

## Arctic Geology

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## Arctic Geology

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Edited by Max G. Pitcher  
*American Association of  
 Petroleum Geologists Memoir 19,*  
 747 p., 1973.  
 \$27.00.

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This volume is the proceedings, published after an extended gestation period, of the Second International Symposium on Arctic Geology held in San Francisco, February 1-4, 1971. At least, it purports to be the proceedings, but of the 147 papers listed in the abstracts of this Symposium, only 69 are represented in the final volume, four of them in summary form. There is, in addition, no record of the discussions which took place at the Symposium. Considering the controversial nature of some of the papers, particularly those dealing with the evolution of the Arctic Ocean Basin, this is a pity, for it means we are deprived of some lively reading.

What we are left with is a collection of important regional papers covering every major circum-Arctic region (plus some regions that barely qualify even as banana-belt Arctic, such as the South Nahanni River) and including a major series of contributions from the U.S.S.R. The reproduction and editorial work is up to the usual high A.A.P.G. standards, and the reviewer has been unable, so far, to find a single typographical error. But the effort has come so late! Mackenzie pipeline advocates may go down the spout, plate tectonics theorists may founder, other Symposia may interpose, in fact anything may happen in a two and a half year publication delay. Whatever the reason for the delay it is unfortunate, for several of the papers were rendered out of date before they appeared, by later work in the same field, often by the same author. For example H. P. Trettin's discussion of the Early Paleozoic rocks of the

northern Canadian Arctic Islands was expanded and updated in his contribution to the G.A.C. publication "Tectonic Styles in Canada", which was published in 1972. Similarly, P. F. Friend's discussion of the Svalbard Devonian rocks has been replaced by a detailed report co-authored with M. Moody-Stuart and published by Norsk Polarinstitut, also in 1972. Other examples could be given.

In spite of all these limitations "Arctic Geology" will serve as a valuable reference work for many years, just as did its predecessor, the proceedings of the first Arctic Symposium. Much of the data, particularly that pertaining to the U.S.S.R., are not readily obtainable elsewhere, and this alone gives the volume a considerable value.

The breakdown of papers is as follows: regional geology of Canada – seven, Nordic countries – seven U.S.S.R. – 24, Alaska – seven. Comparisons in the North Atlantic borders – five papers, Evolution of the Arctic Ocean Basin – 12 papers, and finally seven papers on economic and political aspects of the Arctic petroleum industry. To give some idea of what is missing from the programme of the original Symposium, the following is a list of authors dealing predominantly with Canadian content, whose papers are not present in this volume: Caldwell, Drummond, Hemstock, Henao-Londano, Hills, Hunt and Woodward, Jeletzky, Johnson, Klován and Embry, Mountjoy, Trettin (second paper), Waterhouse.

In summary, a nice thing to have on your shelf, especially if you can persuade someone else to pay for it.

MS received, June 10, 1974.

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## Metamorphism and Metamorphic Belts

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by A. Miyashiro  
*George Allen and Unwin, London,*  
 479 p., 1973.  
 \$28.70.

Reviewed by E. D. Ghent  
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 Calgary, Alberta

This book represents a translation and up-dated revision of the author's book "Metamorphic rocks and metamorphic belts (in Japanese)" which was published in 1965 by Iwanami Shoten (Tokyo). The author's introduction is dated October 1972.

According to the author's introduction, the emphasis is on the synthesis of mineralogic, petrologic and tectonic aspects of metamorphism and is not intended to be an advanced treatment of thermodynamic and structural aspects.

Part I, "Basis of metamorphic petrology (135 p.)" treats basic concepts of metamorphic petrology and geology. Part II, "Progressive metamorphism (175 p.)", deals with the progressive mineral changes and their diversity in regional metamorphism. Part III, "Metamorphism and crustal evolution (100 p.)", deals with the tectonic aspects of regional, ocean-floor and transform fault metamorphism in relation to the evolution of the crust and lithosphere. An appendix, "History of the study of metamorphism (12 p.)", is included.

The references (27 p.) include about 800 items with very few entries later than 1971.

Figures, tables, and chemical equations are numbered with reference to chapter numbers. These can be located reasonably well by referring to page numbers of chapters in the index.

Many of the figures are half-page geologic maps. In most cases the scale is sufficient to show the relationships clearly. In a few cases, for example, the distribution of Alpine regional metamorphism in Figure