tions with Formulas, Graphs, and Mathematical Tables, National Bureau of Standards Applied Mathematics Series, No. 55, U. S. Government Printing Office, Washington, D. C., 1964. (Reviewed in *Math. Comp.*, v. 19, 1965, pp. 147–149, RMT **1**.)

3. A. V. H. Masket & W. C. Rodgers, *Tables of Solid Angles: I. Solid Angle Subtended by a Circular Disc; II. Solid Angle Subtended by the Lateral Surface of a Right Circular Cylinder*, Office of Technical Services, Washington, D. C., 1962. (Reviewed in *Math. Comp.*, v. 17, 1963, pp. 207–208, RMT **25**.)

108[B, I, L].—(a) D. S. Mitrinović & D. Ž. Djoković, *Specijalne Funkcije* (*Special Functions*), Gradjevinska Knjiga, Belgrade, 1964, 267 p., 24 cm. (b) D. S. Mitrinović (Editor), *Zbornik Matematičkih Problema* (*Collection of Mathematical Problems*), three volumes, three editions, three publishers (see below), Belgrade, 1957–62, 24 cm.

One sometimes encounters a collection of tables which contains little original or very extensive, yet is worth noting as a collection. The tables contained in the works under review are, broadly speaking, of this character. The texts of the works are printed in the Latin alphabet of the Serbo-Croat language. *Specijalne Funkcije* (hereafter called *S.F.*) is a concise exposition of the field of special functions, while *Zbornik* (hereafter *Zb.*) is a collection of problems (some solved, some to be solved) from a wide field of mathematics; both works are designed for students at universities and similar institutions. All volumes contain numerical tables, mostly grouped together near the end.

As far as tabular matter is concerned, *S.F.* gives a moderately wide coverage of Legendre polynomials $P_n(x)$ and Legendre coefficients $P_n(\cos\theta)$, Bessel functions $J_n(x)$, $N_n(x)$, $I_n(x)$, $K_n(x)$, Kelvin functions ber x, bei x, Laguerre polynomials $L_n(x)$, Hermite polynomials, both $H_n(x)$ based on exp $(-x^2)$ and $H_n^*(x)$ based on exp $(-\frac{1}{2}x^2)$, Chebyshev polynomials $T_n(x)$ and Chebyshev functions $U_n(x)$. For some of these, the information given includes all of (i) explicit analytical expressions, (ii) numerical values of functions, (iii) numerical values of zeros, and (iv) graphs. For example, to take a case in which *S.F.* may well be found convenient (because of the comparative paucity of other sources), the following information is tabulated for the Laguerre polynomials $L_n(x)$: explicit algebraic expressions for $n = 0(1)10$ on p. 70, 6D zeros for $n = 1(1)15$ on p. 222, 4D values for $n = 2(1)7$, $x = 0(0.1)10(0.2)20$ on pp. 226–228, and graphs of exp $(-\frac{1}{2}x)L_n(x)/n!$ on p. 262.

Explicit expressions for $P_n(x)$ and for $P_n(\cos\theta)$ as Fourier series are quoted for $n = 0(1)20$ on pp. 25–26 and pp. 29–30 respectively from the 1936 tables of the Egersdörfers. *S.F.* also contains exact factorials up to 60! on p. 213, and complete and incomplete elliptic integrals of the first and second kinds, also period ratios and log q, on pp. 237–248. On pp. 250–263 is a set of graphs by D. V. Slavić. It is no doubt a sign of the times that young Yugoslav mathematicians have available, for use in science, engineering, technology and so on, as handsome a set of graphs of the more usual higher functions as the reviewer can recall seeing anywhere.

A review of *S.F.* implies mention of *Zb.*, which contains, among other tables, a number in common with *S.F.* Using roman numerals for volumes and suffixes for editions, the reviewer has had available *Zb.* I_1 1957, I_2 1958, I_3 1962, II_1 1958 and III_1 1960; II_2 1960 has not been available. I_1 and I_2 were published by Nolit, and II_1 by Naučna Knjiga; I_3 and III_1 were published by Zavod za izdavanje Udžbenika N.R.S., which now presumably publishes all three volumes. The variations between editions are very great.

Several of the tables in *S.F.* are also given in *Zb.* II and/or III. With unimportant exceptions, the tables in *S.F.*, when not identical, are fuller than those in *Zb.* Among many tables (some small) in *Zb.*, one may mention (excluding any also given in *S.F.*) the following, where numbers in brackets are page numbers: sums of the kth powers of the first n natural numbers, even numbers, and odd numbers, for $n = 1(1)12$, $k = 1(1)12$, in *Zb.* I_1 (216), I_2 (292), preceded by general expressions; some exact Stirling numbers in *Zb.* I_1 (230), I_2 (309); the first 36 Bernoulli numbers as exact fractions in *Zb.* I_2 (348), I_3 (500); error integral and ordinate, in the exp $(-\frac{1}{2}z^2)$ form, in *Zb.* II_1 (329); values, zeros, etc. of Kelvin functions in *Zb.* III_1 (314); exact binomial coefficients up to $n = 60$ in *Zb.* III_1 (319); and exact powers n^p for $n = 2(1)83$, $p = 1(1)10$ in *Zb.* III_1 (325). One may also note, as rather unusual, that the years of birth and death of more than 170 mathematicians are listed in *Zb.* I_2 (xv), I_3 (501).

A. F.

109[F].—Albert H. Beiler, *Recreations in the Theory of Numbers—The Queen of Mathematics Entertains*, Dover Publications, Inc., New York, 1964, xvi + 349 pp., 22 cm. Price $2.00 (paperbound).

This book addresses itself primarily to the amateur, and its tone, as indicated› is one of recreation. It deals in perfect and amicable numbers, Fermat's theorem and its converse, Wilson's theorem, digit properties, repeating decimals, primitive roots, Pythagorean numbers, Pell's equation, primes, etc. The author was clearly fond of his task, since he has lovingly and industriously compiled long bibliographies after each chapter, 103 tables, 33 pages of answers to the problems, and an 11-page index. There is little, or no attempt to give proofs, and when these are sketched, they are almost never rigourous. In at least one case there is outright fallacy: on page 16 it is stated that if $p \mid a^n - 1$, with p prime and $n < p$, then $n \mid p - 1$. Not so, since $31 \mid 2^{20} - 1$. There are also scattered errors in terminology, judgment, or fact: Uhler's "perfect numbers" on p. 18; an assessment of Wilson's theorem on p. 49; and the claim, on p. 292, that Gauss was unassuming, gentle and naïve. But these blemishes do little harm to the author's main purpose.

The author's style is exceedingly rich. Chapter XX begins: "Inseparably woven into the fabric of number theory, nay, the very weft of the cloth, are the ubiquitous primes. Almost every investigation includes them; they are the elementary building blocks of our number edifice. From the humble 2, the only even prime, and 1, the smallest of the odd primes, they rise in an unending succession aloof and irrefrangible." Chapter XV begins: "There is something about a square! Note its perfection and symmetry. All its sides are equal, its angles are neither stupidly obtuse nor dangerously acute. They are just right. The square has many beautiful geometric properties." It is not clear here whether the author merely means to thus convey his enthusiasm, or whether this is intended to add to the book's recreational value.

For an amateur the book is a real grab-bag, but even a professional may derive some information from the many tables, bibliographies, and occasional curiosities and odds-and-ends that he may not have previously encountered.

D. S.