Common Exotic Trees of South Florida (Dicotyledons). Mary F. Barrett. University of Florida Press, Gainesville, 1956. 414 pp. Illus. $8.50.

"The southern half of the Florida Peninsula," writes Mary Barrett, "forms an open-air museum of trees from all the continents. . . ." The aim of her book is to provide a means of identifying the trees and to furnish information about them; in short, to make the museum, as she says, "intelligible."

The 26 pages of keys are based almost entirely on characteristics of leaves and twigs (and are preceded by 24 pages of explanation and illustrations of the terms used)—a truly formidable undertaking and a testimony to the author's courage as well as her ingenuity. For the keys work, at least with a few random herbarium sheets; they would go better with living material. There are, of course, difficulties; the inexperienced will make mistakes and end up in *Annona* instead of *Ficus*; but this is true of all keys, and botanists make mistakes, too.

In the remaining 363 pages, each species has a detailed description, with mention of height, bark, pubescence, shape and dimensions of leaves—all in language which may be described as "moderately technical." This is followed by notes on distribution, names, uses, relatives, and references to literature. Under "distribution" we find specific places in Florida (there is also a section on sight-seeing trips). The numerous illustrations are, for the most part, outlines of leaves. There is a bibliography and a good index. All this is well organized, well written, and well printed, and very helpful to anyone determined to know the trees in question.

I confess, however, that I am not sure who will use the book. It is as "popular" as an accurate treatment of nearly 200 species can be. Will the visitor to Florida take the trouble to master the necessary terms and learn how to use the keys? The very limitation of the subject, which was undoubtedly necessary, is troublesome. One must first know whether or not one's tree is a native of Florida, and whether it is a dicotyledon. However, I hope I am unduly pessimistic about the intellectual energies of the lay reader. At least the book has already proved useful to botanists. The latter will recognize, also, the devoted care that has gone into its preparation (which will probably earn for the author the insult of being called "meticulous"). Of course, one can find minor errors here and there (for instance, the name of the father of botany was Carl Linnaeus); but for scholarship and accuracy, the author deserves great credit indeed.

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Photoconductivity Conference. Held at Atlantic City, 4–6 Nov. 1954. Sponsored by the University of Pennsylvania, Radio Corporation of America, and Office of Naval Research. R. G. Breckenridge, chairman, Editorial Committee. Wiley, New York; Chapman and Hall, London, 1956. 653 pp. Illus. $13.50.

A conference report that comes out more than 2 years after the event raises the question whether it is worth while to read it, since many of the results have been published in detail elsewhere. The answer in this case is *Yes*. Many of the 30 contributions have the character of review papers, which, taken together, cover a wide range of problems in photoconductivity research. This book may be regarded as an excellent introduction to modern photoconductor problems, though not for the uninitiated.

The emphasis is on excitation, absorption, and trapping processes and on the relation of photoconductor properties to band structure and electron lifetimes. These subjects are extensively treated, theoretically as well as experimentally. Minor subjects (also related to lifetime problems) include surface effects, noise, and the photoelectromagnetic effect. There is a large amount of overlapping, but this presentation of different viewpoints, or different kinds of treatment, is not at all to be regretted. It adds, rather, to the interest. Unfortunately, there are discrepancies in the notations; sometimes they do not even agree between figures and corresponding text.

The authors are well known in their fields and give expert and stimulating presentations of problems and results on a consistently high level. This high level does not, however, make the reading difficult, or it does so only sporadically, depending on how well grounded the reader (in any case, the reviewer) may be in the different subjects. All papers are amply referenced. A very valuable addition is the record of the discussion remarks. These sometimes clarify viewpoints or bring out limitations in the treatment.

The papers are arranged in several chapters: "Phenomenological theory of photoconductivity," "Photon absorption processes," "Electron processes," "Photoconducting materials," "Current topics." I am not sure about the use of the word *phenomenological* in the first chapter. A "phenomenological" theory should refer only to phenomena, that is, observed events, as for instance in Rydberg's theory of atomic spectra. What the two papers of this chapter actually give may better be called "model" theories (as Bohr's theory), treating photoconductor properties in terms of a simple model and its significant parameters, such as lifetimes. Since, however, I am myself guilty of loose use of *phenomenological* in the sense of meaning something less than a detailed theory of fundamental mechanisms from first principles, I will not labor this point.

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Evolution and Classification of the Mountain Caddisflies. H. H. Ross. University of Illinois Press, Urbana, 1956. 213 pp. Illus. $6.

The knowledge of the phylogeny and dispersal of members of the aquatic orders of insects and what information is available on the probable place and time of origin are scattered and inadequate. H. H. Ross, who for the last 20 years has been engaged in an exhaustive study of the Trichoptera, has filled a portion of this gap by this treatise on the evolution and distribution of three selected families of caddisflies.

The three families that Ross chose are considered the most primitive: Philopotamidae, Rhyacophilidae, and Glossomatidae. They are adapted to cold (or cool) biotic conditions, are more abundant in the mountainous regions, and are widely distributed in the Holarctic. In North America, the families are represented by about 200 species, with the majority recorded from the western montane region.

The author has shown that a biogeographic correlation exists in these three caddisfly families and that, although the fossil record is very meager, it is possible to construct a phylogenetic tree of the order, of each genus, and often of species groups. The study presents the morphologic characters (largely male genitalia) and dispersal patterns available to show this relationship. Extensive use is also made of the structures of the larvae and pupae and of their net-making or case-making habits. The dispersal pattern, like rate of evolution, varies with each group.

The book is profusely illustrated with 370 figures and 45 charts; all are up to the high standard of other Ross (and University of Illinois Press) publications. The book is exceedingly well indexed, and the bibliography of seven pages is certainly complete.

In the course of the study it was necessary to describe four new genera and 37 new species, primarily from South America and Asia. Some keys to genera and species are included, and in the *Rhyacophila* and a few other genera, considerable synonymy is given.

For the entomologist or zoologist who is interested in phylogeny and dispersal, the work, since it applies to three mon-

tane caddisfly families in a small order of insects (5000 species), should prove of great interest and should stimulate much needed research.

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Lectures in Immunochemistry. Michael Heidelberger. Academic Press, New York, 1956. 150 pp. $4.

The major portion of this book is devoted to a series of six lectures delivered by the author in Tokyo during the fall of 1955. In this group of readable lectures, Michael Heidelberger has reviewed his contributions and those of his students and collaborators to the field of immunochemistry since his pioneer work with the late O. T. Avery on the isolation of the capsular polysaccharides of the pneumococcus, in the early 1920's. It seems hard to realize that, at the time this work was begun, most immunological reactions were regarded as changes in "colloidal states," and that antibodies were looked upon more as properties of body fluids than as actual substances that could be isolated, weighed, and measured.

It is largely owing to the work of Heidelberger and his students that immunology has become a precise science in which the specific reactions involved can be isolated and studied by the elegant quantitative methods which they developed. In fact, this development has now reached the point where immunochemical methods can be used to guide the chemist in determining the structure and configuration of large and complex molecules such as the polysaccharides.

These lectures constitute a clear and readable course in immunochemistry and can be highly recommended to anyone who wishes to familiarize himself with the development and potentialities of this field. The Tokyo lectures were prepared from a transcription of recordings and, in places, have not been carefully edited. Yet it is perhaps this very fault which helps to give this book the air of informality and simplicity which is its charm.

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New Books

Les Principes de l'Électrophorese. René Audubert and Serge de Mende. Presses Universitaires de France, Paris, 1957. 201 pp. F. 1500.

Man Unlimited. Technology's challenge to human endurance. Heinz Gartmann. Translated by Richard and Clara Winston. Pantheon, New York, 1957. 213 pp. $4.50.

Proceedings of the International Wool Textile Research Conference, Australia, 1955. vol. F, *Histology of Wool and Hair and of the Wool Follicle.* Commonwealth Scientific and Industrial Research Organization, Australia, Melbourne, 1956. 228 pp.

The Effect of Exposure to the Atomic Bombs on Pregnancy Termination in Hiroshima and Nagasaki. Publ. No. 461. J. V. Neel and W. J. Schull. Atomic Bomb Casualty Commission, National Academy of Sciences–National Research Council, Washington, 1956. 241 pp. $2.

Wisconsin's Renewable Resources. James A. Larsen. University of Wisconsin, Madison, 1956. 160 pp.

Statistical Analysis of Stationary Time Series. Ulf Grenander and Murray Rosenblatt. Wiley, New York; Almqvist & Wiksell, Stockholm, 1957. 300 pp. $11.

Water for Industry. A symposium presented on 29 December 1953 at the Boston meeting of the American Association for the Advancement of Science. Publ. No. 45. Jack B. Graham and Meredith F. Burrill, Eds. American Association for the Advancement of Science, Washington 5, 1956. 131 pp. Members, $3.25; nonmembers, $3.75.

Production Forecasting, Planning, and Control. E. H. MacNiece. Wiley, New York; Chapman & Hall, London, ed. 2, 1957. 374 pp. $8.25.

Venoms. Papers presented at the First International Conference on Venoms, 27–30 December 1954, at the annual meeting of the American Association for the Advancement of Science, Berkeley, California. Publ. No. 44. Eleanor E. Buckley and Nandor Porges. American Association for the Advancement of Science, Washington 5, 1956. 467 pp. Members, $8.25; nonmembers, $9.50.

Animal Navigation. How animals find their way about. J. D. Carthy. Scribner's, New York, 1956. 151 pp. $3.95.

Table of the Fresnel Integral to Six Decimal Places. Compiled by T. Pearcey for the Commonwealth Scientific and Industrial Research Organization, Australia. Cambridge University Press, London, 1956 (order from Cambridge University Press, New York). 63 pp. $2.50.

The New World of the Atom. James Stokley. Ives Washburn, New York, 1957. 288 pp. $5.50.

Aeroplanes and Aero-Engines. J. H. Clark, J. Crawley, B. A. J. Hatton, R. J. Way, R. Wood. Philosophical Library, New York, ed. 4, 1956. $6.

Landslides in Clays. Alexandre Collin. Translated by W. R. Schriever. University of Toronto Press, Toronto, Canada, 1956. 160 pp. $6.50.

Semimicro Qualitative Organic Analysis. The systematic identification of organic compounds. Nicholas D. Cheronis and John B. Entrikin. Interscience, New York, ed. 2, 1957. 744 pp. $9.

Notes on Atomic Energy for Medical Officers. An introduction to the subject for service and other medical officers who may be concerned with defense against atomic bombs and similar problems. Royal Naval Medical School. Philosophical Library, New York, 1956. 169 pp. $4.75.

Molecules and Crystals in Inorganic Chemistry. A. E. Van Arkel. Interscience, New York; Butterworths, London, ed. 2, 1956. 270 pp. $4.75.

Miscellaneous Publications

(Inquiries concerning these publications should be addressed, not to Science, *but to the publisher or agency sponsoring the publication.)*

W. K. Kellogg Foundation Report for 1955–1956. The Foundation, Battle Creek, Mich., 1957. 253 pp.

Archeology of the Funeral Mound Ocmulgee National Monument, Georgia. Archeological Research Series No. 3. Charles H. Fairbanks, National Park Service, U.S. Department of the Interior, Washington, 1956 (order from Supt. of Documents, GPO, Washington 25). 95 pp. $1.

Technological Advances and Skilled Manpower. Implications for trade and industrial education, an annotated selected bibliography. Misc. 3509. U.S. Office of Education, Washington, rev. ed., 1956 (order from Supt. of Documents, GPO, Washington 25). 67 pp. $0.45.

Directory of Organization and Field Activities of the Department of Agriculture, 1956. Agriculture Handbook No. 76. U.S. Department of Agriculture, Washington, 1956 (order from Supt. of Documents, GPO, Washington 25). 206 pp. $0.55.

Science and the Humanities. Rickman Godlee lecture. Gavin de Beer. Lewis, London, 1956 (for University College, London and University College Hospital Medical School). 21 pp. 2s. 6d.

The Intrinsic Embryonic Development. Verhandelingen der Koninklijke Nederlandse Akademie van Wetenschappen, Afd. Natuurkunde, vol. LI, No. 2. G. Ten Cate. North-Holland, Amsterdam, 1956. 257 pp. Fl. 15.

Vibration Analysis Tables. R. E. D. Bishop and D. C. Johnson. Cambridge University Press, London, 1956 (order from Cambridge University Press, New York). 59 pp. $2.

Keys and Bibliography to the Collembola. Zoology Publs. No. 20. J. T. Salmon. Victoria University College, Wellington, N.Z., 1956 (distributed on exchange basis by the Department of Zoology). 35 pp.

The Development of Polish Science, 1945–1955. Bogdan Suchodolski and Eugeniusz Olszewski. Polonia, Warsaw, 1956. 91 pp.

Genetic Studies with Bacteria. Publ. 612. M. Demerec et al. Carnegie Institution of Washington, Washington, D.C., 1956. 136 pp. Paper, $0.80; cloth, $1.

Diatomaceous Earth in Arizona. A field and laboratory report. John T. Long, Jr., and George G. Olson. Arizona Development Board, Phoenix, 1956. 28 pp.

Armour Research Foundation of Illinois Institute of Technology, Annual Report, 1956. The Foundation, Chicago 16, 1957. 52 pp.

The Indian Association for the Cultivation of Science, Annual Report 1955–1956. The Association, Jadavpur, Calcutta, 32, 1956. 81 pp.