BOOK REVIEWS

Analytic theory of continued fractions. By H. S. Wall. New York, Van Nostrand, 1948. 13+433 pp. $6.50.

This is the first volume to appear in "The University Series in Higher Mathematics" which is planned to be a collection of "advanced text and reference books in pure and applied mathematics."

In order to make the book suitable as a text book the author gives detailed proofs and includes material which might be unfamiliar to "a student of rather modest preparation." Into this category fall such topics as: the Stieltjes-Vitali theorem, Schwarz' inequalities, matrix calculus, elementary properties of the Stieltjes integral, and basic concepts and formulae of the theory of continued fractions. To increase its usefulness as a text the book is provided with 131 exercises, grouped together at the end of each chapter. The material covered in this book is of such a nature that it or parts of it would make very attractive subject matter for graduate seminars. It is to be hoped that the book will thus contribute to spreading knowledge of and interest in the analytic theory of continued fractions among a larger group of people.

Numerous and important additions have been made to the analytic theory of continued fractions since the appearance of Perron's *Die Lehre von den Kettenbrüchen* in 1913. Only a few of these results were incorporated into the second edition of Perron's book in 1929. It is thus clear that the publication of the present book which brings so much, though unfortunately not all, of this material together in a single volume was welcomed by workers in this and in related fields.

The book consists of twenty chapters. Chapters I–VIII form the first part entitled "Convergence theory." The second part is called "Function theory." Classical as well as more modern results are treated in this book. That Wall himself has been during the last twenty years the foremost contributor to the advancement of the theory is apparent throughout this book. Not only are there many new theorems due to him and his collaborators but there are also numerous new proofs of previously known results.

Wall's most significant original additions to the theory are to be found in the first part. The outstanding result is probably the parabola theorem (§14) due to Scott and Wall. This in turn led Paydon and Wall and independently Leighton and the reviewer (a fact which is not mentioned in this book) to the discovery of a family of parabolic convergence regions (§32).