BOOK REVIEWS

Correspondence concerning reviews should be addressed to the Book Review Editor, Professor William Kruskal, Department of Statistics, University of Chicago, Chicago 37, Illinois.

A. Rényi, *Wahrscheinlichkeitsrechnung, mit einem Anhang über Informationstheorie*, VEB Deutscher Verlag der Wissenschaften, Berlin 1962. Band 52, Hochschulbücher für Mathematik. xi + 547 pp. DM 55.

Leopold K. Schmetterer

University of Vienna

This book has its origin in a series of lectures which the author gave at the University of Budapest, beginning in 1948. These lectures were first published in 1954 as a book written in the Hungarian language, a book known to me by reviews only. I think this knowledge is sufficient to assert that the Hungarian and the present German edition differ in several ways. The former contains a chapter on Mathematical Statistics and another one on stochastic processes, both of which are not included in the latter book. On the other hand an appendix on information theory was added to the German edition. It may be that someone knowing the Hungarian edition would especially miss the chapter about stochastic processes. I think the German edition has been improved by the changes.

The present form of Rényi's book reflects his particular mathematical interests. It appears that the author is not only an expert in probability theory but also in many fields of analysis and in the theory of numbers. Applications of probability theory, especially in physics and chemistry, also belong to the sphere of interests of the author. This wide scope of interests is reflected in the numerous problems that are added to each chapter. Some of these problems are very simple exercises, while others are much more difficult and are accompanied by hints. The reader of the book needs prerequisites; some knowledge in the theory of real and complex functions, and the basic facts of Lebesgue measure and integration.

The first short chapter offers an introduction to the algebra of events, with some emphasis on finite Boolean algebras. It is of importance for the foundation of modern probability that each Boolean algebra is isomorphic to an algebra of subsets of a set. This representation theorem of M. Stone is given here, with a proof that goes back to O. Frink. The next chapter deals with the idea of probability. Some examples explain this idea from the intuitive point of view. Kolmogorov's general axiomatic approach is given, after a short treatment of finite probability algebras and of simple combinatorial methods. This chapter also contains some classical examples of the so-called geometrical probabilities. (The connection with Blaschke's integral geometry is indicated by a reference to Blaschke's book only.) The chapter concludes with Rényi's axiomatic approach to conditional probability algebras. Let Ω be a nonempty set and $\mathfrak{A}$ a σ-algebra