Chemical Engineering in the U.S.A. P. H. Calderbank. Department of Scientific and Industrial Research, Overseas Technical Reports No. 2. H.M. Stationery Office, London, 1956 (order from British Information Services, 45 Rockefeller Plaza, New York 20, N.Y.). 24 pp. $0.36.

This is the second of a series of surveys made by specialist officers attached to the United Kingdom Scientific Mission in Washington, D.C. The author, P. H. Calderbank, who is now with the Chemical Research Laboratory in England, spent some 4 months in the United States in 1955, during which time he visited a number of university and industrial establishments and had discussions with many people concerned with the selection, training, and employment of chemical engineers. His report deals with the development of chemical engineering, the present status of chemical engineering education, and the way in which chemical engineering practice has developed.

Electrical Measurements and Their Applications. Walter C. Michels. Van Nostrand, Princeton, N.J., 1957. 331 pp. Illus. $6.75.

The techniques of electric measurements have undergone substantial changes in the past 10 or 15 years. Part of this is the result of the great advances in electronic instrumentation which have made available, on a commercial basis, equipment of considerable stability and reliability, covering a tremendous range of frequencies, from direct current into the microwave region. The requirements of automation and automatic recording of technical information, furthermore, have extended the application of electric measurements into all fields of science and technology. To attempt to present an up-to-date textbook which covers the range of electric measurements, techniques, and instrumentation used today is, indeed, a challenging task. *Electrical Measurements and Their Applications* gives a surprisingly good survey of the situation. It is a revision of earlier editions by the same author (*Advanced Electrical Measurements, 1932, 1941*) but the changes in this book are sufficiently extensive to make it a successor to the earlier editions rather than just a new edition.

The book is prepared for junior and senior students in science and engineering, although it would also be a good reference book for the more advanced experimentalist. The first part, which consists of nine chapters, deals with basic ideas and with the instruments and techniques commonly found in electric measurements laboratories. The discussion starts with chapters on basic techniques of direct-current measurements. These are followed by chapters on phenomena at increasingly higher frequencies, concluding with one on microwave instrumentation and technique. In each chapter, detailed instructions are given for a number of experiments which illustrate, for the student, fundamental principles and techniques discussed in the chapter. A total of 43 experiments are described.

The second part of the book discusses applications of electric measurements in the fields of magnetism, thermometry, mechanics, acoustics, and nuclear physics. The treatment is necessarily brief but is accompanied by a number of references, to provide further detailed information. This section will be useful to the practicing engineer or scientist.

The book is well illustrated by photographs and diagrams of commercial instruments that are widely used today in industrial and government laboratories. The discussion of the operation of these instruments is limited to design features essential to their use.

In approximately 300 pages this book gives a condensed and lucid treatment of electric measurements as practiced in today's laboratories. It should serve as a valuable textbook in college electric-measurements courses and as a handy reference work for the advanced student or research scientist and engineer.

WAYNE W. SCANLON
U.S. Naval Ordnance Laboratory

Breads, White and Brown. Their place in thought and social history. R. A. McCance and E. M. Widdowson. Lippincott, Philadelphia, 1956. 174 pp. Illus. $5.

Breads, White and Brown is an admirable summary, covering 3000 years of the perennially moot question of the relative virtues or vices of white and brown breads. Perhaps the plagiarized title, "Through the alimentary canal with gun and camera," would not be descriptively amiss.

The historical development of white flour and its reflections of social conflicts and economic states is traced deftly through medieval and early modern England. With the advent of the newer knowledge of nutrition in the period of "peace and plenty" (1820–1914) and the period of "shortages and war" (1914–21), the proteins, minerals, and vitamins came into prominence. The extent to which the healthfulness of wheat is milled out in the manufacture of white flour became a crust of contention and political machinations throughout the "return to plenty" (1921–39) and World War II (1939–46) and indeed is still a lively subject.

The authors review the experimental work, the by-play of opinions and politics, and the differences in measures taken to resolve the problem, with fairness and considered judgment. From their own tests with children, described in some detail in chapter VIII, they conclude that bread has a much higher nutritional value than has been supposed, but no differences are notable in the value of whole meal, white flours, or white enriched flours.

So whatever the case, debate on the relative merits of white versus brown breads must go on, with forbearance and with considered judgment to express the diverse viewpoints of "people's health, the public's wishes, the nation's purse, or [the] shareholders' pockets."

This book is highly recommended for a well-balanced presentation of a difficult subject.

LEROY VORIS
National Research Council

Methods in Enzymology. vol. III. Preparation and assay of substrates. Sidney P. Colowick and Nathan O. Kaplan. Academic Press, New York, 1957. 1154 pp. $26.

Volume III of *Methods in Enzymology* furnishes the information on substrates that is needed for assay of the enzymes described in the previous two volumes. The series can now be used for much of the usual enzyme work without further recourse to the original literature. The present volume is thus an integral part of the previous ones and, in addition, presents methods for the preparation and determination of at least 200 compounds of general biochemical interest.

The organization of this vast amount of information follows that of volumes I and II. Volume III consists of seven sections: carbohydrates, lipids and steroids, citric acid cycle components, proteins and derivatives, nucleic acids and derivatives, coenzymes and related phosphate compounds, and determination of inorganic compounds. It should be noted that each article in volumes I and II gives the appropriate reference to volume III for the required substrate.

The presentation in most of the articles is up to the high standards of the previous volumes. However, this volume cannot be given the same unqualified recommendation. There are gaps in the methods described in several of the fields, which limit the usefulness of the book. To cite three examples which come to mind, no mention is made of

the use of dinitrophenylated derivatives for the quantitative paper chromatography of amino acids, the methods of Khorana for the synthesis of various phosphorylated compounds are not described, and the synthesis of optically active triose phosphates is omitted.

It may be that such omissions, and undoubtedly others, were unavoidable in view of the time and space that were available. When new methods appear so frequently, smaller, more specialized volumes are probably more useful. With these reservations, I feel that the book as a whole will undoubtedly be of great utility in any biochemical laboratory.

RICHARD S. SCHWEET
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New Books

Biology and Its Relation to Mankind. A. M. Winchester. Assisted by B. J. Kaston. Van Nostrand, Princeton, N.J., ed. 2, 1957. $7.25.

Progress in the Age of Reason. The 17th century to the present day. R. V. Sampson. Harvard University Press, Cambridge, Mass., 1956. 259 pp. $4.25.

The Changing Patient-Doctor Relationship. Martin G. Vorhaus. Horizon Press, New York, 1957. 310 pp. $3.95.

Social Theory and Social Structure. Robert K. Merton. Free Press, Glencoe, Ill., rev. ed., 1957. 663 pp. $7.50.

Dextran and Its Use in Colloidal Infusion Solutions. Anders Gronwall. Academic Press, New York, 1957. 156 pp. $4.

Handbuch der Physik, vol. XL. *Nuclear Reactions I.* S. Flügge, Ed. Springer, Berlin, 1957. 553 pp. DM. 128.

Nuclear Power Engineering. Henry C. Schwenk and Robert H. Shannon. B. G. A. Skrotzki, Ed. McGraw-Hill, New York, 1957. 335 pp. $6.50.

Recent Advances in Invertebrate Physiology, a Symposium. Sponsored by the National Science Foundation, the Tektronix Foundation, and the University of Oregon. Bradley T. Scheer, Ed. University of Oregon Publications, Eugene, 1957. 310 pp. $5.50.

Drug Resistance of Microorganisms. Robert J. Schnitzer and Emanuel Grunberg. Academic Press, New York, 1957. 409 pp. $10.

The Proceedings of the Third International Conference on Electron Microscopy, London 1954. V. E. Cosslett, chairman, Editorial Committee. R. Ross, General Ed. Royal Microscopical Society, London, 1956. 721 pp. $15.

The Physiology of Fishes, vol. I, *Metabolism.* Margaret E. Brown, Ed. Academic Press, New York, 1957. 460 pp. $12.

Neutron Transport Theory. R. B. Davison and J. B. Sykes. Clarendon Press, Oxford, 1957. 470 pp. $12.

Life. An introduction to biology. George G. Simpson, Colin S. Pittendrigh, and Lewis H. Tiffany. Harcourt, Brace, New York, 1957. 859 pp.

Rectifying Semi-Conductor Contacts. H. K. Henisch. Clarendon Press, Oxford, 1957. 384 pp. $11.20.

Semiconductor Abstracts, vol. III, *1955.* Abstracts of literature on semiconducting and luminescent materials and their applications. Compiled by Battelle Memorial Institute. Sponsored by the Electrochemical Society, Inc. E. Paskell, Ed. Wiley, New York; Chapman & Hall, London, 1957. 330 pp. $10.

Microwave Principles. Herbert J. Reich, John G. Skalnik, Philip F. Ordung, and Herbert L. Krauss. Van Nostrand, Princeton, N.J., 1957. 436 pp. $8.75.

Kinetics and Thermodynamics in Biochemistry. H. Geoffrey Bray and Kenneth White. Academic Press, New York, 1957. 355 pp. $7.50.

The Next Hundred Years. Man's natural and technological resources. A discussion prepared for leaders of American industry. Harrison Brown, James Bonner, and John Weir. Viking, New York, 1957. 193 pp. $3.95.

United States Army in World War II. The technical services. *The Signal Corps: the test* (December 1941 to July 1943). George Raynor Thompson, Dixie R. Harris, Pauline M. Oakes, and Dulany Terrett. Office of the Chief of Military History, Department of the Army, Washington, D.C. (order from Supt. of Documents, GPO, Washington 25), 1957. 636 pp. $4.50.

Mitochondria and Other Cytoplasmic Inclusions, No. X. Symposia of the Society for Experimental Biology. Published for the Company of Biologists on behalf of the Society for Experimental Biology by Academic Press, New York, 1957. 198 pp. $9.50.

Miscellaneous Publications

(Inquiries concerning these publications should be addressed, not to Science, but to the publisher or agency sponsoring the publication.)

A Monograph on the Termitophilous staphylinidae (Coleoptera) Fieldiana: Zoology, vol. 40. Charles H. Seevers. Chicago Natural History Museum, Chicago, Ill., 1957. 334 pp. $6.50.

The Odonata of Louisiana. Tulane Studies in Zoology, vol. 5, No. 5. George H. Bick. Tulane University, New Orleans, La., 1957. 65 pp. $1.

Results of the Archbold Expeditions. No. 76. *A New Species of Wallaby (Genus Dorcopsis) from Goodenough Island, Papua.* American Museum Novitates, Number 1826. Hobart M. Van Deusen. American Museum of Natural History, New York, 1957. 25 pp.

Survey of Research Projects in the Field of Aviation Safety. Sixth annual supplement, January 1957. Harry F. Guggenheim, chairman. Daniel and Florence Guggenheim Aviation Safety Center at Cornell University, New York, N.Y., and Los Angeles, Calif., 1957. 114 pp.

Flora of Peru. Botanical Ser., vol XIII, pt. IIIA, No. 2. Publ. 808. J. Francis MacBride. Field Museum of Natural History, Chicago, 1956. 555 pp. $5.50.

Subject Index of School of Aviation Medicine Research Reports. January 1942–December 1956. Air University, School of Aviation Medicine, USAF, Randolph AFB, Texas, 1957. 72 pp.

Summaries of Studies in Agricultural Education. An annotated bibliography of studies in agricultural education with classified subject index. Vocational Div. Bull. No. 265, Agr. Ser. No. 69. Supplement No. 10 to Vocational Div. Bull. No. 180. U.S. Office of Education, Washington, 1957 (order from Superintendent of Documents, Government Printing Office, Washington 25, D.C.). 94 pp. $0.45.

Electromyographic Factors in Aircraft Control. Experimental investigation of the effect of a muscle tension reflex upon simple instructed movements. Rept. No. 55–123. R. C. Davis. 1956. 21 pp. *Electromyographic Factors in Aircraft Control.* Muscular activity during steady noise and its relation to instructed responses evoked by visual signals. Rept. No. 55–126. R. C. Davis. 1957. 9 pp. *Electromyographic Factors in Aircraft Control.* Muscular tensions during simultaneous performance of two tasks and their effect on performance. Rept. No. 55–128. R. C. Davis. 1956. 14 pp. *Electromyographic Factors in Aircraft Control.* The development and loss of a muscle tension set to an incidental stimulus. Rept. No. 55–130. John Benson Fink. 1956. 15 pp. *Electromyographic Factors in Aircraft Control.* The effect of induced tension upon muscular activity during simple voluntary movement. Rept. No. 55–133. Rollin M. Patton. 1957. 20 pp. *Electrocardiographic Observations on Ten Subjects at Sea Level and during One Year of Residence at High Altitude.* Rept. No. 56–98. Dante Peñaloza. 1956. 12 pp. *Maximal Diffusing Capacity of the Lungs at High Altitudes.* Rept. No. 56–108. Tulio Velásquez. 1956. 9 pp. *Comparative X-ray Dosimetry.* Rept. No. 56–109. Sanford C. Sigoloff, Loren C. Logie, Henry M. Borella, John C. Tourville. 1957. 4 pp. *The Development and Validation of a Checklist for Measuring Subjective Fatigue.* Rept. No. 56–115. Richard G. Pearson and George E. Byars, Jr. 1956. 16 pp. *Spectrophotometric Characterization of Light-Induced Changes in Autopolymerizing Resins.* Effect of ultraviolet light upon plastic specimens containing excess liquid. Rept. No. 56–124. Bertram Eichel, Theodore E. Fischer, John E. Sartore, Byron G. Butt. 1956. 5 pp. *Probability and Statistics in Item Analysis and Classification Problems.* Statistical decision theory approach to item selection for dichotomous test and criterion variables. Rept. No. 56–139. Howard Raiffa. 1957. 76 pp. *Evaluation of a Rapid (Hemoglobin Reduction) Method for Determining Antibiotic Susceptibility of Microorganisms.* Rept. Nos. 57-5 to 57-10. Joseph A. Bass, Frank B. Engley, Roland B. Mitchell, T. G. Blocker, Jr. 1956. 23 pp. *Human Stress Response in Jet Aircraft Operations.* Rept. No. 57-16. Thaddeus J. Domanski. 1956. 4 pp. *Metabolic Patterns of Selected Members of the Genus Lactobacillus.* Potassium uptake studies. Rept. No. 57–18. Ira L. Shannon and Norman O. Harris. 1957. 6 pp. *Direct Photometry of Diffusing Precipitin Systems for Characterizing Proteins.* Rept. No. 57-37. William G. Glenn. 1957. 5 pp. Air University, School of Aviation Medicine, USAF, Randolph Air Force Base, Tex.