Reviews

LISITZIN, A. P., 2002. *Sea-ice and iceberg sedimentation in the ocean: recent and past.* Berlin and Heidelberg, Springer-Verlag. xii + 564 pp. ISBN 3540679650, hardback. £154/US$239/€199.95.

I first came across this book in 1995, when a colleague drew my attention to the publication of the original Russian version in the previous year. The 2002 edition has been translated into English, but, the author explains, nearly 70% of the original has been rewritten and some new work up to 1999 has also been included. The author points out in the introduction that work on modern polar ocean sediments, as opposed to marine and continental deposits in the rock record on land, is relatively new and is related to the development of ships and associated geophysical equipment capable of deployment in the high-latitude seas. Indeed, Alexander Lisitzin was one of the earliest to use the term glacial-marine, or glacimarine, sedimentation. It is also clear that there was much early Russian work in this field which is only now becoming accessible to other workers, in part through Lisitzin's book.

The book is divided into five parts. First, the cryosphere, quite rightly including sea ice, glaciers and permafrost, is discussed as background to the more detailed text that follows. The inclusion of material on, for example, submarine permafrost is particularly welcome. This is a thread that continues through the book and provides an introduction to much useful Russian literature on the nature of sediments and sedimentation on the extensive shallow continental shelves north of Eurasia.

The second and third parts of the book, which account for about 80% of the text, deal with sea-ice and iceberg sedimentation, respectively. The links between riverine sediment delivery, the deposits on shallow Arctic shelves and sea-ice incorporation and subsequent transportation and melting are considered. Again, the inclusion of large quantities of Russian work is a plus. However, a number of data tables and figures on, for example, sediment and solute mineralogy and chemistry are included without always being placed within the context of their wider significance. In the chapters on icebergs, the text oscillates between very detailed case studies with large data tables, and rather general maps implying the hemispheric or global pattern of, for example, marine sedimentation rates. There are some gaps in coverage. The significance of basal ice-shelf melting is not dealt with in detail. Neither are ice streams, or their importance for relatively rapid delivery of icebergs and sediments to the upper continental slope during full-glacial conditions, given the prominence one might expect. There is also a lack of discussion of the architecture of high-latitude continental slopes and the significance of submarine fans as major depocentres of glacigenic material derived from ice-stream processes.

The final two parts of the book focus on, first, the record of ancient glaciations, from the Late Cenozoic to Ice Ages, and their deposits through geological time and, secondly, an attempt to synthesize much of the previous detail. They are not entirely successful. This may be due in part to the quality of translation from the Russian, which varies from adequate to unsatisfactory, not only here but throughout the book.

The book has two reference lists: the original from the edition first published in Russian, and additional references for the period to 1999. The reader must remember this and consult both lists. It would probably have been straightforward to have merged the two before publication of the English edition.

In summary, a positive from this book is that it makes accessible much of the early, and indeed pioneering, Russian literature on glacier-influenced marine environments in general, and detail on the Russian Arctic and northeast Pacific margins in particular. On the other hand, there is not a consistent thread of general argument followed by detailed exemplification running through the text, and the material is not organized in a coherent way. The quality of translation does not make the book easy to digest as a whole. The book is rather one that can be dipped into by scientists who already have background in the subject area and who want to know more especially about the shallow, permafrost-influenced and river-fed shelves of the Russian North.

Scott Polar Research Institute
University of Cambridge
Lensfield Road
Cambridge CB2 1ER, England
E-mail: jd16@cam.ac.uk

JULIAN A. DOWDESWELL