

however, interest has moved to a position of what can outlier(s) tell us? and what is the best way of dealing with such observations?—this latter question being the title of the chapter following the general Introduction. Chapters 3 and 4 deal with the twin questions of testing discordant observations in univariate samples and the accommodation of outliers in the sense of robust inference procedures as a protection against their effects. The next chapter extends the treatment to samples of observations which may have “slipped” in some way in a group of samples. The remaining three chapters deal with special topics: the difficulties of multivariate data; designed experiments, regression analyses and time series; Bayesian and non-parametric approaches. The final chapter gives a perspective view and counsel for the future.

This book has been eagerly awaited by statisticians; it is now commended to those in operational research as a working manual for handling a class of difficult situations which, like those outliers of society—the poor and the unemployed—will always be with us.

W. R. BUCKLAND

Applied Optimal Control—Studies in the Management Sciences, Vol. 9

A. BENSOUSSAN, P. R. KLEINDORFER and CH. S. TAPIERO (Editors)

North-Holland, Netherlands, 1978. 204 pp. \$24.50 (paperback)

Is management an art or a science, or presently something of both? If one reads the current academic publications on management science and related areas one may be forgiven for believing that the revolution is complete. The realistic answer is of course that, no, it is not a science, by a long way, at least not yet, and maybe never.

It is true to say, however, that the disciplines of statistics, probability theory, operational research and econometrics have all made some impact on management practice over the last decade or two, and to its advantage. There is no surprise then in now witnessing the comparatively new science of optimal control theory joining the list. This book is a timely reminder of the extent of the real but limited progress that has been made in this direction.

The book, the most recent addition to the TIMS Studies in the Management Sciences series, is in two distinct parts. The first part consists of survey papers; Tapiero giving a very good review of optimal control methods, Sethi covering some widespread applications of deterministic methods, Kleindorfer giving an up-to-date version of stochastic optimal control, and finally Pekelman and Rausser studying the simultaneous identification and control of systems.

The second part of the book is devoted to specific applications areas. There is Bensoussan *et al.* examining the properties of optimal price-advertising strategies; Ando, Norman and Palash comparing numerical optimising algorithms on a macroeconomic model; Crouhy and Veyrac applying control theory to the switching from old to new technologies under external constraints and finally, Sawaragi *et al.* developing a new method of non-linear programming for the solution of an environmental control problem.

The level of mathematical content is fairly sophisticated, as is to be expected in any discussion of optimal control, but the final result should certainly whet the appetites of many a research or Ph.D student working in this particular area of management science.

W. D. RAY

Theory of Competing Risks

H. A. DAVID and M. L. MOESCHBERGER

C. Griffin, U.K., 1978. 103 pp. £4.95

Readers of this *Journal*, well-versed in the OR approach to the understanding of complex man-made problems, will have long concluded that risks and other troubles do not