tering is meant (page 239). In addition, one thinks of important exceptions to some of the generalizations which are stated. In spite of these criticisms, the three editions which have already been published in Germany were well warranted, and this English edition may also be expected to be very successful.

Introduction to Elementary Particle Physics. By R. E. Marshak and E. C. G. Sudarshan. No. 11 of Tracts on Physics and Astronomy, edited by R. E. Marshak. 231 pp. Interscience Publishers, Inc., New York, 1961. Clothbound $4.50, paperbound $2.50. *Reviewed by Harold Mendlowitz, National Bureau of Standards.*

THE authors consider this book to be a continuation, in a sense, of a previous book entitled *Meson Physics*, written by the senior author. The field of elementary particles is pretty well covered up to 1961 and the book can serve as a quick reference to many of the basic ideas in this rapidly changing field. A second goal of the authors, that of addressing this book to the nonexpert in theoretical high-energy physics, is not quite achieved. The nonexpert in theoretical high-energy physics will find too many gaps in the explanations of a number of important concepts necessary for an understanding of the fundamental ideas underlying the discussions of the current problems in this field. Of course, for those people involved in the field, the discussions can be considered quite adequate. The newcomer to the field can, with the aid of the present volume and with reference to a good text on field theory, gain a good perspective of the problems and advances of present day high-energy physics.

Mathematical Methods in Physics and Engineering. By John W. Dettman. 323 pp. McGraw-Hill Book Co., Inc., New York, 1962. $9.75. *Reviewed by Peter L. Balise, University of Washington.*

IN his preface, Dr. Dettman observes that students who plan to do graduate work in physics or engineering should, as undergraduates, take what has been traditionally called advanced calculus, followed by an applications course, for which his text is intended. In spite of this intent and the book's title, it is written strongly from the mathematics rather than applications viewpoint, particularly in comparison with many engineering-mathematics texts. Applications are frequently discussed, but without sacrificing mathematical rigor, so the book should perform the worthwhile service of attracting mathematics students to applied mathematics. Because of its clarity, the text should also be useful in physics and engineering curricula, although students here will need more mathematical maturity than is common at the undergraduate level.

The content as well as the exposition has a modern or advanced orientation. For example, the typical chapter on vector analysis is absent. Instead, after a review of the summation convention, the student is asked to

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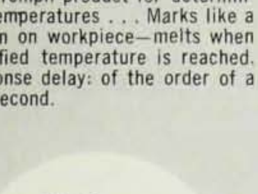

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prove some vector identities. Thus, he is assumed to be familiar with three-dimensional vectors, and the more general concept of function space is used. The unification of vectors and matrices is typical of the entire text, which emphasizes the underlying relations between superficially different mathematical topics. It is then surprising to find that although the concepts of tensor analysis are closely approached, tensors are not mentioned.

Of course the coverage must be restricted in a book of this size, and most of the material relates to boundary and eigenvalue problems. The principal subjects are calculus of variations, separation of variables, nonhomogeneous boundary-value problems, integral equations, and transform methods. Besides applications to partial differential equations, the chapter on transforms discusses the convolution integral and its essential relation to the transfer function—without ever using the term "transfer function".

Aside from limitations such as those referred to above, this text should interest mature students in physics and engineering, as well as in applied mathematics. Particularly commendable is the way Dr. Dettman has not presented a series of disjointed techniques, but has interwoven the discussions, encouraging one to recognize how knowledge in one area reinforces another.

The Laminar Boundary Layer Equations. By N. Curle. 162 pp. Oxford Univ. Press, London, 1962. Paperbound $4.80. *Reviewed by R. E. Street, University of Washington.*

MORE solutions of aerodynamic interest can be obtained from the laminar boundary-layer equations than from the full Navier-Stokes equations or from the turbulent boundary-layer equations. Even then, the mathematics is difficult and complex, so that approximations to these equations are quite often made, and even approximate solutions to the approximate equations are resorted to. The reason lies, of course, in the nonlinear nature of the equations. Special cases based upon simplified properties of the fluid and ingenious transformations of axisymmetric flows to two-dimensional flows or compressible to incompressible flows have been developed. By assumptions regarding the similarity of velocity and temperature profiles, the system of partial differential equations can be reduced to a pair of ordinary differential equations or even to a single nonlinear ordinary equation.

The author of the present monograph has collected almost all of these special solutions of the two-dimensional equations and presented them in a unified, systematic exposition. A considerable amount of the detailed calculation has been left out in most cases, which the reader may or may not want to work out or look up in the references given. It is not necessary to be acquainted with the more exhaustive treatment to be found in the treatises of Goldstein, Howarth, and Schlichting. However, for the derivation of the Navier-Stokes equations, the solution of the three-dimensional