terested in the anaerobes may consider it a deficiency that, with the exception of one paper, all of the research reported has involved work with bacterial spores of the genus *Bacillus*.

An editorial oversight diminishes the value of one paper from which all seven of the tables have been omitted in publication.

The book should find its greatest audience among those actively engaged in research, but its value to advanced students as a guide to areas of current research interest should not be overlooked.

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Microspores and Agents

The Story of Pollination. B. J. D. Meeuse. Ronald Press, New York, 1961. x + 243 pp. Illus. $7.50.

Many of the incompletely solved, yet fascinating, examples of quite precise pollinator-flower relationships and the associated biological time clocks receive interesting attention in this book, which is written in language suitably simple for "young persons between the ages of eight and eighty." To a notable degree, the author's enthusiasm for, and long association with, his subject is revealed in the carefully constructed text. One is led to share his excitement in viewing closely such moments as the hummingbird sipping nectar from the flower of *Lobelia cardinalis* and the beetles reacting remarkably to devices insuring pollination in *Calycanthus* and various aroids.

Meeuse covers, within the limits of 20 well-interlinked chapters, matters as diverse as the bee's perception of the light-polarization pattern of the sky to the pollination of *Kigelia* and other tropical plants by bats. Occasionally there are digressions of sufficient extent to make me wonder why the phrase, "and pollinators" was not appended to the title of the volume.

To a major extent, the highly selected bibliography refers to important works on bees and other pollinators. In view of the limited, and partially inaccurate, character of the two plates on pollen grains, interested readers would have been materially aided by citations directing them to such definitive works on pollen as those of Maurizio, Zander, Hodges, Hyde, Wodehouse, and Erdtman. The balance of the illustrations are of high caliber. Hilda Kern's color plates, which include an exquisitely executed one of *Iris siberica,* are choice and unusual additions to the book. One should note that, in Fig. 28, the legends for *E* and *F* have been reversed.

The text is admirably free of typographical error. It is almost a matter of quibbling to protest that 233,644 pollen tubes (page 214) do not represent "over a quarter of a million." The general format appears to be a satisfactory compromise for the intended audience. Meeuse has produced a distinctive contribution to a phase of biology which, since the days of Darwin, Kerner, and Knuth, has hardly received the attention it could well be given.

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Ecological Viewpoint

A Synthesis of Evolutionary Theory. Herbert H. Ross. Prentice-Hall, Englewood Cliffs, N.J., 1962. xii + 387 pp. Illus. Trade ed., $10; text ed., $7.50.

Herbert H. Ross, principal scientist of the Illinois Natural History Survey and professor of entomology at the University of Illinois, is well known for the breadth of his approach to taxonomic, ecological, and evolutionary problems in the study of insects. Those interests are here exemplified in a still broader way, both by the judicious use of entomological examples (among others) of evolutionary processes and by unusual and welcome emphasis on community, biome, and general ecological aspects of evolution.

Introductory chapters treat the history of evolutionary theory, the origin of the universe, the solar system, and the earth, and the nature and origin of life. Four chapters are then devoted to basic evolutionary processes in populations and to speciation. Another four discuss in considerable detail the evolution of communities and biomes and the geotectonic, environmental factors that are stressed throughout the book. A few final pages summarize the whole. Apart from interesting dissent on some minor points, the evolutionary theory expounded is that familiar through the works of Dobzhansky, Huxley, Mayr, and others.

The most valuable and to some extent the pioneering part of the book is its integration of evolutionary theory and ecology. This should be helpful to many students and practitioners of ecology, biogeography, and related subjects, whose approach has been less dynamic. The book is clearly not meant to be a general textbook of evolution and intentionally omits many subjects that would be expected in such a text. The first half of the book is less successful than the second half and unfortunately cannot be highly recommended, although it is somewhat refreshing to find viruses omitted from a discussion of the origin of life and the Hardy-Weinberg equilibrium from a treatment of population genetics.

The author's known talents have not produced a synthesis as broad and adequate as his name and the book's title seem to promise, but this disappointment is combined with gratitude for what, in fact, has been done.

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Excellent Reference Source

A Survey of Cardiac Glycosides and Genins. J. Hampton Hoch. University of South Carolina Press, Columbia, 1961. i + 93 pp. $3.50.

During the past decade a tremendous advance has occurred in the isolation and identification of many new cardiac glycosides and genins. To date approximately 400 such compounds have been isolated and characterized. This advance has been the result primarily of developments in chromatographic methods and the discovery of new botanical sources.

The author has compiled, from the multitudinous reports in the scientific literature, important botanical, chemical, and pharmacological data for most of the known cardiac glycosides and genins. These data are summarized and presented in tabular form in three tables that comprise most of the book. The first table lists some 380 compounds having cardiotonic activity together with information on the botanical origin, the family, and the part of the plant utilized, and references. Chemical informa-

tion on hydrolytic products of the cardiac glycosides are tabulated in the second table. Included are the type of sugar and the type of genin or additional glycoside hydrolyzed. The third table contains data on animal assay doses for over 300 cardioactive drugs. Lethal dose, mean lethal dose, and LD_{50} dose, as well as species of animal, route of injection, and references, are listed. Short sections on structural features and structure-activity relationships of cardiac glycosides and genins are also included.

It is unfortunate that the author decided not to include assay doses for heart-lung preparations, isolated heart preparations, and the like; this information would have increased further the utility of this monograph. Chemists and biologists working with cardiac glycosides will welcome this as an excellent reference source which provides ready access to botanical, chemical, and pharmacological data that is widely scattered through the literature.

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Field Manual

A Flora of the Alaskan Arctic Slope. Arctic Institute of North America, *Special Publication*, No. 4. Ira L. Wiggins and John Hunter Thomas. University of Toronto Press, Toronto, Canada, 1962. xii + 425 pp. Illus. $9.50.

During the past 20 years the Arctic Slope of Alaska, between the Brooks Range and the Arctic Ocean, has received more extensive study by biologists and earth scientists than any comparable area in Arctic North America; in large part this was the result of support from the Office of Naval Research and its Arctic Research Laboratory and the cooperating universities. This detailed taxonomic and geographical treatment of the vascular plants of the region is one of the major contributions resulting from this research.

This book is a highly useful field manual, with concise but entirely adequate keys to families, genera, species, and (where appropriate) infraspecific taxa and with commendably detailed descriptions of morphologic characters, accompanied by remarks on common habitats and total ranges. It resembles, in some respects, a monographic flora, for all specimens examined are cited along with their collection localities and the localities are carefully plotted on maps in an appendix. On the other hand, citations from the literature on the systematics and distributions of the species are scarce and only a part of the "problem groups" are marked by explanatory statements. The authors are justified in omitting these items, as well as locality records from the older literature, because all were treated in Hulten's *Flora of Alaska and Yukon* (1941–1950).

As a result of this economy of space, however, the distribution maps in this volume must be used in conjunction with those of Hulten's *Flora* in order to obtain a full picture of the records for most species on the Arctic Slope. In some instances parenthetical reference to synonyms in recent use would be helpful. The authors included brief but useful notes about certain complex hybrid and apomictic groups that are prominent in Arctic floras. Appendices, in addition to the 150 maps of collection localities, include a gazetteer of those localities, a glossary of specialized botanical terms, and two pages of references. The index lists the taxa treated and those synonyms that are mentioned. The book has been edited and printed in conformity with high standards.

Especially deserving of comment is an introductory section (29 pages) that describes the physical geography, biotic factors affecting the vascular flora, and the principal classes of habitats, with summary accounts of characteristic species. A highly informative guide to the ecological plant geography of the Arctic Slope, this section reflects the authors' extensive experience in the area, particularly that of the senior author, who was for three and one-half years scientific director of the Arctic Research Laboratory at Point Barrow.

The Arctic Slope is an invaluable source for information concerning the biota and environments of high latitudes. Now that this eminently usable flora is available, field studies of all aspects of the region's vascular flora and vegetation can be more readily accomplished, with improved accuracy of plant identifications.

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New Books

Biological and Medical Sciences

Advances in Horticultural Science and Their Applications. vol. 1. Proceedings of the 15th International Horticultural Congress. Nice, 1958. Jean-Claude Garnaud, Ed. Pergamon, New York, 1961. 627 pp. Illus. (vols. 2 and 3 announced for publication in early 1962). vols. 1–3, $60. The papers are in French, English, or German.

Advances in Protein Chemistry. vol. 16. C. B. Anfinsen, Jr., M. L. Anson, Kenneth Bailey, John T. Edsall, Eds. Academic Press, New York, 1961. 579 pp. Illus. $16.

Animal Parasitology. Laboratory manual. Elmer R. Noble and Glenn A. Noble. Lea and Febiger, Philadelphia, Pa., 1962. 120 pp. Illus. Paper, $3.50. Designed for use in beginning undergraduates courses in parisitology.

Basic Anatomy and Physiology. C. F. V. Smout. Arnold, London, 1962 (order from Williams and Wilkins, Baltimore, Md.). 124 pp. Illus. $3.50.

Biological Transmission of Disease Agents. Symposium held under the auspices of the Entomological Society of America, Atlantic City, 1960. Karl Maramorosch, Ed. Academic Press, New York, 1962. 204 pp. Illus. $7.

Clinical Immunology and Allergy. Leo H. Criep. Grune and Stratton, New York, 1962. 592 pp. Illus. $18.75.

Comparative Biochemistry. A comprehensive treatise. vol. 3, *Constituents of Life*, pt. A. Marcel Florkin and Howard S. Mason, Eds. Academic Press, New York, 1962. 987 pp. Illus. $30.

Handbook of Medical Laboratory Formulae. R. E. Silverton and M. J. Anderson. Butterworth, Washington, D.C., 1961. 688 pp. $18.

Introduction to Immunochemical Specificity. William C. Boyd. Interscience, New York, 1962. 166 pp. Illus. $8.

Lectures on the Methodology of Clinical Research. Max Hamilton. Livingstone, London, 1961 (order from Williams and Wilkins, Baltimore, Md.). 147 pp. $5.

Methods in Carbohydrate Chemistry. vol. 1, *Analysis and Preparation of Sugars.* Roy L. Whistler and M. L. Wolfrom, Eds. Academic Press, New York, 1962. 611 pp. Illus. $20.

Economics and the Social Sciences

Biennial Review of Anthropology. 1961. Bernard J. Siegel, Ed. Stanford Univ. Press, Stanford, Calif., 1962. 338 pp. $7.50.

Capital Formation in Japan, 1868-1940. Henry Rosovsky. Free Press (Macmillan), New York, 1961. 371 pp. $7.50.

Computer Applications in the Behavioral Sciences. Harold Borko, Ed. Prentice-Hall, Englewood Cliffs, N.J., 1962. 653 pp. Illus. Trade ed., $11.65; text ed., $8.75.

The Industrial Revolution in Europe, 1815–1914. W. O. Henderson. Quadrangle Books, Chicago, Ill., 1961. 297 pp. Illus. $6.