Mathematical Foundations of the Calculus of Probability, by J. Neveu. Translated by Amiel Feinstein, foreword by R. Fortet. Holden-Day, Inc., San Francisco, 1965. xiii + 223 pages. $10.45.

"In comparison with the French original, this translation has benefited by the addition of a section (IV.7) on sequences of independent random variables, as well as by certain additions to the Complements and Problems", (A. Feinstein, Translator's Preface). This is an excellent book by a brilliant mathematician, expertly and beautifully translated into English. As a text it is intended for study by advanced students (corresponding roughly to the first or second year of graduate work in probability or measure theory in the United States and Canada) and as a reference work for researchers. There is no doubt that it will succeed brilliantly in fulfilling these aims.

The book develops the mathematical foundations of the theory of random processes to the point where the reader should have no difficulty in further pursuing the subject in any direction he chooses. To this end, the theory of measure and integration is developed including all the theorems for construction of a probability measure by extension from an algebra to a δ-algebra, from a compact subclass to a semi-algebra, from finite product-spaces to infinite product-spaces. General random processes are discussed and results on their separability and measurability are proved. The theory of conditional expectations, martingales and submartingales are fully and elegantly discussed. The basic convergence and continuity properties of such processes are proved. The next subject is ergodic theory and Markov processes with general state spaces. Here the general theory is followed by the ergodic theory for such processes, where mean and individual ergodic theorems are proved and applications to stopping times are given.

Approximately 100 interesting and far-ranging problems are included and thus even decision theory and sufficient statistics are treated to some extent.

Summarizing, this excellent book should serve admirably for a course in advanced probability theory, and as a textbook for a high-level course on measure theory. It is also delightful reading material for anyone interested in this field and can be also used for self-study purposes by one who has had an elementary course in probability or measure theory.

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Étude du Schéma Fluide Parfait et des Équations de Mouvement dans les Théories Pentadimensionelles de Jordan-Thiry et de Kaluza-Klein, by Aline Surin. Gauthier-Villars, Paris, 1965. 137 pages.

Five-dimensional unitary field theories date back to 1921, when Kaluza discovered that the electromagnetic potentials, and their gauge invariance, could be formally included in the metric of a five-dimensional