In Part 1, tables [1] were given for calculating the shape and tension of a neutrally-buoyant flexible cable in a stream. The present volume, Part 2, extends the previous work to include the effect of a weight parameter.

These tables should be quite useful in the design of cable-towed systems. Their application is illustrated in the first part of the volume by a series of eleven examples. A less extensive set of tables for the same purpose is available in David Taylor Model Basin Report 687, by Leonard Pode, dated March 1951 [2], and in a supplement thereto [2].

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1. CHARLES J. THORNE, GEORGE E. BLACKSHAW & RALPH W. CLAASSEN, *Steady-State Motion of Cables in Fluids, Part 1, Tables of Neutrally Buoyant Cable Functions*, NAVWEPs Report 7015, Part 1, NOTS TP 2378, China Lake, California, 1962. [For review, see *Math. Comp.*, v. 18, 1964, p. 337, RMT **55**.]
2. LEONARD PODE, *MTAC*, v. 11, 1957, p. 282–283, RMT **123**.

22[X].—*The Universal Encyclopedia of Mathematics* (with a foreword by JAMES R. NEWMAN), Simon and Schuster, New York, 1964, 715 p., 19 cm. Price $8.95.

This pretentiously entitled compendium of mathematical information is an English translation and adaptation of *Meyers Rechenduden*, published in 1960 by the Bibliographisches Institut in Mannheim.

The body of this encyclopedia is arranged in three main subdivisions: Alphabetical Encyclopedia under Subjects, Mathematical Formulae, and Mathematical Tables.

In the publisher's prefatory note we are informed that the range of mathematics covered is that "from beginning High School through College, but stopping short of a degree in mathematics." The book does not profess to be addressed to the professional mathematician, but rather to the interested layman and the technical student.

The Foreword further clarifies the extent of the subject matter by including a remark that many branches of mathematics from arithmetic through the calculus are included, but that higher branches such as group theory and algebraic topology are excluded.

This limitation in the material presented is reflected also in the numerous formulas presented, which are listed under the nine subheadings of Arithmetic, Algebra, Applications, Geometry and Trigonometry, Analytical Geometry, Special Functions, Series and Expansions in Series, Differential Calculus, and Integral Calculus.

A total of five mathematical tables, together with explanations of their use, comprise the last part of this book. Table 1 gives x^2 (exact), x^3 (3 D), x^{-1} (5 D), $x^{1/2}$ (4 D), $(10\,x)^{1/2}$ (3 D) and $x^{1/3}$ (4 D) for $x = 1(0.01)\,10$; Table 2 lists to 5D the mantissas of the common logarithms of all integers from 1000 through 10009; Table 3 gives $\sin x$, $\cos x$, $\tan x$ (each to 5 D) and $\cot x$ (6 S) for $x = 0(0.001)0.8$, as well as the sexagesimal equivalent of x to the nearest $0.01''$; Table 4 contains $\sinh x$, $\cosh x$, $\tanh x$ (each to 5 D), $\coth x$ (6 S), $\ln x$ (5 D), and $e^{\pm x}$ (5 D) for $x =$

0(0.001)1.65; and Table 5 gives sin φ to 4 D for $\varphi = 0(6')90°$, tan φ to 4 D for $\varphi = 0(6')70°$, to 3 D for $\varphi = 70°(6')\ 85°$, and to 2 D for $\varphi = 85°(6')89°54'$, and the radian equivalent of φ to 4 D. The publisher states that every tabular value was independently calculated electronically, and the tables appear to have been produced by a photo-offset process from the computer output sheets.

A number of improvements can be incorporated in a subsequent edition, in the opinion of this reviewer. For example, the discussion of Diophantine equations (p. 172–173) is restricted to a consideration of a single linear equation in two variables with integral coefficients, without any reference to the fact that this topic includes indeterminate equations of higher degree as well as of more variables. (Incidentally, the heading on p. 173 should be "Diophantine Equations" instead of "Diameter.") Moreover, on p. 231 the statement of the fundamental theorem of algebra is unnecessarily restricted to algebraic equations with *real* coefficients.

It is interesting and informative to compare this book with recent mathematical dictionaries by Karush [1] and by James and James [2]. The breadth of coverage appears to be greater in the latter two references; however, the treatments therein of certain topics in elementary mathematics such as circles and triangles and their properties are not as extensive as in the book under review.

Within the limitations described in the Foreword and referred to in this review, the present book will serve as a useful reference for the technical student, although it does not attain the pre-eminence that is implied by its ambitious title.

J. W. W.

1. WILLIAM KARUSH, *The Crescent Dictionary of Mathematics*, The Macmillan Company, New York, 1962. (Reviewed in *Math. Comp.*, v. 17, 1963, p. 478, RMT **88**.)

2. GLENN JAMES & ROBERT C. JAMES, *Mathematics Dictionary*, 2nd ed., Van Nostrand, Princeton, N. J., 1959. (Reviewed in *MTAC*, v. 13, 1959, p. 331–332, RMT **66**.)

23[X].—KAJ L. NIELSEN, *Methods in Numerical Analysis*, Second Edition, The Macmillan Company, New York, 1964, xiv + 408 p., 23 cm. Price $9.00.

Since this text is designed for a one-semester undergraduate course, no knowledge of mathematics beyond elementary calculus is assumed.

The customary topics of least-squares approximation, interpolation, numerical integration and differentiation, finite-difference methods applied to differential equations, and the solution of systems of equations (linear and nonlinear) are discussed. Material is included on such topics as multiple integration, trigonometric fitting of data, smoothing of data, autocorrelation, and a chapter on linear programming.

The book stresses the proper organization of various numerical methods for efficient use of a desk calculator or larger computer. Many examples are worked out in complete detail, with further exercises for the student at the end of each chapter. The author has also included useful tables to aid in the construction of various algorithms.

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