the author's necessary circumscription of the area to be mapped and his scrupulous attention to the clarification of detail in what is discussed. The specific failures to broaden the section on spectroscopy to include the infrared and the useful empirical relationships in the ultraviolet, as well as that on reactivity to include carbonyl addition reactions, may be noted. In this regard the work cannot serve completely to introduce the student of theoretical organic chemistry to his subject.

The valence-bond approach is used almost exclusively—a decision of the author that will certainly be welcomed by the majority of organic chemists who have found the resonance hybrid symbolism more convenient to their understanding. One questions, somewhat, the insistence that the difficulties of the valence-bond theory are so evenly matched by those of the molecular orbital approach to structure. The latter seems clearly ahead in comprehensibility to an organic chemist where electronic transitions are involved and, given time, may provide a clearer notion of molecular structure.

All will welcome the substantial appendixes; one provides a thorough grounding in the mathematical basis for the theory of resonance, and the other represents an extensive collection of data on bond lengths and angles.

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Problems in Amoebiasis. Charles W. Rees. Thomas, Springfield, Ill., 1955. x + 119 pp. Illus.

After devoting a lifetime of investigation to the subject of amebiasis, Charles Rees has written a small, compact book on the problems that might be encountered today by one interested in studying *Endamoeba histolytica.* This book, although admirably brief (100 pages), covers various aspects of amebiasis quite adequately.

Although the author has been more closely associated with basic investigations, the review of the clinical question is more complete with respect to such topics as diagnostic procedures, chemotherapy, pathology, and so forth.

The reason for a less detailed account of the fundamental biological and physiological properties of *E. histolytica* is well presented by the author. Although the protozoan has been successfully cultured for approximately 30 years under a variety of conditions, the apparent dependency for growth of the ameba on the presence of other living cells, either bacteria, protozoans, or animal cells, has greatly hindered basic studies of the organism.

Therefore, quite a respectable amount of knowledge is presented on the culture of the ameba—albeit in association with other organisms—and this contrasts quite sharply with the paucity of information on the physiology of the ameba. Rees, with his considerable experience in cultivating *E. histolytica,* on the subject of culture, has deviated from the review form to present selectively some of his own work in greater detail. This is justified on the basis of practical aids included to help obtain monaxenic cultures. It is not justified, perhaps, in the case of his own physiological experiments which he has included. There is a fairly complete bibliography at the end of each topic.

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Recent Studies in Avian Biology. Albert Wolfson, Ed. Published under the sponsorship of the American Ornithologists' Union. University of Illinois Press, Urbana, Ill., 1955. 479 pp. Illus. $7.50.

This volume was prepared at the request of a committee of the American Ornithologists' Union for a book that would present recent research in ornithology. The editor states in the preface that the book has two objectives ". . . to stimulate further research in ornithology" and "to provide . . . a convenient and authoritative source of the contributions of ornithological research to broader biological fields." Although the book falls somewhat short of these objectives in its over-all presentation, certain of the chapters are very well written and should stimulate interest. Part of the difficulty of the book is that there were 13 different contributors, and the chapters were received for publication at various times from January 1952 to April 1955. There is a considerable difference, therefore, in the recency of bibliographic references.

The book is divisible roughly into three phases: systematics, including paleontology (three chapters); anatomy, physiology, behavior, migration, and diseases (eight chapters); and population studies (two chapters). The first chapter, "Avian Systematics" (Alden H. Miller) should be of considerable interest to all biologists. The author gives an excellent summary of the advantages and disadvantages of bird study in relation to the broad problems of taxonomy and evolution. He emphasizes that avian taxonomy suffers from inadequate collections and inadequate genetic studies and that, in common with some other fields of taxonomy, there is a tendency to overemphasize minor differences of racial character. The author is an advocate of the importance of geographic isolation in avian evolution. Biologists should also find much of value in the chapter on "Recent Revisions in Classification" (Herbert Friedman) and on "Paleontology" (Alexander Wetmore).

The chapter on "Anatomy" (Harvey I. Fisher) is especially impressive because of the suggestions of anatomical problems that remain to be solved. The chapters on "Bird Navigation" (Donald R. Griffin), "Migration" (Donald S. Farner), "Nocturnal Migration" (George H. Lowery, Jr., and Robert J. Newman), and "Breeding Biology" (David E. Davis) are interestingly written and well documented. These chapters will be valuable because of their excellent bibliographies.

The physiology of birds receives very modest treatment in this book. It is true that much of the recent avian physiology has centered about domestic forms and that data for wild birds are relatively scarce. It was a disappointment, however, to discover that the discussion of endocrine glands is concerned primarily with their relation to migration and that hormones per se are considered only in relation to sex differentiation. The latter chapter (L. V. Domm), although it was the most recent to be received for publication, has the least complete bibliography.

The chapters on "Population Research" (Joseph J. Hickey) and "Bird Banding" (Donald S. Farner) are interesting and have elaborate bibliographies. These should be particularly valuable to other biologists. The final chapter on "Diseases of Birds" (Carlton M. Herman) is also well documented; but, as the author points out, this subject has been sadly neglected except for poultry diseases.

There is much to commend this book and any lack in unified presentation is probably compensated for by the excellence of bibliography.

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The Chemistry of Tanning Processes. K. H. Gustavson. Academic, New York, 1956. 403 pp. Illus. $9.

This is a book on the fundamental chemistry of tanning. Besides extensive coverage of chrome and vegetable tanning, which are the two most important tannages, the author has included chapters on Syntans, aldehydes, and quinone

and oil. In addition, a chapter on combination tannages is included, which is the first of its type in any English textbook on tanning. A survey of chemical combinations similar to those in tanning that are of biological and medical importance is included to show that many reactions similar to those in tanning occur in natural processes.

The author is one of the foremost world authorities on tanning, especially chrome tanning, and much of the material given in the book is based on his own work. In the first four chapters, which discuss the theories of chrome tanning, he has referred to his own work in 102 out of 240 literature citations. In addition, he has an excellent knowledge of the world literature on leather chemistry. For this reason, the book contains much of the valuable work done in Germany on synthetic tanning materials. The chapter on Syntans is probably the best to appear in any book on leather in the English language.

The ideas and theoretical conclusions of the author himself predominate throughout. This is, of course, as would be expected, and, although he does an excellent job in interpreting highly complicated mechanisms of reaction, the reader would feel more convinced if more data were presented to support some of the conclusions. The imagination and fertile mind of the author are, however, inspiring, and the ideas presented will undoubtedly serve as the foundation for further investigations by research men.

This book gives an up-to-date coverage of the literature, and the fundamental chemistry of the tanning reactions is interpreted according to the most modern concepts of the behavior of high polymeric compounds. It should be helpful to everyone who is engaged in the tanning industry and, in my opinion, is a necessary addition to the library of all leather research chemists.

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Protoplasmatologia. Handbuch der Protoplasmaforschung. vol. X, *Red Cell Structure and Its Breakdown.* Eric Ponder. Springer, Vienna, 1955. 123 pp. Illus. $9.50.

Since the publication of the author's monograph *Hemolysis and Related Phenomena* (1948) new observations and techniques have become available which necessitate a different approach to the problems of the red cell and its breakdown. This volume is concerned with all except the last of the following new departures: the observation of fine structure, made with the electron microscope; the realization that there are many varieties of ghosts that have properties of their own; the increasing amount of evidence that some of the simplifying hypotheses regarding the osmotic behavior of the red cell have broken down; the observation of the hitherto neglected fragmentation phenomena; the realization that many lytic reactions cannot be described by the equations for simple chemical reactions; and, finally, the appreciation of the fact that the mammalian red cell has a complex metabolism and that this metabolism is concerned with processes such as active ion transport.

The author divides the very complex subject matter into sections entitled: "The structure of the mammalian red cell"; "Osmotic hemolysis"; "The kinetics of hemolysis"; "Fragmentation, erythrophagocytosis, and the effects of tissue lysins." These are generously illustrated with 58 figures, including graphs, diagrams, and microphotographs as obtained with various instruments, especially the electron microscope. The result is a readable account of especial value to students of general physiology. The use of mathematical language and arguments is in the main restricted to section 3 on kinetics of hemolysis. Another restriction concerns the material, inasmuch as red cell destruction is dealt with from the point of view of the cell rather than from the point of view of the organism. The bibliography has 210 full citations, principally of work done within the last 10 years, but often including one key reference to serve as guide to work done earlier.

ROBERT BLOCH
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New Books

The Chemical Process Industries. R. Norris Shreve. McGraw-Hill, New York, ed. 2, 1956. 1004 pp. $11.50.

Spring on an Arctice Island. Katharine Scherman. Little, Brown, Boston, 1956. 331 pp. $5.

Enzymes: Units of Biological Structure and Function. Henry Ford Hospital International Symposium. Oliver H. Gaebler, Ed. Academic Press, New York, 1956. 624 pp. $12.

Fundamentals of Vibration Analysis. N. O. Myklestad. McGraw-Hill, New York, 1956. 260 pp. $6.50.

E. A. Birge, a Memoir. G. C. Sellery. With an appraisal of Birge by C. H. Mortimer. University of Wisconsin Press, Madison, 1956. 221 pp. $3.50.

Understanding Human Behavior. James L. McCartney. Vantage Press, New York, 1956. 258 pp. $3.50.

College Chemistry. Andrew J. Scarlett. Holt, New York, 1956. 499 pp. $5.50.

General Zoology. David F. Miller and James G. Haub. Holt, New York, 1956. 550 pp. $6.95.

General Biology. Willis. H. Johnson, Richard A. Laubengayer, Louis E. DeLanney. Holt, New York, 1956. 618 pp. $6.50.

The Human Body, Its Anatomy and Physiology. C. H. Best and N. B. Taylor. Holt, New York, ed. 3, 1956. 723 pp. $6.75.

Tombs, Temples and Ancient Art. Joseph Lindon Smith. Corinna Lindon Smith, Ed. University of Oklahoma, Norman, 1956. 349 pp. $5.

Man, Culture, and Society. Harry L. Shapiro, Ed. Oxford University Press, New York, 1956. 380 pp. $7.50.

Histologie und Mikroskopische Anatomie des Menschen. W. Bargmann. Thieme, Stuttgart, Germany, rev. ed. 2, 1956 (order from Intercontinental Medical Book, New York 16). 796 pp. $16.55.

Arctic Wilderness. Robert Marshall. George Marshall, Ed. University of California Press, Berkeley, 1956. 171 pp. $3.75.

What Flowering Tree Is That? Edwin A. Menninger, The Author, Stuart, Fla. 110 pp. $3.

Proceedings of the International Conference on the Peaceful Uses of Atomic Energy. vol. 1. *The World's Requirements for Energy: The Role of Nuclear Energy,* 479 pp.; $8. vol. 4, *Cross Sections Important to Reactor Designs*; 357 pp.; $7.50. vol. 5, *Physics of Reactor Design*; 545 pp.; $9. vol. 6, *Geology of Uranium and Thorium*; 825 pp.; $10. vol. 7, *Nuclear Chemistry and Effects of Irradiation;* 691 pp.; $10. vol. 8, *Production Technology of the Materials Used for Nuclear Energy;* 627 pp.; $10. vol. 9, *Reactor Technology and Chemical Processing;* 771 pp.; $10. vol. 10, *Radioactive Isotopes and Nuclear Radiation in Medicine;* 544 pp.; $8. vol. 11, *Biological Effects of Radiation;* 402 pp.; $8. vol. 12, *Radioactive Isotopes and Ionizing Radiations in Agriculture, Physiology, and Biochemistry;* 553 pp.; $9. vol. 13, *Legal, Administrative, Health and Safety Aspects of Large-Scale Use of Nuclear Energy;* 393 pp.; $7. United Nations, New York, 1956.

Precision Electrical Measurements. Proceedings of an international symposium on precision electrical measurements held at the National Physical Laboratory 17–20 Nov. 1954. Philosophical Library, New York, 1956. $12.

Proceedings of the Third International Congress of Biochemistry. Brussels 1955. Claude Liébecq, Ed. Academic Press, New York, 1956. 544 pp. $15.

Operations Research for Management. vol. II. Joseph F. McCloskey and John M. Coppinger, Eds. Johns Hopkins Press, Baltimore, 1956. 563 pp. $8.

Introductory Organic Chemistry. With certain chapters of biochemistry. E. Wertheim and Harold Jeskey. McGraw-Hill, New York, ed. 3, 1956. 476 pp. $5.50.

Electromagnetically Enriched Isotopes and Mass Spectrometry. Proceedings of the conference held in Cockcroft Hall, Harwell, England, 13–16 Sept. 1955. M. L. Smith, Ed. Academic Press, New York; Butterworths, London, 1956. 272 pp. $8.