Cold Climates

Arctic and Alpine Environments. Proceedings of the 7th Congress of the International Association for Quaternary Research (Boulder and Denver, Aug.–Sept. 1965), vol. 10. H. E. WRIGHT, JR., and W. H. OSBURN, Eds. Indiana University Press, Bloomington, 1968. xii + 308 pp., illus. $12.50.

Arctic and Alpine Environments is a collection of papers gathered largely from the symposium on the same topic organized as part of the seventh INQUA Congress. In their introduction the editors point out that, although the arctic and alpine regions have long been regarded as so similar that they are frequently handled as a unit, an arctic-alpine zone, a critical comparison may show as many differences as similarities. The collection of papers certainly proves their point. It does more than this, however; it establishes for the nonspecialist scientific reader the tremendous range of variation within each region. Absence of trees due to cold, paucity of vegetative mass, relative difficulty of access, all tend to render these regions an almost uniform blank on the atlas sheet of the layman.

The book also serves to relate arctic-alpine research to multidisciplinary investigation of the Quaternary Period, defined by the editors as "the last two or three million years." The importance of directing more effort into study of cold-climate processes operating today and their effects, both for its own sake and to facilitate understanding of the interplay of glacial and interglacial fluctuations that characterize the Quaternary Period, is likewise strongly emphasized.

The book is divided into three sections: Climatology and Glaciology; Ecology; and Geology. But the allotment of papers into these sections has curious inconsistencies. The first section consists of only two papers, both dealing with aspects of climatology; what may be most nearly considered as glaciology occur under "ecology" or "geology"; a paper on the *p*H of melting snow and its erosive capacity seems incongruous under "ecology." Collections of papers presented at international meetings are notorious editorial headaches, and this one seems no exception; to the inconsistencies in arrangement must be added a wide spread of both quality and quantity. Some papers may have been abbreviated because of editorial consideration, but it is disappointing to find less than two pages by Gerasimov and Zimina on the recent natural landscapes and ancient glaciation of the Pamir and a similar ration from Katasonov on features formed under permafrost conditions.

To this geomorphologist reviewer, by far the strongest section is that on ecology. Regardless of its unevennesses the book makes a valuable contribution to our awareness of arctic and alpine environments and the great variety of research being undertaken within the "arctic-alpine zone." The editors are to be complimented on making a brave effort with a difficult task.

JOHN D. IVES
Institute of Arctic and Alpine Research, University of Colorado, Boulder

Marine Animals

Echinoderm Biology. Proceedings of a symposium, London, May 1966. N. MILLOTT, Ed. Published for the Zoological Society of London by Academic Press, New York, 1967. xiv + 240 pp., illus. $11. Symposia of the Zoological Society of London, No. 20.

This symposium volume is an important addition to the existing literature on echinoderms. The editor most appropriately begins his foreword with the statement, "Few would challenge the view that echinoderms are among the most enigmatic animals. For this reason alone they would be rewarding for study, but there are many other reasons as successive pages will show." And in successive pages the promise is kept. The results presented are of recent studies, many of them appearing in print for the first time here.

The first of the 12 contributions is a long-term ecological study of infaunal echinoderm populations; it is followed by chapters on gamete physiology, echinoderm neuromuscular systems, histomorphology and chemistry of the echinoid axial organ, description and operation of the ophiuroid tube feet, and the functional morphology of an extinct cystoid. Chapters on asteroid locomotion and origin, symmetry and diversity, and evolution and classification follow. A chapter on affinities of fossil chordates with echinoderms and a final chapter on echinoderm origin complete the symposium. The last chapter, indeed, presents a new theory which derives the echinoderms from the Sipunculoidea and will challenge the evolutionary biologists. Each chapter opens with a precise synopsis of the text, and eight of the chapters are followed by transcripts of group discussions. All chapters follow a consistent pattern of organization.

The chapters are well illustrated with line drawings and photographs, and most of the illustrations are of fine quality and are appropriately labeled. The volume is well written, edited, and printed. A complete bibliography, with titles, is given at the end of each chapter. Separate author, systematic, and subject indexes are included.

This volume, indeed, will receive enthusiastic welcome from echinoderm biologists, who will agree with the editor's comment: "Happily there are clear signs of resurgence so that once again echinoderms are being viewed as a diverting group of living animals and not solely as egg batteries or as inconsequential remains in the flesh of a former glory enshrined in stone, vaguely comparable with the coelenterates and linked, at least by the orthodox, with chordates."

RICHARD A. BOOLOOTIAN
Biological Sciences Curriculum Study, University of Colorado, Boulder

Plasma Kinetics

The Statistical Theory of Non-Equilibrium Process in a Plasma. YU. L. KLIMONTOVICH. Translated from the Russian edition (Moscow, 1964) by H. S. H. Massey and O. M. Blunn. D. ter Haar, Translation Ed. M.I.T. Press, Cambridge, Mass., 1967. xvi + 284 pp., illus. $12.50.

This book, whose author is a professor at Moscow State University, is a very welcome addition to the growing literature in plasma physics. Whereas most of the treatments of plasma kinetic theory are based on the BBGKY (Bogoliubov, Born, Green, Kirkwood, Yvon) hierarchy, the present work is based on explicit uses of the actual density in six-dimensional phase space and its moments. This method not only allows more physical insight into the relationship between correlations and fluctuations, it also leads to great simplifications in constructing solutions to actual problems. In particular, any known solution of the Vlasov equation can be used to obtain information on correlations in a particular ensemble. In addition, a number of theorems concerning superposition of quasi-particles, relationships between test particles and correlation functions, and so on become quite transparent when this formalism