leading. On page 60, the statement that the Fourier method is "the less rigorous because it neglects the boundary conditions" is questionable. The extensive treatment of iterative solution methods for implicit difference approximations to the heat conditions equation in one space variable seems to lack a certain amount of motivation.

As a text, this book fills a genuine gap in the literature and, on the whole, is recommended for use by senior undergraduates or by beginning graduate students.

R.G. Stanton, University of Waterloo

Discrete Dynamic Programming, by R. Aris. Blaisdell Publ. Co., New York (Division of Ginn and Co.), 1964. x + 148 pages.

A welcome feature of the publication scene in the past few years is the appearance of brief books devoted to timely topics and written in a style that makes them accessible to a wide class of readers. In the present case the required background appears to be little more than a good first course in calculus. Various types of optimization are described in the first chapter. The example of a chemical reaction in a sequence of tanks is then used to lead up to the formal definition of a discrete deterministic decision process, followed by the principle of optimality. The remaining chapters include graphical methods, Lagrange multipliers, problems drawn from economics, communication theory, curve fitting and reliability theory, the connection between the continuous and discrete cases, and some extensions to feedback systems and countercurrent systems.

The author's lucid style and the publisher's pleasing format combine to make a most attractive book. The bibliography is carefully keyed to the corresponding sections in the text (a minor error: the name Vajda is consistently misspelled Vadja).

H. Kaufman, McGill University

Computer Software. Programming Systems for Digital Computers, by Ivan Flores. x + 493 pages. Prentice Hall, Englewood Cliffs, N.J., 1965. $12.00.

This is one of the first text books to be written on computer programming systems - the software which is as important as the hardware of large scale digital computers, and as such it will be extremely valuable to the prospective systems programmer. The book is comprehensive and treats in considerable detail the concepts behind all aspects of systems programming as currently available in IBM 7094 systems. It includes a description of assembly systems, macro-commands, the IOCS buffer subsystems and operating commands, service systems, the monitor, the supervisor, and the loader. However, no mention is made of compiler techniques for translating from an algorithmic language

to an assembly language, for example, though translators and interpreters are mentioned briefly.

Like all others before him who have written a book on computer programming, the author was faced with the difficult question of which computer to use for illustrative purposes. The author solved this problem in a somewhat unusual manner by first deciding on an assembly program, FLAP (for Flores Assembly Program), and then defining the automatic computer which executes FLAP to be FLAPJAC. (Appropriately enough this reviewer first came across the book at a conference in Las Vegas).

The text assumes a basic knowledge of programming though no actual experience on a real computer is required. Problems are included with each chapter but no answers are given. The reviewer agrees with the statement on the front flap of the jacket that "It has no peer as an introduction for programmers entering the software field, or as a study of general principles applicable to all programming systems."

Charlotte Froese, University of British Columbia

Introduction to Basic FORTRAN Programming and Numerical Methods, by W. Prager. Blaisdell Publishing Company, New York, 1965. 203 pages.

As the title implies, this book gives an introduction to both computer programming in the Fortran language and numerical analysis. The author has succeeded in combining into one book a readable elementary account of both subjects.

Chapter I gives a very brief introduction to the use of digital computers in numerical analysis, and includes a detailed discussion of a simple program to sum the terms of an infinite series. Chapters II, III, IV, VI and VIII are devoted to a discussion of FORTRAN II for the IBM 7070. The remainder of the book gives a survey of the topics which are usually included in an elementary course in numerical analysis, viz., error analysis, polynomial calculations, polynomial and trigonometric interpolation, Newton-Cotes and Gaussian quadrature, solution of non-linear equations and systems of linear algebraic equations, and the numerical solution of ordinary differential equations. There are many problems both in numerical analysis and programming at the end of each chapter. The answers to the problems are not given.

The treatment of programming could have been much improved if Arithmetic Statement Functions and Function and Subroutine Subprograms were discussed. In addition, if FORTRAN IV rather than FORTRAN II could have been used, then the logical IF and Boolean expressions could have been included. However, it is possible that the omission of these topics is implied in the word "basic" appearing in the title. The discussion of sorting in Chapter X may have been omitted as this topic is not usually considered as a part of numerical analysis.