Book Reviews

Ancient Man in North America. H. M. Wormington. Denver Museum of Natural History, Denver, Colo., ed. 4, 1957. xviii + 322 pp. Illus. Cloth, $5.25; paper, $3.65.

Eighteen years ago the Denver Museum of Natural History and H. Marie Wormington initiated publication of a series of books called the "Popular Series"; this service has become increasingly useful. The book reviewed here, one of the series, is an unusually complete encyclopedia of the archeology and physical anthropology of ancient man in North America. Every known early camp site and group of artifacts has been described. Such descriptions are often brief, but ample reference is provided for those who are in search of detail. The account is designed to inform the interested nonprofessional reader, but it will be of great value and use to archeologists and other scholars as well.

Introductory chapters that discuss the glacial regimen and climatic cycles in relation to anthropogeography during Pleistocene and Recent geologic time, and also methods of dating, are followed by descriptions of the ancient stone industries. This culture is here divided into three major traditions which, as far as I am aware, are newly proposed. They would be more easily comprehended if they had been discussed a little more thoroughly. Under "Paleoeastern Tradition" are discussed the Folsom Complex —a large number of single sites and a few groups of sites producing culture complexes, all including fluted arrow or dart points. The Folsom Complex is seen to have a distribution somewhat restricted to the Central Plains. On the other hand, points comparable to the Clovis fluted points are distributed from Massachusetts to New Mexico and beyond. There is a stronge reluctance on the part of the author to consider specifically the possible implications of such a distribution of an arrow-point type and of the association of arrow points with widely varying inventories of other tools at a time which could be well before 10,000 B.C. Also included in this Paleoeastern tradition are a number of camp sites and types of dart points which are somewhat later in time. Located largely in the Southwest and in the Plains are Plainview-type points, Angostura, Scottsbluff, and Eden points, and a number of others of equal significance. The description is carried into the Middle West where, at sites such as Graham Cave in Missouri, slightly different shaped points appear to belong to a comparable stage.

The Paleowestern tradition includes industries which have also been called the "desert cultures." Here we see a wide variety of dart points combined with many kinds of scrapers, heavy core implements, grinding tools, and the like which were used by people who subsisted on small mammals and on wild seeds and berries which they harvested. Although some of these industries were contemporaneous with the early Paleoeastern, the people did not hunt the mammoth and now extinct forms of bison as did their eastern counterparts. The third tradition, Paleonorthern, includes material from Alaska, the Yukon, and the Northwest Territories which appears to be a mixture of several stone technologies, some having probable antecedents in the Old World, some being distantly related to technological developments to the south, and the remainder appearing (probably because of lack of knowledge) to be isolated. The antiquity and, in fact, the relative sequence of most of these northern cultures is an open question, and the several hypotheses all have their adherents. As yet the Paleonorthern tradition throws but little light on the earlier migrations from the Old World to the New. The author briefly reviews the various problems and hypotheses.

The preceding synopsis barely outlines the wealth of information presented, for it omits a number of significant, isolated and hardly classifiable discoveries. Among other things, this book gives evidence of the great advance in archeological knowledge which has taken place during the past decade or two. Where 80 pages were sufficient in the 1939 edition, here some 309 pages of description have been required to summarize adequately data from the author's observations and from the references (nearly 600 in this edition, given in an excellent bibliography). More than half of the latter have appeared during the last decade. This increase in the size of the volume is due to the need for description of recent discoveries. Important though this may be, it appears at times to have limited the value of the presentation. Great emphasis has been placed on the dart points, which sometimes are considered to be the only feature from a camp site which provides a basis for classification. The lack of attention to scrapers, core implements, and other tools can be somewhat misleading and will become more so as investigation brings to light more complete inventories of the cultural units. Additional illustrations and some description of tools other than the points would have broadened the base of this book enormously.

I also feel that the book comes close to being a catalog of special things partially or wholly extracted from their surroundings. This robs the picture of ancient cultures that is presented of a certain amount of depth. Furthermore, this characteristic of the book is not truly representative of the status of archeological investigation of ancient man in America. Historical-developmental hypotheses have been postulated by a number of archeologists who are concerned with the evolution of American cultures. These hypotheses, of course, have been derived from a study of the factual material. Some attention to these contributions would have given the book greater breadth. However, American archeology is presently in a state of rapid growth, and the ideas which are appearing may be unusually transitory. Perhaps the author has been wise to restrict herself to brief, objective description. Taken from this point of view, it would be difficult to see how a more useful compilation could have been made.

FREDERICK JOHNSON
R. S. Peabody Foundation, Andover, Massachusetts

The Invertebrata. A manual for the use of students. L. S. Borradaile and F. A. Potts, with chapters by L. E. S. Eastham and J. T. Saunders. Revised by G. A. Kerkut. Cambridge University Press, New York, 1958. xvii + 795 pp. Illus. $8.50.

It is a rare occurrence in recent times when a new textbook on the subject of invertebrate zoology is published, and therefore the appearance of a revised edition of a highly respected volume, when the revisions are as extensive as they are in this case, is a welcome event indeed. Even a superficial examination of the book reveals that it has taken on a substantially new cast. There are more illustrations, and numerous new ones. With the exception of the rare halftones, all are superior to those of the earlier editions—superior not only because a better grade of paper is used but also because the labels are printed on the

figures rather than in the legends. A good number of simplified diagrams have also been used in this edition. More subtitles have been provided in the text, and this remedies a condition which made earlier editions somewhat unpopular among students. The text treatment is, except for changes in organization, rather similar to that of the earlier editions and seems to have received least attention in the revision. The emphasis is clearly morphological.

The classification used in the organization of the book is essentially that found in the earlier editions, with a few exceptions. One is glad to find the Endoprocta and Ectoprocta separated into two phyla and the Graptolita now treated with the protochordates. The phyla Priapulida and Kinorhynchia, omitted from earlier editions, are now included, albeit very briefly. The sections on the Nemertea, Nematoda, Araneida, and Onychophora have been slightly expanded. The minor phyla, however, still continue to be treated very superficially; more than 50 percent of the text is devoted to Protozoa and Arthropoda. With the increasing tendency to make protozoa and insects the subjects of special courses and to consider them apart from the remainder of the invertebrates, this emphasis is not always desirable.

A new chapter, entitled "Literature," has been added. This is an interesting introduction for the student to further sources of information on all phases of invertebrate zoology.

In summary, although this book is on a subject so extensive in scope that the choice of content has, of necessity, been somewhat arbitrary and hence will not please everyone, the character and certainly the general quality of the coverage make this volume one of the best general undergraduate textbooks available.

F. A. Brown, Jr.
Department of Biological Sciences, Northwestern University

The Problem of Scientific and Technical Manpower in Western Europe, Canada and the United States. 2nd report. Organisation for European Economic Co-operation, Paris, 1958. 221 pp. $2.

The Organisation for European Economic Co-operation has shown a steadily expanding interest in studying the scientific and engineering manpower trends and the problems of education and utilization of technological manpower in the OEEC countries. This volume is OEEC's second statistical report on supply and demand in the sciences and applied sciences. Also included is employment information and information on the numbers graduating from universities and other institutions. The information differs somewhat from country to country due to differences in the detail and completeness of available records. Comparisons between nations must be interpreted in light of differences in terminology and educational systems. Nevertheless, the report is a valuable source of scientific and technical manpower information for the member countries—Austria, Belgium, Denmark, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Sweden, Switzerland, Turkey, and the United Kingdom—and for Canada and the United States, which are not member countries but which cooperate closely with OEEC.

Dael Wolfle
American Association for the Advancement of Science

Treatise on Marine Ecology and Paleoecology. vol. 1. *Ecology.* Joel Hedgpeth, Ed. vol. 2. *Paleoecology.* Harry S. Ladd, Ed. Memoir 67. Geological Society of America, New York, 1957. vol. 1, viii + 1296 pp., $12.50; vol. 2, x + 1077 pp. $10.

The breadth of the world's seas and their deepest dimensions scarcely exceed the scope of these outstanding reference volumes. Each is a monument to its editor and to the scores of specialists who contributed so fully. Each volume consists of a series of chapters with individual bibliographies, summarizing present knowledge on representative topics, followed by still different annotated bibliographies and an index.

Of the 29 chapters in volume 1, about a third are contributions from the Scripps Institution of Oceanography, another third from European authorities in Denmark, Finland, Germany, the Netherlands, the U.S.S.R. and the United Kingdom. After classifying marine environments and considering methods used to obtain ecological data from the sea, the specialists have analyzed modern understanding of physical and chemical factors, marine biogeography and bottom characteristics, and the living communities of major habitats as far as high-tide line on rocky shores and sandy beaches and into estuaries, with special consideration given the Baltic, Black, Caspian, and Aral seas. A combination of case-history method and informed speculation features the final chapters on lunar periodicity, fluctuations in littoral populations, and the etiology of mass mortality in the sea. The annotated bibliographies (215 pp.), each by a specialist, group ecological publications by taxonomic groups of animals and plants.

Of the 24 chapters in volume 2, about a third are by members of the U.S. Geological Survey; all are from this country. An initial six chapters give general consideration to evidence from the fossil record about ecological conditions of the past. The next 15 chapters go carefully into selected North American samples—the paleoecological inferences derived from individual formations—representing the full time scale from the Precambrian to the marine Pleistocene. By way of comparison, two chapters are given over to analysis of modern situations favorable to fossilization, one in bays of the central Texas coast, the other in a tidal flat in Maine. G. Evelyn Hutchinson has attempted to peer into the future of marine paleoecology in a final chapter. The annotated bibliographies (342 pp.) are again on a taxonomic base, but often broken down into separate treatments by geological horizon. As in volume 1, the annotations are at least as valuable as the references themselves, and a conscientious attempt has been made to include pertinent material in all languages (including Russian).

These volumes will probably wear out from repeated use before they grow too out-of-date. All scientists concerned with the sea and the fossil record of its past will need to refer constantly to the *Treatise* and should bless the several organizations which have made the publication in present form a possibility.

Lorus J. Milne
Margery Milne
Department of Zoology, University of New Hampshire

Figurets. More fun with figures. J. A. H. Hunter. Oxford University Press, New York, 1958. xi + 116 pp. Illus. $3.50.

This book is not a "survey of mathematics for the layman"; in fact, it makes no pretense of containing much serious mathematics. In the preface, the author calls the book a "selection of teasers . . . meant for people . . . who enjoy figures without being too serious about them." Readers familiar with his earlier volume, *Fun with Figures,* will know what to expect.

The author is more conscientious than some in that when he says his material is within the grasp of the nonmathematician he really means it. The book is a collection of 150 separate short problems presented entertainingly and in many disguises. Nearly all of them can be solved by arithmetic or algebra, but many are by no means easy. Solutions are given (in the back); and as a further (perhaps too kindly) assist to the solver, most of them are classified by code letter in the table of contents so that the general method of solution can be anticipated.