41 [I, M].—M. V. Cerrillo & W. H. Kautz, *Properties and Tables of the Extended Airy-Hardy Integrals*, MIT Technical Report 144, Research Laboratory of Electronics, Massachusetts Institute of Technology, Cambridge, November 15, 1951.

In a previous review (*Math. Comp.*, v. 15, 1961, p. 215) I stated that tables of the Airy function $Ai(z)$ were not available for z complex in polar form. This is not correct, and I am indebted to Dr. Nelson A. Logan of Lockheed Aircraft Corporation, Sunnyvale, California, for calling my attention to the tables of Cerrillo and Kautz, here described.

Let

$$Ah_{1,3}(B) = 3^{-1/3}Ai(-3^{-1/3}B),$$

$$Ah_{2,3}(B) = \tfrac{1}{2}\, 3^{-1/3}[Ai(-3^{-1/3}B) - iBi(-3^{-1/3}B)],$$

$$Ah_{3,3}(B) = \tfrac{1}{2}\, 3^{-1/3}[Ai(-3^{-1/3}B) + iBi(-3^{-1/3}B)],$$

where $Ai(z)$ and $Bi(z)$ are the usual notations for the Airy integrals. Let $B = | B | e^{i\beta}$. This report gives the real and imaginary parts of $Ah_{1,3}(B)$, $Ah_{2,3}(B)$, and $Ah_{3,3}(B)$ to 7D for $| B | = 0(0.2)4$, $\beta = 0(7.5°)180°$. The functions $| Ah_{1,3}(B)|$ and arg $Ah_{1,3}(B)$ (in radians) are also tabulated to 7D for the same range, and graphs of these functions are also provided. The headings in each table should read $| B |$ for B and $| Ah_{1,3}(B)|$ for $Ah_{1,3}(B)$. Also tabulated to 7D are the values of the first 31 coefficients in the power series of $Ah_{1,3}(B)$ and the first 20 zeros of the latter for B real.

Y. L. L.

42 [L, M].—Herbert Bristol Dwight, *Tables of Integrals and Other Mathematical Data*, 4/e., The Macmillan Company, New York, 22 cm. x + 336 p. Price $3.50.

Reviews of the first two editions of these tables, published in 1943 and 1947 respectively, have appeared in *MTAC* (v. 1, p. 190–191; v. 2, p. 346).

A third edition, published in 1957, was enlarged through the addition of formulas relating to determinants, a more extensive list of derivatives of inverse trigonometric functions, a supplementary table of values of the exponential functions, and tables of natural values of the trigonometric functions (to 5D or 5S) corresponding to angles expressed degrees and hundredths.

The fourth and latest edition represents a further significant enlargement, the principal amplification being in the tabulation of definite integrals. This section now occupies 42 pages as contrasted with 11 pages in the third edition and eight pages in the first edition. The principal source of this information is cited as *Nouvelles Tables d'Intégrales Définies* by Bierens de Haan, Leyden, 1867, now readily available through republication in 1957 by Hafner Publishing Company in New York. The section devoted to elliptic functions has been extended by the inclusion of additional formulas concerning indefinite integrals expressible in terms of elliptic integrals.

Eleven references have been added to the list of 65 appearing in the third edition. A few minor changes have been made in the numerical tables; the most conspicuous is the increase in precision of Table 1060 (Some Numerical Constants), so that all the entries appear now to 10 decimal places.

Errata pointed out in the earlier reviews have been corrected. However, the correction of $K(87^\circ.6)$ in Table 1040 was not followed by appropriate changes in the column of first differences. The reviewer has compared the entries in Table 1050 with the corresponding data in the tables of Lowell [1], and thereby has detected 72 last-figure errors in Dwight's values of the Kelvin functions of zeroth order and of their first derivatives.

This useful new edition of Professor Dwight's popular tables of integrals constitutes a valuable contribution to the increasing store of such mathematical literature.

J. W. W.

1. HERMAN H. LOWELL, *Tables of the Bessel-Kelvin Functions Ber, Bei, Ker, Kei, and their Derivatives for the Argument Range 0(0.01)107.50*, Technical Report R-32, National Aeronautics and Space Administration, Washington, D.C., 1959. (See Review 9, *Math. Comp.* v. 14, 1960, p. 81.)

43 [M].—W. F. HUGHES & F. T. DODGE, *A Table of J Integrals of Hydrodynamic Lubrication Theory*. Manuscript deposited in UMT file.

This unpublished table of the numerical values, mainly to five significant figures, of the integrals $J_n = \int_0^\theta (1 - \epsilon \cos \theta)^{-n} d\theta$, corresponding to $n = 1, 2, 3$, $\epsilon = 0.1(0.1)0.9$, and $\theta = 0°(5°)360°$, was prepared on an electronic digital computer by members of the Mechanical Engineering Department of the Carnegie Institute of Technology.

In the prefatory text the authors state that these integrals occur in the theory of the hydrodynamic lubrication of the journal bearings. The film thickness h is approximated by the formula $h = c(1 - \epsilon \cos \theta)$, in terms of the angular coordinate θ, the radial clearance c, and the ratio ϵ of the eccentricity of the journal to the radial clearance. Values of the ratio h/c to four decimal places are included in the table.

J. W. W.

44 [M].—G. PETIT BOIS, *Tables of Indefinite Integrals*, Dover Publications, Inc., New York, 1961, xiv + 151 p. 24 cm. Price $1.65.

This is a new printing, in an inexpensive paperback edition, of the original *Table d'Intégrales Indéfinies* published by Gauthier-Villars in Paris in 1906, and at the same time by Teubner in Leipzig under the title *Tafeln unbestimmte Integrale*.

This unabridged English translation contains 2544 indefinite integrals, systematically arranged according to integrands, as outlined in the table of contents. A preface lists the principal source books and tables. This is followed by an explanatory section devoted to notation and by a section listing 49 "transformations of integral expressions," that is, pairs of expressions possessing the same derivative.

With few exceptions, the indefinite integrals listed here involve elementary functions. Several integrals are shown to depend upon the evaluation of such functions as the sine and cosine integrals, although these are not identified as such. Examples of such higher transcendental functions, which are left in the form of