## MATHEMATICAL TABLES—ERRATA

In this issue references have been made to Errata in RMT **633** (Boll), **646** (Newman, Powell).

**156.**—H. W. HOLTAPPEL, *Tafels van $e^x$*, Groningen, 1938. See *MTAC*, v. 1, p. 437–438; 449–451.

In addition to the long list of errors already reported in *MTAC* by NBSCL, we note the following in the table of $e^x$: $x = 6.450$, *for* 632.70229 28133, *read* 632.70229 28123.

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**157.**—T. L. KELLEY, *The Kelley Statistical Tables*. New York, 1938, *MTAC*, v. 1, p. 151–152; Revised ed., Cambridge, Mass., 1948, *MTAC*, v. 3, p. 301–302.

The following errors are to be found in both editions of the table of $(1 - p^2)^{\frac{1}{2}}$—the first page reference is to the 1938 edition, and the second to the 1948 edition:

| Page | $p$ | *For* | *Read* | Page | $p$ | *For* | *Read* |
|---|---|---|---|---|---|---|---|
| 25(49) | .5581 | .8297 8370 | .8297 7370 | 25(49) | .5587 | .8293 7983 | .8293 6983 |
| | .5582 | .8297 1643 | .8297 0643 | 38(62) | .6208 | .7839 7898 | .7839 6898 |
| | .5583 | .8296 4914 | .8296 3914 | | .6209 | .7838 9978 | .7838 8978 |
| | .5584 | .8295 8184 | .8295 7184 | 60(84) | .7344 | .6788 1691 | .6787 1691 |
| | .5585 | .8295 1452 | .8295 0452 | 71(95) | .7874 | .6164 3241 | .6164 4241 |
| | .5586 | .8294 4718 | .8294 3718 | | | | |

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**158.**—K. PEARSON, *Tables of the Incomplete Beta-Function*. Cambridge, 1934.

On p. XXXV, footnote referring to *Tracts for Computers*, VIII, *Table of the Logarithms of the Complete* Γ-*Function*, to 10D, it is stated that it was for $p = 2$ to 1200, "argument intervals 0.5, 1, and 2." *For this read:* $p = 2(.1)5(.2)70(1)1200$.

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**159.**—U. S. COAST AND GEODETIC SURVEY, *Natural Sines and Cosines to Eight Decimal Places*, 1942; reprinted with some corrections in 1946.

EDITORIAL NOTE: In **MTE 155 A**, p. 424, it was stated that all of our previously published errata in this volume had been corrected in a new printing. We regret that in this respect we misrepresented Prof. E. G. H. COMFORT's previous report. He has quite rightly pointed out that 9 of our 12 earlier reported (before 1949) errors still remain in the reprint, namely: the 6, v. 1, p. 65, and the 3, v. 1, p. 87.

## UNPUBLISHED MATHEMATICAL TABLES

**79[B].**—BARTOL RESEARCH FOUNDATION, Swarthmore, Pa. At this Foundation tables of the functions $(1 - x^2)^{-1}$ and $(1 - x^2)^{-\frac{1}{2}}$ have been calculated for $x = [0(.0001).99; 6D]$. There is an uncertainty of one unit in the sixth decimal place.

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**80[F].**—A. GLODEN, *Nouvelle extension des solutions de la congruence* $x^4 + 1 \equiv 0$ *(mod p) pour p entre* $6 \cdot 10^5$ *et* $10^7$. Mss. in possession of the author, 11 rue Jean Jaurès, Luxembourg, and in the Library of Brown University.

This manuscript table gives solutions $x$ of the congruence mentioned in the title for approximately 1300 primes $p$ beyond the limit 600000 set by previous tables [1] and under ten millions. With a few exceptions, only one solution $x$ is given for each $p$ (instead of the usual pair) and in each $x < 40000$. The table is a byproduct of the results of factoring numbers of the form $x^4 + 1$.

D. H. L.

[1] For references to previous tables of this sort see *MTAC* v. 1, p. 6, v. 2, p. 71, 210, v. 3, p. 96.

**81[F].**—A. GLODEN, *Table de factorisations des nombres* $N^8 + 1$ *pour* $N \leq 400$. Mss. in possession of the author, 11 rue Jean Jaurès, Luxembourg, and in the Library of Brown University.

The table of CUNNINGHAM [1] giving the factors of $N^8 + 1$ for $N \leq 200$ is extended in this manuscript not only by doubling the upper limit of $N$ but also by raising limit 100000 of the smallest prime factor omitted to 600000. Of the 400 entries of the table 140 are complete factorizations, 213 are composite but incompletely factored, while only 47 are of entirely unknown character, beyond the fact that their factors lie above 600000. The smallest number of this latter kind is $\frac{1}{2}(43^8 + 1) = 5844100138801$. The author hopes to raise his 600000 to 800000 by extending his already extensive tables of solutions of the quartic congruence[2] $x^4 + 1 \equiv 0 \pmod{p}$.

A comparison of this table with that of CUNNINGHAM reveals the following errata in the latter.

| | | |
|---|---|---|
| p. 140 | $y = 86$ | insert the small factor 61057 |
| | $y = 148$ | delete the factor 97 |
| p. 141 | $y = 125$ | for semicolon read full stop. |

D. H. L.

[1] A. J. C. CUNNINGHAM, *Binomial Factorisations*, v. 1, London 1923, p. 140–141.
[2] See *MTAC*, v. 2, p. 71–72, 210–211, 252, 300.

## AUTOMATIC COMPUTING MACHINERY

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### TECHNICAL DEVELOPMENTS

Our contribution under this heading, appearing earlier in this issue, is "The solution of simultaneous linear equations with the aid of the 602 calculating punch," by FRANK M. VERZUH.

### DISCUSSIONS

#### *A New General Method for Finding Roots of Polynomial Equations*

The problem of finding all of the roots of polynomial equations of fairly high degree arises so frequently that a routine for accomplishing this automatically on a high-speed digital computer would be of considerable practical value. However, for every one of the standard methods for finding the roots of a polynomial equation, there are some exceptional cases in which the particular method applied fails to work.

Horner's method and Newton's method require a good initial approximation, to prevent