

of mathematical programming, this book would have been more meaningful and interesting to the reader if some of the basic theorems had been included.

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28 [X].—R. L. ACKOFF & P. RIVETT, *A Manager's Guide to Operations Research*, John Wiley & Sons, Inc., New York, 1963, x + 107 p., 22 cm. Price \$4.25.

This is a remarkable little book, which this reviewer and many practitioners of the art will heartily recommend to management personnel who ask, "What is operations research? Where can I find out about it in a form I can understand?" The practical experience of the authors in dealing with management and their knowledge of the field are readily apparent throughout the pages of the book.

The two major chapters expand on the nature of operations research and describe the form and content of typical problems that lend themselves to such an approach. The shorter chapters are concerned with the relationship with other management services and the organization and administration of operations research. Differences in practice between the United Kingdom and the United States are identified, but one is more struck by the essential similarity. In addition to the major textual content there is included a list of consultants, schools and universities offering courses in operations research, a list of firms, arranged by industry, that use operations research, and an annotated bibliography. Ackoff's and Rivett's contribution should receive an enthusiastic response; the enthusiasm is merited.

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29 [X].—ALAN S. MANNE & H. M. MARKOWITZ (editors), *Studies in Process Analysis*, John Wiley & Sons, Inc., New York, 1963, viii + 427 p., 26 cm. Price \$14.00.

As used by the editors, "process analysis" identifies studies "which approach the analysis of industrial capability through models reflecting the structure of productive processes." Process analysis should be differentiated in this sense from a capability analysis based on gross national product or the input-output studies which are founded on inter-industry product flows. In an introductory chapter, the editors state that "input-output analysis fail to account for alternate methods of production," seeing this as a major drawback to this type of approach. This may be true in a narrow sense, but comprehensive linear programming models based on input-output analysis have been formulated and used in which resource substitutability has been incorporated. This point is discussed by Dorfman, Samuelson, and Solow in *Linear Programming and Economic Analysis* (New York, McGraw-Hill, 1958).

Process analysis involves a model-building activity, the development of appropriate computational algorithms, and the application of model and algorithm to

provide insights into a specific problem area. The orientation of the papers is toward the construction and application of models which are usually based on a linear-programming or integer-programming analysis or on simulation. Little discussion centers on algorithms or policy application.

Over 80 percent of the text is devoted to detailed studies of the petroleum and chemical industry, food and agriculture, and metals and metalworking. A short two-chapter section of 41 pages discusses the application of process analysis to investment planning for newly developing countries.

The chapters relating to industrial applications are quite detailed; they provide a comprehensive discussion of the technology involved, its representation by an analytic model, and the sources of data and problems associated with such applications.

This book is composed of the proceedings of a conference held at Yale University in April 1961. The contributions hold up well, but the developments of the past several years in economics and in computing are necessarily absent.

The mathematician can read this monograph with profit for the detailed case studies describing the construction and use of mathematical models of complex phenomena. The economist can read this monograph with profit for the detailed case studies of analyzing a complete industry, separating the wheat from the chaff, and to appreciate the power of analytical descriptions of the technological processes.

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30 [X].—CHRISTIAN GRAM, EDITOR, *Selected Numerical Methods*, Regnecentralen, Copenhagen, 1962, ix + 308 p., 24 cm. Price D.kr. 70,—.

This book contains four survey articles prepared at the Danish Institute of Computing Machinery by a study group for numerical analysis. As stated in the preface, "Only a small part of the present report . . . represents . . . research; the bulk . . . is a description and treatment of papers by other authors with the purpose of estimating and comparing different numerical methods." The four articles, their authors, and their lengths are:

(1) Linear Equations, C. Andersen and T. Krarup, 28 pages.

(2) Partial Differentive Equations, C. Gram, P. Naur, E. T. Poulsen, 85 pages.

(3) Conformal Mapping, C. Andersen, S. E. Christiansen, O. Møller, and H. Thornhave, 148 pages.

(4) Polynomial Equations, T. Busk and B. Svejgaard, 34 pages. Each article contains theoretical background material and a selected number of methods. Scattered through the text are ALGOL codes and numerical examples. All in all, this is a useful book to have around.

P. J. D.

31 [X].—NATHANIEL MACON, *Numerical Analysis*, John Wiley & Sons, Inc., New York, 1963, xiii + 161 p., 24 cm. Price \$5.50.

This book is written as a text for an introductory one-semester course in numerical analysis. A good introductory course in calculus will suffice for prerequisite to a course using this book as a text. The book is machine oriented. In several instances,