404. A Method of Evaluating as a Decimal Any Fraction of the Form $\frac{1}{a} \times 10^{b+1}$, Where a Is Any Integer, from 1 to 12, and b Is Any Integer Whatever

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Again, in the case of a negative radix,

$$\begin{aligned}\log(1 - \cdot 0009) &= \mu \left(-\frac{9}{104} - \frac{81}{2 \cdot 10^8} - \frac{729}{3 \cdot 10^{12}} - \frac{6561}{4 \cdot 10^{16}} - \right) \\ &= -\cdot 000\,900\,405\,243\,164 \times \mu \\ &= -\cdot 000\,391\,041\,028\,58.\end{aligned}$$

To give an example of the use of series (ii).

$$\text{Taking } (\alpha + x) = 3 \cdot 1416 = 264 \times 119 \times 10^{-4},$$

$$(\alpha - x) = 3 \cdot 1415\,9265\,359.$$

$$2x = 0 \cdot 0000\,0734\,641, \quad \alpha = 3 \cdot 14159\,632\,679,$$

$$2x/\alpha = 0 \cdot 0000\,0233\,84322.$$

$$\begin{array}{r} \log 3 \cdot 1416 = 1 \cdot 1447\,3222\,42816 \\ 233\,84322 \end{array}$$

$$\text{Nat. log } \pi = 1 \cdot 1447\,2988\,58494$$

Again, by series (iii),

$$\log 8291 = \log 8290 + 2\mu \left(\frac{1}{16581} + \frac{1}{3} \left(\frac{1}{16581} \right)^3 + \text{etc.} \right).$$

$$3 \cdot 91855\,45305\,50273$$

$$5\,23845\,94708$$

$$3 \cdot 91860\,69151\,4498$$

SYDNEY LUPTON.

(To be continued.)

MATHEMATICAL NOTES.

404. [v. a. δ]. A method of evaluating as a decimal any fraction of the form $\frac{1}{a \times 10^b + 1}$, where a is any integer, from 1 to 12, and b is any integer whatever.

This method is best explained by an illustration.

$$\frac{1}{401} + \frac{400}{401} = 1 = \cdot 9 \quad \text{and} \quad \frac{1}{401} = \cdot 002\dots;$$

$$\therefore \frac{400}{401} = \cdot 997\dots$$

But

$$\frac{1}{401} = \frac{400}{401} \div 400;$$

$$\therefore \frac{1}{401} = \cdot 00249\dots; \quad \therefore \frac{400}{401} = \cdot 99751\dots$$

Continuing this process, we find

$$\begin{aligned} \frac{1}{401} &= \cdot 00249376558603491271820448877805486284289276807980049875311720 \\ &\quad 69825436408977556109725685785536159600997506234413965087281795 \\ &\quad 51122194513715710723192019950124688279301745635910224438902743 \\ &\quad 14214463840399. \end{aligned}$$

$$\begin{aligned} \frac{400}{401} &= \cdot 99750623441396508728179551122194513715710723192019950124688279 \\ &\quad 30174563591022443890274314214463840399002493765586034912718204 \\ &\quad 48877805486284289276807980049875311720698254364089775561097256 \\ &\quad 8578536159600. \end{aligned}$$

D. F. FERGUSON.

405. [v. a. θ ; D. 6. b.] Inverse tabular functions.

The symbol $\sin^{-1}$, $\cos^{-1}$, etc., to denote "the angle whose sine, cosine, etc., is" generally proves a stumbling-block to learners, and to a small extent is inconsistent with the general interpretation of negative indices in algebra. On the continent the difficulty is evaded by writing $\arcsin$, etc. I wish to propose as a substitute the prefix "anti," already used in this connection in