

Quaternary Geology of Canada and Greenland (R.J. Fulton)
Atlantic Margin: Canada (M.J. Keen and G.L. Williams)
Appalachian Orogen in Canada and Greenland (H. Williams)
Innuitian Orogen and Arctic Platform (H.P. Trettin)
Cordilleran Orogen (H. Gabrielse and C.J. Yorath)
Sedimentary Cover of the Craton: Canada (D.F. Stott and J.D. Aitken)
Precambrian Shield: Canada and Greenland (P.F. Hoffman, K.D. Card and A. Davidson)
Mineral Resources of Canada (R.I. Thorpe)
Geology of Canada: Summary (J.O. Wheeler)

Canadian earth scientists are also contributors to the DNAG Arctic Ocean Basin volume, to several DNAG topical volumes such as those dealing with geohydrology, geomorphology, and neotectonics of North America, and to the North American thematic maps.

Work is proceeding on all volumes, except the Canadian Summary volume. Most volumes are two to six months behind schedule which is perhaps not unexpected when so many authors, contributors and institutions

are involved. The English Edition of each volume is expected to be published ten months after the external review and revision of the manuscripts. The French Edition will be completed six months later. The aim is to have all the volumes and maps published by the end of 1988.

Work is also progressing on all regional, national and North American thematic maps. As of July 1985, drafts of the geological maps of the Innuitian Belt, the Cratonic Cover and Cordillera Foreland Belt, and of the Grenville Province as well as a geological and a tectonic map of the Superior and Southern Provinces of the Canadian Shield have been completed.

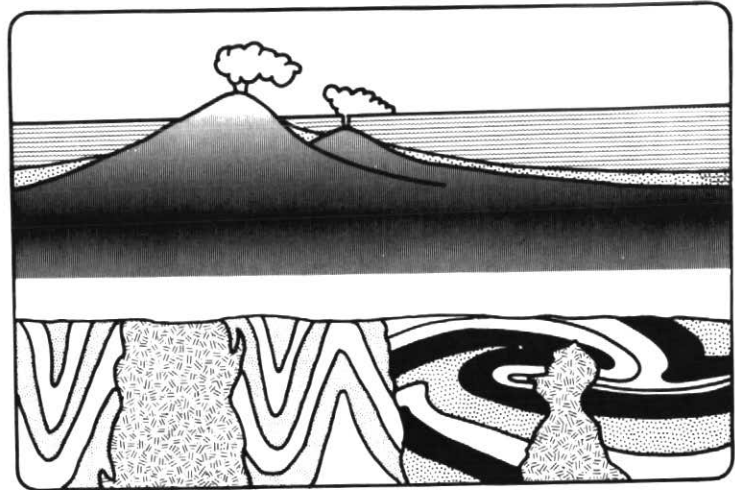
An abundance of talent is involved in the Geology of Canada DNAG project under the leadership of proven synthesizers. Moreover, highly-regarded expert and generalist external reviewers have agreed to help. Accordingly, Canadian earth scientists can look forward to readable, informative and well-integrated syntheses of which they can be proud.

In view of the new plate tectonic conceptual framework within which the new edition of the Geology of Canada has been written, the Editor of *Geoscience Canada* felt it was time for a series of general articles that would briefly present the new interpretations of the geology of Canada. These articles are intended, in part, to be an up-to-date aid for teaching regional geology. They will also advertise the DNAG project and draw attention to some of the new insights and exciting interpretations contained and documented in the volumes. The paper in this issue "Subdivisions of the Superior Province of the Canadian Shield" by Ken D. Card and André Ciesielski, is one such example. The Editor has a commitment from several leaders and contributors so that, although the coverage may not be comprehensive, enough material is available to embark on a series entitled "Geology of Canada — a new look from the DNAG project".

GAC Special Paper 28

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