15. Cube Roots (Q 11, p. 372). In Vega-Hülsse, *Sammlung mathematischer Tafeln*, Leipzig, 1840, or 1849, or 1865, there is a table, p. 476–575, which has square roots and cube roots for \( x = [1(1)10000] \); square roots to 12D, cube roots to 7D. The desired function in this Query may be obtained by multiplying the cube roots from 1000 to 2000 by \( .04641\overline{5888} \ldots = 10000^{1/3} \).

H. E. Salzer

NYMTP

Editorial Note: A cube-root table, of the same range as that of Vega-Hülsse, is given in editions of *Barlow's Tables* printed before 1930.

16. Rounding-off Notation (Q 10, p. 335).—Devices to indicate something of the \( n + 1 \)st place in an \( n \)-place table are desirable if the extra something is occasionally useful but generally to be ignored. For this purpose the high and low dots of Milne-Thomson & Comrie\(^1\) (e.g., \( 2\overline{3} < 3 < 2\overline{4} < 3 < 3\overline{4} < 3\overline{5} < 4. < 3\overline{6}, \) etc.) are to be preferred to either of the uses of the \( + \) sign referred to in Q 10, since the former usage leaves the last figure of the \( n \)-place table as it should be (i.e., rounded off).

As an example of the possible utility of the M.-T. & C. device we may consider the applicability of the *American Air Almanac* to surface navigation; it is said to be used in preference to the *American Nautical Almanac* already 80\% of the time, at least in the U. S. Navy. It is generally accepted that the error of astronomical sights is probably of the order of 5 to 15 minutes, or nautical miles, in the air, 1 or 2 only at sea. In order not to increase these errors the ephemerides and correction tables are given to the nearest minute in the *Air Almanac*, to the nearest tenth of a minute in the *Nautical Almanac*. It is clear in the first place that the former will satisfy the normal demands of sea navigation, and secondly that the greatest accuracy obtainable would be satisfied by about a third of a minute, rather than a tenth, in the tables. Accordingly, the introduction of the high and low dots into the *Air Almanac*, together with the improvement of some of its correction tables,\(^2\) would give it the accuracy needed in the most refined sea navigation without affecting its convenience for air navigation.

Samuel Herrick

University of California, Los Angeles

\(^1\) L. M. Milne-Thomson & L. J. Comrie, *Standard Four-Figure Mathematical Tables*, London, Macmillan, 1931.

\(^2\) W. J. Eckert, in “Air Almanacs,” *Sky and Telescope*, v. 4, p. 12–15, 17, Nov. 1944, shows that the French air almanac uses such a device, but one which, in the writer's opinion, is inferior to that of Milne-Thomson & Comrie, because the last figure must be altered in some cases, when accuracy to the nearest minute only is desired.