detailed reading of a small (non-random) sample of the book the reviewer found a rather large number of misprinted symbols which are correctly printed in the Russian edition.

F. F. BONSALL

F. M. ARSCOTT, *Periodic Differential Equations* (Pergamon Press, 1964), vii+275 pp., 602.

This book contains an account of a class of linear ordinary differential equations and the special functions generated by them. The author explains in the Preface that he has concentrated on fundamental problems and techniques of solution rather than the properties of particular functions. He has attempted to steer a middle course between books written primarily for engineers and those demanding a knowledge of advanced pure mathematics on the part of the reader. At the same time, he has tried to enable the reader to pass on to a more detailed study of either of the two types of books. The reviewer feels that the author succeeded in the task he set himself and produced a very useful and readable book. He is to be commended for the care with which the book was written; for using as far as possible the notations used in the books to which the reader might proceed from his; for providing ample documentation and references; and for greatly increasing the information contained in his book by the device of adding " examples " (i.e. mostly results from the literature not discussed in detail in the present book) to each chapter. There was no attempt at encyclopaedic completeness, and in spite of the considerable amount of material, the book makes an uncluttered impression.

After an introductory chapter, mostly on the origin of the various differential equations treated in this book, about one-half of the book is devoted to Mathieu's equation,

$$w''+(a-2q\cos 2z)w = 0.$$

Both the " general " equation (i.e., the equation with arbitrary given values of a and q) and Mathieu functions (the solutions for characteristic values of a for which a periodic solution exists) are treated.

In the second half of the book, one finds a variety of differential equations and their solutions: Hill's equation, the spheroidal wave equation, the differential equation satisfied by Lamé polynomials, and the ellipsoidal wave equation.

A. ERDÉLYI

NAIMARK, M. A., *Linear Representations of the Lorentz Group*, translated from the Russian by Ann Swinfen and O. J. Marstrand (Pergamon Press, 1964), pp. xiv+450, 100s.

One's first reaction on opening this book is to marvel that it is possible to write a book of four hundred and fifty pages on the representations of the Lorentz group, particularly so since this volume is not concerned with the generalised Lorentz group of r spatial and s temporal dimensions but only with the group of Lorentz transformations of the 3+1 space-time world. The full Lorentz group $\mathcal{G}$ (called the general Lorentz group by the author) is the set of all real linear transformations $x_i' = \sum_i g_{ij}x_j$ which leave $x_1^2+x_2^2+x_3^2-x_4^2$ invariant. This group consists of four disjoint pieces, the most important of which from the physical point of view is the subgroup called the proper Lorentz group $\mathcal{G}_+$ whose transformations satisfy $|g_{ij}| = +1$, $g_{44} \geqq 1$. The proper Lorentz group $\mathcal{G}_+$ is a normal subgroup of index 2 of the complete Lorentz group $\mathcal{G}_0$ whose transformations are required to satisfy the less stringent condition $g_{44} \geqq 1$ and amongst which are spatial reflections such as $x_1' = -x_1$, $x_2' = x_2$, $x_3' = x_3$, $x_4' = x_4$ for which $|g_{ij}| = -1$. $\mathcal{G}_0$ is in turn