

SHUMSKIY, P. A. *Osnovy strukturnogo ledovedeniya: Petrografiya presnogo l'da kak metod glyatsiologicheskogo issledovaniya* [*Principles of structural studies of ice: petrography of fresh water ice as a method of glaciological investigation*]. Moscow, Izdatel'stvo Akademii Nauk SSSR [Publishing House of the Academy of Sciences of the U.S.S.R.], 1955. 492 pages, 119 illus. 22 cm. Price Roubles 22.25.

THIS book is both recent and modern. It takes into account the many investigations of the last hundred years, both in the field and in the laboratory. The physical, and especially the crystallographic, aspect preponderates, and it is in this sense that it is a modern work, quite different in approach from recent glaciological treatises such as those by Drygalski and Machatschek, von Klebelsberg and Flint. The author writes in his introduction that he had not intended to summarize current views, but had tried to "use the most valuable of them to build a complete theory, based on two main ideas: the genetic classification of ice types, and the regionalization of ice forming processes."

It is difficult to summarize a book of 492 pages. A list of chapter headings must suffice.

I. *Mineralogy and crystallography of ice*

Minerals of the ice group. Structure and goniometric symmetry of crystals of common ice. Principal physical properties of common ice. Origin of ice crystals. Growth and form of ice crystals.

II. *Petrology of ice*

Ice as a rock. Impurities in ice. Method of petrographic study of ice. Formation of ice by freezing of water. Varieties and types of occurrence of ice formed by freezing of water. Deposition of snow cover. Summary of processes of metamorphism of ice types. Metamorphic formation of ice. Dynamometamorphism of ice. Thermometamorphism of ice.

III. *Geography of ice*

Character of ice forming processes. Zones of ice formation. Distribution of processes of dynamometamorphism. Structure of the cryosphere.

As far as dynamometamorphism of ice is concerned, and in particular the movement of glaciers, this is the first glaciological work which gives a real value to the spasmodic movement which has been often observed but never understood. The author bases himself on Ivanov and Lavrov's laboratory observations of the deformations of polycrystalline ice. Measurements of non-laminar movements of glaciers lead the author to a new synthesis of Finsterwalder's block movement. Nevertheless it is evident that the dynamics of glacier ice remain an unknown factor which the author has not entirely solved; but he has at least brought together all the available data on the subject, without omitting any as is usually the case.

The exposition is lucid. The author has read widely, as is clear from the considerable list of references, of which only a third are Russian works. This book deserves wide distribution, but this is not likely to come about unless it is translated into a western language.

A. BAUER

THE OCEAN FLOOR. HANS PETTERSSON. New Haven, Yale University Press. London, Oxford University Press, 1954. 181 pages, 48 illus. 21 cm. Price \$3.00, £1 4s. od.

THIS is a popular book and is based on the Silliman Lecture of 1952 delivered at Yale University.

It briefly outlines some of the work done on material collected from the deep-sea floor, particularly by the Swedish Deep-sea Expedition of which the author was leader. It is of necessity both a concentrated outline of fact, with considerable speculation, and also somewhat out-of-date since so much work has since been done on the subject. It covers a wide field and contains a number of useful references, and is vividly written.

C. D. OVEY