

BOOK REVIEWS

Limit distributions for sums of independent random variables. By B. V. Gnedenko and A. N. Kolmogorov. Trans. and annotated by K. L. Chung. Cambridge, Addison-Wesley, 1954. 264+9 pp. \$7.50.

This book is a compact and beautifully presented account of the subject matter of its title. Some of the material is either new or previously available only in the Russian language. The authors have strived with good success to make the development complete and definitive and at the same time direct and simple. The main principle guiding them is to attain an exhaustive treatment of results within their framework at the expense of a broader coverage of subjects (such as error terms in the non-equidistributed cases, multi-dimensional limit theorems, generalizations to dependent random variables, etc.) for which complete results await future research. The authors certainly have much that is pertinent and interesting to say about such matters but have refrained from disrupting the unity and conciseness of their exposition by doing so.

Perhaps the most striking feature of the book lies in the incisive simplicity of its organization and exposition. The material is very cleanly and economically motivated—there is no attempt to over-write or “sell” the subject, just as there is no apology when the authors heuristically discuss here and there connections between some of the theorems and the theory of additive processes, etc. Indeed there may be a risk here, as with any work which is extremely elegant, that the uninitiate, while able to carry through the proofs, may not appreciate nor even understand the theorems.

The following is a brief outline. The book is divided into three parts: I Introduction, II General limit theorems, III Identically distributed summands. Each of these parts consists of three chapters and there are two appendices, one by the translator and one by J. L. Doob. In a short preface sketching the development and history of the subject the authors set forth their main problem—viz., that of delineating the class of all limit laws for sequences of sums of independent and individually negligible random variables and the refinements of these results when the basic random variables are specialized in various ways.

The first two chapters give a compact account of measure and probability theory, convergence of measures and distributions and the basic theorems on Fourier transforms. Here the authors adopt a very inclusive axiomatic framework rather than the usual exposition of