BOOK REVIEW

Probability and potentials, by Paul A. Meyer. Blaisdell, New York, 1966. xiii+266 pp. \$12.50.

It is difficult to explain briefly what this book is. It is much easier to explain what it is not and what it does not pretend to be. It is not a textbook, nor a book on probability theory as a whole, and not at all a book on classical potential theory. What the book wants to be and really is, is very well explained by the author's own words borrowed from his Introduction:

"The fundamental work of Doob and Hunt has shown, during the last ten years or so, that a certain form of potential theory (the study of kernels which satisfy the "complete maximum principle") and a certain branch of probability theory (the study of Markov semigroups and processes) in reality constitute a single theory. It is not a purely formal matter. Probabilistic methods have led to a much better understanding of certain fundamental ideas of potential theory (e.g. balayage, thinness, polar sets); they have above all led to a host of new results in potential theory. In turn, probability theory has received comparable mathematical advantages from this association, and a very important psychological benefit: a marked enlargement of its public, and the end of an old isolation of twenty or thirty years.

"Because of this isolation, a probabilistic background has been lacking in a number of mathematicians to whom probabilistic methods could be of great service. One can thus imagine the usefulness of a work, intended for researchers rather than students, which might put at their disposal simultaneously the elements of probability theory and some of its more advanced aspects. This need is the raison d'être of the present book."

The book consists of three parts which are "connected by a pattern of analogies rather than by explicit logical relations." But as we will see the author succeeds perfectly in making clear to his reader the interplay between probabilistic and potential theoretic notions and procedures.

Part A is entitled "Introduction to Probability Theory." Assuming that the reader is familiar with the fundamental facts of measure theory, Chapter I, "σ-Fields and Random Variables," introduces the usual probabilistic vocabulary. Chapter II concerns "Probability Laws and Mathematical Expectations" and turns after a short résumé of integration theory to deeper subjects, often neglected in measure theoretic books, like uniform integrability and the Dunford-Pettis theorem on weakly compact subsets of L^1-spaces. The fundamental