

whale and talk whale and nothing but whale'. Otto guessed that this was Eskimo psychology, and sometimes they were convinced it had worked for them. Maybe it did."

The author has an unfortunate habit of almost killing a chapter by a clumsy first sentence. "Wrinkled Owhowin totteringly poised her body over the battered cooking kettle that served the household as a chamber pot" — this must surely be the most bizarre first sentence in any book!

The book is well illustrated and indexed, and the design and the typography are clean and pleasing. But there is no map.

Professional archaeologists and ethnologists wince at the way in which enthusiastic amateurs launch themselves into the field and begin digging and recording. The wheel has come full circle, and many traditional peoples are beginning to resent having their graveyards pillaged, their oral history looted, and their daily routines disturbed by "objective" seekers after knowledge and academic promotion. Otto Geist's very lack of professionalism was what endeared him to the native peoples of Alaska. He lived their life and accepted them as his mentors. They accepted him as a human being first and foremost. This book reveals some dimensions of an extraordinary man who could talk to scientists and live with Eskimos. Such men are rare these days. A definitive biography of this outstanding Alaskan still remains to be written.

Jim Lotz

THE PHYSICS OF GLACIERS. BY W. S. B. PATERSON. *Oxford: Pergamon Press Limited, 1969. 5 x 7³/₄ inches, 250 pages, illustrated. Hardcover \$5.50. Flexicover \$4.00.*

Stan Paterson and Pergamon Press have performed a notable service in producing "The Physics of Glaciers", for which all glaciologists, and especially teachers of that and related subjects, will be most grateful. This inexpensive book covers most of the many facets of glaciology in a direct, and simple fashion, sufficiently rigorously to appeal to mathematically-minded students, but with excellent word descriptions of physical processes that should be readily understood by the reader with very little scientific training.

The book is divided into an Introduction and eleven other chapters, dealing with snow metamorphism, mass and energy balances of glaciers, the measurement and theory of glacier and ice sheet flow, temperature distribution in glaciers and ice sheets, and their response to changes in mass balance and to

climate generally. The subject of glacier surges, one of the fascinating "discoveries" of the last decade, but for which no adequate explanation yet exists, occupies a separate chapter. For some of the chapters general references are given under the heading "Further Reading"; and throughout the book, Paterson makes specific references to a well-selected list of original papers that cover developments in the science until early 1968. The whole subject is advancing so quickly that a new edition will be needed in four or five years, but the fundamental material is so well presented that the new edition will involve only an up-dating, and not a re-writing.

Throughout, the level of treatment is appropriate for senior undergraduates and first-year graduate students in physical sciences. The mathematical treatments, necessarily brief, are nevertheless carefully presented so that I judge my geology students will be able to follow without trouble, and will be able to apply the material in their own work. Although no mention is made of till, esker or kame, glacial geologists will find the book a most useful aid in discussing the formation of the features in which they are interested, and the chapter on basal sliding is a good starting point in considerations of erosion processes.

Any reviewer can offer criticisms of any book. I am sorry that Paterson omitted treatments of Thule-type moraines, of the methods of measuring accumulation on ice sheets, of the information on past climates available from the study of long ice cores but, assuming that the length of the book is prescribed, I cannot make corresponding suggestions for the material that should have been excluded. Altogether this is a remarkably good introductory book, and I recommend it wholeheartedly to anyone with even the slightest interest in glaciers. Undoubtedly their interest will be enhanced.

Colin B. B. Bull

POLAR OPERATIONS. BY EDWIN A. MACDONALD. *Annapolis, Maryland: The United States Naval Institute, 1969. 8³/₄ x 9 inches, 239 pages. \$11.00.*

This publication should be required study material for any Master prior to taking command of an icebreaker. However, I do believe that it should have been entitled *Polar Icebreaker Operations* as it deals mainly with this type of operation. Another serious mistake is grouping the Antarctic and Arctic as somewhat similar in ice characteristics,