to all ecologists. The present volume is certainly no exception.

Moreover, the book centers around productivity, which is one of the basic concepts of limnology, as well as a practical measure of success in fisheries management. The quantity of fish produced per unit time can be influenced by almost every conceivable kind of ecological interaction, but only those shown to be of major importance or amenable to new methods of study are considered. Growth, fecundity, metabolism, predation by and on fish, fertilization of waters, and density-dependent regulating factors are some of the "traditional" parameters treated. Migration and lesser movements, rate of digestion, larval behavior, and aggressive interactions with and without territoriality are some of the newer ones. The methods of studying all of these are discussed critically and in detail. The special problems encountered in sampling fish populations, estimating mortality rates and the numbers of fish, and measuring fish production itself are reviewed.

Of the 28 authors, 16 are from Europe, and Israel, Japan, and the Congo Democratic Republic are also represented. The non-English literature receives much more than the nod customarily accorded it, but the fishes and ecological situations dealt with are almost entirely those of the North Temperate Zone. Although the book could hardly be used as a text, because not all major aspects of the ecology of freshwater fish are given adequate treatment, it would serve admirably for supplemental reading. Professionals, especially those involved in fish production or conservation, are sure to find worthwhile reading in it.

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Deep-Earth Geophysics

The Earth's Mantle. T. F. GASKELL, Ed. Academic Press, New York, 1967. xiv + 509 pp., illus. $26.50.

Nearly eight years have elapsed since the Upper Mantle Project was brought into being at the Helsinki meeting of the International Union of Geodesy and Geophysics. In that period the quantity of research effort, both by institutions and by governments, has increased several times. It is no longer possible for a single investigator or group to hold effective leadership in all the many aspects of research on the earth's interior. Communication of progress to the earth-science community as a whole has not been as effective as it might, with the usual mechanisms of journal articles, textbooks, and review volumes. This book, although in the latter format, has a good deal of the cohesion of a textbook, owing to a substantial contribution, both explicit and implicit, by the editor. It may be recommended as by far the best single-volume reference-textbook on general matters of the earth's interior.

The subject matter is taken up in the conventional categories, and the authors are drawn from an equally unsurprising list of major names. By comparison with other review volumes, this one stands out for the way the parts fit together in a whole. Several topics are treated in more than one paper: heat flow by both Von Herzen and Lubimova; convection theory by Knopoff and Tozer; seismology by Bullen, Lehmann, and D. Anderson; density and composition by Kuno, Clark, and Ringwood and D. Anderson. The final two papers, by J. Tuzo Wilson and S. K. Runcorn, provide an appropriate frosting of theory and speculation. The student is given an opportunity to compare brands; it becomes unnecessary for the reviewer to offer dark warnings about papers with which exception might be taken.

The editor's excellent opening chapter provides an appropriate overview of the material. It is also recommended to the general reader, since it gives a good sense of the where and why of the public investment in deep-earth geophysics. By an accident of timing, this book was assembled just prior to the discovery of very strong evidence for sea-floor spreading, in the magnetic anomaly and earthquake source mechanism data. The implications of this are found in every area of earth science; in particular, the mantle must be regarded as the most important component of the heat engine which drives the horizontal motions of the lithosphere. This book is probably better for its innocence, however, since no good summary discussion of these implications will be possible until some of the dust has settled in a few years.

The only shortcomings worth bringing up may be laid at the door of the publisher. The price is, as usual, quite steep. The binding warps. The references are given without titles of papers, a real annoyance when the reference list must be frequently used. With respect to content, however, this book is recommended without reservation for both reference use and graduate teaching. I would also suggest that the teacher of general geology might find this a good way to bring himself up to date on recent progress.

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Denizens of Alaska

Eskimos of the Nushagak River. An Ethnographic History. JAMES W. VANSTONE. University of Washington Press, Seattle, 1967. xxiv + 192 pp., illus. $6.95.

In spite of the fact that more Eskimos live in southwest Alaska than anywhere else, extraordinarily little has been written about them. A few years ago James VanStone decided to join the very small group of anthropologists who are attempting to fill in this gap in our knowledge of the aboriginal peoples of North America. Utilizing a combination of archeological, historical, and ethnographic techniques over the course of several years of research, VanStone has turned his attention to the Eskimos of the Nushagak River region. The volume under review is based primarily on the documentary aspects of this research, supplemented in the appropriate places by ethnographic material. This is the first of what probably will be a series of monographs on this area by the same author.

The book is divided into two major parts. In part 1, entitled Agents of Change, the author treats in separate chapters the influences in the region of early Russian and American explorers, missionaries, traders, commercial fishermen, mining and reindeer herding, and educational and medical services. Each chapter consists of a chronological account of events related to the specific subject being considered. Part 2, in contrast, is comprised of three essentially synchronic studies. Under the heading Emerging Socioeconomic Patterns, VanStone deals in successive chapters with population groupings and settlement patterns in the 19th and early 20th centuries, the yearly cycle at about the same period, and the yearly cycle today. The book ends with a chapter devoted to comparison of developments following the arrival of Europeans in southwestern with those in northwestern Alaska.

The author's style is intensely descriptive. He crams about as much information into the 166 pages of text as would be possible in a readable account. As a result, this short book contains a large quantity of data that could not be obtained anywhere else save in the numerous sources the author cites in his bibliography. Even those sources would not be enough, of course, because the documentary material is supplemented by VanStone's own ethnographic data in certain key areas, and surely his experience in the region has colored his interpretation of the historical sources. The bibliography, a contribution in its own right, includes a number of early Russian titles dating from 1823, as well as several unpublished manuscripts and other archival entries.

The maps, which contain the absolute minimum of pertinent information, constitute the major weakness of this study. The first three (of four), which focus successively on Alaska, southwestern Alaska, and the Nushagak River region, are all right as they stand. However, they would have been of greater assistance to the reader had they all been placed in the introductory account of the geographical and ethnographical background of the study rather than scattered, apparently randomly, through the first 69 pages of the book. Only map 4, which pinpoints the salmon canneries in Nushagak Bay in 1908, is effective. The material presented in part 2 of the book, especially, would have been greatly enhanced by the inclusion of a number of maps of this sort, each one focusing on the specific subject under consideration. This omission is especially serious in the chapter dealing with settlement patterns; the reader is forced to back up 40 pages or more (to map 3) every time he wants to find out precisely what place the author is talking about.

As it stands, this book will probably not appeal to a very wide audience of anthropologists. It is, however, an important addition to the literature on the Eskimos and as such will be useful to specialists on northern peoples. In addition, it may also be of interest to students of more general problems of culture change and contact. Its ultimate worth, though, will depend to a significant extent on how well it relates to other studies that one expects will be forthcoming as a result of VanStone's extensive research in the Nushagak region. If future reports fulfill the promise suggested by this one, and if the various publications are carefully integrated with one another, the series as a whole may well constitute one of the most significant contributions to our knowledge of arctic peoples ever made by a single author.

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The Liquid State

An Introduction to the Statistical Theory of Classical Simple Dense Fluids. G. H. A. COLE. Pergamon, New York, 1967. xii + 284 pp., illus. $12.

Liquid state physics is entering a period of rapid development. Cole's monograph is one of a number of books on the theory of liquids to be published in the last few years. (Some others are by J. A. Barker, 1963; I. Z. Fisher, 1964; S. A. Rice and P. Gray, 1965; P. A. Egelstaff, 1967.) Cole has made valuable contributions to the theory of liquids, including some excellent review articles. The present book appears to be an extension and amplification of his earlier reviews.

The general approach taken here is to describe properties of liquids by means of probability distribution functions of small subsets (usually one, two, or three) of the large number of molecules in the fluid. This approach is commonly called the hierarchy method and was pioneered by Yvon and by Kirkwood. As the title of the book indicates, Cole's discussion is limited to classical fluids (not helium or Fermi liquids), to simple fluids (excluding systems where internal molecular structure plays a significant role, and including mainly the heavier rare gases), and to dense fluids (either liquids or gases at typical liquid densities). Even within these narrow limitations of approach and content a substantial literature has developed.

In the first three chapters Cole reviews some background material on the liquid state properties to be discussed and on general statistical mechanical techniques. The next three chapters are concerned mainly with the theory of the radial distribution function. Derivations are presented for all the standard approximate equations, due to Born and Green, Yvon, Kirkwood, Cole, and Fisher, and Percus and Yevick, and the hypernetted chain equations; and the numerical consequences of those equations are summarized and compared with experiment. Cole concludes this part of the book correctly with the remark ". . . the calculation of the thermodynamic properties of equilibrium fluids is still far from its final state."

The final three chapters deal with nonequilibrium properties. Here the main emphasis is on the Fokker-Planck method, due originally to Kirkwood. Cole discusses also Eisenschitz's version of this theory, and the closely related Rice-Allnatt theory. Numerical calculations of viscosity, thermal conductivity, and diffusion are compared with experiment, and agreement is typically no better than within a factor of two. (This may be not much better than one can get from dimensional analysis and the simplest of physical pictures.) Here again, Cole remarks correctly that "the theory of transport in liquids has not yet reached its final form. . . ."

In spite of the somewhat negative conclusions that can be drawn from the approaches described here, this book is a valuable summary of how these approaches work.

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Odyssey of an Engineer

As I Remember. The Autobiography of STEPHEN P. TIMOSHENKO. Translated from the Russian edition (Paris, 1963) by Robert Addis. Van Nostrand, Princeton, N.J., 1968. xviii + 430 pp., illus. $9.75.

This is a very interesting book indeed. It is the story of an eminent teacher who literally lived two lives, the first in Russia before the revolution and the second in the United States after it. It is the story of a man whose father was born a serf in Russia; who after a good education rose to a position of eminence in his chosen field of engineering mechanics in Russia; who between the ages of 40 and 44, during the Russian revolution, wandered all over eastern Europe under frightful circumstances, with hardly a place to sleep; who at the age of 44 came to the United States barely able to understand English and then in the next 40 years fundamentally transformed the teaching of engineering mechanics in our universities; and who now, nearly 90, is still hale and hearty.