

the format of the text has been improved. There are a few typographical errors and some incomplete or erroneous references, but these do not detract from the general usefulness of the book. Curiously, "anlage" is consistently spelled as "anlagé," an error not present in the previous edition.

The author quotes W. B. Bean (page 103): ". . . criticism, an open and honest look at the world and at ourselves must be desired actively and courted assiduously. It must become the mistress of the scientist. . . ." If one embraces this mistress, one must say of the present edition that it does not reflect the progress in embryology during the 14 years since the previous edition was published. Few of the recent references that were added at the ends of chapters were incorporated into the text. Unfortunately, many significant recent references were omitted, particularly in the sections on early amphibian development and chemical embryology. Immunological procedures were ignored, and no reference has been made to the literature on the electron microscope. Chromatographic, electrophoretic, isotopic, and immunological techniques can be adapted to laboratory exercises suitable for advanced students, and exercises of this nature should be included in a modern course in experimental embryology.

Nevertheless, advanced undergraduate and beginning graduate students will find the manual useful, and within the framework of limitations outlined above, it is recommended.

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Mathematical Problems

Mathematics Manual. Methods and principles of the various branches of mathematics for reference, problem solving, and review. Frederick S. Merritt. McGraw-Hill, New York, 1962. xxi + 378 pp. Illus. \$9.50.

In the preface the author says: "This manual has one aim: to make it easy for you to solve the mathematical problems you encounter in your work and hobbies." The book should be judged in the light of this aim.

The manual is a compendium of axioms, definitions, and theorems, taken from arithmetic, school algebra, synthetic and analytic Euclidean geom-

etry of one- two- and three-dimensional spaces, real calculus, differential equations, matrices, determinants, vectors, tensors, functions of a complex variable, combinatorial mathematics, and statistics. The plan of the work and the arrangement of the material are excellent, and the fields covered are treated fully. There are some cross references in the text.

The usefulness of the book is destroyed, to a large extent, by poor editing. Any work of this kind could hardly be expected to be free of mistakes, but this one contains an inexcusable number of errors, inconsistencies, and unusual definitions. For example, on page 25 we find the statement: "A number or letter without a sign in front of it is assumed to be positive," but, on page 34, $p = -1$. This kind of thing appears on almost every page.

The index is inadequate, and the number of cross references is insufficient to accomplish the declared aim of the work. I experimented by attempting to trace information on certain topics. Frequently I encountered terms for which no cross reference was given and which could not be found in the index; yet these terms were defined elsewhere in the book.

The manual might be useful for finding a specific piece of information, provided the user has a good general knowledge of the mathematics involved, but, even in this case, care would have to be exercised to avoid being led astray by one of the numerous errors. It is doubtful that the book will be of any use to the mathematical novice.

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Notes

Geological Dictionaries

These volumes—the **Dictionary of Geological Terms** (Doubleday, Garden City, N.Y., 1962. 555 pp. Paper, \$1.95), which was prepared under the direction of the American Geological Institute, and John Challinor's **A Dictionary of Geology** (University of Wales Press, Cardiff; Oxford University Press, New York, 1962. 241 pp. \$5)—have similar titles and general aims, but they are not directly competitive. Students of earth science will find the two books useful supplements as guides to the meaning

of words in a vocabulary that grows ever larger and more complex. The second edition of the *Glossary of Geology and Related Sciences* (1960), also prepared under the direction of the AGI, defined nearly 17,000 terms, and the Doubleday paperback is an abridgment of the *Glossary*, with the number of terms reduced to about 7500. Challinor's book, a far more selective list, gives attention to some 1500 items; the author states in the preface that the book is offered as "an essay towards a critical and historical review of a selected ABC of the subject."

A difference in their approach to definitions is pointed out by comparing their treatments of broad, basic terms. The American volume defines geology in less than 50 words, merely outlining the general scope and principal divisions of the science. Challinor's definition, stated in more than 800 words, traces the gradual adoption of the term through more than a century, cites the work of outstanding pioneers, and lists several publications that record stages in the growth of geologic concepts. Similar short historical essays are devoted to the terms *geosyncline*, *granite*, *stratigraphy*, and many others. Contrasted with these lengthy definitions are a few that suffer from brevity. Readers who are not familiar with *décollement* get little help from the bare statement that it is "rupture resulting from folding."

Despite the limitations of his shorter total list, Challinor includes a number of terms omitted in the American dictionary; examples are *dendroidea*, *dinosaur*, *pterodactyl*, *Old Red Sandstone*, *Moine series*, *Millstone Grit*. Some differences in content reflect the natural diversity of interest among geologists in the two countries. Challinor also defines *clunch*, *clint*, *geofault*, *geogeny*, and other terms now practically obsolete; these definitions will help some readers of early geologic literature.

Aside from a preface and a lengthy list of helpers on the project, the AGI dictionary is devoted to definitions. Challinor's book includes three pages that explain derivations and meanings of prefixes and suffixes common in geologic terms, and a 19-page classified index in which terms are grouped in columns under 48 numbered headings. Since some groups contain more than 100 terms each (and the terms are not in alphabetical order), the list has only limited value as a finding index.

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Chemical Dictionaries

Although the new editions of **The Condensed Chemical Dictionary** [by Arthur and Elizabeth Rose (Reinhold, New York, ed. 3, 1961. 1275 pp. \$17.50)] and **A New Dictionary of Chemistry** [edited by L. MacKenzie Miall (Interscience, New York, ed. 3, 1961. 604 pp. \$13.75)]—belong in the class of chemical dictionaries, the two are so different that they actually complement one another.

The Rose book is more of a dictionary in the usual sense, in that its coverage is limited mainly to the names of chemicals and to trademarked items. Physical properties and uses, as well as structural formulas (whenever they are useful), are given for each entry. The treatment is reminiscent of that in the *Merck Index*, although the coverage is naturally much broader. A unique feature is its very thorough and up-to-date treatment of a large number of trade names, and perhaps its most useful feature is the translation of abbreviations and trivial names of pharmaceutical and industrial products and intermediates into systematic chemical nomenclature.

The Miall dictionary is more of a short encyclopedia of chemistry. Its entries cover elements, individual compounds, generic terms for classes of compounds, and descriptions of instruments, machines, reactions, and processes, as well as clear statements and explanations of the fundamental laws, phenomena, and concepts of chemistry. The work is rendered even more valuable for reference purposes by its presentation of brief, well-written biographies of those who have contributed significantly to the development of chemistry.

Both dictionaries are well put together, current, authoritative, and easy to use. Each one is well worth its price.

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Since its publication in 1939, the **Dictionary of Commercial Chemicals** by Foster and Cornelia Snell (Van Nostrand, Princeton, N.J., ed. 3, 1962. 723 pp. \$12.50) has gone through two editions. It is heartening to know that "... successive printings or editions. . . ." are contemplated. The book's 38 chapters are replete with concise information, and each chapter's introductory paragraph is not only informative but

very interesting as well. Eight appendices, including those entitled "Medical terms defined," "Lower limit of explosive concentration of vapor," and "Lower limit of explosive concentration of dusts," complete the dictionary, which is apparently intended for production chemists but which is equally invaluable to any chemist who ventures outside his own narrow field of interest. A truly useful source of information.

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New Books

Biological and Medical Sciences

Advances in Ophthalmology. vol. 12. E. B. Streiff, Ed. Karger, New York, 1962. 386 pp.

Animal Parasitology. A laboratory manual. Elmer R. Noble and Glenn A. Noble. Lea and Febiger, Philadelphia, 1962. 120 pp. Illus. \$3.50.

Annual Review of Medicine. vol. 13. David A. Ryland, Ed. Annual Reviews, Palo Alto, Calif., 1962. 559 pp. Illus. \$7.

Antimicrobial Agents and Chemotherapy. Proceedings of the First Interscience Conference on Antimicrobial Agents and Chemotherapy, held in New York (1961). Maxwell Finland and George M. Savage, Eds. American Soc. for Microbiology, Detroit, 1962. 998 pp. Illus. \$10.

Aspects of Disease Transmission by Ticks. Symposia No. 6. Proceedings of the symposium held at the Zoological Society of London, 8 March 1961. Don R. Arthur, Ed. The Society, London, 1962. 265 pp. Illus. Plates. Paper, £4.

Biochemistry. Israel S. Kleiner and James M. Orten. Mosby, St. Louis, ed. 6, 1962. 867 pp. Illus. Plates. \$9.75.

British Prosobranch Molluscs. Their functional anatomy and ecology. Vera Fretter and Alastair Graham. British Ray Society, London, 1962. 771 pp. Illus. £8 8s.

Cryptobiotic Stages in Biological Systems. Nathan Grossowicz, Shlomo Hestrin, and Alexander Keynan, Eds. Elsevier, New York, 1961. 244 pp. Illus. Paper, \$5.

The Development of Homeostasis. With special reference to factors of the environment. Proceedings of the symposium held in Liblice near Prague, 15–17 September 1960. E. F. Adolf, Chairman. Publishing House of the Czechoslovak Acad. of Sciences, Prague; Academic Press, New York, 1962. 217 pp. Illus. Plates. \$7.

Dissection of the Cat (and comparisons with man). A laboratory manual. Bruce M. Harrison. Mosby, St. Louis, ed. 4, 1962. 215 pp. Illus. Paper, \$3.75.

The Eye. vol. 1, *Vegetative Physiology and Biochemistry.* Hugh Davson, Ed. Academic Press, New York, 1962. 455 pp. Illus. \$14.

Fundamentals of Keratinization. Publ. No. 70. Earl O. Butcher and Reidar F. Sognnaes, Eds. American Assoc. for the Advancement of Science, Washington,

D.C., 1962. 200 pp. Illus. Cash price to members, \$5.75; \$6.50. A symposium presented at the 1960 meeting of the AAAS, held in New York, December 1960.

Human Physiology. W. B. Youmans. Macmillan, New York, ed. 2, 1962. 558 pp. Illus. \$6.75.

Introduction to Biology. Douglas Reid. Cambridge Univ. Press, New York, 1962. 141 pp. Illus. \$3.

An Introduction to the Study of Disease. William Boyd. Lea and Febiger, Philadelphia, ed. 5, 1962. 478 pp. Illus. Plates. \$7.50.

Die Mammographie. Technik, Röntgenatlas, Statistik. Dietrich Buttenberg and Karl Werner. Schattauer, Stuttgart, Germany, 1962. 116 pp. Illus. DM.24.50.

Mechanisms of Organic and Enzymic Reactions. S. G. Waley. Oxford Univ. Press, New York, 1962. 379 pp. Illus. Plates. \$11.20.

Medical Entomology. Arthropods and human disease. William R. Horsfall. Ronald, New York, 1962. 476 pp. Illus. \$10.

The Microbiology of the Atmosphere. P. H. Gregory. Hill, London; Interscience, New York, 1961. 267 pp. Illus. Plates. \$10.50.

The Morphology and Taxonomy of Male Scale Insects (Homoptera: Coccoidea). M. S. K. Ghauri. British Museum (Natural History), London, 1962. 228 pp. Illus. £4.

The Nature of Parasitism. The relationship of some metazoan parasites to their hosts. W. P. Rogers. Academic Press, New York, 1962. 296 pp. Illus. \$7.50.

Principles of Biology. Neal D. Buffaloe. Prentice-Hall, Englewood Cliffs, N.J., 1962. 378 pp. Illus. Text ed., \$6.95; trade ed. \$9.95.

Progress in Surgery. vol. 2. M. Allgöwer, Ed. Karger, New York, 1962. 328 pp. Illus. \$15.

Rabbit Brain Research. vol. 2, *Electroencephalographic Atlas for Pharmacological Research.* Effect of drugs on the electrical activity of the rabbit brain. Vincenzo G. Longo. Elsevier, New York, 1962. 140 pp. Illus.

Properties of Membranes and Diseases of the Nervous System. Based on a symposium (June 1961) sponsored by the American Neurological Association and the American Association of Neuropathologists. Donald B. Tower, Sarah A. Luse, Harry Grundfest. Springer, New York, 1962. 111 pp. Illus. Paper, \$4.50.

Radiation Protection in Mammals. John F. Thomson. Reinhold, New York, 1962. 219 pp. Illus. \$7.75.

The Semen of Animals and Artificial Insemination. Technical Communication No. 15, Commonwealth Bureau of Animal Breeding and Genetics, Edinburgh. J. P. Maule, Ed. The Bureau, Farnham Royal, England, 1962. 448 pp. Illus. 60s.

Vitamin B₁₂ und Intrinsic Faktor. Second European symposium. H. C. Heinrich, Ed. Enke, Stuttgart, Germany, 1962. 818 pp. Illus.

Works of the Institute of Higher Nervous Activity (Trudy Instituta Vysshei Nervnoi Deyatel'nosti. Akademiya nauk SSSR. 1959). vol. 3, Physiological series. Translated by M. Roublev. Israel Program for Scientific Translations (order from the OTS, U.S. Department of Commerce, Washington, D.C.). 263 pp. Illus. Paper, \$2.75.