

he is not so likely to appreciate the many references to other work on this theme. For a book which draws together a wide variety of concepts and work relevant to the model, the subject index is quite inadequate.

PAUL SPENCER

Programming for Optimal Decisions.

P. G. MOORE and S. D. HODGES, Editors.

Penguin Modern Management Readings, Middlesex, 1970. 360 pp. 12s.

I very much welcome this series of Penguin Modern Management Readings. Under this particular title the authors have assembled an excellent selection of papers on the various mathematical programming techniques. Some of these will already be well known to many operational research workers, but their value is enhanced by publication in this form.

Of the 18 papers, 4 first appeared before 1965, 5 in 1965, 7 in 1966 and 2 in 1967. As these necessarily report on work carried out several years earlier, the book essentially describes the situation in mathematical programming from five to ten years ago. This shortcoming is inevitable but is somewhat retrieved by the addition of a reading list which comes forward to 1969.

The book starts with a brief description of the history of mathematical programming. This is followed by a survey paper by J. E. Mulligan on "Basic Optimisation Techniques" which should be required reading for all mathematical programmers. Mulligan approaches a single problem by various routes and sounds a warning against excessive enthusiasm for a new technique, which can lead to a "sort of mental sub-optimisation". I particularly liked his flow chart for the development of an analytical approach to resource allocation problems.

Part 2 deals with linear programming. The authors provide good examples of the difficulties arising from lack of data and in collecting new data. The value of a good rather than "perfect" solution is recognized and the worth of the by-product information from a linear programming approach is emphasized.

In Part 3 there are examples of quadratic, separable and zero-one integer programming and a paper by Albach which is concerned with programming under uncertainty. There are two papers on job shop scheduling and one on the application of heuristics to warehouse location in the presence of continuing economies of scale.

Part 4 covers theoretical developments in the field. This includes Wolfe's 1967 paper on "Methods of Nonlinear Programming", Charnes and Cooper on chance constrained programming and the "Survey of Integer Programming" by Beale in 1965.

I recommend this book, at this modest price, particularly to young O.R. men who are just coming to grips with problems of resource allocation. However, as I found myself, there is likely to be something useful even for those who think they have considerable experience already.

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