

NOTES

136. SOLUTION OF $y = e^y$.—In Note **20** [*MTAC*, v. 1, p. 202–203] a quotation from the *Mathematical Gazette* regarding a 60D approximation to the smaller solution of the equation $10 \log y = y$, or $y = 10^{y/10} \approx 1.259^y$, was the basis of varied comments. Note **25** [*MTAC*, v. 1, p. 334–335] showed that EULER had given a 7D approximation to this same y . In Note **38** [*MTAC*, v. 1, p. 431] a quotation from an early volume of Institute of Actuaries, *Journal*, was given without comment as a curiosity, since it suggested that a solution of $y = e^y$ might be found by computation from the series

$$y = 1 + \frac{2}{2} + \frac{3 \cdot 3}{2 \cdot 3} + \frac{4 \cdot 4 \cdot 4}{2 \cdot 3 \cdot 4} + \frac{5 \cdot 5 \cdot 5 \cdot 5}{2 \cdot 3 \cdot 4 \cdot 5} + \dots$$

That this series did not converge, the author of the quotation did not mention.

For six years since Note **38** was published, no reader wrote to me regarding the obvious error in this quotation. But finally, Mr. CECIL HASTINGS, JR., of Santa Monica, Calif., has now incidentally commented upon it in a letter.

In RMT **884** [*MTAC*, v. 5, p. 140] tables and graphs of the equation $y = x^y$ were considered, and it was clear that there were real values of y only if $x \leq e^{1/e} \approx 1.44$, and therefore in particular for $x \approx 1.259$. Hence, for $x = e$, y is necessarily transcendently imaginary. (Analogous to the equation in Note **20** we have the equation $e \ln y = y$, for which the two solutions coincide in $y = e$.)

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137. PUNCHED CARD TABLES.—In order to keep our Guide to tables on Punched Cards [*MTAC*, v. 5, p. 185–212] up to date, it is planned to collect new material and errata for insertion in a future number of *MTAC*. Readers are requested to send to the undersigned any information relative to punched card tables.

Several laboratories on the West Coast are collaborating in the punching of basic tables during spare time. In many laboratories which do accounting work in addition to mathematical computing, there are peak periods in the month when all key-punch operators are busy, and these periods are followed by one or two weeks of relatively light work. During these latter periods key punch time could be used to prepare important card tables from the British Association for the Advancement of Science tables, and the older ones of the Mathematical Tables Project which are not available on punched cards. It might be mentioned that the Table of Arc $\sin x$ was punched on this basis by BENJAMIN FERBER of Consolidated Vultee Aircraft Corporation, and that he also found time to difference the key-punched values. Similarly, CHARLES DAVIS of the North American Aviation Corporation contributed the Tables of Circular and Hyperbolic Tangents and Cotangents, which he checked by multiplication of the reciprocal functions. If other laboratories can undertake a similar service, the undersigned are

prepared to act as a "clearing house," supplying information about the most urgent tasks that call for key-punching.

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138. A NEW MERSENNE PRIME.—The program described in Note 131 (c) has produced the 15th Mersenne prime: $2^{1279} - 1$ on June 25. The SWAC tests this number in 13 minutes 25 seconds.

D. H. L.

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QUERY

42. Where may one obtain a set of the BEEVERS and LIPSON strips for the summation of Fourier series? These are described in the following references: C. A. BEEVERS & H. LIPSON, "A rapid method for the summation of a two-dimensional Fourier series," *Phil. Mag.*, s. 7, v. 17, 1934, p. 855-859, G. L. CLARK, *Applied X-Rays*. New York, 1940, p. 322.

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QUERIES—REPLIES

49. TABLE OF MULTIPLICATION (Q. 40, v. 6, p. 61).—I possess the first edition of the tables of J. B. OYON, bound in one volume, giving the products of all the integers up to 509×500 without mention of the author's name. The title is:

Tables de multiplication, à l'usage de MM. les ingénieurs employés au cadastre de la France, et de MM. les directeurs des contributions, chargés de la vérification des opérations arithmétiques des ingénieurs.

Approuvées par S.E. le Ministre des Finances
(Prix: 15 francs)

A PARIS

a l'imprimerie de VALADE, rue Coquillière

AN XIII (1805)

The first page bears the following annotation written in pencil: Renard, rue Ste Anne 71, the second tome 15 f by M. OYON.

I have no information about OYON (he may have been an engineer in the Land Registry Service).

R. LIÉNARD

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