vertebrates receive their share of emphasis. However he has not succeeded entirely in escaping provincialism. The book has a local dialect—and sometimes its own dialectic. On occasion, generality is implied for situations characteristic only of the "middlewest." This is almost unavoidable and in itself not of great moment. It becomes more disturbing, however, in conjunction with the text's general flavor. Kendeigh is excessively concerned with categories and classifications. These often seem unnecessary and will, I fear, repel precisely those students who should be attracted, if ecology is to prosper. Moreover the author's use of data contributes to this impression. Figures are insufficiently analyzed in the text, and numbers are strewn through it with uncritical abandon. The resulting agglomeration of information will make it difficult for the beginner, without excellent guidance, to sift the general from the specific. Details gain a precedence that Kendeigh probably did not intend. Since the roots of ecological theory are not examined, generalizations often appear *ex cathedra*. In the hands of a pedagogical pedant, the text is much too convenient as a stick both for support and law enforcement. Conversely, it is regrettable that the generalist, who could derive considerable profit from it, is all too likely to underestimate this book.

PETER W. FRANK
Department of Biology,
University of Oregon

Lanthanides and Actinides

The Rare Earths. F. H. Spedding and A. H. Deane, Eds. Wiley, New York, 1961. xi + 461 pp. Illus. $14.75.

Rare Earth Research. Eugene V. Kleber, Ed. Macmillan, New York, 1961. vi + 313 pp. Illus. $9.75.

For a century and half, chemists labored at the separation of the compounds of the rare earth elements, most of which were really not rare, but merely hard to separate. Now, as stated in the preface to *The Rare Earths*, "largely as a by-product of U.S. Atomic Energy Commission activities, quantities of these materials of high purity are available for research workers and their production becomes commercially attractive. . . . All at once, more new metals become available than the number of those in common use." New knowledge is, consequently, being added to the extensive information already available and new uses of the materials are developing.

The two volumes under review are collections of papers which formed the programs of symposia. *The Rare Earths*, consisting of papers presented in November 1959, is published under the auspices of the American Society for Metals in cooperation with the Office of Technical Information, United States Atomic Energy Commission, while the other volume is based on a seminar (held in October 1960) sponsored by the University of California, the Air Force, the Navy, and the Nuclear Corporation of America. In spite of the seeming similarity of the two books and of the fact that five authors contributed to both, the two are very different in their approach to the subject.

Kleber, coordinator of the papers in *Rare Earth Research*, remarks in his preface that "some subjects dear to the hearts of rare earth researchers have not been covered," the symposium being "devoted to areas which are relatively new and in the forefront of today's activities rather than to those already well documented." The 33 papers are fairly evenly distributed under the five headings: Solution Chemistry; Oxide Systems and Their Properties; Structure of Metals, Alloys, and Intermetallics; Physical Properties of Metals, Alloys, and Intermetallics; Mechanical and Metallurgical Properties of Metals, Alloys, and Intermetallics. The content of the book is consistent with its title, rather resembling that of a single number of a journal devoted to current research in a special field and possessing no index.

The Rare Earths was produced by choosing "an experienced scientist in each area of research . . . to write a review paper covering his particular area of interest." The resulting 24 articles fall under the general headings of occurrence and extraction, preparation, properties of metals and alloys, and applications of metals and compounds. A 27-page index adds to the utility of the book. I made immediate use of the volume by revising a list of melting points in my copy of an advanced textbook published within the last 10 years. Many of the melting points were not given in the textbook, and, of those given, three were off by as much as 200° and one was 1000° high. This detail is mentioned to illustrate the more extensive and more accurate information presented as the result of the availability of pure materials in relatively large quantities. The book should be successful in its aim to provide workers with rare earths with "the highlights of the information that has been developed recently concerning these materials." It is also aimed more generally at chemists, physicists, metallurgists, and engineers in various fields of technology, and it is well equipped to find its target.

The specialist should find both books useful. The more general reader or student, seeking knowledge of the subject, should profit from the somewhat more comprehensive character of *The Rare Earths*.

CHARLES P. SMYTH
Department of Chemistry,
Princeton University

Reprints in Reverse Order

The Ancient Sun Kingdoms of the Americas. Aztec, Maya, and Inca. Victor Wolfgang Von Hagen. World Publishing Company, Cleveland, Ohio, 1961. 617 pp. Illus. $12.50.

This large, thick book is a combination of Von Hagen's three Mentor paperbacks (The New American Library's "Ancient Civilization" series): *Realm of the Incas* (1957), *The Aztec, Man and Tribe* (1958), and *The World of the Maya* (1960). It is a publication of high quality—large size (7 by 9½ inches), with hard covers, good paper, admirable typography and format, and many excellent illustrations. The text is only slightly changed; most of it is word for word as in the originals. The annotated bibliographies and the indexes are combined. The principal additions are an introduction, an 8-page chronology, correlating European, Mexican, and Peruvian events, and four excellent color plates of outstanding art objects from the Robert Woods Bliss collection. The golden ornament that illustrates the Inca section, however, was a poor choice, since this is from Venezuela, probably originally Tairona from Santa Marta, Colombia.

The book is a good account, for the interested but uninformed reader, of the three great civilizations of precolombian America. But I will not expect to find it beside the books of Vaillant,

Morley, Thompson, and Rowe on the reference shelves of my professional colleagues. Von Hagen is our best-known popularizer in this field; he writes well and lucidly, and knows his stuff well. Compared with the volume's great amount of information and data, errors are few, and most of those pointed out in reviews on the paperbacks, published in professional journals, have been corrected. However, contrary to modern opinion for the last decade or more, Von Hagen still considers Teotihuacan as Toltec and denies any trans-Pacific influence.

Errors in the spelling of names and native words, such as Chichanel for Chicanel, are still too frequent, though most of those in the earlier editions have been corrected. In the map on page 34, Tabasco is an error for Tarasco.

The many drawings by Alberto Beltran, in the style and spirit of native artists of the period, illustrate the native life so well that, in the words of one professional reviewer, "The [Aztec] book can be strongly recommended on the basis of them alone."

J. ALDEN MASON
University Museum,
University of Pennsylvania

Perceptive Analysis

Fertility and Survival. Population problems from Malthus to Mao-Tse-Tung. Alfred Sauvy. Translated by Christine Brook-Rose. Criterion Books, New York, 1961. 232 pp. Illus. $7.50.

In this easily read and informative book the population problem is put in perspective by Alfred Sauvy, the French demographer and scholar who has contributed so remarkably to the development and organization of modern demographic research in France. His findings reflect his years of experience on the Population Commission of the United Nations and many of the able inquiries carried out by the National Institute of Demographic Studies (of France) under his directorship.

The book is divided into three main parts. In the first, devoted to data and "vain solutions," the population problem is represented as existing primarily in the underdeveloped world. The problem has been greatly accentuated in this world by the marked decline in mortality which began some 20 to 30 years ago. For fertility has declined little if at all, with the result that natural increase has risen to 2 to 3 percent per year, even in densely populated countries, and emigration can provide little if any relief. Accordingly, if man's lot is to improve appreciably, output must be increased much more rapidly or fertility must be reduced.

In the second part, Sauvy shows the "economic solution" to be inadequate. It is seldom possible for underdeveloped countries to maintain high current rates of natural increase and at the same time supply enough capital and other prerequisites for economic growth to permit per capita income to rise notably and continuously. Nor is foreign aid likely to be in sufficient volume. "The economic solution is not enough." There is need also, he indicates in part 3, for the demographic solution, control of births and reduction of the rate of natural increase to manageable dimensions; but this solution must be accompanied by economic development.

Sauvy devotes some attention to the demographic situations of communist countries, to the bearing of communist ideology upon demographic practice, and to the probable impact of the perfection of sterilizing pills. Near the bottom of page 22 the number cannot be "3,000 millions"; the underdeveloped-country densities reported on page 110 incorrectly refer to 1800.

JOSEPH J. SPENGLER
Department of Economics,
Duke University

Theory and Application

Separation of Heavy Metals. Anil K. De. Pergamon, New York, 1961. 308 pp. $9.

This is a compilation of methods for separating certain metals by immiscible solvent extraction and ion exchange. The metals considered are, to a large extent, those which are important in the nuclear energy field, and the book will interest radiochemists and chemical analysts. Approximately 50 metals are treated, namely those included in the series Rb to Te (Z = 37 to 52), Cs to Bi (55 to 83), and Fr to No (87 to 102).

The book is divided into four parts. Parts 1 and 2 deal with extraction and ion-exchange separations, respectively; common procedures are given in brief form, with some consideration of the elementary theoretical aspects of these methods. Analytical procedures for determination of the separated heavy metals are compiled in part 3. The treatment is very compressed; for example, under uranium we find directions for two gravimetric, one volumetric, one polarographic, one fluorimetric, and three colorimetric methods presented in approximately three pages. In part 4 a number of well-known separation schemes for processing spent reactor fuels and for producing radioisotopes are outlined. The appendix contains tables of fission products, properties of organic solvents and of some chelating agents, and characteristics of ion-exchange resins. All this material is covered in a little less than 300 pages of rather large type.

It is useful to have a one-volume list of both liquid-liquid and ion-exchange methods for separating the metals mentioned, but users of this book should know that separation procedures published in the last 3 or 4 years are, for the most part, not included. Only a dozen or so literature references are dated later than 1957, and most of these are for 1958.

E. B. SANDELL
School of Chemistry,
University of Minnesota

Aa to Zoophyte

A Glossary of Geographical Terms. Prepared by a committee of the British Association for the Advancement of Science. L. Dudley Stamp, Ed. Longmans, Green, London; Wiley, New York, 1961. xxix + 539 pp. $10.

This work, in a genetic sense the 50-odd-year-old scion of a near-published glossary by Hugh Robert Mill, represents a contemporary terminological "blood, sweat, and tears." The issue is as fortunate as was the Battle of Britain, despite the "divergencies of usage between North American and English English."

The volume is a refreshingly honest evaluation of consent, dissent, and bepuzzlement relative to the import of the common, and not-so-common, terms of the geographical tongue. For the careful peruser, it also is an adventure in geographical terminology, from *aa*, on page 1, to *zoophyte*, on page 496. Those disposed to consult this volume