of lower mammals. Laboratory studies are called upon rather heavily to illuminate the basic physiology involved. The book has been compiled by a well-trained anthropologist, familiar with a great many existing cultures, and by one of the foremost experimentalists in sex behavior problems. The authors have been most successful in merging their different experiences into a well-integrated general treatise, to the extent that the separate disciplines merely become a part of the generalized picture, developed against a wide evolutionary background. It is authentic, full of diversified information, and masterfully presented.

Chapters deal with "The Nature of Coitus," "Types of Sexual Stimulation," "Circumstances for Coitus," "Attracting a Sex Partner," "Sexual Partnerships," "Homosexual Behavior," "Relations between Different Species," "Self-stimulation," "Development in the Individual," "Feminine Fertility Cycles," "Other Physiological Factors in Sex Behavior," with a closing chapter on "Human Sexual Behavior in Perspective." A glossary of 350 terms, including location and a short characterization of different cultures, a bibliography of some 200 references, and an index make the book understandable to the layman and a valuable reference source to the scientist.

As a characteristic treatment of the different chapters, the discussion of "Homosexual Behavior" opens with a general introduction and setting in antiquity, followed by discussion of attitudes and frequency among both men and women in the United States. The chapter continues with a treatment of attitudes existing in 76 other human cultures. Similar behavior is then traced through the subhuman primates, and examined for lower mammalian species, with a closing summary for the chapter. The biological, evolutionary, and physiological aspects of sex behavior are thus brought together in a commendable attempt to assist in a better understanding of the behavior and attitudes toward sex in human society.

CARL R. MOORE

Hull Zoological Laboratory
The University of Chicago

Researches in Binocular Vision. Kenneth N. Ogle. Philadelphia-London: Saunders, 1950. 345 pp. $7.50.

In this publication, there is a readable and well-presented account of the results of many years of research by Dr. Ogle and his colleagues at the Dartmouth Eye Institute. We are fortunate to have this work, as probably no other single group has devoted so much time and effort to the understanding of these extraordinary phenomena.

The treatise is neither comprehensive nor exhaustive, as the intention was only to present the knowledge of the subject matter gained from investigations at Dartmouth. The greater part of the material is concerned with direct investigations on the perceptual process of spatial localization. Although many aspects of binocular vision are not discussed, the section dealing with aniseikonia will be of clinical interest. The author has organized and integrated his investigations into the general body of knowledge bearing on the subject.

Broadly speaking, the contents are divided into four parts. The first part presents an introduction to the localization of the horopter and the influence on the horopter by introducing magnification into one eye. In Part II the author reports on investigations concerned with the extent of Panum's fusional area, fixation disparities, fusional amplitudes, and cyclofusional eye movements.

Part III presents some of the work for which the Dartmouth group attracted great interest. This work concerned the distortions introduced in the spatial localization of walls, floors, and ceilings when changes are made in the relative magnification of the images of the two eyes. The last part treats certain aspects of aniseikonia, from which the clinician will gain some insight into the perceptual problems.

The student of vision will find this a valuable reference.

HENRY G. WAGNER

Department of Biophysics
The Johns Hopkins University

Mathematical Engineering Analysis. Rufus Oldenburger. New York: Macmillan, 1950. 426 pp. $6.00.

This is a new kind of textbook with a new delimitation of subject matter for which the new expression "mathematical engineering analysis" has been chosen. In about 400 pages all branches of mechanics and certain parts of thermodynamics, electricity, and magnetism are covered. Obviously some kind of selection had to be made. The author's main idea seems to have been to give only the simplest basic formulas, which usually serve as a point of departure for the construction of mathematical theories. He also wants, however, to present results of a practical nature. Thus, in his first chapter, after a discussion of the most primitive notions of particle mechanics, he shows on page 27 a complete cutaway illustration of an automobile shock absorber which suggests that the preceding definitions and laws should be applied to it. In the same vein the book continues to offer simple formulas such as that heat flux is proportional to a temperature difference or to a temperature gradient. The reader is then encouraged to apply a theorem for heat transfer to complicated devices like gas turbine blades. Nowhere in the book is a theoretical setup carried through to such an extent that a student would learn how more than the most immediate consequences could be drawn from the basic laws by the use of methods that are usually called "mathematical analysis."

As every teacher knows, the difficulty of formulating laws and theorems in a clear, concise, and correct way, so that a beginner can successfully handle them, is enormous. The author is not always lucky in choosing his formulations; what, for instance, "Laws 1.4 and 1.5" on page 10 mean is hardly clear. In the chapter on aerodynamics one single theorem (14.1) is

pronounced stating that under certain conditions a once-irrotational motion stays irrotational.

The reviewer is inclined to believe that the fragmentary approach chosen by the author might be useful on a certain level of instruction. The obvious danger of the method, however, is that a student will be led by it to a kind of "speaking knowledge" of mathematical physics and might then believe that he has learned the essentials. On the other hand, a more mature reader, well grounded in the elements of physics, will enjoy the wealth of interesting examples, the great variety of problems discussed, and, above all, the skillfulness and many-sidedness of the author.

R. v. MISES

Division of Engineering Sciences
Harvard University

Petroleum Geology. Kenneth K. Landes. New York: Wiley; London: Chapman & Hall, 1951. 660 pp. $10.00.

Professor Landes, chairman of the Geology Department of the University of Michigan, has done an outstanding job in compiling the vast amount of information found in his book. The inclusion of many full-page maps (34) has enhanced its value, especially to the geologist.

The book is divided into three distinct parts. The first, "Techniques of the Petroleum Geologist," concerns itself primarily (76 pp.) with exploration methods and secondarily (24 pp.) with exploitation procedures. The information is of a broad general nature and merely acquaints the reader with or reminds him of the subject matter. The field is well covered, however, and with few exceptions emphasis is proportional to the method or the procedure.

Part 2, "Geologic Occurrence of Petroleum" (202 pp.), summarizes the more important theories concerning the origin and accumulation of oil, and is illustrated with many full-page maps drawn from authentic sources. The probable causes of migration are discussed, as well as the possible effects of migration on the physical and chemical properties of oil. The various types of traps are considered and are well illustrated by specific field examples. Adequate bibliography is included for reference work.

Part 3, "Present and Future Oil Supplies" (306 pp.), considers the domestic and foreign distribution of petroleum along with a modest concluding chapter on future oil supplies. Domestic occurrence is treated by individual states. Often three separate and identical-scale maps of each state are included, showing, respectively, structure and oil and gas fields, oil and gas fields, and index map of principal fields. In most cases the three maps could be condensed to one, or two at the most, without causing confusion or losing accuracy—thus the rather unusual criticism of superfluous or overillustration may apply here. If these excess illustrations had been replaced by selected maps of gravity, magnetic, and seismograph surveys, which play such an important part in petroleum exploration, the volume would have gained in balance.

All in all the book fills a much-needed void in its field. It is an important contribution, rivaled only by C. G. Lalicker's excellent *Principles of Petroleum Geology,* which, however, is more restricted in scope.

M. G. FREY

Department of Geology
University of Cincinnati

Scientific Book Register

Einführung in das Studium de Physik. Wolfgang Finkelnburg *et al.* Heidelberg, Germany: Carl Winter, Universitätsverlag, 1950. 119 pp. DM 4.95; bound DM 6.95.

Animal Evolution: A Study of Recent Views of its Causes. G. S. Carter. London: Sidgwick and Jackson; New York: Macmillan, 1951. 368 pp. $4.50.

Encyclopedia of Chemical Reactions: Fe, La, Pb, Li, Mg, Mn, Hg, Mo, Nd, Vol. IV. C. A. Jacobson, Ed. New York: Reinhold, 1951. 790 pp. $14.00.

Catalogue of the Fossil Cephalopoda: The Ammonoidea of the Trias (II), Part V. L. F. Spath. London: British Museum (Natural History), 1951. 228 pp. £1 15s.

Weed Seedlings. Anna P. Kummer. Chicago: Univ. Chicago Press, 1951. 435 pp. $5.00.

The Chemistry of Heterocyclic Compounds: Six-Membered Heterocyclic Nitrogen Compounds with Four Condensed Rings. C. F. H. Allen *et al.* New York–London: Interscience, 1951. 345 pp. $10.00.

Advanced Fluid Dynamics and Fluid Machinery. R. C. Binder. New York: Prentice-Hall, 1951. 426 pp. $8.00.

Advances in Protein Chemistry, Vol. VI. M. L. Anson, John T. Edsall, and Kenneth Bailey, Eds. New York: Academic Press, 1951. 549 pp. inc. cumulative index to Vols. I–V. $9.50.

The Fischer-Tropsch and Related Syntheses: Including a Summary of Theoretical and Applied Contact Catalysis. Henry H. Storch, Norma Golumbic, and Robert B. Anderson. New York: Wiley; London: Chapman & Hall, 1951. 610 pp. $9.00.

Biological Actions of the Adenine Nucleotides. H. N. Green and H. B. Stoner. London: H. K. Lewis, 1950. 221 pp. 25 s. net.

Tecnología de los Aceites Vegetales: El Aceite de Oliva y su Industria, Vol. II. Pier Giovanni Garoglio. Mendoza, Argentina: Ministerio de Educacion, Universidad Nacional de Cuyo, 1950. 1,377 pp.

Electromagnetic Problems of Microwave Theory. H. Motz. London: Methuen; New York: Wiley, 1951. 184 pp. $2.00.

Yuman Indian Agriculture: Primitive Subsistence on the Lower Colorado and Gila Rivers. Edward F. Castetter and Willis H. Bell. Albuquerque: Univ. New Mexico Press, 1951. 274 pp. $6.00.

A Monograph of the Collembola or Springtail Insects of New York State. Elliott A. Maynard. Ithaca, N. Y.: Comstock, 1951. 339 pp. $7.50.

Symposium on Cytology. William L. Doyle *et al.* East Lansing: Michigan State College Press, 1951. 69 pp. $2.00.

The Fourier Integral and Certain of Its Applications. Reprint. Norbert Wiener. New York: Dover, 1951. 201 pp. $3.95.

Immunology. 3rd ed. Noble Pierce Sherwood. St. Louis, Mo.: Mosby, 1951. 731 pp. $8.00.