97. S. LUBKIN & J. J. STOKER, "Stability of columns and strings under periodically varying forces," *Quart. Appl. Math.*, v. 1, 1943, p. 232–235. See *MTAC*, v. 1, p. 415.

The authors list 48 errors in the tables of this article in *Quart. Appl. Math.*, v. 4, Oct. 1946, p. 309–310.

98. F. ZICKERMANN, "Ueber Arbeitsmessung bei Wechselstrom mit besonderer Berücksichtigung des Drehstromarbeitsdynamometers von Siemens & Halske," *Elektrot. Z.*, v. 12, 1891; on p. 511 is a table of $f(x, y) = \tan y \cdot \tan (x - y)$.

This table is for $f(x, y) \leqslant 1$, $y = 0(1°)45°$, $x - y = [0(5°)90°; 3D]$. By differencing the following errata were readily found: $y = 9°$, $x - y = 75°$, *for* 0,581, *read* 0,591; $y = 20°$, $x - y = 65°$, *for* 0,770, *read* 0,781.

S. A. J.

UNPUBLISHED MATHEMATICAL TABLES

For other unpublished tabular numbers see RMT **346**, **348**; MTE **95**.

52[K].—STUART R. BRINKLEY, JR. & RUTH F. BRINKLEY, *Table of the probability of hitting a circular target.* Ms. prepared by, and in the possession of the authors, R. D. 3, Coraopolis, Pennsylvania.

It is readily verified that the probability that the point of impact of a missile aimed at the origin of a rectangular system of coordinates will lie within a circle of radius r whose center is at a distance R from the origin is

$$p(r, R) = e^{-R^2} \int_0^{r^2} e^{-t} I_0(2Rt^{\frac{1}{2}})dt,$$

if the probability distributions for the pair of rectangular coordinates are Gaussian; I_0 being the modified Bessel function of the first kind, zeroth order. A table has been prepared of the function $p(r, R)$, for $r = 0(.1)5$; $R = [0(.1)5; 5S]$. The construction of the table was made possible by a grant from the George Sheffield Fund of Yale University.

We undertook the construction of the table because of applications of the related functions

$$P(x, y) = e^{x+y} p(\sqrt{x}, \sqrt{y}),$$

which is the solution of

$$\frac{\partial^2 P}{\partial x \partial y} = P, \qquad P(o, y) = 0, \qquad P(x, o) = e^x - 1.$$

It appears to have numerous and rather diverse applications. It occurs, for example, in the theory of ion-exchange water softening columns (H. C. THOMAS, Amer. Chem. Soc., *Jn.*, v. 66, 1944, p. 1664f), the theory of heat exchange between a fluid and a porous solid (A. ANZELIUS, *Z. angew. Math. Mech.*, v. 6, 1926, p. 291f, and T. E. W. SCHUMANN, Franklin Inst., *Jn.*, v. 208, 1929, p. 405f), and in the extension of the latter theory to the case where the solid is generating heat, as in a catalytic chemical reaction (S. R. BRINKLEY, unpublished paper, in the press). However, the function P is considerably less well suited to tabulation than is the function p.

S. R. BRINKLEY, JR. & R. F. BRINKLEY