

This volume focuses essentially on palaeotemperatures and physical variations and behaviour of ice sheets. While reading it one must keep in mind that glaciers have a deal of other information on palaeoclimatic environmental conditions preserved in their layered deposits. These aspects are well known to the authors and are often mentioned in the text; however, the title might lead one to expect more discussion of recent research on such other important climatic parameters as atmospheric composition and circulation, sea ice cover, volcanism and solar luminosity. Overall this is a comprehensive work of detailed information on current glaciological concepts, which the main editor has integrated with introductory comments. Uniform scientific symbols are used throughout. The volume reads well, and will be a great help to students, professional glaciologists, and others working in disciplines related to glaciology.

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SOVIET-AMERICAN CO-OPERATION IN ARCTIC RESEARCH

USSR/USA BERING SEA EXPERIMENT. Proceedings of the final symposium on the results of the joint Soviet American Expedition, Leningrad May 12–17 1974. Kondrat'ev, K. Ya. (editor in chief). 1982. Translated from Russian by P. Datta. Rotterdam, Balkema. 316 p, illustrated, hard cover. ISBN 90 6191 403 5. US\$20.00, £11.00.

In the world of polar research there is an interesting asymmetry between the two hemispheres. In the Antarctic, the Soviet Union co-operates freely with the west in international scientific programmes; there are free exchanges of data and even of scientists. In the Arctic no such freedom exists. Co-operation is minimal, exchanges seldom going beyond such basic elements as meteorological data. Proposals for co-operative programmes like the World Meteorological Organization's Polar Experiment (POLEX) wither on the vine. The reason is clear; both super-powers view the Arctic as an area for the strategic disposition of submarines and missiles, and every resurgence of the Cold War worsens the situation. Yet for a short time in the early 1970s a hopeful period of detente led to some genuine co-operative work. One such project was the Bering Sea Experiment (BESEX), a joint Soviet-American expedition which, following preliminary negotiations in 1971 on scientific co-operation in space meteorology, took the field from 15 February to 7 March 1973.

A decade later we finally have an English-language version of the scientific results, in the form of a translation of the proceedings of the Soviet-American symposium held in May 1974. Most of the US contributions have already appeared in National Aeronautics Space Agency (NASA) reports, some almost a decade ago; many of the Soviet contributions have also been published, albeit in Russian. Yet this book has a value in interleaving the American and Soviet papers, in a way that demonstrates the considerable achievements of BESEX. Despite the short duration of the expedition, the two ships (USCG *Staten Island* and Soviet icebreaker *Priboi*) and the US and Soviet aircraft involved collaborated very effectively in investigating the microwave properties of sea ice, the application of remote sensing methods to meteorology, and the oceanographic and ice properties of the Bering Sea itself. The knowledge gathered has proved valuable in more recent

investigations of the Bering Sea from 1979 onward, and in the design of such large-scale modern air-ice-ocean projects as the Marginal Ice Zone Experiment (MIZEX).

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POLLUTION AND HYDROGRAPHY IN THE ARCTIC OCEAN

THE ARCTIC OCEAN. The hydrographic environment and the fate of pollutants. Rey, L. (editor, assisted by B. Stonehouse). 1982. London, Macmillans. 433 p, illustrated, hard cover. ISBN 0 333 31017 9. £33.75.

Arctic science has long suffered from the absence of a body equivalent to the Scientific Committee for Antarctic Research (SCAR), which would further its interests within the international community of scientific unions. Because of east-west tensions it is almost impossible at present to envisage such a body taking shape. However, an independent and somewhat idiosyncratic effort to form a committee of this kind was made in 1979, when Professor Louis Rey set up the Comité Arctique International (CAI) with headquarters in Monaco. Membership of CAI is by invitation only; it has no affiliations with world scientific unions, and its role so far has been mainly limited to organizing conferences on various aspects of Arctic research. The conferences themselves are unusual in that their papers too are presented by invitation only, while Professor Rey is adept at wheeling-on international celebrities to provide introductory speeches. The impression of a small, closed club is inevitable.

However, out of such an ambience a good product has appeared. *The Arctic Ocean* comprises the edited proceedings of a conference held by CAI at the Royal Geographical Society headquarters, Kensington, in 1980. The editors have done a good job of welding together disparate contributions into a coherent book. Following celebrity contributions (a foreword by HRH Prince Philip and an introduction by Lord Hunt), the opening chapter by Louis Rey is an entertaining history of circum-Arctic settlement and exploration. The rest is almost two books, interesting two kinds of reader. The first half adds up to an excellent description of the hydrographic, climatic and ice environment of the Arctic Ocean, in which such distinguished contributors as E. L. Lewis, Knut Aagaard, Torgny Vinje, Sylvain Joffre, Norbert Untersteiner and H. H. Lamb give readable accounts of the air-ice-ocean system. This is the first time that such material has been gathered together in book form, and I recommend it highly as an introductory text for anyone interested in the physical environment of the Arctic Ocean.

The second half, a more specialized account of Arctic biology and of the effects of oil and chemical pollution, is less successful. For example the single most important review chapter, by R. C. Clark and J. S. Finley on the occurrence and impact of petroleum on Arctic environments, is strong on the results of the 1974-75 Beaufort Sea Project and more recent US work, but tends to ignore the careful work of the Canadian Arctic Marine Oilspill Programme (AMOP) over the last few years. Other chapters on aerosols and airborne pollutants, Arctic marine ecosystems, and the biological consequences of oil and chemical pollution give a rather patchy picture which suggests (probably correctly) that our understanding of the pathways taken by pollutants is still meagre. This is perhaps a salutary reminder that, though the purely physical research of the earlier papers may give a coherent picture and attract the mega-bucks, it does not by any means yield all