

presentation of the characteristic speech patterning and Cruikshank's sensitivity to the women's vivid metaphorical phrasing preserved even in English are elegant and satisfying. Some native terms are necessarily incorporated into the texts because each woman in these matrilineal societies followed the approved cultural pattern of beginning her personal account with a genealogy of her ancestors — first the mother's line and then the father's — and also because so much of the oral narrative is intimately tied up with native place names in the local landscape. The three genealogical charts and a glossary of native terms are useful aids for those who block at the sight of unfamiliar linguistic terms and orthographies.

The book is not a study either of interaction between traditional oral performers and non-literate audiences. Cruikshank and her native collaborators knew that times had changed drastically since the women were young. In fact, a major thrust of each of the life stories is how the protagonists adapted to or resisted the changes, and their conscious effort was, with the aid of Cruikshank, to transmit their life stories to a *literate* younger generation. As such, their endeavours are very much part of the current scene in Yukon and countless other places where natives wish both to preserve and to learn from key aspects of their heritage. *Life Lived Like a Story* is a superb model of how this can be done. It is a work of true collaboration between native and non-native. It is also a sophisticated and ground-breaking contribution to anthropological scholarship and practice, adding significantly to our understanding both of northern Tlingit and Athapaskan culture history and of the nature of orally transmitted life histories. Embodying mutual respect and understanding, this book points to the kind of relationship between native Americans and anthropologists that both groups can increasingly hope for in the future and from which both can profit equally. Beyond all that, all readers sensitive to the human condition, no matter what the cultural context, will find the lives of these women and their ways of conveying them to be absorbing and unforgettable.

Cruikshank adds in a postscript to her preface that Kitty Smith died in 1989, before the book was published, and that Annie Ned was awarded the Order of Canada in 1990. It is sad to have to report the death in November 1991 of Elijah Smith, Annie Ned's son by her first husband, a native leader well known throughout Canada and the founder of the Council for Yukon Natives. With great regret I must also record that Angela Sidney died in July 1991. For good reason several major Canadian newspapers noted her passing and paid tribute to this unparalleled storyteller who tried to live her life "like a story."

Catharine McClellan
University of Wisconsin
Madison, Wisconsin 53706
U.S.A.

QUATERNARY GEOLOGY OF CANADA AND GREENLAND.

GEOLOGY OF CANADA, No. 1. Edited by ROBERT J. FULTON. Ottawa: Canadian Government Publishing Centre, 1989. 839 p., 5 folded maps in box. Hardbound. Cdn\$70.00 (in Canada), US\$84.00 (other countries), plus postage and handling.

The publication of this volume marks a very significant milestone in the studies of Quaternary geology in Canada and perhaps also in Greenland. Compared with previous reviews of Quaternary geology of Canada, this is by far the most comprehensive, detailed, and up-to-date treatise on the subject. The truly monumental task has been admirably accomplished by the editor and the many authors, who all deserve full credit for a very difficult job well done. In view of the geographical size and geological complexity of the regions covered in this work and the great variety of available information, the synthesis of the total data base into one volume is remarkably successful. However, because of the vast amount of information contained in this book, it is certainly a challenge and requires considerable effort and persistence to read it from cover to cover. For this reason, it is a difficult book to review — a problem exacerbated by the fact that this

volume also covers many aspects of Quaternary research in addition to geology in the narrow sense. In my opinion this particular aspect of the work is a major strength of the book and it can serve as a source of reference data and inspiration to both professional Quaternary geologists as well as to students and many "friends of the Quaternary" in the more general sense.

The 839-page book and the box of maps are attractive in appearance and sturdy enough to withstand long-term use in any reference library. I consider this to be a definite asset, because I have several volumes in my own library that have fallen apart rather quickly in spite of tender loving care. The use of colour in illustrations is a very pleasing and helpful feature. Typographical errors are rare, indeed, and indicate excellent editorial management of the publication. On pages 7 and 8 we find "Innuition Region" and "Innuition Ice Sheet" instead of Innuitian Ice Sheet. Also on page 7, lower case is used for "Cordilleran ice sheet," whereas elsewhere it is consistently capitalized — Cordilleran Ice Sheet.

The Canadian territory is subdivided into six physiographic regions: 1) the Cordilleran region, 2) the Interior Plains, 3) the Canadian Shield, 4) the St. Lawrence Lowlands, 5) the Atlantic Appalachian region, and 6) the Queen Elizabeth Islands.

Under the heading of "Canadian ice sheets," four subdivisions are recognized: 1) Canadian Cordillera — equivalent to Cordilleran ice and the Cordilleran region; 2) Central Canada (further subdivided into: a) Canadian Shield, b) Interior Plains, c) St. Lawrence Lowlands, and d) Arctic Lowlands); 3) Atlantic Appalachian area; and 4) Queen Elizabeth Islands area — equivalent to the Innuitian region north of the Parry Channel.

However, as shown in Figure 4, there is also an overall subdivision into four ice sheets: 1) the Laurentide Ice Sheet (further subdivided into three sectors — Keewatin, Labrador, and Baffin), 2) the Cordilleran Ice Sheet, 3) the Innuitian Ice Sheet, and 4) the Greenland Ice Sheet.

The reader might notice in the Foreword that "the Laurentide ice" does not mean the same thing as "the Laurentide Ice Sheet" because "Throughout this volume the name Laurentide Ice Sheet is reserved for the Wisconsin inland ice sheet. The ice cover of central Canada of other ages is referred to as Laurentide ice or inland ice" (p. 9).

At least some of this complexity (or confusion?) of definition is caused by the different schools of thought with regard to the inception, growth, and decay of the inland ice, as correctly pointed out by the editor in the Foreword.

Since most chapters of Part 1 of this book were prepared during 1984-86, with some additions made in 1987, it can be expected that further research might clarify some of these problems of definition and complexity. In the same context of problems, there seems to be considerable uncertainty concerning the chronological sequence of events that fall beyond the range of radiocarbon dating. Perhaps a separate review-type chapter on Quaternary geochronometry might be warranted in a future edition of this book?

The editorial introduction (Foreword, 11 p.) provides a very useful summary of the development of Quaternary studies in Canada. In a similar manner, all three parts of the book have a separate introduction and all chapters begin with a summary. This editorial feature provides the reader with a means of quick reference to the different units of subject matter.

The body of this treatise is divided into three parts: Part 1 (regional Quaternary geology — 6 chapters), Part 2 (applied Quaternary geology — 6 chapters), and Part 3 (Quaternary geology of Greenland — 2 chapters). Each chapter contains a separate listing of references, and the volume concludes with an Index (p. 823-839), which is quite helpful in finding specific information on particular events, features, and other items of interest to the reader.

The six chapters of Part 1 (p. 17-478) follow the physiographic subdivisions of Canada. In general terms the format of each chapter includes the geological setting and background, Quaternary processes, the ice sheet, stratigraphy and history, environments, and economic aspects of Quaternary geology. The number of chapter authors ranges from eight to one and they have collectively succeeded in presenting

a well-coordinated and integrated picture of the heterogeneous and wide-ranging subject matter. The differing opinions and interpretations of various aspects of Quaternary geology have been presented fairly and there does not appear to be a bias in favour of any particular concept.

Part 2 (p. 481-738), on the applied aspects of Quaternary geology, also comprises six chapters: chapter 7, Quaternary environments as documented by paleobotanical case histories; chapter 8, Quaternary geodynamics; chapter 9, geomorphic processes; chapter 10, terrain geochemistry; chapter 11, Quaternary resources; and chapter 12, Quaternary geology's influence on man's environment. This innovative and significant part of the volume extends beyond the more conservative bounds of geology in the traditional sense and clearly demonstrates the central position of geosciences in the global environmental context, especially with reference to human population and activities.

The subject matter covered by chapters of Part 2 on resources (soils, peat, aggregate, placers, etc.), various aspects of land use (planning, engineering, hazards), and geochemistry are particularly welcome for the generalist reader who might not be expert in Quaternary geology but who can beneficially use the geoscience information within the scope of his or her field of specialization, which may be, for example, in social, political, or medical research.

One could argue that chapter 10, on terrain geochemistry (p. 645-663), is rather short in view of the geological and general environmental importance of this topic; perhaps it could be expanded in a future edition of this book.

Those concerned with current environmental problems can most certainly derive much useful information from chapters 7 (p. 481-539) and 12 (p. 699-738).

Part 3 of this volume is divided into two chapters. Chapter 13 (p. 741-792) provides a rather comprehensive coverage of the ice-free areas and continental shelves of Greenland, including regional Quaternary geology, sea level changes, paleoflora and fauna, and history of climate, glaciation, and oceanography. Chapter 13 could be considered one of the best available reviews and syntheses of the Quaternary history of Greenland.

Chapter 14 (p. 793-822) summarizes the information and concepts relating to the Greenland Ice Sheet, including data from studies of ice cores and construction of dynamic models of the ice sheet. The subject matter presented in this chapter is especially valuable in the context of global environmental change research because of the unique types of data obtainable only from ice cores.

A supplementary set of five folded maps in a box is another advantageous feature of this volume. Map 1702A (Late Wisconsinan and Holocene Retreat of the Laurentide Ice Sheet; published in 1987, scale 1 : 5 000 000) shows the postulated ice marginal positions at selected times during the last 18 000 years and the names of major ice marginal deposits (for example, end moraines). Map 1703A (Paleogeography of Northern North America; published in 1987, scale 1 : 12 500 000) is a set of three maps that provide eleven "time windows" of the configuration of Canadian ice sheets (including ice domes and saddles, ice divides, ice flow directions, the extent of glacial lakes and seaways, selected radiocarbon dates, and past sea level elevations) at specified times during the period of 18 000 to 5000 years before present. Map 1704A (Status of Quaternary Geology Mapping in Canada with Bibliography; published in 1988, scale 1 : 7 500 000) is really a "progress report," with references showing the development of Quaternary geology mapping in Canada since 1915 subdivided into "detailed," "inventory," and "reconnaissance" categories. Although these maps will be revised to some extent in the future as new information (and perhaps new concepts?) become available, they provide an excellent time and space perspective of our current understanding of the Late Quaternary changes of the Canadian ice sheets.

In spite of some minor and rather insignificant criticisms that probably relate to the reviewer's own personal biases and idiosyncrasies, this treatise on Quaternary geology and research in general superbly fills the need for comprehensive background data in particular geographic areas and for specific topics of Quaternary sciences in

Canada and Greenland required by a large spectrum of readers. It can also serve as a general summary of the state of Quaternary science in Canada and Greenland in the 1980s.

The potential role of this volume in facilitating interaction especially between the applied Quaternary geoscience specialists and the generalist users of geological information deserves to be recognized as an important feature of this treatise.

The price of the book is actually a bargain when compared with other similar publications, and this volume is fully worth the investment, because the treatise will remain a major source of reference data for many years to come.

Jaan Terasmaa
Department of Geological Sciences
Brock University
St. Catharines, Ontario, Canada
L2S 3A1

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