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

D. S. DAVIS, "Reading friction factors from a log-log slide rule," *Chem. 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 Calculus of Observations* (London, 1924, and third ed., 1940, p. 255–256).

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

$$a_{r1}x + a_{r2}y + \cdots + a_{rn}t - c_r = 0 \qquad r = 1 \text{ to } n$$

arise as conditions for minimizing the quantity

$$Q \equiv a_{11}x^2 + a_{22}y^2 + \cdots + a_{nn}t^2 + 2a_{12}xy + 2a_{13}xz + \cdots - 2c_1x - 2c_2y - \cdots - 2c_nz + p.$$

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 satisfactorily. It is

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

with true solution $x = +4/5$, $y = -3/5$. Starting with values $x = \frac{1}{2}$, $y = -\frac{1}{3}$, as in Q9, we first evaluate N_1 and N_2, and then apply $\Delta x = -N_1/a_{11} = -\frac{1}{2}N_1$; re-evaluate N_2 (we shall have $N_1 = 0$) and apply $\Delta y = -N_2/a_{22} = -\frac{1}{3}N_2$; re-evaluate N_1, and put $x = -\frac{1}{2}N_1$ again, and so on. The values x, y, N_1, N_2, Q are given below:

Approx.	1st	Δx	2nd	Δy	3rd	Δx	4th	Δy	5th	Soln.
x	+1/2	+1/6	+2/3		+2/3	+1/9	+7/9		+7/9	+4/5
y	−1/3		−1/3	−2/9	−5/9		−5/9	−1/27	−16/27	−3/5
N_1	−1/3		0		−2/9		0		−1/27	0
N_2	+1/2		+2/3		0		+1/9		0	0
$Q-p$	−7/6		−11/9		−37/27		−113/81		−340/243	−7/5
	−1.17		−1.22		−1.37		−1.395		−1.3992	−1.40

As implied in Q9, the sum $N_1^2 + N_2^2$ shows an initial increase from $\frac{1}{9} + \frac{1}{4} = 13/36$ 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.