

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 WOLFE
*American Association for the
Advancement of Science*

Treatise on Marine Ecology and Paleocology. vol. 1. *Ecology*. Joel Hedgpeth, Ed. vol. 2. *Paleocology*. 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*

Figures. 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.

One finds the problems somewhat lacking in variety, but that may be unavoidable within the prescribed scope. Possibly a wider choice from the field of geometry might have provided a dash of something different with which to flavor the algebraic diet.

Although the book is in no sense a textbook, it could well be used by mathematics clubs or for outside reading in connection with high-school mathematics courses. In addition to illustrating many applications of algebra, the book could introduce a student to indeterminate and Diophantine equations, which are often slighted in standard courses. It also gives a glimpse of the fact that many problems cannot be solved without considerable trial and error. If algebra students are unaware of this, it is high time they were told; mathematics is like that!

C. STANLEY OGLIVY

Department of Mathematics,
Hamilton College

The Handbook of Feedstuffs. Production, formulation, medication. Rudolph Seiden and W. H. Pfander. Springer, New York, 1957. xii + 591 pp. \$8.

Animal feeding has become an ever more complicated and competitive business that requires a sound foundation in agronomy, animal husbandry, biochemistry, botany, nutrition, pharmacology, physiology, and economics. It is obvious that no agricultural agent, farmer, feeder, or feedstuff manufacturer can have the up-to-date knowledge in all these fields of basic and applied science necessary for taking advantage of recent advances and discoveries; and even the scientific worker specializing in any one field related to animal feeding needs to have good background information about the present status of the other fields. All such readers will welcome this first encyclopedic collection of facts and figures about feedstuffs, written by an eminent agricultural chemist, who is a consultant on veterinary pharmaceuticals, and by an outstanding animal nutritionist, who is professor of animal husbandry at the University of Missouri.

The *Handbook* lists all feeds produced on ranches and farms or in factories, data on consumption by various kinds of farm animals, and the ratios applied, and discusses the economic significance of these feeds. Since about 25 percent of manufactured feedstuffs contain natural or synthetic supplements, drugs, and growth stimulants, the many substances that recently have come into use as feedstuff additives, such as antibiotics, sulfonamides, arsenicals, vitamins, hormones, and amino acids, are described and discussed from a physiological and

nutritional viewpoint. Although the work is based upon the investigations of hundreds of experts, the authors have succeeded in presenting even involved scientific matters in simple and understandable language, thus making the information accessible also to the farmer and student of agriculture, who, like the other users of the work, will find its comprehensiveness and the alphabetical arrangement of its extensive subject matter most convenient.

FRANCIS JOSEPH WEISS

Arlington, Virginia

New Books

Mental Deficiency. In relation to problems of genesis, social and occupational consequences, utilization, control and prevention. J. E. Wallace Wallin. Journal of Clinical Psychology, Brandon, Vt., 1956. 200 pp. \$5.

Georgia Birds. Thomas D. Burleigh. University of Oklahoma Press, Norman, 1958. 775 pp. \$12.50.

Clinical Enzymology. Gustav J. Martin, Ed. Little, Brown, Boston; Churchill, London, 1958. 248 pp. \$6.

Lumber. Nelson Courtlandt Brown and James Samuel Bethel. Wiley, New York; Chapman & Hall, London, ed. 2, 1958. 393 pp. \$9.

Annual Review of Medicine. vol. 9. David A. Ryland and William P. Creger, Eds. Annual Reviews, Stanford, Calif., 1958. 530 pp. \$7.

Protides in the Biological Fluids. Proceedings of the fifth colloquium, Bruges, Belgium, 1957. H. Peeters, Ed. Elsevier, Amsterdam, 1958. 260 pp. \$8.50.

A Short Introduction to Archaeology. V. G. Childe. Macmillan, New York, 1958. 142 pp. \$2.50.

A Sourcebook for the Biological Sciences. Evelyn Morholt, Paul F. Brandwein, Alexander Joseph. Harcourt, Brace, New York, 1958. 521 pp.

Nerves Explained. A straightforward guide to nervous illnesses. Richard Asher. Thomas, Springfield, Ill., 1958. 157 pp. \$2.75.

Studies in the Mathematical Theory of Inventory and Production. Kenneth J. Arrow, Samuel Karlin, Herbert Scarf; contributions by Martin J. Beckmann, John Gessford, Richard F. Muth. Stanford Univ. Press, Stanford, Calif., 1958. 350 pp. \$8.75.

Advances in Chemical Engineering. vol. II. Thomas B. Drew and John W. Hoopes, Jr. Academic Press, New York, 1958. 348 pp. \$9.50.

Phenolic Resin Chemistry. N. J. L. Megson. Academic Press, New York; Butterworths, London, 1958. 230 pp. \$10.80.

Physical Optics. R. A. Houstoun. Interscience, New York, 1958. 306 pp. \$6.25.

Professional Ethics and Civic Morals. Emile Durkheim. Translated by Cornelia Brookfield. Free Press, Glencoe, Ill., 1958. 272 pp. \$5.

The City. Max Weber. Translated and edited by Don Martindale and Gertrud Neuwirth. Free Press, Glencoe, Ill., 1958. 242 pp. \$4.

La Souche du BCG. Monographie de l'Institut de Microbiologie et d'Hygiène de l'Université de Montréal (en collaboration avec le Département de Bactériologie de la Faculté de Médecine et avec l'École d'Hygiène). A. Frappier and M. Panisset. Institut de Microbiologie et d'Hygiène de l'Université de Montréal, Montreal, Canada, 1957. 120 pp.

Textbook of Dendrology. Covering the important forest trees of the United States and Canada. William M. Harlow and Ellwood S. Harrar. McGraw-Hill, New York, ed. 4, 1958. 572 pp. \$8.75.

Applied Physiology of the Eye. H. Willoughby Lyle and T. Keith Lyle. Bailliere, Tindall and Cox, London, 1958 (order from Williams & Wilkins, Baltimore). 349 pp. \$9.

Traité de Zoologie. vol. XIII, *Agnathes et Poissons.* Anatomie, ethologie, systématique. Pierre P. Grassé, Ed. Masson, Paris, 1958. 924 pp. Paper, F. 12,000; cloth, F. 13,000.

Traité de Paléontologie. L'origine des mammifères et les aspects fondamentaux de leur évolution. vol. VI, *Mammifères, Evolution.* Jean Piveteau, Ed. Masson, Paris, 1958. 962 pp. Paper, F. 15,500; cloth, F. 16,500.

Matière et Antimatière. Maurice Duquesne. Presses Universitaires de France, Paris, 1958. 126 pp.

The Teaching of Geography. Zoe A. Thralls. Appleton-Century-Crofts, New York, 1958. 347 pp. \$3.75.

Variation in Tracheid Length and Wood Density in Geographic Races of Scotch Pine. School of Forestry, Bull. No. 64. Robert M. Echols. Yale Univ. Press, New Haven, Conn., 1958. 52 pp. \$1.50.

Proceedings of the International Symposium on Isotope Separation. Held in Amsterdam, 23-27 Apr. 1957. J. Kistemaker, J. Bigeleisen, A. O. C. Nier. North-Holland, Amsterdam; Interscience, New York, 1958. 724 pp. \$15.

Skin Grafting. James Barrett Brown and Frank McDowell. Lippincott, Philadelphia, ed. 3, 1958. 426 pp. \$15.

Yearbook of the International Council of Scientific Unions. 1958. Secretary General, ICSU, Paleis Noordeinde, The Hague, Netherlands, 1958. 74 pp. 5s.

Castilla's Spanish and English Technical Dictionary. vol. I, *English-Spanish*, 1611 pp.; vol. II, *Spanish-English*, 1137 pp. Philosophical Library, New York, 1958. \$45.

Soviet Pharmaceutical Research. Consultants Bureau Chemistry Collection No. 4. vol. 1, *Pharmaceutical Chemistry*, 447 pp.; vol. 2, *Pharmacognosy*, 401 pp.; vol. 3, *Medicinal Chemistry*, 556 pp. Consultants Bureau, New York, 1958 (volumes may be ordered separately). \$200.

De l'Actin à l'Homme. vol. 1, *Anticipation et Mémoire. Bases de l'Évolution Psychique.* Henri Pieron. Presses Universitaires de France, Paris, 1958. 306 pp. F. 1600.

Research and Education in Rheumatic Diseases. Transactions of the Second National Conference at National Institutes of Health, Bethesda, Md., 1 Dec. 1956. Joseph J. Bunim, Ed. National Institute of Arthritis and Metabolic Diseases, National Institutes of Health, Bethesda, 1958. 156 pp.