After the brief, though in part superfluous, introductions, the author launches into his subject. Some of the photographs appear flat, especially in the early part of the book. But anyone familiar with the difficulties of photographing whiteness—a snow landscape without the contrast of rock—will appreciate the largely successful reproduction of the delicate shadow-contrast provided by even the smallest surface features—skavler, snow dunes and sledge trucks. Each feature on a photograph is labelled, *e.g.* crevasses, iceberg, cloud, nunatak, melt water, moraine, valley glacier, stone polygons, etc. Beneath the photograph is a one-paragraph description in electrotype of the features appearing on it. This is well worth reading, in spite of the fact that few glaciologists will need even the labels to help them in understanding what the photographs portray. There are encouragingly few mistakes in the actual interpretation, and Mr. Roscoe has an eye for the origin of ice features, being widely read in the subject. He goes into a short discussion of things like differential ablation caused by rock-dust and moraine, and of the origin and occurrence of melt water.

There is much one could say about terminology, but the author has been faced with the problem of labelling many features which have not yet been described by expeditions on the ground. The path has many pitfalls, and he has not done badly. One wonders why crevasses must be labelled "tension crevasses" in the majority of cases, the converse—compression crevasses—occurring, of course, nowhere. "Slick ice" sounds slippery, but the term is not explained. "Hard glacier ice" is apparently "slick" on some occasions, though not always.

The photographs are classified under group headings, *e.g.* Major ice formations, Glaciers, Ice tongues, Shelf ice, Icebergs, Mountains, Coastlines, Islands, etc. As a result, reference to a particular feature is quite straightforward. "Major ice formations" are subdivided into Continental glaciers, Island ice, Highland ice, Cirque ice, Avalanche ice and Snowdrift ice. In many cases the photographs are printed in stereo-pairs, a great help to those unfamiliar with the features shown.

For the glaciologist, there is much that is superfluous. On p. 141 there are six almost identical photographs taken to convince the unbelieving reader of the occurrence of "white day"—the absence of shadows in overcast weather. But the valuable material in the book is not hard to sort out from the rest, and it will be a useful reference work. A word of caution is perhaps necessary in using the folding map entitled "Antarctica—Aerial photographic coverage." This is a useful attempt to show the flight tracks of aircraft from which photographs have been taken, but in many cases the tracks certainly do not represent photographic *coverage*. The author concludes his introductory chapters as follows: "Airphoto interpretation is no substitute for research in the field. It is a fact, however, that approximately 100,000 airphotos have been taken of areas of Antarctica on which man has never set foot, and of many areas which man is not likely to explore personally for many years to come, if ever. Photo interpreters can provide military or regional analyses of these areas by use of photo interpretation keys developed on the basis of their experience or the experience of other photo interpreters and explorers in similar regions elsewhere in the Antarctic."

CHARLES SWITHINBANK

A FUNCTIONAL GLOSSARY OF ICE TERMINOLOGY. U.S. Navy Hydrographic Office, Washington D.C. H.O. Publication No. 609, 1952. xv+88 pages, 110 plates. $0.80.

THIS is an amplification and revision of the previous glossary with the same title (H.O. Study 103, 1948) dealing with Arctic sea ice. It is not wholly different in aim from *Antarctica*, reviewed above, although the chief distinction is that here the main emphasis lies upon definition rather than upon recognition in the field. Its avowed purposes are (1) to standardize terminology, (2) to provide means of classifying and describing ice forms and (3) to develop a better understanding of ice properties in general.

It deals with ice wherever ice is found. Snow and snow surfaces are not included and reference is made to the reviewer's book *Snow Structures and Ski Fields* for this purpose. This book, however,

is out of print and some of its concepts, set down some twenty years ago, need revision, so that some more modern record of terminology seems desirable. This is to some extent covered in the *International Snow Classification* of the International Commission on Snow and Ice.

Foreign terminology has been reduced to a minimum and is only used where there is no equivalent in English. "In case English (or British) usage differs from the American-Canadian, the latter is preferred." This is, of course, natural in an American publication. It is rather unfortunate that in some cases, luckily few, British and Western Hemisphere terms have drifted apart, as, for instance, "sleet" and the unfortunate new use of "tongue". It seems that the reviewer has himself transgressed in this direction. In adopting the term "ice apron" for the snow and ice above the bergschrund he had overlooked the fact that Wright and Priestley in their classic *Glaciology* had used the word for a somewhat different phenomenon. This slip has been brought to light by the work under review, but the reviewer believes that Wright and Priestley's meaning of the word has fallen into disuse, and it is not evident whether the compilers of the glossary had good reasons for reviving it. There seem to be a few other redundancies.

The 110 illustrations are excellent, although in the reviewer's copy some are rather faint and do scant justice to the excellent photographs. Some with due acknowledgement have been borrowed from Wright and Priestley's book, and much of the land ice definitions, added in this edition, have followed their lead.

The key to the glossary is divided into sections: I. Sea Ice, II. Land Ice, III. Lake Ice, IV. River Ice. Most of these are subdivided and subdivided again so that in all there are 57 different headings with references to the photographs at the end of the book. In the glossary itself well over 400 items are listed and defined, and after each there is a reference back to the particular section under which the item comes.

In so comprehensive a work it is not difficult to be critical. It is probable that if ten specialists in ten different branches of glaciology were to review it each would have criticisms and suggestions to make. Yet a very valuable piece of work has been accomplished.

G. SELIGMAN

## OBITUARY

### WALTER RAVENHILL BROWN BATTLE

" BEN " BATTLE was born in 1919 and educated at Leeds and Cambridge Universities. While still reading for his honours degree in Geography he led the Leeds University Expedition to East Greenland in 1948, where he worked on the Pasterze Glacier. In 1949 he continued this field work on neighbouring Clavering Ø. He therefore came to the Geography Department at Cambridge in 1949 as a research student with considerable field experience. His Greenland work demonstrated the erratic movement of the Pasterze Glacier, and he concerned himself particularly with temperature and other conditions in bergschrunds, where his ability as a climber and his determination as a research worker enabled him to gain valuable information under the most arduous conditions. While at Cambridge he worked in Jotunheimen in 1950 and 1951, and in the Jungfraujoch area in the easter and summer vacations of 1951. His results showed that temperatures in bergschrunds changed far less than had been widely suggested; they rarely, if ever, rose above 0° C. and rarely fell more than a very few degrees below it. In the laboratory he subjected various rock samples repeatedly to those changes of temperature which he had found to occur in nature, and even his careful " beam " tests showed that the rock specimens suffered little or no damage. It can be confidently stated that his work alone would have gone far to discredit the earlier bergschrund hypothesis of cirque erosion, which assumed that rises and falls of temperature across the freezing point led to the disintegration of bedrock. It did much to limit my own