MATHEMATICAL TABLES—ERRATA

References have been made to Errata in the introductory article of this issue, by Bickley (Goldstein, Hidaka, Lubkin & Stoker, Morse & Rubenstein), and in RMT **196** (Cayley, Kavân), **199** (Wright), **205** (Buchholz).

62. JAMES BURGESS, "On the definite integral $\frac{2}{\sqrt{\pi}}\int_0^t e^{-t^2}dt$, with extended tables of values," R. So. Edinburgh, *Trans.*, v. 39, 1898, p. 257–321.

A. The great tables of this number of the *Transactions* do not begin until p. 283. In the earlier pages are various extended preparatory values of constants. Errors in these values in final digits are here summarized.

On p. 258 are 30-place values for $\frac{1}{2}\sqrt{\pi}$ and $2/\sqrt{\pi}$, and log $(2/\sqrt{\pi})$

$\frac{1}{2}\sqrt{\pi}$ *for* 670, *read* 671
$2/\sqrt{\pi}$ *for* 120, *read* 122.

These corrections are based on values of $\sqrt{\pi}$ and $1/\sqrt{\pi}$, computed to 317D and 310D, respectively (see *MTAC*, p. 200). Log $(2/\sqrt{\pi})$ is entirely free from error.

On p. 279 is a table of 31 constants and their logarithms. Of the 62 numbers comprising the table, each to 23D, only 12 were found to be entirely correct. Most of the errata are attributable to the fundamental error in Burgess' approximation to ρ. In order to correct this table each of the values was calculated to at least 32D.

	Constants		Logarithms	
	for	*read*	*for*	*read*
ρ	3 51	1 42	30 78	28 88
$1/\rho$	615 78	224 95	69 22	71 12
ρ^2	3 25	1 26	61 56	57 75
$\rho\sqrt{2}$	35 151 103 81	81 743 202 23	7 65	5 75
$2\rho\sqrt{\pi}$	009 806 981 30	298 912 773 92	20 15	18 25
$2\rho/\sqrt{\pi}$	9 82	7 46	8 88	6 98
$2\rho^2/\sqrt{\pi}$	59 638 137 627 19	00 537 595 982 03	459 350 094 499 66	359 350 094 495 86
$1/(\rho\sqrt{\pi})$	1 42	6 60	3 59	5 49
$1/(2\rho\sqrt{\pi})$	0 71	3 30	79 85	81 75
$\rho\sqrt{\pi}$	004 903 490 65	149 456 386 96	6 41	4 51

	for	*read*	*for*	*read*
$1/(\rho\sqrt{2})$	0 58	7 08	2 35	4 25
$\rho\pi^{1/6}$	3 01	0 48	5 99	4 09
$\rho(\pi/4)^{1/10}$	3 06	1 02	3 16	1 26
$\rho\sqrt{(\pi-2)}$	9 73	7 50	10 25	08 35
$\rho\sqrt{(15\pi-8)/6}$	4 65	2 47	4 00	2 10
$\rho\sqrt{(945\pi-128)/40}$	50 44	47 52	9 57	7 57
$\rho(4/3)^{\frac{1}{2}}$	5 56	3 15	7 00	5 10
$\rho(4/3)^{1/4}$	3 34	1 10	3 89	1 99
$\rho(113/45)^{\frac{1}{2}}$	6 05	2 74	40 23	38 33
$\rho(8/15)^{1/6}$	61 27	59 39	90 77	88 86
e^{ρ^2}	6 89	4 38	8 09	7 22
$e^{\rho^2}\sqrt{\pi}$	592 189 588 00	899 608 129 83	23 629 623 72	83 629 622 85
$e^{-\rho^2}$	2 06	3 65	1 91	2 78
$2e^{-\rho^2}/\sqrt{\pi}$	3 84	5 63	02	89
$e/2^{3/2}$	42	92		
$\sqrt{(\pi/2)}$	15 207 88	51 207 88		

The table on p. 281 was checked by comparison of Burgess' results with a 15-place table which I computed with the aid of NYMTP, *Tables of Probability Functions*, v. 1. The great carelessness displayed in the preparation of the table is illustrated by log .08888591 given instead of log .088885991, and log. 272460716 instead of log .272462716.

	t			log *t*	
H	*for*	*read*	*H*	*for*	*read*
.1	85 991	55 990	.1	832 9230	686 7124
.3	6	5	.2	59	49
.4	49	59	.3	3 8936	7 0795
.6	79	81	.4	0986	1098
.7	9	8	.6	43	61
.9	3	4	.7	85	78
			.8	5	7
			.9	87	90

On p. 282 are given 30-place values of e^{-x}, and 27-place values (with one exception) of $2e^{-x}/\sqrt{\pi}$, for $x = 0(1)10$, and $\frac{1}{2}$. I recalculated each of these values to at least 38D. The value of e^{-x} for $x = \frac{1}{2}$ should end in 991 instead of 990. If for $x = \frac{1}{2}$ the value of $2e^{-x}/\sqrt{\pi}$ had been given to 27 instead of to 26 places, 367 should be substituted for 37. All other values in this table are correct. The value of $e^{-\frac{1}{2}}$ was computed to 80D and thus the value to 72D, given by PETERS and STEIN in the *Anhang* to Peters' *Zehnstellige Logarithmentafel*, v. 1, p. 12, was shown to be entirely correct.

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B.

page	*t*	error in	*for*	*read*
283	0.015	H	0.0179...	0.0169...
	0.017	$2e^{-t^2}/\sqrt{\pi}$	...53126	...53113
	0.055	H	...98209	...98333
284	0.110	argument	0.010	
	0.115	argument	0.015	
	0.155	$2e^{-t^2}/\sqrt{\pi}$	1.0815...	1.1015
	0.156	$2e^{-t^2}/\sqrt{\pi}$	1.0812...	1.1012
	0.157	$2e^{-t^2}/\sqrt{\pi}$	1.0809...	1.1009
	0.158	$2e^{-t^2}/\sqrt{\pi}$	1.0805...	1.1005
	0.159	$2e^{-t^2}/\sqrt{\pi}$	1.0802...	1.1002
	0.160	$2e^{-t^2}/\sqrt{\pi}$	...50273	...59273
	0.188	$2e^{-t^2}/\sqrt{\pi}$	...94388	...94288
285	0.291	H	...9220558	...9320558
286	0.367	H	...0689	...0679
287	0.429½	Δ_1	939383	938298
292	Heading	$2e^{-t^2}/\sqrt{\pi}$	$2e^{-t^2}/\sqrt{w}$	
	Heading	Δ_2	Δ	
	0.987½	Δ_1	...5541	...5549
296	1.011½	Δ_1	...615273...	...615373...
	1.036	$\log[2e^{-t^2}/\sqrt{\pi}] + 10$	...85280...	...85290...
298	1.122	$\log[2e^{-t^2}/\sqrt{\pi}] + 10$	...602099	...606210
299	1.154	$\log[2e^{-t^2}/\sqrt{\pi}] + 10$	...98049...	...98149...
301	1.250	$\log[2e^{-t^2}/\sqrt{\pi}] + 10$	...30829	...30833
302	1.308	H	...30256	...30286
	1.342	Δ_2	...36988	...36888
304	1.405	Δ_2	...406067	...406057
306	1.516	$\log[2e^{-t^2}/\sqrt{\pi}] + 10$	...8473	...8743
	1.564	H	...58239...	...58739...
308	1.798	H	...1899...	...1799...
310	1.966	H	...7457	...7447
	1.998	H	...226026	...326026
315	2.492	$\log[2e^{-t^2}/\sqrt{\pi}] + 10$	7.355468...	7.355458...
317	2.630½	Δ_1	...890673	...490673
318	2.782	Δ_4	91	1091
321	3.5	H	...8901628	...6901628
	4.1	H	...932999724	...993299972
	4.7	H	...980048	...970047

L. J. C.

C. *Integrand* $2e^{-t^2}/\pi^{\frac{1}{2}}$. For the following values of t the last figure should be (a) increased, (b) decreased, by a unit: (a) .187, 1.43, 3.3; (b) .947, 1.076, 1.077, 1.112, 1.230. P. 295, t = 3, *for* ...983, *read* ...947.

Integral H. For the following values of t the last figure should be (a) increased, (b) decreased by a unit: (a).397, 1.274, 1.276, 1.392, 2.504, 2.506, 2.510, 2.514, 2.552, 2.556, 2.628, 2.630, 2.634, 2.692; (b) .886, .927, .983, 1.260, 1.347, 1.466, 2.524, 2.642. 2.658, 2.662, 2.666, 2.668, 2.670, 2.898, 3.4.

P. 317,	t = 2.644, *for*	... 263, *read*	... 261,
	t = 2.646, *for*	... 857, *read*	... 855,
	t = 2.648, *for*	... 153, *read*	... 150,
	t = 2.650, *for*	... 978, *read*	... 976,
	t = 2.652, *for*	... 264, *read*	... 262,
	t = 2.654, *for*	... 056, *read*	... 054,
	t = 2.656, *for*	... 529, *read*	... 527,
	t = 2.660, *for*	... 963, *read*	... 961,
p. 321, H,	t = 6, *for*	...516 075, *read*	...519 737,
p. 321, G,	t = 4.7, *for*	... 544, *read*	... 545,
	t = 6.0, *for*	... 069, *read*	... 071.

On p. 314 the argument 2.880 should read 2.380.

NYMTP

EDITORIAL NOTE: In the above lists four errors in the 96 entries on p. 321 are noted (if two unit errors and one two-unit error, in the last figure are omitted). But a report of J. W. WRENCH JR. (to be published in our next issue) on the 24 entries of the L-column, shows that 13 are in error, several seriously. Accordingly J. O. IRWIN, (BAASMTC, *Mathematical Tables, volume VII, The Probability Integral*, by W. F. SHEPPARD, Cambridge, 1939, p. x), perhaps correctly states that this table is "seriously infested with error." In the value of H given by Burgess in his footnote on p. 321, *for* ...483 925, *read* ...480 263.

63. M. KRAITCHIK, *Recherches sur la Théorie des Nombres*, v. 1, Paris, 1924.

On p. 131–191 is Table I which gives the exponent γ of 2 mod p, for p < 300,000. For p > 100,000 I have discovered the following errata (p. 159–186):

p	γ	γ
104161	*for* 60	*read* 30
114601	2	6
121081	4	20
127681	8	152
267481	1	2

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64. E. C. J. v. LOMMEL, Bayer. Akad. d. Wissen., *math. natw. Abt., Abh.*, v. 15, 1886, p. 648, T.IIIa, Maxima and minima of the Fresnel integrals; also G. N. WATSON, *A Treatise on the Theory of Bessel Functions*, 1922 and 1944, p. 745. Compare MTE **58**, p. 366f.

The 32 values of this table have been completely checked and only the following four errata were found:

$S(2x/\pi)^{\frac{1}{2}}$			$C(2x/\pi)^{\frac{1}{2}}$		
x	*for*	*read*	x	*for*	*read*
6.283185(=2π)	.343415	.343416	10.995574(=7π/2)	.380389	.380391
15.707963(=5π)	.600361	.600362	45.553093(=29π/2)	.559088	.559087

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65. NYMTP, *Tables of Lagrangian Interpolation Coefficients*, New York, 1944. See *MTAC*, p. 314f.

P. 391, the entry corresponding to $n = 8$, $m = 1$, and $k = -2$, should be negative.

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66. R. M. PAGE, 14000 *Gear Ratios . . .* , New York, The Industrial Press, 1942. See RMT **87**, p. 21f.

In MTE **53**, p. 326f, I gave a long list of the errors in this table found by Mr. S. JOHNSTON. We had hoped that the list would prove to be complete, but now Mr. F. LANCASTER, of Huddersfield, writes that he has checked Table 4, and found the following additional errors:

Page	N	*For*	*Read*
371	621	23 × 37	23 × 27
388	3904	59 × 66	Delete
391	4901	67 × 73	Delete
393	5432	46 × 118	Delete
400	9682	94 × 113	94 × 103

There are also three errors of position—less serious because they are unlikely to be misleading.

Page	N	
384	2860	52 × 55 should follow 44 × 65
398	8100	Transpose 81 × 100 and 75 × 108
401	10192	Transpose 98 × 104 and 91 × 112

L. J. C.

UNPUBLISHED MATHEMATICAL TABLES

Reference has been made to an unpublished table in RMT **202** (BISSHOPP); also to results by Ince and Bickley, *MTAC*, p. 412, 417.

34[A, B].—*Table of $x^n/n!$*, Manuscript prepared by, and in possession of, the NYMTP.

This table is for $x = 0(.05)5$, $n = 1(1)20$, to 10S.

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MECHANICAL AIDS TO COMPUTATION

15[Z].—H. P. KUEHNI and H. A. PETERSON, "A new differential analyzer," *Electrical Engineering*, v. 63, May, 1944, p. 221–227. (Also in A.I.E.E., *Trans.*, v. 63, 1945, and discussion p. 429–431) 20.5 × 28.6 cm.

The article describes a differential analyzer of the Kelvin wheel-and-disc type which was built by the General Electric Company and put into service in Schenectady in 1943. The design follows closely that of the machine started in 1926 at Massachusetts Institute of Technology by Vannevar Bush, but incorporates a number of improvements which have been suggested by experience with later models, especially the one at the University of Pennsylvania. It has fourteen integrators, four manual input tables, and two double output tables; it can therefore be used for problems of considerable complexity. It is also arranged for operation as two independent units on simpler problems when not all of the elements are required.

The most important of the design innovations is the electronic arrangement used to relieve the integrator disc of mechanical load, and thus to minimize slipping of the integrator disc with respect to the wheel upon which it rolls. The arrangement uses two beams of light which pass through a polaroid disc mounted upon the integrator disc and through crossed