BOOK REVIEWS

RUTHERFORD, D. E., *Introduction to Lattice Theory* (Oliver and Boyd, 1965), 117 pp., 35s.

An introduction to a subject may either concentrate upon some relatively small part of the subject and explore it leisurely and in some detail, or it may briefly touch upon many facets of the subject in an attempt to convey some idea of its range. In this book the author has followed the second course and in some thirty-seven sections has touched upon a considerable variety of interesting topics looked at in a lattice setting. These topics range over Boolean algebra, Boolean rings, propositional calculus, switching circuits, Boolean matrices and determinants, Brouwer algebra, intuitionistic logic, atomic lattices, Geometric lattices and lattice topology. Definitions are clear and concise, explanations lucid and proofs well presented. This book may be confidently recommended to all students entering on a study of mathematical logic.

R. L. GOODSTEIN

AKHIEZER, N. I., *The Classical Moment Problem* (Oliver and Boyd, 1965), x+252 pp., 70s.

The problem of moments has never quite been in the main stream of mathematical analysis. It has, however, interested some very distinguished mathematicians, and has substantial contacts with several other important topics (function-theory, continued fractions, orthogonal polynomials, operators in Hilbert spaces, ...). The classical one-dimensional power moment problem is to solve for σ the equation $\int t^n d\sigma(t) = c_n (n = 0, 1, 2, \ldots)$, where σ is to be a positive measure and the c_n are given constants. Here the integral is either over the whole real axis (Hamburger's problem), or a specified subset of it ((0, 1) Hausdorff; (0, ∞) Stieltjes). In the trigonometric moment problem the real axis is replaced by the unit circle, and negative as well as positive powers of t ($= \exp i\theta$) appear. The basic problem is an interesting and natural one; its ramifications are still far from being fully worked out.

For the most part the author confines himself to the one-dimensional power problem, with occasional excursions into more general situations. The five chapters are: Infinite Jacobi matrices and their associated polynomials; The power moment problem; Function theoretic methods in the moment problem; Inclusion of the power moment problem in the spectral theory of operators; Trigonometric and continuous analogues. For much of the book, a background of classical analysis such as used to be found in any honours degree course, together with some elementary ideas from functional analysis, should suffice. In the fourth chapter some acquaintance with spectral theory is required. The presentation of the material is straightforward, and an adequately equipped reader should encounter few difficulties.

There is naturally a substantial overlap between the present book and Shohat and Tamarkin's *The Problem of Moments* (American Mathematical Society, New York, 1943). Both contain, for example, a detailed study of the classical one-dimensional Hamburger problem. However, there is also much in Akhiezer that is not to be found in Shohat and Tamarkin, such as the treatment of the relation between the moment problem and spectral theory in Chapter 4.

Account is taken of work on the problem up to 1960 or so (the original Russian text appeared in 1961). A leading part in the investigation of the moment problem has been taken by Russian mathematicians, and this tradition has been fully maintained in recent years, Significant contributions have been made by the author himself, by M. G. Krein, and others.

https://doi.org/10.1017/S0013091500011494 Published online by Cambridge University Press