

translation is under review. In a remarkably clear, lucid, and simple, but largely qualitative, fashion, the author presents the cogent factors of gaseous discharge from the basic processes involved through the various types of discharges, including as well a few technical applications. This book is written for the average engineer or person with a college degree based on the physical sciences, and presents in a comfortably readable fashion the elements of electrical discharge in gases, especially as developed during those years when Penning was the experimental leader in the field. This booklet is on a par in character with the monograph series published by Methuen, but is somewhat less technical and of broader scope. Obviously, when it is recognized that the more rigorous treatment of the subject in volumes 21 and 22 of the Springer *Encyclopedia of Physics* of 1956 covers the same scope of information, it is clear that Penning's coverage cannot be more than superficial. Because of its clarity and simplicity and the judicious choice of the most essential elements, this presentation represents a truly remarkable achievement in condensation. It will prove to be of interest and value to those wishing a quick, stimulating preview of this useful and interesting field of knowledge.

L. B. LOEB

Department of Physics,
University of California, Berkeley

Mathematics and Statistics for Use in Pharmacy, Biology and Chemistry. L. Saunders and R. Fleming. Published under the direction of the Council of the Pharmaceutical Society of Great Britain. Pharmaceutical Press, London, England, 1957. x + 257 pp. Illus. 27s. 6d.

In the words of the authors, this book provides students in pharmacy and other biological subjects with "a short course in mathematics and statistics which assumes very little knowledge of either topic." In reality, it touches upon so many complex subjects in such a limited space that it is not likely to give the unaided reader a working knowledge of either the mathematics or the statistics it covers.

Following two chapters on arithmetic and algebra, chapter 3 introduces analytical geometry, curve forms, and the graphical solution of equations. Chapter 4 covers arithmetic and geometric progressions, series, permutations and combinations, the binomial theorem, and natural logarithms. The next three chapters present the rudiments of differential calculus, the higher derivatives, partial differentiation, and rules of integra-

tion. These lead directly to a chapter on trigonometry including trigonometric identities and trigonometric integrals, differential equations of the type applicable to chemical reactions, radioactive decay, and diffusion. Chapter 10 treats equations and series for describing experimental measurements.

The remaining five chapters are statistical, in each case with a discussion of elementary theory followed by one or more applications in biology, chemistry, or pharmacy. Beginning with the probability concept, the authors discuss the binomial, Poisson, and normal distributions. Following this, in a chapter on the statistical analysis of repeated measurements, the mean, standard deviation, and limits of error are considered. In one chapter on tests of significance and comparison of data by statistical methods, the authors cover in rapid succession the normal deviate test, the *t* test, the variance-ratio or *F* test, the χ^2 test, least-squares regression, correlation coefficients, covariance, and the error of regression coefficients. Some applications of statistics to biological assay and bacteriology (in chapter 14) and to quality control in pharmacy (in chapter 15) complete the text. Derivations of the more important relations, constants, and reference tables are presented in a series of 13 appendices.

On the whole, the examples are well selected and lucidly explained. *Mathematics and Statistics* contains much fundamental material in a concise and well organized, but oversimplified, form—especially in the statistical chapters. It employs a consistent, mnemonic symbology, and appeals to the intuition of the reader. By bringing together in a compact volume many of the mathematical concepts which underlie basic statistical theory, the authors give the reader a better insight into the interrelations of these concepts than he would gain from the usual introductory text in statistics.

KENNETH D. WARE

Northeastern Forest Experiment
Station, Upper Darby, Pennsylvania

The Brain and Human Behavior. Proceedings of the Association, December 7-8, 1956. vol. XXVI of *Research Publications, Association for Research in Nervous and Mental Disease*. Williams and Wilkins, Baltimore, 1958. xi + 564 pp. \$15.

The student of neurological science will find in this volume a worth-while group of essays on various aspects of the human nervous system. The 21 individual contributions are by outstanding investigators drawn from such fields as

physiology, psychology, pharmacology, electrophysiology, clinical neurology, and neurosurgery. The resulting mélange of vocabulary, constructs, techniques, and methodologies somehow permits the emergence of new and important findings bearing on brain-behavior relations.

The corpus callosum is no longer "silent" but appears to provide facilitation of sensory input to the two hemispheres. The frontal lobes, all important in mediating the higher levels of mentation, are apparently secondary in importance to the temporal and parietal lobes in mediating various personality functions, including the "body schema."

Of considerable medical significance is the fact that certain patients with uncontrolled psychomotor epileptic seizures may be benefited by unilateral anterior temporal lobectomy without serious loss in mentation.

Objective behavioral techniques have now been developed which define operationally a frontal lobe principle in the human brain. This principle is apparently redundant to some extent throughout the cerebral cortex and is disturbed by a 2 to 3 percent lesion (average brain weight is taken to be 1400 grams) or more, regardless of cortical locus. The possibilities of "chemical facilitation" in such cases are as yet unexplored.

The reader will search in vain in this volume for a compelling theory or model of brain functioning. Theory in this field cannot yet successfully integrate empirical fact. Nevertheless, he will welcome the continued sponsorship of such studies through its annual programs by the Association for Research in Nervous and Mental Disease, one of the very few remaining medical societies devoted to bridging the void between modern neurology and psychiatry.

WARD C. HALSTEAD

Departments of Psychology and
Medicine, University of Chicago

Physics of Nuclear Fission. Supplement No. 1 of the Soviet journal *Atomnaya Energiya*. Translated by J. E. S. Bradley. Pergamon, New York and London, 1958. vi + 182 pp. Illus. + plates. \$9.

This book, entitled *Physics of Nuclear Fission*, is actually a translation of the first supplement to the Russian journal *Atomic Energy*, in which were published the papers read at a conference on the physics of nuclear fission, held in January 1956 at the Atomic Energy Institute of the Academy of Sciences of the U.S.S.R.

The conference appears to have been an excellent one, and a surprisingly wide range of material is presented in the

form of terse, concise reviews, with extensive references to the Russian and Western literature. A few of the chapter headings will serve to illustrate the subject matter covered: "Nuclear fission theory" (B. T. Geilikman); "Fast Neutron fission cross sections" (U. S. Zamiatin); "Charge and mass distributions of fission products" (A. N. Murin); "Theory of fission of heavy nuclei near threshold" (V. G. Nosov); "Fission Neutrons" (B. G. Erozkolinskii); "Spontaneous fission of heavy nuclei" (K. A. Petrzhak).

Although, as the editors of *Atomic Energy* remark, the problems reviewed in the reports have not been solved in the two years that have passed since the conference was held, it is nevertheless true that this book is in the process of becoming dated. The subject of fission by mesons, for example, is one which is mentioned in the current literature but which is missing from the conference reports.

It is apparent that this book is not directed toward the beginner, who requires selectivity in the material presented to him in order to avoid confusion; it is, rather, for the workers in this field who wish to keep informed of new developments. The book is priced rather high, but this may be due to the high costs of translation. J. E. S. Bradley is credited with the excellent translation.

An interesting feature of the book is the fact that it reveals the state the Russians had achieved in fission physics at the time of the conference; it contains evaluations, by physicists who appear to be very competent, of Russian and Western efforts in this field.

EDWARD DER MATEOSIAN
Department of Physics,
Brookhaven National Laboratory

An Introduction to Medical Mycology.

George M. Lewis, Mary E. Hopper, J. Walter Wilson, and Orda A. Plunkett. Year Book Publishers, Chicago, ed. 4, 1958. xvii + 453 pp. Illus. \$15.

Few books have been as influential as Lewis and Hopper's in furthering the development of medical mycology. The first edition was published in 1939 shortly after an upsurge of interest in mycotic diseases began. It served as an authoritative guide to physicians and research workers who desired to know more about the subject. Subsequent editions have kept pace with the developments in this field and have met the needs for a practical text. The fourth edition has been extensively revised and expanded, with the collaboration of Wilson and Plunkett. Where formerly the greatest emphasis was placed on the cutaneous my-

coses, now the systemic mycoses receive almost equal coverage. Another significant change lies in the long-delayed adoption of the valid names for the dermatophytes. However, an occasional lapse is noted. In Table 8, *Trichophyton niveum* is cited as a species distinct from *T. mentagrophytes*, and on page 214 a separate paragraph is devoted to *Microsporum simiae*, an organism that is considered by most authorities to be identical with *M. canis*.

The subject matter is well organized, lucidly presented, and arranged so that specific information is easily found. After a brief introductory description of the superficial mycoses, most of the etiologic agents are presented in separate chapters. Generally each chapter covers the following topics: etiology, clinical characteristics, differential diagnosis, pathogenesis, mycology, immunologic reaction, prognosis, and treatment. Where necessary, sections on history, geographic distribution, and prophylaxis are included. The 10 chapters on the deep mycoses are presented in a similar manner. Pertinent references are found at the end of each chapter.

In addition, there are sections on the physiology and nutritional requirements of the dermatophytes, the immunology and allergic reactions of the dermatophytes, treatment of the superficial mycoses, immunology and allergic reactions in the deep mycoses, fungus diseases and workmen's compensation, fundamentals of elementary mycology, methods of diagnosis, laboratory methods, experimental aspects, and contaminants.

This publication is lavishly illustrated with informative clinical photographs and illustrations of the gross and microscopic characteristics of both pathogenic and saprophytic fungi. Line drawings of the diagnostic features of common molds and yeasts enhance the value of the chapter on contaminants.

The book is bound attractively and is printed in a legible type face on high-quality paper. This edition should prove to be even more useful than its predecessors.

LIBERO AJELLO

U.S. Public Health Service,
Communicable Disease Center,
Atlanta, Georgia

New Books

Principles of Quantum Electrodynamics. Walter E. Thirring. Translated from the German by J. Bernstein. Academic Press, New York, 1958. 249 pp. \$8.

Reader in Comparative Religion. An anthropological approach. William A. Lessa and Evon Z. Vogt, Eds. Row, Peterson, Evanston, Ill., 1958. 611 pp.

Sampled-Data Control Systems. John R. Ragazzini and Gene F. Franklin. Mc-

Graw-Hill, New York, 1958. 340 pp. \$9.50.

A Scientist of Two Worlds: Louis Agassiz. Catherine Owens Peare. Lippincott, Philadelphia, 1958. 188 pp. \$3.

Soviet Research in Crystallography. Chemistry Collection No. 5, vols. 1 and 2. English translation. Consultants Bureau, New York, 1958. 618 pp. vol. 1, \$30; vol. 2, \$100; Set, \$115.

Stellar Populations. Proceedings of the conference sponsored by the Pontifical Academy of Science and the Vatican Observatory, 20-28 May 1957. D. J. K. O'Connell. North-Holland, Amsterdam; Interscience, New York, 1958. 544 pp. \$10.

A Stereoscopic Atlas of Human Anatomy. Section IV, *The Thorax.* View-Master reels 113-122 and 123-132. David L. Bassett. Sawyer's, Portland, Ore., 1958.

The Structure of Steel. A simple explanation for students, engineers, and buyers of steel. Edwin Gregory and Eric N. Simons. Philosophical Library, New York, 1958. 176 pp. \$10.

The Study of the Physical World. Nicholas D. Cheronis, James B. Parsons, Conrad E. Ronneberg. Houghton Mifflin, Boston, ed. 3, 1958. 693 pp. \$7.50.

A Survey of European Civilization. Wallace K. Ferguson and Geoffrey Bruun. Houghton Mifflin, Boston, ed. 3, 1958. 1028 pp. \$8.25.

Systematics of Today. Proceedings of a symposium held at the University of Uppsala in commemoration of the 250th anniversary of the birth of Carolus Linnaeus. Olov Hedberg, Ed. Uppsala Universitets, Uppsala, Sweden, 1958. 243 pp.

Les Techniques et le philosophe. Pierre Ducassé. Presses Universitaires de France, Paris, 1958. 191 pp. F. 800.

Thirst. Physiology of the urge to drink and problems of water lack. A. V. Wolf. Thomas, Springfield, Ill., 1958. 546 pp. \$12.50.

Topologie algébrique et théorie des faisceaux. Publications de l'Institut de Mathématique de l'Université de Strasbourg. vol. XIII. Roger Godement. Hermann, Paris, 1958 (order from Pierre Berès, 681 Fifth Avenue, New York). 291 pp.

What We Must Know about Communism. Harry and Bonaro Overstreet, Norton, New York, 1958. 348 pp. \$3.95. "We have written this book because we had to." The Overstreets feel that the point in time is here when each individual must accept his responsibility and obligation to know the character of this new force (Communism) which "claims the human future as its own," and "to convert such knowledge into awareness of what is at stake and what needs to be done."

An Introduction to the Chemistry of Fats and Fatty Acids. F. D. Gunston. Wiley, New York, 1958. 171 pp.

Mind and Matter. Erwin Schrodinger. Cambridge Univ. Press, New York, 1958. 111 pp. \$2.75.

A Natural History of Inhaca Island, Mocambique. William Macnae and Margaret Kalk. Witwatersrand Univ. Press, Johannesburg, South Africa, 1958. 163 pp. 42s.