

The author has taken great care to produce a *field* guide that does not require a compound microscope to be used effectively. Thus, all identification keys are based on characteristics that are distinguishable to the naked eye or with the aid of a hand lens and ruler. However, on occasion, the author recommends the use of a microscope to clearly distinguish between closely related species. Keys are dichotomous and for the most part easy to use. Where confusion and pitfalls may arise, the author recognizes them and offers alternative solutions to solving those problems. The author also provides an easy to use multiple access key, which in some cases may provide significant clues as to the identity of some species.

The size and soft cover also make this book useful in the field, but the square corners may, on occasion, make it awkward to handle. The poor-quality binding and square corners could significantly reduce the book's life expectancy, especially under field conditions. The cost is a bit high in view of the number of photographs and in comparison to other field guides.

With the wide variety of forms and colours that many species may assume under different environmental and climatic conditions, and the visible similarities among many species, *Sphagnum* identification is a particularly bewildering subject and has discouraged many naturalists and terrified more than one plant ecologist. Because of these intra-specific variations and inter-specific similarities, reliable identification of most peat mosses is impossible without staining, sectioning, and the use of a compound microscope. Having stated this, this book comes close to being the exception that proves the rule. The author has achieved this goal somewhat artificially by selecting only those species that have diagnostic characteristics readily identifiable with a hand lens and simply pointing out closely related species that may require microscopic study to distinguish them. For example, *Sphagnum austinii* and *S. papillosum* are both common and abundant in coastal Pacific peatlands and often grow intermixed on the same hummocks. In some cases, it is virtually impossible to distinguish each species based on macroscopic features but relatively easy when using a compound microscope. To circumvent this problem, the author only describes the more common *S. papillosum* in his keys, and later in his more detailed description of that species he describes *S. austinii* as being: ". . . barely distinguishable from *S. papillosum* in the field." He then describes other methods for distinguishing between these species. However, based solely on the identification keys, both species would have keyed out together. For obvious reasons, this may prove entirely unsatisfactory to professional botanists.

This book has a definite eastern North American low-boreal flavour to it that somewhat restricts its use in other areas. Descriptions of such species as *S. lindbergii*, *S. austinii*, *S. tenellum*, and *S. jensenii*, which are both common and abundant in high-boreal and/or Pacific coastal areas of western North America, are hidden in the descriptions of other species. Some species — for example, *S. lenense* and *S. balticum* — that are common in high-boreal regions of western Canada are not even mentioned. Conversely, such species as *S. pulchrum*, *S. cuspidatum*, and *S. flexuosum*, which do not occur in the western interior of North America, are described at length. One of the major shortcomings of this book is that the author has not provided distribution maps for these species and often leaves the reader with the impression that they are found throughout boreal North America. This could lead to serious identification errors, which may be unacceptable to many users in western and mid- and high-boreal regions of North America.

In conclusion, the writing style and the use of macroscopic characteristics to identify *Sphagnum* species make this book a very valuable tool for naturalists and students venturing into peatland ecology for the first time or with a passing interest in these ecosystems. This book certainly makes a very difficult subject a lot less discouraging for non-specialists. However, because of its eastern North American focus, naturalists interested in coastal peatlands in western North America may find it of limited use. Also, professional botanists who must rely on accurate identifications will find this book less

than satisfactory. Readers of *Arctic* interested in northern peatlands will only find this book adequate at best.

L. Dennis Gignac
Faculté Saint-Jean
University of Alberta
Edmonton, Alberta, Canada
T6G 2E1

CANADA'S MISSING DIMENSION: SCIENCE AND HISTORY IN THE CANADIAN ARCTIC ISLANDS. 2 vols. Edited by C.R. HARINGTON. Ottawa: Canadian Museum of Nature, 1990. 855 p. Softbound. Price not indicated.

The 40 papers in this publication represent the proceedings of an international meeting with similar title sponsored by the National Museum of Natural Sciences and organized with great skill by C.R. Harington, who has performed his heavy editorial task with equal skill.

The papers are arranged in nine sections in the following sequence: scientific research — support, conflict and the future; the earth — fossils and paleoenvironments; freshwater, sea and ice; the atmosphere; plants; insects; fishes, birds and mammals; human pre-history; history and recent expeditions. The 62 authors (or co-authors) are mainly leading Canadian specialists in their fields, but 9 have United States and 2 have United Kingdom affiliations.

As Harington remarks in his perceptive introduction, this publication complements M. Zaslow's *A Century of Canada's Arctic Islands* (Ottawa: Royal Society of Canada, 1981), which focused "more on the history of various disciplines, policy, strategy, sociology and economics." The present work gives greater emphasis to the current state of knowledge in the various disciplines and also provides pointers to the way ahead. Compared with the earlier volume, it can thus be expected to appeal more to the field scientist than to the administrator or the commercial operator.

In a short review it is impossible to do justice to a book of such broad scope and, in the case of some papers, magisterial sweep. It is only possible to pick on a small fraction of its contents. And, first, tribute is due to the Polar Continental Shelf Project (PCSP), which, as a support agency, has played a huge role in promoting knowledge of the Canadian Arctic Islands and whose work is ably described by G.D. Hobson, its former director. He is followed by E.F. Roots (PCSP's first director), who rightly stresses the need for "multidisciplinary, internationally-related research," a field in which the PCSP already has an excellent record but for which (reading between the lines) more funds are sorely needed.

In the specialized papers, which form the bulk of the book, there runs through many a persistent theme: the climatic control exercised on all life — human, animal and plant — and indeed determining its very existence, or otherwise, in a hostile land. The key to this theme is contained in R.M. Koerner's paper on arctic ice cores representative of the last 100 000 years. For the future, under the perceived threat of a man-made greenhouse effect, Koerner suggests that "the early phase of the last interglacial may be the best analogue for such warmer conditions." Clues or questions posed on climatic change are scattered through other papers.

Take Harington's own paper on Ice Age vertebrates in the Arctic Islands. He suggests that research in this field has "important palaeoclimatic implications stemming from the relationship between marine mammals and their environmental adaptations." He poses the question of whether there was "a delay between early Holocene open-water conditions in the southern islands compared to the northern ones," the answer to which could be highly relevant to changing sea-ice conditions in the next century, if predictions of climatic warming are correct. This subject is taken up in a paper on climate by G.A. McKay, who points to current projections indicating arctic winters up to 10°C warmer by the year 2050 as a result of arctic haze and the greenhouse effect. A similarly higher than present-day temperature is implied by the trees that grew on

Prince Patrick Island in Late Tertiary time, as suggested by J.V. Matthews and others in their paper on the Beaufort Formation biota of that island. In other fields, Anne Gunn, from her studies on Victoria Island, stresses the need for understanding how the numbers of caribou and muskoxen react to climatic change, and R. McGhee, writing on the prehistory of the Inuit, points to the fact that the Little Ice Age (c. 1600-1850) saw the abandonment of occupation in the High Arctic islands.

The climatic element of papers in these volumes could provide a unifying strategy for future research in the Arctic Islands. The current predictions of climatic change are of an order of magnitude that politicians will ignore at their peril — or at least at their grandchildren's — if they cannot bring themselves to look beyond the next election. There was a time when Canadian activity in the far North proceeded in fits and starts according to perceived threats to sovereignty, or even of actual military invasion! Now is the time to confront the common enemy of northern peoples in a broadly based program of research into climate devised with skill to bring in international expertise in all disciplines, and so as to extract money from tight-fisted authorities. As C.L. Labine remarks in his paper on arctic meteorology and climatology, "a lack of a clear government northern policy is . . . the main drawback affecting all research in the Arctic Islands."

Besides the climatic issues, which are scattered through the volumes and on which it has seemed appropriately topical to dwell, the papers embody an immense amount of solid science in the palaeontological, taxonomic and ecological fields — science that is refreshingly forward-looking as well as reviewing. The four papers on human prehistory provide a fine perspective on that subject, and the paper by A.J. Sutcliffe on rates of decay of mammalian remains in the High Arctic gives much food for thought, if not for consumption under extremely favourable conditions of preservation!

On a more general note, it is pleasant to find the last four papers devoted to the history of arctic exploration and to recent adventure-training or mountaineering expeditions in the Arctic Islands. In one of these papers mention is made of that great warrior and adventurer Bill Tilman, whose grave is the Southern Ocean. On his departure from Pond Inlet in *Mischief* in 1963, after his crossing of Bylot Island, he liked to relate that he had almost been killed by kindness. He had experienced the hospitality traditional to all northerners, for his boat was loaded to the gunnels with goodies nearly to the point of capsizing! This proud tradition continues — and long may it — as members of recent United Kingdom expeditions can testify, for they have met only kindness and every possible assistance, with perhaps an amused tolerance of their quaint fantasies about "exploring."

To Canadians and visitors from overseas alike, these volumes, in attractive covers from a painting by Brenda Carter, provide a most valuable compendium of current scientific knowledge of the Arctic Islands and a blueprint for future research.

G. Hattersley-Smith
The Crossways
Cranbrook, Kent TN17 2AG
England

RUNNING THE NORTH: THE GETTING AND SPENDING OF CANADA'S PUBLIC FINANCES BY CANADA'S TERRITORIAL GOVERNMENTS. Edited by REBECCA AIRD. Ottawa: Canadian Arctic Resources Committee, 1989(?). 468 p., 54 figs. Price not indicated.

Out of delicacy or disinterest, northern researchers have on the whole neglected questions of territorial public finance. Federal-territorial fiscal relations, the budget cycle, patterns of revenue and expenditure, the means for ensuring financial control and fiscal probity have been scarcely studied at all. *Running the North* by no means exhausts these topics, but editor Rebecca Aird and most of the 14 authors in the collection do take us an enormous step towards filling the gap.

Aird's substantial introduction and a strong trio of articles open the volume. James Cunningham and Mark Dickerson provide a history of Northwest Territories administration, including a useful review of successive financial regimes. Gurston Dacks examines fiscal and other aspects of the Territories' constitutional position, to propose, finally, staged enhancement of territorial powers rather than provincial status. Long-time backbencher Lynda Sorensen explains the considerable leverage available to ordinary members to affect budget decisions in the party-less NWT Legislative Assembly. Issues arising in political and economic development are addressed in the next set of articles, which begins with Peter Jull's provocative and subtle analysis of the prospects for true aboriginal control of territorial governing institutions. Jull probes the implications of devolution and division for the difficult issues of race, ethnicity and representation. Doug McArthur's chapter on Yukon 2000 is a useful report of what Yukoners think about their economic future. Not only is the material interesting in its own right, but as McArthur notes, it also demonstrates the efficacy of the structured, territory-wide discussion that was Yukon 2000.

Sandwiched between these two intelligent pieces is Mark Malone's incoherent and slight essay on the Northwest Territories economy. Malone has strung together a number of trendy but irrelevant literary references and some well-known facts. His expository style and his analysis are very sloppy. A typical sentence (in a section titled "The Unbearable Lightness of Dependency") reads: "Phase 1 of Finance Minister Wilson's inevitable response to Reaganomics, involving lower direct taxation rates, hardly reflects N.W.T. consumer prices, averaging 44 per cent above comparable prices for Canada" (p.135). "Phase 1" is never defined or explained; the inadequate description of Reagan's economic policies as a matter of "lower direct taxation rates" is never remedied; nor is there any explanation of why Wilson's response to lower U.S. tax rates was inevitable, or why it should reflect N.W.T. consumer prices.

David Smith and Jean Guertin do us all the major favour of describing and analyzing the ever-changing terms of federal-territorial fiscal relations. Formula financing, the system through which funds are transferred from the federal to the territorial governments, is explained in historical context (by Smith) and with an eye to the future (by Guertin). Smith correctly identifies territorial struggles for increased fiscal autonomy as the core of the evolution towards responsible government. Both he and Guertin open this key area for informed debate among northerners and southern fellow travellers. Very different approaches to the same issues come from Oran Young, northerners' favourite American academic, and former federal civil servant Barbara Heidenreich. Young assays the damaging impact of oil dependency upon Alaskan fiscal policy, while Heidenreich contributes the best effort to date at calculating the cost of dividing the Northwest Territories. Oil-boom hopefuls in the territorial Cabinet and people on both sides of the division question need these analyses.

The book concludes with four articles that proceed from a recognition of the importance of public expenditures in maintaining territorial economic vitality. Editor Rebecca Aird contributes a comprehensive, thoughtful review of the role of the N.W.T. government in economic development. Among many useful aspects of this chapter is a quantitative analysis of patterns in government spending on economic development, and arising from this is a plea for more realistic economic development planning. Frank Duerden's powerful analysis of the geography of Yukon government spending shows how it sets the limits of community economic development. Like his earlier work on residency and elections, Duerden's solidly empirical and intelligent analysis should settle many silly arguments, in this case about the merits and effects of government "intervention" in the northern economy. In a complementary vein, David Moll explores the dynamics of socio-economic benefits of program expenditures.

Public spending is analyzed from another perspective in C.E.S. Franks's study of aboriginal representation in the public service. Franks's spirited critique of ineffective affirmative action measures