TABLE ERRATA

574.—A. ERDÉLYI, W. MAGNUS, F. OBERHETTINGER & F. G. TRICOMI, *Higher Transcendental Functions*, vol. 2, McGraw-Hill Book Co., New York, 1953.

On p. 103, the right side of formula 52 should read in part:

$$-\frac{1}{2} + \pi^{1/2}x^{-1}\frac{\Gamma(\nu+1)}{\Gamma\left(\nu+\frac{1}{2}\right)}\left(1-\frac{t^2}{x^2}\right)^{\nu-1/2}, \qquad 0 < t < x < \pi.$$

The right side of formula 54 corresponding to $0 < x < t \leqslant \pi$ should read $-1/\pi^{1/2}$ instead of $-(\frac{1}{2}+\nu)/\pi^{1/2}$. The portion of this formula relating to the interval $0 < t < x < \pi$ is correct, but a simpler expression for this region is

$$-\frac{1}{\pi^{1/2}} + \frac{\pi^{1/2}(2\nu+1)}{x}\int_0^{\cos^{-1}(t/x)} \sin^{2\nu}\theta\, d\theta,$$

which may be written in terms of the hypergeometric function as given, or as

$$-\frac{1}{\pi^{1/2}} + \frac{\pi\Gamma\left(\nu+\frac{3}{2}\right)}{x\Gamma(\nu+1)} - \frac{\pi^{1/2}(2\nu+1)t}{x^2}F\left(\frac{1}{2}-\nu, \frac{1}{2}, \frac{3}{2}; \frac{t^2}{x^2}\right).$$

These formulas have been reproduced as formulas (12) and (13) on p. 123 of [1], and accordingly the same corrections are applicable therein.

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1. V. MARGULIS, *Handbook of Series for Scientists and Engineers*, Academic Press, New York and London, 1965.

On p. 250, Eq. 11.5(17), which is Rodrigues' formula for the associated Legendre functions, should end with $(1 - x^2)^n$ instead of $(1 - x^2)^m$.

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EDITORIAL NOTE: For notices of additional errata in this volume see *Math. Comp.*, v. 30, 1976, pp. 675–676, MTE **524** and the editorial footnote thereto. Further errors in the book by Margulis are noted in *Math. Comp.*, v. 21, 1967, pp. 750–751, MTE **417**.

575.—W. MAGNUS, F. OBERHETTINGER & R. P. SONI, *Formulas and Theorems for the Special Functions of Mathematical Physics*, third enlarged edition, Springer-Verlag, New York, 1966.

The following necessary typographical corrections have been noted.

page	*line*	*for*	*read*
92	9	a	α
99	5	$b^{-\nu}$	b^{ν}
124	−7	4.13.1	3.13.1
167	−4	;;	;
212	12	$-\dfrac{2}{1+x}$	$\dfrac{2}{1+x}$
213	−8	$)_3$	$)_x$
214	6	t	z
217	−6	$\Sigma\,\underline{\Gamma(}$	$\Sigma\,\underline{(}$
242	6, 7	t	x
250	12	4	12
252	−7	$e^{-x^2/2}$	$e^{x^2/2}$
254	9	$\Sigma_{m=0}^{\infty}$	$\Sigma_{m=0}^{n}$
257	−10	U	U_n
268	−6	$-az$	$-aw$
285	13	$\int_z^\infty$	$e^z\int_z^\infty$
327	3	$e^{z^2/4}$	$e^{-z^2/4}$
327	12	$\sqrt{\pi}$	$\sqrt{2\pi}$
332	2, 4	$e^{-i\pi\nu}$	$e^{i\pi\nu}$
332	9	$\Sigma_{n=0}^{\infty}$	$\Sigma_{n=0}^{N}$
339	6	Erf	Erfc
340	3	e^x	e^{-x}
342	2	$\sqrt{\dfrac{\pi}{2}}\;a$	$\sqrt{\dfrac{\pi}{2}}\;a^{1/2}$
342	12 (second integral)	e^{-t}	e^{t}
347	2	e^{-x}	e^{x}
356	−1	a	n

Furthermore, on p. 86, line 1 *delete* a, and on p. 229, line 9 *delete* n. On p. 93, line 7 in the right member of the equation *read* I_ν. Similarly, on p. 250, line 7 *read* $2^{n/2}He_n(x\sqrt{2})$. On p. 471, line −7 *read* $\Sigma_{l=0}^{n}$; in line −4 *read*

$$\Sigma_{l=0}^{n}((-1)^l(n+l)!/(n-l)!(2l)!)(2\sin x)^{2l};$$

and on p. 493, line −10 *read* ε_n.

It should also be noted that the formula on p. 28, line −3 is incorrect.

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On p. 132, the right side of the last formula should read (in part):

$$-\frac{1}{2}+\pi^{1/2}x^{-1}\frac{\Gamma(\nu+1)}{\Gamma\left(\nu+\frac{1}{2}\right)}\left(1-\frac{t^2}{x^2}\right)^{\nu-1/2}, \qquad 0<t<x<\pi.$$

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EDITORIAL NOTE: For notices of additional errors in this and earlier editions, see *Math. Comp.*, v. 34, 1980, p. 332, MTE **569** and the editorial footnote thereto.

576.–P. F. BYRD & M. D. FRIEDMAN, *Handbook of Elliptic Integrals for Engineers and Physicists*, 2nd rev. ed., Springer-Verlag, New York, 1971.

On p. 12 formula 115.01 gives expressions for $F(\theta \pm i\phi, k)$ and $E(\theta \pm i\phi, k)$ in terms of $F(\beta, k)$, $E(\beta, k)$, $F(A, k')$, and $E(A, k')$ with real arguments. However, the amplitudes A and β of the latter integrals are defined implicitly in terms of θ and ϕ. Explicit expressions for these quantities are:

$$\sin\beta = 2\sin\theta\Big\{\big[(1 + k\sin\theta\cosh\phi)^2 + (k\cos\theta\sinh\phi)^2\big]^{1/2} + \big[(1 - k\sin\theta\cosh\phi)^2 + (k\cos\theta\sinh\phi)^2\big]^{1/2}\Big\}^{-1},$$

$$\sin A = \tanh\phi/\,(1 - k^2\sin^2\beta)^{1/2}.$$

On p. 39 the sections referenced in the footnote should be those numbered 813 and 814, and in Section 164.02 the left side of the last equation should read $\Pi(\phi, \alpha_1^2, k_1)$.

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EDITORIAL NOTE: For previous notices of errata in this handbook see *Math. Comp.*, v. 26, 1972, p. 597, MTE **488** and the editorial footnote thereto.

577.–I. S. GRADSHTEYN & I. M. RYZHIK, *Table of Integrals, Series, and Products*, 4th ed., Academic Press, New York, 1965.

Further corrections required in this edition are the following:

P. xxxii: The lower limit of the integral defining $E_n(z)$ should be 1 instead of 0.

P. 34: Delete x from the second cosine term on the right side of formula 1.395(1).

P. 367: In formula 3.614 the conditions on the parameters should read $0 < b \leqslant a \leqslant 1, p = 1, 2, 3, \ldots$. (In the source [1] of this formula, the relative size of a and b is not specified.) The alternative formula

$$\int_0^\pi \frac{\sin x \sin px\, dx}{(a^2 - 2ab\cos x + b^2)(1 - 2a^p\cos px + a^{2p})} = \frac{\pi a^{p-1}}{2b(b^p - a^{2p})}$$

holds in the less restrictive range $0 < a \leqslant 1, a^2 < b, p = 1, 2, 3, \ldots$.

P. 384: In the right member of formula 3.666(1), read $(\beta^2 - 1)^{\mu/2}$ in place of $(z^2 - 1)^{\mu/2}$.

P. 908: The right member of formula 8.128(3) should read $k[K(k) + iK'(k)]$, and all three formulas in 8.128 should carry the restriction $\mathrm{Im}(k) < 0$.

P. 929: In formula 8.241(1), for $x > 1$ read $x < 1$.

P. 944: In formula 8.363(6) the second term on the right side should be $-\ln(2q)$.

P. 948: In formula 8.375(1) the summation symbol Σ' should be used in order to indicate that only one-half the last term is to be taken. An alternative form of this sum is

$$-2 \sum_{k=0}^{E(q/2)-1} \cos \frac{p(2k+1)\pi}{q} \ln \sin \frac{(2k+1)\pi}{q}.$$

The same error occurs in the source [2] of this formula. As noted in MTE **428** (*Math. Comp*., v. 22, 1968, pp. 903–907), the range of p should be $1, 2, 3, \ldots, q - 1$. Also, the reference following this formula should be to 8.363(5)–(7).

P. 1020: In formula 8.835(3) the algebraic sign between the terms on the right side should be minus instead of plus.

P. 1067: In formula 9.254(2) a minus sign should be prefixed to the right side.

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1. D. BIERENS DE HAAN, *Nouvelles Tables d'Intégrales Définies*, Hafner Publishing Co., New York, 1957.

2. N. NIELSEN, *Handbuch der Theorie der Gammafunktion*, Teubner, Leipzig, 1906.

EDITORIAL NOTE: For previous notices of errata in this edition see *Math. Comp*., v. 33, 1979, p. 1377, MTE **565** and the editorial footnote thereto.

578.–HENRY E. FETTIS & JAMES C. CASLIN, *A Table of the Complete Elliptic Integral of the First Kind for Complex Values of the Modulus*, Part I, Report ARL 69-0172, Aerospace Research Laboratories, Office of Aerospace Research, United States Air Force, Wright-Patterson Air Force Base, Ohio, November, 1969. [See *Math. Comp*., v. 24, 1970, pp. 993–994, RMT **76**.]

Page 3: The second term on the right side of Eq. 7 should be

$$+ \frac{a \cdot b}{c \cdot 1!} z.$$

Page 16: In Eq. 49 the numerator of the right member should read $2\sqrt{\rho_n}$, and in Eq. 51 the numerator of the third term on the right side should be 2 instead of 3.

Page 20: In lines 2 and 6 replace k and k' by K and K'; also in the formulas on lines 3 and 7.

An errata sheet distributed to the original recipients of this report gave the following typographical corrections:

Page 4, line 9: Read "relations" for "reactions."

Page 10, line 11: Read, in part, " . . . $K(k)$ when k is outside the unit circle."

Page 15, Eq. 46: Read ϕ_1 for ϕ.

Page 23, line −2: Read $w = \frac{1}{2} + iy$.

Page 24, line 5: Read τ-plane instead of -plane.

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579.—E. T. WHITTAKER & G. N. WATSON, *A Course of Modern Analysis*, 4th ed., Cambridge Univ. Press, New York and London, 1927, and subsequent reprints.

On p. 289, the first equation should read:

$$\frac{\Gamma(a)\Gamma(b)}{\Gamma(c)} F(a, b; c; z) = \frac{\Gamma(a)\Gamma(b-a)}{\Gamma(c-a)}(-z)^{-a}F(a, 1-c+a; 1-b+a; z^{-1})$$
$$+ \frac{\Gamma(b)\Gamma(a-b)}{\Gamma(c-b)}(-z)^{-b}F(b, 1-c+b; 1-a+b; z^{-1}).$$

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EDITORIAL NOTE: For a previously announced error in this edition, see *Math. Comp.*, v. 33, 1979, p. 431, MTE **560**.

580.—P. F. BYRD & M. D. FRIEDMAN, *Handbook of Elliptic Integrals for Engineers and Physicists*, Springer, New York and Berlin, 1953, 2nd rev. ed., 1971.

The correction noted in MTE **557** and MTE **559** (*Math. Comp.*, v. 33, 1979, pp. 430–431) should also be made in formula 911.01 of this handbook. The correct expansion for sn^2 can be obtained by differentiating formula 905.01, and, as noted by O. G. Ruehr (*SIAM Rev.*, v. 22, 1980, p. 234), is given in [1] (p. 25, formula 2.23) and in [2] (Section 22.735, Ex. 5).

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1. F. OBERHETTINGER, *Fourier Expansions*, Academic Press, New York, 1973.
2. E. T. WHITTAKER & G. N. WATSON, *A Course of Modern Analysis*, Cambridge Univ. Press, fourth edition reprinted, 1973.

581.—H. H. GOLDSTINE, *A History of Numerical Analysis from the* 16*th through the* 19*th Century*, Springer, New York, 1977.

On page 304, lines 9 and 10, *for*

$$\frac{(x-b)^\beta(x-c)^\gamma \cdots (x-l)^\lambda}{(a-b)^\beta(a-c)^\gamma \cdots (a-l)^\lambda}$$
$$\cdot\Big[f(a) + f'(a)(x-a) + \frac{1}{2!}f''(a)(x-a)^2$$
$$+ \cdots + \frac{1}{(\alpha-1)!}f^{(\alpha-1)}(a)(x-a)^{\alpha-1}\Big],$$

read

$$(x-a)^\alpha(x-b)^\beta(x-c)^\gamma \cdots (x-l)^\lambda$$
$$\cdot\sum_{s=0}^{\alpha-1}\left\{\sum_{j=s}^{\alpha-1}\frac{\left[(x-b)^{-\beta}(x-c)^{-\gamma}\cdots(x-l)^{-\lambda}\right]_{x=a}^{(j-s)}}{s!\,(j-s)!\,(x-a)^{\alpha-j}}\right\}f^{(s)}(a).$$

Lines 7 and 8 are also incorrect, because the author overlooked the need for the expansions of $1/(z-b)^{\beta}$, $1/(z-c)^{\gamma}, \ldots, 1/(z-l)^{\lambda}$ in powers of $z-a$ to be combined with the expansion of $f(z)/(x-z)$ in order to obtain the coefficient of $(z-a)^{\alpha-1}$. The original derivation [1] by Hermite of his osculatory interpolation formula does not have this error.

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1. *J. Reine Angew. Math.*, v. 84, 1878, pp. 70–79.

582.–I. S. GRADSHTEYN & I. M. RYZHIK, *Table of Integrals, Series, and Products*, 4th ed., Academic Press, New York, 1965.

On p. 371 formula 3.624(6) is valid only for integer values of a. This restriction is not stated.

For all real values of a the appropriate formula is

$$\int_0^{\pi/2}\left(\frac{\sin ax}{\sin x}\right)^2 dx = \frac{\pi a}{2} + \frac{1}{2}\sin a\pi\left\{1 + a\left[x\left(\frac{a}{2}\right) - x\left(\frac{1+a}{2}\right)\right]\right\},$$

where $\psi(z) = d \ln \Gamma(z)/dz$.

For a derivation of this result, see [1].

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1. H. E. FETTIS, "On some trigonometric integrals," *Math. Comp.*, v. 34, 1980, pp. 1325–1329.

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