1942) now offered for sale:

Page	Function	Angle	Correct Value
44	sin	3°30′45″	2663*0*
45	sin	3°39′24″	*77756*
108	cos	diff. at top of column	*75*
154	cos	12°44′44″	*35944*
190	sin	15°43′47″	*09*981
172, bottom of page, right side			
345° sin +	should be		345° cos +

B. Mr. E. G. H. Comfort, Illinois Institute of Technology, who drew the above matter to our attention, notes that the 8th decimal of the value for sin 72°21′52″ is one unit too small.

UNPUBLISHED MATHEMATICAL TABLES

76[C].—Clovis Faucher, *Table de Logarithmes à 10 Décimales.* MS. in possession of the author, 33 rue de Bel-Airs, Poitiers, France, xx, 574 p., beautifully written and neatly bound. 20.5 × 31 cm.

In this manuscript, loaned in 1948 for our inspection, Mr. Faucher tells us that he was "Géomètre en chef honoraire; ancien chef des services topographiques de la Côte d'Ivoire, de la Haute Volta et du Soudan français."

The main part of the table is arranged in three columns: (i) Numbers (N) in black; (ii) first five figures of Log N in red; (iii) Logarithmes complémentaires (L.c.) in blue. The argument column is the red column, where the range of values may be said to be 0(.00001).99999, if decimal points are inserted. Corresponding to each of these values the antilogarithm is given in the first column, to 11 digits (rounded off from 13 digit calculation) up to .69999, and to 10 digits (rounded from 12 digits) corresponding to .7(.00001).99999.

In the blue column are the remaining five decimals to be added to the right of the corresponding red-column entry. There are some indications about differences and throughout are attached signs to refine last digits: +(equivalent to .25), −(equivalent to .50), ×(equivalent to .75).

Suppose that it were required to find the logarithm of $\pi \approx 3.141592653$. Then

$N = 31415\ 92653\times$
$n = 31415\ 21237-$ (next below N in table) $\log n = 49714$
$N - n = 00000\ 71416+$

next below *00000 71415*
corresp. Δ 1

Then $\log (N - n) = \bar{5}.85379-$ and L.c. $= \log (N - n) - \log n = \bar{5}.35665-$, corresponding to which in the log column is 98727 whence the required result

$$\log \pi \approx .49714\ 98727.$$

Thus the table is a combination of antilogarithms and of a species of subtraction logarithms.

R. C. A.

77[D].—Ernest Clare Bower (1890–), *Natural Circular Functions for decimals of a circle.* MSS. in possession of author, Douglas Aircraft Company, 3000 Ocean Park Boulevard, Santa Monica, Cal. Listed and punched card copies are available at nominal cost from NBSINA, Univ. California, 405 Hilgard Ave., Los Angeles, Cal., and The Rand Corporation, 1500 Fourth Street, Santa Monica, California.

In F. Callet, *Tables Portatives de Logarithmes,* Paris, 1795, tirage 1819 there is a 15D table of $\sin x$ and $\cos x$ for $x = 0(0^q.001)0^q.5 = 0(0^g.1)50^g = 0(0^c.00025)0^c.125$. This was checked by: (1) comparing with ANDOYER's 20D table of these functions for $x = 0(1^g)50^g$; (2) differencing, exposing the error in cos $0^q.114$, *for* 98400 96253 51140, *read* 98400 96256 51140; and (3) extensive spot checking with the aid of Andoyer's series. Subtabulation to 25ths, with an IBM tabulator by my expeditious self-checking method of the Lick Observatory, *Bull.*, v. 17, 1935, p. 65–74, gave 15D values which are subject to an error occasionally somewhat exceeding the usual .5 unit rounding error.

The 10 tables derived from these values, contain sines and cosines, with Δ^2 when significant:

15D, 12D, 10D, 8D, 7D, 6D:	$0(0^c.00001)0^c.125$, 250 p., 12500 cards, each
6D, 5D, 4D:	$0(0^c.0001)0^c.125$, 25 p., 1250 cards, each
4D:	$0(0^c.001)0^c.125$, $2\frac{1}{2}$ p., 125 cards.

The circle is the most practical unit of angular measure in essentially every respect, especially for any computing device—desk computator, punched card machine, etc. It eliminates striking out multiples of 360°, 24^h, 4^q, 6400^m, and $2\pi^r$, and the constant reduction from one unit to another or to a larger unit because the advantage of decimalization is completely realized. The number before the decimal point denotes whole circles, cycles, revolutions, or days, and the decimal is the angle for which functions may be wanted.

E. C. BOWER

EDITORIAL NOTE: The Callet error noted above was corrected in the 1899 *tirage*, and possibly much earlier. There is a copy of the 15D table, for $x = 0(0^c.00001)0^c.125 = 0(0^g.004)50^g$, 250 p., 36.7 × 28 cm., in the Library of Brown University.

78[K].—J. ARTHUR GREENWOOD, *Table of the Double Exponential Distribution*, Ms. in possession of the author, 25 Winthrop St., Brooklyn 25, N. Y.

This table was computed for use in the theory of statistical extreme values. The functions $V(y) = \exp[-e^{-y}]$ and $v(y) = \exp[-y - e^{-y}]$ were introduced by R. A. FISHER & L. H. C. TIPPETT, in Camb. Phil. Soc., *Proc.*, v. 24, 1928, p. 180–190. They were further discussed by E. J. GUMBEL (Institut Henri Poincaré, *Annales*, v. 5, 1935, p. 115–158), who has given (*Annals Math. Statistics*, v. 12, 1941, p. 163–190) a table of $V(y)$ for $y = [-2(.25)+6; 5D]$.

The present table gives $V(y)$ and $v(y)$, for $y = [-3(.1)-2.4(.05)0(.1)4(.2)8(.5)17; 7D]$, with modified second differences.

In addition to its statistical use, this table may be used as an inverse log log table (*MTAC*, Q **4**, v. 1, p. 131; QR **9**, **12**, **30**, **38**, v. 1, p. 336, 373, v. 2, p. 374, v. 3, p. 398). If $y = -x \ln 10 - \ln\ln 10 =$ approx. $-2.30258\,50930\,x - 0.83403\,24452$, then $V(y) =$ illolog x (in CHAPPELL's notation, *MTAC*, Q **4** note; red lologs must be used in entering CHAPPELL, who gives them with positive mantissae).

J. C. P. MILLER (Camb. Phil. Soc., *Proc.*, v. 36, 1940, p. 286) gives 4S values of exp exp x, exp exp exp x, exp exp exp exp x, for $x = -4(1)+5$, $-4(1)+3$, $-4(1)+1$, respectively.

J. A. GREENWOOD

AUTOMATIC COMPUTING MACHINERY

Edited by the Staff of the Machine Development Laboratory of the National Bureau of Standards. Correspondence regarding the Section should be directed to Dr. E. W. CANNON, 418 South Building, National Bureau of Standards, Washington 25, D. C.

TECHNICAL DEVELOPMENTS

Our contribution under this heading, appearing earlier in this issue, is "Piecewise Polynomial Approximation for Large-Scale Digital Calculators," by J. O. HARRISON, JR., & Mrs. HELEN MALONE.