photographic reproduction. The maximum error in any entry is claimed to be less than 0.50005 in units of the least significant figure.

The tabular data are arranged quadrantally for each sexagesimal minute in floating-point format, the values for each successive pair of degrees appearing on a single page. Thus, the tabulated values of the functions $1/(1 \pm \tan \theta)$ are read from the top to the bottom of each page, while those of the functions $1/(1 \pm \cot \theta)$ are read in the reverse direction, using the indicated complementary angles. In this manner the range of argument stated in the title is covered.

The table user is further assisted by a composite graph of the tabulated functions, which immediately precedes the tables.

This unique table should be a useful addition to the extensive tabular literature devoted to the trigonometric functions.

J. W. W.

1. J. E. Ivory, "Rapid method for measuring Seebeck coefficient as ΔT approaches zero," *Rev. Sci. Instr.*, v. 33, 1962, pp. 992–993.

67[D, P, R].—L. S. Khrenov, *Tables for Computing Elevations in Topographic Levelling*, translated by D. E. Brown, Pergamon Press, New York, 1964, vii + 200 pp., 26 cm. Price $10.00.

This translation of *Tablitsy dlya vyehisleniya prevyshnii*, originally published in Moscow, constitutes Volume 31 of the Pergamon Preess Mathematical Tables Series.

We are informed in the Preface that topographic levelling is used to determine elevations when the horizontal distances between points to be levelled are known either through direct measurement or by trigonometric calculations.

The main table (Table I) permits elevations h ($= d \tan \alpha$) in meters to be read off directly to 2 decimal places for the angle of elevation $\alpha = 1'(1')5°50'$ and the distance $d = 1(1)350$ meters. Flexibility in the use of the table is attained by virtue of the fact that d (in meters) and α (in minutes of arc) can be interchanged, with a resultant error in h not exceeding 0.047 m., as demonstrated on p. 193, in the section entitled "Theoretical Basis and Description of Tables I and II."

Furthermore, this range in d and in α can be doubled, as the author points out, by use of the formula $h = h' + \Delta h$, where $h' = 2d \tan \alpha/2$ and $\Delta h = \frac{1}{4} d\alpha^3 \sin^3 1'$. The necessary correction, Δh, is included in the right margins of Table I.

Table II simply consists of values of $1000 \tan \alpha$ to 5 significant figures for $\alpha = 11°(1')31°$.

Table III (Slope corrections ΔD for distances measured by tape) gives $\Delta D = 2D \sin^2 \alpha/2$, $D = 40(10)90, 200, 300$, 3 dec.; $D = 1000$, 2 dec.; $\alpha = 0°(10')30°$.

The following table (Reductions to horizontal of slopes measured by tape) gives $D \cos \alpha$, $D = 60(10)90, 400, 500$, 2 dec.; $D = 100(100)300$, 3 dec.; $\alpha = 1°(1°)30°$.

For the same range in α, Table V (Corrections D for slopes of distances measured by range-finder) gives $D \sin^2 \alpha$ to 1 dec. for $D = 100(100)900$.

The same ranges in α and D and the same precision appear in Table VI (Reductions to horizontal of slope distances measured by range-finder) which tabulates $D \cos^2 \alpha$.

Table VII (Corrections for refraction and curvature of the earth) gives integer values of d (in meters) corresponding to $f = 0.01(0.01)1.68$, also in meters.

The final table (Horizontal distances and gradients) consists of $\tan \alpha$, 5 dec.; $\cot \alpha$, 5 fig.; $h \cot \alpha$, 2 dec. for $h = 0.5$, 1, and 1 dec. for $h = 2$, 2.5, 5, 10, 20; $\alpha = 0°30'(30')10°(1°)30°$.

The user is well advised to study the illustrative examples in the use of the tables, which appear on pp. 196–198.

A supplementary loose sheet lists 25 known typographical errors in these tables.

This convenient set of tables should materially expedite the calculations involved in topographic levelling.

J. W. W.

68[F].—N. G. W. H. BEEGER, *Tafel van den kleinsten factor der getallen van* 999 999 000–1000 119 120 *die niet deelbaar zijn door* 2, 3, 5, ms. of 57 pp. (unnumbered) deposited in the UMT File.

In accordance with the bequest of the late Dr. Beeger this factor table, together with the one described in the next review, has been placed in the file of unpublished mathematical tables that is maintained by this journal.

The format is that devised by L. Poletti in his *Neocribrum* and used subsequently by Dr. Beeger in his factor table for the eleventh million [1]. Accordingly, we find in the present table the least prime factor of all integers not divisible by 2, 3, or 5 in the range of the 120,120 numbers designated in the title.

The details of the construction of this factor table are set forth in English on a carefully handwritten introductory page.

Each page of the manuscript is devoted to the factors of numbers prime to 30 over an interval of 2310 consecutive integers, and the number of primes is subtotaled for each such interval and for each member of the reduced residue class modulo 30. The grand total of all primes listed is 5775.

Comparison of these data with the table of primes for the thousandth million by Baker & Gruenberger [2] revealed complete agreement in the 63 entries common to the two tables.

Information on the inside title page shows that Dr. Beeger compiled the present table between 19 December 1937 and 18 June 1938. It represents an impressive accomplishment for this well-known expert in the art of factoring large numbers.

J. W. W.

1. N. G. W. H. BEEGER, *Table of the Least Factor of the Numbers that are not Divisible by* 2, 3, 5, *of the Eleventh Million*, ms. in UMT file. See *MTAC*, v. 10, 1956, pp. 36–37, RMT **5**. For a brief description of the *Neocribrum*, see *MTAC*, v. 4, 1950, pp. 145–146, RMT **768**.
2. C. L. BAKER & F. J. GRUENBERGER, *Primes in the Thousandth Million*, deposited in UMT file. See *MTAC*, v. 12, 1958, p. 226, RMT **89**.

69[F].—N. G. W. H. BEEGER, *Tafel van den kleinsten factor der getallen* 61 621 560–61 711 650 *die niet door* 2, 3, 5 *deelbaar zijn*, ms. of 54 pp. (unnumbered) deposited in UMT file.

This manuscript table consists of three fascicles, each giving the least prime factor of integers relatively prime to 30 over an interval of 30,030 consecutive numbers within the range stated in the title.