

the chapter headings: Rounding and Truncation Errors, Roots of Equations, Simultaneous Linear Equations, Interpolation, Numerical Differentiation and Integration, Taylor's Series, Numerical Solution of Ordinary Differential Equations, and Empirical Formulas and Approximation. In general, the technique the authors have adopted is to describe a numerical analysis procedure and then to follow this procedure with a flow chart of a possible algorithm. The actual mathematics is seldom justified except in the most intuitive way.

On the whole, the book seems to be well written and much of the included material would be of value to the beginning engineering students.

R. W. DICKEY

Courant Institute of Mathematical Sciences
New York University
New York, New York

75[W].—CHARLES CHRISTENSON, *Strategic Aspects of Competitive Bidding for Corporate Securities*, Division of Research, Harvard Business School, Boston, Mass., 1965, x + 116 pp., 26 cm. Price \$6.00.

A syndicate preparing a bid to underwrite a bond issue must usually specify three quantities in order to prepare a responsive, and responsible, bid. The quantities are the offering price which will be charged the public, the coupon rate which the issuer must pay during the life of the bond, and the proceeds to the issuer which will be paid by the syndicate for the securities.

This monograph provides a complete analysis of the interplay of forces between the syndicate and its competitors as well as of the factors which affect the relationship of members of the syndicate to each other and to the public.

The scope and setting of the problem is described in detail with the help of a case study. The exposition is sufficient to set the stage for any neophyte to the bond market if he has any degree of mathematical sophistication.

The pricing problem is considered in a chapter devoted to this decision process, but greatest attention is paid to the bidding problem, consisting of setting the coupon rate and the proceeds. The bidding problem is approached via game theory in one chapter, assuming perfect rationality among competitors who seek to adopt a strategy to maximize their return. In a Bayes approach, to which another chapter is devoted, statistical decision theory is employed to make a choice under uncertainty. Considerable new and novel material is to be found in these sections of the book.

Another interesting and, to the financial world, novel finding is one that suggests it may be more profitable to the syndicate to hold the bonds in inventory for a while instead of seeking an immediate total disposal.

It would be interesting to apply some of the author's precepts to a recent British underwriting in which the bid on some Imperial Chemical Industries bonds was so high—and hence disadvantageous to ICI—that the public subscription ran to many times the available number of securities.

As one of the "Studies in Managerial Economics," the book is attractively printed with a complete bibliography, but without an index. Misprints noted were few: "Player 1" should be "Player 0" on the sixth line from the bottom of p. 58; the equation reference in the text in the middle of p. 73 should be to "(6-1)" rather than

“(5-1)”); no difficulty will be found in reading “manager” for “manaser” on the fifth line of p. 112.

The author does not claim to have written the definitive work; avenues for further research are suggested. Other approaches have been proposed in the technical literature. Recently, Cohen and Hammer (*Management Science* 12:1, pp. 68–82) proposed a linear programming formulation of the scheduling interest coupons. In the meantime, this tour-de-force will serve as the most complete overall analysis of the problem available.

JACK MOSHMAN

C.E.I.R. Incorporated
1200 Jefferson Davis Highway
Arlington, Virginia

76[W, Z].—JAMES MARTIN, *Programming Real-Time Computer Systems*, Prentice-Hall, Inc., Englewood Cliffs, N. J., 1965, xii + 386 pp., 24 cm. Price \$11.75.

This reviewer objects to the current ambiguous use of the term “real-time,” which is continued in this book. A distinction ought to be made, once and for all, between rapid systems response for comfort and convenience, and response required by the physical process being monitored or controlled. The most dramatic contrast between these two different kinds of systems requirements, both called “real-time” by the author, may be found on p. 22: “It may be installed to give speedier action . . . for example, bank customers queueing to draw cash in their lunch hour, or two airplanes on a possible collision course.”

The reviewer also found somewhat misleading the use of the term “programming” in the title of the book.

The first third of this book discusses, on a very elementary level, the advantages and disadvantages of “real-time” systems, their history, and some examples of their implementation.

Beginning in the middle of the book, the author proceeds to more serious discussions. He addresses himself to techniques found essential or useful, with enough detail to satisfy managers of programming teams or of computer installations.

In the final third of the book, Mr. Martin draws on extensive experience with the sample systems described to present a convincing chronicle of the many pitfalls that await the naive traveler down the path of multiprogrammed, multiprocess, on-line system design.

The book is highly recommended for those in management contemplating the use, creation, or installation of new systems in the true “real-time,” the “pseudo-real-time,” or other multi-access, quick-response modes of operation.

H. M. ERNST

Applied Mathematics Laboratory
David Taylor Model Basin
Washington, D.C. 20007

77[X].—V. K. SAUL'YEV, *Integration of Equations of Parabolic Type by the Method of Nets*, The Macmillan Company, New York, 1964, xvii + 346 pp., 23 cm. Price \$12.00.

This is a translation by G. E. Tee of the original Russian monograph, which