in this field. By presenting a not overly long and very readable discussion centered about the basic problems of approximation, solutions of polynomial equations and systems of equations, and the numerical solution of ordinary differential equations, the author attains all of his objectives.

The book consists of 22 relatively short chapters. The first twelve chapters are concerned with approximation of functions and the solution of equations; included herein are discussions of Chebyshev and Legendre polynomials, approximation in the square integral sense, interpolation, and the methods of Newton-Raphson and Bernoulli. The next five chapters deal with numerical differentiation and integration. In the last five chapters are introduced some methods for the solution of ordinary differential equations, systems of linear equations, matrix inversion and eigenvalue problems. At the end of the book is a set of five appendices, containing statements of some basic results of calculus and linear algebra, to which the student may refer.

The main emphasis of the book is on the application of the methods presented to specific problems. The text is studded with numerical examples, most of which are well suited for a desk calculator; in addition each chapter contains a nice assortment of problems (and answers), as well as a bibliography containing, to a large measure, references to recent literature which are suitable for a good undergraduate student.

The main shortcomings of the book lie in the presence of a number of misprints and an occasional tendency to examine some ideas too briefly.

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80[X].—S. B. NORKIN, Editor, *The Elements of Computational Mathematics*, Pergamon Press, New York, 1965, xiii + 192 pp., 21 cm. Price $6.00.

This is an excellent and unobtrusive translation by G. J. Tee of a short, elementary textbook on computational mathematics. The Russian original (1960) was designed for use by correspondence students taking basic courses in higher mathematics, and for engineering students as a supplementary course in computational techniques.

It consists of seven chapters: on computation with approximate numbers by I. A. Zhabin, on the construction of tables by M. I. Rozental′, on the approximate solution of equations by D. P. Polozkov, on systems of linear equations by Kh. R. Suleimanova, on interpolation polynomials by S. B. Norkin, on the approximate computation of integrals by R. Ya. Berri, and on the approximate integration of ordinary differential equations again by S. B. Norkin.

The contents of the chapters were considered by the authors jointly, and the finished product was reviewed by the faculties of a number of institutions of higher learning in Moscow.

As one might expect, the standard of presentation is quite exceptionally high: the material is carefully selected, the exercises strategically placed, and the successive chapters disciplined into a balanced and harmonious whole.

If one feels called upon to offer adverse criticism, it is that the publication of this book would not have been out of place fifty years ago. Certainly all the methods dealt with are older than this, and there is a preoccupation with such topics as the growth of errors in a difference table, work sheets for use when solving linear equations, and various other matters which recall the sort of hand-computing drudgery that most of us would prefer to forget.

It is not assumed that the student will have access to a digital computer. Moreover the authors state: "The use of fast machines for the comparatively small calculations most often arising in engineering and industry is not advantageous, and sometimes it is actually inconvenient."

Clearly the authors have a very good idea of the public to which they address their book. Moreover they have a far more intimate knowledge of the sort of computing facilities generally available in the Soviet Union than do most of the readers of this review. When preparing their book, the authors made certain assumptions and acted consistently upon them. However, any person in the United States who made similar assumptions and produced a similar textbook would, in the opinion of the reviewer, be old-fashioned.

The book is pleasantly produced.

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81[X].—PATRICIA C. STAMPER, *Table of Gregory Coefficients*, The Johns Hopkins University, Applied Physics Laboratory, Silver Spring, Md. Ms. of two typewritten pages deposited in the UMT File.

Herein are tabulated in floating-point form to 15S (generally unrounded) the first 50 coefficients of the Gregory integration formula, computed in double precision on an IBM 7094 by use of the recurrence formula

$$G_n = \sum_{i=1}^{n} (-1)^{i+1} G_{n-i}/(i+1) + (-1)^{n+1} n/2(n+1)(n+2)$$

with $G_0 = 0$. This yields $G_1 = \frac{1}{12}$, $G_2 = -\frac{1}{24}$, $\cdots$, in contradistinction to the values $G_1 = \frac{1}{2}$, $G_2 = -\frac{1}{12}$, $G_3 = \frac{1}{24}$, with reversed signs, which are found from the conventional recurrence relation for these numbers, which has $(-1)^{n+1}/(n+1)$ for the second term on the right.

It seems appropriate to note here that the first 20 of these numbers have been computed in rational form by Lowan and Salzer [1]. Furthermore, their asymptotic character has been most recently investigated by Davis [2], who refers to them as "logarithmic numbers" because of their identification with the coefficients in the Maclaurin series for $x/\ln(1 + x)$.

The present manuscript table appears to be the most extensive one of these coefficients extant.

J. W. W.

1. A. N. LOWAN & H. E. SALZER, "Tables of coefficients in numerical integration formulae," *J. Math. Phys.*, v. 22, 1943, pp. 49–50.
2. H. T. DAVIS, "The approximation of logarithmic numbers," *Amer. Math. Monthly*, v. 64, 1957, pp. 11–18.

EDITORIAL NOTE: It may be noted that no table of these coefficients, which are quite important (at least for small n), appears in the celebrated, and otherwise quite complete, NBS *Handbook of Mathematical Functions with Formulas, Graphs, and Mathematical Tables.*