

Sunday, July 19, 2026: While I was working on a web page about logarithms, I had occasion to look at photographic images of a few pages out of his *Arithmetica Logarithmica*, published in 1624, and I happened to notice an error in the tabulated value of $\sqrt{\sqrt{10}}$, in the 19th decimal place. Since this error would, logically, have affected all of his subsequent calculations, I have decided to document the errors here, on my web site.

I did a little more digging, and I understand what Briggs did wrong. He changed a nine into an eight in the eighteenth decimal place of his estimate for $\sqrt{10} \approx 3.1622, \dots, 93319, 98893, 54443, 27185$. Indeed, if I use an extended-precision computer program I find that $\sqrt{3.16\dots 18988935444327185} \approx 1.778279410038922801$ **19730412893316738**, which matches Briggs' erroneous result to 26 decimal places.

I also did a little more reading and convinced myself that this error was actually inconsequential. After extracting the square root of the square root of $\dots 10$ 54 times, Briggs noticed that the next square root in the sequence could be calculated as $1 + \frac{(a_{54}-1)}{2}$; from his previous work with Napier's tables he knew he could double $(a_{54} - 1)$ 54 times to arrive at $\ln(10)$, accurate to at least 15 decimal places. So that's what he did, arriving eventually at $\ln(10) \approx 2.3025, 85092, 99404, 58$.

Radix	Briggs	Corrected
2^{-1}	31622, 77660, 16837, 93319, 98893, 54	3.1622, 77660, 16837, 93319, 98893, 54
2^{-2}	17782, 79410, 03892, 2801 1,97304,13	1.7782, 79410, 03892, 28012, 25421, 19
2^{-3}	13335, 21432, 16332, 40256, 65389,308	1.3335, 21432, 16332, 40256, 75931, 715
2^{-4}	11547, 81984, 68945, 81796, 61918,213	1.1547, 81984, 68945, 81796, 66482, 887
2^{-5}	10746, 07828, 32131, 74972, 13817,6538	1.0746, 07828, 32131, 74972, 15941, 5320
2^{-6}	10366, 32928, 43769, 79972, 90627,3131	1.0366, 32928, 43769, 79972, 91651, 7249
2^{-7}	10181, 51721, 71818, 18414, 73723,8144	1.0181, 51721, 71818, 18414, 74226, 8886
2^{-8}	10090, 35044, 84144, 74377, 59 005,1391	1.0090, 35044, 84144, 74377, 59254, 4239
2^{-9}	10045, 07364, 25446, 25156, 64 670,6113	1.0045, 07364, 25446, 25156, 64794, 6943
2^{-10}	10022, 51148, 29291, 29154, 656 11,7367	1.0022, 51148, 29291, 29154, 65673, 6389
2^{-11}	10011, 24941, 39987, 98758, 85 395,51805	1.0011, 24941, 39987, 98758, 85426, 43437
2^{-12}	10005, 62312, 60220, 86366, 18 495,91839	1.0005, 62312, 60220, 86366, 18511, 36781
2^{-13}	10002, 81116, 78778, 01323, 992 49,64325	1.0002, 81116, 78778, 01323, 99257, 36577
2^{-14}	10001, 40548, 51694, 72581, 627 67,32715	1.0001, 40548, 51694, 72581, 62771, 18786
2^{-15}	10000, 70271, 78941, 14355, 388 1,70845	1.0000, 70271, 78941, 14355, 38813, 63868
2^{-16}	10000, 35135, 27746, 18566, 0858 1,37077	1.0000, 35135, 27746, 18566, 08582, 33586
2^{-17}	10000, 17567, 48442, 26738, 3384 6,28274	1.0000, 17567, 48442, 26738, 33847, 26527
2^{-18}	10000, 08783, 70363, 46121, 46574, 07431	1.0000, 08783, 70363, 46121, 46574, 31557
2^{-19}	10000, 04391, 84217, 31672, 3628 1,88083	1.0000, 04391, 84217, 31672, 36282, 00146
2^{-20}	10000, 02195, 91867, 55542, 03317, 07719	1.0000, 02195, 91867, 55542, 03317, 13751
2^{-21}	10000, 01097, 95873, 50204, 09754, 72940	1.0000, 01097, 95873, 50204, 09754, 75957
2^{-22}	10000, 00548, 97921, 68211, 14626, 60250,4	1.0000, 00548, 97921, 68211, 14626, 61759, 4
2^{-23}	10000, 00274, 48957, 07382, 95091, 25449,9	1.0000, 00274, 48957, 07382, 95091, 26204, 4
2^{-24}	10000, 00137, 24477, 59510, 83282, 69 572,5	1.0000, 00137, 24477, 59510, 83282, 69949, 8
2^{-25}	10000, 00068, 62238, 56210, 25737, 18 748,2	1.0000, 00068, 62238, 56210, 25737, 18936, 9
2^{-26}	10000, 00034, 31119, 22218, 83912, 75 020,8	1.0000, 00034, 31119, 22218, 83912, 75115, 1
2^{-27}	10000, 00017, 15559, 59637, 84719, 93 879,1	1.0000, 00017, 15559, 59637, 84719, 93926, 2
2^{-28}	10000, 00008, 57779, 79451, 03051, 17 588,8	1.0000, 00008, 57779, 79451, 03051, 17612, 4
2^{-29}	10000, 00004, 28889, 89633, 54198, 429 01,3	1.0000, 00004, 28889, 89633, 54198, 42913, 2
2^{-30}	10000, 00002, 14444, 94793, 77767, 4297 0,4	1.0000, 00002, 14444, 94793, 77767, 42976, 4

Radix	Briggs	Corrected
2^{-31}	10000, 00001, 07222, 47391, 14050, 7692 6,8	1.0000, 00001, 07222, 47391, 14050, 76929, 8
2^{-32}	10000, 00000, 53611, 23694, 13317, 1483 1,4	1.0000, 00000, 53611, 23694, 13317, 14833, 0
2^{-33}	10000, 00000, 26805, 61846, 70731, 5150 8,7	1.0000, 00000, 26805, 61846, 70731, 51509, 5
2^{-34}	10000, 00000, 13402, 80923, 26383, 9927 7,7	1.0000, 00000, 13402, 80923, 26383, 99278, 1
2^{-35}	10000, 00000, 06701, 40461, 60946, 55519, 6	1.0000, 00000, 06701, 40461, 60946, 55519, 9
2^{-36}	10000, 00000, 03350, 70230, 79911, 91730, 0	1.0000, 00000, 03350, 70230, 79911, 91730, 2
2^{-37}	10000, 00000, 01675, 35115, 39815, 61857, 6	1.0000, 00000, 01675, 35115, 39815, 61857, 6
2^{-38}	10000, 00000, 00837, 67557, 69872, 7242 6,9	1.0000, 00000, 00837, 67557, 69872, 72427, 0
2^{-39}	10000, 00000, 00418, 83778, 84927, 5908 7,9	1.0000, 00000, 00418, 83778, 84927, 59088, 0
2^{-40}	10000, 00000, 00209, 41889, 42461, 60262, 5	1.0000, 00000, 00209, 41889, 42461, 60262, 6
2^{-41}	10000, 00000, 00104, 70944, 71230, 25311, 0	1.0000, 00000, 00104, 70944, 71230, 25311, 0
2^{-42}	10000, 00000, 00052, 35472, 35614, 98950, 4	1.0000, 00000, 00052, 35472, 35614, 98950, 4
2^{-43}	10000, 00000, 00026, 17736, 17807, 46048, 9	1.0000, 00000, 00026, 17736, 17807, 46048, 9
2^{-44}	10000, 00000, 00013, 08868, 08903, 72167, 8	1.0000, 00000, 00013, 08868, 08903, 72167, 9
2^{-45}	10000, 00000, 00006, 54434, 04451, 85869, 75	1.0000, 00000, 00006, 54434, 04451, 85869, 81
2^{-46}	10000, 00000, 00003, 27217, 02225, 92881, 337	1.0000, 00000, 00003, 27217, 02225, 92881, 368
2^{-47}	10000, 00000, 00001, 63608, 51112, 96427, 283	1.0000, 00000, 00001, 63608, 51112, 96427, 300
2^{-48}	10000, 00000, 00000, 81804, 25556, 48210, 295	1.0000, 00000, 00000, 81804, 25556, 48210, 304
2^{-49}	10000, 00000, 00000, 40902, 12778, 24104, 31 1	1.0000, 00000, 00000, 40902, 12778, 24104, 316
2^{-50}	10000, 00000, 00000, 20451, 06389, 12051, 94 6	1.0000, 00000, 00000, 20451, 06389, 12051, 949
2^{-51}	10000, 00000, 00000, 10225, 53194, 56025, 92 1	1.0000, 00000, 00000, 10225, 53194, 56025, 922
2^{-52}	10000, 00000, 00000, 05112, 76597, 28012, 94 7	1.0000, 00000, 00000, 05112, 76597, 28012, 948
2^{-53}	10000, 00000, 00000, 02556, 38298, 64006, 47 0	1.0000, 00000, 00000, 02556, 38298, 64006, 471
2^{-54}	10000, 00000, 00000, 01278, 19149, 32003, 235	1.0000, 00000, 00000, 01278, 19149, 32003, 235