Throughout the book the author speaks in a direct, informal manner, often using the first person plural. In this way he has been highly successful, the result being a clear and simple presentation of problems and methods of reactor physics. There are no side-tracking excursions into topics of interest only to specialists, and the practical significance of the results from design and operational viewpoints is kept in the fore.

The choice of subject matter and the arrangement of the material, along with the author's keen physical insight, make for a book which will leave the reader with a limited, but well-balanced, over-all view of the field of reactor physics. The reviewer recommends this book to those who desire a survey of the field, especially those who plan to continue study in this field.

JAMES H. MARABLE
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(About the Reviewer: Our reviewer, James Marable, has been on the staff of the Oak Ridge National Laboratory for the past 10 years. After several years experience with critical assemblies, he engaged in reactor physics research and then transferred to the Reactor School of the Oak Ridge National Laboratory where he has been a lecturer in reactor analysis for the past 5 years.)

Your Future in Nuclear Energy Fields. By WILLIAM E. THOMPSON, JR. Popular Library Guidance Books, Popular Library, New York, 1962. 159 pp., $.50.

A good sign that the nuclear field has reached some maturity is the appearance of this paper bound book on careers. The author, in a simple, brief, interestingly-written volume, has provided much useful factual information about atomic energy and its opportunities, especially for high school and beginning college students.

After a short history of the Manhattan Project, the subject of radiation is emphasized. Descriptions of industrial activities and research and teaching careers follow. Daily activities of a reactor engineer, a development engineer, a research scientist and a professor in a university are nicely portrayed by example individuals. Advice given on preparing for a career is thoughtful, sensible, and realistic. Key ideas are self-evaluation, the exploitation of one's interests and talents, and the importance of satisfaction in chosen work. The sound advice is given that it is never too late to change careers. An evaluation of job openings as they depend on formal training is made. The section on seeking employment is aimed at college students. This is somewhat inappropriate in view of the widespread interviewing practice for graduating seniors with nuclear training. The suggestions are useful however for students with low grade averages who must advance their credentials in order to obtain employment.

The author emphasizes properly in following chapters that education must continue throughout life, and that progress depends on performance, not degrees. Mr. Thompson is to be commended on his style and choice of material. Never pompous, but quietly philosophical, he has provided what should be a useful service to our young people.

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(About the Reviewer: Our reviewer, Dr. Raymond L. Murray, Burlington Professor and Head of the Physics Dept. of North Carolina State College, is a consultant and researcher in reactor theory. He is the author of "Introduction to Nuclear Engineering," 2nd ed. (1961), *and* "Nuclear Reactor Physics" (1957). *He is currently Chairman of the Education Committee of ANS.)*

Mathematical Handbook for Scientists and Engineers. By G. A. KORN AND THERESA M. KORN. McGraw-Hill, New York, 1961. 960 pp., $20.00.

This handbook is an almost encyclopedic completion of results and theorems in an extremely broad area of mathematics which the authors feel are likely to be of interest to practicing engineers and scientists, as distinguished from professional mathematicians. In keeping with its character as a handbook proofs are not given, but an important feature of each chapter is a list of references to books where more extended discussions can be found. This handbook will probably be more useful to the engineer who is already aware of a mathematical principle or method he wishes to apply but who has forgotten the details than to the engineer who wishes to apply, or to discover what is available for application in, a completely new field. The latter should be very careful to check the validity of any specific equation he uses for there are several minor errors (equations 1.4-4 and 1.4-5 are typical) which would be readily detected by an engineer with some degree of familiarity with the material but which might cause trouble to the novice. To be sure some errors, even though disturbing to the pure mathematician, will cause no difficulties to the engineer, e.g., the assertion (p. 107) that "The surface area of a curved surface . . . is the limit of the area of an inscribed polybedral surface as the maximum distance between adjacent vertices decreases," for the engineer is quite unlikely to use this prescription to calculate a surface area. On the other hand, the incomplete statement of Cardan's solution of the cubic equation (p. 23) may well be troublesome to the hasty engineer. (The reviewer has himself stumbled in the past over this point.)

The handbook begins with three chapters on elementary algebra and plane and solid analytic geometry, which include material which would be covered in college level courses in these subjects as well as material on polynomial equations and systems of linear equations generally treated in courses in the theory of equations. These are followed by a chapter on the calculus, with material generally taken from courses in elementary and advanced calculus (e.g., Fourier series, Taylor series), and a short but pithy chapter on vector analysis which serves as a prerequisite to a chapter on curvilinear coordinate systems and a later chapter on tensor analysis.

A chapter on functions of a complex variable contains the expected results. The significant sections for the applications are probably those on contour integration and conformal mapping. The Laplace transform is defined and the basic facts about it are given. A short table of transforms appears in the appendix. The chapter on ordinary differential equations is excellent. The engineer will appreciate the discussion of nonlinear second order equations and in particular the treatment of the Kryloff–Bogoliubov method. The chapter on partial differential equations contains primarily definitions and statements of general properties of

such equations. A chapter on maxima and minima treats the calculus of variations, including problems involving accessory differential or integral equations, as well as the standard results on functions of a finite number of variables. An excellent example of the breadth of coverage of this handbook is the next chapter which briefly treats some aspects of abstract algebra and topology.

A very valuable collection of results is contained in three chapters which are concerned with matrices, linear transformations, linear integral equations, and boundary value and eigenvalue problems. All of the basic properties of matrices (rank, determinants, similarity, eigenvalues, quadratic and Hermitian forms, etc.) are discussed, and then applied and slightly generalized in the discussion of linear transformations in normed linear spaces. The Fredholm and Hilbert–Schmidt theories for integral equations are presented and the use of Green's functions to reduce differential boundary value and eigenvalue problems to integral equations is illustrated.

The next chapter discusses the metric differential geometry of curves and surfaces in two- and three-dimensional Euclidean space. Two rather long chapters on probability theory and mathematical statistics, subjects of ever increasing importance to the engineer, contain a vast amount of information. The chapter on numerical methods treats the numerical solution of transcendental and algebraic equations, simultaneous linear equations, and ordinary and partial differential equations. The final chapter gives properties of the more frequently occurring transcendental functions, such as gamma, elliptic, Bessel. There is an appendix containing tables of indefinite and definite integrals and tables of values of natural and common logarithms, trigonometric functions, and some of the higher transcendental functions.

The handbook is relatively easy to use because of an excellent index and table of contents. The reviewer had no difficulty deciding quickly whether or not a desired bit of information was available.

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(About the Reviewer: J. Ernest Wilkins is currently Assistant Chairman of the Theoretical Physics Department of General Atomic and is concerned with the development of large high-temperature gas-cooled reactors. From 1950 to 1960 he was at Nuclear Development Corporation of America, his last position being that of Manager of Research and Development. He holds the Ph.D. in mathematics from the University of Chicago and a Master's degree in mechanical engineering from New York University.)