REVIEWS AND DESCRIPTIONS OF TABLES AND BOOKS

65[D].—JEAN PETERS, *Eight-Place Tables of Trigonometric Functions for Every Second of Arc,* Chelsea Publishing Company, Bronx, New York, 1963, xi + 954 p., 29 cm. Price $18.50.

The title listed above is that on the title page; the back of the binding merely has "Trigonometric Tables—Peters".

The main table here is a 900-page table giving the sine, cosine, tangent, and cotangent for every second of arc from 0° to 45°. The first three functions are given to 8D, while the cotangent has the same number of significant figures as the corresponding value of the tangent. Bounds for first differences are listed for each minute of arc. Peters' original (1939) table [1] was followed by two war-time photographic reprints, and this volume consists of a third photographic reprint. The previous editions have been reviewed at length in [2]. Peters' table is considered to be the standard (i.e., the best) 8-place trigonometric table [3].

The two (rather obvious) errors in [1] on pages 54 and 585, noted in [4], have not been corrected. Nor has the poorly printed digit 6 on page 783, that already appeared in the previous American reprint, and which is also noted in [4]. The printing here has the expected variation in digit blackness but is generally very good. The paper is of a fine quality.

The "appendix" contains reproductions of Peters' 1911 twenty-one place tables [5]. Specifically, Table II lists sin α and cos α to 21D for $\alpha = 0°0'(10')45°0'$, and Table III gives the same quantities for $\alpha = 0'0''(1'')10'0''$ together with first, second, and third differences. With these there is included an explanation, in English, for computing sin α and cos α to 20D from these two tables by the use of interpolation and addition formulas. These two tables were *not* included in the three earlier editions reviewed [2].

There also are three "supplementary" tables: nM to 21D for $n = 1(1)100$ where M is the Modulus $0.43429 \cdots$; likewise there is given n/M; and finally the values of n seconds of arc, expressed in radians, to 21D for $n = 1(1)100$.

For biographical remarks concerning Johann Theodor Peters, "the greatest table-maker of all time," see [4, p. 889] and [2, p. 168–169].

D. S.

1. J. PETERS, *Achtstellige Tafel der trigonometrischen Funktionen für jede Sexagesimalsekunde des Quadraten,* Reichsamt für Landesaufnahme, Berlin, 1939.
2. R. C. ARCHIBALD, RMT 78, Notes 5 and 6, RMT 128, *Math. Comp.*, v. 1, 1943–1945, p. 11–12, 64–65, 147–148.
3. FLETCHER, MILLER, ROSENHEAD & COMRIE, *An Index of Mathematical Tables*, second edition, Addison-Wesley, Reading, Massachusetts, 1962, Vol. 1, p. 178–179.
4. *Ibid*, Vol. 2, p. 890.
5. J. PETERS, *Einundzwanzigstellige Werte der Funktionen Sinus und Cosinus*, Reimer, Berlin, 1911.

66[F].—V. L. GARDINER, R. B. LAZARUS & P. R. STEIN, *Tables of Solutions of the Diophantine Equation* $x^3 + y^3 = z^3 - d$, Los Alamos Scientific Laboratory, Los Alamos, New Mexico, 1963, 69 p., 28 cm. Copy deposited in the UMT file.

These three tables are described in this issue of *Mathematics of Computation* [1].

The brief introduction repeats the specifications concerning these tables. They were computed on an IBM STRETCH and the MANIAC II. The output was placed on cards and paper tape prior to printing in the present form.

D. S.

1. V. L. Gardiner, R. B. Lazarus & P. R. Stein, "Solutions of the diophantine equation $x^3 + y^3 = z^3 - d$," *Math. Comp.*, v. 18, 1964, p. 408–413.

67[F].—D. H. Lehmer, "On a problem of Störmer," *Illinois J. Math.*, v. 8, 1964, p. 69–79, Tables I, II, III.

The problem of the title consists of finding all pairs of integers N, $N-1$ such that both numbers have as their prime divisors only primes contained in a preassigned set. For instance, if the set is that of the six smallest primes, an example is

$$N = 123201 = 3^6 \cdot 13^2, \qquad N - 1 = 123200 = 2^6 \cdot 5^2 \cdot 7 \cdot 11.$$

In Table I Lehmer gives *all* 869 pairs where the set consists of the 13 smallest primes, 2 through 41. Embodied in this are also all solutions where the set is that of the t smallest primes, with $t = 1(1)13$. Factorizations of N and $N - 1$ are also given if $N > 10^5$; for smaller N the author suggests the use of existing factor tables.

In Tables II and III he gives the analogous pairs of *odd* numbers N, $N - 2$ and N, $N - 4$, respectively, for the set of the first 11 primes.

The text of the article gives the underlying theory and mentions several number-theoretic applications.

D. S.

68[G].—Wolfgang Krull, *Elementare und klassische Algebra, vom modernen Standpunkt*, Band I, Walter De Gruyter & Co., Berlin, 1963, 148 + 31 p., 16 cm. Price 3.60 DM.

This is the third edition of a Göschen book which first appeared under the title *Elementare Algebra vom höheren Standpunkt* in 1939. The second edition appeared under the present title in 1952. Since the book carries the volume number I, it seems that a sequel is planned. The book deals with polynomial equations and does include some chapters on their solutions, as is customary in books of this type; it also includes an account of the Sturm theory. However, the first edition included a whole chapter on numerical calculation of the roots. The book is written by an expert who had helped shape the modern treatment of this subject. "Modern" means here, of course, "abstract"; hence, the book is not of immediate concern for the readers of this journal. The day may come when "modern" may mean "numerical".

O. Taussky

California Institute of Technology
Pasadena, California

69[G].—Frank M. Stewart, *Introduction to Linear Algebra*, D. Van Nostrand Co., Inc., Princeton, New Jersey, 1963, xv + 281 p. Price $7.50

This book is written in the belief that "linear algebra provides an ideal introduction to the conceptual, axiomatic methods characteristic of mathematics today". Accordingly, the symbolism, and to some extent the phraseology, is borrowed from