Readings in Botany

Selected Botanical Papers. Irving William Knobloch, Ed. Prentice-Hall, Englewood Cliffs, N.J., 1963. xiv + 311 pp. Paper, $3.95.

This collection consists of 58 selected papers arranged in 18 categories; the editor has provided a brief introduction, a paragraph or two, for each paper. The selection covers almost the entire spectrum of botany and even includes some basic aspects of biology. Several of the papers were chosen from the older and historically important works —from Theophrastos, Gnew, Ingen-Housz, Linnaeus, von Humboldt, Asa Gray, and others. Most, however, were written in the 20th century. The collection contains some technical works, but the majority of the items emphasize the more general aspects of the science—the sort of papers that botanists prepare as presidential addresses or for symposia. Many items have been condensed somewhat by omitting certain passages, but they have survived the operation well and seem not to have suffered in the process.

The book is aimed directly at the beginning student of botany, and each of the papers is followed by a series of questions for the student. The editor calls attention to the fact that, for most students, the first course in botany is also the last. A survey of large midwestern colleges showed that 82 percent of those who took an introductory course in botany never pursued the subject further. Beginning botany, the editor points out, should be made useful to those who study it, and it should not be considered merely an introductory course for future professionals. Important papers, such as those in this collection, should, he hopes, add to the educational background of those whose interests lie elsewhere.

The papers as a whole seem to have been selected exceptionally well, despite the necessary omission of many excellent items. The book as it stands should aid the educational process of any student who becomes acquainted with it. A very minor exception must be taken, however, to an excerpt from *On Plants* which is ascribed by the editor (following many precedents) to Aristotle. True, the selection follows the peripatetic tradition, but almost certainly it was not written by Aristotle. Historians of science are almost unanimous in ascribing it to Nicolas of Damascus, who lived three centuries later.

The emphasis of *Selected Botanical Papers*, however, is upon the great modern and very recent discoveries, such as radioactive carbon, the nature of the gene, genetic transduction, the possibilities of space biology, Arctic botany, and tree-ring dating. I am convinced that the contents of this collection should be in the repertory of every broadly educated man.

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Early Man and Archeology

The Prehistory of East Africa. Sonia Cole. Macmillan, New York, ed. 2, 1963. 382 pp. Illus. $7.95.

Sonia Cole has produced a fully revised edition of her *Prehistory of East Africa*, first published in 1954 in England as a Penguin paperback. This new edition is updated to include the results of varied prehistoric and protohistoric archeological studies carried out in eastern Africa during the last decade. Consequently, it is the single, and the best, available summary of early man and archeology in one of the most fascinating regions of the world. The coverage includes principally Kenya, Uganda, and Tanganyika, the several countries of the Horn (Ethiopia and Somalia), and the Sudan. However, the discussion is placed in broader perspective throughout, with reference to other parts of Africa, both central and southern, as well as to the vast Saharan zone.

The scope of the book is broad, with initial chapters on the country and its peoples, the geographical setting, and the nature of the regional Pleistocene stratigraphic and faunal successions, including the evidence for past climatic changes. In the latter case, some important work is still in progress and some of the author's statements (for example, those on the existence of a major time gap separating Beds I and II at Olduvai Gorge and those about the nature and magnitude of changes in Pleistocene mammal faunas) already need revision. The remainder of the book is essentially chronological, with chapters on the Tertiary higher primates, their habitats and evolutionary significance; very early hominids (genus *Australopithecus*) of the early Pleistocene, their age and ecological adjustments; the peoples of the mid-Pleistocene, their distribution and cultural adaptations; the varied cultural patterns of late Pleistocene peoples; artistic and other cultural manifestations of the post-Pleistocene hunter-gatherers; and discussions of subsequent cultural adaptations and inferred population shifts prior to, and attendant upon, the introduction of food production and animal domestication and the introduction of iron-working.

Sonia Cole is a most skillful writer, and, while the intricacies of stone artifact typology may seem tedious or the meaning of pottery types and their distribution may seem obscure, even the nonarcheologist, with an interest in Africa or the study of man's past, will find that the story she competently unfolds makes interesting reading.

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Inorganic Chemistry

Inorganic Thermogravimetric Analysis. Clement Duval. Translated from the French by Ralph E. Oesper. Elsevier, New York, ed. 2, 1963. xvi + 722 pp. Illus. $22.

The first edition of this work, published in 1953, was a monograph in which the author and his co-worker described their studies of the thermal behavior of some thousand or more inorganic compounds. The thermograms (plots of sample weight as a function of temperature) that the author provided have been of considerable use to the analytical and inorganic chemist; among other things, these data have certainly led to a more rational basis for the heat treatment of precipitates in gravimetric analyses.

The new edition of *Inorganic Thermogravimetric Analysis* is appreciably larger than the original, owing to the impressive number of contributions to the field made by the author and by many others during the period from 1953 to 1961. According to the author, data for some 5000 compounds of 79 elements are given. Unfortunately, it was not possible to reproduce the thermolysis curves for the compounds studied; only written descriptions of

regions of thermal stability and instability are presented.

Since the first edition was published, a large number of thermobalances have been described in the literature, and ten of these are available commercially. Two chapters are devoted to a description of the construction and performance characteristics of several of these instruments. There is also a chapter on the precautions necessary in using the thermobalance and in interpreting the data obtained.

This new edition is a useful source of information on the thermal behavior of a wide variety of inorganic compounds.

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Recent Research

Fortschritte der Zoologie. vol. 15, part 3 (96 pp., 1962), and vol. 16, part 1 (186 pp., 1963). H. Bauer, Ed. Fischer, Stuttgart, Germany.

The first summary article in part 3 of volume 15 is by F. J. Gouin, and it deals with the anatomy, morphology, and developmental aspects of the abdomen of insects, with special emphasis upon the genital organs. For the various pregenital and genital parts, the author uses mainly the nomenclature of Snodgrass, which is based more on anatomical and developmental aspects than on function, while the taxonomists still use a nomenclature according to function. The second paper (by I. Eibl-Erbsfeldt and W. Wickler) summarizes the newer work concerned with the ontogenesis and organization of behavior; this paper is based mainly on publications from the laboratories of Beach, von Frisch, Gray, Hess, Lorenz, and von Holst. The last paper (by A. Egelhaaf) is a very worthwhile attempt to summarize our present knowledge of biochemical gene effects, mainly the gene physiology of the pigmentation of vertebrates and of arthropods, the genetic control of metabolic aberrations, of enzymes, and of the various blood proteins, and also the genetics of complex loci and pseudoallelism.

Part 1 of volume 16 begins with a paper in which Hanke and Giersberg summarize the more recent work on the various hormones of vertebrates and invertebrates. There are special chapters which treat hormone effects during the migration of fishes, hormonal mechanisms in the reproduction of lower vertebrates, and hormonal effects upon periodicity in the behavior of birds. M. Lindauer provides an extensive report on the papers concerned with the general sensory mechanisms that are involved in the orientation in space by animals: namely, the optical sense, the chemical sense, and finally, the mechanical senses (orientation by acoustic stimuli, gravity, water and air currents, kinesthetic sensation, and electromagnetic fields). The last article (by W. Wieser) deals with the dynamics of marine population, the production biology of the ocean as a whole, and the structure of mixed communities of different marine organisms.

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New Books

General

Admission Requirements of American Medical Colleges, Including Canada, 1963–64. Compiled by E. Shepley Nourse. Assoc. of American Medical Colleges, Evanston, Ill., 1963. 264 pp. Paper, $3.

Aid for Federally Affected Public Schools. I. M. Labovitz. Syracuse Univ. Press, Syracuse, N.Y., 1963. 217 pp. Paper, $1.75.

Aspens. Phoenix trees of the Great Lakes region. Samuel A. Graham, Robert P. Harrison, Jr., and Casey E. Westell, Jr., Eds. Univ. of Michigan Press, Ann Arbor, 1963. 286 pp. Illus. $7.50.

Bibliography and Index of Geology Exclusive of North America. vol. 26. Marie Siegrist, Mary C. Grier, and others. Geological Soc. of America, New York, 1963. 815 pp.

The Big Dish. The fascinating story of radio telescopes. Roger Piper. Harcourt, Brace, and World, New York, 1963. 159 pp. Illus. $3.25.

A Book of Mathematical and Reasoning Problems. Fifty brain twisters. D. St. P. Barnard. Van Nostrand, Princeton, N.J., 1962. 109 pp. Illus. $2.50.

Careers in the Biological Sciences. William W. Fox. Walck, New York, 1963. 114 pp. Illus. $3.50.

The Chambered Tombs of Scotland. vol. 1. Audrey Shore Henshall. Univ. of Edinburgh Press, Edinburgh, Scotland; Aldine, Chicago, 1963. 470 pp. Illus. $20.

A Comprehensive Bibliography on Operations Research, 1957–1958. David B. Hertz, Ed. Wiley, New York, 1963. 417 pp. $8.75.

Congressional Districting. The issue of equal representation. Andrew Hacker. Brookings Institution, Washington, D.C., 1963. 143 pp. Cloth, $3.50; paper, $1.95.

Conservationists and What They Do. C. William Harrison. Watts, New York, 1963. 175 pp. $3.95 (juvenile book).

Correspondence between Spencer Fullerton Baird and Louis Agassiz—Two Pioneer American Naturalists. Publ. No. 4515. Elmer Charles Herber, Ed. Smithsonian Institution, Washington, D.C., 1963. 237 pp. Plates.

Dairy Engineering Conference. Held at East Lansing, Mich., February 1963. G. Robert Johnson *et al.* Michigan State Univ., East Lansing, 1963 (order from Continuing Education Service, Kellogg Center, Michigan State University). 125 pp. Illus. Paper, $2.

The Development of Scientific Method. W. S. Fowler, Pergamon, London, 1962; Macmillan, New York, 1963. 130 pp. Illus. Paper, $1.45.

The Dictionary of Chemical Names. W. E. Flood. Philosophical Library, New York, 1963. 270 pp. Illus. $7.50.

Dictionary of Modern Acronyms and Abbreviations. Milton Goldstein. Sams (Bobbs-Merrill), Indianapolis, 1963. 158 pp. $4.95.

Educators Guide to Free Films. Mary Foley Horkheimer and John W. Diffor, Eds. Educators Progress Service, Randolph, Wis., ed. 23, 1963. 671 pp. Paper, $9.

Educators Guide to Free Tapes, Scripts, and Transcription. Walter A. Wittich and Gertie Hanson Halsted, Eds. Educators Progress Service, Randolph, Wis., ed. 10, 1963. 177 pp. Paper.

Emerging Techniques in Population Research. Proceedings of a conference held in September 1962. Arthur A. Campbell *et al.* Milbank Memorial Fund, New York, 1963. 307 pp. Illus. Paper, $2.

Enrichment Mathematics for High School. 28th yearbook. National Council of Teachers of Mathematics, Washington, D.C., 1963. 398 pp. Illus. Paper, $1.50; cloth, $3.

Exploring the Secrets of Space. Astronautics for the layman. I. M. Levitt and Dandridge M. Cole. Prentice-Hall, Englewood Cliffs, N.J., 1963. 320 pp. Illus. $5.95.

Fifty Mathematical Puzzles and Oddities. Nicholas E. Scripture. Van Nostrand, Princeton, N.J., 1962. 83 pp. Illus. $2.50.

Problems of World Disarmament. A series of lectures delivered at the Johns Hopkins University. Charles A. Barker, Ed., Houghton Mifflin, Boston, 1963. 182 pp. Paper, $1.75; cloth, $2.50.

Professional Careers in Science and Technology. Morton Sherman. Scarecrow Press, New York, 1963. 463 pp. $10.

Science in Progress. vol. 13. Wallace R. Brode, Ed. Yale Univ. Press, New Haven, Conn., 1963. 319 pp. Illus. $7.50.

The Story of Blood. Kenneth Walker. Philosophical Library, New York (© 1958), 1962. 213 pp. Illus. $6.

Technically Speaking. Oral communication for engineers, scientists, and technical personnel. Harold Weiss and J. B. McGrath, Jr. McGraw-Hill, New York, 1963. 266 pp. Illus. $7.95; text, $5.95.

Under the Mediterranean. Marine antiquities. Honor Frost. Prentice-Hall, Englewood Cliffs, N.J., 1963. 296 pp. Illus. $6.95.