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. Mehltretter, 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-

versity of Birmingham, reviews "D-Glucuronic acid in metabolism" in the second of these chapters. The origin, site, and kinetics of D-glucuronide synthesis are among the topics considered. A comprehensive tabulation of biosynthetic D-glucuronides is included.

T. Mori, Tokyo University, in a chapter entitled "Seaweed polysaccharides," reviews the present state of our knowledge of these compounds, with emphasis on the need for further work in this field. The remaining two chapters consist of a discussion of "The substituted sucrose structure of melezitose," by E. J. Hehre, Cornell University, and a detailed compilation of the "Composition of cane juice and cane final molasses," by W. W. Binkley and M. L. Wolfrom, Ohio State University.

This volume represents a valuable addition to the literature of carbohydrate chemistry.

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Crystal Growth and Dislocations. Ajit Ram Verma. Academic Press, New York; Butterworths, London, 1953. 182 pp. Illus. $5.

One of the most dramatic episodes in the development of our understanding of the nature and significance of imperfections in crystals was initiated by the proposal of F. C. Frank, in 1949, that the presence of screw dislocations could account for the previously baffling growth rates of crystals. Frank's paper was soon followed by Griffin's experimental observation of the predicted growth figures on natural single crystals of beryl. These two papers led to a whole series of studies of spiral growth figures, so that now this field represents one of the major successes of dislocation theory.

In the present monograph, Verma reviews these developments, in which he himself played a major part. In the first two chapters, the author summarizes the problems of accounting for the observed growth behavior of crystals as they appeared before Frank's proposal of the screw-dislocation growth mechanism. In the third chapter, the dislocation concept is introduced, and Frank's growth mechanism is described.

The rest of the monograph is devoted to descriptions of the various experimental methods of observing growth patterns on crystals and of the observations that have been made. So much of this material has been widely scattered in the literature that the present connected account is extremely helpful. The text includes a large number of illustrations from the author's own work, many of which have not been published before.

Crystal Growth and Dislocations fills in a very satisfactory way the need for an account of the studies of dislocations and crystal growth.

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New Books

Elements of Food Engineering. vol. II, *Unit Operations.* Milton E. Parker. Reinhold, New York, 1954. vi + 360 pp. Illus. $8.50.

Medicine and Science. Lectures to the Laity, No. XVI. Iago Galdston, Ed. International Universities Press, New York, 1954. 159 pp. Illus. $3.

Modern Learning Theory. A critical analysis of five examples. William K. Estes *et al.* Appleton-Century-Crofts, New York, 1954. xv + 379 pp. $5.

Linear Transient Analysis. vol. I, *Lumped-Parameter Two-Terminal Networks.* Ernst Weber. Wiley, New York; Chapman & Hall, London, 1954. xiv + 348 pp. Illus. $7.50.

Handbuch der Pflanzenkrankheiten. vol. II, *Die Virus- und Bakterienkrankheiten,* pt. 1, *Viruskrankheiten.* E. Köhler and M. Klinkowski. O. Appel and H. Richter, Eds. Paul Parey, Berlin, ed. 6, 1954. 784 pp. Illus. DM. 150.

The Anatomy of the Migratory Locust. F. O. Albrecht. Athlone Press, London; John de Graff, New York, 1953. xvi + 118 pp. Illus. $6.

Astrophysics: Nuclear Transformations, Stellar Interiors, and Nebulae. Lawrence H. Aller. Ronald Press, New York, 1954. x + 291 pp. Illus. + plates. $12.

Industrial Inorganic Analysis. Roland S. Young. Wiley, New York; Chapman & Hall, London, 1953. viii + 368 pp. Illus. 36s.

Electronics for Everyone. Monroe Upton. Devin-Adair, New York, 1954. xiii + 370 pp. Illus. $6.

Evolution as a Process. Julian Huxley, A. C. Hardy, and E. B. Ford, Eds. Macmillan, New York; Allen & Unwin, London, 1954. 367 pp. Illus. $4.25.

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

Rare Metals Handbook. Clifford A. Hampel, Ed. Reinhold, New York, 1954. xiii + 657 pp. Illus. $12.

Traité de Génétique. vols. I and II. Ph. L'Héritier. Presses Universitaires, Paris, 1954. 518 pp. Illus. Paper: vol. I, F. 1500; vol. II, F. 900.

Student Personnel Work as Deeper Teaching. Esther Lloyd-Jones and Margaret Ruth Smith, Eds. Harper, New York, 1954. xii + 361 pp. $5.

Isotopic Tracers. A theoretical and practical manual for biological students and research workers. G. E. Francis, W. Mulligan, and A. Wormall. Athlone Press, London; John de Graff, New York, 1954. xvi + 306 pp. Illus. $7.

The Struggle for Existence. Umberto D'Ancona. Trans. by Anne Charles and R. F. J. Withers. Brill, Leiden, Netherlands, 1954. xi + 274 pp. Illus.

Irrigated Soils. Their fertility and management. D. W. Thorne and H. B. Peterson. Blakiston, New York, ed. 2, 1954. xii + 392 pp. Illus. $6.50.

Educators Guide to Free Films. Mary Foley Horkheimer and John W. Diffor. Educators Progress Service, Randolph, Wis., ed. 14, 1954. xiv + 566 pp. Paper, $6.

Archaeology in the Field. O. G. S. Crawford. Frederick A. Praeger, New York, 1953. 280 pp. Illus. + plates. $8.50.

Human Physiology. W. B. Youmans, Macmillan, New York, 1954. xiv + 481 pp. Illus. $6.

Theoretical Physics. Mechanics of particles, rigid and elastic bodies, fluids, and heat flow. F. Woodbridge Constant. Addison-Wesley, Cambridge, Mass., 1954. xiv + 281 pp. Illus. $6.50.

Adhesive Bonding of Metals. George Epstein. Reinhold, New York, 1954. ix + 218 pp. Illus. $2.95.