79. **Tables of $2^n$.**—A table for $n = 1(1)120$ is given by Peters & Stein, *Zehnstellige Logarithmentafel*, v. 1, Anhang, Berlin, 1922, p. 13–32; for $n = 1(1)140$ by H. W. Weigel, $x^n + y^n = z^n$? *Die elementare Lösung des Fermat-Problems*. Leipzig, 1933; for $n = 1(1)50$, $52(4)100(5)150(6)180$ by BAASMT, *Table of Powers*. Cambridge, 1940; for $n = 1(1)256$ by Aleksander Katz, *Riveon Lematematika*, v. 1, April, 1947, p. 83–85; for $n = 1(12)721$ by William Shanks, *Contributions to Mathematics Comprising chiefly the Rectification of the Circle*. London, 1853, p. 90–95. In *MTAC*, v. 2, p. 246, references were made to manuscript tables, for $n = 1(2)1207$ by Dr. J. W. Wrench, Jr., and for non-continuous values of $n$ up to 671 by Professor H. S. Uhler. In *Intermédiaire des Recherches Mathématiques*, v. 2, July 1946, p. 73, no. 0550, what purports to be the value of $2^{600}$ is given by D. Fau who asks if higher powers of 2 have been calculated. The seventy-sixth digit in the 181-digit value given should be 2, not 8, and the hundred and fifty-fifth and fifty-sixth digits 86, should be 68. Professor Uhler’s later calculation has been to $n = 1000$, and checked as agreeing with the value obtained by Dr. Wrench in each of its 302 digits.

R. C. A.

**QUERIES**

23. **Hendrik Anjema.**—What is known besides facts indicated below concerning this author of *Table of Divisors of all the Natural Numbers from 1 to 10000*, Leyden, 1767 (of which there were also Dutch, French, German and Latin editions of the same date)? In this volume’s “Avertisement of the Booksellors” are the following notes regarding Anjema, “After having taught with success & applause, for several years, the Mathematicks in the University of Franeker, he resolved to devote the leisure hours, which an Employment given by the states of Friesland had left him, to the advantage of his old Disciples. He formed the design, of giving a Table of Divisors of all the natural numbers to the amount of 100 000, & he had already brought it so far as 10000, when unhappily he died.” What was the year of death of the author of this posthumously published work? A. v. Braunmühl, in M. Cantor, *Vorlesungen über Geschichte der Mathematik*, v. 4, 1908, misspells the name as “Ajema” (p. 434, 1099).

R. C. A.

**QUERIES—REPLIES**

30. **Log Log Tables (Q4, v. 1, p. 131; QR9, p. 336, 12, p. 373).**—In Marcel Boll, *Tables Numériques Universelles*, Paris, 1947, p. 446–449, there is a 5D table of log log $x$, for $x = 1.001(.001)1.18(.002)1.3(.005)1.5(.01)2(.02)3(.05)5(.1)10(.5)20(1)50(2)100(5)200(10)300(20)500(50)1000(100)2000(200)5000(500)10000(1000)20000(5000)50000(10000)100000$.

In *Electrical World*, v. 122, Oct. 14, 1944, p. 118–119, is an article by Jerry Ailinger, “24-scale slide rule solves vector problems.” This “Rota-Vec-Trig” rotating slide rule invented and designed by the author is designated as a log log vector and trigonometric slide rule. For greater flexibility there are log log scales in the hexagonal sliding section. There are also new log log scales of decimal quantities of full unit length for greater accuracy,
QUERIES—REPLIES

referred to the D scale, which give the values of $e^{-z}$ with a single setting."
See also Electronics, v. 17, Sept. 1944, p. 252.

and Metallurgical Engineering, v. 51, July, 1944, p. 115. A table shows the
very close correlation of results obtained both graphically and by this
slide rule.

R. C. A.

31. SANG TABLES (Q20, v. 2, p. 225).—There is a copy of Sang's New
Table of Seven-Place Logarithms, 1915, in the Princeton University Library.

M. C. SHIELDS

Fine Hall Library,
Princeton University

32. SYSTEM OF LINEAR EQUATIONS (Q9, v. 1, p. 203).—In this query it
is noted that the method of GAUSS and SEIDEL for solving a system of linear
equations is not satisfactorily described in WHITTAKER & ROBINSON, The
The difficulty arises from two errors by Whittaker & Robinson, (1) a
failure to note that $m = n$ when giving the normal equations (we retain $n$
below), and (2) an error in the definition of $Q$; this is stated (wrongly) to
be the “sum of the squares of the residuals,” while, in fact, the equations

$$a_1 x + a_2 y + \cdots + a_n t - c_r = 0 \quad r = 1 \text{ to } n$$

arise as conditions for minimizing the quantity

$$Q = a_{11} x^2 + a_{22} y^2 + \cdots + a_{nn} t^2
+ 2 a_{12} xy + 2 a_{13} xz + \cdots - 2 c_1 x - 2 c_2 y - \cdots - 2 c_n z + p.$$ The method outlined by W. & R. is correctly based on the latter definition
of $Q$. The example given in Q9 yields to the treatment outlined quite satis-
factorily. It is

$$N_1 = 2x + y - 1 = 0$$
$$N_2 = x + 3y + 1 = 0,$$

with true solution $x = +4/5, y = -3/5$. Starting with values $x = \frac{1}{5}$,
y = $-\frac{3}{5}$, as in Q9, we first evaluate $N_1$ and $N_2$, and then apply

$$\Delta x = -\frac{1}{a_{11}} N_1 = -\frac{1}{2} N_1; \text{re-evaluate } N_2 \text{ (we shall have } N_1 = 0 \text{) and apply}
\Delta y = -\frac{1}{a_{22}} N_2 = -\frac{1}{2} N_2; \text{re-evaluate } N_1, \text{ and put } x = -\frac{1}{2} N_1 \text{ again, and so}
on.\text{ The values } x, y, N_1, N_2, Q \text{ are given below:}

<table>
<thead>
<tr>
<th>Approx.</th>
<th>1st $\Delta x$</th>
<th>2nd $\Delta x$</th>
<th>3rd $\Delta x$</th>
<th>4th $\Delta x$</th>
<th>5th $\Delta x$</th>
<th>Soln.</th>
</tr>
</thead>
<tbody>
<tr>
<td>$x$</td>
<td>$+1/2$</td>
<td>$+1/6$</td>
<td>$+2/3$</td>
<td>$+2/3$</td>
<td>$+1/9$</td>
<td>$+1/9$</td>
</tr>
<tr>
<td>$N_1$</td>
<td>$-1/3$</td>
<td>$0$</td>
<td>$-2/9$</td>
<td>$0$</td>
<td>$-1/27$</td>
<td>$0$</td>
</tr>
<tr>
<td>$N_2$</td>
<td>$+1/2$</td>
<td>$+2/3$</td>
<td>$0$</td>
<td>$+1/9$</td>
<td>$0$</td>
<td>$0$</td>
</tr>
<tr>
<td>$Q-\Phi$</td>
<td>$-7/6$</td>
<td>$-11/9$</td>
<td>$-37/27$</td>
<td>$-113/81$</td>
<td>$-340/243$</td>
<td>$-7/5$</td>
</tr>
<tr>
<td>$\geq -1.17$</td>
<td>$-1.22$</td>
<td>$-1.37$</td>
<td>$-1.395$</td>
<td>$-1.3992$</td>
<td>$-1.40$</td>
<td></td>
</tr>
</tbody>
</table>

As implied in Q9, the sum $N_1^2 + N_2^2$ shows an initial increase from $\frac{1}{5} + \frac{1}{5}$
$= 13/36$ to $4/9 = 16/36$, but this is not relevant to the process.

J. C. P. MILLER

CORRIGENDA

V. 2, p. 77, l. 32, for Steinmetz, read Steinitz; p. 342, l. 5, for 1856, read 1857.