Chapters I through V, IX and X could be the core of an advanced, one-semester course in matrix theory including elementary group representation theory. Selected topics from the remaining chapters could more than easily complete a one-year sequence.

This reviewer believes that *Integral Matrices* will certainly take its place among the very best in mathematical expositions: it deals with interesting material; it is packed with information; and it is intelligible.

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6 [7, 9].—ROBERT SPIRA, *Table of* $e^{\pi\sqrt{n}}$, Michigan State University, East Lansing, Michigan. Ms. of 9 typewritten pp. deposited in the UMT file.

This unpublished table consists of 15D values of $e^{\pi\sqrt{n}}$ for $n = 1(1)200$. Because of the increasing size of the integer parts of these numbers, the corresponding number of significant figures in the tabular entries ranges from 17 to 35. In the introduction we are informed that this table was calculated in order to test the author's general multiple-precision Fortran subroutines for the elementary functions. Each entry was computed in about four seconds on a CDC 3600 system, using 117S decimal arithmetic.

The author refers to a listing of decimal approximations to six of these numbers in the FMRC *Index* [1], and he notes his confirmation of terminal-digit errors in two of them, originally announced by Larsen [2].

This table should be of particular interest to number-theorists because of the known relation between the fractional part of $e^{\pi\sqrt{n}}$ and the number of classes of binary quadratic forms of determinant equal to $-n$, as mentioned by D. H. Lehmer [3].

J. W. W.

1. A. FLETCHER, J. C. P. MILLER, L. ROSENHEAD & L. J. COMRIE, *An Index of Mathematical Tables*, 2nd ed., Addison-Wesley Publishing Co., Reading, Massachusetts, 1962.
2. *Math Comp.*, v. 25, 1971, p. 200, MTE **474.**
3. *MTAC*, v. 1, 1943, pp. 30–31, QR **1.**

7 [9].—R. P. BRENT, *The Distribution of Prime Gaps in Intervals up to* 10^{16}, Australian National University, 1973, iv + 62 pp. deposited in the UMT file.

These tables are analogous to the Table 2 of Brent's paper [1]. For all primes p such that $N < p < N'$, the number of gaps

$$p_{i+1} - p_i = g$$

are tabulated for each $g = 2, 4, 6, \cdots$ that occurs in (N, N'). The *estimated* total number of gaps is

$$P = \int_N^{N'} dx/\log x,$$

while the number for $g = 2$ or for $g = 4$ is the well-known

$$E_2 = E_4 = 1.3203236317 \int_N^{N'} dx/\log^2 x.$$

For larger g, Brent uses his formulae developed in [1].

The first 21 tables are for the intervals

$$(10^j, 10^j + 10^6), \qquad j = 6(1)15;$$
$$(10^j, 10^j + 10^7), \qquad j = 7(1)14;$$
$$(10^6, 10^j), \qquad j = 7, 8, 9.$$

For each interval there is listed the first and last prime; the observed population for each g: O_g; the expected number E_g for $g = 2(2)80$ according to the aforementioned formulas; the expected number for $g > 80 = P - \sum_2^{80} E_g$; the normalized differences $(O_g - E_g)/(E_g)^{1/2}$; and a χ^2 computed for these 41 degrees of freedom. The χ^2 vary from 20 to 73 and seem to suggest that, if anything, the distribution agrees "too well" with the expected distribution.

For the remaining four intervals

$$(10^j, 10^j + 2\cdot 10^7), \qquad j = 15, 16,$$
$$(10^j, 10^j + 10^8), \qquad j = 14, 16,$$

only the empirical data are given, not the expected values or χ^2.

There is included a 13-page Fortran and 360 Assembly Language program. One sees that the estimating integrals were computed with a 16-point Gauss integration. There also is a 3-page text.

The empirical counts in the interval $(10^{14}, 10^{14} + 10^8)$ were tabulated earlier by Weintraub [2]. The data agree.

D. S.

1. R. P. Brent, "The distribution of small gaps between successive primes," *Math. Comp.*, v. 28, 1974, pp. 315–324.
2. S. Weintraub, UMT 27, *Math. Comp.*, v. 26, 1972, p. 596.

8 [9].—Edgar Karst, *The Third* 2500 *Reciprocals and their Partial Sums of all Twin Primes* $(p, p + 2)$ *between* (239429, 239431) *and* (393077, 393079), University Computer Center, The University of Arizona, Tucson, Arizona, February 1973. Ms. of 207 computer sheets deposited in the UMT file.

9 [9].—Daniel Shanks & Carol Neild, *Brun's Constant*, Computation and Mathematics Department, Naval Ship Research and Development Center, Bethesda, Maryland, April 1973. Ms. of 67 computer sheets deposited in the UMT file. For a detailed review of these unpublished tables, see pp. 295–296 of this issue.