Biological Sciences

Perspectives de la zoologie européenne. Histoire, problèmes contemporains. Jean Leclercq. With a preface by Marcel Florkin. Duculot, Gembloux, Belgium; Rustique, Paris, 1959. 164 pp. Illus.

This is the first part of a study addressed to the Division of Cultural Affairs of the Conseil de l'Europe. In the first section, after a very brief treatment of ancient zoology, the development of zoology in Europe is traced clearly and succinctly from the 15th to the 19th century. This treatment occupies 100 pages and includes 41 illustrations. The section concludes with 12 pages giving some highlights of the first half of the 20th century, and a four-page summary.

The second section (30 pages) entitled "Contemporary problems," is more unusual. It contains subsections on internationality, supply and demand, and conditions for improvement. In the first of these it is pointed out that science and scientists do not recognize national boundaries but are still dependent on national policies. Quotations from various sources show the dissatisfaction of scientists with the situation in their countries and what they consider to be the unfavorable attitude of the general populace toward science (including a general lack of interest in the emigration of research workers).

In the second subsection Leclercq tabulates and discusses data on the numbers of zoologists, botanists, and geologists, the numbers of professional versus amateur entomologists, the numbers of publications, and the numbers of students. In some cases, the figures are compared with those for Canada, Russia, and the United States. These figures are by no means complete, but they are enough to document the conclusion that Europe has a large potential of research workers which is not being utilized because of the paucity of jobs. Western Europe has about 60 percent as many university graduates as the United States, but the number majoring in zoology and botany is small and decreasing, at least in France and Germany. Presumably this reflects the job situation. Further losses come from emigration of university graduates.

The third and final part is most unusual and provocative. The author makes a tirade, as an angry young man, on the restrictions imposed by the grantors of funds and on the repressive effect of European professors. Anyone who has been around the universities of continental Europe has heard this sort of harangue from the younger men. But I have not heretofore seen such in print with acknowledged authorship. Professor Ulrich of Berlin and I, as well as a few others, have stated similar points but in less vehement language. For instance, after deploring "dead wood" professors who dictate to young researchers engaged in original work, the role of inertia played by authoritarianism, the necessity for conformity, the recompense for appropriate obsequiousness, and so forth, Leclercq says (I translate freely), "Most intelligent researchers eventually get an enviable position, good equipment, collaborators, and technical assistants—but only after passing the age when they have the spare time and energy for truly creative work. The conservative scientific organization in Europe is tainted with gerontocratic and feudal policies which we should have the courage to denounce." He denounces them in no uncertain terms and makes some suggestions for fundamental changes, but he can hardly be optimistic about the prospects in continental Europe.

The book, forthright in a way few publications from European universities are, will be particularly useful for citing as the expression of the views of a young Belgian professor; the views are quite similar to the impressions obtained by numerous Americans on visiting European universities.

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L'Hérédité moléculaire. Conditions normales et pathologiques. Jean de Grouchy. L. Gedda, Ed. Instituto Gregorio Mendel, Rome, 1958 (order from Librairie Le François, Paris VI). xxvii + 333 pp. Illus.

Jean de Grouchy, who is in Maurice Lamy's department at the Hôpital des Enfants-Malades (Paris), has divided his monograph into two parts. The first discusses bacterial transformation, transduction in bacteriophage, structure and duplication of deoxyribonucleic acid, deoxyribonucleic acid and ribonucleic acid in protein synthesis, the gene as a unit of function, mutation and crossing over, pseudoallelism, genes and enzymes, genes and nonenzymatic proteins, and so forth. The second part discusses pathologic states that, in recent years, have been increasingly understood, some at the biochemical level: phenylketonuria, galactosemia, glycogen storage diseases, Wilson's disease, heritable disorders of connective tissue, von Recklinghausen's neurofibromatosis, intestinal polyposis, Rh factors, disorders of clotting, and hemoglobinopathies.

Each discussion is authoritative, from both the clinical and the genetic point of view. Full references to the literature are provided. The author is much to be congratulated on the final product. Since he confines himself to those conditions on which the information is sound and relatively ample, he has reviewed the status of medical genetics —as of 1958—in an admirable manner.

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Manual of Vegetation Analysis. Stanley A. Cain and G. M. de Oliveria Castro. Harper, New York, 1959. xvii + 325 pp. Illus. $7.

The 12 chapters of this excellent book begin with a discussion of floristic methods for the analysis of vegetation, a realistic treatment of the nature of the plant community, a survey of the major types of vegetation in the world, and an outline of the principal methods for the analysis of vegetation. Following this introductory material are discussions of the problems of number, pattern, and dominance, with particular emphasis upon, respectively, abundance and density, frequency, and coverage; a treatment of the troublesome problems that are inherent in the selection of sizes for sample units; discussions of the methods of combining community characteristics, and of the concepts involved in the development of the theory of the community; and finally there is a discussion of life form and leaf size. A glossary, a list of cited literature (425 titles), and an index are included. The whole is illustrated with well-chosen charts, maps, diagrams, and tabular material.

The book is notable first because it is one of the few published in this country which draws illustrative material from the tropics and subtropics; on numerous occasions, the authors use

Central and South American vegetation to illuminate their discussions. Second, the authors have maintained a questioning attitude toward many of the concepts and methodologies they describe, and their comments suggest that they have also questioned some of the basic assumptions underlying their theory and procedure. This is long overdue in the study of vegetation, and one could wish that they had gone further with it. A third outstanding feature of their book is an attempt to deal adequately with the floristic base within which many fundamental problems of vegetation must be stated. They believe they have found common ground between Gleason's "individualistic" concept of the community and the more recent concept of the "continuum," which retains the idea of development to some sort of "climax." They do not escape the plant ecologist's prevailing prepossession with the community, but their book should stimulate interest in aspects of vegetational analysis that will be at least as fruitful. Whether they have actually found common ground for the "individualistic" and "continuum" concepts (as the continuum concept is currently interpreted) is open to question. A more thorough examination of the basic assumptions underlying both these ideas would do much to clarify not only this issue but many others in the study of vegetation.

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Histochemistry. Theoretical and applied. A. G. Everson Pearse. Little, Brown, Boston, ed. 2, 1960. x + 998 pp. Illus. $20.

During the 7-year interval between publication of the first and the second editions of this book, histochemistry, like most other interdisciplinary fields, has expanded enormously. Whether this justifies doubling (nearly) the size of the book (as well as its cost) is open to question. The bulges have been accommodated in part in separate new chapters, notably immunohistology, fluorescence microscopy, autoradiography, and "electron histochemistry," and in part by expansion and subdivision of chapters in the earlier edition (for example, the treatment of enzymes). The chapter on the chemistry of fixation is new. The second part of the book, which describes histochemical methods, is more than doubled, as is the author index.

There is no question that this book is now the most up-to-date, comprehensive treatise on descriptive histochemistry. It is, perhaps, premature to expect a *biological* treatment of the subject, which, with its numerous diverse aspects, probably would be better handled as a series of monographs.

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The Avian Embryo. Structural and functional development. Alexis L. Romanoff. Macmillan, New York, 1960. xvi + 1305 pp. Illus. $35.

This book, presented by Romanoff as a complementary and companion volume to his earlier work *The Avian Egg* (1949), aims to bring together all known data on the structural and functional development of the avian embryo. This is a vast assignment even for a volume as large as the present one, and it would seem unlikely that any one book or any one author could manage to cover every aspect of such a broad field. It might be pointed out, for example, that in the discussion of the egg tooth (pages 1027–29) no mention is made of one extreme development of the mandibular tooth, which, while not as well developed as the maxillary one, is present in a number of birds, and, in the case of the honeyguides, *Indicator,* reaches a maximum development; in this case the mandibular and the maxillary teeth are greatly elongated and curved into a pair of scissor-like hooks, used by the newly hatched bird to kill its nest-mates. In his discussion of the soft, swollen tissue at the gape, which Romanoff calls the *beak cushion,* no mention is made of the pearl-like, reflective globules present in some weaverbirds, such as *Poephila, Estrilda,* and *Vidua.*

These, however, are small items in the total panorama of avian embryonic development, and, in a broad sense, they are relatively unimportant specializations. The book's coverage of more basic topics—the germ cells, fertilization, and the early as well as the later, more involved, morphogenesis of the various tissues, organs, and systems—is more exhaustive; the book has the great virtue of bringing together, almost uniquely, the large fund of data on the embryology of the domestic chicken and the scattered fragments of descriptive knowledge that still constitute about all we know of the embryology of wild species of birds. There is no other book that brings together so much embryological information from such widely divergent sources. Every embryologist should have access to this work.

It is not the purpose of a book such as this to suggest future lines of investigation; the fact that it brings existing knowledge together to form a new starting point is more than enough to justify publication and to earn the diligent and conscientious author plaudits and thanks of his colleagues and followers. Still, I cannot help but point out that avian embryology is still largely involved with the embryo of one bird species, the domestic fowl, and that its base must be broadened by extending its coverage to a whole series of well-chosen species of various avian types. In his introduction, Romanoff expresses the hope that his book may serve as a starting point for an experimental search for new facts concerning still missing links in our knowledge of the prenatal development of birds. To this I would add that it would be just as important if the volume were to stimulate embryologists to study, in a purely descriptive sense, enough other birds so that eventually we might be able to discuss more adequately all phases of the theme of this book, the avian embryo.

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Biology of Mycorrhiza. J. L. Harley. Leonard Hill, London; Interscience, New York, 1959. xiv + 233 pp. Illus. $8.75.

This treatise on mycorrhizae is considerably more than a review of the extensive literature on the subject. J. L. Harley has conducted physiological investigations on mycorrhizae and has used his knowledge and experience in an attempt to interpret the significance of some of the available information.

The book is divided into three main sections: "General considerations," "Ectotrophic mycorrhizas," and "Endotrophic mycorrhizas." Harley prefers the anglicized form of the plural rather than the more common *-ae* ending.

The first part provides a brief introduction to the history of research in

the field, considers the general relationship of roots to some soil microorganisms, and attempts to define mycorrhizae.

The second part, dealing with ectotrophic mycorrhizae, is the most important portion of the book. The author, eminently qualified to discuss the physiology of ectotrophic mycorrhizae has leaned heavily on his own researches and on those of British colleagues. The discussions of the structure and development of mycorrhizae and the physiology of salt absorption are the most impressive portions of the book. Since so much of the experimental evidence on salt absorption was based on excised mycorrhizae, Harley's own words seem appropriate. He writes about carbohydrate absorption (page 97) "No one would make wild ecological assertions concerning the significance of sugar uptake by carrot discs, peas or cereal roots, and I pray that none will be made for beech mycorrhiza."

The final section on endotrophic mycorrhizae is admittedly a conglomerate of observations made by many investigators. It is a good review and makes physiological sense out of some of the better research and observational reports.

This book will serve as a valuable reference for workers on mycorrhizae and could be very useful to students in a seminar-type course.

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Diagnosis of Veterinary Parasitisms. J. H. Whitlock. Lea and Febiger, Philadelphia, Pa., 1960. 236 pp. Illus. $10.

This handbook brings together information essential for the generic diagnosis of the common arthropod and helminth parasites of domestic animals, some of which occasionally attack man. The author is to be congratulated for using up-to-date nomenclature. The book is profusely illustrated with the author's photomicrographs, which reproduce with extraordinary precision the structures of cleared nematode specimens, and with many line drawings and other illustrations of parasites which have been taken from the literature.

According to the author, the book is not intended to take the place of diagnostic monographs, which must still be consulted in order to identify these parasites to species, but to serve as a bridge between the parasitological laboratory and the clinical laboratory of the veterinarian.

The title is something of a misnomer since the Protozoa are not included. Although practically all of the material considered essential for the author's purpose is quoted from other sources, the book falls short of being an introduction to the relevant literature, perhaps because of space limitations. Since it does not contain original contributions, it is doubtful that professional parasitologists would find the book of more than passing interest.

In some instances, the lack of uniformity in handling citations makes it difficult to locate the original source. Occasionally, the student may be misled: the Class Pentastomida is included under the Order Acarina (page 83), and the Phylum Acanthocephala is discussed in the chapter entitled, "The suborders Dioctophymata and Trichurata" (page 221), but this arrangement may have been made for convenience. The portions of the book dealing with the bionomics of the parasites and with parasitological philosophy might appear to be somewhat out of place in a book on the diagnosis of parasitism. The book is singularly free from typographical errors; I found only two. One of these, however, occurred in the running headings on the odd-numbered pages 145 to 155 where "Stongyloidea" appears instead of "Strongyloidea." The book is very attractive; the paper, typography, and illustrations are excellent.

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New Books

Biological and Medical Sciences

American Meat Institute Foundation. *The Science of Meat and Meat Products.* Freeman, San Francisco, 1960. 448 pp. Text edition, $8; trade edition, $9.60.

Calderone, Mary Steichen, Phyllis Goldman, Robert P. Goldman. *Release from Sexual Tensions.* Toward an understanding of their causes and effects in marriage. Random House, New York, 1960. 353 pp. $4.95.

Clausen, Robert T. *Sedum of the Trans-Mexican Volcanic Belt.* An exposition of taxonomic methods. Cornell Univ. Press (Comstock Associates), Ithaca, N.Y., 1959. 390 pp. $7.75.

Darrah, William C. *Principles of Paleobotany.* Ronald, New York, 1960. 302 pp. $6.50.

Desikachary, T. V. *Cyanophyta.* Monographs on algae. Indian Council of Agricultural Research, New Delhi, 1959. 686 pp. Sh. 72.

Esau, Katherine. *Anatomy of Seed Plants.* Wiley, New York, 1960. 392 pp. $6.95.

Featherstone, Robert M., and Alexander Simon, Eds. *A Pharmacologic Approach to the Study of the Mind.* Thomas, Springfield, Ill., 1960. 427 pp. $10.75. Papers presented at a symposium sponsored by the University of California's San Francisco Medical Center.

Huberty, Martin R., and Warren L. Flock, Eds. *Natural Resources.* McGraw-Hill, New York, 1959. 574 pp. $11. Papers in this volume were prepared as a series of lectures given in an extension course at the University of California, Los Angeles. Covering all natural resources, the volume provides information on both renewable and non-renewable resources. The technological developments and aspects considered are nuclear energy, solar energy, geophysical prospecting, conversion of saline water to fresh water, and air pollution. The social and economic aspects are also considered.

Jenness, Robert, and Stuart Patton. *Principles of Dairy Chemistry.* Wiley, New York; Chapman and Hall, London, 1959. 454 pp. $8.75.

Meyer, Bernard S., Donald B. Anderson, Richard H. Bohning. *Introduction to Plant Physiology.* Van Nostrand, Princeton, N.J., 1960. 546 pp. $7.50. Written in response to the demand for a condensation of the text *Plant Physiology* by Anderson and Meyer, this book is based on that text, but new material has been added and other material has been rewritten.

Migdalski, Edward C. *How to Make Fish Mounts and Other Fish Trophies.* Ronald, New York, 1960. 228 pp. $5.50.

Pharmacopoea Internationalis. Supplement. World Health Organization, Geneva, 1959 (order from Columbia Univ. Press, New York). 254 pp. $5.

Pirone, Pascal P., Bernard O. Dodge, Harold W. Rickett. *Diseases and Pests of Ornamental Plants.* Ronald, New York, ed. 3, 1960. 785 pp. $10. This volume, an official publication of the New York Botanical Garden, provides a concise introduction to the problems of disease and pest control and tells the gardener why and under what conditions specific methods and substances should be used. In part 2, the host plants are arranged by their botanical names and indexed by their common names.

Randhawa, M. S. *Zygnemaceae.* Monographs on algae. Indian Council of Agricultural Research, New Delhi, 1959. 478 pp. Rs. 26. First in a series of monographs on algal studies which the Indian Council of Agricultural Research is bringing out.

Ray, Dixy Lee, Ed. *Marine Boring and Fouling Organisms.* Univ. of Washington Press, Seattle, 1959. 548 pp. $8.50. Proceedings of a 1957 symposium at the Friday Harbor Laboratories.

Rosenbaum, Francis F., and Elston L.