technologist who is to apply the mathematical results will, in general, not be familiar with the mathematical theory or its mathematical background. In order to bring the mathematical results to his immediate attention, without his extensively reviewing mathematical background and theory, the engineer requires a specialized notation designed especially to display the required results. Second, the engineer's primary attention will be on his technological problem rather than on the mathematical methods. Therefore, a systematic mathematical notation that can enable the mathematical results to be applied by rote, with as little analytical thought as possible, will more likely be utilized by the engineer, unless analytical ingenuity must be concentrated on the engineering pattern at hand. Third and finally, applying a mathematical theory to a specific technological situation is frequently far from trivial. This transition, from theoretical mathematical results to specific applications, can be substantially aided by means of an application-oriented notation, by means of which the relationships between the mathematical entities and their properties can be more readily identified with the hardware components and "real world" phenomena being investigated.

Nadler's book can therefore be praised as a step in the right direction, since its main purpose is to present one such application-oriented notation. The notation involves "logical matrices," and the application is the logical design of digital electronic circuits. The logical matrix is attributed to Marquand, Veitch, and Svoboda, and consists in the more extensive use of the "Veitch Chart" than is normally considered in most texts. The main advantage of the method rests upon the convenience that results from writing the truth values of a Boolean function of n variables as a two-dimensional array, where the columns correspond to all combinations of truth values of r of the variables, and the rows correspond to all combinations of the remaining $n - r$ variables. In particular, the combinations of truth values are so chosen that they form the binary numbers from 0 to 2^r from left to right, and from 0 to 2^{n-r} from top to bottom. Various observations about patterns made by such arrays are applied to the problems of minimizing Boolean functions, of forming self-correcting codes, of synthesizing circuit designs, etc. Other subjects associated with logical design of digital circuits are considered, including redundancy.

Nadler's presentation is best read by one already familiar with the problems of logical circuit design, and presents one approach to computational methods for various problems. Manual computational feasibility is stressed. The book could be a useful addition to the library of the engineer who is interested in various notations devised to aid such logical design.

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35[S, X].—J. S. R. Chisholm & Rosa M. Morris, *Mathematical Methods in Physics*, W. B. Saunders Company, Philadelphia, Pennsylvania, 1965, xviii + 719 pp., 23 cm. Price $10.00.

In spite of its title, and the correct number of authors, one should not expect to find a competitor here for Courant-Hilbert, Morse-Feshbach, Jeffreys-Jeffreys, Margenau-Murphy, Frank-von Mises, and the like. The present textbook is quite elementary. Written for students who have studied algebra, trigonometry, and analytic geometry, it includes calculus, some ordinary differential equations, vector algebra and analysis, complex variables, matrices, Fourier series, special functions, and probability. There is little more than mention of partial differential equations and tensor analysis, and no treatment whatsoever of integral equations, calculus of variations, group theory, graph theory, numerical analysis, or other modern tools. In a word, the title is misleading; an adequate treatment of that field would assume knowledge of calculus, and some allied material, and not attempt to teach it.

Mathematically, the book is not always adequate, and sometimes is incorrect. On page 609 it purports to prove a proposition known to be false, namely, that the Fourier series of a continuous $f(x)$ converges to $f(x)$. This is accomplished by generous interchange of limiting processes and sets the theory back 130 years.

D. S.

36[S, X].—JON MATHEWS & R. L. WALKER, *Mathematical Methods of Physics*, W. A. Benjamin, Inc., New York, 1964, x + 475 pp., 24 cm. Price $12.50.

As the authors point out in the preface, this book evolved from the notes of a course which they have taught at the California Institute of Technology for the last fourteen years. That course was intended primarily for first-year physics graduate students. The book thus assumes, as far as physics is concerned, that the reader has been exposed to the standard undergraduate physics curriculum: mechanics, electricity and magnetism, introductory quantum mechanics, etc. To quote further from the preface: "It is assumed that the student has become acquainted with the following mathematical subjects:

1. Simultaneous linear equations and determinants
2. Vector analysis, including differential operations in curvilinear coordinates
3. Elementary differential equations
4. Complex variables, through Cauchy's theorem."

The book has an Appendix for a review of some topics in the theory of a complex variable. But even after studying this Appendix, the reader who studied complex variable theory only through Cauchy's theorem will find that Section 3 of Chapter 3 (Contour Integration) and Chapter 5 (Further Application of Complex Variables) call for more intensive preparation.

The stated prerequisites make it clear that the book is not another "Mathematics for Engineers and Physicists." It assumes that the reader either completed a course of such or similar title, or, even better, that he has taken individually the several courses which are often telescoped into one course of Mathematics for Engineers and Physicists.

In the presentation of the various subjects elementary topics are, therefore, only briefly summarized. For instance, the first chapter (Ordinary Differential Equations) gives only a cursory description of solutions in closed form, with the understanding that the reader is familiar with the subject and needs only to be reminded of it briefly. The rest of the first chapter is then devoted to a section on Power-Series Solutions, introducing the concept of regular singular point, a section on Miscellaneous Approximate Methods, and one on the WKB Method.