# NEW BOOKS

*Statistical Analysis of Stochastic Processes in Time.* By J. K. Lindsey, Cambridge University Press, 2004, xiv+338 pp., $75.00

This is volume 14 in the Cambridge Series in Statistical and Probabilistic Mathematics. Its aim is to introduce research workers and students to ways of modelling a wide variety of phenomena that occur over time, to show the broadness of the field and the many interrelations within it. Attention is restricted to a selection of the simpler stochastic processes, those for which explicit probability models, and hence likelihood functions, can be specified and which are most useful in statistical applications modelling empirical data. The text is aimed at scientists looking for realistic statistical models to help in understanding and explaining the specific conditions of their empirical data. The analysis of examples from many areas is presented: botany,. criminology, demography, economics and finance, education, engineering, epidemiology, industry, medicine, meteorology, pharmacokinetics, political science, psychology, sociology, veterinary science, and zoology. The data for the examples and exercises, as well as the R code for all the examples, can be found at the book's website. Chapter headings: Part I, Basic Principles; 1. What is a stochastic process? 2. Basics of statistical modelling; Part II, Categorical state space; 3. Survival processes; 4. Recurrent events; 5. Discrete Markov chains; 6. Event histories; 7. Dynamic models; 8. More complex dependencies; Part III. Continuous state space; 9. Time series; 10. Diffusion and volatility; 11. Dynamic models; 12. Growth curves; 13. Compartment models; 14. Repeated measurements.

*Biostatistics - A Bayesian Introduction.* By George G. Woodworth, Wiley-Interscience, 2004, xvi+360 pp., $89.95

This is a volume in the Wiley Series in Probability and Statistics. It is a textbook intended for students in the biological sciences. It does not require calculus. To connect statistics and scientific method in a deep way, it presents the axiomatic basis of statistical reasoning via Dutch book thought experiments. It covers the standard biostatistics topics: inference on rates; relative risks; odds ratios; means; linear, logistic, and proportional hazards regression; survival analysis; meta-analysis and hierarchical models. It shows how to compute, interpret, and report Bayesian statistical analyses in practice, and how to reinterpret conventional statistical reporting (confidence intervals, margins of error, one-sided p-values) in approximate Bayesian terms where possible. The book provides explicit instruction on two statistical packages: the SAS System and WinBUGS. The latter is probably the most commonly used program for routine Bayesian data analysis. Chapter headings: 1. Introduction to statistical science; 2. Probability; 3. Subjective probability; 4. Distributions and descriptive statistics; 5. Statistical inference; 6. Continuous probability distributions; 7. Comparing two rates; 8. Inference on means; 9. Linear models and statistical adjustment; 10. Logistic regression; 11. Hierarchical models; 12. Time to event analysis; 13. Decision analysis.