

preferred orientation for joints when sealing dam foundations against leakage is involved.

Should engineering geologists be inclined to consider the authors stingy in their development of the heavier subjects such as soil mechanics, subsurface explorations, and dams and reservoirs, they are reminded that the purpose of the book as expressed in the preface is that it should meet the needs of engineering students primarily, and that "an even greater need for a book acquainting geologists employed in engineering work" continues. With the impressive array of geologists who are qualified to contribute a treatise on engineering geology, it is to be hoped that such a contribution will appear at an early date as a supplement to Schultz and Cleaves' good work.

ROBERT H. NESBITT
Office, Chief of Army Engineers

Mathematics for the Chemist. Mathematical analysis for chemists, physicists, and chemical engineers. G. J. Kynch. Academic Press, New York; Butterworths, London, 1955. vii + 356 pp. Illus. \$4.80.

The author states a threefold purpose for the book: to meet the needs of students taking Honours Courses in English universities; to provide a textbook on the applications of mathematics to chemical problems; and to serve as a reference book of mathematical information.

The subject matter covered includes approximate solution of equations; sequences and limits; differentiation; rational, circular, exponential, logarithmic, and hyperbolic functions; elementary analytic geometry; integration; series; complex numbers; differential equations; determinants; vectors; partial differential equations. Illustrative material in the text and numerous problems at the end of each chapter are largely from the field of chemistry. It is regrettable that the author found it necessary, because of space considerations, to omit chapters on numerical integration and on probability and error theory.

With such a wide range of subject matter to cover, the book could hardly be considered as a primary source of information. However, it should serve excellently as a textbook for a refresher course in mathematical techniques, for which purpose it is highly recommended. It should be especially valuable as a handy reference book for chemists, chemical engineers, physicists, and others who apply mathematics to physicochemical problems.

JOHN K. TAYLOR
*Division of Chemistry,
National Bureau of Standards*

Transform Calculus with an Introduction to Complex Variables. E. J. Scott. Harper, New York, 1955. ix + 330 pp. Illus. \$7.50.

This book is written strictly for the engineer, physicist, and chemist. Its purpose is to show how problems are solved by the use of transforms. Although a fair amount of theory is included, it is there only because it is necessary for expounding the technique. The preface explains that the book is an outgrowth of lectures given at the University of Illinois to advanced undergraduates, mostly from the fields of engineering, physics, and chemistry.

The first chapter of 46 pages, including five pages of problems, is devoted to complex variables, with limits and analyticity, the Cauchy theorem, Taylor and Laurent series, singularities, residues, and contour integration. The next two chapters (34 pages) discuss the Laplace transform and its inverse. The succeeding eight chapters consider, in turn, ordinary differential equations, partial differential equations, integral equations and some special functions, partial differential equations again, and finite transforms. In appendixes are given a list of references and tables of operations, of Laplace transforms, of finite sine transforms, and of finite cosine transforms. Finally there is a short index of just over a page.

The exposition rests primarily upon the discussion of special problems: deflection of beams, motion of a particle, small oscillations, vibrations, networks, heat flow, radiation, diffusion, and others. There is a brief discussion of stability in the chapter on matrix algebra. Each chapter is followed by three or four pages of problems for solution.

Mention might be made of an unfortunate phraseology on page 256, second paragraph. The first sentence reads: "Now the series in the bracket is *divergent* for all values of x , since by the Cauchy ratio test . . ."; the italics are Scott's and the dots signify an assertion. Presumably the following is meant: "Since . . . therefore by the Cauchy ratio test the series in the bracket is *divergent*." On page 51, second line before the end of the section, there appears to be a superfluous "and."

On the whole the book seems well suited to its purpose. A considerable amount of material is presented in a readily comprehensible manner. Thus the engineering student who is interested in gaining facility with a particular tool can get some experience in using it, some feeling for the variety of possible transforms, and some appreciation for the principles upon which the method is based.

However, it appears to me at least that the utility of this particular tool is

decidedly on the wane. This makes no judgment of the importance of operator theory as a branch of mathematics, which is, in any case, not the concern of the book. But with the increasing use of high-speed computing machinery, and the use is increasing at a phenomenal rate, the notion of what constitutes a "solution" to a problem is undergoing a radical change. To be able to express a function, say the solution of a differential equation, in terms of tabulated functions, even elementary functions, is not *ipso facto* advantageous. If numbers are required it may be much easier to apply standard numerical procedures to the differential equation itself than to attempt to evaluate the "closed form" expression for the solution. And if one is interested in the qualitative properties of the solution, then again one may be better off to go back to the differential equation and apply principles of the qualitative theory of differential equations. In either case the attempt to apply transform theory or any other device for obtaining the solution in some kind of closed form may turn out to be wasted effort even when it is formally successful.

One may object that not every physicist or engineer will have a UNIVAC or 701 at his fingertips, and this is certainly true. But many do and many more will have, or if not one of these, then a 650 or other more modest, but still fairly adequate, computing equipment. There is an ILLIAC at Scott's own university.

ALSTON S. HOUSEHOLDER
*Mathematics Panel,
Oak Ridge National Laboratory*

Medical Uses of Cortisone. Including hydrocortisone and corticotropin. Francis D. W. Lukens, Ed. Blakiston-McGraw-Hill, New York, 1954. xiii + 534 pp. Illus. \$7.50.

"Five years have passed since the anti-inflammatory effect of cortisone was announced and since this hormone was made available to physicians. During this period extensive investigations have been made of the action and uses of cortisone, hydrocortisone, and corticotropin. . . . Accordingly, the judgment of a group of physicians with wide experience in the use of adrenal hormone therapy has been assembled in one volume. The authors not only cite the ample literature in their several fields, but present their own conclusions as to the place of these hormones in various diseases."

The 15 chapters, representing the work of 29 contributors, are "Physiology of the adrenal cortex," "Pharmacologic aspects of adrenocortical hormones in man, and their effects in adrenal insufficiency," "Rheumatoid arthritis and

other rheumatic or articular diseases," "Rheumatic fever," "Other collagen diseases," "Asthma and rhinitis," "Allergic reactions to therapeutic agents," "Diseases affecting the skin," "Granulomas: pulmonary granulomatoses, pulmonary fibrosis, other pulmonary conditions," "Infections," "Eye diseases," "Gastro-intestinal diseases," "Blood diseases and malignancy," "Diseases of the kidney," and "Neuropsychiatric disorders."

New Books

Catalysis. vol. III, Hydrogenation and Dehydrogenation. Paul H. Emmett, Ed. Reinhold, New York; Chapman & Hall, London, 1955. 504 pp. \$12.

Determination of Organic Structures by Physical Methods. E. A. Braude and F. C. Nachod, Eds. Academic, New York, 1955. 810 pp. \$15.

Principles of Nuclear Reactor Engineering. Samuel Glasstone. Van Nostrand, New York, 1955. 861 pp. \$7.95.

Linear Feedback Analysis. J. G. Thomason. McGraw-Hill, New York; Pergamon, London, 1955. 355 pp. \$8.50.

Montaña y los Origenes del Movimiento Social y Científico de México. Jose Joaquin Izquierdo. Ediciones Ciencia, Mexico, 1955. 442 pp.

The Life and Work of Sigmund Freud. Years of Maturity, 1901-1919. vol. 2. Ernest Jones. Basic, New York, 1955. 512 pp. \$6.75.

Science and Christian Belief. C. A. Coulson. Univ. of North Carolina, Chapel Hill, 1955. 127 pp. \$2.50.

Science News No. 36. A. W. Haslett, Ed. Penguin, Baltimore, 1955. 128 pp. \$0.65.

Operationism. A. Cornelius Benjamin. Thomas, Springfield, 1955. 154 pp. \$4.

Production of Heavy Water. National Nuclear Energy Ser. Division III, vol. 4F. James O. Maloney, George F. Quinn, and Harold S. Ray, Maxwell L. Eidinoff, George G. Joris, Ellison Taylor, Hugh S. Taylor, and Harold C. Urey. McGraw-Hill, New York, 1955. 394 pp. \$5.25.

A History of Dermatology in Philadelphia, including a Biography of Louis A. Duhring, Father of Dermatology in Philadelphia. Reuben Friedman. Froben, Fort Pierce Beach, Fla., 1955. 556 pp. \$10.

Universe, Unlimited. A new concept of atomic structure with a unification hypothesis. Hugh Sloss. Vantage, New York, 1955. 197 pp. \$2.75.

Microbiology. Ernest Gray. Philosophical Library, New York, 1955. 175 pp. \$3.75.

Horner's Dictionary of Terms Used in the Theory and Practice of Mechanical Engineering. Staton Abbey, compiler. Philosophical Library, New York, ed. 7, 1955. 538 pp. \$6.50.

Experimental Electronics for the Beginner. Lewis G. Blevins and Leonard R. Crow. Universal Scientific, Vincennes, Ind., 1955. 360 pp. \$3.50.

Lectures on Functions of a Complex Variable. Wilfred Kaplan, Ed. Univ. of Michigan, Ann Arbor, 1955. 435 pp. \$10.

The Metallurgy of Zirconium. Benjamin Lustman and Frank Kerze, Jr., Eds. McGraw-Hill, New York, 1955. 776 pp. \$10.

A Catalogue of the American Hesperidae indicating the Classification and Nomenclature Adopted in the British Museum. pt. IV, Hesperinae and Megathyminae. W. H. Evans. The Museum, London, 1955. 499 pp. £4.

The Luminescence of Biological Systems. Proc. Conf. on Luminescence, 28 Mar.-2 Apr. 1954. Frank H. Johnson, Ed. American Association for the Advancement of Science, Washington, 1955. 452 pp. \$7., AAAS memb. \$6.

Antimetabolites and Cancer. A symposium. Cornelius P. Rhoads, Ed. American Association for the Advancement of Science, Washington, 1955. 312 pp. \$5.75, AAAS memb. \$5.

Advances in Experimental Caries Research. A symposium. Reidar F. Sognaes, Ed. American Association for the Advancement of Science, Washington, 1955. 236 pp. \$6.75, AAAS memb. \$5.75.

Miscellaneous Publications

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

Disposal of Government-Owned Community at Oak Ridge, Tenn. Hearing before the *ad hoc* subcommittee on disposal of government-owned communities of the Joint Committee on Atomic Energy, Congress of the United States, Eighty-Fourth Congress, first session. 148 pp. *Disposal of Government-Owned Community at Richland, Wash.* Hearings before a subcommittee on disposal of government-owned communities of the Joint Committee on Atomic Energy, Congress of the United States, Eighty-Fourth Congress, first session. 112 pp. The Committee, Washington, 1955.

Appraisal of Conservation Purpose and Policy. G. B. Gunlogson. North Dakota Inst. for Regional Studies, Fargo, 1954. 12 pp.

Annual Report, 1 June 1954-31 May 1955. General Mills, Inc., Minneapolis 1, 1955. 23 pp.

Vegetative Propagation of Slash Pine. Station Paper No. 54. Francois Mergen. Southeastern Forest Expt. Sta., Asheville, N.C., 1955. 63 pp.

Numeros Indices Agrícolas. No. 4, 1954. Instituto Nacional de Investigaciones Agronomicas, Madrid, 1955. 9 pp.

Proceedings of the National Institute of Sciences of India. pt. A, No. 1, vol. 21, *Physical Sciences*. The Institute, New Delhi, 1955. 81 pp.

Synoptic Analysis of Convection in a Rotating Cylinder. Geophysical Research Papers No. 34. J. Corn and D. Fultz. 72 pp. *Mean Molecular Weight of the Upper Atmosphere*. No. 36. Warren E. Thompson. U.S. Dept. of Commerce, Office of Technical Services, Washington 25, 1955. 23 pp.

Annual Report. An Outline of Research during the Fiscal Year 1953-1954. American Meat Inst. Foundation, Chicago 37, 1955. 58 pp.

Anuario Bago de Investigaciones Cientificas. vol. 1, No. 1. Instituto Bago de Investigaciones, Buenos Aires, 1954. 63 pp.

Vehicle Operation as Affected by Traffic Control and Highway Type. Highway Research Bull. 107. Natl. Acad. of Sciences-Natl. Research Council, Washington, 1955. 62 pp. \$0.90.

Shopper Attitudes. Highway Research Bd. special rept. 11-A. Natl. Acad. of Sciences-Natl. Research Council, Washington, 1955. 71 pp. \$2.25.

New Species of Tilapia (Pisces, Cichlidae) from Lake Jipe and the Pangani River, East Africa. Zoology, vol. 2, No. 12. Rosemary H. Lowe. 10s. *Review of the Notostraca*. Zoology, vol. 3, No. 1. Alan R. Longhurst. 12s 6d. *Revision of the Octopodinae in the Collections of the British Museum*. Zoology, vol. 3, No. 3. Grace E. Pickford. 5s.

Induced Abortion on Psychiatric Grounds. A follow-up study of 479 women. Acta Psychiatrica et Neurologica Scandinavica Supp. 99. Martin Ekblad. Munksgaard, Copenhagen, 1955. 237 pp.

Expert Committee on Midwifery Training. 1st rept. World Health Organization Tech. Rept. Ser. No. 93. 21 pp. \$0.30. *Expert Committee on Biological Standardization*. 8th rept. World Health Organization Tech. Rept. Ser. No. 96. 19 pp. \$0.30. The Organization, Geneva, 1955.

Bonampak, Chiapas, Mexico. Publ. 602. Karl Ruppert, J. Eric S. Thompson, and Tatiana Proskouriakoff. Carnegie Inst. of Washington, 1955. 71 pp. \$3., paper; \$3.75, cloth.

Field Evaluation of Houdry Catalytic Exhaust Converters. Rept. No. 8. Southwest Research Institute. Air Pollution Foundation, Los Angeles, 1955. 77 pp. \$3.

Report of the Medical Research Council for the Year 1953-1954. Her Majesty's Stationery Office, London, 1955. 274 pp. 7s 6d (order from: British Information Services, New York 20).

Nutrition Practices: A guide for public health administrators. American Public Health Assoc., New York, 1955. 72 pp.

Metallurgical Works in Canada. pt. 1, Primary Iron and Steel. Dept. of Mines and Technical Surveys, Ottawa, Canada. 27 pp. \$0.25.

Blight Resistant Chestnuts, Culture and Care. Hans Nienstaedt and Arthur H. Graves. Connecticut Agri. Expt. Station, New Haven. 18 pp.

A New Louisiana Copepod Related to Diaptomus (Agladiaptomus) Clavipes Schacht (Copepoda, Calanoida). Zoology, vol. 3, No. 2. Mildred Stratton Wilson. Tulane Univ., New Orleans, 1955. 47 pp. \$0.30.

How to Draw in 3rd Dimension. David Gordon. William-Frederick, New York, 1955. \$2.

Radiation Sterilization of Foods. Hearings before the Subcommittee on Research and Development of the Joint Committee on Atomic Energy, the Congress of the United States, Eighty-fourth Congress, first session. Govt. Print. Off., 1955. 59 pp. \$0.20.

Information for Physicians on the Salk Poliomyelitis Vaccine. Hart E. Van Riper, Ed. Natl. Foundation for Infantile Paralysis, New York 5, 1955. 34 pp.