of the book the author chooses for detailed study the hypergeometric equation, Laplace's linear equation, and the equations of Lamé and Mathieu.

The style of the book is somewhat terse and, while usually clear, is not always easy reading for one approaching the subject for the first time. This difficulty is largely overbalanced by abundant references to the literature so that an industrious reader will be able to learn very much with this volume as a basis for his study. The details given in the text are considerably extended by the collection of examples at the end of each chapter. A large number of these examples contain citations to their origin in the literature.

W. R. LONGLEY

La Théorie du Potentiel et ses Applications aux Problèmes Fondamentaux de la Physique Mathématique. By N. M. Gunther. Paris, Gauthier-Villars, 1934. 303 pp.

This volume is one of the collection of monographs on the theory of functions published under the direction of Émile Borel and contains a carefully written and rigorous treatment of the material usually covered in an introductory course on the theory of the newtonian potential function.

The first chapter contains general definitions and theorems concerning functions of the type to be encountered later. The characteristic properties of the newtonian potential of a three-dimensional distribution of attracting matter and of a simple and of a double surface distribution are treated in the second chapter. The remaining three chapters are concerned with the standard problems associated with the names of Neumann, Robin, Dirichlet, and Green.

The book is entirely self-contained in that it contains only one reference to the literature and this occurs in the last paragraph of an appendix.

W. R. LONGLEY

Le Problème de la Dérivée Oblique en Théorie du Potentiel. By G. Bouligand, G. Giraud, and P. Delens. Paris, Hermann, 1935. 78 pp.

This is No. 219 of the series *Actualités Scientifiques et Industrielles* and No. 6 of the subseries devoted to geometry and edited by E. Cartan. The problem treated is the extension of the Neumann problem in potential theory where the normal derivative is replaced by a directional derivative whose direction is prescribed over the bounding surface. When the direction is never tangent to the bounding surface and when, in addition, the direction cosines fixing the direction and the values assigned to the directional derivative satisfy certain regularity conditions (Hölder and continuity conditions) the problem is termed regular. The first part of the present work, written by Bouligand, is introductory and shows the essential character of the criterion of regularity (when the direction of differentiation can become tangent to the bounding surface the uniqueness theorem which holds in the regular problem breaks down). The second part, written by Giraud, gives the solution of the regular problem (under a stated condition of compatibility on the assigned values of the directional derivative). The third part, by Delens, discusses the connection of the theory of congruences of curves with the problem. This arises through a study of harmonic functions of the form $\phi(\alpha, \beta)$, where α, β are functions of position.

F. D. MURNAGHAN