

REVIEWS

TERENCE ARMSTRONG and others. *Illustrated glossary of snow and ice*, by Terence Armstrong, Brian Roberts, Charles Swithinbank. Cambridge, Scott Polar Research Institute, 1966. v, 60 p., 79 photos. (Scott Polar Research Institute Special Publication No. 4.) 21s.

THE *Illustrated glossary of snow and ice* defines 155 terms in alphabetical order, still a minimum list, and gives linguistic equivalents in Danish, Finnish, French, German, Icelandic, Norwegian, Russian and Spanish. Almost half of the terms are illustrated by photographs which, carefully chosen and well reproduced, clarify less-known terms and ambiguities arising from language differences.

The authors rightly point out the "practical necessity for international agreement on equivalent terms and their definitions" for the "coding of messages and the facsimile radio transmission of ice charts". It is this *practical* aspect of the glossary which accounts for the bias towards sea ice over land and atmospheric ice; some 85 terms deal with floating ice. There is, however, an increasing need for transmitting coded information on land ice, seasonal snow cover and atmospheric ice, partly because of their hydrological importance.

The *Illustrated glossary* appeared at an opportune time with the commencement of the International Hydrological Decade. For a project such as the "World inventory of seasonal and permanent snow and ice masses on and beneath the land surfaces" the inclusion of a few basic terms on sub-surface ice would have been beneficial.

Considering the inherent difficulties of defining the terms of a young science which has some old roots in a variety of languages and disciplines, the reviewer found himself very rarely in disagreement with the authors. Some definitions certainly need reconsideration as, for example, firn line (p. 15), glacier (p. 17), ice cap (p. 22), snow line (p. 37); and the following German linguistic equivalents must be improved or left out: "eisbesetzt" (p. 10), "Eisfächer" (p. 23), "Gletscherstrom" (p. 30), "Tümpel" (p. 32), "Verrottetes Eis" (p. 34), "Regenschnee" (p. 35). Such a glossary naturally will require frequent revision and refinement. With this in mind the reviewer has forwarded his proposals to the authors and suggests that others do likewise, thus contributing to the further improvement of this excellent booklet which should be in a handy place on the bookshelf of all concerned with snow and ice.

FITZ MÜLLER

CHARLES A. KNIGHT. *The freezing of supercooled liquids*. Princeton, N. J., London, etc., D. Van Nostrand and Co. Ltd., [1967]. vi, 145 p., illus. (Van Nostrand Momentum Book, 14.) \$1.95.

THIS reasonably priced little book is one of the paperbacks prepared under the sponsorship of the Commission on College Physics. The series assumes a background of only elementary physics and attempts to treat a number of specialty subjects at that level. The current book discusses the solidification of rather pure liquids. The subjects treated are the states of matter, the basic physical chemistry of freezing, nucleation, crystal growth from the vapour, and a large number of subjects dealing with crystal growth from the melt. These include discussions of linear crystallization velocity, interface morphology, crystallization mechanisms, one-directional solidification, impurity effects, preferred orientations, and techniques for growing single crystals from the melt. The final chapter is devoted to methods of studying crystal growth and to simple observations and experiments that can easily be performed by any interested person. The book quite commonly and very effectively uses the different aspects of the freezing of water (snow-flakes, frost flowers, ground ice, lake and river ice, and sea ice) as practical examples to amplify the more basic discussion. This is in line with the general

research interests of the author who has done considerable work on the freezing of fresh and sea-water and is currently investigating the structure of hailstones.

It is a difficult task to prepare such a book; the author is continually faced with making approximations and simplifications. Also, many aspects of the subject must be neglected because of space limitations. However, the book succeeds quite effectively in providing the reader with insight into a large number of problems that are of interest to a glaciologist. The book is clearly written and well illustrated. Sections of the book can quite profitably be used as supplementary reading in an introductory glaciology course. The specialist in problems involving the freezing of water will also enjoy reading the book. It is quite interesting to consider the effectiveness of some of the simplifications used in this book. When the author's simplifications and omissions coincide with the ones you would have used, you can feel bright; when they do not, you can feel even brighter. Besides you will undoubtedly learn a great deal in the process.

It is unfortunate that the book was not lengthened to include a more satisfactory discussion of spherulitic crystallization and the effects of poisons. The fact that our understanding of these subjects is very incomplete only serves to make them more fascinating. I feel that this book will prove to be a most useful addition to the introductory literature on glaciology.

W. F. WEEKS