

Perhaps the most remarkable feature of the book is that it covers the crustose or micro-lichens as well as the foliose, fruticose and squamulose macrolichens. Crustose lichens are generally avoided and are not covered in such basic sources as Hale's "How to know the lichens".

The book covers the 504 species known to occur in the area but the writer cautions that these represent only about one-quarter of the approximately 2000 species that have been reported from arctic regions. His long-range plans to produce a treatment on the lichens of all of arctic America will eventually lessen this problem.

This book will be widely used and should be in the hands of all arctic biologists.

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WESTERN AND ARCTIC CANADIAN BIOSTRATIGRAPHY. PERCIVAL SYDNEY WARREN MEMORIAL VOLUME. EDITED BY C. R. STELCK AND B. D. E. CHATTERTON. The Geological Association of Canada, 1978. Special Paper No. 18, 602 p. Price: Members, \$18.50, Non-members, \$22.00.

The seventeen papers in this volume represent, in part, contributions made at the Percival Sydney Warren Biostratigraphy Seminar which was sponsored by the Paleontological Division of the Geological Association of Canada in Edmonton in 1976. As such, it does not represent an exhaustive overview of the biostratigraphy of Western and Arctic Canada, as prospective readers might, perhaps, infer from the title. For instance, none of the papers deals specifically with Cambrian or Triassic geology and while a wide variety of organisms is dealt with (ranging from palynomorphs to vertebrates), conodonts and brachiopods receive most attention while corals are not treated — does this mean they have had their day, at least in the west? Several papers having little direct bearing on northwestern Canadian biostratigraphy are included yet only two papers present any volume of new data from the Arctic islands.

Aside from these minor quibbles on emphasis, it is pleasing to note that most papers provide much valuable new data on occurrences of individual taxon-groups in restricted parts of the stratigraphic column. Presumably because of constraints imposed by length and costs, details of taxonomy and illustrations have been kept to a minimum. Since some authors have used as yet

undescribed taxa as a basis for new zonal schemes which should be of considerable international significance, there is urgent need for monographic treatments of these Canadian fossils. It is hoped that the authors responsible have such works well under way and can get them published with a minimum of delay; the prolific Devonian ostracode faunas described by Braun are a good case. Only through such publications will it be possible for other workers to check, refine and extend geographically these proposed zonations.

Much of the work recorded in these papers is a first attempt to use given fossil groups as a basis for zonal schemes for parts of the stratigraphic column in northwestern Canada. As these zones are extended to other areas and, no doubt, undergo modifications, it is hoped authors will try to show correlations with zonal schemes based on other fossil groups. This calls for increased co-operation between specialists from various institutions across the country at all stages of a study, from planning to publication. The relating by Anan-Yorké and Stelck of Albian microfloral zones from northeastern British Columbia to the previously recognized ammonoid zones goes a long way towards such a synthesis. A major contribution describing foraminiferal zones for the Cretaceous of the Interior Plains and their correlation with ammonoid zones by Caldwell *et al.* is exemplary: for each zone and subzone the constituent taxa, geographic and stratigraphic distribution, designated stratotype and age are all systematically laid out along with bibliographic references and additional commentary.

Some papers deal with more general aspects of biostratigraphy that will be of interest to all paleontologists. In an analysis of Middle Ordovician trilobite faunas from the southern Mackenzie Mountains, Ludvigsen uses depth-related trilobite biofacies to recognise transgressive events in fine-grained, platform carbonates. Such events affect the use of faunas for correlation and offer an alternative to plate movements as an explanation for breakdown in faunal provinciality. A discussion of difficulties in recognising real provinciality of benthic faunas due to the nature of sampling, in its broadest sense, is included in a paper by Perry and Lenz which deals with Emsian brachiopods. Evolutionary and migratory events within the late Paleozoic brachiopod subfamily Spiriferellinae are evaluated in terms of climatic changes by Waterhouse *et al.*

The editors are to be congratulated in establishing and maintaining a fairly consistent style for illustrations throughout this volume — no small achievement with such a variety of

topics and authors. Just a few of the many maps, tables and diagrams suffer from loss of clarity after reduction, inadequate explanations or lack of consistency with the accompanying text; for example, those on pages 41, 126 and 456. Only two spelling errors were noticed by this reader: "pelecepod" on page 340 and "comformable" on page 406. The quality of paper, printing, binding and reproduction of plates is very good; however, I don't think I am being unduly nationalistic in wondering whether a Canadian printer cannot be found to turn out work of a similar high quality.

While this is not the type of book which will be read from cover to cover, except perhaps by reviewers, it contains a wealth of new information, important reviews and syntheses which will make it a standard reference for continuing research in each of the taxonomic groups/stratigraphic divisions which is covered. And, at the listed prices, it is a bargain.

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A HISTORY OF THE RUSSIAN-AMERICAN COMPANY. By P. A. TIKHMENEV. Translated and edited by RICHARD A. PIERCE and ALTON S. DONNELLY. Seattle and London: University of Washington Press, 1978. 522 + xvi pp., drawings, maps, index. \$35. **A HISTORY OF THE RUSSIAN-AMERICAN COMPANY, VOL. 2, DOCUMENTS.** Translated by DMITRI KRENOV, edited by RICHARD A. PIERCE and ALTON S. DONNELLY. Materials for the Study of Alaska History, No. 13. Kingston, Ontario: The Limestone Press, 1979. 257 + vii pp., drawings, maps, index. No price indicated.

Originally published in two volumes, with an appendix of documents, at St. Petersburg in 1861-63 as *A historical survey of the formation and activities of the Russian-American Company until the present time*, Petr Aleksandrovich Tikhmenev's work has been widely regarded as one of the most valuable sources available on the Russian-American Company. The Company, chartered in 1799, managed Russian America for the Imperial Government from that time until 1867 when the United States purchased what is now known as Alaska. The Company also established posts or conducted business in other Pacific Rim areas such as Siberia, Hawaii, and California; and attempted, unsuccessfully, to initiate trade with Japan. Until the publication of these translations, however, one of the early historical accounts of this significant commercial organization has not been generally available.

Both of these books are greatly enhanced by prefaces in which the editors critically review the

history of their writing by Tikhmenev, a Russian naval officer in the employ of the Russian-American Company. The editors also discuss earlier translations, beginning with the work of Ivan Petroff in the 1880's.

A HISTORY OF THE RUSSIAN-AMERICAN COMPANY is organized in two parts, and in twenty chapters traces the Company's development from the time of its formation until 1861. **VOL. 2, DOCUMENTS**, reproduces letters, reports, and other documents which were written by or to key officials of the Company or its predecessor trading organizations between 1783 and 1807. Extensive notes, a Glossary, and a list of Chief Managers of the Russian-American Company Colonies with their terms of service will aid the users of both books. The texts are accompanied by a number of informative maps and illustrations, not all of which appeared in the original publication.

Richard A. Pierce, who is Professor of History at Queen's University, Kingston, Ontario, has in the past published a number of books, articles, and translations concerning Russian America. This has often been done in cooperation with Alton S. Donnelly, Professor of History at the State University of New York, Binghamton. Their latest joint effort in these Tikhmenev translations adds a superb item to their list of past achievements and will allow wider use and study of one of the more important works on Russian exploration and trade in Alaska and the North Pacific.

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JOURNAL OF A VOYAGE TO THE NORTHERN WHALE-FISHERY. BY WILLIAM SCORESBY JUNIOR. Edinburgh, 1823. Reprinted 1980 by Caedmon of Whitby, 9 John Street, Whitby, Yorkshire, YO21 3ET. 472 pp. £13.95.

The Naval Arctic voyages of the eighteenth and nineteenth centuries are well covered by published narratives, log books, muster books, letters and other papers; but as anybody who has tried to deal with other Arctic voyages for the same period knows only too well, material on the whale fishery is exceedingly scarce, and few books have been published about their voyages. This is all the more regrettable since there were (in round figures) about a thousand whaling voyages to every naval voyage.

Fortunately for us, the whaling trade had one outstanding man, Captain William Scoresby, Junior, a skilled seaman, a successful whaling master, an outstanding navigator and surveyor and an educated man. Scoresby was an able scientist with an enquiring mind (as shown by his magnetic observations at the Royal Greenwich Observatory), and a Fellow of some of the leading learned societies, to which he made notewor-