

and Kepler did not have our concept of logarithms as powers of a base. In 1624 appeared the great work containing $\log N$ for $N = [1(1)20\ 000 \text{ and } 90\ 000(1)\ 101\ 000; 14D]$; only some copies of these tables have the Chiliad for $N > 100\ 000$. His remarkable Canon of Sines, and other material (published posthumously, 1633) has been already described. Note *MTAC*, p. 100.
R. C. A.

9. CAYLEY AND TABULATION.—Except for a brief first paragraph which has nothing to do with the sequel, the following is a letter (in my possession) written to J. W. L. Glaisher (1848–1928) by Arthur Cayley (1821–1895):

“Dear Mr. Glaisher,

.....
“Apropos of tabulation—in many arithmetical operations you are sure of your last figure—i.e., the result as directly obtained to a given number of figures, say three, is accurate as far as it goes but always in defect e.g., .246. To correct the last figure you have to go *one* figure further; if the next figure is 0, 1, 2, 3 or 4, you leave the last figure unaltered—if it is 5, 6, 7, 8 or 9, you increase it: of course the maximum error is $\pm.0005$.

“Now suppose you were not to correct the last figure at all, but tabulate always in defect—and *in using the tables* supply in every case a last figure 5. e.g. read your tabular number .246 as .2465 the maximum error would be as before $\pm.0005$ you would have saved yourself the calculation of the additional figure (the 4th figure) in making the table.

“To counterbalance this you have to work with 4 instead of 3 figures.

“Which is best? It seems to me the accuracy is *absolutely* the same. In favor of the ordinary plan it may be said, that the table is a thing made once for all and that the labour of the calculation *does not signify*—(a view for me rather than for you).

“In favor of the other plan; it would be perhaps hundreds or thousands of years before all the tabular numbers come into use—so that even admitting that in each single case the labour of using the final figure 5 is equal to what would have been the labour of correcting the figure (and it is certainly much less). There would be on the whole (i.e., considering together the labor of computing the table and of using it) a saving of labour.

Believe me, yours very sincerely,
Cambridge, 9th July 1874.

A. Cayley”
R. C. A.

QUERY

3. A SHOR TREDE TABLE.—In *Catalogue of the Library of the Royal Astronomical Society*, London, 1886, is the following entry: “Table of $\log \frac{\text{vers } P}{\sin 1''}$

to every second of time as far as $1^{\text{h}}00^{\text{m}}4^{\text{s}}$ to. Poona, 1842.” There is no suggestion as to the author of the table. Mrs. Grace O. Savage, librarian of the U. S. Naval Observatory, kindly drew my attention to the fact that in R. Astron. So., *Mo. Notices*, v. 8, 1848, p. 160, there is a reference to a memoir “On a formula for reducing observations in azimuth of circumpolar stars near elongation, to the azimuth at the greatest elongation” by Robert Shortrede (1800–1868), who spent a number of years in India; see also *MTAC*, p. 42. The report concludes with the statement that a table of

“ $\log \frac{\text{ver. sin}}{\sin 1''}$ ” [sic] “for all arcs up to 1^{h} is added to the memoir.” This is evidently the Poona table. Where may a copy be seen in America?

R. C. A.