

nection with "coincidental logarithms." But already in the eighteenth century Euler had solved the problem, "Quaeratur numerus praeter 10, cujus logarithmus tabularis aequetur decimali parti ipsius numeri." (EULER, *Institutiones Calculi Differentialis*, St. Petersburg, 1755, p. 566-567; *Opera Omnia*, s. 1, v. 10, Leipzig and Berlin, 1913, p. 437-438). Euler found the number to be 1.37128857, agreeing exactly, for 7D, with what we recorded.  
R. C. A.

QUERIES

10. ROUNDING-OFF NOTATION.—In RMT 157 (p. 192) attention is drawn by H.T.D. to a special use of the sign + by A. N. LOWAN and J. LADERMAN in their "Table of Fourier coefficients." In this paper the authors state that "A plus sign after an entry [to 10D] indicates that the eleventh decimal place is 5 or larger." This new use of the + seems, perhaps, a little unfortunate in view of (i) the variety of means already in use for indicating whether the final digit has been, or should be, raised or not, and (ii) T. N. THIELE's Rule, mentioned below, in which the same symbol + is used with a different meaning. It seems also worth while to note that the phrase used by Lowan and Laderman gave no hint, at any rate to the present writer, that the tenth decimal had not been raised in the usual way; it is easy to verify that, as H.T.D. notes, the tenth decimal has *not* been increased, but a hint at least sufficient to raise doubt seems essential.

As a single example of other methods for distinguishing whether the final digit should be, or has been, rounded off see *Four-Place Mathematical Tables with Forced Decimals* by F. S. CAREY and S. F. GRACE, Longmans, Green, London, 1927. In these, for some of the tables "Decimals in italics are in excess of the true value, those in thick type are in defect." Ordinary type is used when no discrimination is made.

The rule of T. N. THIELE was used by H. ANDOYER in his *Nouvelles Tables Trigonométriques Fondamentales (Logarithmes)*, 1911, (*Valeurs naturelles*), 1, [Sines], 1915; 2, [Tangents], 1916; 3, [Secants], 1918, Hermann, Paris. Andoyer describes the rule in these words: "Si le nombre formé par les décimales qui suivent la dernière est compris entre 000 . . . et 250 . . . inclus, la dernière décimale est conservée telle quelle, sans aucun signe: si ce même nombre est compris entre 250 . . . et 750 . . ., la dernière décimale est encore conservée telle quelle, mais suivie du signe +; si enfin ce même nombre est supérieur ou égal à 750 . . ., la dernière décimale est forcée d'une unité, sans aucun signe." J. R. AIREY uses a colon ':' instead of '+' to give the same information, see, for instance, his table of the Lommel-Weber functions  $\Omega_0(x)$  and  $\Omega_1(x)$  in B.A.A.S., *Report*, 1924, p. 280.

In RMT 157 H.T.D. also refers to the use of 'high' and 'low' dots by L. M. MILNE-THOMSON & L. J. COMRIE in their *Standard Four-Figure Mathematical Tables* (London, Macmillan, 1931); the present writer finds this device both useful and practical.

What other devices have been used to give an accuracy beyond that which can be obtained by a bare final digit? What useful purpose is served by such of those devices as require extra printing space which could not be as well or better served by giving an extra figure, possibly correct only within 1 or 2 units, instead of the more usual  $\frac{1}{2}$  unit (or sometimes 0.52 or 0.6 unit)?

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