2. L. J. Comrie, editor, *Barlow's Tables*, 4th edition, Chemical Publishing Co., New York, 1941.
3. Daniel Shanks & John W. Wrench, Jr. "Calculation of π to 100,000 Decimals," *Math. Comp.*, v. 16, 1962, p. 76–99.
4. William Shanks, *Contributions to Mathematics, comprising chiefly the Rectification of the Circle to 607 places of decimals*, G. Bell, London, 1853.

69[A, B].—C. B. Bailey & G. E. Reis, *Tables of Roots of the First Ten Thousand Integers*, Sandia Corporation Monograph, SCR-501, January 1963, 237 p., 28 cm. Price \$3.00. Available from the Office of Technical Services, Department of Commerce, Washington 25, D. C.

Table I lists $N^{1/2}$, $(10N)^{1/2}$, $N^{1/3}$, $(10N)^{1/3}$, $(100N)^{1/3}$, $N^{1/4}$, $(10N)^{1/4}$, $(100N)^{1/4}$, and $(1000N)^{1/4}$ for $N = 1(1)\ 10{,}000$ to 9D.

Table II lists $N^{1/k}$ for $k = 2(1)\ 10$ and $N = 1(1)1000$ to 9D.

Table III lists $x^{1/k}$ for $k = 2(1)10$ to 11D for 48 values of x such as π, π^{-1}, e, γ, $\pi^{1/e}$, $e^{1/\pi}$, etc. In striving for symmetrical completeness, $x = \log_e 10$ and $x = (\log_{10} e)^{-1}$ are both given. Luckily, the values in these two lists coincide.

The tables were computed on a CDC 1604 with a double-precision Newton-Raphson iteration, starting from a single-precision Fortran approximation. All values were carefully rounded (in decimal). The values listed were very carefully checked in two different ways. The format is very good.

The authors are to be commended for their conscientious effort. We have seen so many machine-made tables in the past years with poor error control, mediocre format, etc., that a carefully produced table draws attention to itself at once, as the sort of thing possible if the necessary care is taken.

D. S.

70[A–E, J, M].—Robert D. Carmichael & Edwin R. Smith, *Mathematical Tables and Formulas*, Dover Publications, Inc., New York, 1962, viii + 269 p., 21.5 cm. Price \$1.00.

As explicitly stated by the publisher, this is an unabridged, unaltered, paperback edition of mathematical tables and formulas compiled by Carmichael & Smith and originally published by Ginn and Company in 1931.

The material is arranged in three parts. Part I consists of an introduction devoted to linear interpolation, the elementary properties of logarithms, and a brief description of some of the fourteen tables therein, which are "necessary in the study of college algebra and trigonometry." These tables include: common logarithms to 5D, arranged in a single-entry table; natural and logarithmic trigonometric functions to 4 and 5D; conversion tables for use with sexagesimal and radian angular measurement; and well-known constants, generally to 7 and 8D, except for π and e and their logarithms, which are separately listed to 30D.

Part II consists of five tables "not generally accessible to students of college mathematics," together with brief introductory explanations of their contents and use. These tables include: 6S values of $n^{-1}, n^2, n^3, n^{1/2}, (10n)^{1/2}, n^{1/3}, (10n)^{1/3}, (100n)^{1/3}$ for $n = 1(0.01)10$; ln n to 5D for $n = 0.01(0.01)10(0.1)100(1)1000$; $e^{\pm x}$, sinh x, cosh x, generally to 5S, and their common logarithms to 5D, for $x = 0(0.01)3(0.05)$-$4(0.1)6(0.25)10$; the first 100 multiples of M and $1/M$ to 6D; and finally 10D common logarithms of primes less than 1000.

Part III consists of: formulas from algebra, elementary geometry, trigonometry, analytic geometry, and the calculus; graphs for reference; a compilation of 323 indefinite integrals and 37 definite integrals; and a concluding selected list of infinite series (including the well-known infinite-product expansions for sin πx and cos πx).

It is interesting to note that a number of similar collections of tables and formulas appeared shortly after the first edition of the present work. Two of these are by Burington [1] and by Dwight [2], which together include such additional material as interest and mortality tables, formulas and tables relating to elliptic functions and integrals, the gamma function, probability integral, Legendre polynomials, and Bessel functions.

Further expansion and elaboration of such information appears in the recent compilation published by the Chemical Rubber Company [3]. For example, herein we find statistical tables, dictionaries of Laplace and Fourier transforms, and a number of other tables not to be found in the references previously cited.

Thus a comparison of the tables of Carmichael and Smith with similar books published subsequently reveals the continual growth of applied mathematics. In brief, the book under review, although acceptable as an inexpensive elementary reference, cannot be considered adequate as a general reference for mathematical formulas and numerical information, more than thirty years after its initial appearance.

J. W. W.

1. R. S. Burington, *Handbook of Mathematical Tables and Formulas*, Handbook Publishers, Inc., Sandusky, Ohio, 1933; second edition, 1940; third edition, 1953.

2. H. B. Dwight, *Tables of Integrals and other Mathematical Data*, The Macmillan Company, New York, 1934; revised edition, 1947; third edition, 1957; fourth edition, 1961. [See *MTAC*, v. 1, 1943–45, p. 190–191, RMT **154**; v. 2, 1946–47, p. 346, RMT **447**; v. 16, 1962, p. 390–391, RMT **42**.]

3. S. M. Selby, R. C. Weast, R. S. Shankland, & C. D. Hodgman, Editors, *Handbook of Mathematical Tables*, Chemical Rubber Publishing Company, Cleveland, Ohio, 1962. [See *Math. Comp.*, v. 17, 1963, p. 303, RMT **34**.]

71 [A, I].—Alan Bell & Adele Higgins, *Table of Stirling Numbers of the Second Kind* $S(n, k)$, $k = 1(1)n$, $n = 1(1)100$, Sylvania Electric Products, Inc., Reconnaissance Systems Laboratory Report RSL-1330-1 SN, Mountain View, California, 2 October 1961, 18 p., 28 cm.

The table consists of 6S values of the Stirling numbers of the second kind, presented in floating-point form over the range indicated in the title. The necessary calculations were performed on a Burroughs 220 computer, using a program written in BALGOL capable of producing a similar table of $S(n, k)$ to $n = 350$, if a core memory of 10,000 words is fully utilized.

The authors define these numbers and give some of their properties, referring the reader to books by Richardson [1] and Riordan [2] for further information. No reference is made, however, to the considerable existing literature of tables of these numbers. For example, tables of *exact* values up to $n = 50$ have been prepared by Gupta [3] and Miksa [4]. A number of smaller tables are referenced in the new edition of the FMR *Index* [5].

Numerous rounding errors in the table under review have been revealed by a