NORMAN T. J. BAILEY, *The Elements of Stochastic Processes with Applications to the Natural Sciences*, John Wiley and Sons, New York, 1964. $7.95, 60s. xi + 249pp.

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This book presents an introductory account of the theory and applications of stochastic processes of the evolutionary type. It begins with a general introduction and a chapter on generating functions. Of the remaining fourteen chapters, the first four treat recurrent events, random walk models, Markov chains and discrete branching processes. Chapters 7–16 discuss stochastic processes involving a continuous time parameter. The titles of these chapters, in order, are, Markov processes, homogeneous birth and death processes, some non-homogeneous processes, multi-dimensional processes, queueing processes, epidemic processes, competition and predation, diffusion processes, approximations to stochastic processes and some non-Markovian processes.

The aim of the author is to introduce the student as expeditiously as possible to the theoretical principles and applied techniques concerning a wide variety of stochastic models of practical interest rather than to present a rigorous development of the mathematical theory. While such a heuristic approach has much to recommend it in a textbook of this kind, it often leads to vagueness in the definitions—e.g., in the definition of recurrent events and recurrence times. It also leads the author to an undue emphasis on the purely formal aspects of the subject. This is particularly so in the chapter on diffusion processes.

In the first four chapters following the general introduction (generating functions, recurrent events, random walk models, and Markov chains) the development follows the treatment in Feller's book so faithfully, that the only departure from it consists in frequent condensation of the argument and omission of the wealth of illustrations that make the latter book such a pleasure to read. For example, compare Section 3.3 with Feller's treatment of the same topics in his Section 13.3.

The most serious drawback of the book is the dearth of examples. There are in all fifty-eight problems in the book. Many of these are, in fact, theoretical exercises which are extensions of the text. The last four chapters contain no problems at all, not even a single worked example. One cannot help feeling that with a little effort on the author's part, this lack could easily have been made good.

This reviewer cannot share the hope expressed in the preface that after a course based on the book, students "will be better equipped to tackle some of the more mathematically sophisticated treatises." On the other hand, it might serve as a text covering some of the more applied aspects of stochastic processes for students who have taken a one year course in statistics and probability.