

form, race, and subspecies as synonymous; this usage is hardly in accordance with the most up-to-date taxonomy. But such details primarily emphasize the desirability of agreeing on terms, regardless of the country in which we work, and they scarcely mar the excellence of this fine systematic contribution.

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Simultaneous Linear Equations and the Determination of Eigenvalues. L. J. Paige and Olga Taussky, Eds. National Bureau of Standards, Washington, 1953. (Order from Supt. of Documents, GPO, Washington, D.C.) 126 pp. Illus. \$1.50.

As the proceedings of a symposium, held 23-25 Aug. 1951 at Los Angeles, California, under the sponsorship of the National Bureau of Standards, in cooperation with the Office of Naval Research, this book contains 19 reports. Eight of these reports deal primarily with general methods, procedures, or theories; seven are concerned with special methods or special machines for computing; three involve interpretation or applications to physical or related mathematical fields; one is bibliographical. Nearly all the papers emphasize the development of computing procedures suited to the capabilities of high-speed digital computing machines, in which the effort and time required for input and output are more important than the number or complexity of internal operations. The resulting problems of the degree of approximation of output data are prominent in most of the papers.

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A Symposium on the Mechanism of Enzyme Action. William D. McElroy and Bentley Glass, Eds. Johns Hopkins Press, Baltimore, Md., 1954. xvi + 819 pp. Illus. \$11.

This volume, which contains the formal presentations and informal discussions of the Fourth McCollum-Pratt Institute Symposium, maintains the high level of excellence that has characterized this series. The general problem of the mechanism of enzyme action has been considered from a variety of standpoints, each aspect being thoroughly reviewed by experts in the field.

Of particular long-range value to chemists working in this area of biochemistry are the reviews presented on the aspects of enzymatic catalysis that are still in a highly developmental stage. Discussions by Kirkwood, Kauzmann, Eyring, Calvin, Klotz, and others are exceedingly stimulating, because of their frank appraisal of the present state of knowledge of the enzyme as a protein and because they indicate some of the essential pathways of research which must be followed for a clearer understanding of enzymatic catalysis.

The volume also contains a valuable series of reviews on the mechanism of electron and hydrogen transport and on the general features of group transfers in enzymatic reactions. These subjects are reviewed in such a manner that this volume should serve as a definitive source of literature for some time, even in fields that move as rapidly as these.

As was the case with the previous volumes in this series, the inclusion of informal discussions with a minimum of editorial modification provides additional expansion of the subjects covered in the formal sections as well as a personal touch of humor and whimsy too frequently absent in the discussions of all-too-serious scientists. Bentley Glass has presented his usual well-sifted summary of the entire symposium.

It seems to me that the scientific value of these symposia and the volumes resulting from them is so nearly self-evident that any comments are unnecessary. Nevertheless, for what one man's opinion is worth, the book is highly recommended to students of biochemistry in all stages of development and should be included on any modern bookshelf in this field.

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Higher Transcendental Functions, vols. I and II. Based, in part, on notes left by Harry Bateman. Bateman Project Staff, A. Erdélyi, Ed. McGraw-Hill, New York-London, 1953. vol. I, xxvi + 302 pp., \$6.50; vol. II, xviii + 396 pp., \$7.50.

Tables of Integral Transforms, vol. I. Based, in part, on notes left by Harry Bateman. Bateman Project Staff, A. Erdélyi, Ed. McGraw-Hill, New York-London, 1954. xx + 391 pp. \$7.50.

The late Harry Bateman projected a definitive compilation of information about, among other things, special functions and definite integrals, and he left an enormous amount of manuscript material on these subjects. The Bateman Manuscript Project was set up in 1948 by the California Institute of Technology, with support from the Office of Naval Research, to continue Bateman's work. It employed four noted specialists—A. Erdélyi, W. Magnus, F. Oberhettinger, and F. Tricomi—and several assistants. It has now produced these magnificent volumes, which should be on the desk of every scientist who ever has to solve any but the simplest differential equation or evaluate any but the simplest definite integral. One more volume of functions and one more of tables are still to appear.

The scope of these books is not as broad as that dreamed of by Bateman (and actually only a small part of his manuscript material could be used), but the books certainly embody the most useful parts of Bateman's plan and present information in a way that is not even approached elsewhere, either in thoroughness or in ease of reference. It will no longer take less time to derive afresh the properties of a special function needed in a particular problem than to search the literature for them.

The volumes on higher transcendental functions form a handbook; proofs are abbreviated or omitted, but definitions and notations are explained in detail, and there are extensive lists of formulas. Functions that already possessed their own treatises are less fully covered than others, but the basic information is always presented, and there are ample references. In volume I, the chapters cover the gamma function and its relatives, hypergeometric functions, Legendre functions, generalizations of hypergeometric functions, and the confluent hypergeometric function. In volume II, Bessel functions, functions of the parabolic cylinder and the paraboloid of revolution, incomplete gamma functions and their relatives, orthogonal polynomials in one and several variables, spherical and hyperspherical harmonics, and elliptic functions and integrals are covered. Each volume has its own subject index and index of notations.

The volume of integral transforms is, in effect, a table of integrals, mostly those involving higher transcendental functions. By choosing the parameters so that, whenever possible, an integral appears in the form of one of the standard integral transforms, the compilers have made the arrangement very convenient for the user. Important integrals which might be written as transforms of more than one type appear accordingly in two or more places. This volume includes Fourier cosine, Fourier sine, Laplace, inverse Laplace, Mellin, and inverse Mellin transforms. The inclusion of both inverse and direct transforms is particularly valuable, since the duplication of this information enables one to use the tables painlessly in either direction, without having to resort to a cumbersome index or to haphazard searching. A self-restraint, as admirable as it is unusual, has led the compilers to use standard notations instead of inventing new, better, and more confusing ones. The definition of the transform under discussion is repeated at the top of each page (another saving of trouble for the user), and all notations are fully explained and indexed at the back of the book.

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***Temperature Measurement in Engineering*, vol. I.**

H. Dean Baker, E. A. Ryder, and N. H. Baker.
Wiley, New York; Chapman & Hall, London, 1953.
179 pp. Illus. \$3.75.

The authors have written a book that will be extremely valuable to the engineer who wishes to use thermocouples for temperature measurement. It will provide him with many specific details that are necessary to devise a temperature-measurement technique that will give accurate and dependable data. This book does not attempt to cover all the details of an innumerable variety of problems, but it does present a comprehensive list of possible techniques, methods of analysis, survey of previous designs, and other information necessary for the development of a well-organized approach to a temperature-measurement problem.

Since supplementary reading material is of practical importance to each individual problem, the authors have provided an abundance of reference data.

The book deals primarily with thermocouples because of the superiority that they offer for internal temperature measurement of solids. The early chapters are introductory, discussing temperature and its measurement. Later chapters on thermo-couple-thermometer circuits, indicating instruments, design calculation techniques, installation design types, drilling techniques, special materials, cemented installation designs, and temperature gradient installation designs provide a wealth of detailed information. The clear and concise presentation makes possible the many details without accompanying bulk.

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***Advances in Carbohydrate Chemistry*, vol. 8.** Claude S. Hudson and Melville L. Wolfrom, Eds. Academic Press, New York, 1953. xviii + 408 pp. Illus. \$10.

This volume of *Advances in Carbohydrate Chemistry* continues the same format and high quality of the previous volumes. James M. Sugihara, University of Utah, discusses "Relative reactivities of hydroxyl groups of carbohydrates" with respect to reactions involving neighboring group effects, configurational relationships, and selective reactions involved in the etherification, esterification, hydrolysis, and oxidation reactions of carbohydrates.

"The chemistry of the 2-deoxysugars," by W. G. Overend, Pennsylvania State College and University of Birmingham, contains a thorough discussion of the characteristic color reactions, chemical properties, and syntheses of the 2-deoxysugars and their derivatives. With the increasing emphasis recently placed on the importance of deoxyribose nucleic acids, this chapter serves as a background of this aspect of carbohydrate chemistry.

The "Sulfonic esters of carbohydrates" are discussed in a well documented review by R. S. Tipson, Mellon Institute. The chapter, developed in a logical order, starts with a detailed discussion of the preparation of these compounds, their various reactions, and synthetic applications. Wherever possible, attention is called to what appears to be a general type of reaction; however, any known exceptions are mentioned. Many suggestions for future investigations are given.

G. O. Aspinall, University of Edinburgh, presents a summary of the known "Methyl ethers of D-mannose." The physical properties, syntheses, and, in some cases, the isolation of these compounds are discussed.

The inclusion of two chapters dealing with D-glucuronic acid reflects the increasing importance of this compound. In the first of these, C. L. Mehlretter, Northern Regional Research Laboratory, relates recent syntheses of D-glucuronic acid. Special emphasis is given to methods involving the catalytic oxidation of various derivatives of D-glucose. H. G. Bray, Uni-