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.

JACK MOSHMAN

30 [X].—CHRISTIAN GRAM, EDITOR, *Selected Numerical Methods*, Regnecentralen, Copenhage, 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,

flow charts adequate for programming are supplied with the discussion of particular numerical methods. With each topic, there is, in general, a good discussion of error. The exercises supplied are aptly chosen and adequate to check the student's understanding of the material. Answers for computational exercises are supplied. Briefly, the topics covered by this text are: an introduction to machine computation, with a discussion of problem formulation and flow charting; iterative methods for solving functional equations, with emphasis on Newton's method for finding real and complex roots of an equation; an introduction to matrices and linear equations (both iterative and elimination methods are presented); the characteristic value problem for matrices, with a discussion of the method of iteration for finding characteristic roots and vectors; interpolation, using the Aitken-Neville, and Lagrange methods; the Weierstrass theorem, and Bernstein polynomials as an approximation device; numerical differentiation and integration; a thorough discussion of Simpson's rule and the trapezoidal rule; solution of ordinary differential equations by Euler's and Heun's methods; and an introduction to difference equations.

The book is remarkably free of typographical errors. However, on page 47 the third component of the vector should be -9, not -20.

The author indicates that he is defining *analytic* on page 20; however, the correct definition is given as a footnote on page 30. The definition of *inner product* on page 44 could be made a bit more explicit. Since the Bernstein polynomials are discussed as an approximating device, their shortcomings in this role should be indicated.

All in all, the reviewer believes this to be a good text for use at the sophomore or junior level. It has many things to recommend it, including lucid presentation and good selection of topics. This text is aimed at an understanding of numerical analysis rather than a proficiency in problem solving. In developing a curriculum for the student who wishes to become a numerical analyst, it seems that two alternatives present themselves. They are either the inauguration at the sophomore or junior level of a course using a text similar to the one being reviewed or the inclusion of topics presented in this text in existing courses such as calculus, matrix theory, and differential equations.

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32 [X].—K. A. REDISH, *An Introduction to Computational Methods*, John Wiley & Sons, Inc., New York, New York, 1962, xii + 211 p., 25 cm. Price $5.75.

The intended readers of this book are, in the author's words, the "occasional" computer and students of science and engineering. The tools assumed available are tables and, preferably, a desk calculator. The knowledge assumed is that of a sophomore at college, although more advanced terms are used occasionally. Matrix notation is used only briefly, and familiarity with it is not necessary.

Someone approaching this subject for the first time could teach himself from this book, for it is admirably clear in style and nearly every method is illustrated by several worked out examples designed to cover various cases which can occur. The procedures chosen for discussion are those which are the simplest mathematically, not necessarily the most economical computationally. Emphasis is laid on always