

*Einführung in die Höhere Mathematik.* By H. von Mangoldt. Sixth edition. Completely revised and enlarged by K. Knopp. Three volumes. Leipzig, Hirzel, 1931–33.

The *Introduction to Higher Mathematics* of von Mangoldt has held a notable place in the extensive German literature since the publication of the first edition more than twenty years ago. This was distinguished by the clarity of the exposition and the rigor of the proofs. The several editions during the life of the author testified to the value of the book as a work of reference because of its accuracy and as a text for students because of its easy comprehensibility and the inclusion of well chosen exercises. The new editions prepared by von Mangoldt showed no essential changes from the first one. When, after the death of the author, it became apparent that the work had grown somewhat obsolete, the publisher invited Professor Knopp to revise the book with the result that it has been completely rewritten.

The most extensive changes occur in the first volume which is concerned with such fundamental notions as the systems of rational, real, and complex numbers, point sets, sequences and limits, functions and continuity. The second volume includes differential calculus, infinite series, elements of differential geometry and of functions of a complex variable. The third volume is devoted to the integral calculus and its applications, including complex variables, Fourier series, and differential equations. The list of individual topics is too long to reproduce here, but the choice of material is such as to furnish a very satisfactory preparation for the study of more advanced mathematics from the modern point of view.

W. R. LONGLEY

*Leçons sur les Fonctions Presque-Périodiques.* By J. Favard. Paris, Gauthier-Villars, 1933. viii + 181 pp.

This book is the 13th volume of the Series "Cahiers Scientifiques, publiés sous la direction de M. Gaston Julia," and is based upon a course delivered by the author at the Collège de France. It was the author's intention to give an exposition not only of the theory, but also of some of its applications. Such are, for instance, applications to the theory of linear differential equations with almost periodic coefficients, theory of perturbations, distribution of values of analytic functions almost periodic in a strip, and of harmonic almost periodic functions.

The exposition of the theory is confined primarily to the uniform almost periodic functions of H. Bohr, with a short sketch of various generalizations in the last chapter. As to applications, the author gives mainly an account of his own investigations. His results in the theory of differential equations are suggestive and interesting; however, the reviewer can not help feeling that the whole theory is still in a somewhat primitive stage, and that a considerable amount of work will have to be done in order to bring the theory of linear differential equations with almost periodic coefficients to a level comparable to that of the analogous theory of linear differential equations with periodic coefficients. The book is well and carefully written and will prove to be of value to those desiring a rapid introduction to the theory of almost periodic functions and their applications.

J. D. TAMARKIN