vibrations of continuous systems, are actually correct, has not yet been constructed." Likewise the comments in section 8.8 are suggestive and illuminating. The volume closes with a note on the notation for the probability integral, with a page on interpretations of the principal operators, with a bibliography of papers in which operational methods are used, and with author and subject indexes.

H. S. UHLER

Nouvelles Tables de Log n! By F.-J. Duarte. Paris, Index Generalis, 1927. xxiv+136 pp.

This book contains in large clear type the common logarithms to 33 decimals of factorial n from $n=1$ to $n=3000$. A preface is given by Professeur M. R. de M. de Ballore, who emphasizes the importance and reliability of the work. The largest previous table by Degen, (1824), contained 18-place logarithms up to log 1200! The aim of Duarte was to allow adequate study of expressions constantly occurring in the theory of probability.

Incidentally the author points out errors in the logarithms of 829, 1087, 1409, 1900 as given by Wolfram and published in Vega's Thesaurus, also in Thoman's values for log 45! and log 55! and Degen's values for log 1093! and log 1180!.

In 1925 Duarte and Ballore published a similar twelve-figure table to $n=1000$.

The present table was constructed by adding successively the logarithms to 39 decimals of numbers from 1 to 3000. To control the table Stirling's formula was used to calculate independently to 36 places log $50k$! for $k=1, 2, \cdots, 60$. The forcing of a digit in the 33d place is indicated by an asterisk.

If p is a prime beyond 1000, its logarithm may be calculated by means of the remarkable series $\log p=\frac{1}{2}\log(p-1)+\frac{1}{2}\log(p+1)+\Delta_0+\Delta_1+2.8\Delta_2+72.4\Delta_3/7+304.48\Delta_4/7+R_4$, where $4p\Delta_0=\log(p+1)-\log(p-1)$, $6p^2\Delta_k=\Delta_{k-1}$, $k=1, 2, 3, \cdots$, and $R_4<.0^{38}5$. The author used a similar series to compute $\log p$ when $17<p<1000$ by a proper choice of m such that $mp-1$ and $mp+1$ contain prime factors less than p. He accordingly started with 42-place logarithms of 2, 3, 5, 7, 11, 13, 17 and calculated all the other primes by this new method.

Three obvious errors in printing occur on pp. xiv, xvi, and xxii.

In calculating a logarithm the method of Flower is used and illustrated by the evaluation of $\log \pi$ and $500!/40!\times 460!$ The necessary table for Mn, $n=1, 2, \cdots, 100$; and the brief table for $\log 1.0^s k$, $s=0, 1, \cdots, 16$; $k=1, 2, \cdots, 9$, constitute Tables II, III, respectively, the former running to 40 decimals.

The reviewer was pleased to find a use for this new table in computing $\log \pi$ from the formula

$$\pi^{35}E_{17}=2^{36}\times 34!(1-1/3^{35}+1/5^{35}-1/7^{35}+\cdots)$$

correct to 33 places.

C. C. CAMP