

H. R. BÁRÐARSON. *Ice and fire: contrasts of Icelandic nature*. Reykjavík, H. R. Bårdarson, [c1971]. [iv], 171 p., illus.

To those fortunate members of the Glaciological Society who attended the conference in Iceland in 1970 this book will be a very pleasant reminder of their visit to Iceland. To the rest of the membership it can provide a useful introduction to a part of the world in which glaciology and vulcanology are very closely associated. The excellent illustrations in this book, both black and white and colour, demonstrate not only the dramatic and sometimes catastrophic character of the Icelandic landscape but also some of the classic landforms associated with glaciers and volcanoes.

The text of the book is designed for a non-scientific readership and it is clear and concise. It includes discussions of sea ice as well as land ice, the main ice caps and glaciers, glacier lakes, hot springs and volcanoes. The author has made use of up-to-date scientific papers and there is a good bibliography. Without any wish to detract from the text, it must be stated that it is the high quality of the illustrative material that is the main attraction of this book.

R. J. PRICE

WORLD METEOROLOGICAL ORGANIZATION. *WMO sea-ice nomenclature. Terminology, codes and illustrated glossary. Edition 1970*. Geneva, Secretariat of the World Meteorological Organization, 1970. [ix], 147 p. [including 175 photos]+corrigenda slip. (WMO/OMM/BMO, No. 259, TP. 145.)

INTERNATIONAL agreement on nomenclature is always difficult to reach. The difficulty pertains not so much to language—lists of linguistically equivalent terms can meet that—as to definitions. How does one reconcile the body of meaning which has grown up round, say, the term “fast ice”, with the broadly similar, but not identical, concept denoted by the Russian term *pripay*? Canadians may think of “young ice” as having a maximum thickness of a foot (after which they give it another name), while Norwegians may allow their equivalent term only half that thickness. There are many points of this kind, because seamen of many countries have their own traditions of ice navigation and therefore their own terminologies.

The obvious need to standardize has been recognized for thirty years and more, but the process is bound to be slow. The World Meteorological Organization has had since 1947 an official commitment to further this cause, but has only now published in generally accessible form the results of its labours. This *WMO sea-ice nomenclature* (incidentally, “floating ice” would be more appropriate in the title than “sea ice”) stems from an “abridged ice nomenclature” adopted in 1956, and was itself adopted in 1968.

It must be said at once that much progress has been made. The 157 defined concepts, which are the core of the work, have now reached a stage at which they cover all the main aspects of the subject, avoid overlap one with another, and evidently command international support. Names have been found for the concepts—often, of course, traditional ones (though sometimes with a narrower meaning than in popular usage), but some new ones also.

The terms are arranged both systematically and alphabetically. The full text is given in Russian as well as in English, and is faithfully translated. There is an intention to have French and Spanish texts also, and to introduce a table to show linguistic equivalents in all four languages (perhaps others could be added too?); but these sections, together with the codes by which the information is to be transmitted, are to be published later. Finally, there is a large section of illustrations, in which 107 of the terms are shown, generally with two pictures of each.

A difficult balance which a nomenclature of this kind must hold is that between proliferation of terms, when the nomenclature begins to become a dictionary of all the words that have

ever been used to describe sea ice features, and undue brevity, when certain useful terms are not included. A parallel function is to choose between synonyms and near-synonyms in a given language, backing the chosen term and suppressing (by omission) any others. In these two areas the nomenclature must be judged successful; although in the first, my own opinion is that it errs slightly in the direction of too many rather than too few terms. This is no doubt the price of international agreement. One country may seek the inclusion of a term which the others do not see a need for, and the easy solution is to accept it because it does no harm, and after all no one is compelled to use it.

In general, this is a sensible list, and its availability in a usable form (that is, with pictures which really help) is welcome. There is some criticism to be made of minor points. On the definitions, one may wonder why the term "ice of land origin" (1.2) has in its definition "the concept includes ice that is stranded or grounded", when that phrase is included in the definition of the parent term "floating ice" (1), and not in that of the other main subdivisions "sea ice" (1.1), "lake ice" (1.3) and "river ice" (1.4), where it is also presumably true. There is not a term for a water area with no ice at all present. It may be argued that such a concept is not of proper concern to a sea ice nomenclature: but with "ice-free" and "open water" already included, and defined as areas in which some ice may occur, the user is at a loss for words not already pre-empted. There is a misprint on p. 6, under 8.2.2.6: "oiled" should read "piled". On the Russian translation, there is a discrepancy over the thickness of ice islands: the Russian text says 15–30 m, while the English text says 30–50 m. On the pictures, the excellence of many tends to emphasize the poor quality of some (31, 80, 81, 145, 160), and a few are unclear (36, 97, 143, 144). The twelve colour pictures are attractive but the colour is decisive for their purpose in only about half the cases. There is even one joke: bare ice (133) is apparently ice with bears on it. No doubt the intention is to improve the pictures by gradual replacement as better examples come to hand.

Will people use this nomenclature? One may suspect that while the various countries' officially-appointed delegates have reached agreement, their seamen, oceanographers and other interested parties go on using the terms they have always used. To some extent, this is bound to be so. But it may not matter too much. While the desirable thing would no doubt be for as many users as possible to accept exactly this set of terms, the essential thing is that they should be used by the relatively small group of meteorologists whose job is to collect, transmit and interpret the information; and this is probably already the case. Meanwhile, wider use will slowly grow.

TERENCE ARMSTRONG

N. RIEHL and others, ed. *Physics of ice: proceedings of the international symposium on physics of ice, Munich, Germany, September 9–14, 1968*. Edited by N. Riehl, B. Bullemer, H. Engelhardt. New York, Plenum Press, 1969. xix, 642 p. \$25.

THIS book exhibits the usual merits and demerits of a symposium report; merits, because hardly by any other means would one get so many aspects of the science of ice treated between the covers of one book: and demerits, because of lack of rigour in refereeing and editing. With regard to the first of these charges, it in fact comes off very well: one can agree with Onsager's closing remark "there is very little I wanted to miss". On the other hand, the second usual defect is somewhat enhanced on this occasion by the fact that the language of the symposium, English, is not that of the editors, or of a majority of the contributors. Language apart, the number of occasions when the equation as printed is obviously not quite right is irritatingly many.

Printed in photo-reduced typescript (which, in the reviewer's experience, always makes for a lower standard of proof-reading) on rather thick paper, this is too cumbersome a volume to