Beliakov and K. A. Karpov. Starting with the standard definition of the Weierstrass elliptic function $z = \wp(u; g_2, g_3)$ as the inverse of the function

$$u = \int_z^\infty \frac{dz}{(4z^3 - g_2 z - g_3)^{1/2}},$$

it gives a detailed discussion of the properties of that function, as well as formulas for the evaluation thereof corresponding to complex values of u. A section is devoted to a discussion of the numerical evaluation of $\wp(u; g_2, g_3)$ for large values of g_2 when $g_3 = \pm 1$. This is supplemented by a discussion of the evaluation of the Jacobi elliptic function $\mathrm{sn}(u, m)$, together with an auxiliary table of $K(m)$ to 8D for $m = 0.4980(0.0001)0.5020$, with first differences. The relevant computational methods are illustrated by the detailed evaluation of $\wp(0.2; 100, 1)$ and $\wp(0.3; 100, -1)$ to 7S.

The two main tables, which were calculated and checked by differencing on the Strela computer, consist of 7S values (in floating-point form) of $\wp(u; g_2, g_3)$ for $g_2 = 3(0.5)100$, $g_3 = 1$, and $g_2 = 3.5(0.5)100$, $g_3 = -1$, respectively, where in both tables $u = 0.01(0.01)\omega_1$. Here ω_1 represents the real half-period of the elliptic function. It should be noted that for the stated range of the invariants g_2 and g_3, the discriminant $g_2^3 - 27g_3^2$ is nonnegative, so that the zeros e_1, e_2, e_3 of $4z^3 - g_2 z - g_3$ are all real.

A description of the contents and use of the tables, including details of interpolation (with illustrative examples) is also given in the introduction.

Appended to the introduction is a listing of the various notations used for this elliptic function and a useful bibliography of 19 items.

An examination of the related tabular literature reveals that these tables are unique; indeed, Fletcher [1] in his definitive guide to tables of elliptic functions mentions no tables of $\wp(u; g_2, g_3)$ when g_2 and g_3 are real and the discriminant is positive.

J. W. W.

1. Alan Fletcher, "Guide to tables of elliptic functions," *MTAC*, v. 3, 1948, pp. 229–281.

7[7].—Robert Spira, *Tables of Zeros of Sections of the Zeta Function*, ms. of 30 sheets deposited in the UMT file.

This manuscript table consists of rounded 6D values of zeros, $\sigma + it$, of $\sum_{n=1}^{M} n^{-s}$ for $M = 3(1)12$, $0 < t < 100$; $M = 10^k$, $k = 2(1)5$, $-1 < \sigma$, $0 < t < 100$; $M = 10^{10}$, $0.75 < \sigma < 1$, $0 < t < 100$. No zero with $\sigma > 1$ was found. A detailed discussion by the author appears in [1] and [2].

J. W. W.

1. R. Spira, "Zeros of sections of the zeta function. I," *Math. Comp.*, v. 20, 1966, pp. 542–550.
2. R. Spira, "Zeros of sections of the zeta function. II", *ibid.*, v. 22, 1968, pp. 163–173.

8[7, 8].—W. Russell & M. Lal, *Table of Chi-Square Probability Function*, Department of Mathematics, Memorial University of Newfoundland, St. John's, Newfoundland, Canada, September 1967, 77 pp., 28 cm. One copy deposited in the UMT file.

Herein are tabulated to 5D the values of the chi-square distribution function

$$1 - F_n(\chi^2) = [2^{n/2}\Gamma(n/2)]^{-1} \int_{\chi^2}^{\infty} x^{n/2-1}e^{-x/2}dx$$

for $n = 1(1)50$, $\chi^2 = 0.001(0.001)0.01(0.01)0.1(0.1)107$. As explained in the introductory text, those values that round to 0 or 1 to 5D have been omitted. It should be particularly noted that the tabulated values are those of the complementary function, $1 - F_n(\chi^2)$, and not those of $F_n(\chi^2)$ as implied in the introduction.

The tabulated values were obtained by appropriately rounding 8S floating-point values calculated on an IBM 1620 Mod. I system, employing an iterative procedure due to R. Thompson [1].

A spot check made by the authors with corresponding entries in the tables of Pearson & Hartley [2] revealed no discrepancies.

The abbreviated bibliography contains no reference to the extensive tables of Harter [3], which include 9D values of the incomplete gamma-function ratio

$$I(u, p) = 2^{-n/2}\{\Gamma(n/2)\}^{-1} \int_0^{\chi^2} e^{-x/2}x^{n/2-1}dx ,$$

where $u = \chi^2/(2n)^{1/2}$ and $p = n/2 - 1$.

Hence, we have the relation $F_n(\chi^2) = I(\chi^2/(2n)^{1/2}, n/2 - 1)$, which reveals that entries in the two tables are generally not readily comparable.

Because of the conveniently small increment in χ^2 throughout, the present table should provide a useful supplement to the cited tables of Pearson & Hartley.

J. W. W.

1. Rory Thompson, "Evaluation of $I_n(b) = 2\pi^{-1} \int_0^\infty (\sin x/x)^n \cos (bx)dx$ and of similar integrals," *Math. Comp.*, v. 20, 1966, pp. 330–332.

2. E. S. Pearson & H. O. Hartley, *Biometrika Tables for Statisticians*, Vol. I, third edition, Cambridge University Press, Cambridge, 1966.

3. H. Leon Harter, *New Tables of the Incomplete Gamma-Function Ratio and of Percentage Points of the Chi-Square and Beta Distributions*, U. S. Government Printing Office, Washington, D. C., 1964.

9[9].—Dov Jarden, *Recurring Sequences*, Second Edition, Riveon Lematematika, 12 Gat St., Kiryat-Moshe, Jerusalem, 1966, ii + 137 pp. Price $6.

The second edition, which has been produced on a more durable paper, is an enlargement and revision of the first. The enlargement comes from the inclusion of eight new articles, while the revision consists mainly of the inclusion of many new prime factors in the two factor tables in the work.

In general, the book is a collection of short papers by the author on various questions concerning the Fibonacci numbers U_n, their associated sequence V_n, and other recurring sequences. Representative titles are, "Divisibility of U_{mn} by U_mU_n in Fibonacci's sequence," "Unboundedness of the function $[p - (5/p)]/a(p)$ in Fibonacci's sequence," and "The series of inverses of a second order recurring sequence." There is also a large chronological bibliography on recurring sequences.

Among the new articles is one of general interest to Decaphiles, "On the periodicity of the last digits of the Fibonacci numbers," where the period mod 10^d is shown to be 60, 300, and $15 \cdot 10^{d-1}$ for 1, 2, and $d \geqq 3$ final digits.

The two revised factor tables, which were provided by the reviewer, are at present the most extensive in the literature.