

century. Not surprisingly, considering the (admitted) bias of the book, Brantenberg is of the opinion that tutelage maintained the cleavage, which is now disappearing with the advent of local government.

One criticism with the volume concerns an essay in the latter section. Chapter 15 (Inuit-Settler Relations in Makkovik, 1962 by Shmuel Ben-Dor) is an excerpt from a larger work, and as such suffers from a lack of editing. It would be easier to follow with more editorial comments or footnotes; as it now stands, one is at times left with the sense of having missed the author's point. Also, when the essays are read one after the other a certain amount of redundancy is encountered, although this is perhaps to be expected when a number of authors address a common topic. A third comment is that the maps are hidden away (and not referenced!), and could more conveniently be used if they were placed in their appropriate chapters. Typological errors are at a minimum, and an errata sheet is provided.

The rationale behind this book — that there are lessons to be learned in the encounter between colonizer and colonized in the Canadian arctic — will probably not draw much disagreement from the reader. Although most of the research involved took place between 1968 and 1972, and since that time considerable change has taken place in the north, the contents of the book provide a background for an understanding of the present state of Inuit-white relations. In short, *The White Arctic* provides worthwhile reading, although it will likely find its greatest appeal with social scientists rather than with the general reader.

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BOREAL ECOLOGY BY WILLIAM O. PRUITT, JR. *Toronto: Macmillan Company of Canada, 1978. 73 pages, illus. \$10.20 cloth, \$4.80 paper.*

A new book (#91) has been published in the series *Studies in Biology* sponsored by the

Institute of Biology, London. This very readable little book contains 7 chapters ranging from the first on general northern terms, through chapters on environmental parameters, adaptations of plants and animals and ends with chapters on human utilization and research methods and procedures used in northern studies.

To many, the inclusion of taiga and Arctic within the term boreal may seem strange, for many biologists equate boreal with taiga; the treeless Arctic being considered separately. The author points out that subarctic and Arctic are defined differently in the Russian and English literature, a point that is seldom made. However he incorrectly states that Arctic as used in the USSR is equivalent to High Arctic or Polar Desert as used in North America. The more recent Russian literature recognizes Polar Desert as separate from subarctic and Arctic. The beginning reader would have been aided by a table to show the varying usage of these terms.

Pruitt explains the biological importance of radiant energy to plants and animals, especially in the High Arctic. Light is discussed in relation to photoperiod and the role this plays in mammals and birds. Brief mention is made of long day plants but no recent researches are mentioned.

In chapter 3 water is discussed only as it relates to snow and snow characteristics. The author goes as far as stating (p. 14) "...that one might accurately state that boreal ecology is the study of the ecology of snow." It is doubtful that very many biologists would interpret ecology of the north this narrowly. The section on soils is very elementary, giving no clear picture of northern soils and their genesis. No references are more recent than 1970. The unit on permafrost is more complete, though no mention is made of the dynamic studies of permafrost that have been made in the Mackenzie River Delta region in the past 15 years.

Chapter 5 discusses boreal vegetation. Only one page is devoted to plant adaptations with no real references given to physiological studies of northern plants. Only one, generally non-quantitative, review is cited, though more than six exhaustive reviews have been written in recent years. The author states (p. 32) that boreal vegetation studies have suffered from an excess of hasty superficial surveys of the tundra and a neglect of taiga except for exploitation-oriented research. Pruitt has either not read the literature or has chosen to ignore most of it. Again no reference is made to literature more recent than 1970 and then to only highly generalized articles.

Chapter 6 on boreal animals receives only slightly better treatment, for none of the intensive as well as survey animal studies conducted under the International Biological Programme is included. Those intensive studies on animal and plant biology can hardly be called hasty, superficial or exploitation-oriented research. A comparison is made between North American and Russian ideas on the influencing concepts relative to adaptations of endotherms to arctic conditions. The author favors those concepts laid down by the late S.S. Shwartz of the USSR. Factors related to animal cycles are not discussed here, though the role of snow relative to microtine cycles is briefly discussed under research methods (Chapter 9).

Ecosystems and foodwebs are presented in Chapter 7. Again only very general foodweb diagrams are presented. Only passing reference is made to one IBP study and no details of energy flow or nutrient cycling as discussed in numerous articles and books are given. This is clearly one of the weakest chapters in the book.

Much of chapter 8 is a diatribe on northern development without even mentioning the vast amount of boreal and arctic research that has resulted from government and industrial support in the past 10 years. No mention is made of national parks and wilderness areas that are being set aside in both Canada and Alaska as a result of public concern for preserving northern lands. Reference is made to the fact that northern peoples have not gained enough strength to stop the worst of white man's exploitive schemes such as the Mackenzie Valley Pipeline, a project stopped nearly a year before this book was published.

The final chapter deals with research methods and procedures, largely a discussion of the merits of studying animal ecology in relation to snow. Cold adaptation studies are pooh-poohed on the grounds these studies were largely backed (if indirectly) by the military. No mention of plant studies is made. It appears the author has little use for physiological research though the need to better understand heat flow, permafrost, ice fog, and pollution is stressed.

References include papers in Russian, Norwegian, Danish and Finnish, a real plus for this book. There is no subject index.

In summary, those looking for a simplified presentation of northern ecology from a natural history viewpoint will find this readable book most enjoyable. Those expecting an indepth presentation of boreal ecology from an ecosystem and physiological basis will need to look elsewhere.

L.C. Bliss

FLUCTUATIONS OF GLACIERS 1970-1975 (VOLUME III) COMPILED BY FRITZ MÜLLER
Published by the International Association of Hydrological Sciences and UNESCO, Paris, 1977.

Large-scale inventories and data banks are springing up in many earth science fields these days. In glaciology this trend is sustained by the World Glacier Inventory Project of the International Commission on Snow and Ice, and the Permanent Service on the Fluctuations of Glaciers (PSFG) of the International Union of Geodesy and Geophysics. The main function of the PSFG (which is composed mainly of Prof. Fritz Müller of the Swiss Federal Institute of Technology) has been to produce a series of volumes of data on glacier fluctuations throughout the world. The first two volumes covered the periods 1959-65 and 1965-70; a future volume will deal with 1975-80. The third volume differs from the first two in that data for it was submitted by the various collaborators on a standard PSFG data form, and in the computerization of the data. The result is a more homogeneous presentation. The stated objectives of the overall project, a contribution to the International Hydrological Programme, are 1) to afford a general view of the changes, 2) encourage more extensive measurements, 3) invite further processing of the results, 4) facilitate consultation of the further sources, and 5) serve as a basis for research.

The bulk of the book is a series of tables dealing with "general information on the observed glaciers" (name, location, morphological form, area, elevation, etc.), variations in positions of glacier fronts, mass balance variations (including some data on mass balance/elevation interval relationships), and changes in thickness, area, and volume. Time units in all cases are one year or greater. As might be expected, the number of glaciers inventoried varies radically from table to table; apart from the general information table, the one dealing with frontal positions covers the greatest number of glaciers (763).

Shortcomings of the volume stem not from faults of the editor but from inherent limitations of the project itself. Many of the world's ice-covered areas have received little or no study and even when data is available a collector finds it hard to get his hands on much of it. Consequently the geographical bias in the volume is quite large. The bulk of the data is, naturally, from North America, Scandinavia, the Alps, and Soviet Asia. There is very little from elsewhere, including the most heavily glacierized land masses, Antarctic and Greenland. Thus the book's capacity to "serve as a basis for research" (objective no. 5 above) is