356[L, S].—F. B. Pidduck, *Currents in Aerials and High-Frequency Networks.* Oxford, Clarendon Press, 1946. iv, 97 p. 14 × 22.1 cm. 8s. 6d.

The tables include the following:

P. 70, $(1, s)$ for s = [0(1)23; 5D], where $(n, s) = \int_0^\pi e^{in\nu} y^s dy$;
$(1, 23) = -35061200000 + 4410840000i$.
P. 86–91, Ci x, Si x for x = [0(.01)10(.1)29.9; 5D].
P. 70, 96–97; in the treatment of aerials parallel to the earth the function $E_n{}^s(x) = C_n{}^s(x) + iS_n{}^s(x) = \int_0^\pi e^{in y} J_0(xy) y^s dy$ was introduced. For large values of x the function is expressible in terms of Lommel functions. There are tables of $C_1{}^\circ$, $S_1{}^\circ$, $C_1{}^{\circ\prime}$, $S_1{}^{\circ\prime}$, $C_1{}^1(x)$, $S_1{}^1(x)$, $\pi C_1{}^\circ(x) + S_1{}^{\circ\prime}(x) - C_1{}^1(x)$, $(x^2 - 1)^{\frac{1}{2}}$, for x = [0(.05)2(.2)10; 4D].
P. 92–95, sin x and cos x, for x = [0(.01)7.99; 5D].

357[M].—Murlan S. Corrington, "Table of the integral $2\pi^{-1}\int_0^x \tanh^{-1} t\, dt/t$," *R. C. A. Review*, v. 7, Sept. 1946, p. 432–437. 14.9 × 22.7 cm. Compare UMT **51**, p. 184.

The integral $B(x) = \pi^{-1}\int_0^x \ln\left|\frac{1+t}{1-t}\right| dt/t = 2\pi^{-1}\int_0^x \tanh^{-1} t\, dt/t$ is involved in the computation of either the real or imaginary component of a minimum-phase-shift network, having the component given.[1] $B(x)$ is tabulated for x = [0(.01).97(.005).99(.002)1; 5D] rounded off from computations to 8D [see *MTAC*, v. 2, p. 184]. The methods of computation and checking are explained in detail. After the difference test indicated that the computed values were all within one unit in the eighth decimal place, the values were rounded off to 5D. It is therefore hoped that the table is free from error.

Extracts from introductory text

[1] Hendrik W. Bode, *Network Analysis and Feedback Amplifier Design*, New York, 1945, chapters 14–15.

358[M].—Harvard University, Computation Laboratory Reports for the U. S. Bureau of Ships: No. 2, June, 1944, *Evaluation of the Function* $S(b, h) = \int_0^h \sin (x^2 + b^2)^{\frac{1}{2}} dx/(x^2 + b^2)^{\frac{1}{2}}$; by H. H. Aiken & R. V. D. Campbell. 5 leaves mimeographed on one side of each. No. 10, Oct. 1944, *Evaluation of the Function* $C(b, h) = \int_0^h \cos (x^2 + b^2)^{\frac{1}{2}} dx/(x^2 + b^2)^{\frac{1}{2}}$, by H. H. Aiken, H. A. Arnold, R. V. D. Campbell, & R. R. Seeber. 9 leaves mimeographed on one side of each. 20.3 × 26.7 cm. These tables are available only to certain Government agencies and activities.

These integrals arise in considerations connected with coupled antennae. Their values are tabulated for h = .5(.5)6.5, b = [0(.1)6.3; 5D]. In the table of $S(b, h)$ all arithmetic work was carried to 15D. Hence all tabular entries should be accurate. In the table of $C(b, h)$ an error of less than 3×10^{-5} is assured for all results, and in most cases it is less than 10^{-5}.

MATHEMATICAL TABLES—ERRATA

References have been made to Errata in RMT **338** (Nelshuler), **340** (Zimmermann), **341** (Elznic & Valouch), **342** (Marchin), **343** (Févrot), **344** (Elznic), **345** (Cherwell), **346** (Delfeld), **348** (Cunningham), **352** (Cossar & Erdélyi), **353** (Herman & Meyer), **354** (Jordan, Okaya), **355** (Rosenbach, Whitman & Moskovitz), N **63** (Leibniz), **64** (Womersley), **65** (Rosenbach, Whitman & Moskovitz), **66** (Crommelin, Meares).

In RMT 311, v. 2 p. 128, we listed five errors which E. L. KAPLAN had noted in Tables K and E in K. HAYASHI *Tafeln der Besselschen, Theta-, Kugel- und anderer Funktionen,*[1] Berlin, 1930, p. 72–81. In *Math. Reviews*, v. 7, 1946, p. 485, L. J. C. pointed out that Hayashi himself had corrected four of these errors [in a "Berichtigungen"-sheet for the volume, dated Fukuoka, 1932] and that the fifth error had been noted by us in *Scripta Math.* v. 3, 1936, p. 365. L. J. C. also adds that Kaplan listed six errors in E, all of which (and no more) were found by him in 1933, by differencing. Regarding Kaplan's remark that the last figure in MILNE-THOMSON's ten-figure table of the complete elliptic integrals was "unreliable" in the last figure, L. J. C. noted that "records show about 70 errors (in 200 values) of a unit each, one of two units, and none greater; this rather loose statement about a perfectly useful table is somewhat misleading."

[1] Compare review by L. J. C., *Math. Gazette*, v. 17, 1933, p. 283–284.

94. SCHUYLER M. CHRISTIAN, "Integration of $\sin^2 xdx/x$," *Phys. Rev.*, s. 2, v. 69, May 1 and 15, 1946, p. 546.

The table of 12 entries here given is reproduced below. This integral can be expressed as

$$\int_0^x \sin^2 xdx/x = \tfrac{1}{2}\gamma + \tfrac{1}{2}\ln 2x - \tfrac{1}{2}\,\mathrm{Ci}\,2x,$$

where $\gamma = .5772\,1566\,49\ldots$ is Euler's constant, and $\mathrm{Ci}\,x = \int_\infty^x \cos t dt/t$.

Using the tables NBSMTP, *Tables of Sine, Cosine and Exponential Integrals*, v. 2, 1940, and NBSMTP, *Tables of Natural Logarithms*, v. 1, 1941, I arrived at the following results:

x	Christian	Corrington
.5	0.119 906	0.1199 0587
1	0.423 691	0.4236 9101
2	1.052 246	1.0522 4586
3	1.218 513	1.2185 1619
4	1.267 080	1.2671 1166
5	1.462 628	1.4626 2860
6	1.555 950	1.5559 5116
7	1.573 438	1.5734 3832
8	1.683 106	1.6820 0229
9	1.748 135	1.7555 3126
10	1.764 305	1.7642 6406
11	1.833 071	1.8333 0871

Thus eight of the twelve values given by Professor Christian appear to be incorrect.

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EDITORIAL NOTE: Professor Christian is a professor of physics at Agnes Scott College, Decatur, Georgia.

95. FMR, *Index*. See *MTAC*, v. 2, p. 13–18, 136, 178–181.

A. P. 87, 5.16 log π to 101D, by PARKHURST 1889, is omitted; l. 8, *for* $\sqrt{6/\pi}$, *read* $\sqrt[3]{6/\pi}$. Perhaps it may be added that I have the following more extended fractional powers of π than three ms. values recorded in the *Index*: (a) p. 86, $\pi^{-1/3}$(60D+), 310D; (b) p. 87, $\pi^{1/3}$(51D), 110D; (c) p. 87, $\pi^{2/3}$(42D), 110D.

P. 196, l. −4, the upper limit in each integral should be infinity, not x.

P. 255, l. 1, *for* J_{-n-}, *read* $J_{-n-\frac{1}{2}}$.

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B. P. 250, move "4 dec." to the left.

P. 253, l. 5, *for* $x = 15(1)25$, *read* 16(1)25; also $(16 - p)$ dec. is not correct for $p = 12(1)14$.

P. 389, under A. DeMorgan, 1837 and 1845 editions of "Theory of Probabilities" are noted, but there was still another edition in an undated volume of 1847, entitled *The Encyclopædia of Pure Mathematics: Comprising* [here follow titles of articles and names of authors of 12 contributions]. London and Glasgow, Richard Griffin & Co. Then come p. [303]–844, 1–208, 305–544+16 plates, reprinted from *Encyclopædia Metropolitana.*

A review of the *Index* in *Engineering*, v. 162, 18 Oct. 1946, p. 365, has the following: "The only misprints noted occur on p. 59, where the 039, corrected to 093, is itself correct and where the two zeros on the following line appear to be superfluous. The statement has been made, too—though we cannot recall its source—that the *Essay on Probabilities*, ascribed to De Morgan, on p. 389, and which certainly bears his name upon the title page, was not, in fact, written by him." The first error refers to the fifth and sixth decimals in the value of s_{10} in the table of Oettinger 1856; the numbers quoted under *For* and *Read* respectively, should simply be interchanged. The *Memoir of Augustus De Morgan* by his wife, with entries in the list of his Writings of not only the *Essay*, 1838, in the Cabinet Cyclopaedia series, but also of the long article on "Theory of Probabilities" in *Encyclopædia Metropolitana*, 1837, seems to render the reviewer's surmise untenable. Moreover, anyone familiar with De Morgan's characteristic writings in the field with which the volume deals would naturally assign the *Essay* to him, even if it were without title-page.

R. C. A.

96. M. B. Kraïtchik, "Les grands nombres premiers," *Mathematica* (Cluj), v. 7, 1933, p. 92–94. See RMT **36**.

The table contains what purports to be 94 primes successively numbered from no.1, 1 030 330 938 209, to no.94, the largest known prime $2^{127}-1$, containing 39 digits. There are the following errors in this table:

9 *For* $2^{60}-1$, *read* $2^{59}-1$
23 *Delete* this line, and *insert*[1] between nos. 6 and 7 the entry: 2748779069441 = $5 \cdot 2^{39} + 1$, factor of $2^{2^{36}} + 1$ (Seelhoff)
26 *Delete* this line. Entry = 550801·23650061
34 *For* $2^{135} + 1$, *read* $3^{135} + 1$
38 *For*[2] 76076..., *read* 76096...
42 *For* $5^{75} + 1$, *read* $5^{75} - 1$
46 *For* $2^{65} + 1$, *read* $2^{65} - 1$
51 *For* $10^{27} + 1$, *read* $10^{27} - 1$
52 *For*[2] 549767..., *read* 549797...
65 *Delete* this line. Entry = 1210483·25829691707
66 *For* $2^{111} + 1$, *read* $3^{111} + 1$
71 *For*[2] 16024···, *read* 16624···; *for* $2^{170} + 1$, *read* $2^{270} + 1$
88 *Delete* this line. Entry = 394783681·46908728641

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[1] An erratum noted by Th. Gosset, *Sphinx*, v. 3, 1933, p. 125.
[2] These typographical errata were given by N. G. W. H. Beeger, *Mathematica* (Cluj), v. 8, 1934, p. 212.

Editorial Note: In *Sphinx*, v. 3, 1933, p. 100–101, Kraïtchik gives what purports to be a list of 161 prime numbers greater than 10^{12}. Five of the above errata apply also to this list, namely: nos. 23, 26, 42, 65, 71 (first part).

97. S. LUBKIN & J. J. STOKER, "Stability of columns and strings under periodically varying forces," *Quart. Appl. Math.*, v. 1, 1943, p. 232–235. See *MTAC*, v. 1, p. 415.

The authors list 48 errors in the tables of this article in *Quart. Appl. Math.*, v. 4, Oct. 1946, p. 309–310.

98. F. ZICKERMANN, "Ueber Arbeitsmessung bei Wechselstrom mit besonderer Berücksichtigung des Drehstromarbeitsdynamometers von Siemens & Halske," *Elektrot. Z.*, v. 12, 1891; on p. 511 is a table of $f(x, y) = \tan y \cdot \tan (x - y)$.

This table is for $f(x, y) \leqslant 1$, $y = 0(1°)45°$, $x - y = [0(5°)90°; 3D]$. By differencing the following errata were readily found: $y = 9°$, $x - y = 75°$, *for* 0,581, *read* 0,591; $y = 20°$, $x - y = 65°$, *for* 0,770, *read* 0,781.

S. A. J.

UNPUBLISHED MATHEMATICAL TABLES

For other unpublished tabular numbers see RMT **346**, **348**; MTE **95**.

52[K].—STUART R. BRINKLEY, JR. & RUTH F. BRINKLEY, *Table of the probability of hitting a circular target.* Ms. prepared by, and in the possession of the authors, R. D. 3, Coraopolis, Pennsylvania.

It is readily verified that the probability that the point of impact of a missile aimed at the origin of a rectangular system of coordinates will lie within a circle of radius r whose center is at a distance R from the origin is

$$p(r, R) = e^{-R^2} \int_0^{r^2} e^{-t} I_0(2Rt^{\frac{1}{2}})dt,$$

if the probability distributions for the pair of rectangular coordinates are Gaussian; I_0 being the modified Bessel function of the first kind, zeroth order. A table has been prepared of the function $p(r, R)$, for $r = 0(.1)5$; $R = [0(.1)5; 5S]$. The construction of the table was made possible by a grant from the George Sheffield Fund of Yale University.

We undertook the construction of the table because of applications of the related functions

$$P(x, y) = e^{x+y} p(\sqrt{x}, \sqrt{y}),$$

which is the solution of

$$\frac{\partial^2 P}{\partial x \partial y} = P, \qquad P(o, y) = 0, \qquad P(x, o) = e^x - 1.$$

It appears to have numerous and rather diverse applications. It occurs, for example, in the theory of ion-exchange water softening columns (H. C. THOMAS, Amer. Chem. Soc., *Jn.*, v. 66, 1944, p. 1664f), the theory of heat exchange between a fluid and a porous solid (A. ANZELIUS, *Z. angew. Math. Mech.*, v. 6, 1926, p. 291f, and T. E. W. SCHUMANN, Franklin Inst., *Jn.*, v. 208, 1929, p. 405f), and in the extension of the latter theory to the case where the solid is generating heat, as in a catalytic chemical reaction (S. R. BRINKLEY, unpublished paper, in the press). However, the function P is considerably less well suited to tabulation than is the function p.

S. R. BRINKLEY, JR. & R. F. BRINKLEY