

In addition there are several chapters, devoted to the general biology of the algae, mostly not covered in existing treatises. Chapters on Micro-technique, Methods for the Cultivation of Algae, Ecology of Marine Algae, Cytology of Algae, Sexuality of Algae, and Physiology and Biochemistry of Algae make this a valuable reference book for those interested in algology.

CHARLES C. HERBST,
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MCDUGALL, W. B., and SPERRY, O. E. *Plants of Big Bend National Park*. U. S. Government Printing Office, Washington. XII+1-209 pp. 190 figs. 1951. \$1.00.

An excellent and helpful work for both the amateur and professional botanist. The figures, except for a few line drawings in the beginning to aid the amateur, are half-tone photographs, and are good. There is a key to the families of the Pteridophytes and Spermatophytes, and, in general, there are keys to genera and to species if several are involved.

In an area as large and complex as the park, new records are certain to be found. This is especially true for weedy plants along the Rio Grande flood plain. Unless the collector is there the right year, and between floods, certain plants cannot be found. Two species of *Rorippa*, two more genera of the Umbelliferae (*Apium* and *Ammoselinum*), *Gilia longiflora*, *Veronica peregrina* var. *xalapensis*, and *Evax* are among the plants we have at hand not recorded by the authors.

The authors are to be praised for writing this flora. Professional botanists will welcome it for dealing with an area far removed from regions well covered taxonomically. Though the authors may be too optimistic in believing that even an amateur will be able "to identify accurately and determine the name of any plant he may find in the park," the amateur will be able to identify enough of them to add to his enjoyment of this scenic area.

GEORGE J. GOODMAN,
*University of Oklahoma,
Norman, Oklahoma*

KIRBY, HAROLD. *Materials and Methods in the Study of Protozoa*. University of California Press, Berkeley and Los Angeles, California. x+72 pp. \$2.50.

This is a valuable book for the beginning Protozoologist. The techniques explained are mostly for securing, maintaining and making preparations of

protozoa for observation. There are three sections of this cardboard-covered book, page size 11×8½ with references at end of each section. The first seventeen pages deals with collection and cultivation methods for free-living protozoa. Culture media recipes are given alphabetically from Agar to Zumstein media. The second section, ten pages, is devoted to collection and cultivation methods for symbiotic protozoa. Third is the twenty-nine-page section devoted to technical methods of study and preservation ranging from aceto-carmin stain thru Fixation fluids, Haematoxylin staining to Wright stain. A complete eight-page index is found at the end of the book.

M. A. RUSSELL,
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Highland Park, Mich.*

MARTIN, GUSTAV J. *Biological Antagonism—The Theory of Biological Relativity*. The Blakiston Co., Philadelphia 5, Pa. vii+516 pp. illus. 1951. \$8.50.

The author presents authoritatively, completely, and concisely the concept of biological relativity, as based upon an extensive study of biological antagonisms and as seen in and related to amino acids, hormones, minerals, purines, enzymatic structure and action, pyrimidines, and vitamins. He relates such a basic concept to the fields of chemotherapy, immunology, and pharmacology. The coverage of the whole study of metabolite analogues is thorough and complete, and yet concise enough as to make the book an excellent reference work for research students and investigators in the fields of chemotherapy, immunology, pharmacology, and medicine. The over 1900 references are carefully selected and arranged, and represent a complete survey of pertinent literature. The index is quite comprehensive and well arranged. The text matter includes 64 figures and 44 tables.

B. BERNARR VANCE,
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YOUNG, J. Z. *Doubt and Certainty in Science*. Clarendon Press, Oxford. VIII+168 pp. illus. 1951.

The author, in eight lectures comprising the Reith Lecture Series for 1950 and comments thereupon, presents a simple, clear explanation of the phenomena of brain and nerve functioning. He does this by comparison with computing machines, "mechanical brains." No other subject illustrates

so admirably the relationship between doubt and certainty—a most appropriate title for the booklet.

Professor Young describes the higher activities of man (scientists) by considering the brain processes that produce them. Communication is essential to cooperation between individuals and dominates all man's actions—speaking habits and other behavior patterns. The brain does this by building up a series of rules, which act as models for the brain when it deals with new events. Models of communication have a historical pattern, which is brought out by the author in tracing the changing concepts in science; i.e., “matter and forces” have been gradually replaced by those of “relative motion and energy.” Appropriate photographic and sketch illustrations make the explanation quite meaningful. The booklet has value as a reference in psychology and biology besides being of interest to the general reader.

ELMO N. STEVENSON,
*Southern Oregon College of Education,
Ashland, Oregon*

BULLOUGH, W. S. *Vertebrate Sexual Cycles*. John Wiley & Sons, Inc., New York. viii + 117 pp. 1951. \$1.50.

This little book is written by a research fellow of the Royal Society of London, for the non-specialist, and published as one of Methuen's Monographs on Biological Subjects. It deals with the two best known sexual cycles—the long seasonal or yearly cycle found in vertebrates of all classes and the short oestrus cycle of female mammals. The author attempts to summarize the knowledge gained during the past generation or so on the interactions of the numerous and complex factors affecting these cycles. Although great advances have been made, he admits that much research remains to be done. The book is documented with a literature list of 203 titles.

Facts are given to show that seasonal cycles are especially subject to the external environment, light in particular, acting upon the nervous system, and through it upon the pituitary gland, whose hormones in turn affect the gonads. For example, autumn-breeding sheep were taken from England to South Africa. The ewes lambed after arrival in January. When the southern autumn began in March they came into heat and were mated in May. Thereafter they bred only in the southern autumn. Similar reversals are cited in other mammals. Increasing or decreasing daylight is the effective stimulus.

Oestrus cycles are primarily genetic in that each species of mammal has its own inherent periodicity. The physiological mechanism here also involves the pituitary gland and the nervous system acting upon the gonads. Man seems to be a peculiar species in showing the widest variation in time of ovulation within the cycle, although within the individual this time is regarded as fairly constant.

There is a glossary, a list of 112 species mentioned, and an index. The book is recommended as stimulating reading for the student in general biology or zoology.

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A Proof Book of Forestry Ad Mats, available free from the American Forest Products Industries, Inc., 1319 Eighteenth Street, N.W., Washington 6, D. C.

Twenty-eight different ready-made ads can be varied to fit a local situation and may be used by any type of business organization which advertises. These are powerful conservation education aids at a high level of advertising skill and public appeal. Every publisher or printer in every community should be using them. They are helpful at any teaching level.

RAUSHENBUSH, STEPHEN (editor). *The Future of Our Natural Resources*. 1952, The Annals of the American Academy of Political and Social Science, Volume 281, Philadelphia.

This is a symposium published by a galaxy of glittering names in the wide fields of conservation. It is the most comprehensive over-all picture of the problems of conservation in all phases which has ever been published. Familiarity with the subject matter of this volume is indispensable for anyone who seeks to project his comprehension of natural resource requirements into the future. It offers the most adequate basis for understanding conservation education yet published.

JAMES M. SANDERS,
*Chicago Teachers College,
Chicago, Illinois*

BAER, MARIAN E. *Sound—An Experiment Book*. Holiday Press. 126 pp. 1952. \$2.50.

The varied and bewildering sounds in our everyday life are given clearer meaning in this book of interesting experiments for older children. The book is easy to read, the experiments easy to per-