



Bürgi's Progress Tabulen (1620): logarithmic tables without logarithms

Denis Roegel

► To cite this version:

Denis Roegel. Bürgi's Progress Tabulen (1620): logarithmic tables without logarithms. [Research Report] 2010. inria-00543936

HAL Id: inria-00543936

<https://inria.hal.science/inria-00543936>

Submitted on 6 Dec 2010

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Bürgi's “*Progress Tabulen*” (1620):
logarithmic tables without logarithms

Denis Roegel

6 December 2010

This document is part of the LOCOMAT project:
<http://www.loria.fr/~roegel/locomat.html>

In 1620, Jost Bürgi, a clock and instrument maker at the court of the Holy Roman Emperor Ferdinand II in Prague, had printed (and perhaps published) a mathematical table which could be used as a means of simplifying calculations. This table, which appeared a short time after Napier’s table of logarithms, has often been viewed by historians of mathematics as an independent invention (or discovery) of logarithms. In this work, we examine the claims about Bürgi’s inventions, clarifying what we believe are a number of misunderstandings and historical inaccuracies, both on the notion of logarithm and on the contributions of Bürgi and Napier. We also briefly consider Bürgi’s construction of a sine table, as this is related to the construction of some tables of logarithms. Finally we give a new reconstruction of Bürgi’s progression tables.

1 The *prosthaphæresis*

Before coming to Bürgi’s table, we will describe the context of his work and in particular the method of *prosthaphæresis*.

As observed by Dreyer, the astronomer Tycho Brahe (1546–1601) was the first to make extensive use of trigonometry. In his unprinted manual of trigonometry, he expounded the *prosthaphæretic* method aimed at simplifying the complex trigonometric computations [34]. This method first appeared in print in 1588, in Nicolas Reimerus (Ursus)’ *Fundamentum astronomicum* [137]. It was of great value at the end of the sixteenth century, and was going to be a direct competitor to the method of logarithms.¹

The method of prosthaphæresis² had been devised by Johannes Werner (1468–1522)³ at the beginning of the 16th century and was likely brought to Tycho Brahe by the mathematician and astronomer Paul Wittich (ca. 1546–1586) in 1580 when the latter stayed at Uraniborg, Brahe’s observatory.⁴ This method was based on the two formulæ:

$$\begin{aligned}\sin A \sin B &= \frac{1}{2} [\cos(A - B) - \cos(A + B)], \\ \cos A \cos B &= \frac{1}{2} [\cos(A - B) + \cos(A + B)].\end{aligned}$$

With the help of a table of sines, these formulæ could be used to replace multiplications by additions and subtractions, something that Wittich found out, but that apparently Werner didn’t realize [161, p. 237]. To compute 2.577×6.131 , for instance, one could find values A and B such that $\sin A = 0.2577$, $\sin B = 0.6131$, and then use the first expression above to compute $\sin A \sin B$, and multiply the result by 100 in order to obtain the value of 2.577×6.131 .

¹For a comparison between teaching manuals using prosthaphæresis and those using logarithms, see Miura’s interesting article comparing Pitiscus’ and Norwood’s trigonometries [118].

²The name prosthaphæresis is constructed from the Greek words πρόσθεσις (addition) and ἀφαίρεσις (subtraction), see [101, p. 78], [179], [183, vol. 1, pp. 227–228], [168, vol. 1], and [26, pp. 454–455, 642–643].

³Some sources give Werner’s death in 1528, but this is apparently the result of a confusion with another Johann Werner, see [29, 44].

⁴Interestingly, it also seems that this method was brought to Napier by John Craig who obtained it from Wittich in Frankfurt at the end of the 1570s [55, pp. 11–12]. It has even been argued that Longomontanus had discovered logarithms and that Craig had brought their knowledge to Napier [23, p. 99–101].

Thanks to Brahe’s manual of trigonometry, the fame of the method of prosthaphæresis spread abroad and it was brought by Wittich to Kassel in 1584 [55, pp. 17,68]. This is probably how Jost Bürgi (1552–1632)—who was then an instrument maker working for the Landgrave of Kassel, learned of it.

Bürgi not only used this method, but even improved it. He found the second formula, for Brahe and Wittich only knew the first. In addition, he improved the computation of the spherical law of cosines, which is one of the laws used in spherical trigonometry:

$$\cos c = \cos a \cos b + \sin a \sin b \cos C$$

Using the method of prosthaphæresis, two of the products ($\cos a \cos b$ and $\sin a \sin b$) could be computed but two new multiplications were still left unsimplified and it was not clear that they could be replaced, especially since at that time equations were not written using the modern notation. Bürgi realized that the method of prosthaphæresis could be used a second time, and thus that all multiplications could be replaced by additions or subtractions.

In 1588, when Ursus published the method of prosthaphæresis, he did not give any sources.⁵ But he acknowledged his debt to Wittich and Bürgi in 1597 in his *De astronomiæ hypothesis* [138], [120, p. 180], [94, p. 317]. Once Ursus had published the method, it spread further and was improved by other mathematicians, in particular Clavius [157]. But some time after the invention of logarithms, the method fell in oblivion and the name prosthaphæresis even came to mean again an entirely different notion, which it originally had [35, p. 361], namely the equation of centre, that is the difference between the true and the mean motion of a planet.⁶

2 Jost Bürgi

Jost Bürgi⁷ was born in Lichtensteig, Switzerland, in 1552. Very little is known of his early education⁸ and some authors have theorized that he must have taken a part in the construction of the astronomical clock in Strasbourg between 1571 and 1574, since this clock was built by the Swiss clockmakers Habrecht.⁹ There is however no proof of this assertion. All that is known is that he was hired as court clockmaker by the Landgrave Wilhelm IV of Hessen at Kassel in 1579. The passage through Strasbourg would explain Bürgi’s knowledge in astronomical mechanisms, and the fact that Wilhelm IV had been

⁵This was not the most serious problem of the book. In fact, Ursus also expounded a geo-heliocentric theory which was almost identical to that of Brahe. This caused a long feud between Tycho Brahe and Ursus. For a very detailed account, see Jardine *et al.*’s *Tycho v. Ursus* [73, 72] and Jardine and Segonds’ *La guerre des astronomes* [74]. It should also be noted that Ursus defended a number of original theses in his work, see for instance McColley’s study [115].

⁶In fact, one might even distinguish the “equation of centre” from the difference between the true and mean anomaly, see the article “Prostapherese” in the *Encyclopédie* [135]. A contemporary example of such a use of the prosthaphæresis is found in Wright’s *Certain errors in navigation* published in 1599 and 1610 [184].

⁷On the correct spelling of Bürgi’s name, see Wolf [179, pp. 7–8], [181], [182].

⁸A few elements on his family can be found in Müller’s study [122].

⁹Rudolf Wolf seems to have been the first to suggest this connection in his *Geschichte der Astronomie* [180, pp. 273–274]. Later, Voellmy [164, p. 6] and others took it for granted.

student in Strasbourg in the 1540s may have created a connection. These, however, are mere possibilities.

What is certain is that B rger was a very talented instrument maker who built sophisticated clocks and globes, of which a number survive [166, 99]. He also made astronomical observations and did important work in mathematics.

B rger was highly esteemed by Wilhelm who wrote in 1586 in a mixture of German and Latin: “...unsers Uhrmachers M. Just [B rger], *qui quasi indagine alter Archimedes ist*”¹⁰ [10, p. 21]. In 1597, in a letter to Kepler, Ursus wrote that B rger was on the “same level as Archimedes and Euclides” [177, p. 58].

In 1603, B rger was called to the imperial court in Prague [112, p.89]. There he also received the praise of Kepler who wrote that B rger would sometime be as famous in his art as D rer is in painting [83, p. 769], [1, p. 15]. Although this has not turned out for mathematics, it is definitely the case for clockmaking.

3 B rger’s sine table

The use of the prosthaph retic method required a table of sines. This is likely the reason why B rger constructed a *Canon sinuum*, or a new sine table, probably at the end of the 1590s. A lost note seen by Wolf [179, p. 8] seems to indicate that the sine table has been completed in 1598, assuming Wolf misread 1588 for 1598. Unfortunately, this table was never published and got lost.¹¹ B rger himself seems to have been reluctant at publishing it and in 1592, Brahe wrote that he did not understand why he was keeping the table hidden, after he had allowed a look at it. This seems to indicate that at least some part of the table of sines had been computed by then [10, p. 268], [99, p. 22].

In any case, there remains B rger’s “Coss,” a manuscript explaining B rger’s algebra and giving some elements on the construction of the *Canon*. This manuscript is only known through a copy made by Kepler [145, p. 207]. That the table has really existed seems proven by several observations, including those of Bramer [101, pp. 112–113].

B rger’s *Canon sinuum* contained the sines to 8 places at intervals of 2′′. Rheticus’ *Opus palatinum* (1596), the only other comparable work, gave the sines (and other trigonometric lines) to 10 places at intervals of 10′′ [139]. It is however far from certain that B rger’s table was as accurate as some people claim. Even if the sines were tabulated every 2′′, it is likely that they were only correct to five or six decimal places.

Unfortunately, B rger’s procedure for the computation of the canon is not totally clear. He seems to have computed the values of the sines for each degree of the quadrant and the value of $\sin 2''$ by repeated bisection, trisection and quinquisection of arcs.^{12,13} Other

¹⁰“(...) our clockmaker Jost B rger, who is almost on the way of another Archimedes.”

¹¹The publication of Rheticus’ *Opus palatinum* in 1596 [139], and then of Pitiscus’ *Thesaurus mathematicus* in 1613 [134] are certainly the main reasons explaining why B rger’s tables were never published, and perhaps even never completed, even if some witnesses may have seen parts of the tables.

¹²B rger used a method for solving equations analogous to that of Vi te, later improved by Newton. Interestingly, the literature mentions a “Birge-Vieta” method for finding roots of certain functions, and this is actually a variant of Newton-Raphson’s method published by Raymond Thayer Birge (1887–1980) in 1942 (“The Birge-Vieta Method of Finding Real Roots of Rational Integral Function.” Marchant Calculating Machine Company, report MM-225, August 1942).

¹³For details on B rger’s method, see List and Bialas [101], [183, vol. 1, pp. 86–87, 169–175], [26, pp. 643–646].

values were obtained by interpolation using differences [101], [168, vol. 1], [179]. Bürgi mentions several methods, of which we consider two.

3.1 Bürgi's first method

List and Bialas have suggested that Bürgi's interpolation scheme was similar or identical to the quinquisection used by Briggs (which is a special case of Newton's forward difference formula), but it is a mere hypothesis, and Bürgi never writes that he used quinquisection when using differences [101, 130]. Moreover, if quinquisection was used, it would have required to compute the sines every $10''$, which is a huge work, given that Bürgi did not use Rheticus' work. Finally, as we have shown, if quinquisection is not applied properly, it can introduce larger errors than those caused by Briggs' method [141].

3.2 Bürgi's second method

Bürgi gives a second method in his manuscript [101, p. 77], and although it was not explicited by List and Bialas, it seems actually relatively straightforward. Bürgi's idea is again to start with the values of the sines for every degree, and with the value of $\sin 2''$. Then, he considers the following approximations:

$$\begin{aligned}\sin 30'32'' - \sin 30'30'' &\approx \sin 30'30'' - \sin 30'28'' \approx \frac{\sin 1^\circ - \sin 0^\circ}{1800} \\ \sin 1^\circ30'02'' - \sin 1^\circ30' &\approx \sin 1^\circ30' - \sin 0^\circ29'58'' \approx \frac{\sin 2^\circ - \sin 1^\circ}{1800} \\ \sin 2^\circ30'02'' - \sin 2^\circ30' &\approx \sin 2^\circ30' - \sin 2^\circ29'58'' \approx \frac{\sin 3^\circ - \sin 2^\circ}{1800}\end{aligned}$$

and so on.

Bürgi apparently also computes the differences for the degrees, apparently averaging ("halbir die summam") the previous differences:

$$\begin{aligned}\sin 1^\circ0'2'' - \sin 1^\circ &\approx \sin 1^\circ0' - \sin 0^\circ59'58'' \\ &\approx \frac{(\sin 1^\circ30'02'' - \sin 1^\circ30') + (\sin 30'30'' - \sin 30'28'')}{2}\end{aligned}$$

Bürgi writes explicitly that the differences stand for 450 sines, and that there are 900 sines between degrees, but Bürgi's text seems to often mix chords and sines. We interpret his description as meaning that there are 1800 sines between each degree (hence every $2''$) and that there are twice as many differences. Once Bürgi has the differences, he can interpolate. This interpolation is of course not very accurate. For instance, Bürgi would have

$$\begin{aligned}\sin 2'' &= 0.0000096962\dots \\ \sin 30'2'' - \sin 30' &\approx 0.000009695781\dots \\ \sin 44^\circ &= 0.694658370\dots \\ \sin 44^\circ30'2'' - \sin 44^\circ30' &\approx 0.00000691578373\dots \\ \sin 43^\circ30'2'' - \sin 43^\circ30' &\approx 0.00000703333910\dots \\ \sin 44^\circ2'' - \sin 44^\circ &\approx 0.0000069745614\dots\end{aligned}$$

Then

$$\begin{aligned}\sin 45' &\approx \sin 0 + 900 \sin 2'' + 450(\sin 30'2'' - \sin 30') = .0130897477, \\ \sin 44^\circ 30' &\approx 0.694658370 + 900 \times 0.0000069745614 = 0.70093547526,\end{aligned}$$

whereas the exact values are 0.01308959... and 0.70090926429....

Bürgi's second algorithm gives the sines to 4 or 5 places.

Oechslin has also analyzed this algorithm, but he seems to have misunderstood it and distorted Bürgi's words [130, pp. 89–92]. Oechslin's algorithm is yet another algorithm, in which the basic principle is averaging neighboring differences. But Bürgi makes it very clear that his method is dispensing with the multiple differences, and he really considers only one level of differences, whose values are obtained by one or two means.

3.3 What Bürgi might have done

When we consider using differences, it seems that we tend to compare contemporary methods. For instance, a parallel has been drawn above between Bürgi's method and that of Briggs. But in fact, Bürgi's method could have been of a very different nature. Another possibility should be considered, and it is surprising that apparently no one has suggested it. We suggest that Bürgi may have applied the principles used 200 years later in Prony's *Tables du cadastre*, where large tables of logarithms and trigonometric functions were computed by purely mechanical means [144]. Some features of the *Tables du cadastre* were totally at reach of Bürgi, and do not require any advanced mathematics. The idea is to compute the differences for pivots, for instance every degree, and interpolate using these differences.

$$\begin{array}{cccccc} y & \delta y & \delta^2 y & \delta^3 y & \dots & \\ y' & & & & & \\ y'' & & & & & \\ y''' & & & & & \\ \dots & \dots & \dots & \dots & \dots & \end{array}$$

Bürgi writes that the sines are computed every degree with one more place than the final result [101, p. 76]. He then computed the first, second, third, and fourth differences. But if he took the approximations

$$\begin{array}{ll} \delta y \approx \frac{\delta a}{5} & \delta^2 y \approx \frac{\delta^2 a}{25} \\ \delta^3 y \approx \frac{\delta^3 a}{125} & \dots \end{array}$$

where δa , $\delta^2 a$, etc., are the differences for an interval of one degree, his interpolation would have been very bad. Instead, he should compute the values of δy , $\delta y'$, etc., exactly.

In principle, only the first row is computed in advance, and row $n + 1$ is computed from row n , by adding the differences. In order to compute the initial differences, Prony had analytic expressions for these differences, but these are not strictly necessary. In

order to compute d differences at some point, it is sufficient to compute exactly d sines after the one of the pivot:

$$\begin{aligned}\delta y &= y' - y \\ \delta y' &= y'' - y' \\ \delta y'' &= y''' - y'' \\ \delta^2 y &= \delta y' - \delta y \\ \delta^2 y' &= \delta y'' - \delta y' \\ \delta^3 y &= \delta^2 y' - \delta^2 y \\ &\dots\dots\end{aligned}$$

Bürgi must have computed the pivots by bisection, trisection and quintisection of arcs. Knowing $\sin y$, he may also have computed $\cos y$. Then, he also had computed $\sin \delta a$, where $\delta a = 2''$. From $\sin \delta a$, Bürgi may have computed $\cos \delta a$. Finally, Bürgi could compute the next sine value with

$$\sin y' = \sin(y + \delta a) = \sin y \cos \delta a + \cos y \sin \delta a$$

In order to compute $\sin y''$, Bürgi would have needed to compute $\cos y'$ from $\sin y'$. And similarly when computing $\sin y'''$ or further values. Then, Bürgi would have been able to compute the pivots, and to interpolate. A further problem is to decide on the number of differences, the number of decimals and on the interval, but this method might well have been the one that Bürgi used, and decided to conceal.

4 Bürgi's "Progress Tabulen"

4.1 The motivation

The prosthaphæretic method was much more efficient than direct multiplication, but it still required three additions/subtractions and one division by 2. The method was also inconvenient because it required addition and subtraction of sexagesimal angles, and because powers of a number could not be computed by a mere multiplication. Bürgi must have been searching for an even better method and he devised one based on general progression tables. In his introduction to the tables, he mentions Simon Jacob¹⁴ (?–1564) and Moritius Zons who had described some properties of progressions [53, p. 27] [54, p. 321]. Bürgi's tables were probably conceived around 1605–1610, after he had finished his work on sines.¹⁵

¹⁴Tropfke writes that Jacob almost copies word for word Stifel's description of progressions [162, p. 145].

¹⁵Some authors believe that Bürgi may have started to work on his *Progress Tabulen* as early as 1588, but this seems wishful thinking. All we know is that Ursus mentioned in 1588 that Bürgi had a means to simplify computations (Ursus [137], cited through Lutstorf [105, p. 1]), by which the computation of the sine table must have been meant, since this computation is also implicitly present in Ursus' book [137, f. 9]. In 1627, in the Rudolphine tables, Kepler wrote that Bürgi had found his logarithms many years before Napier (*Apices logistici Justo Byrgio multis annis ante editionem Neperianam viam praeiverunt*

Tabulen/sampt gründlichem vnterricht/wie solche nützlich
in allerley Rechnungen zugebrauchen/ond verstanden werden sol.



Gessen/der Löblichen Universitet Buchdruckern/ Im Jahr / 1620.

9

In the introduction to the *Progress Tabulen*, only published in 1856, Bürgi explains that various tables were available for specific purposes, for instance for multiplication, for division, for the extraction of roots, and so on, but that his purpose was to build a general table [53, 54].

In order to explain the principles of his *Progress Tabulen*, Bürgi considers the following simple correspondence between an arithmetical and a geometrical progression:

0	1	2	3	4	5	...	12
1	2	4	8	16	32	...	4096

In order for instance to compute 4×8 , we can look up these numbers in the second line, find the corresponding values in the first line (2 and 3), *add* them (5) and look up the corresponding value in the second line, which is 32, the result sought.

Stifel, in his *Arithmetica integra* (1544), had already considered the following correspondence:

-3	-2	-1	0	1	2	3	4	5	6
$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{2}$	1	2	4	8	16	32	64

and observed for instance that the multiplication of the second progression corresponds to addition in the first:¹⁶ $\frac{1}{8}$ corresponds to -3 , 64 corresponds to 6, and their product 8 corresponds to $3 = -3 + 6$ [158, ff. 249–250]. Stifel, Bürgi, and others had a notion of exponent, but they were still lacking the modern notation introduced in 1637 by Descartes in his *Géométrie* [32].

Bürgi’s large table follows the same principles, only with a different ratio from one value to the next. In fact, as observed by Voellmy [164, p. 21] and Lutstorf [104, p. 106], Bürgi states that the properties of the above correspondence are shared by any pair of arithmetic and geometric progressions, if these progressions start with 0 and 1. And he adds that the “following tables” are also two such progressions.¹⁷

ad hos ipsissimos logarithmos) [85, p. 298], [125, p. 392], [30, p. 52]. Then, in 1630, Benjamin Bramer (1588–1652), Bürgi’s brother-in-law, mentioned that Bürgi’s tables had been computed more than 20 years before [11], that is before those of Napier [175, 60], hence our range 1605–1610. Montucla did recognize Bürgi’s merits, but Biot, in a 1835 review of Mark Napier’s memoir and republished in 1858, discarded Bürgi’s work altogether, apparently not aware of Montucla’s description, and even calling Bürgi “an obscure mathematician of the continent” [9, p. 410]. For Cantor, Bürgi’s tables were developed between 1603 and 1611, when Bramer was living in Prague with Bürgi [26, p. 729]. Cajori, for the Napier tercentenary celebration, wrote that Bürgi “published a table of logarithms in 1620” and considers the issues of priority, not questioning the discovery itself [23, p. 101]. Cajori takes over Cantor’s period for the computation of the tables. Cajori also considers the unfairness of some previous authors towards Bürgi [23, pp. 106–107] or Napier. Perhaps the extreme case of unfairness is that of Jacomy-Régnier who claims that Napier had his calculating machine made by Bürgi himself and that in return the shy Bürgi told him of his invention of logarithms [71, p. 53]. Recent authors have added their own interpretation of the events. Voellmy, for instance, in addition of asserting the year 1588 for Bürgi’s tables, claims that Napier’s work was still improved between 1614 and 1619 (which is false) and this is a contrived way to assert anteriority for Bürgi [164, p. 19]. Bell follows Cantor or Cajori [4, p. 162] and for Bruins, Bürgi started his tables in 1603 [15, p. 98] or in 1606 [16, p. 243] and completed them in 1610. For Mautz, Mackensen, and others, it is obvious that Bürgi invented logarithms before Napier [113, p. 3], [169, p. 28].

¹⁶On the history of these correspondences and the law of exponents, see Smith [156].

¹⁷The original text reads “...und dieße Eigenschafft haben nicht allein die 2 abgesetzten *Progressen* mit

	0	500	1000	1500	2000	2500	3000	3500
0	1000000000	100501227	101004966	101511230	102020032	102531384	103045299	103561795
10	100000000	100501277	101004967	101511231	102020033	102531385	103045300	103561796
20	100000000	100501278	101004968	101511232	102020034	102531386	103045301	103561797
30	100000000	100501279	101004969	101511233	102020035	102531387	103045302	103561798
40	100000000	100501280	101004970	101511234	102020036	102531388	103045303	103561799
50	100000000	100501281	101004971	101511235	102020037	102531389	103045304	103561800
60	100000000	100501282	101004972	101511236	102020038	102531390	103045305	103561801
70	100000000	100501283	101004973	101511237	102020039	102531391	103045306	103561802
80	100000000	100501284	101004974	101511238	102020040	102531392	103045307	103561803
90	100000000	100501285	101004975	101511239	102020041	102531393	103045308	103561804
100	100000000	100501286	101004976	101511240	102020042	102531394	103045309	103561805
110	100000000	100501287	101004977	101511241	102020043	102531395	103045310	103561806
120	100000000	100501288	101004978	101511242	102020044	102531396	103045311	103561807
130	100000000	100501289	101004979	101511243	102020045	102531397	103045312	103561808
140	100000000	100501290	101004980	101511244	102020046	102531398	103045313	103561809
150	100000000	100501291	101004981	101511245	102020047	102531399	103045314	103561810
160	100000000	100501292	101004982	101511246	102020048	102531400	103045315	103561811
170	100000000	100501293	101004983	101511247	102020049	102531401	103045316	103561812
180	100000000	100501294	101004984	101511248	102020050	102531402	103045317	103561813
190	100000000	100501295	101004985	101511249	102020051	102531403	103045318	103561814
200	100000000	100501296	101004986	101511250	102020052	102531404	103045319	103561815
210	100000000	100501297	101004987	101511251	102020053	102531405	103045320	103561816
220	100000000	100501298	101004988	101511252	102020054	102531406	103045321	103561817
230	100000000	100501299	101004989	101511253	102020055	102531407	103045322	103561818
240	100000000	100501300	101004990	101511254	102020056	102531408	103045323	103561819
250	100000000	100501301	101004991	101511255	102020057	102531409	103045324	103561820
260	100000000	100501302	101004992	101511256	102020058	102531410	103045325	103561821
270	100000000	100501303	101004993	101511257	102020059	102531411	103045326	103561822
280	100000000	100501304	101004994	101511258	102020060	102531412	103045327	103561823
290	100000000	100501305	101004995	101511259	102020061	102531413	103045328	103561824
300	100000000	100501306	101004996	101511260	102020062	102531414	103045329	103561825
310	100000000	100501307	101004997	101511261	102020063	102531415	103045330	103561826
320	100000000	100501308	101004998	101511262	102020064	102531416	103045331	103561827
330	100000000	100501309	101004999	101511263	102020065	102531417	103045332	103561828
340	100000000	100501310	101005000	101511264	102020066	102531418	103045333	103561829
350	100000000	100501311	101005001	101511265	102020067	102531419	103045334	103561830
360	100000000	100501312	101005002	101511266	102020068	102531420	103045335	103561831
370	100000000	100501313	101005003	101511267	102020069	102531421	103045336	103561832
380	100000000	100501314	101005004	101511268	102020070	102531422	103045337	103561833
390	100000000	100501315	101005005	101511269	102020071	102531423	103045338	103561834
400	100000000	100501316	101005006	101511270	102020072	102531424	103045339	103561835
410	100000000	100501317	101005007	101511271	102020073	102531425	103045340	103561836
420	100000000	100501318	101005008	101511272	102020074	102531426	103045341	103561837
430	100000000	100501319	101005009	101511273	102020075	102531427	103045342	103561838
440	100000000	100501320	101005010	101511274	102020076	102531428	103045343	103561839
450	100000000	100501321	101005011	101511275	102020077	102531429	103045344	103561840
460	100000000	100501322	101005012	101511276	102020078	102531430	103045345	103561841
470	100000000	100501323	101005013	101511277	102020079	102531431	103045346	103561842
480	100000000	100501324	101005014	101511278	102020080	102531432	103045347	103561843
490	100000000	100501325	101005015	101511279	102020081	102531433	103045348	103561844
500	100000000	100501326	101005016	101511280	102020082	102531434	103045349	103561845

Figure 2: First page of Bürgi's tables (source: [105]).

4.2 Bürgi's correspondence

4.2.1 The construction

As stated earlier, in 1620 Bürgi had printed (and perhaps published) a table with a correspondence between two sequences, one arithmetical (in red), the other geometric (in black).^{18,19} The correspondence was the following:

red numbers	black numbers
0	10^8
10	$10^8 \left(1 + \frac{1}{10^4}\right)$
20	$10^8 \left(1 + \frac{1}{10^4}\right)^2$
...	...
n	$10^8 \left(1 + \frac{1}{10^4}\right)^{\frac{n}{10}}$

where all numbers were rounded to integers.

Let $b(x)$ be the black number corresponding to x , and $r(x)$ be the red number corresponding to x . We then have

$$b(x) = 10^8 (1.0001)^{\frac{x}{10}}$$

$$r(x) = 10 \left(\frac{\ln(x/10^8)}{\ln(1.0001)} \right)$$

and of course $b(r(x)) = x$.

Bürgi's tables were spanning 58 pages and a reconstruction of these tables is given at the end of this volume. They exhibit two interesting features, although Bürgi was not the first to use them. First, the tables are double-entry tables and anticipate later double-entry tables of logarithms.²⁰ The tables of Briggs, Vlacq, and others, were not

einander, sonder alle, sie sein, wie sie wollen, wenn der *Arithmetische* von 0 und der *Geometrische* von 1 anfanget, wie denn auch die folgenden *Tabulen* nichts anderß als 2 solcher *Progressen* sindt." (... and this property is not only a property of the two composed progressions with eachother, but all those, whichever they are, in which the arithmetical progression starts with 0 and the geometrical with 1, and the following tables are nothing else as two such progressions.) [164, p. 21], [105, p. 27], [104, p. 106].

¹⁸The printing quality of the original tables is less than satisfactory, and many digits are illegible. There also appear to be slight alignment problems between the red and black numbers, as observed by Lutstorf [105, p. 3], and also before by Kästner [76, p. 95].

¹⁹To our knowledge, there are currently (2010) at least two copies of Bürgi's table, and they are located in Munich (Universitätsbibliothek München, call number 1603/R 1620-001), and in Graz (Hauptbibliothek SOSA, Guldin-Bibliothek, call number I 18601). The title page of the latter copy (which was part of Paulus Guldin's library) was reproduced in [152] and [64]. The (now) Munich copy was found by Kästner [76], and rediscovered by Wolf in 1847 [175], [177, p. 71]. Kästner found Bürgi's tables among various papers he bought when the books of Georg Moritz Lowitz (1722–1774) were auctioned in 1776 [76, p. 94]. Lowitz had bought the books of Johann Gabriel Doppelmayr (1677–1750), some of which were from Johann Christoph Sturm (1635–1703). Bürgi's tables may therefore have been acquired by Sturm or Doppelmayr, although nothing more is known about their origin. Kästner had initially not noticed Bürgi's tables, and the initials "I. B." made him think more of Jacob Bartsch, until Bramer's words [11] drew Kästner's attention to Bürgi. In 1877, Wolf mentioned copies in Gdansk, Göttingen and Munich [180, p. 349], but we do not know if a copy does still exist in Göttingen. There is or was a copy in Gdansk (Danzig), whose title page was reproduced by Voellmy [164]. This copy was found by Gronau in 1855, together with its handwritten introduction. In 1997, Faustmann mentioned a copy in the Vatican library, but this was an unverified claim which has not been confirmed [40, p. 121].

²⁰For a possible influence of this feature on other tables, in particular those of Kepler, see Tropfke [162, p. 158].

double-entry tables, but one reason for that may be the fact that the first tables of logarithms were heavily loaded with difference entries, which make it difficult to use double-entries. Bürgi's tables, instead, have no differences. A second interesting feature is the use of dots to replace repeated figures.²¹

Bürgi constructed this table until $n = 230270.022$ and the value of the black number²² was then $999999999 \approx 10^9$. He gave exactly 23032 correspondences.²³ His purpose was to cover a range of black numbers with a ratio of 10, such that the digits of every number could be found within the table. It is interesting to observe that whereas the black numbers are always integers (in our interpretation), the red numbers start as multiples of 10, but end up being fractionary. Some authors have considered that the step of 10 in the red numbers is reminiscent of the step of $10'$ or $10''$ in some trigonometric tables, but I think this is a very contrived explanation. It seems much more likely that Bürgi had anticipated that by the end of his table, he would need to add at least one significative digit to the red numbers for the last interpolation, and it was probably only when his work was very advanced that he noticed that he could actually find even more digits for $r(1000000000)$.

4.2.2 The errors in Bürgi's tables

Bürgi's geometric progression seems rather simple to compute. At first sight, given a value n of 9 digits, the next value n' is obtained as $n' = 1.0001 \times n = n + \frac{n}{10000}$, or n added to n shifted by four digits to the right. Bruins [16, p. 244] estimated that this work would take about 170 hours. Mackensen estimated that it would take a few months [169, p. 29]. But in fact, it probably took longer, because care had to be taken that the values were accurate.

Waldvogel was the first to investigate the accuracy of Bürgi's tables [170, 171, 172]. The tables appear not to contain any systematic errors. In particular, the last value of the red numbers is given as 23027.0022, whereas the exact value is 23027.0022032...

In order to check the accuracy of the table, Waldvogel has typed in the 23028 terminal digits (from the red numbers 0 to 230270) and checked the accuracy of the values, assuming that the error was at most a few units. The terminal digits were illegible in 182 cases. In 91.54% of the cases, the rounding was correct. In 7.29% of the cases, the error was only a rounding error. In 0.39% of the cases, the terminal digit was erroneous ($\Delta \geq 1$). Lutstorf had also observed that Bürgi's values were not always correctly rounded [105, p. 6].

Bürgi has most certainly computed the values in his table using guard digits. In other words, he must have added digits to the table values and only put in the table the rounded truncated values. For instance, with three guard digits, the *internal* value for $b(22620)$ is 125381222593, which when multiplied by 1.0001 and rounded gives 125393760715. This will be the *internal* value of $b(22630)$. But the black numbers derived from these internal values are respectively 125381223 and 125393761.

Waldvogel has compared Bürgi's values with recomputations using different numbers

²¹This feature may also have been borrowed by Kepler, see Tropfke [162, p. 159].

²²All explicit nine-digit "black numbers" will be written in a different font but this will not apply to any number derived from them.

²³Strangely, Montucla writes that Bürgi's table contained about 33000 logarithms [119, vol. 2, p. 11].

of guard digits and he has shown that the difference between Bürgi's table and a table recomputed with guard digits is minimized if the computation uses three guard digits [170, 171, 172]. It is therefore safe to assume that Bürgi did the computation with at most three additional digits and rounded the results before putting them in the table. Even without using Bürgi's original table, we can compare the exact results with the results obtained using guard digits. With three guard digits, almost all the values are correct when rounded on nine digits. But with two guard digits, the error reaches about two units by the end of the table, if no other correcting method is employed. One obtains for instance 999999782 for the red number 230270 instead of the correct 999999780 with three guard digits. Bürgi gave 999999779. And computing with no guard digits would have led to 999999479.

However, even computing with three guard digits is not foolproof, since it is always possible to make a mistake, therefore checks are necessary. Bürgi's tables contain some anomalies that reveal the existence of checks. For instance, Waldvogel reports that the largest interval of systematic errors takes place between 19890 and 19904, when the error on the last digit is between 1.73 and 2.64 (difference with the unrounded theoretical value) [171, p. 20]. Then, the value for 19905 appears again correctly rounded. Obviously, the correct value comes from elsewhere. Bürgi must have computed check values at regular intervals and this is easy for $n = 2^m$. He may also have checked ratios at certain intervals, perhaps every 5000 values, as given on the cover page. Using adequate checks, Bürgi may have used only two guard digits. In any case, these checks explain why there is no systematic error. The propagation of errors was thwarted. A more detailed analysis of the actual tables might reveal what were these "pivot" values, if any.

By comparison, it is interesting to observe that Napier apparently did not apply some checks that he could have applied, and consequently his tables display a systematic error [143].

4.3 Using Bürgi's table

When Bürgi's tables were printed in 1620, it was without the announced "Unterricht." The introduction was apparently never printed.²⁴ If Bürgi's tables were really published, which I think is unlikely, they would indeed have been difficult to use, but as Kästner has shown [76], it would have been possible to work out how to use them, at least if the reader was mathematically inclined and had a clue that the tables served a purpose similar to that of logarithms. In any case, a handwritten version of the wanted introduction was eventually found in Gdansk by Johann Friedrich Wilhelm Gronau in 1855 and published by Gieswald in 1856 [53, 54].²⁵ Bürgi's text mainly gives a number of examples showing

²⁴This was already suggested by Kästner in 1786 [76, p. 96]. One might think that the delay in the printing may have been due to the two colors in the printing, but in fact this seems unlikely. It is much more likely that the printing was made obsolete by the increasing fame of Napier's logarithms, by Kepler himself using Napier's logarithms and not Bürgi's, by Gunter's table, etc. In fact, the tables that were printed were probably never sold and left incomplete, the project being postponed *sine die*. It is also possible that the introduction was printed, but that all copies have vanished. Some people were probably able to obtain some of the incomplete copies.

²⁵There are slight differences between Gieswald's two versions. The original manuscript has the red numbers in red, and this feature is reproduced in Gieswald's first publication. But in the second publication, the red numbers were replaced by italics. Other reproductions of Bürgi's text, from Gieswald's first

how interpolation, multiplication, extraction of roots and various proportionals can be computed.

4.3.1 Interpolation

In his “Unterricht,” Bürgi explains the process of interpolation, which happens to be a mere linear interpolation. As an example, he considers the black number 36 and seeks its red number [104, pp. 108–110]. Bürgi considers the number $x = 360000000$ and looks this number up in the table. He finds two approaching black numbers, and their corresponding red numbers:

red	black
128090	359964763
128100	360000759

Let $r_1 = 128090$, $r_2 = 128100$, $b_1 = 359964763$, and $b_2 = 360000759$. Bürgi then considers that $b_2 - b_1 = 35996$ corresponds to 10000 (in fact, representing the difference 10), and concludes that $x - b_1$ corresponds to

$$10000 \times \frac{x - b_1}{b_2 - b_1} \approx 9789,$$

hence the red number sought is $r_1 + 9.789 = 128099^{\circ}789$, where the decimal point²⁶ is indicated by Bürgi with a small $^{\circ}$ over the unit 9. The exact value is $128099.78910\dots$

Interpolation was certainly also used to complete the final steps of the table. Assuming that Bürgi found $b(230270) = 999999779$ and $b(230280) = 1000099779$ (both values are truncated), then he could find $b(230270.01) = b(230270) + \frac{0.01}{10} \times (b(230280) - b(230270)) = 999999879$. Similarly, $b(230270.02) = 999999979$, $b(230270.021) = 999999989$, and finally $b(230270.022) = 999999999$, although if correctly rounded, $b(230270.022) = 10^9$. But even with an error of one unit on the last digit, Bürgi could have seen that there are about ten units between the last two terms, and therefore that the red number corresponding to 1000000000 was very close to 230270.022, which is what he concluded on the title page.

4.3.2 Multiplication and scaling

The black numbers cover the range from 10^8 to 10^9 , which is essentially the range 1 to 10. Every number has a black number close to it, when scaled by a power of 10. However, when Bürgi’s table is used for multiplication, the result may need to be rescaled, since it can get out of the range from 1 to 10.

publication, and with comments, can be found in Lutstorf and Walter’s publications [105, 104]. Lutstorf and Walter have also reproduced the covers of the Gdansk and Munich copies and following parts of the tables: 0–4000, 224000–230270. Folta and Nový have also published a typescript of the introduction, together with reproductions of two original pages, the cover of the Gdansk copy, as well as four pages of the tables (0–4000, 28000–32000, 128000–132000, and 228000–230270) [45].

²⁶It has been argued that Bürgi is the inventor of the decimal point [26, pp. 617–619]. Bürgi’s little circle, however, although it has the function of a decimal point, is not a point. Dots have been used by various authors, although not systematically. Pitiscus, for instance, used separating dots in his 1608 and 1612 tables, but these dots were not exclusively separators for a decimal part. The first who seems to have used the dot systematically as a decimal point seems to be Napier [143].

	228000	228500	229000	229500	230000	230000
0	977556601	982456378	987380714	992329732	...	997303557
10	...654356	...554623	...475452	...428965	...100000	...403287
20	...752122	...652879	...578200	...528208	...200000	...503027
30	...849897	...751144	...676958	...617461	...300000	...602778
40	...947682	...849419	...775726	...726724	...400000	...702538
50	978045477	...547704	...874503	...825996	...500000	...802308
60	...143281	983045999	...973291	...925279	...600000	...902088
70	...241096	...144304	988072088	993024572	...700000	998001879
80	...338920	...242618	...170895	...123874	...800000	...101679
90	...436754	...340942	...269712	...223187	...900000	...201489
100	...534597	...439276	...368539	...322509	...	...301309
110	...632451	...537620	...467376	...421841	...100000	...401139
120	...730314	...635974	...566223	...521183	...200000	...500979
130	...828187	...734338	...665080	...620535	...300000	...600829
140	...926070	...832711	...763946	...719898	...400000	...700690
150	979023962	...931094	...862822	...819269	...500000	...800560
160	...121865	984029488	...961709	...918651	...600000	...900440
170	...219777	...127800	986060605	994018043	...700000	999000330
180	...317699	...226303	...159511	...117445	...800000	...100230
190	...415631	...324726	...258427	...216857	...900000	...200140
200	...513572	...423158	...357353	...316278	...	...300060
210	...611524	...521601	...456288	...415710	...100000	...399990
220	...709485	...620053	...555234	...515152	...200000	...499930
230	...807456	...718515	...654190	...614603	...300000	...599880
240	...905437	...816987	...753155	...714065	...400000	...699840
250	980003427	...915468	...852130	...813536	...500000	...799810
260	...101427	985013960	...951115	...913017	...600000	...899790
270	...99438	...112461	990050111	995012509	...700000	999999779
280	...297457	...210973	...149116	...111010	...800000	...879
290	...395487	...309494	...248130	...211521	...900000	...979
300	...493527	...408025	...347155	...311042	...	...89
310	...591576	...506565	...446190	...410573	230270022	999999999
320	...689635	...605116	...545235	...510115	230270023	
330	...787704	...703677	...644289	...609666	Also enden sich die zwei Summen der Zahlen in 9. Ziffern/ von ist die Note 230270022 230270023 Die Schwarze aber ist ganz mit 9. nollen als 1000000000 und so dieselben ganz gen Zahlen/nicht genug geben mögen / so mag man dieselben 2.3.4. 5.6.7.8.9. zusammen addieren.	
340	...885783	...802247	...743353	...709227		
350	...983872	...900827	...842428	...808797		
360	981081970	...99417	...941512	...908378		
370	...180078	986098017	991040606	996007969		
380	...278156	...196627	...139711	...107570		
390	...376324	...295247	...238625	...207181		
400	...474462	...393876	...337948	...306801		
410	...572609	...492516	...437082	...406432		
420	...670766	...591165	...536226	...506073		
430	...768934	...689824	...635380	...605723		
440	...867110	...788493	...734543	...705384		
450	...965297	...887172	...833717	...805054		
460	982063494	...985861	...932900	...904735		
470	...161700	987084559	992032093	997004425		
480	...259916	...183268	...131296	...104126		
490	...358142	...281986	...230510	...203836		
500	...456378	...380714	...329732	...303557		

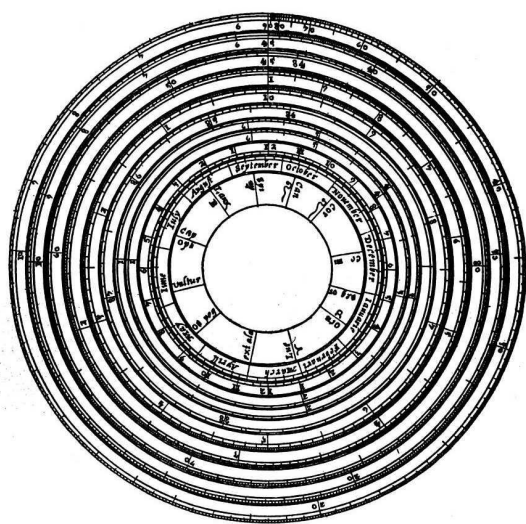
Figure 3: Last page of Bürgi's tables (source: [105]).

The multiplication procedure is as follows. If we want to multiply x by y , we find their corresponding red numbers $r(x)$ and $r(y)$, assuming x and y are both nine digits integers. If x or y do not have nine digits, their values are scaled, as this does not alter the first digits of the result xy . We then add the red numbers, and compute again the corresponding black number. In other words, we compute $b(r(x) + r(y)) = \frac{b(r(x)) \times b(r(y))}{10^8} = \frac{x \times y}{10^8}$. The multiplication has been replaced by an addition and three table look-ups. Bürgi then merely keeps the first nine digits of the result and these are the first nine digits of (the approximation of) xy .

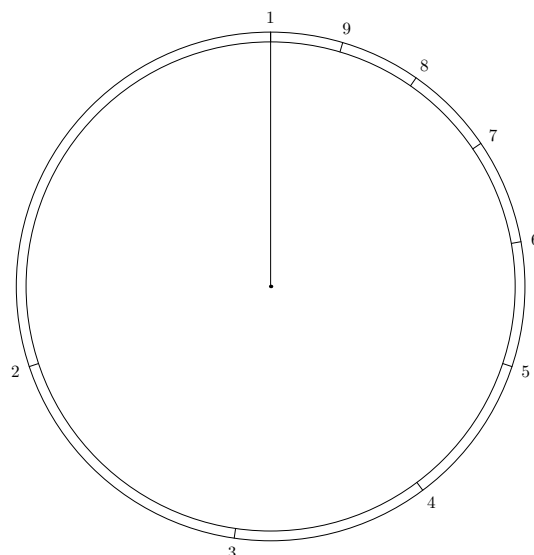
If $r(x) + r(y) \geq 230270.022$, Bürgi subtracts this value, and therefore computes $b(r(x) + r(y) - 230270.022) = \frac{b(r(x) + r(y))}{10^9}$, which has the same first nine digits as xy .

Divisions are computed similarly, but the red numbers are subtracted. If the result of the subtraction is negative, Bürgi adds 230270.022 in order to remain in the range of the table, without altering the digits.

The pivotal use of the constant 230270.022, which Bürgi calls the “whole red number,” explains why Bürgi tried to compute it very accurately.



(a) Oughtred's circle of proportion



(b) A circular logarithmic scale from 1 to 10

Figure 4: Circles of proportions

4.4 Circles of proportions

Although Bürgi understood that his tables could be extended beyond the black number 999999999 or before 1000000000, he does not seem to have felt the need to define such an abstract notion of a general correspondence, very likely because there was no practical need for it. But Bürgi did provide a circular representation of his table on the cover of his tables (figure 1) and this representation is a first step towards circular slide rules. Such a relation had already been observed by Henderson [69, p. 166]. The red and black numbers are given by steps of 5000 of the red numbers. The only hindrance in the way to a circular slide rule was the need to add or subtract a complex constant when multiplying or dividing by 10, a problem that would vanish once the decimal logarithms would be introduced.

And indeed, in 1632, soon after their introduction, William Oughtred published such a circular version of a slide rule (figure 4a) [133, 173]. In this circle, we can in particular notice a circular logarithmic scale going from 1 to 10 counterclockwise (fourth division from the outside). Figure 4b shows this scale alone.

5 Debates

5.1 Positions of the units

There has been some debate about the positions of the units in the arithmetic and geometric sequences, especially since Wolf apparently overlooked the decimal point in 23027⁰0022, a point marked by a little circle over the unit digit 0. In 1849, Wolf considered that Bürgi didn't indicate the positions of the units in any of the sequences [175],²⁷ and he took the choice which was most convenient to him in the arithmetic sequence, namely the one in which the red numbers range from 0.0001 to 2.30270022, although nothing in Bürgi's text supports this view. But later, in 1877, Wolf expressed the arithmetic sequence as $x_n = 10n$, with $n = 0$ to 23027 [180, pp. 347–351] and in 1890 he seemed once again to consider that the red numbers range from 0.0001 to 2.30270022 [183, vol. 1, pp. 68–70]. Gerhardt, in his “history of mathematics in Germany” (1877) writes that the arithmetic sequence goes from 0 to 230270022 and also that Bürgi has scaled the arithmetic progression by a factor 10^5 for accuracy [51, pp. 118–119]. Other historians have followed the natural interpretation where the red numbers are multiples of 10. But the copies of Bürgi's tables located at Munich and Gdansk both contain(ed) a small position mark $^\circ$ for the units (see at the end of our reconstruction and on the cover page). This mark is therefore certainly not a mark added at a later time and can be used to support the natural interpretation.

The geometric sequence, however, has no position mark, and its values naturally go from 10^8 to 10^9 . However, this too has been debated. Wolf, Voellmy, and especially Lutstorf, have claimed that Bürgi's black numbers really go from 1 to 10, and not from 10^8 to 10^9 [164, p. 16] [105, p. 18] [104, p. 36]. However, Wolf is again contradicting himself, since in 1877 he also writes that the geometric sequence is $y_n = 10^8 \cdot 1.0001^n$, with $n = 0$ to 23027 [180, pp. 347–351], and in 1890 he considered that the black number 271814593 should be read 2.71814593 [183, vol. 1, pp. 68–70]. This conflicting expression contrasts with the coherence of the description of Napier's ideal sequence $y_n = 10^7 \left(1 - \frac{1}{10^7}\right)^n$ in 1877 and 1890.

For Gerhardt, the geometric progression goes from 10^8 to 10^9 [51, p. 119]. Many other historians, such as Oechslin [130, p. 93], have adopted Wolf's 1890 views. But some, such as Naux [126, vol. 1, pp. 96–97] have shown more care and stated that the position of the unit and the base was not clear.²⁸ Other early historians, such as Matzka [108, p. 139] have remained neutral and interpreted the sequences in the natural way.²⁹

²⁷This may also seem strange, if one remembers the copy at Munich is the one rediscovered by Kästner, and that Kästner explicitly reproduces the unit marking circle in 1786 [76, p. 96].

²⁸But then, Naux does not seem to have read Bürgi's introduction to the table, although he seems aware of its existence.

²⁹We should however note that Matzka, like many other writers, errs on Napier's logarithms, when he basically writes $\log_n 9999999 = 1$, which is incorrect [108, p. 139]. Matzka's first article was published

5.2 Dubious reasonings

For us, all the above claims are based on misunderstandings, wishful thinking, and anachronisms! Wolf, Voellmy, Lutstorf and others have mainly been motivated by the belief that Bürgi's tables *are* tables of logarithms (or antilogarithms), and that Bürgi had defined a function which was an analogue to the function defined by Napier in his *Descriptio*. They have actually confused logarithmic computation with logarithms. I suspect that an important—and perhaps unconscious—motivation was to claim a posthumous anteriority for the invention of logarithms by one of their landmen.³⁰ Kewitsch summarized very well Wolf's (perhaps unconscious) motivations when he wrote that Wolf “set his lifegoal to draw his landsman Bürgi out of undeserved oblivion” [87, p. 323].

5.2.1 Circular reasonings

In order to set the stage of these dubious reasonings, consider what Wolf writes. With his assumptions, and from the fact that 1 then corresponds to 2.71814593 and 2.30270022 to 10, Wolf incorrectly concluded that his assumptions about the positions of the units were valid. Wolf's reasoning is actually even more contrived, because in his view, Bürgi had really wanted to use a ratio of $\sqrt[10000]{e} = 1.000100005\dots$, and that he approximated this value with 1.0001 for practical reasons [175], [177, p. 75]. In other words, for Wolf, Bürgi discovered the natural logarithms before Napier. One question that Wolf does not ask is: did Bürgi know e and did he actually need to divide the ratio e in 10000 parts? I am afraid that Bürgi had no need for e . Some of these shortcomings of Wolf's analysis had already been noted by Lutstorf [105, pp. 17–18].

Another incorrect—but interesting—analysis is Lutstorf's “proof” that 360000000 really means 3.60000000, and even that 36 really means 3.6, for instance when Bürgi writes that the red number of 36 is 128099.78 [104, p. 110]. This too is a typical example of circular reasoning. First, using an hypothetical function $\log_b$, Lutstorf takes for granted that $\log_b 10 = 230270.022$, although Bürgi does not say so [104, p. 37]. Then, Lutstorf computes $\log_b(360000000) = \log_b 3.6 + 8 \times \log_b 10$, and assuming $\log_b 3.6 = 128099.789$, he finds $\log_b(360000000) = 1970259.965$ and concludes that since Bürgi's table does not give 1970259.965 for the black number 360000000, that this black number cannot represent 360000000! This reasoning contains two assumptions which help to conclude that the assumptions are correct! Incidentally, the first assumption is even too strong, and Lutstorf could have gone by merely assuming that $\log_b 10 \neq 0$. As Lutstorf writes, this hints to the fact that 360000000 really means 3.6.

5.2.2 Wrong assumptions

Sometimes, the errors arise from wrong implicit assumptions. For instance, from the fact that the red number 0 corresponds to the black number 100000000, which he views as 1, Lutstorf claims that for Bürgi the *logarithm* of 1 is 0 [105, p. 16]. This seems a

in 1850, before Bürgi's introduction was known. But in a second article published in 1859, Matzka has adopted the view according to which the range of the black numbers was 1–10 [109, pp. 351–352].

³⁰It is important to remember that many “popular” encyclopædias covering a large subject are bound to contain many errors, even when written by reputed mathematicians. Two interesting articles worth reading in this context are those of Mautz [113] and Miller [117].

minor point, except that Lutstorf has assumed that Bürgi had conceived such a *logarithm* function.

5.2.3 Tweaking the numbers

If, as Lutstorf, one is convinced that Bürgi had a notion of a logarithmic function, one is bound to hit contradictions. When Bürgi is looking up the red number corresponding to 36, he says that he adds seven zeros to obtain nine digits, because all the black numbers in his table have at least nine digits. He does not say that 360000000 is in fact 3.6. Then he finds the red number corresponding to 360000000 which is 128099.789 [104, p. 108–109]. Next, Bürgi writes that the red number of 36 is 128099.78 [104, p. 110]. This, of course, seems to be a contradiction, but Lutstorf solves this contradiction by proposing *two* changes: first, as we explained above, the black number 360000000 is supposed to mean 3.60000000, and second, 36 is also supposed to mean 3.6! In addition, when Bürgi computes the difference of two black numbers, he finds for instance 35996 [104, p. 110]. If Lutstorf is right, why does Bürgi write 35996 and not perhaps 0.00035996 or 000035996?

It is interesting to relate this to Oechsli's comment that "Bürgi does not write the last value 10 [of the geometric sequence] as 10, which for him would mean 1.0, but as 999999999, which is 9.99999999", and that the "usual reading applies to the numbers of the arithmetic sequence" [130, p. 95]. However, if this is so, how should the number 1000000000 on the last page of tables be interpreted? One should realize that Bürgi has intentionally limited his table to nine digit numbers, and that these numbers had to be all different. This may be one explanation why he rounded the last black number to 999999999 and not to the more correct 1000000000. It makes only very little difference. In any case, the value 1000000000 on the last page must mean 10 times the first value of the table, and cannot merely be equal to it.

5.2.4 Incoherencies

But that is not the whole story. Lutstorf continues with another example [104, p. 38], in case the reader was not totally convinced by the above one. Taking again 360000000, he considers its red number 128099.789, as well as half of this number, 64049.8945, which corresponds to the black number 189736660, which can be read 1.89736660 according to Lutstorf, and this is equal to $\sqrt{3.6}$, which is compatible with an interpretation of 360000000 as 3.6. So far, so good. If instead 360000000 means 36, says Lutstorf, then $\log_b 36 = 128099.789$ (using Bürgi's table), and $\log_b 6 = \frac{1}{2} \log_b 36 = 64049.8945$, but, says Lutstorf, the tables give $\log_b 6 = \log_b 600000000 = 179184.905$. This apparent discrepancy leads Lutstorf to conclude that 360000000 cannot mean 36. The reasoning error is totally obvious, but apparently Lutstorf did not see it: if 360000000 means 36, then 600000000 must mean 60; in other words, the table does not contain $\log_b 6$, but $\log_b 60$, and therefore Lutstorf cannot derive from the tables that $\log_b 6 = 179184.905$. What Lutstorf should have done instead, assuming that $\rho(n) = n \cdot 10^m$ is the table representative of n and that $a < \sqrt{10}$, was to observe that $\log_b(\rho(a)) = \frac{1}{2} \log_b(\rho(a^2))$ is only true for even values of m . And since Bürgi uses this fact in his examples of root extractions, this excludes the interpretation of 360000000 as 36, but allows 360000000 to mean 360, and also ... 360000000. What this really shows is that the range of the black numbers is somewhat (but not totally) irrelevant.

5.3 Relation to Bürgi’s “Coss”

Bürgi’s introduction has one example where 0749472554 really means 0.749472554 and from this sole example, where the decimal mark may accidentally be missing, Lutstorf concludes that all nine digit numbers (and the above is not a nine digit number!) should be read as a value between 1 and 10 [105, p. 5].

This actually happens to be one of the conventions used in Bürgi’s “Coss” [101]. In the “Coss,” which dates from the end of the 1590s, Bürgi considers for instance the case of 00002909 which represents 0.0002909 [101, pp. 23–24]. These conventions, which apply to sines, are also explained by Wolf [179, p. 15]. One argument for viewing the black numbers as values between 1 and 10 is therefore that they can be read using the conventions of the “Coss.”

However, not only does Bürgi not explain the above notation in his introduction to the tables, but the “Coss” itself does not always follow these conventions. There are numerous such counterexamples, for instance on page 33 [101] where he writes “20 und 7 ist 27,” and one wonders why he did not write 1) “20 und 7 ist 27,” or 2) “20 und 7 ist 9.”

5.4 A better interpretation

5.4.1 Bürgi’s correspondence is not injective

The reality is in fact a lot simpler, and there is no need to tweak the numbers to avoid contradictions. If Bürgi had given one more example, say, finding the red number of 360, things would perhaps have become clearer a long time ago. It is easy to guess what Bürgi would have answered. He would have added six zeros to 360, for the same reason as he added seven zeros to 36. And he would have found the same red number as above for 360000000. And finally, Bürgi would have said that the red number of 360 is 128099.78, just as he said that the red number of 36 is 128099.78. This may seem like yet another contradiction, but it is only a contradiction if one insists of writing “the logarithm of” instead of “the red number corresponding to.” These two notions are different. The first notion is that of a function, with particular properties. The logarithm function, whether it is the natural, decimal, or any other based logarithm, is an injective function. In other words, the logarithm of 36 cannot be equal to the logarithm of 360, and the only way to make them equal is somehow to consider that 36 and 360 represent the same value. This is Lutstorf’s erroneous reasoning which forced him (and others) to tweak the numbers.³¹

Bürgi never had any notion of a logarithmic function, which is one reason why he cannot really be claimed as the inventor of the logarithms, even if his *Progress Tabulen* were made before Napier’s tables.³² What Bürgi had was a correspondence between two

³¹We should however observe that Lutstorf recognized that Bürgi’s tables were exhibiting a computational process based on *representations*, in which each black number represents a class of numbers [104, p. 46]. Lutstorf even writes that Bürgi “does in many cases not hesitate to assign the logarithm directly to a sequence of digits, instead of a concrete value” [104, pp. 46–47], but Lutstorf does not realize that here lies the problem. Lutstorf still firmly believes in the existence of a Bürgian logarithm function.

³²Some authors have had a more modern approach, even by Bürgi’s time. For instance, Kepler apparently defined logarithms using an explicit functional approach [62, p. 2]. He defined a *measure* function $M(x)$ which was equal to $10^n \ln x$ for some n . Then he defined the “Keplerian logarithm” $K(x) = M(10^n/x) = 10^n \ln(10^n/x)$ which was basically the Napierian logarithm. But the modern natural logarithm was only an intermediate step, and Kepler’s final function did not have the property

progressions, one arithmetic, the other geometric, *and* a way to find a representative of a number within one of these progressions. The geometric progression goes from 10^8 to 10^9 , but the correct interpretation of Bürgi's invention does not really rely on this fact. If the progression went from 1 to 10, from 0.01 to 0.1, from 100 to 1000, etc., the problem with 36 and 360 would still be there and would need to be tweaked.³³

5.4.2 The notations of the “Coss” do not apply here

If one looks carefully, it appears that the black numbers do not need to be between 1 and 10. The notations of the “Coss” may suggest a similar reading for the black numbers of the *Progress Tabulen*, but this is in no case a certainty. Moreover, the example where 074... means 0.74... is actually not a black number, but the result of the computation of $\frac{154030185}{205518112}$ [53, p. 30]. The corresponding black number is 749472554, which would be read as 7.49472554 according to the conventions of the “Coss.”

In fact, the black numbers could be considered only as what they are, namely sequences of nine digits. Their position value is only given by an *interpretation*, and is in no way absolute. In addition, although it is a tempting assumption, I do not think that the scale of the black numbers should be related to the practice of giving the trigonometric lines with a radius such as 10^8 or 10^{10} [40, p. 119].

Perhaps one of the main objections against interpreting 36 as 3.6 is that Bürgi's introduction was not meant to be supplemented by the “Coss,” and if special reading rules were to be applied, Bürgi would have stated them in this introduction. The fact that he hasn't done so excludes 36 from meaning 3.6.

Compared to the “Coss,” Bürgi has also changed the position of the decimal dot. Given that he made such a change, and explained his new notation, and given that the “Coss” itself does not follow these rules everywhere, why should we want to interpret the black numbers as ranging from 1 to 10, when these need not—only can—be interpreted that way?

$K(xy) = K(x) + K(y)$. For instance, in his 1624 table of logarithms, Kepler has $K(2) = 1081977.82$, $K(30000.00) = 120397.28$, but $K(60000) = 51082.56$ [82]. On the other hand, in 1614 Napier definitely had the notion of a logarithmic function, even though he was missing modern notations. It would take many years until the logarithm would be defined as an exponent (perhaps by Zaragoza in 1669 [127, p. 89]), or the usual law $\log(ab) = \log a + \log b$ be laid down by Gardiner in 1742 [49, p. 1], [162, p. 175].

³³Lutstorf considers Bürgi's comment about his initial example (cited above, footnote 17) to imply that Bürgi's main tables start with 1 [104, p. 106]. I don't think this is a correct interpretation and I believe that Bürgi only meant that the main tables are similar to the first ones, and have similar properties. This does not imply that the first black number is 1. We can state this in another way: even if the black numbers do not start with 1, they exhibit properties similar to the ones in Stifel's progression, namely that the digits of the multiplication of x by y are those of $b(r(x) + r(y))$. And the fact that Bürgi writes “take the first nine digits” strongly supports this view. Starting the black numbers with 1 is possible, but it is a misunderstanding of Bürgi's writings. But even if the black numbers were ranging between 1 and 10, it would be only a minor point, since my main objection to Wolf, Lutstorf, and others, is that they failed to see that Bürgi was not computing with an injective function. In fact, the scale of the black numbers is pretty much irrelevant for Bürgi, and starting them with 1 has the only purpose of putting $\log_b 1 = 0$ into Bürgi's words.

5.4.3 The name “logarithm”

As it should be obvious by now, Bürgi never used the word “logarithm,” neither in his tables, nor in his introduction to the tables. This of course does not mean that Bürgi did not have a notion of logarithm.

The table and the introduction go back to a time when the word “logarithm” was not yet known. But when Bürgi published (or, at least, had printed) the table, he must have known about logarithms, merely because Kepler knew about them by then. So, if the word does not appear on the cover, it can only mean that Bürgi did not view his progressions as logarithms. He must have viewed the progressions as a generic auxiliary tool, in contrast to Napier’s logarithms which were still tainted with trigonometry.

5.4.4 The correspondence

We can now conclude. Given Bürgi’s correspondence between a black number B and a red number $R = r(B)$, Bürgi assigns black and red numbers $black(n)$, $red(n) = r(black(n))$ to a given value n . This assignment is not injective:

$$\begin{aligned} black(36) &= 360000000 \\ black(360) &= 360000000 \\ black(3600) &= 360000000 \\ &\dots \end{aligned}$$

and of course $red(36) = red(360) = red(3600) = \dots = 128099.789$.

When Bürgi computes xy , he finds representatives of x and y , and computes with them using his table. In some cases, his computations exceed the capacity of his table, but he has ways to fall back to the table, and then to derive the result of the computation. He has however no such notion as $\log_b(xy) = \log_b(x) + \log_b(y)$.

In view of this interpretation, we can express which function Bürgi has implicitly been using to assign red numbers to a value n . Assuming $E(x)$ is the integer part and $\log$ is the decimal logarithm, then Bürgi’s functions are

$$\begin{aligned} black(n) &= 10^8 \times \frac{n}{10^{E(\log n)}} \\ red(n) &= r(black(n)) = 10 \left(\frac{\ln(black(n)/10^8)}{\ln 1.0001} \right) = 10 \left(\frac{\ln \left(\frac{n}{10^{E(\log n)}} \right)}{\ln 1.0001} \right) \end{aligned}$$

where the natural logarithm $\ln$ can be replaced by any other based logarithm.

Bürgi’s black numbers only cover a range and therefore Oechsli called Bürgi’s tables “closed tables” [130, p. 93–94]. This, contrary to what Oechsli seems to imply, is also true of modern tables of decimal logarithms. In fact, what prevented Bürgi from manipulating an unbounded range (which would still not be logarithms) was the non-decimal nature of the range of the red numbers. Only with decimal logarithms did it become practical to compute and manipulate the decimal logarithms of any (decimal-based) number.³⁴

³⁴Belyi has claimed that Bürgi’s table was more convenient than Napier’s and Briggs’ tables [5, p. 655], but I fail to see how Bürgi’s table can be more convenient than Briggs’, since the former is not totally decimal. Others, such as Ayoub, have had opposite opinions. For Ayoub, “Bürgi’s table proved to be of very limited use,” but both Napier’s and Bürgi’s tables were inferior to Briggs’ [2, p. 353]. Admittedly, Bürgi’s table alone is not sufficient for trigonometric calculations, whereas Napier’s table covers all needs.

5.5 Identifying a base

The simple correspondence of Bürgi’s tables has led many authors to seek what was the *base* of Bürgi’s “logarithms,” by trying to see to which value the arithmetic value 1 was corresponding. Some authors seemed in particular to consider that finding a base for Bürgi’s tables warrants Bürgi as an inventor of logarithms. Of course, from the foregoing discussion, one can already anticipate various opinions, since there is a debate about which red number really represents 1. Some authors’ purpose was really to “prove” that Bürgi found an approximation of e , the base of the natural logarithms. The conclusions reached by these authors were usually anachronistic and forgot that one can accidentally come close to a constant. This was very well stated by Mautz in 1921 [114]. In this section, we only give an overview of the debate, and there seems little point in giving all the details.

The first one to write on Bürgi’s tables seems to have been Kästner in 1786 [76]. He was already viewing Bürgi’s table as a table of logarithms,³⁵ and he was entitled to do so, because he did not know the introduction of the table.³⁶ Kästner was perhaps the first one to put Bürgi’s tables in equations and for him, $\log_b 10 = 230270.022$, assuming the black numbers range from 1 to 10 [76, p. 102]. But Kästner understood that this was an interpretation, and on the next page, he wrote that the logarithm of 100 millions is 0 if the black numbers are considered to range from 100 millions to 1000 millions [76, p. 103]. Kästner concluded that the latter was not suited for the ordinary logarithmic computations, and he therefore favored the first interpretation. Finally, Kästner showed how one can compute with these numbers, which casts some doubts on the many authors who wrote that Bürgi’s tables could not have been used without Bürgi’s introduction and examples [76, pp. 103–105].

A few years later, Kästner observed that “Bürgi’s logarithms were easier to use than those of Napier” [78, p. 14]. Curiously, Kästner then wrote that since $\log_b 10 = 230270.022$, it is similar to Briggs’ logarithms [78, p. 15]. Or perhaps he meant that Bürgi’s system was closer to Briggs’ than to Napier’s, given that both in Bürgi’s and in Briggs’ system, the logarithm of 1 (or a number interpreted as 1), which is not true for Napier’s logarithms.

Montucla, in the second edition of his *Histoire des mathématiques* published soon afterwards [119, p. 10], not only quoted Kästner, but pondering the difference between

³⁵This point of view is clearly a consequence of Bramer’s words [11]. Bramer led Kästner to Bürgi, but he also set the frame of the understanding of the tables. Kästner wrote explicitly that “in order to extract the meaning of the tables, I made [the] assumption (...) The red numbers are logarithms of the black ones” and he then checked the validity of his assumption [76, pp. 98–99]. But the validity is merely the absence of contradiction, and it is indeed sound to view the red numbers as logarithms of the black ones, which Kästner, naturally, considers to be between 1 and 10. The absence of contradiction convinces Kästner that Bürgi’s red numbers are logarithms of the black numbers. This, again, is a property, but it does still not mean that Bürgi invented logarithms, for the same reason that we can also find similar properties in Stifel’s work [158, ff. 249–250], or in a book published by Wright in 1599 [143]. Some of the early writings may in fact be misleading. A few years later, in 1797, Kästner wrote for instance that Bürgi had invented logarithms based on the decimal system [77, p. 375], which might induce one to think that Bürgi invented the decimal logarithms, which of course is not the case. Kästner’s words have to be taken more broadly as meaning that Bürgi’s table was fitted to the decimal system, which is true, since its range goes over a ratio of 10.

³⁶Knowing the introduction, Kästner would have understood that Bürgi’s correspondence is not injective, and would have ruled out the invention of logarithms in general.

$10^5 \cdot \ln 10 = 230258.509\dots$ and Bürgi's 230270.022, concluded that Bürgi must have made an error in his computations, although Kästner never said so. So, this incorrect interpretation may have led one to think that Bürgi was the first to produce a table of natural logarithms (which is not totally true, since one appeared in a disguised way in Napier's *Constructio* [143]). But once Gieswald had published the introduction to the tables, such an interpretation could no longer be maintained.

In 1808, soon after Kästner's publication, Klügel also noticed that if Bürgi's progressions are divided by 10^5 and 10^8 , we come close to natural logarithms [90, p. 533].

In 1850, still before Gieswald's publication, Matzka published a long analysis of the notion of base, in which he also considered Bürgi's tables, and one of the base he ended up with was $10^8 \cdot (1.0001)^{1/10} = 100000999.95500\dots$ [108]. Matzka had interpreted the correspondence in a natural way. In 1856, Gieswald [53, p. 25] also used the same interpretation and found the same base. (Both Matzka's and Gieswald's values were slightly incorrect.)

But, soon afterwards in 1858, Wolf [177, p. 74], perhaps intentionally ignoring the position mark found on the cover of Bürgi's tables and on their last page, considered that Bürgi's correspondence was the following

$$\begin{array}{cc} 0 & 1 \\ \frac{1}{10^4} & \left(1 + \frac{1}{10^4}\right) \\ \frac{2}{10^4} & \left(1 + \frac{1}{10^4}\right)^2 \\ \dots\dots\dots & \dots\dots\dots \\ \frac{n}{10^4} & \left(1 + \frac{1}{10^4}\right)^n \end{array}$$

and from this he concluded that the black number 1 corresponds to $\left(1 + \frac{1}{10^4}\right)^{10^4} = 2.71814592682\dots$, which of course is close to $e = 2.71828\dots$, but merely because $e = \lim_{n \rightarrow \infty} \left(1 + \frac{1}{n}\right)^n$. This idea is the same as that of Klügel (who notices the decimal point mark on the cover), although Wolf does not cite him. Faustmann also seems to adhere to these views [40, pp. 120–121]. Similarly, Launert [94, p. 47] writes that on Bürgi's title page 1,00000 corresponds to 2,71814593 and that therefore Bürgi's logarithms use a base close to e . Klemm [89] seems to conclude in the same way. It should however be observed that Wolf's 1877 *Geschichte* once again seems to contradict his earlier and later writings, in that it does not mention e in Bürgi's context [180, pp. 347–351].

Von Braunmühl, in his history of trigonometry [168, vol. 2, pp. 3–4], writes that the base can be considered either way, either with the black numbers starting with 10^8 , or as Wolf does. Cantor, in 1900, does not hesitate to claim that “Bürgi's logarithms are the logarithms of base e ” [26, p. 727] but in the 1892 edition of his book, he was still claiming that Bürgi's base is $\sqrt[10]{1.0001}$. Cantor seems to have changed his mind after some exchanges with Kewitsch [87]. Incidentally, in 1892, Cantor was considering that Napier's base was also $\frac{10^7}{e^{10^{-7}}} = 9999999.00\dots$. In his article, Kewitsch, although he is critical of previous authors such as Wolf and Cantor, concludes much the same with 1.0001^{10000} for Bürgi's base [87, p. 333].

In 1903, Tropfke viewed the black numbers as starting with 10^8 , but still concluded that the base was 2.71814593, hence close to e [162, pp. 147–150].³⁷

³⁷However, Tropfke also writes that for Bürgi and Napier the logarithms were integers and that in their tables there is no decimal point, which is incorrect in both cases [162, p. 158].

Mautz [113] gives a very detailed and clear analysis of this problem, in particular in comparison with Napier’s tables. He describes the results of a number of authors which we haven’t mentioned here, but his conclusions were partly wrong, having assumed that Bürgi’s tables had originally no decimal position mark.³⁸ Mautz does however correct his statements in a further note [114], in which he considered that for the computation of a base, Bürgi’s correspondence was equivalent (but not identical) to the following

$$\begin{array}{ll} 0 & 1 \\ 10 & \left(1 + \frac{1}{10^4}\right) \\ 20 & \left(1 + \frac{1}{10^4}\right)^2 \\ \dots & \dots \\ n & \left(1 + \frac{1}{10^4}\right)^{\frac{n}{10}} \end{array}$$

from which he concluded that 1 corresponds to $\left(1 + \frac{1}{10^4}\right)^{1/10} = 1.00000999955\dots$. However, we stress that by 1921 Mautz did not consider the black numbers to range from 1 to 10.

Voellmy also first considered that the correspondence is the same as the previous one but then seemed to say that Wolf’s approach is more correct, since it leads to an approximation of e [164, p. 17]. The contradictions of the first page do not seem to be a problem for Voellmy [164, p. 18].

For Bruins, the base of Bürgi’s “logarithms” is obviously $1.0001^{10000} = 2.718145927$, whereas that of Napier’s is $1.0000001^{10000000} = 2.718281692$ [15, p. 98]. This, of course, is a misrepresentation of Napier’s work, who never considered that $\log_n(1.0000001) = 0.0000001$, which is Bruins’ underlying assumption.

Mackensen writes that “you have to put the decimal point yourself in the tables,” and 1,00000 corresponds to 2,71814593. But at the same time, he mentions the unit ring $^\circ$ and the correspondence between 230270.022 and 10^9 . This confusion seems to go back to Voellmy on which Mackensen relies [169].

Lutstorf follows Mautz’s 1921 conclusion and also expresses that the base e is “vain wishing” [104, p. 169].

The true conclusion is that Bürgi had no notion of a base and that some authors have tweaked Bürgi’s table to make it say things that it did not contain. It would be ridiculous to assign the first computation of e to Bürgi, but it is true that the value of x such that $b(x) = 10^9$ is close (but not identical) to $10^5 \ln 10$ and that $r(100000)$ is close to $10^8 \times e$. This is a mere coincidence, a consequence of Bürgi’s construction, but an unintentional one.

5.6 Comparing Bürgi and Napier

The works of Bürgi and Napier share a number of features and, in addition, they have been published almost simultaneously. It is therefore not surprising that a number of authors have claimed that Bürgi was the first inventor of logarithms, and the same would probably have taken place in defense of Napier, had he published his *Descriptio* after Bürgi’s *Progress Tabulen*. But, as it should by now be clear, some authors were interested

³⁸Mautz had assumed Wolf’s account to be correct, and that the small circles in the Gdansk copy were later additions, which is incorrect.

in Bürgi for other reasons, either because of his Swiss origins, or because he was a talented clockmaker, and that making him a somewhat unfortunate mathematician adds nicely to his admittedly remarkable work in fine mechanics and clockmaking.

5.6.1 Bürgi's real and false contributions

Wolf, Voellmy, Lutstorf and others have injected into Bürgi's work a notion of logarithm only on the grounds 1) of a computational process, 2) of the implicit presence of e or $\ln 10$ and 3) of $\log_b 1 = 0$. But in fact, only the computational process is really part of Bürgi's work, and in that respect, his work differs only from that of Stifel by a finer-grained division, by the use of a non-integer ratio (which is admitted to be 1.0001 by all), and by a range covering exactly a ratio of 10. These are very important features, but they are not sufficient to ascribe the invention of logarithms to Bürgi. Neither is the use of interpolation sufficient to transform a progression into a notion of logarithm.

Unfortunately, almost every author mentioning Bürgi still feels compelled to add that he invented logarithms, possibly before Napier. Nový, for instance, in the *Dictionary of Scientific Biography*, writes that “possibly at the end of the 1580's, the idea of logarithms occurred to him” [129]. And further, “[T]he tables extend to the value 1,000,000,000 in the geometrical progression, with the corresponding value 230,270,022 in the arithmetic progression. Consequently, Bürgi's logarithms correspond to our so-called natural logarithms with the base e .”³⁹ Such statements are very misleading and incorrect.

Some authors have considered that Bürgi has “calculated a table of logarithms before Napier” [150], but if a mere correspondence between two arithmetic progressions, with calculating rules, is a table of logarithms, then Stifel and others should be named before Napier and Bürgi.⁴⁰ And in fact, Voellmy wrote that “Stifel was the first mathematician who understood and clearly expressed the theory of logarithmic computation” [164, p. 5]. This may be true, but it is different from the claim that Bürgi did discover the notion of logarithms. Voellmy goes so far as concluding that further tables have adopted Bürgi's convention $\log_b 1 = 0$ which is nonsensical, since it was first introduced in Briggs' 1617 table [164, p. 23].

In fact, Napier was the first to define an abstract correspondence between two infinite continua, $\mathbb{R}^+$ and $\mathbb{R}$, having the property to transform multiplication into addition.⁴¹ For Napier, $\nu(xy) = \nu(x) + \nu(y) + c$, where $\nu(x)$ is the Napierian (not natural) logarithm and

³⁹Similar conclusions are drawn by Folta and Nový. In addition, they write that to a logarithm ranging from 1 to 230270022, the corresponding nine digit number is given [45], but in fact the red numbers do not range from 1 to 230270022.

⁴⁰Busch is one who writes that logarithms have been discovered by Stifel in 1530 and that Bürgi and Napier laid their foundations. This is also what Matzka does, when he defines logarithms as a correspondence between a geometric and an arithmetic sequence, and calculating rules transforming multiplications into addition. He first concludes that Stifel could be named as the inventor of logarithms shortly before 1544 [109, pp. 352]. But Matzka adds that a practical side is still missing. For Matzka, Bürgi's table is not very convenient to use [109, p. 353], although this opinion seems based on a restricted view concerned with multiplications of small numbers. And this leads Matzka to conclude that it is not Bürgi, but Napier who must be credited for the invention of (practical) logarithms. This somewhat contrived reasoning is quite foreign to our interpretation.

⁴¹One of the rare authors who seem to have understood this point is Friedelmeyer, who in an article on Napier's work, stresses that Bürgi's handling of the terms of two progressions remains “discontinuous,” and that he can therefore not be attributed the priority of the invention of logarithms [47, p. 59].

c is a constant. Natural logarithms only came later.⁴² Of course, Napier does not write such an equation, and he has $c \neq 0$, which is objectionable, but so is the non abstract and partial table of Bürgi. In addition to defining a function anticipating the infinitesimal calculus, Napier also had a very clear notion of accuracy.

5.6.2 The granularity of the tables

Bürgi's table divides the interval from 10^8 to 10^9 into a little more than 23027 intervals having the same ratio $1 + \frac{1}{10^4}$. Napier, instead, produced a theoretical division of the interval 10^7 to $5 \cdot 10^6$ into 6900000 intervals, of which he computed only about 1500 carefully chosen ones. This amounts to a division of a ratio 10 in about 23 million intervals.⁴³

Although Napier had a much denser theoretical division than Bürgi, his aim was in a way also more restricted, and he only wanted to compute the logarithms of specific sine values. At the same time, Napier's notion of logarithms was a general one. He had a very clear notion of an abstract definition, that he needed to approach by approximating bounds, using several levels of approximations. There is no such approach in Bürgi's work, where a large interval was divided by "brute force" in a unique long table. As a consequence, there is a difference of complexity between the two approaches, and Bürgi's approach would have been impossible if pushed to Napier's grain.

5.6.3 The abstract notion of logarithms

Although Bürgi understood that his construction would simplify calculations, and that the greater the subdivisions from 10^8 to 10^9 , the greater the accuracy, Bürgi's calculation is not an implementation of an abstract notion, and intermediate values are only approached by linear interpolation, without a clear notion of bounding the errors. Bürgi's correspondence therefore is at the same conceptual level as Stifel's construction, only a lot more detailed, mainly because of a better understanding of decimal fractions. Bürgi devised a general way to simplify calculations and the importance of his work lies in the understanding that the ratio 10 could be subdivided in many smaller intervals and that these subdivisions would follow the properties expounded by Stifel. This work is of a very different nature than that of Napier.

Napier and Bürgi both define a correspondence between an arithmetic and a geometric sequence. For Bürgi, the correspondence is the starting point, but for Napier, the correspondence is a consequence of an abstract definition. They both can compute the value corresponding to any number, in both directions.

5.6.4 The almost decimal nature of Bürgi's system

Bürgi's system is tailored to the decimal system in that he produces a loop (and not a spiral) in which the intervals 1–10, 10–100, ..., are all alike. Earlier correspondences, such

⁴²For a (not totally correct) overview of correspondences in early logarithms and the birth of the idea of natural logarithms, see Burn's study on Alphonse Antonio de Sarasa [19].

⁴³In his first article on Bürgi and Napier, Mautz compared the computation of about 23000 terms by Bürgi with 70000000 terms by Napier [113, p. 30], but not only is the latter value incorrect, it also ignores that Napier only computed a small fraction of his terms.

as those of Stifel, were not circular. The bond between Bürgi's system and the decimal system is in fact a bond between Bürgi's table and the decimal system,⁴⁴ not between Bürgi's theoretical function (which he did not express) and the decimal system.

Napier's system instead was aimed at trigonometry. Although Napier explained that his logarithms could be used to compute square roots, cubic roots, etc., he gave only very few examples. For instance, Napier did not show how to multiply two numbers, although it was possible with his logarithms. As a consequence of Napier's focus, he did not use a circular representation, but in fact he could have. An equivalent representation from 10^7 to 10^6 would have had logarithms go from 0 to 23025850.92... Further turns would add this constant, and Napier had a notation for these constants—a forerunner to the characteristic, which Bürgi had not.⁴⁵ The injective nature of Napier's logarithms actually leads to a spiral, where Bürgi only has a circle.

But Bürgi's circle can also be said to be an immediate anticipation of Oughtred's first circular slide rule, the main difference being that Bürgi's system is still not totally decimal.

5.7 Sorting everything out

Given all the above analysis, it is now easy to conclude. First, Bürgi did not define an abstract notion of logarithms, associating two infinite continuas. He only built a restricted table which could serve as a lookup table to simplify multiplication, division, etc.

But this table has the properties of tables of logarithms, or rather, of antilogarithms.⁴⁶ In particular, one can find a base subtending this table, and one can define logarithm values outside of the range of the table, but Bürgi did not do it. So, it is essential to distinguish these two sides, first that of the abstract notion which Bürgi had not, and second that of the table which was close to a table of logarithms. But again, the same could be said of Stifel and this, once again, is why Bürgi cannot be considered as a discoverer of logarithms.

6 Conclusion

Jost Bürgi was the remarkable combination of an instrument maker, an astronomer and a mathematician, and he made significant contributions in each of these fields.

In this study, we have tried to analyze objectively Bürgi's work on progression tables, in the same way as we have simultaneously analyzed Napier's work [143]. Ever since the discovery of Bürgi's introduction to his tables in 1855, his contributions in the theory

⁴⁴This was certainly what Kästner meant in 1797, see note 35.

⁴⁵The fact that the logarithms of two numbers differing only by a ratio of 10 have different digits was interestingly characterized in 1678 by Juan Caramuel who wrote that “they lack revolution” [127, p. 87].

⁴⁶For Cantor [25], Bürgi's table anticipates the tables of antilogarithms of Dodson [33] and Filipowski [42], but I think that this is not the correct way to look at things. It implicitly assumes that Bürgi had a notion of logarithms, and Dodson and Filipowski's tables were based on this notion. Their tables were not a starting point, they were tables based on the notion of logarithms and on prior tables of logarithms. To consider Bürgi's tables as tables of antilogarithms is a false reinterpretation of the past, when these tables are merely progression tables. They should not be viewed as tables of antilogarithms, even though they share their properties.

of logarithms have only rarely been questioned, and, most often, only been tweaked to make them fit in a more general framework.

It is actually symptomatic that very few authors who wrote on Bürgi have taken the time to analyze Napier’s system [143]. Gieswald, Wolf, Voellmy, Lutstorf and others, have not given to Napier the same attention as to Bürgi, which may explain a certain lack of objectivity. Then, later authors, perhaps relying on earlier authors, have followed their path, although they did not have to.

In order to answer objectively the questions about Bürgi’s contribution to logarithms, it is first necessary to analyze what logarithms are. Stifel’s progressions exhibit properties of logarithms, but are they logarithms? Does a finer subdivision of Stifel’s progression produce logarithms? Is a means of replacing multiplications by additions the same as logarithms? Is a table of logarithms the same as the invention of the abstract notion of logarithms?

There is no doubt that Bürgi came very close to the notion of logarithm, but if we call logarithms a correspondence between two infinite continua representing real numbers, such that multiplication becomes addition, then Bürgi obviously only partly attained it, whereas Napier undoubtedly hit it.⁴⁷ We can of course understand why this happened. It is in particular clear that Napier’s kinematic approach based on the theory of proportions gave him naturally a firm base in two infinite continua.⁴⁸ We can also observe that Napier went beyond his needs. He needed only to define logarithms of sines, but his definition goes beyond. Bürgi, on the other hand, basically only needed to define the multiplication of numbers between 1 and 10 (or 10^8 and 10^9) and he therefore introduced a restricted way to do these computations, which at the same time prevented him from defining the general logarithm function which he didn’t really need.

A fair comparison between Napier and Bürgi requires a clear definition of the notion of logarithms, but it also makes it necessary to distinguish the abstract notion of logarithm from the knowledge of logarithmic computation. It is by confusing these two notions that many authors were led to attribute the discovery of logarithms to Bürgi or some of his forerunners, when they have in fact only produced what are, admittedly, tables of logarithms.

That being said, our purpose was in no way to diminish Bürgi’s contributions. Instead, we are a great admirer of his technical and mathematical contributions. But we have felt that justice had not been given to the *Progress Tabulen* and that wishful thinking by Swiss landsmen had somewhat distorted Bürgi’s work, and that it had again to be put straight.

Although we do not consider that Bürgi discovered or invented logarithms, we think it is still appropriate to quote the words of Cajori in 1915:

“The facts as they are known to-day assign to Napier the glory of a star of the first magnitude as the inventor of logarithms who first gave them to the

⁴⁷In 1599, prior to Napier, logarithms had been used by Edward Wright (who translated Napier’s *Descriptio* [124]), but without Wright realizing that he had done so, and without using them to simplify calculations [23]. Therefore, Wright can not (and did not) lay claim on a prior discovery. See Wedemeyer’s article [174] for additional information.

⁴⁸It should be said at this point that Napier’s approach also had forerunners, in particular the Portuguese Alvarus Thomas who in 1509 used a geometric progression to divide a line [159, 23].

world, and to Bürgi the glory of a star of lesser magnitude, but shining with an independent light.” [23, p. 109]

7 Note on the recomputation

The recomputation of the table in the appendix was straightforward and was done with the GNU `mpfr` multiprecision library [46]. The computations were done exactly, and it can be seen that they differ very little from Bürgi’s tables. A previous recomputation was published by Lutstorf and Walter in 1992 and their values seem to agree with our values [105].

8 Acknowledgements

It is our pleasure to acknowledge the help of Jörg Waldvogel, Gerlinde Faustmann and Fritz Staudacher during the preparation of this article.

References

The following list covers the most important references⁴⁹ related to Bürgi's tables. For the sake of completeness, we have added a number of items which either have only marginal interest, or contain errors and oversimplifications. The reader should always compare the sources. The main source on Bürgi's *Canon sinuum* is List and Bialas' study, and the main sources on Bürgi's tables are the original tables and their introduction published by Gieswald. Not all items of this list are mentioned in the text, and the sources which have not been seen are marked so. We have added notes about the contents of the articles in certain cases.

- [1] Carl Alhard von Drach. Jost Bürgi, Kammeruhrmacher Kaisers Rudolf II. Beiträge zu seiner Lebensgeschichte und Nachrichten über Arbeiten desselben. *Jahrbuch der kunsthistorischen Sammlungen des allerhöchsten Kaiserhauses*, 15:15–44, 1894. [Bürgi's tables are mentioned on pages 42–44.]
- [2] Raymond Ayoub. What is a Napierian logarithm? *The American Mathematical Monthly*, 100(4):351–364, April 1993.
- [3] Évelyne Barbin et al., editors. *Histoires de logarithmes*. Paris: Ellipses, 2006.
- [4] Eric Temple Bell. *The development of mathematics*. Mineola, NY: Dover Publications, Inc., 1992. [First edition in 1940.]
- [5] Yu. A. Belyi. Johannes Kepler and the development of mathematics. *Vistas in Astronomy*, 18:643–660, 1975.
- [6] Ju. A. Belyj and Dragan Trifunović. Zur Geschichte der Logarithmentafeln Keplers. *NTM-Schriftenreihe für Geschichte der Naturwissenschaften, Technik und Medizin*, 9(1):5–20, 1972.
- [7] Jean-Baptiste Biot. Review of Mark Napier's memoir of John Napier (first part). *Journal des Savants*, pages 151–162, March 1835. [Followed by [8], and reprinted in [9].]
- [8] Jean-Baptiste Biot. Review of Mark Napier's memoir of John Napier (second part). *Journal des Savants*, pages 257–270, May 1835. [Sequel of [7], and reprinted in [9].]
- [9] Jean-Baptiste Biot. *Mélanges scientifiques et littéraires*, volume 2. Paris: Michel Lévy frères, 1858. [contains a reprint of [7] and [8]]
- [10] Tycho Brahe. *Epistolarum astronomicarum libri*. Frankfurt: Gottfried Tampach, 1610. [Third edition. The first edition was published in 1596.]

⁴⁹**Note on the titles of the works:** Original titles come with many idiosyncrasies and features (line splitting, size, fonts, etc.) which can often not be reproduced in a list of references. It has therefore seemed pointless to capitalize works according to conventions which not only have no relation with the original work, but also do not restore the title entirely. In the following list of references, most title words (except in German) will therefore be left uncapitalized. The names of the authors have also been homogenized and initials expanded, as much as possible.

The reader should keep in mind that this list is not meant as a facsimile of the original works. The original style information could no doubt have been added as a note, but we have not done it here.

- [11] Benjamin Bramer. *Beschreibung eines sehr leichten Perspectiv und grundreissenden Instruments auff einem Stande*. Frankfurt, 1630. [not seen]
- [12] Bridel. Notice biographique. *Le Conservateur Suisse ou recueil complet des étrennes helvétiques*, 10:149–162, 1829.
- [13] Henry Briggs. *Arithmetica logarithmica*. London: William Jones, 1624. [The tables were reconstructed by D. Roegel in 2010. [141]]
- [14] Thomas John I’Anson Bromwich. Elementary treatment of logarithms. *The Mathematical Gazette*, 14(197):260–265, 1928.
- [15] Evert Marie Bruins. Computation of logarithms by Huygens. *Janus*, 65:97–104, 1978. [pp. 97–98 on Bürgi’s tables]
- [16] Evert Marie Bruins. On the history of logarithms: Bürgi, Napier, Briggs, De Decker, Vlacq, Huygens. *Janus*, 67(4):241–260, 1980.
- [17] David J. Bryden. Scotland’s earliest surviving calculating device: Robert Davenport’s circles of proportion of c. 1650. *The Scottish Historical Review*, 55(159):54–60, April 1976.
- [18] Jost Bürgi. *Arithmetische und Geometrische Progress Tabulen, sambt gründlichem Unterricht, wie solche nützlich in allerley Rechnungen zugebrauchen, und verstanden werden sol*. Prague, 1620.
- [19] Robert P. Burn. Alphonse Antonio de Sarasa and logarithms. *Historia Mathematica*, 28:1–17, 2001.
- [20] Gabriel Christoph Benjamin Busch. *Handbuch der Erfindungen*. Eisenach: Wittekindtschen Hofbuchhandlung, 1817. [Bürgi is mentioned on p. 11]
- [21] Florian Cajori. *A history of elementary mathematics with hints on methods of teaching*. New York: The Macmillan Company, 1896. [pp. 166–167 briefly mention Bürgi, without any details on his tables.]
- [22] Florian Cajori. History of the exponential and logarithmic concepts. *The American Mathematical Monthly*, 20(1):5–14, January 1913.
- [23] Florian Cajori. Algebra in Napier’s day and alleged prior inventions of logarithms. In Knott [92], pages 93–109.
- [24] Florian Cajori. *A history of mathematical notations*. Chicago, Ill.: The Open court publishing company, 1928–29. [2 volumes]
- [25] Moritz Cantor. Jobst Bürgi. In Historische Kommission bei der Bayerischen Akademie der Wissenschaften, editor, *Allgemeine Deutsche Biographie*, volume 3, pages 604–606. Leipzig: Duncker & Humblot, 1876.
- [26] Moritz Cantor. *Vorlesungen über Geschichte der Mathematik*. Leipzig: B. G. Teubner, 1900. [volume 2, pp. 725–730, 739–740 on Bürgi’s tables]

- [27] Kathleen M. Clark and Clemency Montelle. Logarithms: the early history of a familiar function. *Loci*, June 2010.
- [28] Heinrich Wilhelm CLEMM. *Mathematisches Lehrbuch, oder vollständiger Auszug aus allen so wohl zur reinen als angewandten Mathematik gehörigen Wissenschaften, nebst einem Anhang oder kurzen Entwurf der Naturgeschichte und Experimentalphysik*. Stuttgart: Johann Benedict Mezler, 1768. [Bürge is mentioned on p. 267]
- [29] Nicholas Copernicus. *Minor works*, volume 3 of *Nicholas Copernicus complete works*. Baltimore: Johns Hopkins University Press, 1992. [translation and commentary by Edward Rosen with the assistance of Erna Hilfstein]
- [30] Augustus de Morgan. *A budget of paradoxes*. Chicago: The open court publishing co., 1915. [First edition in 1872. Second edition in two volumes.]
- [31] Léopold Defosse. *Les savants du XVII^e siècle et la mesure du temps*. Lausanne: Édition du journal suisse d’horlogerie et de bijouterie, 1946.
- [32] René Descartes. *Discours de la méthode pour bien conduire sa raison, & chercher la vérité dans les sciences. Plus la dioptrique. Les Météores. Et la géométrie. Qui sont des essais de cete méthode*. Leyde: Ian Maire, 1637.
- [33] James Dodson. *The anti-logarithmic canon. Being a table of numbers consisting of eleven places of figures, corresponding to all logarithms under 100000*. London, 1742.
- [34] John Louis Emil Dreyer. On Tycho Brahe’s manual of trigonometry. *The Observatory*, 39:127–131, 1916.
- [35] John Louis Emil Dreyer. *Tycho Brahe: a picture of scientific life and work in the sixteenth century*. New York: Dover Publications Inc., 1963. [logarithms are cited on pp. 361–362]
- [36] Peter Nikolaus Caspar Egen. *Handbuch der allgemeinen Arithmetik*, volume 1. Berlin: Duncker und Humblot, 1833. [Bürge is mentioned on pp. 258–259]
- [37] Johann Samuel Ersch and Johann Gottfried Gruber, editors. *Allgemeine Encyclopädie der Wissenschaften und Künste*. Leipzig: Johann Friedrich Gleditsch, 1824. [Volume 12 (article Bramer by Gartz) and 13 (article Bürge by Meyer von Knonau).]
- [38] Gerlinde Faustmann. *Österreichische Mathematiker um 1800 unter besonderer Berücksichtigung ihrer logarithmischen Werke*, volume 59 of *Dissertationen der Technischen Universität Wien*. Wien: Österreichischer Kunst- und Kulturverlag, 1994. [Excerpts have been republished in [39] and [40].]
- [39] Gerlinde Faustmann. Die Geschichte der Logarithmen. *Didaktikhefte der Österreichischen Mathematischen Gesellschaft*, 23:36–57, December 1995. [This article heavily borrows from the first chapter of the author’s dissertation [38], and is almost identical to the article published in 1997 [40].]

- [40] Gerlinde Faustmann. Jost Bürgis Progress Tabulen und die Entwicklung der Logarithmen. In Jaroslav Folta, editor, *Science and Technology in Rudolfinian Time*, volume 1 of *Acta historiae rerum naturalium necnon technicarum, Prague, Studies in the History of Science and Technology. New Series*, pages 111–126, 1997. [This article heavily borrows from the first chapter of the author’s dissertation [38], and is almost identical to the article published in 1995 [39].]
- [41] Gerlinde Faustmann. Jost Bürgi (1552–1632) : Leben und Werke. In Rainer Gebhardt, editor, *Rechenbücher und mathematische Texte der frühen Neuzeit : Tagungsband zum Wissenschaftlichen Kolloquium „Rechenbücher und mathematische Texte der frühen Neuzeit“ anlässlich des 440. Todestages des Rechenmeisters Adam Ries vom 16.—18. April 1999 in der Berg- und Adam-Ries-Stadt Annaberg-Buchholz*, volume 11 of *Schriften des Adam-Ries-Bundes e.V. Annaberg-Buchholz*, pages 167–176. Annaberg-Buchholz: Adam-Ries-Bund e.V., 1999.
- [42] Herschell E. (Zevi Hirsch) Filipowski. *A table of anti-logarithms; containing to seven places of decimals, natural numbers, answering to all logarithms from .00001 to .99999, and an improved table of Gauss’s logarithms, by which may be found the logarithm to the sum or difference of two quantities whose logarithms are given. Etc.* London: M. & W. Collis, 1849.
- [43] Alan Fletcher, Jeffery Charles Percy Miller, Louis Rosenhead, and Leslie John Comrie. *An index of mathematical tables*. Oxford: Blackwell scientific publications Ltd., 1962. [2nd edition (1st in 1946), 2 volumes]
- [44] Menso Folkerts. Werner, Johannes. In Charles Coulston Gillispie, editor, *Dictionary of Scientific Biography*, volume 14, pages 272–277. New York: Charles Scribner’s Sons, 1981.
- [45] Jaroslav Folta and Luboš Nový. Zu Bürgi’s Anleitung zu den Logarithmentafeln. *Acta historiae rerum naturalium necnon technicarum*, 4:97–126, 1968. [This article reproduces Bürgi’s introduction to the tables.]
- [46] Laurent Fousse, Guillaume Hanrot, Vincent Lefèvre, Patrick Pélicier, and Paul Zimmermann. MPFR: A multiple-precision binary floating-point library with correct rounding. *ACM Transactions on Mathematical Software*, 33(2), 2007.
- [47] Jean-Pierre Friedelmeyer. Contexte et raisons d’une « mirifique » invention. In Barbin et al. [3], pages 39–72.
- [48] Josef Fust. Zum 400. Geburtstag Jost Bürgis von Lichtensteig : Uhrmacher, Astronom und Mathematiker. *Toggenburger Blätter für Heimatkunde*, 15(4):25–32, Okt.-Dez. 1952.
- [49] William Gardiner. *Tables of logarithms, for all numbers from 1 to 102100, and for the sines and tangents to every ten seconds of each degree in the quadrant; as also, for the sines of the first 72 minutes to every single second: with other useful and necessary tables*. London: G. Smith, 1742.

- [50] Karsten Gaulke. *Der Ptolemäus von Kassel : Landgraf Wilhelm IV von Hessen-Kassel und die Astronomie*. Kassel: Museumslandschaft Hessen Kassel, 2007. [pp. 113–114 on Bürgi’s tables]
- [51] Carl Immanuel Gerhardt. *Geschichte der Mathematik in Deutschland*, volume 17 of *Geschichte der Wissenschaften in Deutschland. Neuere Zeit*. München: R. Oldenbourg, 1877. [pp. 75–83 and 116–120 on Bürgi]
- [52] David Gibb. *A course in interpolation and numerical integration for the mathematical laboratory*, volume 2 of *Edinburgh Mathematical Tracts*. London: G. Bell & sons, Ltd., 1915.
- [53] Hermann Robert Gieswald. Justus Byrg als Mathematiker und dessen Einleitung in seine Logarithmen. In *Programm Danzig Realgymnasium St. Johannis*, pages 1–36. Danzig: Realgymnasium St. Johannis, 1856. [Pages 26–36 are also reproduced in [54], with slight changes. Briefly reviewed by Wolf in 1857 [176].]
- [54] Hermann Robert Gieswald. Zur Geschichte und Literatur der Logarithmen. *Archiv der Mathematik und Physik*, 26:316–334, 1856. [Reproduces part of the text of [53], with slight changes]
- [55] Owen Gingerich and Robert S. Westman. *The Wittich connection: conflict and priority in late sixteenth-century cosmology*, volume 78 (7) of *Transactions of the American Philosophical Society*. American Philosophical Society, 1988.
- [56] James Whitbread Lee Glaisher. *Report of the committee on mathematical tables*. London: Taylor and Francis, 1873. [Also published as part of the “Report of the forty-third meeting of the British Association for the advancement of science,” London: John Murray, 1874.] [Bürgi is not mentioned]
- [57] Herman Heine Goldstine. *A history of numerical analysis from the 16th through the 19th century*. New York: Springer, 1977.
- [58] Miguel Ángel Granada and Édouard Mehl, editors. *Nouveau ciel, nouvelle terre : la révolution copernicienne dans l’Allemagne de la Réforme (1530–1630)*. Paris: Les Belles Lettres, 2009.
- [59] Nicolaas Lambertus Willem Antonie Gravelaar. De notatie der decimale breuken. *Nieuw Archief voor Wiskunde*, 2(4):54–73, 1900.
- [60] Ernst Grebe. Literarische Bemerkung. *Archiv der Mathematik und Physik*, 16:363–364, 1851.
- [61] Detlef Gronau. *Johannes Kepler und die Logarithmen*, volume 284 of *Berichte der Mathematisch-statistischen Sektion in der Forschungsgesellschaft Joanneum Graz*. Graz, 1987.
- [62] Detlef Gronau. The logarithms — From calculation to functional equations. In *II. Österreichisches Symposium zur Geschichte der Mathematik, Neuhofen an der Ybbs, 22.–28. Oktober 1989*, 1989. [Also published in the “Notices of the South African Mathematical Society,” Vol. 28, No. 1, April 1996, pp. 60–66.]

- [63] Detlef Gronau. Johannes Keppler (1571–1630) : Die logarithmischen Schriften. In Rainer Gebhardt, editor, *Verfasser und Herausgeber mathematische Texte der frühen Neuzeit*, volume 14 of *Schriften des Adam-Ries-Bundes e.V.* Annaberg-Buchholz. Annaberg-Buchholz: Adam-Ries-Bund e.V., 2002.
- [64] Detlef Gronau. Paulus Guldin, 1577–1643, Jesuit und Mathematiker. In Franz Pichler and Michael von Renteln, editors, *Kosmisches Wissen von Peurbach bis Laplace — Astronomie, Mathematik, Physik*, pages 101–120. Linz: Trauner Verlag, 2009. [Peurbach Symposium 2008]
- [65] Siegmund Günther. Johannes Werner. In Historische Kommission bei der Bayerischen Akademie der Wissenschaften, editor, *Allgemeine Deutsche Biographie*, volume 42, pages 56–58. Leipzig: Duncker & Humblot, 1897.
- [66] Siegmund Günther. Paul Wittich. In Historische Kommission bei der Bayerischen Akademie der Wissenschaften, editor, *Allgemeine Deutsche Biographie*, volume 43, page 637. Leipzig: Duncker & Humblot, 1898.
- [67] Jürgen Hamel. *Die astronomischen Forschungen in Kassel unter Wilhelm IV. Mit einer Teiledition der deutschen Übersetzung des Hauptwerkes von Copernicus um 1586*, volume 2 of *Acta Historica Astronomiae*. Frankfurt: Verlag Harri Deutsch, 1998.
- [68] Jürgen Hamel. Die Begründung der modernen astronomischen Beobachtungstechnik an der Kasseler Sternwarte im 16. Jahrhundert. Der Kasseler Sternkatalog 1586 — eine Fehleranalyse der ihm zugrunde liegenden Positionsmessungen. In Granada and Mehl [58], pages 67–84.
- [69] James Henderson. *Bibliotheca tabularum mathematicarum, being a descriptive catalogue of mathematical tables. Part I: Logarithmic tables (A. Logarithms of numbers*, volume XIII of *Tracts for computers*. London: Cambridge University Press, 1926. [Bürge’s tables are described on pp. 165–166.]
- [70] Ellice Martin Horsburgh, editor. *Modern instruments and methods of calculation: a handbook of the Napier tercentenary exhibition*. London: G. Bell and sons, 1914.
- [71] Jacomy-Régnier. *Histoire des nombres et de la numération mécanique*. Paris: Napoléon Chaix et Cie, 1855.
- [72] Nicholas Jardine, Katherine Harloe, Dieter Launert, and Alain Segonds. Tycho v. Ursus: the build-up to a trial, part 2. *Journal for the history of astronomy*, 36:125–165, 2005.
- [73] Nicholas Jardine, Dieter Launert, Alain Segonds, Adam Mosley, and Karin Tybjerg. Tycho v. Ursus: the build-up to a trial, part 1. *Journal for the history of astronomy*, 36:81–106, 2005.
- [74] Nicholas Jardine and Alain-Philippe Segonds. *La guerre des astronomes : la querelle au sujet de l’origine du système géo-héliocentrique à la fin du XVI^e siècle*. Paris: Les belles lettres, 2008. [3 volumes]

- [75] Louis Charles Karpinski. The decimal point. *Science (new series)*, 45(1174):663–665, 1917. [issue dated 29 June 1917]
- [76] Abraham Gotthelf Kästner. *Fortsetzung der Rechenkunst in Anwendungen auf mancherley Geschäfte*. Göttingen: Wittwe Vandenhöck, 1786. [pages 93–106 describe Bürgi’s tables]
- [77] Abraham Gotthelf Kästner. *Geschichte der Mathematik seit der Wiederherstellung der Wissenschaften bis an das Ende des achtzehnten Jahrhunderts*, volume 2. Göttingen: Johann Georg Rosenbusch, 1797. [see pp. 375–376 for Bürgi]
- [78] Abraham Gotthelf Kästner. *Geschichte der Mathematik seit der Wiederherstellung der Wissenschaften bis an das Ende des achtzehnten Jahrhunderts*, volume 3. Göttingen: Johann Georg Rosenbusch, 1799. [pages 14–15 describe Bürgi’s tables]
- [79] Wolfgang Kaunzner. Martha List; Volker Bialas. “Die Coss von Jost Bürgi in der Redaktion von Johannes Kepler, Ein Beitrag zur frühen Algebra” (review). *Isis*, 67(2):316–317, June 1976.
- [80] Wolfgang Kaunzner. Logarithms. In Ivor Grattan-Guinness, editor, *Companion encyclopedia of the history and philosophy of the mathematical sciences*, volume 1, pages 210–228. London: Routledge, 1994. [pp. 216–218 on Bürgi’s tables]
- [81] Wolfgang Kaunzner. Über Henry Briggs, den Schöpfer der Zehnerlogarithmen. In Rainer Gebhardt, editor, *Visier- und Rechenbücher der frühen Neuzeit*, volume 19 of *Schriften des Adam-Ries-Bundes e.V. Annaberg-Buchholz*, pages 179–214. Annaberg-Buchholz: Adam-Ries-Bund, 2008. [Bürgi’s tables are cited on page 192]
- [82] Johannes Kepler. *Chilias logarithmorum ad totidem numeros rotundos*. Marburg: Caspar Chemlin, 1624.
- [83] Johannes Kepler. *Opera Omnia*, volume 2. Frankfurt: Heyder & Zimmer, 1859.
- [84] Johannes Kepler. *Opera Omnia*, volume 5. Frankfurt: Heyder & Zimmer, 1864.
- [85] Johannes Kepler. *Opera Omnia*, volume 7. Frankfurt: Heyder & Zimmer, 1868.
- [86] Georg Kewitsch. Bemerkungen zu meinem Aufsatz : „Die Basis der Bürgischen und Neperschen Logarithmen” nebst einigem anderen. *Zeitschrift für mathematischen und naturwissenschaftlichen Unterricht*, 27:577–579, 1896.
- [87] Georg Kewitsch. Die Basis der Bürgischen Logarithmen ist e , der Neperschen $\frac{1}{e}$. Ein Mahnruf an die Mathematiker. *Zeitschrift für mathematischen und naturwissenschaftlichen Unterricht*, 27:321–333, 1896.
- [88] Friedrich Wilhelm Kistermann. Die Rechentechnik um 1600 und Wilhelm Schickards Rechenmaschine. In Friedrich Seck, editor, *Zum 400. Geburtstag von Wilhelm Schickard: Zweites Tübinger Schickard-Symposion, 25. bis 27. Juni 1992*, pages 241–272. Sigmaringen: Jan Thorbecke Verlag, 1995. [p. 257 briefly mentions Bürgi’s work]

- [89] Friedrich Klemm. Die roten Zahlen von Prag : Mathematik und Naturwissenschaften am Hofe Kaiser Rudolfs II. *Hauszeitschrift der Badischen Anilin- & Soda-Fabrik AG (BASF)*, 19:137–145, October 1969.
- [90] Georg Simon Klügel. *Mathematisches Wörterbuch oder Erklärung der Begriffe, Lehrsätze, Aufgaben und Methoden der Mathematik mit den nöthigen Beweisen und litterarischen Nachrichten begleitet*. Leipzig: Schwickertschen Verlage, 1808. [Bürgi is mentioned on pp. 531–533]
- [91] Oliver Knill. Jost Bürgi. In Thomas Hockey, editor, *The Biographical Encyclopedia of Astronomers*. New York: Springer, 2007. [This biographical note contains oversimplifications and ignores the main works on Bürgi.]
- [92] Cargill Gilston Knott, editor. *Napier Tercentenary Memorial Volume*. London: Longmans, Green and company, 1915.
- [93] Max Koppe. Die Behandlung der Logarithmen und der Sinus im Unterricht. In *Wissenschaftliche Beilage zum Programm des Andreas-Realgymnasiums zu Berlin*, pages 32–84. Berlin: Andreas-Realgymnasiums, 1893. [not seen]
- [94] Dieter Launert. *Nicolaus Reimers (Raimarus Ursus): Günstling Rantzaus — Brahes Feind — Leben und Werk*, volume 29 of *Algorismus*. München: Institut für Geschichte der Naturwissenschaften, 1999. [Bürgi’s tables are mentioned on p. 47]
- [95] Dieter Launert. *Nicolaus Reimers Ursus : Stellenwertsystem und Algebra in der Geodaesia und der Arithmetica*, volume 9 (Neue Folge) of *Nova Kepleriana*. München: Verlag der Bayerischen Akademie der Wissenschaften, 2007.
- [96] Dieter Launert. Le système du monde de Nicolas Raimar Ursus comparé à ceux de Brahe et Roeslin. In Granada and Mehl [58], pages 155–178.
- [97] Dieter Launert. *Nicolaus Reimers Ursus : Leben und Werk*. Meldorf: Eigenverl. der Meldorfer Gelehrtenschule, 2010. [not seen]
- [98] Adrien Marie Legendre. Sur une méthode d’interpolation employée par Briggs, dans la construction de ses grandes tables trigonométriques. In *Additions à la Connaissance des tems, ou des mouvemens célestes, à l’usage des astronomes et des navigateurs, pour l’an 1817*, pages 219–222. Paris: Veuve Courcier, 1815.
- [99] John H. Leopold. *Astronomen, Sterne, Geräte : Landgraf Wilhelm IV. und seine sich selbst bewegenden Globen*. Luzern: Joseph Fremersdorf, 1986.
- [100] John H. Leopold and Klaus Pechstein, editors. *Der kleine Himmelsglobus 1594 von Jost Bürgi*. Luzern: Joseph Fremersdorf, 1977. [p. 15 mentions Bürgi’s logarithms briefly]
- [101] Martha List and Volker Bialas. *Die Coss von Jost Bürgi in der Redaktion von Johannes Kepler. Ein Beitrag zur frühen Algebra*, volume 5 (Neue Folge) of *Nova Kepleriana*. München: Bayerische Akademie der Wissenschaften, 1973.

- [102] Hans Loeffel. Das mathematische Werk Jost Bürgis. *Toggenburgerblätter für Heimatkunde*, 34:37–51, 1982. [This is a slight variant of [103].]
- [103] Hans Loeffel. Das mathematische Werk von Jost Bürgi (1552–1632). *Mitteilungen der Vereinigung Schweizerischer Versicherungsmathematiker*, 1:25–41, 1982. [This is a slight variant of [102].]
- [104] Heinz Theo Lutstorf. *Die Logarithmentafeln Jost Bürgis. Bemerkungen zur Stellenwert- und Basisfrage. Mit Kommentar zu Bürgis „Gründlichem Unterricht“*, volume 3 of *Schriftenreihe A (Wissenschaftsgeschichte) der ETH-Bibliothek*. Zürich: ETH-Bibliothek, 2005.
- [105] Heinz Theo Lutstorf and Max Walter. *Jost Bürgi’s « Progress Tabulen » (Logarithmen)*, volume 28 of *Schriftenreihe der ETH-Bibliothek*. Zürich: ETH-Bibliothek, 1992.
- [106] G. B. M. Review of “Johannes Tropicke: Geschichte der Elementar-Mathematik”. *Nature*, 69(1792):409–410, 1904. [issue dated 3 March 1904]
- [107] Andrei Andreivich Markov. *Differenzenrechnung*. Leipzig: B. G. Teubner, 1896. [Translated from the Russian.]
- [108] Wilhelm Matzka. Beiträge zur höheren Lehre von den Logarithmen. *Archiv der Mathematik und Physik*, 15:121–196, 1850. [pp. 136–140, 175–176 are on Bürgi’s tables, a summary appeared also in French [110]]
- [109] Wilhelm Matzka. Ein kritischer Nachtrag zur Geschichte und Erfindung der Logarithmen, mit Beziehung auf Abh. III. im 15. Theil, 2. Heft, Seiten 121–196. *Archiv der Mathematik und Physik*, 33:341–354, 1859. [pp. 349–354 are on Bürgi’s tables, a summary appeared also in French [110]]
- [110] Wilhelm Matzka. Burgi (Jobst) et sens népérien du mot logarithme. *Bulletin de bibliographie, d’histoire et de biographie mathématiques (Supplement of “Nouvelles annales de mathématiques. Journal des candidats aux écoles polytechnique et normale,” vol. 19, 1860)*, 6:62–69, July 1860. [Summary of Matzka’s articles [108, 109]]
- [111] Frédéric Maurice. Mémoire sur les interpolations, contenant surtout, avec une exposition fort simple de leur théorie, dans ce qu’elle a de plus utile pour les applications, la démonstration générale et complète de la méthode de quinti-section de *Briggs* et de celle de *Mouton*, quand les indices sont équi-différents, et du procédé exposé par *Newton*, dans ses *Principes*, quand les indices sont quelconques. In *Additions à la Connaissance des temps ou des mouvements célestes, à l’usage des astronomes et des navigateurs, pour l’an 1847*, pages 181–222. Paris: Bachelier, 1844. [A summary is given in the *Comptes rendus hebdomadaires des séances de l’Académie des sciences*, 19(2), 8 July 1844, pp. 81–85, and the entire article is translated in the *Journal of the Institute of Actuaries and Assurance Magazine*, volume 14, 1869, pp. 1–36.]

- [112] Klaus Maurice. Jost Bürgi, or on innovation. In Klaus Maurice and Otto Mayr, editors, *The clockwork universe. German clocks and automata 1550–1650*, pages 87–102. Washington, DC: Smithsonian Institution, 1980. [Logarithms are briefly mentioned on page 89. There is also a German version “Jost Bürgi oder über die Innovation,” pages 90–104 in the simultaneously published German version “Die Welt als Uhr. Deutsche Uhren und Automaten 1550-1650.”]
- [113] Otto Mautz. *Zur Basisbestimmung der Napierschen und Bürgischen Logarithmen*. Beilage zu den Jahresberichten des Gymnasiums, der Realschule und der Töchterschule in Basel (Schuljahr 1918/19). Basel: Kreis & Co., 1919.
- [114] Otto Mautz. Zur Stellung des Dezimalkommas in der Bürgischen Logarithmentafel. *Verhandlungen der Naturforschenden Gesellschaft in Basel*, 32:104–106, 1921.
- [115] Grant McColley. Nicolas Reymers and the fourth system of the world. *Popular Astronomy*, 46:25–31, 1938.
- [116] Erik Meijering. A chronology of interpolation: from ancient astronomy to modern signal and image processing. *Proceedings of the IEEE*, 90(3):319–342, March 2002.
- [117] George Abram Miller. An eleventh lesson in the history of mathematics. *Mathematics Magazine*, 21(1):48–55, September-October 1947.
- [118] Nobuo Miura. The applications of logarithms to trigonometry in Richard Norwood. *Historia scientiarum: international journal of the History of Science Society of Japan*, 37:17–30, 1989.
- [119] Jean-Étienne Montucla. *Histoire des mathématiques*. Paris: Henri Agasse, 1799. [second edition, second volume]
- [120] Adam Mosley. *Bearing the heavens: Tycho Brahe and the astronomical community of the late sixteenth century*. Cambridge: Cambridge University Press, 2007.
- [121] Armin Müller. Jost Bürgis Herkunft und Verwandtschaft. *Toggenburgerblätter für Heimatkunde*, 27:53–68, 1968. [not seen]
- [122] Armin Müller. Jost Bürgis Herkunft. In John H. Leopold and Klaus Pechstein, editors, *Der kleine Himmelsglobus 1594 von Jost Bürgi*, pages 107–113. Luzern: Joseph Fremersdorf, 1977.
- [123] Armin Müller. Herkunft und Lebensweg Jost Bürgis. *Toggenburgerblätter für Heimatkunde*, 34:7–20, 1982.
- [124] John Napier. *Mirifici logarithmorum canonis descriptio*. Edinburgh: Andrew Hart, 1614.
- [125] Mark Napier. *Memoirs of John Napier of Merchiston, his lineage, life, and times, with a history of the invention of logarithms*. Edinburgh: William Blackwood, 1834.

- [126] Charles Naux. *Histoire des logarithmes de Neper à Euler*. Paris: A. Blanchard, 1966, 1971. [2 volumes]
- [127] Juan Navarro-Loidi and José Llombart. The introduction of logarithms into Spain. *Historia Mathematica*, 35:83–101, 2008.
- [128] New York Times. Logarithm tercentenary: Royal Society in Edinburgh planning a celebration in 1914. *The New York Times*, 1912. [Issue dated December 11, 1912. This very short notice is actually very technical, and even mentions Bürgi.]
- [129] Luboš Nový. Bürgi, Joost. In Charles Coulston Gillispie, editor, *Dictionary of Scientific Biography*, volume 2, pages 602–603. New York: Charles Scribner’s Sons, 1981.
- [130] Ludwig Oechslin. *Jost Bürgi*. Luzern: Verlag Ineichen, 2000.
- [131] Ludwig Oechslin. Jost Bürgi und Rudolf Wolf, oder wie Denkstile Bilder beeinflussen. *Toggenburger Jahrbuch*, pages 9–18, 2003.
- [132] Robert Keith Otnes. The logarithms of Joss Bürgi. *Journal of the Oughtred Society*, 7(2):50–51, 1998. [not seen]
- [133] William Oughtred. *The circles of proportion and the horizontall instrument*. London, 1632.
- [134] Bartholomaeus Pitiscus. *Thesaurus mathematicus sive canon sinuum ad radium 1. 00000. 00000. 00000. et ad dena quæque scrupula secunda quadrantis : una cum sinibus primi et postremi gradus, ad eundem radium, et ad singula scrupula secunda quadrantis : adiunctis ubique differentiis primis et secundis; atque, ubi res tulit, etiam tertijs*. Frankfurt: Nicolaus Hoffmann, 1613. [The tables were reconstructed by D. Roegel in 2010. [142]]
- [135] Prostapherese. In Denis Diderot and Jean le Rond d’Alembert, editors, *Encyclopédie, ou dictionnaire raisonné des sciences, des arts et des métiers*, volume 13, pages 500–501. Neufchastel: Samuel Faulche, 1765. [reference is given to the first edition of the *Encyclopédie*, published between 1751 and 1780]
- [136] Jean-Charles Rodolphe Radau. Études sur les formules d’interpolation. *Bulletin Astronomique, Série I*, 8:273–294, 1891.
- [137] Nicolas Reimarus. *Fundamentum astronomicum: id est, nova doctrina sinuum et triangulorum*. Strasbourg: Bernhard Jobin, 1588.
- [138] Nicolas Reimarus. *De astronomicis hypothesibus seu systemate mundano, tractatus astronomicus et cosmographicus*. Prague, 1597. [not seen]
- [139] Georg Joachim Rheticus and Valentinus Otho. *Opus palatinum de triangulis*. Neustadt: Matthaeus Harnisch, 1596. [This table was recomputed in 2010 by D. Roegel [140].]

- [140] Denis Roegel. A recomputation of the tables of Rheticus's *Opus Palatinum* (1596). Technical report, LORIA, Nancy, 2010. [This is a recalculation of the tables of [139].]
- [141] Denis Roegel. A reconstruction of the tables of Briggs' *Arithmetica logarithmica* (1624). Technical report, LORIA, Nancy, 2010. [This is a recalculation of the tables of [13].]
- [142] Denis Roegel. A reconstruction of the tables of Pitiscus' *Thesaurus Mathematicus* (1613). Technical report, LORIA, Nancy, 2010. [This is a recalculation of the tables of [134].]
- [143] Denis Roegel. Napier's ideal construction of the logarithms. Technical report, LORIA, Nancy, 2010.
- [144] Denis Roegel. The great logarithmic and trigonometric tables of the French Cadastre: a preliminary investigation. Technical report, LORIA, Nancy, 2010.
- [145] Edward Rosen. *Three imperial mathematicians: Kepler trapped between Tycho Brahe and Ursus*. New York: Abaris Books, Inc., 1986.
- [146] Walter William Rouse Ball. *A short account of the history of mathematics*. New York: Dover, 1960. [Republication of the 1908 edition.]
- [147] Ralph Allen Sampson. The discovery of logarithms by Jobst Büergi. In Knott [92], pages 208–212.
- [148] Ralph Allen Sampson. The method of prosthaphæresis. In Knott [92], pages 219–220.
- [149] Georg Schaad. Von den Logarithmen. In *Jahres-Bericht über das königliche Lyzeum und Gymnasium zu Bamberg, Programm zum Schlusse des Studien-Jahres 1845/46*, pages 1–26. Bamberg: J. M. Reindl, 1846. [Bürgi is mentioned on p. 13]
- [150] Ivo Schneider. Trends in German mathematics at the time of Descartes' stay in southern Germany. In Michel Serfati and Dominique Descotes, editors, *Mathématiciens français du XVII^e siècle : Descartes, Fermat, Pascal*, pages 45–67. Clermont-Ferrand: Presses universitaires Blaise Pascal, 2008.
- [151] Philipp Schöbi-Fink. Georg Joachim Rheticus aus Feldkirch und Jost Bürgi, ein Genie aus dem Toggenburg. *Montfort*, 30(4):5–20, 2008.
- [152] Ernst Seidel. *Bibliotheca Mathematica, von Euclid bis Gauß. Ausstellungskatalog der Universitätsbibliothek Graz*. Graz: Universitätsbibliothek, 1985. [Exhibition held from 16 to 21 September 1985.] [not seen]
- [153] Jean Seidengart. Le copernicianisme de Christoph Rothmann dans sa controverse avec Tycho Brahe et son prétendu « retrait ». In Granada and Mehl [58], pages 179–205.
- [154] Demetrius Seliwanoff. *Lehrbuch der Differenzenrechnung*. Leipzig: B. G. Teubner, 1904.

- [155] David B. Sher and Dean C. Nataro. The prosthaphaeretic slide rule: a mechanical multiplication device based on trigonometric identities. *Mathematics and computer education*, 38(1):37–43, 2004.
- [156] David Eugene Smith. The law of exponents in the works of the sixteenth century. In Knott [92], pages 81–91.
- [157] David Eugene Smith. *A source book in mathematics*. New York: McGraw-Hill Book Co., Inc., 1929.
- [158] Michael Stifel. *Arithmetica integra*. Nuremberg: Johannes Petreius, 1544.
- [159] Alvarus Thomas. *Liber de triplici motu proportionibus annexis ... philosophicas Suiseth calculationes ex parte declarans*. Paris: G. Anabat, 1509. [not seen]
- [160] Victor E. Thoren. Prosthaphaeresis revisited. *Historia Mathematica*, 15:32–39, 1988.
- [161] Victor E. Thoren. *The lord of Uraniborg: A biography of Tycho Brahe*. Cambridge: Cambridge University Press, 1990.
- [162] Johannes Tropfke. *Geschichte der Elementar-Mathematik in systematischer Darstellung*, volume 2. Leipzig: Veit & Comp., 1903.
- [163] Quido Vetter and Raymond Clare Archibald. The development of mathematics in Bohemia. *The American Mathematical Monthly*, 30(2):47–58, February 1923. [Bürgi is mentioned on page 51.]
- [164] Erwin Voellmy. *Jost Bürgi und die Logarithmen*, volume 5 of *Beihefte zur Zeitschrift « Elemente der Mathematik »*. Basel: Birkhäuser, 1948.
- [165] Kurt Vogel. Wittich, Paul. In Charles Coulston Gillispie, editor, *Dictionary of Scientific Biography*, volume 14, pages 470–471. New York: Charles Scribner’s Sons, 1976.
- [166] Hans von Bertele. Nouveaux documents sur l’œuvre d’un horloger suisse de génie, Jost Burgi, « Le second Archimède » 1552–1632. *Journal suisse d’horlogerie et de bijouterie*, 11/12, 1956.
- [167] Anton von Braunmühl. Zur Geschichte der prosthaphaeretischen Methode in der Trigonometrie. *Abhandlungen zur Geschichte der Mathematik*, 9:15–29, 1899.
- [168] Anton von Braunmühl. *Vorlesungen über Geschichte der Trigonometrie*. Leipzig: B. G. Teubner, 1900, 1903. [2 volumes, volume 2, pp. 1–4 on Bürgi’s tables]
- [169] Ludolf von Mackensen, Hans von Bertele, and John H. Leopold. *Die erste Sternwarte Europas mit ihren Instrumenten und Uhren : 400 Jahre Jost Bürgi in Kassel*. München: Callwey, 1979. [2nd and 3rd editions in 1982 and 1988. Pages 28–31 of the first edition describe Bürgi’s tables.]
- [170] Jörg Waldvogel. Jost Bürgi’s logarithms. ETH internal note, 12 December 1976, 3 pages.

- [171] Jörg Waldvogel. Jost Bürgi, a Swiss discoverer of the logarithms. In Heinz Joss, editor, *Slide rule '98. Rechenschieber. Proceedings of the 4th international meeting of slide rule collectors, Huttwil, Switzerland 14–16 October 1998*, pages 15–23. Huttwil, 1998. [This article was also published in German during the same conference, with the title “Jost Bürgi, ein Schweizerischer Entdecker der Logarithmen.”]
- [172] Jörg Waldvogel. Jost Bürgi and the discovery of the logarithms, 2011? [to appear]
- [173] P. J. Wallis. William Oughtred’s ‘circles of proportion’ and ‘trigonometries’. *Transactions of the Cambridge Bibliographical Society*, 4:372–382, 1968.
- [174] A. Wedemeyer. Die erste Tafel der Logarithmen und der Antilogarithmen und die erste Anwendung der Mechanischen Quadratur. *Astronomische Nachrichten*, 214(5120):131–134, 1921.
- [175] Rudolf Wolf. Ueber Bürgi’s Logarithmen. *Archiv der Mathematik und Physik. Literarische Berichte*, 12:671–674, 1849. [Reprinted from the “Mittheilungen der naturforschenden Gesellschaft in Bern,” issues 114–115.]
- [176] Rudolf Wolf. Gieswald, Justus Byrg als Mathematiker und dessen Einleitung in seine Logarithmen. Danzig 1856. *Vierteljahrsschrift der Naturforschenden Gesellschaft in Zürich*, 2:93, 1857. [brief review of Gieswald’s first publication [53]]
- [177] Rudolf Wolf. *Biographien zur Kulturgeschichte der Schweiz*, volume 1. Zürich: Orell, Füssli & Comp., 1858. [pp. 57–80 are on Bürgi and pp. 70–80 on his tables]
- [178] Rudolf Wolf. *Johannes Keppler und Jost Bürgi : Vortrag gehalten den 4. Januar 1872 auf dem Rathhaus in Zürich*. Zürich: Friedrich Schulthess, 1872.
- [179] Rudolf Wolf. *Astronomische Mittheilungen*, volume XXXI–XXXX. Zürich: Zürcher and Furrer, 1872–1876. [see pp. 7–28 (Bürgi’s table of sines), pp. 57–67 (prosthaphaeresis), p. 92, and pp. 99–106 (pendulum)]
- [180] Rudolf Wolf. *Geschichte der Astronomie*, volume 16 of *Geschichte der Wissenschaften in Deutschland*. München: R. Oldenbourg, 1877.
- [181] Rudolf Wolf. Über die Rechtschreibung des Namens von Jost Bürgi. *Astronomische Mittheilungen der Eidgenössischen Sternwarte Zürich*, 8:37–42, 1888.
- [182] Rudolf Wolf. Schreiben betr. Nr. 72 seiner » Astronomischen Mittheilungen «. *Astronomische Nachrichten*, 121(2885):79–80, 1889.
- [183] Rudolf Wolf. *Handbuch der Astronomie : ihrer Geschichte und Litteratur*. Zürich: Friedrich Schulthess, 1890. [2 volumes]
- [184] Edward Wright. *Certain errors in navigation, detected and corrected*. London: Felix Kingston, 1610. [2nd edition]
- [185] Ernst Zinner. Bürgi, Jost. In Historischen Kommission bei der bayerischen Akademie der Wissenschaften, editor, *Neue deutsche Biographie*, volume 2, page 747. Berlin: Duncker & Humblot, 1955.

Buergi's table (reconstruction, D. Roegel, 2010)

	0	500	1000	1500	2000	2500	3000	3500
0	100000000	100501227	101004966	101511230	102020032	102531384	103045299	103561790
10	10000	11277	15067	21381	30234	41637	55603	72146
20	20001	21328	25168	31534	40437	51891	65909	82503
30	30003	31380	35271	41687	50641	62146	76216	92861
40	40006	41433	45374	51841	60846	72403	86523	103603221
50	50010	51488	55479	61996	71052	82660	96832	13581
60	60015	61543	65584	72152	81259	92918	103107141	23942
70	70021	71599	75691	82310	91467	102603177	17452	34305
80	80028	81656	85798	92468	102101677	13438	27764	44668
90	90036	91714	95907	101602627	11887	23699	38077	55033
100	100100045	100601773	101106017	12787	22098	33961	48391	65398
110	10055	11834	16127	22949	32310	44225	58705	75765
120	20066	21895	26239	33111	42523	54489	69021	86132
130	30078	31957	36351	43274	52738	64755	79338	96501
140	40091	42020	46465	53438	62953	75021	89656	103706870
150	50105	52084	56580	63604	73169	85289	99975	17241
160	60120	62150	66695	73770	83387	95557	103210295	27613
170	70136	72216	76812	83938	93605	102705827	20616	37986
180	80153	82283	86930	94106	102203824	16097	30938	48359
190	90171	92351	97048	101704275	14045	26369	41261	58734
200	100200190	100702420	101207168	14446	24266	36642	51585	69110
210	10210	12491	17289	24617	34488	46915	61910	79487
220	20231	22562	27411	34790	44712	57190	72237	89865
230	30253	32634	37533	44963	54936	67466	82564	103800244
240	40276	42707	47657	55138	65162	77742	92892	10624
250	50300	52782	57782	65313	75388	88020	103303221	21005
260	60325	62857	67908	75490	85616	98299	13552	31387
270	70351	72933	78034	85667	95844	102808579	23883	41770
280	80378	83011	88162	95846	102306074	18860	34216	52154
290	90406	93089	98291	101806025	16305	29142	44549	62540
300	100300435	100803168	101308421	16206	26536	39424	54883	72926
310	10465	13249	18552	26388	36769	49708	65219	83313
320	20496	23330	28684	36570	47003	59993	75555	93702
330	30529	33412	38816	46754	57237	70279	85893	103904091
340	40562	43496	48950	56939	67473	80566	96232	14481
350	50596	53580	59085	67124	77710	90854	103406571	24873
360	60631	63665	69221	77311	87948	102901144	16912	35265
370	70667	73752	79358	87499	98186	11434	27254	45659
380	80704	83839	89496	97687	102408426	21725	37596	56053
390	90742	93927	99635	101907877	18667	32017	47940	66449
400	100400781	100904017	101409775	18068	28909	42310	58285	76846
410	10821	14107	19916	28260	39152	52604	68631	87243
420	20862	24199	30058	38453	49396	62900	78977	97642
430	30904	34291	40201	48647	59641	73196	89325	104008042
440	40947	44384	50345	58841	69887	83493	99674	18443
450	50991	54479	60490	69037	80134	93792	103510024	28844
460	61037	64574	70636	79234	90382	103004091	20375	39247
470	71083	74671	80783	89432	102500631	14391	30727	49651
480	81130	84768	90931	99631	10881	24693	41080	60056
490	91178	94867	101501080	102009831	21132	34995	51435	70462
500	100501227	101004966	11230	20032	31384	45299	61790	80869

Buergi's table (reconstruction, D. Roegel, 2010)

	4000	4500	5000	5500	6000	6500	7000	7500
0	104080869	104602551	105126847	105653771	106183336	106715556	107250443	107788011
10	91277	13011	37360	64336	93954	26227	61168	98790
20	104101686	23472	47873	74903	106204574	36900	71894	107809570
30	12097	33935	58388	85470	15194	47574	82621	20351
40	22508	44398	68904	96039	25816	58248	93349	31133
50	32920	54862	79421	105706608	36438	68924	107304079	41916
60	43333	65328	89939	17179	47062	79601	14809	52700
70	53748	75794	105200458	27751	57687	90279	25541	63485
80	64163	86262	10978	38324	68313	106800958	36273	74272
90	74580	96731	21499	48897	78939	11638	47007	85059
100	84997	104707200	32021	59472	89567	22319	57741	95847
110	95415	17671	42544	70048	106300196	33001	68477	107906637
120	104205835	28143	53068	80625	10826	43685	79214	17428
130	16256	38616	63594	91203	21457	54369	89952	28219
140	26677	49089	74120	105801782	32089	65055	107400691	39012
150	37100	59564	84648	12363	42723	75741	11431	49806
160	47524	70040	95176	22944	53357	86429	22172	60601
170	57948	80517	105305706	33526	63992	97117	32914	71397
180	68374	90995	16236	44109	74629	106907807	43658	82194
190	78801	104801474	26768	54694	85266	18498	54402	92993
200	89229	11955	37300	65279	95905	29190	65148	108003792
210	99658	22436	47834	75866	106406544	39883	75894	14592
220	104310088	32918	58369	86453	17185	50577	86642	25394
230	20519	43401	68905	97042	27827	61272	97390	36196
240	30951	53886	79442	105907632	38469	71968	107508140	47000
250	41384	64371	89980	18223	49113	82665	18891	57805
260	51818	74858	105400519	28814	59758	93363	29643	68610
270	62253	85345	11059	39407	70404	107004063	40396	79417
280	72689	95834	21600	50001	81051	14763	51150	90225
290	83127	104906323	32142	60596	91699	25464	61905	108101034
300	93565	16814	42685	71192	106502348	36167	72661	11844
310	104404004	27305	53229	81789	12999	46871	83418	22655
320	14445	37798	63775	92388	23650	57575	94177	33468
330	24886	48292	74321	106002987	34302	68281	107604936	44281
340	35329	58787	84869	13587	44956	78988	15697	55095
350	45772	69283	95417	24188	55610	89696	26458	65911
360	56217	79780	105505967	34791	66266	107100405	37221	76728
370	66662	90278	16517	45394	76922	11115	47985	87545
380	77109	105000777	27069	55999	87580	21826	58749	98364
390	87557	11277	37621	66605	98239	32538	69515	108209184
400	98006	21778	48175	77211	106608899	43251	80282	20005
410	104508455	32280	58730	87819	19560	53966	91050	30827
420	18906	42783	69286	98428	30222	64681	107701819	41650
430	29358	53287	79843	106109038	40885	75397	12589	52474
440	39811	63793	90401	19648	51549	86115	23361	63299
450	50265	74299	105600960	30260	62214	96834	34133	74126
460	60720	84807	11520	40873	72880	107207553	44906	84953
470	71176	95315	22081	51487	83547	18274	55681	95781
480	81633	105105825	32643	62103	94216	28996	66457	108306611
490	92091	16335	43207	72719	106704885	39719	77233	17442
500	104602551	26847	53771	83336	15556	50443	88011	28273

Buergi's table (reconstruction, D. Roegel, 2010)

	8000	8500	9000	9500	10000	10500	11000	11500
0	108328273	108871244	109416936	109965363	110516539	111070478	111627193	112186699
10	39106	82131	27878	76360	27591	81585	38356	97917
20	49940	93019	38821	87357	38644	92693	49520	112209137
30	60775	108903909	49764	98356	49698	111103802	60685	20358
40	71611	14799	60709	110009356	60753	14913	71851	31580
50	82448	25691	71655	20357	71809	26024	83018	42803
60	93287	36583	82603	31359	82866	37137	94186	54028
70	108404126	47477	93551	42362	93924	48251	111705356	65253
80	14966	58371	109504500	53366	110604983	59365	16526	76480
90	25808	69267	15451	64372	16044	70481	27698	87707
100	36651	80164	26402	75378	27106	81598	38871	98936
110	47494	91062	37355	86386	38168	92717	50044	112310166
120	58339	109001961	48309	97394	49232	111203836	61219	21397
130	69185	12862	59263	110108404	60297	14956	72396	32629
140	80032	23763	70219	19415	71363	26078	83573	43862
150	90880	34665	81176	30427	82430	37200	94751	55097
160	108501729	45569	92134	41440	93498	48324	111805931	66332
170	12579	56473	109603094	52454	110704568	59449	17111	77569
180	23430	67379	14054	63469	15638	70575	28293	88807
190	34283	78286	25015	74486	26710	81702	39476	112400045
200	45136	89193	35978	85503	37782	92830	50660	11285
210	55990	109100102	46942	96522	48856	111303959	61845	22527
220	66846	11012	57906	110207541	59931	15090	73031	33769
230	77703	21923	68872	18562	71007	26221	84218	45012
240	88561	32836	79839	29584	82084	37354	95407	56257
250	99419	43749	90807	40607	93162	48488	111906596	67502
260	108610279	54663	109701776	51631	110804242	59622	17787	78749
270	21140	65579	12746	62656	15322	70758	28979	89997
280	32002	76495	23717	73682	26404	81896	40172	112501246
290	42866	87413	34690	84710	37486	93034	51366	12496
300	53730	98332	45663	95738	48570	111404173	62561	23747
310	64595	109209252	56638	110306768	59655	15313	73757	35000
320	75462	20173	67613	17798	70741	26455	84954	46253
330	86329	31095	78590	28830	81828	37598	96153	57508
340	97198	42018	89568	39863	92916	48741	112007352	68764
350	108708068	52942	109800547	50897	110904005	59886	18553	80020
360	18939	63867	11527	61932	15096	71032	29755	91278
370	29810	74794	22508	72968	26187	82179	40958	112602538
380	40683	85721	33491	84006	37280	93328	52162	13798
390	51557	96650	44474	95044	48374	111504477	63367	25059
400	62433	109307579	55458	110406083	59469	15627	74574	36322
410	73309	18510	66444	17124	70564	26779	85781	47585
420	84186	29442	77430	28166	81662	37932	96990	58850
430	95065	40375	88418	39209	92760	49085	112108199	70116
440	108805944	51309	99407	50253	111003859	60240	19410	81383
450	16825	62244	109910397	61298	14959	71396	30622	92651
460	27706	73180	21388	72344	26061	82553	41835	112703920
470	38589	84118	32380	83391	37163	93712	53049	15191
480	49473	95056	43373	94439	48267	111604871	64265	26462
490	60358	109405995	54368	110505489	59372	16032	75481	37735
500	71244	16936	65363	16539	70478	27193	86699	49009

Buergi's table (reconstruction, D. Roegel, 2010)

	12000	12500	13000	13500	14000	14500	15000	15500
0	112749009	113314137	113882098	114452906	115026575	115603119	116182553	116764891
10	60284	25469	93486	64351	38077	14679	94171	76568
20	71560	36801	113904876	75798	49581	26241	116205791	88245
30	82837	48135	16266	87245	61086	37803	17411	99924
40	94115	59470	27658	98694	72592	49367	29033	116811604
50	112805394	70806	39051	114510144	84100	60932	40656	23285
60	16675	82143	50444	21595	95608	72498	52280	34968
70	27957	93481	61840	33047	115107118	84065	63905	46651
80	39239	113404820	73236	44500	18628	95634	75532	58336
90	50523	16161	84633	55955	30140	115707203	87159	70022
100	61808	27502	96032	67410	41653	18774	98788	81709
110	73095	38845	114007431	78867	53167	30346	116310418	93397
120	84382	50189	18832	90325	64683	41919	22049	116905086
130	95670	61534	30234	114601784	76199	53493	33681	16777
140	112906960	72880	41637	13244	87717	65069	45314	28468
150	18251	84227	53041	24706	99235	76645	56949	40161
160	29542	95576	64446	36168	115210755	88223	68585	51855
170	40835	113506925	75853	47632	22276	99802	80221	63550
180	52130	18276	87260	59096	33799	115811382	91859	75247
190	63425	29628	98669	70562	45322	22963	116403499	86944
200	74721	40981	114110079	82029	56847	34545	15139	98643
210	86019	52335	21490	93498	68372	46128	26780	117010343
220	97317	63690	32902	114704967	79899	57713	38423	22044
230	113008617	75047	44315	16437	91427	69299	50067	33746
240	19918	86404	55730	27909	115302956	80886	61712	45449
250	31220	97763	67145	39382	14487	92474	73358	57154
260	42523	113609122	78562	50856	26018	115904063	85005	68860
270	53827	20483	89980	62331	37551	15653	96654	80567
280	65132	31845	114201399	73807	49084	27245	116508304	92275
290	76439	43209	12819	85284	60619	38838	19954	117103984
300	87747	54573	24240	96763	72155	50432	31606	15694
310	99055	65938	35663	114808243	83693	62027	43260	27406
320	113110365	77305	47086	19723	95231	73623	54914	39119
330	21676	88673	58511	31205	115406770	85220	66569	50833
340	32989	113700042	69937	42689	18311	96819	78226	62548
350	44302	11412	81364	54173	29853	116008418	89884	74264
360	55616	22783	92792	65658	41396	20019	116601543	85981
370	66932	34155	114304221	77145	52940	31621	13203	97700
380	78249	45528	15652	88633	64485	43224	24864	117209420
390	89566	56903	27083	114900121	76032	54829	36527	21141
400	113200885	68279	38516	11611	87579	66434	48191	32863
410	12205	79655	49950	23103	99128	78041	59855	44586
420	23527	91033	61385	34595	115510678	89649	71521	56310
430	34849	113802413	72821	46088	22229	116101258	83188	68036
440	46172	13793	84258	57583	33781	12868	94857	79763
450	57497	25174	95697	69079	45335	24479	116706526	91491
460	68823	36557	114407136	80576	56889	36092	18197	117303220
470	80150	47940	18577	92074	68445	47705	29869	14950
480	91478	59325	30019	115003573	80002	59320	41542	26682
490	113302807	70711	41462	15073	91560	70936	53216	38415
500	14137	82098	52906	26575	115603119	82553	64891	50148

Buergi's table (reconstruction, D. Roegel, 2010)

	16000	16500	17000	17500	18000	18500	19000	19500
0	117350148	117938339	118529478	119123579	119720659	120320731	120923811	121529914
10	61883	50133	41331	35492	32631	32763	35903	42067
20	73620	61928	53185	47405	44604	44796	47997	54221
30	85357	73724	65040	59320	56579	56831	60092	66376
40	97095	85521	76897	71236	68554	68867	72188	78533
50	117408835	97320	88754	83153	80531	80904	84285	90691
60	20576	118009120	118600613	95071	92509	92942	96383	121602850
70	32318	20921	12473	119206991	119804488	120404981	121008483	15010
80	44061	32723	24334	18912	16469	17021	20584	27172
90	55806	44526	36197	30834	28451	29063	32686	39334
100	67551	56330	48061	42757	40433	41106	44789	51498
110	79298	68136	59925	54681	52417	53150	56894	63664
120	91046	79943	71791	66606	64403	65195	68999	75830
130	117502795	91751	83659	78533	76389	77242	81106	87998
140	14545	118103560	95527	90461	88377	89290	93214	121700166
150	26297	15370	118707396	119302390	119900366	120501339	121105324	12336
160	38049	27182	19267	14320	12356	13389	17434	24508
170	49803	38995	31139	26252	24347	25440	29546	36680
180	61558	50808	43012	38184	36339	37493	41659	48854
190	73314	62624	54887	50118	48333	49546	53773	61029
200	85072	74440	66762	62053	60328	61601	65889	73205
210	96830	86257	78639	73989	72324	73657	78005	85382
220	117608590	98076	90517	85927	84321	85715	90123	97561
230	20351	118209896	118802396	97865	96320	97773	121202242	121809740
240	32113	21717	14276	119409805	120008319	120609833	14362	21921
250	43876	33539	26157	21746	20320	21894	26484	34103
260	55640	45362	38040	33688	32322	33956	38606	46287
270	67406	57187	49924	45632	44325	46020	50730	58471
280	79173	69012	61809	57576	56330	58084	62855	70657
290	90941	80839	73695	69522	68335	70150	74982	82844
300	117702710	92667	85582	81469	80342	82217	87109	95033
310	14480	118304497	97471	93417	92350	94285	99238	121907222
320	26251	16327	118909361	119505366	120104359	120706355	121311368	19413
330	38024	28159	21251	17317	16370	18425	23499	31605
340	49798	39992	33144	29269	28381	30497	35631	43798
350	61573	51826	45037	41221	40394	42570	47765	55992
360	73349	63661	56931	53176	52408	54645	59899	68188
370	85126	75497	68827	65131	64424	66720	72035	80385
380	96905	87335	80724	77087	76440	78797	84173	92583
390	117808685	99173	92622	89045	88458	90875	96311	122004782
400	20465	118411013	119004521	119601004	120200477	120802954	121408451	16983
410	32247	22854	16422	12964	12497	15034	20592	29184
420	44031	34697	28323	24925	24518	27116	32734	41387
430	55815	46540	40226	36888	36540	39198	44877	53591
440	67601	58385	52130	48852	48564	51282	57021	65797
450	79387	70231	64035	60817	60589	63367	69167	78003
460	91175	82078	75942	72783	72615	75454	81314	90211
470	117902965	93926	87849	84750	84642	87541	93462	122102420
480	14755	118505775	99758	96718	96671	99630	121505611	14630
490	26546	17626	119111668	119708688	120308700	120911720	17762	26842
500	38339	29478	23579	20659	20731	23811	29914	39055

Buergi's table (reconstruction, D. Roegel, 2010)

	20000	20500	21000	21500	22000	22500	23000	23500
0	122139055	122751248	123366511	123984857	124606302	125230863	125858554	126489391
10	51268	63523	78847	97255	18763	43386	71140	126502040
20	63484	75800	91185	124009655	31225	55910	83727	14690
30	75700	88077	123403524	22056	43688	68436	96315	27341
40	87917	122800356	15865	34458	56152	80963	125908905	39994
50	122200136	12636	28206	46862	68618	93491	21496	52648
60	12356	24918	40549	59266	81085	125306020	34088	65303
70	24577	37200	52893	71672	93553	18551	46681	77960
80	36800	49484	65238	84080	124706022	31083	59276	90618
90	49024	61769	77585	96488	18493	43616	71872	126603277
100	61249	74055	89933	124108898	30965	56150	84469	15937
110	73475	86342	123502282	21308	43438	68686	97067	28599
120	85702	98631	14632	33721	55912	81223	126009667	41261
130	97931	122910921	26983	46134	68388	93761	22268	53926
140	122310160	23212	39336	58549	80865	125406300	34870	66591
150	22391	35504	51690	70964	93343	18841	47474	79258
160	34624	47798	64045	83382	124805822	31383	60078	91926
170	46857	60093	76402	95800	18303	43926	72685	126704595
180	59092	72389	88759	124208219	30785	56470	85292	17265
190	71328	84686	123601118	20640	43268	69016	97900	29937
200	83565	96984	13478	33062	55752	81563	126110510	42610
210	95803	123009284	25840	45486	68238	94111	23121	55284
220	122408043	21585	38202	57910	80724	125506660	35733	67960
230	20284	33887	50566	70336	93212	19211	48347	80637
240	32526	46190	62931	82763	124905702	31763	60962	93315
250	44769	58495	75297	95191	18192	44316	73578	126805994
260	57013	70801	87665	124307621	30684	56870	86195	18675
270	69259	83108	123700034	20052	43177	69426	98814	31356
280	81506	95416	12404	32484	55672	81983	126211434	44040
290	93754	123107726	24775	44917	68167	94541	24055	56724
300	122506003	20037	37147	57351	80664	125607101	36677	69410
310	18254	32349	49521	69787	93162	19661	49301	82097
320	30506	44662	61896	82224	125005661	32223	61926	94785
330	42759	56976	74272	94662	18162	44787	74552	126907474
340	55013	69292	86650	124407102	30664	57351	87180	20165
350	67269	81609	99028	19542	43167	69917	99808	32857
360	79525	93927	123811408	31984	55671	82484	126312438	45550
370	91783	123206246	23789	44428	68177	95052	25070	58245
380	122604043	18567	36172	56872	80683	125707622	37702	70941
390	16303	30889	48555	69318	93192	20192	50336	83638
400	28565	43212	60940	81765	125105701	32764	62971	96336
410	40827	55536	73326	94213	18211	45338	75607	127009036
420	53092	67862	85714	124506662	30723	57912	88245	21737
430	65357	80189	98102	19113	43236	70488	126400884	34439
440	77623	92517	123910492	31565	55751	83065	13524	47142
450	89891	123304846	22883	44018	68266	95643	26165	59847
460	122702160	17176	35275	56472	80783	125808223	38808	72553
470	14430	29508	47669	68928	93301	20804	51451	85260
480	26702	41841	60064	81385	125205820	33386	64097	97969
490	38974	54175	72460	93843	18341	45969	76743	127110679
500	51248	66511	84857	124606302	30863	58554	89391	23390

Buergi's table (reconstruction, D. Roegel, 2010)

	24000	24500	25000	25500	26000	26500	27000	27500
0	127123390	127760566	128400937	129044517	129691323	130341371	130994677	131651257
10	36102	73342	13777	57421	129704292	54405	131007776	64423
20	48816	86120	26618	70327	17262	67440	20877	77589
30	61530	98898	39461	83234	30234	80477	33979	90757
40	74247	127811678	52305	96142	43207	93515	47082	131703926
50	86964	24459	65150	129109052	56181	130406554	60187	17096
60	99683	37242	77997	21963	69157	19595	73293	30268
70	127212403	50026	90844	34875	82134	32637	86401	43441
80	25124	62811	128503693	47789	95112	45680	99509	56615
90	37846	75597	16544	60703	129808092	58725	131112619	69791
100	50570	88384	29395	73619	21072	71771	25730	82968
110	63295	127901173	42248	86537	34055	84818	38843	96146
120	76022	13963	55103	99455	47038	97866	51957	131809326
130	88749	26755	67958	129212375	60023	130510916	65072	22507
140	127301478	39547	80815	25297	73009	23967	78189	35689
150	14208	52341	93673	38219	85996	37020	91306	48873
160	26940	65137	128606532	51143	98985	50073	131204426	62057
170	39672	77933	19393	64068	129911974	63128	17546	75244
180	52406	90731	32255	76995	24966	76185	30668	88431
190	65142	128003530	45118	89922	37958	89242	43791	131901620
200	77878	16330	57983	129302851	50952	130602301	56915	14810
210	90616	29132	70849	15782	63947	15361	70041	28002
220	127403355	41935	83716	28713	76943	28423	83168	41194
230	16095	54739	96584	41646	89941	41486	96296	54389
240	28837	67545	128709454	54580	130002940	54550	131309426	67584
250	41580	80351	22325	67516	15940	67615	22557	80781
260	54324	93159	35197	80452	28942	80682	35689	93979
270	67069	128105969	48070	93390	41945	93750	48823	132007178
280	79816	18779	60945	129406330	54949	130706820	61957	20379
290	92564	31591	73821	19270	67955	19890	75094	33581
300	127505313	44404	86699	32212	80961	32962	88231	46784
310	18064	57219	99577	45156	93970	46036	131401370	59989
320	30816	70034	128812457	58100	130106979	59110	14510	73195
330	43569	82851	25339	71046	19990	72186	27652	86402
340	56323	95670	38221	83993	33002	85263	40794	99611
350	69079	128208489	51105	96941	46015	98342	53938	132112821
360	81836	21310	63990	129509891	59030	130811422	67084	26032
370	94594	34132	76876	22842	72045	24503	80230	39245
380	127607353	46956	89764	35794	85063	37585	93379	52459
390	20114	59780	128902653	48748	98081	50669	131506528	65674
400	32876	72606	15543	61703	130211101	63754	19679	78891
410	45639	85434	28435	74659	24122	76840	32830	92108
420	58404	98262	41328	87616	37144	89928	45984	132205328
430	71170	128311092	54222	129600575	50168	130903017	59138	18548
440	83937	23923	67117	13535	63193	16107	72294	31770
450	96705	36756	80014	26497	76220	29199	85452	44993
460	127709475	49589	92912	39459	89247	42292	98610	58218
470	22246	62424	129005811	52423	130302276	55386	131611770	71444
480	35018	75260	18712	65388	15306	68482	24931	84671
490	47792	88098	31614	78355	28338	81579	38094	97899
500	60566	128400937	44517	91323	41371	94677	51257	132311129

Buergi's table (reconstruction, D. Roegel, 2010)

	28000	28500	29000	29500	30000	30500	31000	31500
0	132311129	132974308	133640811	134310655	134983856	135660432	136340398	137023773
10	24360	87605	54175	24086	97355	73998	54032	37475
20	37593	133000904	67541	37518	135010854	87565	67668	51179
30	50826	14204	80907	50952	24355	135701134	81304	64884
40	64061	27506	94275	64387	37858	14704	94943	78591
50	77298	40808	133707645	77824	51362	28275	136408582	92299
60	90536	54113	21016	91261	64867	41848	22223	137106008
70	132403775	67418	34388	134404701	78373	55422	35865	19719
80	17015	80725	47761	18141	91881	68998	49509	33430
90	30257	94033	61136	31583	135105390	82575	63154	47144
100	43500	133107342	74512	45026	18901	96153	76800	60859
110	56744	20653	87890	58471	32413	135809733	90448	74575
120	69990	33965	133801268	71916	45926	23314	136504097	88292
130	83237	47278	14648	85364	59440	36896	17747	137202011
140	96485	60593	28030	98812	72956	50480	31399	15731
150	132509735	73909	41413	134512262	86474	64065	45052	29453
160	22986	87227	54797	25713	99992	77651	58707	43176
170	36238	133200545	68182	39166	135213512	91239	72362	56900
180	49492	13865	81569	52620	27034	135904828	86020	70626
190	62747	27187	94957	66075	40556	18419	99678	84353
200	76003	40509	133908347	79532	54080	32010	136613338	98081
210	89260	53834	21738	92990	67606	45604	27000	137311811
220	132602519	67159	35130	134606449	81133	59198	40662	25542
230	15780	80486	48523	19909	94661	72794	54326	39275
240	29041	93814	61918	33371	135308190	86391	67992	53009
250	42304	133307143	75314	46835	21721	99990	81659	66744
260	55568	20474	88712	60299	35253	136013590	95327	80481
270	68834	33806	134002111	73765	48787	27191	136708996	94219
280	82101	47139	15511	87233	62322	40794	22667	137407958
290	95369	60474	28913	134700702	75858	54398	36339	21699
300	132708638	73810	42315	14172	89395	68004	50013	35441
310	21909	87147	55720	27643	135402934	81610	63688	49185
320	35182	133400486	69125	41116	16475	95219	77364	62929
330	48455	13826	82532	54590	30016	136108828	91042	76676
340	61730	27167	95940	68065	43559	22439	136804721	90423
350	75006	40510	134109350	81542	57104	36051	18402	137504172
360	88284	53854	22761	95020	70649	49665	32084	17923
370	132801562	67200	36173	134808500	84196	63280	45767	31675
380	14843	80546	49587	21981	97745	76896	59451	45428
390	28124	93894	63002	35463	135511295	90514	73137	59182
400	41407	133507244	76418	48946	24846	136204133	86825	72938
410	54691	20595	89836	62431	38398	17753	136900513	86696
420	67976	33947	134203255	75918	51952	31375	14203	137600454
430	81263	47300	16675	89405	65507	44998	27895	14214
440	94551	60655	30097	134902894	79064	58623	41588	27976
450	132907841	74011	43520	16384	92622	72249	55282	41739
460	21132	87368	56944	29876	135606181	85876	68977	55503
470	34424	133600727	70370	43369	19742	99504	82674	69268
480	47717	14087	83797	56863	33304	136313134	96372	83035
490	61012	27448	97225	70359	46867	26766	137010072	96804
500	74308	40811	134310655	83856	60432	40398	23773	137710573

Buergi's table (reconstruction, D. Roegel, 2010)

	32000	32500	33000	33500	34000	34500	35000	35500
0	137710573	138400816	139094518	139791697	140492371	141196556	141904272	142615534
10	24344	14656	139108427	139805676	140506420	141210676	18462	29796
20	38117	28497	22338	19657	20471	24797	32654	44059
30	51890	42340	36250	33639	34523	38920	46847	58323
40	65666	56184	50164	47622	48576	53044	61042	72589
50	79442	70030	64079	61607	62631	67169	75238	86856
60	93220	83877	77995	75593	76687	81296	89436	142701125
70	137807000	97725	91913	89581	90745	95424	142003634	15395
80	20780	138511575	139205832	139903570	140604804	141309553	17835	29667
90	34562	25426	19753	17560	18865	23684	32037	43939
100	48346	39279	33675	31552	32926	37817	46240	58214
110	62131	53133	47598	45545	46990	51950	60444	72490
120	75917	66988	61523	59539	61054	66086	74650	86767
130	89704	80845	75449	73535	75121	80222	88858	142801046
140	137903493	94703	89377	87533	89188	94360	142103067	15326
150	17284	138608562	139303306	140001532	140703257	141408500	17277	29607
160	31075	22423	17236	15532	17327	22640	31489	43890
170	44869	36285	31168	29533	31399	36783	45702	58175
180	58663	50149	45101	43536	45472	50926	59917	72460
190	72459	64014	59035	57541	59547	65072	74133	86748
200	86256	77880	72971	71546	73623	79218	88350	142901036
210	138000055	91748	86909	85553	87700	93366	142202569	15326
220	13855	138705617	139400847	99562	140801779	141507515	16789	29618
230	27656	19488	14787	140113572	15859	21666	31011	43911
240	41459	33360	28729	27583	29941	35818	45234	58205
250	55263	47233	42672	41596	44024	49972	59458	72501
260	69069	61108	56616	55610	58108	64127	73684	86798
270	82876	74984	70562	69626	72194	78283	87912	143001097
280	96684	88862	84509	83643	86281	92441	142302141	15397
290	138110493	138802740	98457	97661	140900370	141606600	16371	29699
300	24305	16621	139512407	140211681	14460	20761	30602	44002
310	38117	30502	26358	25702	28551	34923	44835	58306
320	51931	44385	40311	39725	42644	49086	59070	72612
330	65746	58270	54265	53749	56738	63251	73306	86919
340	79563	72156	68220	67774	70834	77418	87543	143101228
350	93380	86043	82177	81801	84931	91585	142401782	15538
360	138207200	99932	96135	95829	99029	141705755	16022	29850
370	21021	138913822	139610095	140309859	141013129	19925	30264	44163
380	34843	27713	24056	23890	27231	34097	44507	58477
390	48666	41606	38019	37922	41333	48271	58751	72793
400	62491	55500	51982	51956	55438	62445	72997	87110
410	76317	69395	65948	65991	69543	76622	87244	143201429
420	90145	83292	79914	80027	83650	90799	142501493	15749
430	138303974	97191	93882	94065	97758	141804978	15743	30071
440	17804	139011090	139707851	140408105	141111868	19159	29995	44394
450	31636	24992	21822	22146	25979	33341	44248	58718
460	45469	38894	35794	36188	40092	47524	58502	73044
470	59304	52798	49768	50232	54206	61709	72758	87371
480	73140	66703	63743	64277	68321	75895	87015	143301700
490	86977	80610	77719	78323	82438	90083	142601274	16030
500	138400816	94518	91697	92371	96556	141904272	15534	30362

Buergi's table (reconstruction, D. Roegel, 2010)

	36000	36500	37000	37500	38000	38500	39000	39500
0	143330362	144048772	144770783	145496414	146225681	146958603	147695199	148435488
10	44695	63177	85260	145510963	40303	73299	147709969	50331
20	59029	77583	99739	25514	54927	87997	24740	65176
30	73365	91991	144814219	40067	69553	147002695	39512	80023
40	87702	144106400	28700	54621	84180	17396	54286	94871
50	143402041	20811	43183	69176	98808	32097	69062	148509720
60	16381	35223	57668	83733	146313438	46801	83839	24571
70	30723	49636	72153	98292	28070	61505	98617	39424
80	45066	64051	86641	145612851	42702	76211	147813397	54278
90	59411	78468	144901129	27413	57337	90919	28178	69133
100	73757	92886	15619	41975	71972	147105628	42961	83990
110	88104	144207305	30111	56540	86610	20339	57745	98848
120	143502453	21726	44604	71105	146401248	35051	72531	148613708
130	16803	36148	59098	85672	15888	49764	87318	28570
140	31155	50571	73594	145700241	30530	64479	147902107	43432
150	45508	64997	88092	14811	45173	79196	16897	58297
160	59862	79423	145002590	29382	59817	93914	31689	73163
170	74218	93851	17091	43955	74463	147208633	46482	88030
180	88576	144308280	31592	58530	89111	23354	61277	148702899
190	143602935	22711	46096	73106	146503760	38076	76073	17769
200	17295	37143	60600	87683	18410	52800	90871	32641
210	31657	51577	75106	145802262	33062	67525	148005670	47514
220	46020	66012	89614	16842	47715	82252	20470	62389
230	60384	80449	145104123	31424	62370	96980	35272	77265
240	74750	94887	18633	46007	77026	147311710	50076	92143
250	89118	144409326	33145	60591	91684	26441	64881	148807022
260	143703487	23767	47658	75177	146606343	41174	79687	21903
270	17857	38210	62173	89765	21004	55908	94495	36785
280	32229	52654	76689	145904354	35666	70643	148109305	51669
290	46602	67099	91207	18944	50329	85380	24116	66554
300	60977	81546	145205726	33536	64995	147400119	38928	81440
310	75353	95994	20247	48130	79661	14859	53742	96329
320	89730	144510443	34769	62724	94329	29601	68557	148911218
330	143804109	24894	49292	77321	146708998	44343	83374	26109
340	18490	39347	63817	91918	23669	59088	98193	41002
350	32872	53801	78343	146006518	38342	73834	148213012	55896
360	47255	68256	92871	21118	53016	88581	27834	70792
370	61640	82713	145307401	35720	67691	147503330	42657	85689
380	76026	97171	21931	50324	82368	18080	57481	149000587
390	90413	144611631	36463	64929	97046	32832	72307	15487
400	143904802	26092	50997	79536	146811726	47585	87134	30389
410	19193	40555	65532	94143	26407	62340	148301962	45292
420	33585	55019	80069	146108753	41089	77096	16793	60196
430	47978	69484	94607	23364	55773	91854	31624	75102
440	62373	83951	145409146	37976	70459	147606613	46458	90010
450	76769	98420	23687	52590	85146	21374	61292	149104919
460	91167	144712890	38230	67205	99835	36136	76128	19829
470	144005566	27361	52773	81822	146914525	50900	90966	34741
480	19967	41834	67319	96440	29216	65665	148405805	49655
490	34369	56308	81865	146211060	43909	80431	20646	64570
500	48772	70783	96414	25681	58603	95199	35488	79486

Buergi's table (reconstruction, D. Roegel, 2010)

	40000	40500	41000	41500	42000	42500	43000	43500
0	149179486	149927214	150678690	151433932	152192960	152955792	153722448	154492946
10	94404	42207	93758	49075	152208179	71087	37820	154508395
20	149209324	57201	150708827	64220	23400	86385	53194	23846
30	24245	72197	23898	79367	38622	153001683	68569	39298
40	39167	87194	38970	94515	53846	16983	83946	54752
50	54091	150002193	54044	151509664	69071	32285	99324	70208
60	69016	17193	69120	24815	84298	47588	153814704	85665
70	83943	32195	84197	39968	99527	62893	30086	154601123
80	98872	47198	99275	55122	152314757	78199	45469	16583
90	149313802	62203	150814355	70277	29988	93507	60853	32045
100	28733	77209	29436	85434	45221	153108816	76239	47508
110	43666	92217	44519	151600593	60456	24127	91627	62973
120	58600	150107226	59604	15753	75692	39440	153907016	78439
130	73536	22237	74690	30914	90929	54754	22407	93907
140	88473	37249	89777	46077	152406168	70069	37799	154709377
150	149403412	52262	150904866	61242	21409	85386	53193	24848
160	18353	67278	19957	76408	36651	153200705	68588	40320
170	33294	82294	35049	91576	51895	16025	83985	55794
180	48238	97313	50142	151706745	67140	31346	99383	71270
190	63183	150212332	65237	21916	82387	46670	154014783	86747
200	78129	27354	80334	37088	97635	61994	30185	154802225
210	93077	42376	95432	52261	152512885	77320	45588	17706
220	149508026	57401	151010531	67437	28136	92648	60992	33187
230	22977	72426	25632	82613	43389	153307977	76398	48671
240	37929	87454	40735	97792	58643	23308	91806	64156
250	52883	150302482	55839	151812971	73899	38641	154107215	79642
260	67838	17513	70944	28153	89156	53974	22626	95130
270	82795	32544	86052	43336	152604415	69310	38038	154910620
280	97753	47578	151101160	58520	19676	84647	53452	26111
290	149612713	62612	16270	73706	34938	99985	68867	41603
300	27674	77649	31382	88893	50201	153415325	84284	57097
310	42637	92686	46495	151904082	65466	30667	99703	72593
320	57601	150407726	61610	19272	80733	46010	154215123	88090
330	72567	22766	76726	34464	96001	61354	30544	155003589
340	87534	37809	91844	49658	152711270	76701	45967	19090
350	149702503	52852	151206963	64853	26542	92048	61392	34591
360	17473	67898	22083	80049	41814	153507397	76818	50095
370	32445	82945	37206	95247	57088	22748	92246	65600
380	47418	97993	52329	152010447	72364	38100	154307675	81106
390	62393	150513043	67455	25648	87641	53454	23106	96615
400	77369	28094	82581	40850	152802920	68810	38538	155112124
410	92347	43147	97710	56054	18200	84166	53972	27635
420	149807326	58201	151312839	71260	33482	99525	69407	43148
430	22307	73257	27971	86467	48766	153614885	84844	58663
440	37289	88314	43103	152101676	64050	30246	154400283	74178
450	52273	150603373	58238	16886	79337	45609	15723	89696
460	67258	18433	73374	32098	94625	60974	31164	155205215
470	82245	33495	88511	47311	152909914	76340	46607	20735
480	97233	48559	151403650	62526	25205	91708	62052	36257
490	149912223	63623	18790	77742	40498	153707077	77498	51781
500	27214	78690	33932	92960	55792	22448	92946	67306

Buergi's table (reconstruction, D. Roegel, 2010)

	44000	44500	45000	45500	46000	46500	47000	47500
0	155267306	156045548	156827690	157613753	158403755	159197718	159995660	160797601
10	82833	61152	43373	29514	19596	159213638	160011659	160813681
20	98361	76758	59057	45277	35438	29559	27660	29762
30	155313891	92366	74743	61042	51281	45482	43663	45845
40	29422	156107975	90431	76808	67126	61406	59667	61930
50	44955	23586	156906120	92575	82973	77333	75673	78016
60	60490	39199	21810	157708345	98821	93260	91681	94104
70	76026	54812	37502	24116	158514671	159309190	160107690	160910193
80	91563	70428	53196	39888	30523	25121	23701	26284
90	155407103	86045	68892	55662	46376	41053	39713	42377
100	22643	156201664	84588	71437	62230	56987	55727	58471
110	38186	17284	157000287	87215	78087	72923	71743	74567
120	53729	32905	15987	157802993	93945	88860	87760	90664
130	69275	48529	31688	18774	158609804	159404799	160203779	161006763
140	84822	64154	47392	34556	25665	20739	19799	22864
150	155500370	79780	63096	50339	41527	36682	35821	38966
160	15920	95408	78803	66124	57392	52625	51845	55070
170	31472	156311038	94511	81911	73257	68570	67870	71176
180	47025	26669	157110220	97699	89125	84517	83897	87283
190	62580	42301	25931	157913489	158704994	159500466	99925	161103392
200	78136	57936	41644	29280	20864	16416	160315955	19502
210	93694	73571	57358	45073	36736	32367	31987	35614
220	155609253	89209	73074	60867	52610	48321	48020	51727
230	24814	156404848	88791	76663	68485	64276	64055	67843
240	40377	20488	157204510	92461	84362	80232	80091	83959
250	55941	36130	20230	158008260	158800240	96190	96129	161200078
260	71506	51774	35952	24061	16120	159612150	160412169	16198
270	87073	67419	51676	39864	32002	28111	28210	32319
280	155702642	83066	67401	55668	47885	44074	44253	48443
290	18212	98714	83128	71473	63770	60038	60297	64567
300	33784	156514364	98856	87280	79656	76004	76343	80694
310	49358	30015	157314586	158103089	95544	91972	92391	96822
320	64932	45668	30317	18899	158911434	159707941	160508440	161312952
330	80509	61323	46050	34711	27325	23912	24491	29083
340	96087	76979	61785	50525	43218	39884	40543	45216
350	155811667	92637	77521	66340	59112	55858	56597	61350
360	27248	156608296	93259	82156	75008	71834	72653	77487
370	42830	23957	157408998	97975	90906	87811	88710	93624
380	58415	39619	24739	158213794	159006805	159803790	160604769	161409764
390	74001	55283	40482	29616	22705	19770	20830	25905
400	89588	70949	56226	45439	38608	35752	36892	42047
410	155905177	86616	71971	61263	54511	51736	52956	58191
420	20767	156702284	87719	77089	70417	67721	69021	74337
430	36360	17955	157503467	92917	86324	83707	85088	90485
440	51953	33626	19218	158308746	159102233	99696	160701156	161506634
450	67548	49300	34970	24577	18143	159915686	17226	22784
460	83145	64975	50723	40410	34055	31677	33298	38937
470	98743	80651	66478	56244	49968	47671	49371	55091
480	156014343	96329	82235	72079	65883	63665	65446	71246
490	29945	156812009	97993	87917	81800	79662	81523	87403
500	45548	27690	157613753	158403755	97718	95660	97601	161603562

Buergi's table (reconstruction, D. Roegel, 2010)

	48000	48500	49000	49500	50000	50500	51000	51500
0	161603562	162413563	163227623	164045764	164868006	165694368	166524873	167359541
10	19722	29804	43946	62169	84492	165710938	41526	76277
20	35884	46047	60270	78575	164900981	27509	58180	93014
30	52048	62292	76596	94983	17471	44082	74836	167409754
40	68213	78538	92924	164111392	33963	60656	91493	26495
50	84380	94786	163309253	27803	50456	77232	166608152	43237
60	161700548	162511035	25584	44216	66951	93810	24813	59982
70	16718	27286	41917	60630	83448	165810389	41476	76728
80	32890	43539	58251	77047	99946	26970	58140	93475
90	49063	59793	74587	93464	165016446	43553	74806	167510225
100	65238	76049	90924	164209884	32948	60137	91473	26976
110	81415	92307	163407263	26305	49451	76723	166708142	43728
120	97593	162608566	23604	42727	65956	93311	24813	60483
130	161813773	24827	39946	59151	82463	165909900	41486	77239
140	29954	41089	56290	75577	98971	26491	58160	93997
150	46137	57354	72636	92005	165115481	43084	74836	167610756
160	62322	73619	88983	164308434	31992	59678	91513	27517
170	78508	89887	163505332	24865	48506	76274	166808192	44280
180	94696	162706156	21683	41297	65020	92872	24873	61044
190	161910885	22426	38035	57732	81537	166009471	41556	77810
200	27076	38698	54389	74167	98055	26072	58240	94578
210	43269	54972	70744	90605	165214575	42675	74925	167711348
220	59463	71248	87101	164407044	31096	59279	91613	28119
230	75659	87525	163603460	23485	47619	75885	166908302	44892
240	91857	162803804	19820	39927	64144	92493	24993	61666
250	162008056	20084	36182	56371	80671	166109102	41685	78442
260	24257	36366	52546	72817	97199	25713	58380	95220
270	40459	52650	68911	89264	165313728	42325	75075	167812000
280	56663	68935	85278	164505713	30260	58940	91773	28781
290	72869	85222	163701647	22163	46793	75555	167008472	45564
300	89076	162901510	18017	38616	63327	92173	25173	62348
310	162105285	17801	34389	55069	79864	166208792	41876	79134
320	21496	34092	50762	71525	96402	25413	58580	95922
330	37708	50386	67137	87982	165412941	42036	75286	167912712
340	53922	66681	83514	164604441	29483	58660	91993	29503
350	70137	82977	99892	20901	46026	75286	167108702	46296
360	86354	99276	163816272	37363	62570	91913	25413	63091
370	162202573	163015576	32654	53827	79117	166308542	42126	79887
380	18793	31877	49037	70293	95664	25173	58840	96685
390	35015	48180	65422	86760	165512214	41806	75556	168013485
400	51238	64485	81808	164703228	28765	58440	92273	30286
410	67463	80792	98197	19699	45318	75076	167208993	47089
420	83690	97100	163914586	36171	61873	91713	25714	63894
430	99919	163113409	30978	52644	78429	166408353	42436	80700
440	162316149	29721	47371	69119	94987	24993	59160	97508
450	32380	46034	63766	85596	165611546	41636	75886	168114318
460	48613	62348	80162	164802075	28107	58280	92614	31130
470	64848	78665	96560	18555	44670	74926	167309343	47943
480	81085	94983	164012960	35037	61235	91573	26074	64757
490	97323	163211302	29361	51520	77801	166508223	42807	81574
500	162413563	27623	45764	68006	94368	24873	59541	98392

Buergi's table (reconstruction, D. Roegel, 2010)

	52000	52500	53000	53500	54000	54500	55000	55500
0	168198392	169041448	169888729	170740257	171596053	172456139	173320536	174189265
10	168215212	58352	169905718	57331	171613213	73385	37868	174206684
20	32033	75258	22708	74407	30374	90632	55202	24105
30	48857	92165	39701	91484	47537	172507881	72537	41527
40	65681	169109074	56695	170808564	64702	25132	89874	58951
50	82508	25985	73690	25644	81869	42384	173407213	76377
60	99336	42898	90688	42727	99037	59639	24554	93805
70	168316166	59812	170007687	59811	171716207	76895	41897	174311234
80	32998	76728	24688	76897	33378	94152	59241	28665
90	49831	93646	41690	93985	50552	172611412	76587	46098
100	66666	169210565	58694	170911074	67727	28673	93934	63533
110	83503	27486	75700	28165	84903	45936	173511284	80969
120	168400341	44409	92708	45258	171802082	63200	28635	98407
130	17181	61334	170109717	62353	19262	80467	45988	174415847
140	34023	78260	26728	79449	36444	97735	63342	33289
150	50866	95187	43741	96547	53628	172715004	80699	50732
160	67711	169312117	60755	171013647	70813	32276	98057	68177
170	84558	29048	77771	30748	88000	49549	173615416	85624
180	168501407	45981	94789	47851	171905189	66824	32778	174503072
190	18257	62916	170211808	64956	22379	84101	50141	20523
200	35109	79852	28829	82062	39572	172801379	67506	37975
210	51962	96790	45852	99170	56766	18659	84873	55428
220	68817	169413730	62877	171116280	73961	35941	173702242	72884
230	85674	30671	79903	33392	91159	53225	19612	90341
240	168602533	47614	96931	50505	172008358	70510	36984	174607800
250	19393	64559	170313961	67620	25559	87797	54357	25261
260	36255	81505	30992	84737	42761	172905086	71733	42724
270	53119	98453	48025	171201856	59966	22376	89110	60188
280	69984	169515403	65060	18976	77172	39669	173806489	77654
290	86851	32355	82097	36098	94379	56963	23870	95122
300	168703720	49308	99135	53221	172111589	74258	41252	174712591
310	20590	66263	170416175	70347	28800	91556	58636	30062
320	37462	83220	33216	87474	46013	173008855	76022	47535
330	54336	169600178	50260	171304602	63227	26156	93410	65010
340	71211	17138	67305	21733	80444	43458	173910799	82487
350	88088	34100	84352	38865	97662	60763	28190	99965
360	168804967	51063	170501400	55999	172214881	78069	45583	174817445
370	21848	68028	18450	73135	32103	95377	62977	34927
380	38730	84995	35502	90272	49326	173112686	80374	52410
390	55614	169701964	52556	171407411	66551	29997	97772	69895
400	72499	18934	69611	24552	83778	47310	174015171	87382
410	89386	35906	86668	41694	172301006	64625	32573	174904871
420	168906275	52879	170603726	58838	18236	81942	49976	22362
430	23166	69854	20787	75984	35468	99260	67381	39854
440	40058	86831	37849	93132	52702	173216580	84788	57348
450	56952	169803810	54913	171510281	69937	33901	174102196	74844
460	73848	20791	71978	27432	87174	51225	19607	92341
470	90745	37773	89045	44585	172404413	68550	37019	175009840
480	169007645	54756	170706114	61739	21653	85877	54432	27341
490	24545	71742	23185	78895	38895	173303205	71848	44844
500	41448	88729	40257	96053	56139	20536	89265	62349

Buergi's table (reconstruction, D. Roegel, 2010)

	56000	56500	57000	57500	58000	58500	59000	59500
0	175062349	175939808	176821666	177707944	178598664	179493849	180393520	181297701
10	79855	57402	39348	25715	178616524	179511798	180411560	181315831
20	97363	74998	57032	43487	34386	29749	29601	33963
30	175114872	92595	74718	61262	52249	47702	47644	52096
40	32384	176010195	92405	79038	70114	65657	65688	70231
50	49897	27796	176910095	96816	87981	83614	83735	88368
60	67412	45399	27786	177814595	178705850	179601572	180501783	181406507
70	84929	63003	45478	32377	23721	19532	19834	24648
80	175202447	80609	63173	50160	41593	37494	37886	42790
90	19968	98217	80869	67945	59467	55458	55939	60934
100	37490	176115827	98567	85732	77343	73423	73995	79080
110	55013	33439	177016267	177903520	95221	91391	92052	97228
120	72539	51052	33969	21311	178813100	179709360	180610112	181515378
130	90066	68667	51672	39103	30982	27331	28173	33530
140	175307595	86284	69377	56897	48865	45303	46235	51683
150	25126	176203903	87084	74692	66750	63278	64300	69838
160	42658	21523	177104793	92490	84636	81254	82366	87995
170	60193	39145	22503	178010289	178902525	99232	180700435	181606154
180	77729	56769	40216	28090	20415	179817212	18505	24315
190	95267	74395	57930	45893	38307	35194	36577	42477
200	175412806	92022	75645	63698	56201	53178	54650	60641
210	30347	176309652	93363	81504	74096	71163	72726	78807
220	47890	27283	177211082	99312	91994	89150	90803	96975
230	65435	44915	28803	178117122	179009893	179907139	180808882	181715145
240	82982	62550	46526	34934	27794	25130	26963	33316
250	175500530	80186	64251	52747	45697	43122	45046	51490
260	18080	97824	81977	70563	63601	61116	63130	69665
270	35632	176415464	99706	88380	81508	79113	81216	87842
280	53185	33105	177317436	178206198	99416	97110	99305	181806021
290	70741	50749	35167	24019	179117326	180015110	180917394	24201
300	88298	68394	52901	41841	35238	33112	35486	42384
310	175605857	86041	70636	59666	53151	51115	53580	60568
320	23417	176503689	88373	77492	71066	69120	71675	78754
330	40980	21340	177406112	95319	88984	87127	89772	96942
340	58544	38992	23853	178313149	179206902	180105136	181007871	181915132
350	76110	56646	41595	30980	24823	23146	25972	33323
360	93677	74301	59339	48813	42746	41159	44075	51516
370	175711247	91959	77085	66648	60670	59173	62179	69712
380	28818	176609618	94833	84485	78596	77189	80285	87908
390	46391	27279	177512582	178402323	96524	95206	98393	182006107
400	63965	44942	30334	20164	179314453	180213226	181116503	24308
410	81542	62606	48087	38006	32385	31247	34615	42510
420	99120	80272	65841	55849	50318	49270	52728	60715
430	175816700	97940	83598	73695	68253	67295	70844	78921
440	34281	176715610	177601356	91542	86190	85322	88961	97129
450	51865	33282	19117	178509391	179404129	180303350	181207080	182115338
460	69450	50955	36878	27242	22069	21381	25200	33550
470	87037	68630	54642	45095	40011	39413	43323	51763
480	175904626	86307	72408	62950	57955	57447	61447	69978
490	22216	176803986	90175	80806	75901	75483	79573	88195
500	39808	21666	177707944	98664	93849	93520	97701	182206414

Buergi's table (reconstruction, D. Roegel, 2010)

	60000	60500	61000	61500	62000	62500	63000	63500
0	182206414	183119682	184037527	184959973	185887042	186818758	187755144	188696223
10	24635	37994	55931	78469	185905631	37440	73919	188715093
20	42857	56308	74336	96967	24221	56124	92697	33964
30	61082	74623	92744	185015466	42814	74809	187811476	52838
40	79308	92941	184111153	33968	61408	93497	30257	71713
50	97536	183211260	29564	52471	80004	186912186	49040	90590
60	182315765	29581	47977	70976	98602	30877	67825	188809469
70	33997	47904	66392	89484	186017202	49570	86612	28350
80	52230	66229	84809	185107993	35804	68265	187905401	47233
90	70466	84555	184203227	26503	54407	86962	24191	66118
100	88703	183302884	21647	45016	73013	187005661	42984	85005
110	182406941	21214	40070	63530	91620	24361	61778	188903893
120	25182	39546	58494	82047	186110229	43064	80574	22783
130	43425	57880	76919	185200565	28840	61768	99372	41676
140	61669	76216	95347	19085	47453	80474	188018172	60570
150	79915	94554	184313777	37607	66068	99182	36974	79466
160	98163	183412893	32208	56131	84684	187117892	55778	98364
170	182516413	31234	50641	74656	186203303	36604	74583	189017264
180	34665	49578	69076	93184	21923	55318	93391	36165
190	52918	67923	87513	185311713	40545	74033	188112200	55069
200	71173	86269	184405952	30244	59169	92751	31011	73975
210	89430	183504618	24393	48777	77795	187211470	49824	92882
220	182607689	22968	42835	67312	96423	30191	68639	189111791
230	25950	41321	61279	85849	186315053	48914	87456	30702
240	44213	59675	79725	185404388	33684	67639	188206275	49615
250	62477	78031	98173	22928	52318	86366	25095	68530
260	80743	96389	184516623	41470	70953	187305094	43918	87447
270	99012	183614748	35075	60014	89590	23825	62742	189206366
280	182717281	33110	53528	78560	186408229	42557	81569	25287
290	35553	51473	71984	97108	26870	61292	188300397	44209
300	53827	69838	90441	185515658	45512	80028	19227	63134
310	72102	88205	184608900	34210	64157	98766	38059	82060
320	90379	183706574	27361	52763	82803	187417506	56893	189300988
330	182808658	24945	45824	71318	186501452	36247	75728	19918
340	26939	43317	64288	89875	20102	54991	94566	38850
350	45222	61691	82755	185608434	38754	73736	188413405	57784
360	63506	80068	184701223	26995	57408	92484	32247	76720
370	81793	98446	19693	45558	76063	187511233	51090	95658
380	182900081	183816825	38165	64122	94721	29984	69935	189414597
390	18371	35207	56639	82689	186613381	48737	88782	33539
400	36663	53591	75114	185701257	32042	67492	188507631	52482
410	54956	71976	93592	19827	50705	86249	26482	71427
420	73252	90363	184812071	38399	69370	187605007	45334	90374
430	91549	183908752	30553	56973	88037	23768	64189	189509323
440	183009848	27143	49036	75549	186706706	42530	83045	28274
450	28149	45536	67520	94126	25377	61295	188601904	47227
460	46452	63930	86007	185812706	44049	80061	20764	66182
470	64757	82327	184904496	31287	62724	98829	39626	85138
480	83063	184000725	22986	49870	81400	187717599	58490	189604097
490	183101372	19125	41479	68455	186800078	36370	77356	23057
500	19682	37527	59973	87042	18758	55144	96223	42020

Buergi's table (reconstruction, D. Roegel, 2010)

	64000	64500	65000	65500	66000	66500	67000	67500
0	189642020	190592557	191547858	192507947	193472849	194442587	195417186	196396670
10	60984	190611616	67013	27198	92196	62031	36728	196416309
20	79950	30677	86169	46451	193511546	81478	56271	35951
30	98918	49740	191605328	65706	30897	194500926	75817	55594
40	189717888	68805	24489	84962	50250	20376	95365	75240
50	36860	87872	43651	192604221	69605	39828	195514914	94888
60	55833	190706941	62815	23481	88962	59282	34466	196514537
70	74809	26011	81982	42743	193608321	78738	54019	34188
80	93786	45084	191701150	62008	27682	98196	73574	53842
90	189812766	64159	20320	81274	47044	194617656	93132	73497
100	31747	83235	39492	192700542	66409	37117	195612691	93155
110	50730	190802313	58666	19812	85776	56581	32252	196612814
120	69715	21394	77842	39084	193705144	76047	51816	32475
130	88702	40476	97020	58358	24515	95514	71381	52138
140	189907691	59560	191816199	77634	43887	194714984	90948	71804
150	26682	78646	35381	96912	63262	34455	195710517	91471
160	45675	97734	54564	192816191	82638	53929	30088	196711140
170	64669	190916823	73750	35473	193802016	73404	49661	30811
180	83666	35915	92937	54756	21396	92882	69236	50484
190	190002664	55009	191912127	74042	40779	194812361	88813	70159
200	21664	74104	31318	93329	60163	31842	195808392	89836
210	40666	93201	50511	192912619	79549	51325	27973	196809515
220	59671	191012301	69706	31910	98937	70810	47555	29196
230	78676	31402	88903	51203	193918327	90297	67140	48879
240	97684	50505	192008102	70498	37718	194909787	86727	68564
250	190116694	69610	27303	89795	57112	29277	195906316	88251
260	35706	88717	46505	193009094	76508	48770	25906	196907940
270	54719	191107826	65710	28395	95906	68265	45499	27630
280	73735	26937	84917	47698	194015305	87762	65093	47323
290	92752	46050	192104125	67003	34707	195007261	84690	67018
300	190211771	65164	23335	86309	54110	26762	196004288	86715
310	30793	84281	42548	193105618	73516	46264	23889	197006413
320	49816	191203399	61762	24929	92923	65769	43491	26114
330	68841	22519	80978	44241	194112332	85275	63095	45817
340	87868	41642	192200196	63556	31743	195104784	82702	65521
350	190306896	60766	19416	82872	51157	24295	196102310	85228
360	25927	79892	38638	193202190	70572	43807	21920	197104936
370	44960	99020	57862	21510	89989	63321	41533	24647
380	63994	191318150	77088	40833	194209408	82838	61147	44359
390	83031	37282	96316	60157	28829	195202356	80763	64074
400	190402069	56415	192315545	79483	48252	21876	196200381	83790
410	21109	75551	34777	98811	67676	41398	20001	197203508
420	40151	94689	54010	193318141	87103	60922	39623	23229
430	59195	191413828	73246	37472	194306532	80449	59247	42951
440	78241	32969	92483	56806	25963	99977	78873	62675
450	97289	52113	192411722	76142	45395	195319507	98501	82402
460	190516339	71258	30963	95479	64830	39039	196318131	197302130
470	35390	90405	50207	193414819	84266	58572	37762	21860
480	54444	191509554	69452	34160	194403705	78108	57396	41592
490	73499	28705	88699	53504	23145	97646	77032	61326
500	92557	47858	192507947	72849	42587	195417186	96670	81063

Buergi's table (reconstruction, D. Roegel, 2010)

	68000	68500	69000	69500	70000	70500	71000	71500
0	197381063	198370390	199364676	200363945	201368223	202377535	203391906	204411361
10	197400801	90227	84612	83981	88360	97773	203412245	31802
20	20541	198410066	199404551	200404020	201408499	202418013	32586	52245
30	40283	29907	24491	24060	28640	38254	52929	72690
40	60027	49750	44433	44103	48783	58498	73275	93138
50	79773	69595	64378	64147	68927	78744	93622	204513587
60	99521	89442	84324	84194	89074	98992	203513971	34038
70	197519271	198509291	199504273	200504242	201509223	202519242	34323	54492
80	39023	29142	24223	24292	29374	39494	54676	74947
90	58777	48994	44176	44345	49527	59748	75032	95405
100	78533	68849	64130	64399	69682	80004	95389	204615864
110	98290	88706	84086	84456	89839	202600262	203615749	36326
120	197618050	198608565	199604045	200604514	201609998	20522	36110	56789
130	37812	28426	24005	24575	30159	40784	56474	77255
140	57576	48289	43968	44637	50322	61048	76840	97723
150	77342	68154	63932	64701	70487	81314	97207	204718193
160	97109	88020	83898	84768	90654	202701582	203717577	38664
170	197716879	198707889	199703867	200704836	201710823	21852	37949	59138
180	36651	27760	23837	24907	30994	42124	58323	79614
190	56424	47633	43810	44979	51167	62399	78698	204800092
200	76200	67508	63784	65054	71342	82675	99076	20572
210	95978	87384	83760	85130	91520	202802953	203819456	41054
220	197815757	198807263	199803739	200805209	201811699	23233	39838	61538
230	35539	27144	23719	25289	31880	43516	60222	82025
240	55322	47027	43701	45372	52063	63800	80608	204902513
250	75108	66911	63686	65457	72248	84086	203900996	23003
260	94895	86798	83672	85543	92436	202904375	21386	43495
270	197914685	198906687	199903661	200905632	201912625	24665	41778	63990
280	34476	26577	23651	25722	32816	44958	62173	84486
290	54270	46470	43643	45815	53009	65252	82569	205004984
300	74065	66365	63638	65909	73205	85549	204002967	25485
310	93863	86261	83634	86006	93402	203005847	23367	45988
320	198013662	199006160	200003632	201006105	202013601	26148	43770	66492
330	33463	26060	23633	26205	33803	46451	64174	86999
340	53267	45963	43635	46308	54006	66755	84581	205107507
350	73072	65868	63639	66412	74211	87062	204104989	28018
360	92879	85774	83646	86519	94419	203107371	25399	48531
370	198112689	199105683	200103654	201106628	202114628	27681	45812	69046
380	32500	25593	23665	26738	34840	47994	66227	89563
390	52313	45506	43677	46851	55053	68309	86643	205210082
400	72128	65421	63691	66966	75269	88626	204207062	30603
410	91946	85337	83708	87082	95486	203208945	27483	51126
420	198211765	199205256	200203726	201207201	202215706	29265	47905	71651
430	31586	25176	23746	27322	35927	49588	68330	92178
440	51409	45099	43769	47445	56151	69913	88757	205312707
450	71234	65023	63793	67569	76377	90240	204309186	33239
460	91061	84950	83820	87696	96604	203310569	29617	53772
470	198310890	199304878	200303848	201307825	202316834	30900	50050	74307
480	30722	24809	23878	27956	37066	51234	70485	94845
490	50555	44741	43911	48088	57299	71569	90922	205415384
500	70390	64676	63945	68223	77535	91906	204411361	35926

Buergi's table (reconstruction, D. Roegel, 2010)

	72000	72500	73000	73500	74000	74500	75000	75500
0	205435926	206465626	207500487	208540536	209585797	210636298	211692064	212753121
10	56469	86273	21237	61390	209606756	57361	211713233	74397
20	77015	206506921	41990	82246	27716	78427	34404	95674
30	97563	27572	62744	208603104	48679	99495	55578	212816954
40	205518112	48225	83500	23964	69644	210720565	76753	38235
50	38664	68879	207604258	44827	90611	41637	97931	59519
60	59218	89536	25019	65691	209711580	62711	211819111	80805
70	79774	206610195	45781	86558	32551	83787	40292	212902093
80	205600332	30856	66546	208707427	53524	210804866	61477	23383
90	20892	51519	87313	28297	74500	25946	82663	44676
100	41454	72185	207708081	49170	95477	47029	211903851	65970
110	62018	92852	28852	70045	209816457	68113	25041	87267
120	82584	206713521	49625	90922	37438	89200	46234	213008565
130	205703153	34192	70400	208811801	58422	210910289	67428	29866
140	23723	54866	91177	32682	79408	31380	88625	51169
150	44295	75541	207811956	53566	209900396	52473	212009824	72474
160	64870	96219	32737	74451	21386	73569	31025	93782
170	85446	206816898	53521	95338	42378	94666	52228	213115091
180	205806025	37580	74306	208916228	63372	211015765	73433	36403
190	26605	58264	95093	37120	84369	36867	94641	57716
200	47188	78950	207915883	58013	210005367	57971	212115850	79032
210	67773	99638	36674	78909	26368	79077	37062	213200350
220	88360	206920328	57468	99807	47370	211100184	58275	21670
230	205908948	41020	78264	209020707	68375	21294	79491	42992
240	29539	61714	99062	41609	89382	42407	212200709	64316
250	50132	82410	208019862	62513	210110391	63521	21929	85643
260	70727	207003108	40664	83419	31402	84637	43152	213306971
270	91324	23808	61468	209104328	52415	211205756	64376	28302
280	206011924	44511	82274	25238	73430	26876	85602	49635
290	32525	65215	208103082	46151	94448	47999	212306831	70970
300	53128	85922	23892	67065	210215467	69124	28062	92307
310	73733	207106630	44705	87982	36489	90251	49294	213413646
320	94341	27341	65519	209208901	57512	211311380	70529	34988
330	206114950	48054	86336	29822	78538	32511	91766	56331
340	35562	68769	208207154	50745	99566	53644	212413005	77677
350	56175	89485	27975	71670	210320596	74779	34247	99024
360	76791	207210204	48798	92597	41628	95917	55490	213520374
370	97408	30925	69623	209313526	62662	211417056	76736	41726
380	206218028	51649	90450	34458	83698	38198	97983	63081
390	38650	72374	208311279	55391	210404737	59342	212519233	84437
400	59274	93101	32110	76327	25777	80488	40485	213605795
410	79900	207313830	52943	97264	46820	211501636	61739	27156
420	206300528	34562	73778	209418204	67864	22786	82995	48519
430	21158	55295	94616	39146	88911	43938	212604254	69883
440	41790	76031	208415455	60090	210509960	65093	25514	91250
450	62424	96768	36297	81036	31011	86249	46777	213712620
460	83060	207417508	57140	209501984	52064	211607408	68041	33991
470	206403699	38250	77986	22934	73119	28569	89308	55364
480	24339	58993	98834	43886	94177	49732	212710577	76740
490	44981	79739	208519684	64841	210615236	70896	31848	98117
500	65626	207500487	40536	85797	36298	92064	53121	213819497

Buergi's table (reconstruction, D. Roegel, 2010)

	76000	76500	77000	77500	78000	78500	79000	79500
0	213819497	214891218	215968311	217050802	218138720	219232090	220330940	221435298
10	40879	214912707	89908	72507	60533	54013	52973	57442
20	62263	34199	216011507	94215	82349	75938	75008	79587
30	83650	55692	33108	217115924	218204168	97866	97046	221501735
40	213905038	77188	54711	37636	25988	219319796	220419086	23885
50	26428	98685	76317	59350	47811	41728	41127	46038
60	47821	215020185	97924	81065	69635	63662	63172	68192
70	69216	41687	216119534	217202784	91462	85598	85218	90349
80	90613	63191	41146	24504	218313292	219407537	220507266	221612508
90	214012012	84698	62760	46226	35123	29477	29317	34670
100	33413	215106206	84377	67951	56956	51420	51370	56833
110	54816	27717	216205995	89678	78792	73366	73425	78999
120	76222	49230	27616	217311407	218400630	95313	95483	221701167
130	97629	70745	49238	33138	22470	219517262	220617542	23337
140	214119039	92262	70863	54871	44312	39214	39604	45509
150	40451	215213781	92490	76607	66157	61168	61668	67684
160	61865	35302	216314120	98344	88003	83124	83734	89860
170	83281	56826	35751	217420084	218509852	219605082	220705802	221812039
180	214204700	78351	57385	41826	31703	27043	27873	34221
190	26120	99879	79020	63570	53556	49006	49946	56404
200	47543	215321409	216400658	85317	75412	70971	72021	78590
210	68968	42941	22298	217507065	97269	92938	94098	221900777
220	90394	64476	43940	28816	218619129	219714907	220816177	22968
230	214311823	86012	65585	50569	40991	36878	38259	45160
240	33255	215407551	87231	72324	62855	58852	60343	67354
250	54688	29091	216508880	94081	84721	80828	82429	89551
260	76123	50634	30531	217615840	218706590	219802806	220904517	222011750
270	97561	72179	52184	37602	28460	24786	26608	33951
280	214419001	93727	73839	59366	50333	46769	48700	56155
290	40443	215515276	95497	81132	72208	68754	70795	78360
300	61887	36828	216617156	217702900	94085	90740	92892	222100568
310	83333	58381	38818	24670	218815965	219912730	221014991	22778
320	214504781	79937	60482	46443	37846	34721	37093	44990
330	26232	215601495	82148	68217	59730	56714	59197	67205
340	47684	23055	216703816	89994	81616	78710	81303	89422
350	69139	44618	25487	217811773	218903504	220000708	221103411	222211641
360	90596	66182	47159	33554	25395	22708	25521	33862
370	214612055	87749	68834	55338	47287	44710	47634	56085
380	33516	215709317	90511	77123	69182	66715	69748	78311
390	54980	30888	216812190	98911	91079	88721	91865	222300539
400	76445	52461	33871	217920701	219012978	220110730	221213984	22769
410	97913	74037	55554	42493	34879	32741	36106	45001
420	214719383	95614	77240	64287	56783	54755	58229	67235
430	40855	215817194	98928	86083	78689	76770	80355	89472
440	62329	38775	216920617	218007882	219100596	98788	221302483	222411711
450	83805	60359	42310	29683	22506	220220808	24614	33952
460	214805283	81945	64004	51486	44419	42830	46746	56196
470	26764	215903533	85700	73291	66333	64854	68881	78441
480	48246	25124	217007399	95098	88250	86880	91018	222500689
490	69731	46716	29099	218116908	219210169	220308909	221413157	22939
500	91218	68311	50802	38720	32090	30940	35298	45191

Buergi's table (reconstruction, D. Roegel, 2010)

	80000	80500	81000	81500	82000	82500	83000	83500
0	222545191	223660648	224781695	225908362	227040676	228178665	229322358	230471783
10	67446	83014	224804174	30953	63380	228201482	45290	94830
20	89703	223705382	26654	53546	86086	24303	68224	230517880
30	222611962	27753	49137	76141	227108795	47125	91161	40932
40	34223	50126	71622	98739	31505	69950	229414100	63986
50	56486	72501	94109	226021339	54219	92777	37042	87042
60	78752	94878	224916598	43941	76934	228315606	59985	230610101
70	222701020	223817257	39090	66545	99652	38438	82931	33162
80	23290	39639	61584	89152	227222372	61271	229505880	56225
90	45562	62023	84080	226111761	45094	84108	28830	79291
100	67837	84409	225006578	34372	67818	228406946	51783	230702359
110	90114	223906798	29079	56985	90545	29787	74738	25429
120	222812393	29188	51582	79601	227313274	52630	97696	48501
130	34674	51581	74087	226202219	36006	75475	229620656	71576
140	56957	73976	96594	24839	58739	98322	43618	94653
150	79243	96374	225119104	47462	81475	228521172	66582	230817733
160	222901531	224018774	41616	70086	227404213	44024	89549	40815
170	23821	41175	64130	92713	26954	66879	229712518	63899
180	46113	63580	86647	226315343	49696	89735	35489	86985
190	68408	85986	225209165	37974	72441	228612594	58462	230910074
200	90705	224108394	31686	60608	95189	35456	81438	33165
210	223013004	30805	54209	83244	227517938	58319	229804416	56258
220	35305	53218	76735	226405882	40690	81185	27397	79354
230	57609	75634	99262	28523	63444	228704053	50380	231002452
240	79915	98051	225321792	51166	86200	26924	73365	25552
250	223102223	224220471	44325	73811	227608959	49796	96352	48654
260	24533	42893	66859	96458	31720	72671	229919342	71759
270	46845	65317	89396	226519108	54483	95549	42334	94867
280	69160	87744	225411935	41760	77248	228818428	65328	231117976
290	91477	224310173	34476	64414	227700016	41310	88324	41088
300	223213796	32604	57019	87071	22786	64194	230011323	64202
310	36117	55037	79565	226609729	45558	87081	34324	87318
320	58441	77473	225502113	32390	68333	228909969	57328	231210437
330	80767	99910	24663	55054	91110	32860	80333	33558
340	223303095	224422350	47216	77719	227813889	55754	230103341	56681
350	25425	44792	69770	226700387	36670	78649	26352	79807
360	47758	67237	92327	23057	59454	229001547	49364	231302935
370	70093	89684	225614886	45729	82240	24447	72379	26065
380	92430	224512133	37448	68404	227905028	47350	95397	49198
390	223414769	34584	60012	91081	27819	70254	230218416	72333
400	37110	57037	82578	226813760	50611	93161	41438	95470
410	59454	79493	225705146	36441	73406	229116071	64462	231418610
420	81800	224601951	27717	59125	96204	38982	87489	41752
430	223504148	24411	50289	81811	228019003	61896	230310517	64896
440	26499	46874	72864	226904499	41805	84812	33548	88042
450	48851	69338	95442	27189	64609	229207731	56582	231511191
460	71206	91805	225818021	49882	87416	30652	79617	34342
470	93563	224714274	40603	72577	228110225	53575	230402655	57496
480	223615923	36746	63187	95274	33036	76500	25696	80651
490	38284	59220	85773	227017974	55849	99428	48738	231603809
500	60648	81695	225908362	40676	78665	229322358	71783	26970

Buergi's table (reconstruction, D. Roegel, 2010)

	84000	84500	85000	85500	86000	86500	87000	87500
0	231626970	232787947	233954743	235127387	236305909	237490338	238680703	239877035
10	50132	232811225	78138	50900	29539	237514087	238704571	239901023
20	73297	34507	234001536	74415	53172	37838	28442	25013
30	96465	57790	24936	97932	76808	61592	52315	49006
40	231719634	81076	48339	235221452	236400445	85348	76190	73000
50	42806	232904364	71743	44974	24085	237609107	238800067	96998
60	65981	27654	95151	68499	47728	32867	23947	240020997
70	89157	50947	234118560	92025	71372	56631	47830	45000
80	231812336	74242	41972	235315555	95020	80396	71715	69004
90	35517	97540	65386	39086	236518669	237704164	95602	93011
100	58701	233020839	88803	62620	42321	27935	238919491	240117020
110	81887	44141	234212221	86156	65975	51708	43383	41032
120	231905075	67446	35643	235409695	89632	75483	67278	65046
130	28266	90753	59066	33236	236613291	99260	91174	89063
140	51458	233114062	82492	56779	36952	237823040	239015073	240213081
150	74654	37373	234305920	80325	60616	46823	38975	37103
160	97851	60687	29351	235503873	84282	70607	62879	61126
170	232021051	84003	52784	27423	236707950	94394	86785	85153
180	44253	233207321	76219	50976	31621	237918184	239110694	240309181
190	67457	30642	99657	74531	55294	41976	34605	33212
200	90664	53965	234423097	98089	78970	65770	58518	57245
210	232113873	77290	46539	235621648	236802648	89566	82434	81281
220	37085	233300618	69984	45211	26328	238013365	239206352	240405319
230	60298	23948	93431	68775	50011	37167	30273	29360
240	83514	47281	234516880	92342	73696	60970	54196	53403
250	232206733	70615	40332	235715911	97383	84776	78122	77448
260	29953	93952	63786	39483	236921073	238108585	239302049	240501496
270	53176	233417292	87242	63057	44765	32396	25980	25546
280	76402	40634	234610701	86633	68459	56209	49912	49598
290	99629	63978	34162	235810212	92156	80025	73847	73653
300	232322859	87324	57625	33793	237015855	238203843	97785	97711
310	46092	233510673	81091	57376	39557	27663	239421724	240621771
320	69326	34024	234704559	80962	63261	51486	45666	45833
330	92563	57377	28030	235904550	86967	75311	69611	69897
340	232415802	80733	51503	28140	237110676	99138	93558	93964
350	39044	233604091	74978	51733	34387	238322968	239517507	240718034
360	62288	27451	98455	75328	58100	46801	41459	42106
370	85534	50814	234821935	98926	81816	70635	65413	66180
380	232508783	74179	45417	236022526	237205534	94472	89370	90256
390	32033	97547	68902	46128	29255	238418312	239613329	240814335
400	55287	233720916	92389	69733	52978	42154	37290	38417
410	78542	44289	234915878	93340	76703	65998	61254	62501
420	232601800	67663	39370	236116949	237300431	89845	85220	86587
430	25060	91040	62863	40561	24161	238513694	239709188	240910676
440	48323	233814419	86360	64175	47893	37545	33159	34767
450	71588	37800	235009858	87791	71628	61399	57133	58860
460	94855	61184	33359	236211410	95365	85255	81108	82956
470	232718124	84570	56863	35031	237419105	238609113	239805087	241007054
480	41396	233907959	80368	58655	42847	32974	29067	31155
490	64670	31349	235103876	82280	66591	56838	53050	55258
500	87947	54743	27387	236305909	90338	80703	77035	79364

Buergi's table (reconstruction, D. Roegel, 2010)

	88000	88500	89000	89500	90000	90500	91000	91500
0	241079364	242287718	243502130	244722628	245949244	247182008	248420951	249666103
10	241103472	242311947	26480	47100	73839	247206726	45793	91070
20	27582	36178	50833	71575	98436	31447	70637	249716039
30	51695	60412	75188	96052	246023036	56170	95484	41011
40	75810	84648	99545	244820532	47638	80895	248520334	65985
50	99927	242408886	243623905	45014	72243	247305624	45186	90961
60	241224047	33127	48268	69498	96850	30354	70041	249815941
70	48170	57371	72632	93985	246121460	55087	94898	40922
80	72295	81616	97000	244918475	46072	79823	248619757	65906
90	96422	242505865	243721369	42967	70687	247404561	44619	90893
100	241320552	30115	45742	67461	95304	29301	69483	249915882
110	44684	54368	70116	91958	246219923	54044	94350	40874
120	68818	78624	94493	245016457	44545	78789	248719220	65868
130	92955	242602881	243818873	40958	69170	247503537	44092	90864
140	241417094	27142	43254	65463	93797	28288	68966	250015863
150	41236	51404	67639	89969	246318426	53040	93843	40865
160	65380	75670	92026	245114478	43058	77796	248818722	65869
170	89527	99937	243916415	38990	67692	247602554	43604	90876
180	241513676	242724207	40806	63503	92329	27314	68489	250115885
190	37827	48480	65200	88020	246416968	52077	93376	40896
200	61981	72754	89597	245212539	41610	76842	248918265	65910
210	86137	97032	244013996	37060	66254	247701609	43157	90927
220	241610295	242821311	38397	61584	90901	26380	68051	250215946
230	34457	45594	62801	86110	246515550	51152	92948	40968
240	58620	69878	87207	245310638	40201	75927	249017847	65992
250	82786	94165	244111616	35169	64855	247800705	42749	91018
260	241706954	242918455	36027	59703	89512	25485	67653	250316047
270	31125	42746	60441	84239	246614171	50268	92560	41079
280	55298	67041	84857	245408777	38832	75053	249117469	66113
290	79473	91337	244209275	33318	63496	99840	42381	91150
300	241803651	243015636	33696	57862	88162	247924630	67295	250416189
310	27832	39938	58120	82407	246712831	49423	92212	41230
320	52015	64242	82546	245506956	37503	74217	249217131	66275
330	76200	88548	244306974	31506	62176	99015	42053	91321
340	241900387	243112857	31405	56059	86853	248023815	66977	250516370
350	24577	37169	55838	80615	246811531	48617	91904	41422
360	48770	61482	80273	245605173	36212	73422	249316833	66476
370	72965	85798	244404711	29734	60896	98229	41765	91533
380	97162	243210117	29152	54297	85582	248123039	66699	250616592
390	242021362	34438	53595	78862	246910271	47852	91635	41654
400	45564	58762	78040	245703430	34962	72666	249416575	66718
410	69768	83087	244502488	28000	59655	97484	41516	91784
420	93975	243307416	26938	52573	84351	248222303	66460	250716854
430	242118185	31746	51391	77148	247009050	47126	91407	41925
440	42397	56080	75846	245801726	33751	71950	249516356	66999
450	66611	80415	244600303	26306	58454	96777	41308	92076
460	90828	243404753	24764	50889	83160	248321607	66262	250817155
470	242215047	29094	49226	75474	247107868	46439	91219	42237
480	39268	53437	73691	245900061	32579	71274	249616178	67321
490	63492	77782	98158	24651	57292	96111	41139	92408
500	87718	243502130	244722628	49244	82008	248420951	66103	250917497

Buergi's table (reconstruction, D. Roegel, 2010)

	92000	92500	93000	93500	94000	94500	95000	95500
0	250917497	252175163	253439133	254709439	255986111	257269182	258558685	259854651
10	42589	252200381	64477	34910	256011710	94909	84541	80636
20	67683	25601	89824	60383	37311	257320639	258610399	259906624
30	92780	50824	253515173	85859	62915	46371	36260	32615
40	251017879	76049	40524	254811338	88521	72106	62124	58608
50	42981	252301276	65878	36819	256114130	97843	87990	84604
60	68085	26506	91235	62302	39741	257423583	258713859	260010603
70	93192	51739	253616594	87789	65355	49325	39730	36604
80	251118302	76974	41956	254913278	90972	75070	65604	62607
90	43413	252402212	67320	38769	256216591	257500817	91481	88614
100	68528	27452	92687	64263	42212	26567	258817360	260114622
110	93645	52695	253718056	89759	67837	52320	43242	40634
120	251218764	77940	43428	255015258	93463	78075	69126	66648
130	43886	252503188	68802	40760	256319093	257603833	95013	92665
140	69010	28438	94179	66264	44725	29593	258920902	260218684
150	94137	53691	253819558	91770	70359	55356	46795	44706
160	251319267	78946	44940	255117280	95996	81122	72689	70730
170	44398	252604204	70325	42791	256421636	257706890	98587	96757
180	69533	29465	95712	68306	47278	32661	259024486	260322787
190	94670	54728	253921101	93822	72923	58434	50389	48819
200	251419809	79993	46493	255219342	98570	84210	76294	74854
210	44951	252705261	71888	44864	256524220	257809988	259102201	260400892
220	70096	30532	97285	70388	49872	35769	28112	26932
230	95243	55805	254022685	95915	75527	61553	54025	52974
240	251520392	81080	48087	255321445	256601185	87339	79940	79020
250	45544	252806358	73492	46977	26845	257913128	259205858	260505068
260	70699	31639	98899	72512	52508	38919	31778	31118
270	95856	56922	254124309	98049	78173	64713	57702	57171
280	251621016	82208	49722	255423589	256703841	90509	83627	83227
290	46178	252907496	75137	49131	29511	258016308	259309556	260609285
300	71342	32787	254200554	74676	55184	42110	35487	35346
310	96509	58080	25974	255500223	80859	67914	61420	61410
320	251721679	83376	51397	25773	256806538	93721	87356	87476
330	46851	253008674	76822	51326	32218	258119531	259413295	260713545
340	72026	33975	254302250	76881	57901	45342	39237	39616
350	97203	59279	27680	255602439	83587	71157	65180	65690
360	251822383	84585	53113	27999	256909276	96974	91127	91766
370	47565	253109893	78548	53562	34966	258222794	259517076	260817846
380	72750	35204	254403986	79127	60660	48616	43028	43927
390	97937	60518	29426	255704695	86356	74441	68982	70012
400	251923127	85834	54869	30266	257012055	258300268	94939	96099
410	48319	253211152	80315	55839	37756	26098	259620898	260922188
420	73514	36473	254505763	81414	63460	51931	46861	48281
430	98711	61797	31213	255806992	89166	77766	72825	74375
440	252023911	87123	56666	32573	257114875	258403604	98793	261000473
450	49114	253312452	82122	58156	40586	29444	259724762	26573
460	74319	37783	254607580	83742	66300	55287	50735	52676
470	99526	63117	33041	255909331	92017	81133	76710	78781
480	252124736	88453	58504	34921	257217736	258506981	259802688	261104889
490	49948	253413792	83970	60515	43458	32832	28668	30999
500	75163	39133	254709439	86111	69182	58685	54651	57112

Buergi's table (reconstruction, D. Roegel, 2010)

	96000	96500	97000	97500	98000	98500	99000	99500
0	261157112	262466102	263781653	265103798	266432570	267768001	269110127	270458979
10	...83228	...92349	263808031	...30308	...59213	...94778	...37038	...86025
20	261209346	262518598	...34412	...56821	...85859	267821558	...63952	270513074
30	...35467	...44850	...60795	...83337	266512507	...48340	...90868	...40125
40	...61591	...71104	...87182	265209855	...39159	...75125	269217787	...67179
50	...87717	...97361	263913570	...36376	...65812	267901912	...44709	...94236
60	261313846	262623621	...39962	...62900	...92469	...28702	...71633	270621295
70	...39977	...49884	...66356	...89426	266619128	...55495	...98560	...48357
80	...66111	...76149	...92752	265315955	...45790	...82291	269325490	...75422
90	...92248	262702416	264019152	...42487	...72455	268009089	...52423	270702490
100	261418387	...28686	...45553	...69021	...99122	...35890	...79358	...29560
110	...44529	...54959	...71958	...95558	266725792	...62694	269406296	...56633
120	...70673	...81235	...98365	265422097	...52465	...89500	...33237	...83709
130	...96820	262807513	264124775	...48640	...79140	268116309	...60180	270810787
140	261522970	...33794	...51188	...75184	266805818	...43120	...87126	...37868
150	...49122	...60077	...77603	265501732	...32498	...69935	269514075	...64952
160	...75277	...86363	264204020	...28282	...59182	...96752	...41026	...92038
170	261601435	262912652	...30441	...54835	...85867	268223571	...67980	270919128
180	...27595	...38943	...56864	...81390	266912556	...50394	...94937	...46220
190	...53758	...65237	...83290	265607949	...39247	...77219	269621897	...73314
200	...79923	...91533	264309718	...34509	...65941	268304046	...48859	271000411
210	261706091	263017833	...36149	...61073	...92638	...30877	...75824	...27512
220	...32262	...44134	...62582	...87639	267019337	...57710	269702791	...54614
230	...58435	...70439	...89019	265714208	...46039	...84546	...29761	...81720
240	...84611	...96746	264415458	...40779	...72744	268411384	...56734	271108828
250	261810789	263123055	...41899	...67353	...99451	...38225	...83710	...35939
260	...36970	...49368	...68343	...93930	267126161	...65069	269810688	...63052
270	...63154	...75683	...94790	265820509	...52873	...91916	...37670	...90169
280	...89340	263202000	264521240	...47091	...79589	268518765	...64653	271217288
290	261915529	...28320	...47692	...73676	267206307	...45617	...91640	...44409
300	...41721	...54643	...74147	265900264	...33027	...72471	269918629	...71534
310	...67915	...80969	264600604	...26854	...59751	...99329	...45621	...98661
320	...94112	263307297	...27064	...53446	...86477	268626188	...72615	271325791
330	262020311	...33628	...53527	...80042	267313205	...53051	...99613	...52923
340	...46513	...59961	...79992	266006640	...39937	...79916	270026613	...80059
350	...72718	...86297	264706460	...33240	...66671	268706784	...53615	271407197
360	...98925	263412636	...32931	...59844	...93407	...33655	...80621	...34338
370	262125135	...38977	...59404	...86450	267420147	...60528	270107629	...61481
380	...51348	...65321	...85880	266113058	...46889	...87404	...34639	...88627
390	...77563	...91667	264812359	...39669	...73633	268814283	...61653	271515776
400	262203780	263518016	...38840	...66283	267500381	...41165	...88669	...42928
410	...30001	...44368	...65324	...92900	...27131	...68049	270215688	...70082
420	...56224	...70723	...91810	266219519	...53883	...94936	...42710	...97239
430	...82449	...97080	264918299	...46141	...80639	268921825	...69734	271624399
440	262308678	263623439	...44791	...72766	267607397	...48717	...96761	...51561
450	...34909	...49802	...71286	...99393	...34158	...75612	270323790	...78726
460	...61142	...76167	...97783	266326023	...60921	269002510	...50823	271705894
470	...87378	263702534	265024283	...52656	...87687	...29410	...77858	...33065
480	262413617	...28905	...50785	...79291	267714456	...56313	270404896	...60238
490	...39858	...55278	...77290	266405929	...41227	...83219	...31936	...87414
500	...66102	...81653	265103798	...32570	...68001	269110127	...58979	271814593

Buergi's table (reconstruction, D. Roegel, 2010)

	100000	100500	101000	101500	102000	102500	103000	103500
0	271814593	273177001	274546237	275922337	277305334	278695264	280092159	281496057
10	41774	273204318	73692	49929	33065	278723133	280120169	281524206
20	68958	31639	274601149	77524	60798	51005	48181	52359
30	96145	58962	28610	276005122	88534	78880	76195	80514
40	271923335	86288	56072	32723	277416273	278806758	280204213	281608672
50	50527	273313617	83538	60326	44015	34639	32233	36833
60	77722	40948	274711006	87932	71759	62522	60257	64997
70	272004920	68282	38478	276115541	99506	90409	88283	93163
80	32120	95619	65951	43152	277527256	278918298	280316311	281721332
90	59324	273422958	93428	70767	55009	46190	44343	49505
100	86530	50301	274820907	98384	82765	74084	72378	77679
110	272113738	77646	48389	276226004	277610523	279001982	280400415	281805857
120	40950	273504993	75874	53626	38284	29882	28455	34038
130	68164	32344	274903362	81252	66048	57785	56498	62221
140	95381	59697	30852	276308880	93814	85691	84543	90407
150	272222600	87053	58345	36511	277721584	279113599	280512592	281918597
160	49822	273614412	85841	64144	49356	41511	40643	46788
170	77047	41773	275013340	91781	77131	69425	68697	74983
180	272304275	69137	40841	276419420	277804909	97342	96754	282003181
190	31505	96504	68345	47062	32689	279225261	280624814	31381
200	58739	273723874	95852	74706	60472	53184	52876	59584
210	85974	51246	275123362	276502354	88258	81109	80941	87790
220	272413213	78622	50874	30004	277916047	279309037	280709010	282115999
230	40454	273805999	78389	57657	43839	36968	37080	44210
240	67698	33380	275205907	85313	71633	64902	65154	72425
250	94945	60763	33427	276612972	99430	92838	93231	282200642
260	272522195	88149	60951	40633	278027230	279420778	280821310	28862
270	49447	273915538	88477	68297	55033	48720	49392	57085
280	76702	42930	275316006	95964	82838	76665	77477	85311
290	272603960	70324	43537	276723633	278110647	279504612	280905565	282313539
300	31220	97721	71072	51306	38458	32563	33655	41771
310	58483	274025121	98609	78981	66272	60516	61749	70005
320	85749	52523	275426149	276806659	94088	88472	89845	98242
330	272713018	79929	53691	34339	278221908	279616431	281017944	282426482
340	40289	274107337	81237	62023	49730	44393	46046	54724
350	67563	34747	275508785	89709	77555	72357	74150	82970
360	94840	62161	36336	276917398	278305383	279700324	281102258	282511218
370	272822119	89577	63889	45090	33213	28294	30368	39469
380	49401	274216996	91446	72784	61046	56267	58481	67723
390	76686	44418	275619005	277000481	88883	84243	86597	95980
400	272903974	71842	46567	28182	278416721	279812221	281214715	282624239
410	31264	99269	74131	55884	44563	40202	42837	52502
420	58557	274326699	275701699	83590	72408	68186	70961	80767
430	85853	54132	29269	277111298	278500255	96173	99088	282709035
440	273013152	81567	56842	39009	28105	279924163	281327218	37306
450	40453	274409006	84417	66723	55958	52155	55351	65580
460	67757	36446	275811996	94440	83813	80150	83486	93856
470	95064	63890	39577	277222159	278611672	280008148	281411625	282822136
480	273122374	91336	67161	49882	39533	36149	39766	50418
490	49686	274518786	94748	77607	67397	64153	67910	78703
500	77001	46237	275922337	277305334	95264	92159	96057	282906991

Buergi's table (reconstruction, D. Roegel, 2010)

	104000	104500	105000	105500	106000	106500	107000	107500
0	282906991	284324997	285750111	287182367	288621803	290068453	291522354	292983543
10	35282	53429	78686	287211085	50665	97460	51506	293012841
20	63575	81865	285807263	39806	79530	290126469	80662	42142
30	91871	284410303	35844	68530	288708398	55482	291609820	71447
40	283020171	38744	64428	97257	37269	84498	38981	293100754
50	48473	67188	93014	287325987	66142	290213516	68145	30064
60	76778	95635	285921603	54720	95019	42537	97311	59377
70	283105085	284524084	50196	83455	288823898	71562	291726481	88693
80	33396	52537	78791	287412193	52781	290300589	55654	293218012
90	61709	80992	286007389	40935	81666	29619	84829	47334
100	90025	284609450	35989	69679	288910554	58652	291814008	76658
110	283218344	37911	64593	98426	39445	87688	43189	293305986
120	46666	66375	93199	287527176	68339	290416727	72373	35316
130	74991	94841	286121809	55928	97236	45768	291901561	64650
140	283303318	284723311	50421	84684	289026136	74813	30751	93986
150	31649	51783	79036	287613442	55038	290503860	59944	293423326
160	59982	80258	286207654	42204	83944	32911	89140	52668
170	88318	284808736	36275	70968	289112852	61964	292018339	82013
180	283416657	37217	64898	99735	41764	91020	47541	293511362
190	44998	65701	93525	287728505	70678	290620079	76745	40713
200	73343	94188	286322154	57278	99595	49141	292105953	70067
210	283501690	284922677	50786	86054	289228515	78206	35164	99424
220	30040	51169	79421	287814832	57438	290707274	64377	293628784
230	58393	79664	286408059	43614	86363	36345	93594	58147
240	86749	285008162	36700	72398	289315292	65418	292222813	87513
250	283615108	36663	65344	287901185	44224	94495	52035	293716881
260	43469	65167	93990	29975	73158	290823574	81261	46253
270	71834	93673	286522640	58768	289402095	52657	292310489	75628
280	283700201	285122183	51292	87564	31036	81742	39720	293805005
290	28571	50695	79947	288016363	59979	290910830	68954	34386
300	56944	79210	286608605	45165	88925	39921	98191	63769
310	85319	285207728	37266	73969	289517874	69015	292427430	93155
320	283813698	36249	65930	288102777	46825	98112	56673	293922545
330	42079	64772	94596	31587	75780	291027212	85919	51937
340	70463	93299	286723266	60400	289604738	56315	292515167	81332
350	98850	285321828	51938	89216	33698	85420	44419	294010730
360	283927240	50360	80613	288218035	62661	291114529	73673	40131
370	55633	78895	286809291	46857	91628	43640	292602931	69535
380	84029	285407433	37972	75681	289720597	72755	32191	98942
390	284012427	35974	66656	288304509	49569	291201872	61454	294128352
400	40828	64518	95343	33339	78544	30992	90720	57765
410	69232	93064	286924032	62173	289807522	60115	292719989	87181
420	97639	285521613	52725	91009	36503	89241	49261	294216600
430	284126049	50165	81420	288419848	65486	291318370	78536	46021
440	54462	78720	287010118	48690	94473	47502	292807814	75446
450	82877	285607278	38819	77535	289923462	76637	37095	294304873
460	284211295	35839	67523	288506383	52454	291405774	66379	34304
470	39717	64403	96230	35233	81450	34915	95665	63737
480	68141	92969	287124939	64087	290010448	64058	292924955	93174
490	96567	285721538	53652	92943	39449	93205	54247	294422613
500	284324997	50111	82367	288621803	68453	291522354	83543	52055

Buerger's table (reconstruction, D. Roegel, 2010)

	108000	108500	109000	109500	110000	110500	111000	111500
0	294452055	295927928	297411199	298901904	300400081	301905767	303419000	304939818
10	...81501	...57521	...40940	...31794	...30121	...35958	...49342	...70312
20	294510949	...87117	...70684	...61687	...60164	...66151	...79687	305000809
30	...40400	296016716	297500431	...91584	...90210	...96348	303510035	...31309
40	...69854	...46317	...30181	299021483	300520259	302026548	...40386	...61812
50	...99311	...75922	...59934	...51385	...50311	...56750	...70740	...92319
60	294628771	296105530	...89690	...81290	...80366	...86956	303601097	305122828
70	...58234	...35140	297619449	299111198	300610424	302117165	...31457	...53340
80	...87699	...64754	...49211	...41109	...40485	...47376	...61821	...83855
90	294717168	...94370	...78976	...71023	...70549	...77591	...92187	305214374
100	...46640	296223990	297708744	299200941	300700616	302207809	303722556	...44895
110	...76115	...53612	...38515	...30861	...30686	...38030	...52928	...75420
120	294805592	...83237	...68289	...60784	...60759	...68253	...83303	305305947
130	...35073	296312866	...98066	...90710	...90836	...98480	303813682	...36478
140	...64556	...42497	297827845	299320639	300820915	302328710	...44063	...67012
150	...94043	...72131	...57628	...50571	...50997	...58943	...74448	...97548
160	294923532	296401768	...87414	...80506	...81082	...89179	303904835	305428088
170	...53024	...31409	297917203	299410444	300911170	302419418	...35226	...58631
180	...82520	...61052	...46994	...40385	...41261	...49660	...65619	...89177
190	295012018	...90698	...76789	...70329	...71355	...79905	...96016	305519726
200	...41519	296520347	298006587	299500276	301001452	302510153	304026415	...50278
210	...71023	...49999	...36387	...30226	...31552	...40404	...56818	...80833
220	295100530	...79654	...66191	...60179	...61656	...70658	...87224	305611391
230	...30041	296609312	...95998	...90135	...91762	302600915	304117632	...41952
240	...59554	...38973	298125807	299620094	301121871	...31175	...48044	...72516
250	...89069	...68637	...55620	...50056	...51983	...61438	...78459	305703083
260	295218588	...98304	...85435	...80021	...82098	...91704	304208877	...33654
270	...48110	296727973	298215254	299709989	301212217	302721973	...39298	...64227
280	...77635	...57646	...45076	...39960	...42338	...52246	...69721	...94803
290	295307163	...87322	...74900	...69934	...72462	...82521	304300148	305825383
300	...36694	296817001	298304728	...99911	301302589	302812799	...30578	...55965
310	...66227	...46682	...34558	299829891	...32720	...43080	...61012	...86551
320	...95764	...76367	...64391	...59874	...62853	...73365	...91448	305917140
330	295425303	296906055	...94228	...89860	...92989	302903652	304421887	...47731
340	...54846	...35745	298424067	299919849	301423128	...33942	...52329	...78326
350	...84391	...65439	...53910	...49841	...53271	...64236	...82774	306008924
360	295513940	...95135	...83755	...79836	...83416	...94532	304513222	...39525
370	...43491	297024835	298513603	300009834	301513564	303024832	...43674	...70129
380	...73046	...54537	...43455	...39835	...43716	...55134	...74128	306100736
390	295602603	...84243	...73309	...69839	...73870	...85440	304604586	...31346
400	...32163	297113951	298603167	...99846	301604027	303115748	...35046	...61959
410	...61726	...43663	...33027	300129856	...34188	...46060	...65510	...92575
420	...91293	...73377	...62890	...59869	...64351	...76374	...95976	306223194
430	295720862	297203094	...92756	...89885	...94518	303206692	304726446	...53817
440	...50434	...32815	298722626	300219904	301724687	...37013	...56918	...84442
450	...80009	...62538	...52498	...49926	...54860	...67336	...87394	306315071
460	295809587	...92264	...82373	...79951	...85035	...97663	304817873	...45702
470	...39168	297321993	298812251	300309979	301815214	303327993	...48355	...76337
480	...68752	...51726	...42133	...40010	...45395	...58326	...78839	306406974
490	...98339	...81461	...72017	...70044	...75580	...88661	304909327	...37615
500	295927928	297411199	298901904	300400081	301905767	303419000	...39818	...68259

Buergi's table (reconstruction, D. Roegel, 2010)

	112000	112500	113000	113500	114000	114500	115000	115500
0	306468259	308004360	309548161	311099700	312659016	314226147	315801133	317384014
10	98906	35161	79116	311130810	90282	57570	32713	317415752
20	306529555	65964	309610074	61923	312721551	88995	64296	47493
30	60208	96771	41035	93039	52823	314320424	95883	79238
40	90864	308127581	71999	311224159	84098	51856	315927472	317510986
50	306621524	58393	309702966	55281	312815376	83291	59065	42737
60	52186	89209	33937	86407	46658	314414730	90661	74492
70	82851	308220028	64910	311317535	77943	46171	316022260	317606249
80	306713519	50850	95886	48667	312909230	77616	53862	38010
90	44191	81675	309826866	79802	40521	314509064	85468	69773
100	74865	308312503	57849	311410940	71815	40515	316117076	317701540
110	306805542	43335	88834	42081	313003113	71969	48688	33311
120	36223	74169	309919823	73225	34413	314603426	80303	65084
130	66907	308405006	50815	311504372	65716	34886	316211921	96860
140	97593	35847	81810	35523	97023	66350	43542	317828640
150	306928283	66690	310012809	66676	313128333	97816	75167	60423
160	58976	97537	43810	97833	59645	314729286	316306794	92209
170	89672	308528387	74814	311628993	90961	60759	38425	317923998
180	307020371	59240	310105822	60156	313222280	92235	70059	55791
190	51073	90096	36832	91322	53603	314823714	316401696	87586
200	81778	308620955	67846	311722491	84928	55197	33336	318019385
210	307112486	51817	98863	53663	313316257	86682	64979	51187
220	43197	82682	310229883	84839	47588	314918171	96626	82992
230	73912	308713550	60906	311816017	78923	49663	316528275	318114800
240	307204629	44421	91932	47199	313410261	81158	59928	46612
250	35350	75296	310322961	78383	41602	315012656	91584	78426
260	66073	308806173	53993	311909571	72946	44157	316623243	318210244
270	96800	37054	85029	40762	313504293	75661	54906	42065
280	307327529	67938	310416067	71956	35644	315107169	86571	73890
290	58262	98825	47109	312003153	66997	38680	316718240	318305717
300	88998	308929714	78153	34354	98354	70194	49912	37547
310	307419737	60607	310509201	65557	313629714	315201711	81587	69381
320	50479	91503	40252	96764	61077	33231	316813265	318401218
330	81224	309022403	71306	312127973	92443	64754	44946	33058
340	307511972	53305	310602363	59186	313723812	96281	76630	64902
350	42723	84210	33424	90402	55185	315327810	316908318	96748
360	73477	309115119	64487	312221621	86560	59343	40009	318528598
370	307604235	46030	95553	52843	313817939	90879	71703	60451
380	34995	76945	310726623	84069	49321	315422418	317003400	92307
390	65759	309207862	57696	312315297	80705	53960	35100	318624166
400	96525	38783	88771	46529	313912094	85506	66804	56028
410	307727295	69707	310819850	77763	43485	315517054	98511	87894
420	58068	309300634	50932	312409001	74879	48606	317130221	318719763
430	88843	31564	82017	40242	314006277	80161	61934	51635
440	307819622	62497	310913106	71486	37677	315611719	93650	83510
450	50404	93434	44197	312502733	69081	43280	317225369	318815388
460	81189	309424373	75291	33983	314100488	74844	57092	47270
470	307911977	55315	311006389	65237	31898	315706412	88817	79154
480	42769	86261	37489	96493	63311	37982	317320546	318911042
490	73563	309517209	68593	312627753	94727	69556	52278	42933
500	308004360	48161	99700	59016	314226147	315801133	84014	74828

Buergi's table (reconstruction, D. Roegel, 2010)

	116000	116500	117000	117500	118000	118500	119000	119500
0	318974828	320573616	322180417	323795272	325418221	327049305	328688564	330336040
10	319006725	...605673	...212635	...827652	...450763	...082010	...721433	...369074
20	...038626	...637734	...244856	...860034	...483308	...114718	...754305	...402111
30	...070530	...669797	...277081	...892420	...515857	...147430	...787181	...435151
40	...102437	...701864	...309309	...924810	...548408	...180145	...820060	...468194
50	...134347	...733934	...341539	...957202	...580963	...212863	...852942	...501241
60	...166261	...766008	...373774	...989598	...613521	...245584	...885827	...534291
70	...198177	...798084	...406011	324021997	...646082	...278308	...918716	...567345
80	...230097	...830164	...438252	...054399	...678647	...311036	...951607	...600402
90	...262020	...862247	...470495	...086804	...711215	...343767	...984503	...633462
100	...293946	...894334	...502742	...119213	...743786	...376502	329017401	...666525
110	...325876	...926423	...534993	...151625	...776360	...409239	...050303	...699592
120	...357808	...958516	...567246	...184040	...808938	...441980	...083208	...732662
130	...389744	...990611	...599503	...216459	...841519	...474724	...116116	...765735
140	...421683	321022711	...631763	...248880	...874103	...507472	...149028	...798811
150	...453625	...054813	...664026	...281305	...906690	...540223	...181943	...831891
160	...485570	...086918	...696292	...313733	...939281	...572977	...214861	...864974
170	...517519	...119027	...728562	...346165	...971875	...605734	...247782	...898061
180	...549471	...151139	...760835	...378599	326004472	...638495	...280707	...931151
190	...581426	...183254	...793111	...411037	...037073	...671258	...313635	...964244
200	...613384	...215372	...825390	...443478	...069676	...704026	...346567	...997340
210	...645345	...247494	...857673	...475923	...102283	...736796	...379501	331030440
220	...677310	...279619	...889959	...508370	...134894	...769570	...412439	...063543
230	...709277	...311747	...922248	...540821	...167507	...802347	...445380	...096649
240	...741248	...343878	...954540	...573275	...200124	...835127	...478325	...129759
250	...773222	...376012	...986835	...605732	...232744	...867910	...511273	...162872
260	...805200	...408150	323019134	...638193	...265367	...900697	...544224	...195988
270	...837180	...440291	...051436	...670657	...297994	...933487	...577178	...229108
280	...869164	...472435	...083741	...703124	...330623	...966281	...610136	...262231
290	...901151	...504582	...116049	...735594	...363257	...999077	...643097	...295357
300	...933141	...536732	...148361	...768068	...395893	328031877	...676061	...328487
310	...965134	...568886	...180676	...800545	...428532	...064680	...709029	...361619
320	...997131	...601043	...212994	...833025	...461175	...097487	...742000	...394756
330	320029131	...633203	...245315	...865508	...493821	...130297	...774974	...427895
340	...061134	...665366	...277640	...897994	...526471	...163110	...807952	...461038
350	...093140	...697533	...309968	...930484	...559123	...195926	...840932	...494184
360	...125149	...729703	...342299	...962977	...591779	...228745	...873916	...527333
370	...157161	...761875	...374633	...995474	...624439	...261568	...906904	...560486
380	...189177	...794052	...406970	325027973	...657101	...294394	...939894	...593642
390	...221196	...826231	...439311	...060476	...689767	...327224	...972888	...626802
400	...253218	...858414	...471655	...092982	...722436	...360057	330005886	...659964
410	...285244	...890600	...504002	...125491	...755108	...392893	...038886	...693130
420	...317272	...922789	...536352	...158004	...787783	...425732	...071890	...726300
430	...349304	...954981	...568706	...190520	...820462	...458575	...104897	...759472
440	...381339	...987176	...601063	...223039	...853144	...491420	...137908	...792648
450	...413377	322019375	...633423	...255561	...885830	...524270	...170922	...825827
460	...445418	...051577	...665786	...288087	...918518	...557122	...203939	...859010
470	...477463	...083782	...698153	...320615	...951210	...589978	...236959	...892196
480	...509511	...115991	...730523	...353147	...983905	...622837	...269983	...925385
490	...541561	...148202	...762896	...385683	327016604	...655699	...303010	...958578
500	...573616	...180417	...795272	...418221	...049305	...688564	...336040	...991773

Buergi's table (reconstruction, D. Roegel, 2010)

	120000	120500	121000	121500	122000	122500	123000	123500
0	331991773	333655806	335328179	337008934	338698114	340395760	342101915	343816622
10	332024973	...689171	...361711	...042635	...731983	...429799	...136125	...851004
20	...058175	...722540	...395248	...076339	...765857	...463842	...170339	...885389
30	...091381	...755913	...428787	...110047	...799733	...497889	...204556	...919777
40	...124590	...789288	...462330	...143758	...833613	...531939	...238776	...954169
50	...157803	...822667	...495876	...177472	...867496	...565992	...273000	...988565
60	...191018	...856049	...529426	...211190	...901383	...600048	...307228	344022964
70	...224237	...889435	...562979	...244911	...935273	...634108	...341458	...057366
80	...257460	...922824	...596535	...278635	...969167	...668172	...375692	...091772
90	...290686	...956216	...630095	...312363	339003064	...702239	...409930	...126181
100	...323915	...989612	...663658	...346095	...036964	...736309	...444171	...160594
110	...357147	334023011	...697224	...379829	...070868	...770382	...478415	...195010
120	...390383	...056413	...730794	...413567	...104775	...804459	...512663	...229429
130	...423622	...089819	...764367	...447308	...138685	...838540	...546915	...263852
140	...456864	...123228	...797943	...481053	...172599	...872624	...581169	...298278
150	...490110	...156640	...831523	...514801	...206516	...906711	...615427	...332708
160	...523359	...190056	...865106	...548553	...240437	...940802	...649689	...367142
170	...556611	...223475	...898693	...582308	...274361	...974896	...683954	...401578
180	...589867	...256897	...932283	...616066	...308289	341008993	...718222	...436018
190	...623126	...290323	...965876	...649827	...342219	...043094	...752494	...470462
200	...656388	...323752	...999473	...683592	...376154	...077198	...786769	...504909
210	...689654	...357184	336033072	...717361	...410091	...111306	...821048	...539360
220	...722923	...390620	...066676	...751133	...444032	...145417	...855330	...573813
230	...756195	...424059	...100282	...784908	...477977	...179532	...889616	...608271
240	...789471	...457501	...133892	...818686	...511924	...213650	...923905	...642732
250	...822750	...490947	...167506	...852468	...545876	...247771	...958197	...677196
260	...856032	...524396	...201123	...886253	...579830	...281896	...992493	...711664
270	...889318	...557849	...234743	...920042	...613788	...316024	343026792	...746135
280	...922606	...591304	...268366	...953834	...647750	...350156	...061095	...780609
290	...955899	...624763	...301993	...987629	...681714	...384291	...095401	...815088
300	...989194	...658226	...335623	338021428	...715683	...418429	...129710	...849569
310	333022493	...691692	...369257	...055230	...749654	...452571	...164023	...884054
320	...055795	...725161	...402894	...089036	...783629	...486716	...198340	...918542
330	...089101	...758633	...436534	...122845	...817607	...520865	...232660	...953034
340	...122410	...792109	...470178	...156657	...851589	...555017	...266983	...987530
350	...155722	...825589	...503825	...190473	...885574	...589173	...301310	345022028
360	...189038	...859071	...537475	...224292	...919563	...623331	...335640	...056530
370	...222357	...892557	...571129	...258114	...953555	...657494	...369973	...091036
380	...255679	...926046	...604786	...291940	...987550	...691660	...404310	...125545
390	...289005	...959539	...638446	...325769	340021549	...725829	...438651	...160058
400	...322333	...993035	...672110	...359602	...055551	...760001	...472995	...194574
410	...355666	335026534	...705777	...393438	...089557	...794177	...507342	...229093
420	...389001	...060037	...739448	...427277	...123566	...828357	...541693	...263616
430	...422340	...093543	...773122	...461120	...157578	...862540	...576047	...298143
440	...455682	...127052	...806799	...494966	...191594	...896726	...610404	...332672
450	...489028	...160565	...840480	...528815	...225613	...930915	...644765	...367206
460	...522377	...194081	...874164	...562668	...259636	...965109	...679130	...401742
470	...555729	...227600	...907851	...596524	...293661	...999305	...713498	...436283
480	...589085	...261123	...941542	...630384	...327691	342033505	...747869	...470826
490	...622444	...294649	...975236	...664247	...361724	...067708	...782244	...505373
500	...655806	...328179	337008934	...698114	...395760	...101915	...816622	...539924

Buergi's table (reconstruction, D. Roegel, 2010)

	124000	124500	125000	125500	126000	126500	127000	127500
0	345539924	347271863	349012483	350761828	352519941	354286866	356062647	357847329
10	...574478	...306590	...047384	...796904	...555193	...322294	...098253	...883114
20	...609035	...341321	...082289	...831984	...590448	...357727	...133863	...918902
30	...643596	...376055	...117197	...867067	...625707	...393162	...169477	...954694
40	...678160	...410793	...152109	...902154	...660970	...428602	...205093	...990489
50	...712728	...445534	...187024	...937244	...696236	...464045	...240714	358026288
60	...747300	...480278	...221943	...972338	...731506	...499491	...276338	...062091
70	...781874	...515026	...256865	351007435	...766779	...534941	...311966	...097897
80	...816452	...549778	...291791	...042536	...802055	...570394	...347597	...133707
90	...851034	...584533	...326720	...077640	...837336	...605852	...383232	...169520
100	...885619	...619291	...361653	...112748	...872619	...641312	...418870	...205337
110	...920208	...654053	...396589	...147859	...907907	...676776	...454512	...241158
120	...954800	...688819	...431529	...182974	...943197	...712244	...490157	...276982
130	...989395	...723587	...466472	...218092	...978492	...747715	...525806	...312810
140	346023994	...758360	...501418	...253214	353013790	...783190	...561459	...348641
150	...058597	...793136	...536369	...288339	...049091	...818668	...597115	...384476
160	...093202	...827915	...571322	...323468	...084396	...854150	...632775	...420314
170	...127812	...862698	...606279	...358600	...119704	...889635	...668438	...456156
180	...162425	...897484	...641240	...393736	...155016	...925124	...704105	...492002
190	...197041	...932274	...676204	...428876	...190332	...960617	...739775	...527851
200	...231661	...967067	...711172	...464018	...225651	...996113	...775449	...563704
210	...266284	348001864	...746143	...499165	...260973	355031613	...811127	...599560
220	...300910	...036664	...781117	...534315	...296299	...067116	...846808	...635420
230	...335540	...071468	...816096	...569468	...331629	...102623	...882493	...671284
240	...370174	...106275	...851077	...604625	...366962	...138133	...918181	...707151
250	...404811	...141085	...886062	...639786	...402299	...173647	...953873	...743022
260	...439451	...175899	...921051	...674950	...437639	...209164	...989568	...778896
270	...474095	...210717	...956043	...710117	...472983	...244685	357025267	...814774
280	...508743	...245538	...991039	...745288	...508330	...280209	...060970	...850655
290	...543394	...280363	350026038	...780463	...543681	...315737	...096676	...886540
300	...578048	...315191	...061040	...815641	...579035	...351269	...132385	...922429
310	...612706	...350022	...096046	...850822	...614393	...386804	...168099	...958321
320	...647367	...384857	...131056	...886007	...649755	...422343	...203815	...994217
330	...682032	...419696	...166069	...921196	...685120	...457885	...239536	359030117
340	...716700	...454538	...201086	...956388	...720488	...493431	...275260	...066020
350	...751372	...489383	...236106	...991584	...755860	...528980	...310987	...101926
360	...786047	...524232	...271129	352026783	...791236	...564533	...346718	...137836
370	...820725	...559084	...306157	...061985	...826615	...600089	...382453	...173750
380	...855408	...593940	...341187	...097192	...861998	...635649	...418191	...209668
390	...890093	...628800	...376221	...132401	...897384	...671213	...453933	...245589
400	...924782	...663663	...411259	...167615	...932774	...706780	...489678	...281513
410	...959475	...698529	...446300	...202831	...968167	...742351	...525427	...317441
420	...994171	...733399	...481345	...238052	354003564	...777925	...561180	...353373
430	347028870	...768272	...516393	...273275	...038964	...813503	...596936	...389308
440	...063573	...803149	...551444	...308503	...074368	...849084	...632696	...425247
450	...098279	...838029	...586500	...343734	...109775	...884669	...668459	...461190
460	...132989	...872913	...621558	...378968	...145186	...920258	...704226	...497136
470	...167702	...907800	...656620	...414206	...180601	...955850	...739996	...533086
480	...202419	...942691	...691686	...449447	...216019	...991445	...775770	...569039
490	...237139	...977585	...726755	...484692	...251441	356027044	...811548	...604996
500	...271863	349012483	...761828	...519941	...286866	...062647	...847329	...640956

Buergi's table (reconstruction, D. Roegel, 2010)

	128000	128500	129000	129500	130000	130500	131000	131500
0	359640956	361443574	363255226	365075960	366905819	368744850	370593098	372450611
10	...676920	...479718	...291552	...112467	...942509	...781724	...630158	...487856
20	...712888	...515866	...327881	...148978	...979204	...818602	...667221	...525105
30	...748859	...552018	...364214	...185493	367015901	...855484	...704287	...562357
40	...784834	...588173	...400550	...222012	...052603	...892370	...741358	...599613
50	...820813	...624332	...436890	...258534	...089308	...929259	...778432	...636873
60	...856795	...660494	...473234	...295060	...126017	...966152	...815510	...674137
70	...892781	...696660	...509581	...331589	...162730	369003048	...852591	...711404
80	...928770	...732830	...545932	...368123	...199446	...039949	...889676	...748676
90	...964763	...769003	...582287	...404659	...236166	...076853	...926765	...785950
100	360000759	...805180	...618645	...441200	...272890	...113760	...963858	...823229
110	...036759	...841361	...655007	...477744	...309617	...150672	371000954	...860511
120	...072763	...877545	...691373	...514292	...346348	...187587	...038055	...897797
130	...108770	...913732	...727742	...550843	...383083	...224506	...075158	...935087
140	...144781	...949924	...764114	...587398	...419821	...261428	...112266	...972381
150	...180796	...986119	...800491	...623957	...456563	...298354	...149377	373009678
160	...216814	362022317	...836871	...660519	...493309	...335284	...186492	...046979
170	...252835	...058520	...873255	...697085	...530058	...372218	...223611	...084284
180	...288861	...094726	...909642	...733655	...566811	...409155	...260733	...121592
190	...324889	...130935	...946033	...770229	...603568	...446096	...297859	...158904
200	...360922	...167148	...982427	...806806	...640328	...483040	...334989	...196220
210	...396958	...203365	364018826	...843386	...677092	...519989	...372122	...233540
220	...432998	...239585	...055228	...879971	...713860	...556941	...409260	...270863
230	...469041	...275809	...091633	...916559	...750631	...593896	...446401	...308190
240	...505088	...312037	...128042	...953150	...787406	...630856	...483545	...345521
250	...541138	...348268	...164455	...989746	...824185	...667819	...520694	...382855
260	...577193	...384503	...200872	366026344	...860967	...704786	...557846	...420194
270	...613250	...420741	...237292	...062947	...897753	...741756	...595001	...457536
280	...649312	...456983	...273715	...099553	...934543	...778730	...632161	...494882
290	...685377	...493229	...310143	...136163	...971337	...815708	...669324	...532231
300	...721445	...529478	...346574	...172777	368008134	...852690	...706491	...569584
310	...757517	...565731	...383008	...209394	...044934	...889675	...743662	...606941
320	...793593	...601988	...419447	...246015	...081739	...926664	...780836	...644302
330	...829672	...638248	...455889	...282640	...118547	...963657	...818014	...681666
340	...865755	...674512	...492334	...319268	...155359	370000653	...855196	...719034
350	...901842	...710779	...528783	...355900	...192175	...037653	...892381	...756406
360	...937932	...747050	...565236	...392536	...228994	...074657	...929571	...793782
370	...974026	...783325	...601693	...429175	...265817	...111664	...966764	...831161
380	361010123	...819603	...638153	...465818	...302643	...148675	372003960	...868545
390	...046224	...855885	...674617	...502464	...339474	...185690	...041161	...905931
400	...082329	...892171	...711084	...539115	...376307	...222709	...078365	...943322
410	...118437	...928460	...747555	...575769	...413145	...259731	...115573	...980716
420	...154549	...964753	...784030	...612426	...449986	...296757	...152784	374018114
430	...190664	363001049	...820509	...649087	...486831	...333787	...190000	...055516
440	...226784	...037350	...856991	...685752	...523680	...370820	...227219	...092922
450	...262906	...073653	...893476	...722421	...560532	...407857	...264441	...130331
460	...299032	...109961	...929966	...759093	...597389	...444898	...301668	...167744
470	...335162	...146272	...966459	...795769	...634248	...481942	...338898	...205161
480	...371296	...182586	365002955	...832449	...671112	...518991	...376132	...242581
490	...407433	...218905	...039456	...869132	...707979	...556043	...413369	...280006
500	...443574	...255226	...075960	...905819	...744850	...593098	...450611	...317434

Buergi's table (reconstruction, D. Roegel, 2010)

	132000	132500	133000	133500	134000	134500	135000	135500
0	374317434	376193614	378079197	379974232	381878766	383792845	385716518	387649833
10	...354865	...231233	...117005	380012230	...916953	...831224	...755090	...688598
20	...392301	...268856	...154817	...050231	...955145	...869607	...793665	...727367
30	...429740	...306483	...192632	...088236	...993341	...907994	...832245	...766140
40	...467183	...344114	...230452	...126245	382031540	...946385	...870828	...804916
50	...504630	...381748	...268275	...164257	...069743	...984780	...909415	...843697
60	...542080	...419386	...306102	...202274	...107950	384023178	...948006	...882481
70	...579534	...457028	...343932	...240294	...146161	...061580	...986601	...921270
80	...616992	...494674	...381767	...278318	...184375	...099987	386025199	...960062
90	...654454	...532323	...419605	...316346	...222594	...138397	...063802	...998858
100	...691920	...569976	...457447	...354377	...260816	...176810	...102408	388037658
110	...729389	...607633	...495292	...392413	...299042	...215228	...141018	...076461
120	...766862	...645294	...533142	...430452	...337272	...253650	...179633	...115269
130	...804338	...682959	...570995	...468495	...375506	...292075	...218251	...154081
140	...841819	...720627	...608852	...506542	...413743	...330504	...256872	...192896
150	...879303	...758299	...646713	...544593	...451985	...368937	...295498	...231715
160	...916791	...795975	...684578	...582647	...490230	...407374	...334128	...270538
170	...954283	...833655	...722446	...620705	...528479	...445815	...372761	...309365
180	...991778	...871338	...760319	...658767	...566732	...484259	...411398	...348196
190	375029277	...909025	...798195	...696833	...604989	...522708	...450039	...387031
200	...066780	...946716	...836075	...734903	...643249	...561160	...488684	...425870
210	...104287	...984411	...873958	...772977	...681513	...599616	...527333	...464712
220	...141797	377022109	...911846	...811054	...719782	...638076	...565986	...503559
230	...179311	...059811	...949737	...849135	...758053	...676540	...604643	...542409
240	...216829	...097517	...987632	...887220	...796329	...715008	...643303	...581264
250	...254351	...135227	379025530	...925309	...834609	...753479	...681967	...620122
260	...291876	...172941	...063433	...963401	...872892	...791955	...720636	...658984
270	...329406	...210658	...101339	381001497	...911180	...830434	...759308	...697850
280	...366939	...248379	...139249	...039598	...949471	...868917	...797984	...736719
290	...404475	...286104	...177163	...077702	...987766	...907404	...836663	...775593
300	...442016	...323832	...215081	...115809	383026065	...945894	...875347	...814471
310	...479560	...361565	...253003	...153921	...064367	...984389	...914035	...853352
320	...517108	...399301	...290928	...192036	...102674	385022887	...952726	...892237
330	...554660	...437041	...328857	...230156	...140984	...061390	...991421	...931127
340	...592215	...474784	...366790	...268279	...179298	...099896	387030120	...970020
350	...629774	...512532	...404727	...306405	...217616	...138406	...068823	389008917
360	...667337	...550283	...442667	...344536	...255938	...176920	...107530	...047818
370	...704904	...588038	...480611	...382670	...294263	...215437	...146241	...086722
380	...742474	...625797	...518559	...420809	...332593	...253959	...184956	...125631
390	...780049	...663560	...556511	...458951	...370926	...292484	...223674	...164544
400	...817627	...701326	...594467	...497097	...409263	...331014	...262397	...203460
410	...855208	...739096	...632426	...535246	...447604	...369547	...301123	...242380
420	...892794	...776870	...670390	...573400	...485949	...408084	...339853	...281305
430	...930383	...814648	...708357	...611557	...524297	...446624	...378587	...320233
440	...967976	...852429	...746327	...649718	...562650	...485169	...417325	...359165
450	376005573	...890214	...784302	...687883	...601006	...523718	...456066	...398101
460	...043174	...928003	...822281	...726052	...639366	...562270	...494812	...437041
470	...080778	...965796	...860263	...764225	...677730	...600826	...533562	...475984
480	...118386	378003593	...898249	...802401	...716098	...639386	...572315	...514932
490	...155998	...041393	...936239	...840581	...754469	...677950	...611072	...553883
500	...193614	...079197	...974232	...878766	...792845	...716518	...649833	...592839

Buergi's table (reconstruction, D. Roegel, 2010)

	136000	136500	137000	137500	138000	138500	139000	139500
0	389592839	391545583	393508115	395480484	397462739	399454929	401457105	403469316
10	...631798	...584738	...547466	...520032	...502485	...494875	...497251	...509663
20	...670761	...623896	...586821	...559584	...542235	...534824	...537400	...550014
30	...709728	...663059	...626179	...599140	...581989	...574778	...577554	...590369
40	...748699	...702225	...665542	...638700	...621748	...614735	...617712	...630728
50	...787674	...741395	...704909	...678264	...661510	...654697	...657874	...671091
60	...826653	...780569	...744279	...717832	...701276	...694662	...698039	...711458
70	...865636	...819747	...783653	...757403	...741046	...734631	...738209	...751829
80	...904622	...858929	...823032	...796979	...780820	...774605	...778383	...792205
90	...943613	...898115	...862414	...836559	...820598	...814582	...818561	...832584
100	...982607	...937305	...901800	...876142	...860380	...854564	...858743	...872967
110	390021605	...976499	...941191	...915730	...900166	...894549	...898929	...913354
120	...060607	392015696	...980585	...955322	...939956	...934539	...939118	...953746
130	...099613	...054898	394019983	...994917	...979750	...974532	...979312	...994141
140	...138623	...094103	...059385	396034517	398019548	400014530	402019510	404034541
150	...177637	...133313	...098791	...074120	...059350	...054531	...059712	...074944
160	...216655	...172526	...138201	...113727	...099156	...094537	...099918	...115351
170	...255677	...211743	...177614	...153339	...138966	...134546	...140128	...155763
180	...294702	...250965	...217032	...192954	...178780	...174559	...180342	...196179
190	...333732	...290190	...256454	...232573	...218598	...214577	...220560	...236598
200	...372765	...329419	...295879	...272197	...258420	...254598	...260782	...277022
210	...411802	...368652	...335309	...311824	...298246	...294624	...301008	...317450
220	...450844	...407888	...374743	...351455	...338075	...334653	...341239	...357881
230	...489889	...447129	...414180	...391090	...377909	...374687	...381473	...398317
240	...528938	...486374	...453621	...430729	...417747	...414724	...421711	...438757
250	...567991	...525623	...493067	...470372	...457589	...454766	...461953	...479201
260	...607047	...564875	...532516	...510019	...497435	...494811	...502199	...519649
270	...646108	...604132	...571969	...549670	...537284	...534861	...542449	...560101
280	...685173	...643392	...611427	...589325	...577138	...574914	...582704	...600557
290	...724241	...682656	...650888	...628984	...616996	...614972	...622962	...641017
300	...763314	...721925	...690353	...668647	...656857	...655033	...663224	...681481
310	...802390	...761197	...729822	...708314	...696723	...695099	...703491	...721949
320	...841470	...800473	...769295	...747985	...736593	...735168	...743761	...762421
330	...880554	...839753	...808772	...787660	...776467	...775242	...784035	...802897
340	...919642	...879037	...848253	...827339	...816344	...815319	...824314	...843378
350	...958734	...918325	...887737	...867021	...856226	...855401	...864596	...883862
360	...997830	...957617	...927226	...906708	...896111	...895486	...904883	...924350
370	391036930	...996912	...966719	...946399	...936001	...935576	...945173	...964843
380	...076034	393036212	395006216	...986093	...975895	...975669	...985468	405005339
390	...115141	...075516	...045716	397025792	399015792	401015767	403025766	...045840
400	...154253	...114823	...085221	...065494	...055694	...055869	...066069	...086344
410	...193368	...154135	...124729	...105201	...095599	...095974	...106375	...126853
420	...232488	...193450	...164242	...144912	...135509	...136084	...146686	...167366
430	...271611	...232770	...203758	...184626	...175422	...176197	...187001	...207883
440	...310738	...272093	...243279	...224345	...215340	...216315	...227319	...248403
450	...349869	...311420	...282803	...264067	...255262	...256437	...267642	...288928
460	...389004	...350751	...322331	...303793	...295187	...296562	...307969	...329457
470	...428143	...390086	...361863	...343524	...335117	...336692	...348300	...369990
480	...467286	...429425	...401400	...383258	...375050	...376826	...388634	...410527
490	...506432	...468768	...440940	...422996	...414988	...416963	...428973	...451068
500	...545583	...508115	...480484	...462739	...454929	...457105	...469316	...491613

Buergi's table (reconstruction, D. Roegel, 2010)

	140000	140500	141000	141500	142000	142500	143000	143500
0	405491613	407524046	409566667	411619525	413682673	415756163	417840045	419934372
10	...532162	...564799	...607624	...660687	...724042	...797738	...881829	...976365
20	...572716	...605555	...648584	...701853	...765414	...839318	...923617	420018363
30	...613273	...646316	...689549	...743024	...806791	...880902	...965409	...060364
40	...653834	...687081	...730518	...784198	...848171	...922490	418007206	...102370
50	...694400	...727849	...771491	...825376	...889556	...964082	...049006	...144381
60	...734969	...768622	...812468	...866559	...930945	416005679	...090811	...186395
70	...775542	...809399	...853450	...907746	...972338	...047279	...132620	...228414
80	...816120	...850180	...894435	...948936	414013735	...088884	...174434	...270437
90	...856702	...890965	...935424	...990131	...055137	...130493	...216251	...312464
100	...897287	...931754	...976418	412031330	...096542	...172106	...258073	...354495
110	...937877	...972547	410017416	...072533	...137952	...213723	...299898	...396530
120	...978471	408013344	...058417	...113741	...179366	...255344	...341728	...438570
130	406019069	...054146	...099423	...154952	...220784	...296970	...383563	...480614
140	...059671	...094951	...140433	...196167	...262206	...338600	...425401	...522662
150	...100277	...135761	...181447	...237387	...303632	...380234	...467244	...564714
160	...140887	...176574	...222465	...278611	...345062	...421872	...509090	...606771
170	...181501	...217392	...263487	...319839	...386497	...463514	...550941	...648831
180	...222119	...258214	...304514	...361071	...427936	...505160	...592796	...690896
190	...262741	...299039	...345544	...402307	...469378	...546811	...634656	...732965
200	...303367	...339869	...386579	...443547	...510825	...588465	...676519	...775039
210	...343998	...380703	...427617	...484791	...552276	...630124	...718387	...817116
220	...384632	...421541	...468660	...526040	...593732	...671787	...760259	...859198
230	...425270	...462384	...509707	...567292	...635191	...713454	...802135	...901284
240	...465913	...503230	...550758	...608549	...676654	...755126	...844015	...943374
250	...506560	...544080	...591813	...649810	...718122	...796801	...885899	...985468
260	...547210	...584934	...632872	...691075	...759594	...838481	...927788	421027567
270	...587865	...625793	...673936	...732344	...801070	...880165	...969681	...069670
280	...628524	...666656	...715003	...773617	...842550	...921853	419011577	...111776
290	...669187	...707522	...756075	...814895	...884034	...963545	...053479	...153888
300	...709854	...748393	...797150	...856176	...925523	417005241	...095384	...196003
310	...750525	...789268	...838230	...897462	...967015	...046942	...137294	...238123
320	...791200	...830147	...879314	...938752	415008512	...088647	...179207	...280246
330	...831879	...871030	...920402	...980045	...050013	...130355	...221125	...322374
340	...872562	...911917	...961494	413021343	...091518	...172068	...263047	...364507
350	...913249	...952808	411002590	...062646	...133027	...213786	...304974	...406643
360	...953940	...993703	...043690	...103952	...174540	...255507	...346904	...448784
370	...994636	409034603	...084794	...145262	...216058	...297233	...388839	...490929
380	407035335	...075506	...125903	...186577	...257579	...338962	...430778	...533078
390	...076039	...116414	...167016	...227895	...299105	...380696	...472721	...575231
400	...116746	...157325	...208132	...269218	...340635	...422434	...514668	...617389
410	...157458	...198241	...249253	...310545	...382169	...464176	...556619	...659550
420	...198174	...239161	...290378	...351876	...423707	...505923	...598575	...701716
430	...238894	...280085	...331507	...393211	...465250	...547673	...640535	...743887
440	...279618	...321013	...372640	...434551	...506796	...589428	...682499	...786061
450	...320346	...361945	...413777	...475894	...548347	...631187	...724467	...828240
460	...361078	...402881	...454919	...517242	...589902	...672950	...766440	...870422
470	...401814	...443821	...496064	...558593	...631461	...714718	...808416	...912609
480	...442554	...484766	...537214	...599949	...673024	...756489	...850397	...954801
490	...483298	...525714	...578368	...641309	...714591	...798265	...892382	...996996
500	...524046	...566667	...619525	...682673	...756163	...840045	...934372	422039196

Buergi's table (reconstruction, D. Roegel, 2010)

	144000	144500	145000	145500	146000	146500	147000	147500
0	422039196	424154570	426280547	428417180	430564523	432722628	434891551	437071344
10	...081400	...196986	...323175	...460022	...607579	...765900	...935040	...115051
20	...123608	...239405	...365807	...502868	...650640	...809177	...978533	...158763
30	...165820	...281829	...408444	...545718	...693705	...852458	435022031	...202479
40	...208037	...324257	...451085	...588573	...736774	...895743	...065533	...246199
50	...250258	...366690	...493730	...631432	...779848	...939033	...109040	...289924
60	...292483	...409126	...536379	...674295	...822926	...982327	...152551	...333653
70	...334712	...451567	...579033	...717162	...866008	433025625	...196066	...377386
80	...376945	...494012	...621691	...760034	...909095	...068927	...239586	...421124
90	...419183	...536462	...664353	...802910	...952186	...112234	...283110	...464866
100	...461425	...578916	...707020	...845790	...995281	...155545	...326638	...508612
110	...503671	...621373	...749690	...888675	431038380	...198861	...370171	...552363
120	...545921	...663836	...792365	...931564	...081484	...242181	...413708	...596118
130	...588176	...706302	...835044	...974457	...124592	...285505	...457249	...639878
140	...630435	...748773	...877728	429017354	...167705	...328834	...500795	...683642
150	...672698	...791247	...920416	...060256	...210822	...372167	...544345	...727410
160	...714965	...833727	...963108	...103162	...253943	...415504	...587899	...771183
170	...757237	...876210	427005804	...146072	...297068	...458845	...631458	...814960
180	...799512	...918698	...048505	...188987	...340198	...502191	...675021	...858742
190	...841792	...961189	...091210	...231906	...383332	...545541	...718589	...902528
200	...884077	425003686	...133919	...274829	...426470	...588896	...762160	...946318
210	...926365	...046186	...176632	...317756	...469613	...632255	...805737	...990112
220	...968658	...088691	...219350	...360688	...512760	...675618	...849317	438033912
230	423010954	...131199	...262072	...403624	...555911	...718986	...892902	...077715
240	...053256	...173713	...304798	...446565	...599067	...762358	...936491	...121523
250	...095561	...216230	...347528	...489509	...642227	...805734	...980085	...165335
260	...137870	...258752	...390263	...532458	...685391	...849114	436023683	...209151
270	...180184	...301277	...433002	...575412	...728559	...892499	...067285	...252972
280	...222502	...343808	...475745	...618369	...771732	...935889	...110892	...296798
290	...264824	...386342	...518493	...661331	...814909	...979282	...154503	...340627
300	...307151	...428881	...561245	...704297	...858091	434022680	...198119	...384461
310	...349482	...471423	...604001	...747267	...901277	...066082	...241739	...428300
320	...391817	...513971	...646761	...790242	...944467	...109489	...285363	...472143
330	...434156	...556522	...689526	...833221	...987661	...152900	...328991	...515990
340	...476499	...599078	...732295	...876205	432030860	...196315	...372624	...559841
350	...518847	...641638	...775068	...919192	...074063	...239735	...416261	...603697
360	...561199	...684202	...817846	...962184	...117270	...283159	...459903	...647558
370	...603555	...726770	...860627	430005180	...160482	...326587	...503549	...691423
380	...645915	...769343	...903414	...048181	...203698	...370020	...547199	...735292
390	...688280	...811920	...946204	...091186	...246919	...413457	...590854	...779165
400	...730649	...854501	...988999	...134195	...290143	...456898	...634513	...823043
410	...773022	...897086	428031797	...177208	...333372	...500344	...678177	...866925
420	...815399	...939676	...074601	...220226	...376606	...543794	...721844	...910812
430	...857781	...982270	...117408	...263248	...419843	...587248	...765517	...954703
440	...900166	426024868	...160220	...306274	...463085	...630707	...809193	...998599
450	...942556	...067471	...203036	...349305	...506332	...674170	...852874	439042499
460	...984951	...110078	...245856	...392340	...549582	...717637	...896559	...086403
470	424027349	...152689	...288681	...435379	...592837	...761109	...940249	...130311
480	...069752	...195304	...331510	...478423	...636097	...804585	...983943	...174224
490	...112159	...237923	...374343	...521470	...679360	...848066	437027641	...218142
500	...154570	...280547	...417180	...564523	...722628	...891551	...071344	...262064

Buergi's table (reconstruction, D. Roegel, 2010)

	148000	148500	149000	149500	150000	150500	151000	151500
0	439262064	441463764	443676499	445900325	448135298	450381473	452638906	454907654
10	...305990	...507910	...720867	...944915	...180111	...426511	...684170	...953145
20	...349920	...552061	...765239	...989510	...224929	...471554	...729438	...998641
30	...393855	...596216	...809615	446034109	...269752	...516601	...774711	455044140
40	...437795	...640376	...853996	...078712	...314579	...561652	...819989	...089645
50	...481739	...684540	...898382	...123320	...359410	...606709	...865271	...135154
60	...525687	...728708	...942771	...167932	...404246	...651769	...910557	...180667
70	...569639	...772881	...987166	...212549	...449087	...696834	...955848	...226185
80	...613596	...817058	444031564	...257170	...493932	...741904	453001144	...271708
90	...657558	...861240	...075968	...301796	...538781	...786978	...046444	...317235
100	...701523	...905426	...120375	...346426	...583635	...832057	...091749	...362767
110	...745494	...949617	...164787	...391061	...628493	...877140	...137058	...408303
120	...789468	...993812	...209204	...435700	...673356	...922228	...182372	...453844
130	...833447	442038011	...253625	...480344	...718223	...967320	...227690	...499389
140	...877430	...082215	...298050	...524992	...763095	451012417	...273013	...544939
150	...921418	...126423	...342480	...569644	...807972	...057518	...318340	...590494
160	...965410	...170636	...386914	...614301	...852852	...102624	...363672	...636053
170	440009407	...214853	...431353	...658962	...897738	...147734	...409008	...681616
180	...053408	...259074	...475796	...703628	...942627	...192849	...454349	...727185
190	...097413	...303300	...520243	...748299	...987522	...237968	...499695	...772757
200	...141423	...347530	...564695	...792974	449032420	...283092	...545045	...818335
210	...185437	...391765	...609152	...837653	...077324	...328220	...590399	...863916
220	...229456	...436004	...653613	...882337	...122231	...373353	...635758	...909503
230	...273479	...480248	...698078	...927025	...167144	...418490	...681122	...955094
240	...317506	...524496	...742548	...971718	...212060	...463632	...726490	456000689
250	...361538	...568748	...787022	447016415	...256982	...508779	...771862	...046289
260	...405574	...613005	...831501	...061116	...301907	...553930	...817240	...091894
270	...449614	...657267	...875984	...105823	...346837	...599085	...862621	...137503
280	...493659	...701532	...920472	...150533	...391772	...644245	...908008	...183117
290	...537709	...745802	...964964	...195248	...436711	...689409	...953398	...228735
300	...581762	...790077	445009460	...239968	...481655	...734578	...998794	...274358
310	...625821	...834356	...053961	...284692	...526603	...779752	454044194	...319986
320	...669883	...878639	...098467	...329420	...571556	...824930	...089598	...365618
330	...713950	...922927	...142976	...374153	...616513	...870112	...135007	...411254
340	...758022	...967220	...187491	...418890	...661475	...915299	...180420	...456895
350	...802097	443011516	...232010	...463632	...706441	...960491	...225839	...502541
360	...846178	...055817	...276533	...508379	...751411	452005687	...271261	...548191
370	...890262	...100123	...321060	...553130	...796387	...050887	...316688	...593846
380	...934351	...144433	...365592	...597885	...841366	...096092	...362120	...639505
390	...978445	...188748	...410129	...642645	...886350	...141302	...407556	...685169
400	441022543	...233066	...454670	...687409	...931339	...186516	...452997	...730838
410	...066645	...277390	...499216	...732178	...976332	...231735	...498442	...776511
420	...110751	...321717	...543765	...776951	450021330	...276958	...543892	...822189
430	...154863	...366050	...588320	...821729	...066332	...322186	...589346	...867871
440	...198978	...410386	...632879	...866511	...111338	...367418	...634805	...913558
450	...243098	...454727	...677442	...911297	...156350	...412655	...680269	...959249
460	...287222	...499073	...722010	...956089	...201365	...457896	...725737	457004945
470	...331351	...543423	...766582	448000884	...246385	...503142	...771209	...050645
480	...375484	...587777	...811159	...045684	...291410	...548392	...816687	...096350
490	...419622	...632136	...855740	...090489	...336439	...593647	...862168	...142060
500	...463764	...676499	...900325	...135298	...381473	...638906	...907654	...187774

Buergi's table (reconstruction, D. Roegel, 2010)

	152000	152500	153000	153500	154000	154500	155000	155500
0	457187774	459479323	461782357	464096935	466423114	468760952	471110508	473471841
10	...233493	...525271	...828535	...143344	...469756	...807828	...157619	...519188
20	...279216	...571223	...874718	...189759	...516403	...854709	...204735	...566540
30	...324944	...617180	...920905	...236178	...563054	...901594	...251856	...613897
40	...370677	...663142	...967098	...282601	...609711	...948484	...298981	...661258
50	...416414	...709108	462013294	...329029	...656372	...995379	...346111	...708624
60	...462155	...755079	...059496	...375462	...703037	469042279	...393245	...755995
70	...507902	...801055	...105702	...421900	...749708	...089183	...440385	...803371
80	...553652	...847035	...151912	...468342	...796383	...136092	...487529	...850751
90	...599408	...893019	...198127	...514789	...843062	...183006	...534677	...898136
100	...645168	...939009	...244347	...561240	...889747	...229924	...581831	...945526
110	...690932	...985003	...290572	...607697	...936436	...276847	...628989	...992921
120	...736701	460031001	...336801	...654157	...983129	...323775	...676152	474040320
130	...782475	...077004	...383034	...700623	467029828	...370707	...723319	...087724
140	...828253	...123012	...429273	...747093	...076531	...417644	...770492	...135133
150	...874036	...169024	...475516	...793567	...123238	...464586	...817669	...182546
160	...919824	...215041	...521763	...840047	...169950	...511532	...864851	...229964
170	...965616	...261063	...568015	...886531	...216667	...558483	...912037	...277387
180	458011412	...307089	...614272	...933019	...263389	...605439	...959228	...324815
190	...057213	...353120	...660533	...979513	...310115	...652400	472006424	...372248
200	...103019	...399155	...706800	465026011	...356846	...699365	...053625	...419685
210	...148829	...445195	...753070	...072513	...403582	...746335	...100830	...467127
220	...194644	...491239	...799345	...119021	...450323	...793310	...148040	...514574
230	...240464	...537288	...845625	...165533	...497068	...840289	...195255	...562025
240	...286288	...583342	...891910	...212049	...543817	...887273	...242475	...609481
250	...332116	...629400	...938199	...258570	...590572	...934262	...289699	...656942
260	...377950	...675463	...984493	...305096	...637331	...981255	...336928	...704408
270	...423787	...721531	463030791	...351627	...684094	470028253	...384162	...751878
280	...469630	...767603	...077095	...398162	...730863	...075256	...431400	...799354
290	...515477	...813680	...123402	...444702	...777636	...122264	...478643	...846833
300	...561328	...859761	...169715	...491246	...824414	...169276	...525891	...894318
310	...607184	...905847	...216032	...537795	...871196	...216293	...573144	...941808
320	...653045	...951938	...262353	...584349	...917983	...263314	...620401	...989302
330	...698910	...998033	...308679	...630907	...964775	...310341	...667663	475036801
340	...744780	461044133	...355010	...677471	468011572	...357372	...714930	...084304
350	...790655	...090237	...401346	...724038	...058373	...404407	...762201	...131813
360	...836534	...136346	...447686	...770611	...105179	...451448	...809477	...179326
370	...882417	...182460	...494031	...817188	...151989	...498493	...856758	...226844
380	...928306	...228578	...540380	...863769	...198804	...545543	...904044	...274367
390	...974199	...274701	...586734	...910356	...245624	...592597	...951334	...321894
400	459020096	...320828	...633093	...956947	...292449	...639657	...998630	...369426
410	...065998	...366960	...679456	466003543	...339278	...686721	473045929	...416963
420	...111905	...413097	...725824	...050143	...386112	...733789	...093234	...464505
430	...157816	...459238	...772197	...096748	...432950	...780863	...140543	...512051
440	...203732	...505384	...818574	...143358	...479794	...827941	...187857	...559603
450	...249652	...551535	...864956	...189972	...526642	...875024	...235176	...607158
460	...295577	...597690	...911342	...236591	...573494	...922111	...282500	...654719
470	...341506	...643850	...957733	...283215	...620352	...969203	...329828	...702285
480	...387441	...690014	464004129	...329843	...667214	471016300	...377161	...749855
490	...433379	...736183	...050530	...376476	...714081	...063402	...424499	...797430
500	...479323	...782357	...096935	...423114	...760952	...110508	...471841	...845010

Buergi's table (reconstruction, D. Roegel, 2010)

	156000	156500	157000	157500	158000	158500	159000	159500
0	475845010	478230073	480627091	483036124	485457231	487890474	490335912	492793608
10	...892594	...277896	...675154	...084427	...505777	...939263	...384946	...842887
20	...940183	...325724	...723221	...132736	...554327	...988057	...433984	...892172
30	...987777	...373556	...771294	...181049	...602883	488036855	...483028	...941461
40	476035376	...421394	...819371	...229367	...651443	...085659	...532076	...990755
50	...082980	...469236	...867453	...277690	...700008	...134468	...581129	493040054
60	...130588	...517083	...915540	...326018	...748578	...183281	...630187	...089358
70	...178201	...564935	...963631	...374350	...797153	...232099	...679250	...138667
80	...225819	...612791	481011727	...422688	...845733	...280923	...728318	...187981
90	...273441	...660652	...059829	...471030	...894317	...329751	...777391	...237300
100	...321069	...708518	...107935	...519377	...942907	...378584	...826469	...286623
110	...368701	...756389	...156045	...567729	...991501	...427422	...875551	...335952
120	...416338	...804265	...204161	...616086	486040100	...476264	...924639	...385286
130	...463979	...852145	...252281	...664448	...088704	...525112	...973731	...434624
140	...511626	...900031	...300407	...712814	...137313	...573964	491022829	...483968
150	...559277	...947921	...348537	...761185	...185927	...622822	...071931	...533316
160	...606933	...995815	...396672	...809561	...234545	...671684	...121038	...582669
170	...654594	479043715	...444811	...857942	...283169	...720551	...170150	...632028
180	...702259	...091619	...492956	...906328	...331797	...769423	...219267	...681391
190	...749929	...139528	...541105	...954719	...380430	...818300	...268389	...730759
200	...797604	...187442	...589259	484003114	...429068	...867182	...317516	...780132
210	...845284	...235361	...637418	...051515	...477711	...916069	...366648	...829510
220	...892969	...283285	...685582	...099920	...526359	...964960	...415785	...878893
230	...940658	...331213	...733750	...148330	...575012	489013857	...464926	...928281
240	...988352	...379146	...781924	...196745	...623669	...062758	...514073	...977674
250	477036051	...427084	...830102	...245164	...672332	...111665	...563224	494027072
260	...083754	...475027	...878285	...293589	...720999	...160576	...612380	...076474
270	...131463	...522974	...926473	...342018	...769671	...209492	...661542	...125882
280	...179176	...570927	...974665	...390452	...818348	...258413	...710708	...175294
290	...226894	...618884	482022863	...438891	...867030	...307339	...759879	...224712
300	...274617	...666846	...071065	...487335	...915716	...356269	...809055	...274134
310	...322344	...714812	...119272	...535784	...964408	...405205	...858236	...323562
320	...370076	...762784	...167484	...584238	487013104	...454145	...907422	...372994
330	...417813	...810760	...215701	...632696	...061806	...503091	...956612	...422432
340	...465555	...858741	...263922	...681159	...110512	...552041	492005808	...471874
350	...513302	...906727	...312149	...729627	...159223	...600996	...055009	...521321
360	...561053	...954718	...360380	...778100	...207939	...649956	...104214	...570773
370	...608809	480002713	...408616	...826578	...256660	...698921	...153425	...620230
380	...656570	...050713	...456857	...875061	...305385	...747891	...202640	...669692
390	...704336	...098718	...505103	...923548	...354116	...796866	...251860	...719159
400	...752106	...146728	...553353	...972041	...402851	...845846	...301085	...768631
410	...799881	...194743	...601609	485020538	...451592	...894830	...350315	...818108
420	...847661	...242762	...649869	...069040	...500337	...943820	...399550	...867590
430	...895446	...290787	...698134	...117547	...549087	...992814	...448790	...917077
440	...943235	...338816	...746403	...166059	...597842	490041814	...498035	...966568
450	...991030	...386850	...794678	...214575	...646602	...090818	...547285	495016065
460	478038829	...434888	...842958	...263097	...695366	...139827	...596540	...065566
470	...086633	...482932	...891242	...311623	...744136	...188841	...645799	...115073
480	...134441	...530980	...939531	...360154	...792910	...237860	...695064	...164585
490	...182255	...579033	...987825	...408690	...841689	...286883	...744334	...214101
500	...230073	...627091	483036124	...457231	...890474	...335912	...793608	...263622

Buergi's table (reconstruction, D. Roegel, 2010)

	160000	160500	161000	161500	162000	162500	163000	163500
0	495263622	497746017	500240854	502748196	505268106	507800646	510345880	512903871
10	...313149	...795792	...290879	...798471	...318633	...851426	...396914	...955161
20	...362680	...845571	...340908	...848751	...369165	...902211	...447954	513006457
30	...412216	...895356	...390942	...899036	...419702	...953001	...498999	...057757
40	...461758	...945145	...440981	...949326	...470244	508003797	...550049	...109063
50	...511304	...994940	...491025	...999621	...520791	...054597	...601104	...160374
60	...560855	498044739	...541074	503049921	...571343	...105403	...652164	...211690
70	...610411	...094544	...591128	...100226	...621900	...156213	...703229	...263011
80	...659972	...144353	...641187	...150536	...672462	...207029	...754299	...314338
90	...709538	...194168	...691251	...200851	...723029	...257849	...805375	...365669
100	...759109	...243987	...741320	...251171	...773602	...308675	...856455	...417006
110	...808685	...293812	...791395	...301496	...824179	...359506	...907541	...468347
120	...858266	...343641	...841474	...351826	...874761	...410342	...958632	...519694
130	...907852	...393475	...891558	...402161	...925349	...461183	511009728	...571046
140	...957442	...443315	...941647	...452502	...975941	...512029	...060829	...622403
150	496007038	...493159	...991741	...502847	506026539	...562880	...111935	...673765
160	...056639	...543008	501041840	...553197	...077142	...613737	...163046	...725133
170	...106244	...592863	...091945	...603553	...127749	...664598	...214162	...776505
180	...155855	...642722	...142054	...653913	...178362	...715465	...265284	...827883
190	...205471	...692586	...192168	...704278	...228980	...766336	...316410	...879266
200	...255091	...742456	...242287	...754649	...279603	...817213	...367542	...930654
210	...304717	...792330	...292411	...805024	...330231	...868094	...418678	...982047
220	...354347	...842209	...342541	...855405	...380864	...918981	...469820	514033445
230	...403983	...892093	...392675	...905790	...431502	...969873	...520967	...084848
240	...453623	...941982	...442814	...956181	...482145	509020770	...572119	...136257
250	...503268	...991877	...492958	504006576	...532793	...071672	...623277	...187670
260	...552919	499041776	...543108	...056977	...583447	...122579	...674439	...239089
270	...602574	...091680	...593262	...107383	...634105	...173492	...725606	...290513
280	...652234	...141589	...643421	...157793	...684768	...224409	...776779	...341942
290	...701899	...191503	...693586	...208209	...735437	...275331	...827957	...393376
300	...751570	...241422	...743755	...258630	...786110	...326259	...879139	...444816
310	...801245	...291347	...793929	...309056	...836789	...377192	...930327	...496260
320	...850925	...341276	...844109	...359487	...887473	...428129	...981520	...547710
330	...900610	...391210	...894293	...409923	...938161	...479072	512032719	...599165
340	...950300	...441149	...944483	...460364	...988855	...530020	...083922	...650625
350	...999995	...491093	...994677	...510810	507039554	...580973	...135130	...702090
360	497049695	...541042	502044877	...561261	...090258	...631931	...186344	...753560
370	...099400	...590996	...095081	...611717	...140967	...682894	...237562	...805035
380	...149110	...640955	...145291	...662178	...191681	...733863	...288786	...856516
390	...198825	...690920	...195505	...712644	...242400	...784836	...340015	...908001
400	...248545	...740889	...245725	...763116	...293125	...835814	...391249	...959492
410	...298270	...790863	...295949	...813592	...343854	...886798	...442488	515010988
420	...348000	...840842	...346179	...864073	...394588	...937787	...493732	...062489
430	...397734	...890826	...396413	...914560	...445328	...988780	...544982	...113995
440	...447474	...940815	...446653	...965051	...496072	510039779	...596236	...165507
450	...497219	...990809	...496898	505015548	...546822	...090783	...647496	...217023
460	...546969	500040808	...547147	...066049	...597577	...141792	...698761	...268545
470	...596723	...090812	...597402	...116556	...648336	...192807	...750031	...320072
480	...646483	...140821	...647662	...167068	...699101	...243826	...801306	...371604
490	...696248	...190835	...697927	...217584	...749871	...294850	...852586	...423141
500	...746017	...240854	...748196	...268106	...800646	...345880	...903871	...474683

Buergi's table (reconstruction, D. Roegel, 2010)

	164000	164500	165000	165500	166000	166500	167000	167500
0	515474683	518058381	520655030	523264693	525887437	528523327	531172428	533834807
10	...526231	...110187	...707095	...317020	...940026	...576179	...225545	...888191
20	...577783	...161998	...759166	...369351	...992620	...629036	...278668	...941580
30	...629341	...213815	...811242	...421688	526045219	...681899	...331796	...994974
40	...680904	...265636	...863323	...474030	...097823	...734768	...384929	534048373
50	...732472	...317462	...915409	...526378	...150433	...787641	...438067	...101778
60	...784046	...369294	...967501	...578730	...203048	...840520	...491211	...155188
70	...835624	...421131	521019598	...631088	...255669	...893404	...544360	...208604
80	...887207	...472973	...071700	...683451	...308294	...946293	...597515	...262025
90	...938796	...524821	...123807	...735820	...360925	...999188	...650674	...315451
100	...990390	...576673	...175919	...788193	...413561	529052088	...703839	...368882
110	516041989	...628531	...228037	...840572	...466202	...104993	...757010	...422319
120	...093593	...680394	...280160	...892956	...518849	...157903	...810186	...475762
130	...145203	...732262	...332288	...945346	...571501	...210819	...863367	...529209
140	...196817	...784135	...384421	...997740	...624158	...263740	...916553	...582662
150	...248437	...836013	...436559	524050140	...676820	...316667	...969745	...636120
160	...300062	...887897	...488703	...102545	...729488	...369598	532022942	...689584
170	...351692	...939786	...540852	...154955	...782161	...422535	...076144	...743053
180	...403327	...991680	...593006	...207371	...834839	...475478	...129351	...796527
190	...454967	519043579	...645165	...259791	...887523	...528425	...182564	...850007
200	...506613	...095483	...697330	...312217	...940212	...581378	...235783	...903492
210	...558263	...147393	...749499	...364649	...992906	...634336	...289006	...956982
220	...609919	...199307	...801674	...417085	527045605	...687300	...342235	535010478
230	...661580	...251227	...853855	...469527	...098309	...740268	...395469	...063979
240	...713246	...303152	...906040	...521974	...151019	...793242	...448709	...117485
250	...764918	...355083	...958231	...574426	...203734	...846222	...501954	...170997
260	...816594	...407018	522010426	...626883	...256455	...899206	...555204	...224514
270	...868276	...458959	...062627	...679346	...309180	...952196	...608459	...278037
280	...919963	...510905	...114834	...731814	...361911	530005191	...661720	...331564
290	...971655	...562856	...167045	...784287	...414647	...058192	...714986	...385098
300	517023352	...614812	...219262	...836766	...467389	...111198	...768258	...438636
310	...075054	...666774	...271484	...889249	...520136	...164209	...821535	...492180
320	...126762	...718740	...323711	...941738	...572888	...217225	...874817	...545729
330	...178474	...770712	...375943	...994232	...625645	...270247	...928104	...599284
340	...230192	...822689	...428181	525046732	...678408	...323274	...981397	...652844
350	...281915	...874672	...480424	...099236	...731175	...376306	533034695	...706409
360	...333643	...926659	...532672	...151746	...783949	...429344	...087999	...759980
370	...385377	...978652	...584925	...204262	...836727	...482387	...141308	...813556
380	...437115	520030650	...637183	...256782	...889511	...535435	...194622	...867137
390	...488859	...082653	...689447	...309308	...942300	...588489	...247941	...920724
400	...540608	...134661	...741716	...361839	...995094	...641548	...301266	...974316
410	...592362	...186674	...793990	...414375	528047893	...694612	...354596	536027913
420	...644121	...238693	...846270	...466916	...100698	...747681	...407932	...081516
430	...695886	...290717	...898554	...519463	...153508	...800756	...461272	...135124
440	...747655	...342746	...950844	...572015	...206323	...853836	...514619	...188738
450	...799430	...394780	523003139	...624572	...259144	...906921	...567970	...242357
460	...851210	...446820	...055440	...677134	...311970	...960012	...621327	...295981
470	...902995	...498864	...107745	...729702	...364801	531013108	...674689	...349610
480	...954785	...550914	...160056	...782275	...417638	...066209	...728056	...403245
490	518006581	...602969	...212372	...834853	...470479	...119316	...781429	...456886
500	...058381	...655030	...264693	...887437	...523327	...172428	...834807	...510531

Buergi's table (reconstruction, D. Roegel, 2010)

	168000	168500	169000	169500	170000	170500	171000	171500
0	536510531	539199667	541902281	544618441	547348216	550091673	552848880	555619908
10	...564182	...253587	...956471	...672903	...402951	...146682	...904165	...675470
20	...617839	...307512	542010667	...727370	...457691	...201696	...959456	...731038
30	...671501	...361443	...064868	...781843	...512437	...256717	553014752	...786611
40	...725168	...415379	...119074	...836321	...567188	...311742	...070053	...842189
50	...778840	...469321	...173286	...890805	...621945	...366773	...125360	...897773
60	...832518	...523267	...227504	...945294	...676707	...421810	...180673	...953363
70	...886201	...577220	...281726	...999789	...731474	...476852	...235991	556008959
80	...939890	...631178	...335954	545054289	...786248	...531900	...291314	...064559
90	...993584	...685141	...390188	...108794	...841026	...586953	...346643	...120166
100	537047283	...739109	...444427	...163305	...895810	...642012	...401978	...175778
110	...100988	...793083	...498672	...217821	...950600	...697076	...457318	...231396
120	...154698	...847062	...552921	...272343	548005395	...752146	...512664	...287019
130	...208414	...901047	...607177	...326870	...060195	...807221	...568015	...342647
140	...262135	...955037	...661437	...381403	...115001	...862302	...623372	...398282
150	...315861	540009033	...715704	...435941	...169813	...917388	...678734	...453921
160	...369592	...063034	...769975	...490485	...224630	...972480	...734102	...509567
170	...423329	...117040	...824252	...545034	...279452	551027577	...789476	...565218
180	...477072	...171052	...878535	...599588	...334280	...082680	...844855	...620874
190	...530819	...225069	...932822	...654148	...389114	...137788	...900239	...676536
200	...584572	...279091	...987116	...708714	...443953	...192902	...955629	...732204
210	...638331	...333119	543041414	...763284	...498797	...248021	554011025	...787877
220	...692095	...387152	...095719	...817861	...553647	...303146	...066426	...843556
230	...745864	...441191	...150028	...872442	...608502	...358276	...121832	...899240
240	...799638	...495235	...204343	...927030	...663363	...413412	...177245	...954930
250	...853418	...549285	...258664	...981622	...718230	...468553	...232662	557010626
260	...907204	...603340	...312989	546036221	...773101	...523700	...288086	...066327
270	...960994	...657400	...367321	...090824	...827979	...578852	...343514	...122034
280	538014791	...711466	...421657	...145433	...882861	...634010	...398949	...177746
290	...068592	...765537	...476000	...200048	...937750	...689174	...454389	...233464
300	...122399	...819613	...530347	...254668	...992644	...744343	...509834	...289187
310	...176211	...873695	...584700	...309293	549047543	...799517	...565285	...344916
320	...230029	...927783	...639059	...363924	...102448	...854697	...620742	...400650
330	...283852	...981876	...693423	...418561	...157358	...909883	...676204	...456390
340	...337680	541035974	...747792	...473203	...212274	...965074	...731671	...512136
350	...391514	...090077	...802167	...527850	...267195	552020270	...787144	...567887
360	...445353	...144186	...856547	...582503	...322121	...075472	...842623	...623644
370	...499198	...198301	...910933	...637161	...377054	...130680	...898107	...679406
380	...553048	...252421	...965324	...691825	...431991	...185893	...953597	...735174
390	...606903	...306546	544019720	...746494	...486935	...241111	555009093	...790948
400	...660764	...360677	...074122	...801168	...541883	...296335	...064594	...846727
410	...714630	...414813	...128530	...855849	...596837	...351565	...120100	...902512
420	...768501	...468954	...182942	...910534	...651797	...406800	...175612	...958302
430	...822378	...523101	...237361	...965225	...706762	...462041	...231130	558014098
440	...876260	...577253	...291785	547019922	...761733	...517287	...286653	...069899
450	...930148	...631411	...346214	...074624	...816709	...572539	...342181	...125706
460	...984041	...685574	...400648	...129331	...871691	...627796	...397716	...181519
470	539037939	...739743	...455088	...184044	...926678	...683059	...453255	...237337
480	...091843	...793917	...509534	...238762	...981671	...738327	...508801	...293161
490	...145752	...848096	...563985	...293486	550036669	...793601	...564352	...348990
500	...199667	...902281	...618441	...348216	...091673	...848880	...619908	...404825

Buergi's table (reconstruction, D. Roegel, 2010)

	172000	172500	173000	173500	174000	174500	175000	175500
0	558404825	561203700	564016605	566843608	569684781	572540195	575409920	578294030
10	...460665	...259821	...073006	...900292	...741749	...597449	...467461	...351859
20	...516511	...315947	...129414	...956982	...798723	...654708	...525008	...409695
30	...572363	...372078	...185826	567013678	...855703	...711974	...582561	...467536
40	...628220	...428215	...242245	...070379	...912689	...769245	...640119	...525382
50	...684083	...484358	...298669	...127086	...969680	...826522	...697683	...583235
60	...739951	...540507	...355099	...183799	570026677	...883805	...755253	...641093
70	...795825	...596661	...411535	...240517	...083680	...941093	...812828	...698957
80	...851705	...652820	...467976	...297241	...140688	...998387	...870409	...756827
90	...907590	...708986	...524423	...353971	...197702	573055687	...927997	...814703
100	...963481	...765157	...580875	...410707	...254722	...112992	...985589	...872584
110	559019377	...821333	...637333	...467448	...311748	...170304	576043188	...930472
120	...075279	...877515	...693797	...524194	...368779	...227621	...100792	...988365
130	...131187	...933703	...750266	...580947	...425816	...284944	...158402	579046264
140	...187100	...989896	...806741	...637705	...482858	...342272	...216018	...104168
150	...243019	562046095	...863222	...694469	...539906	...399606	...273640	...162079
160	...298943	...102300	...919708	...751238	...596960	...456946	...331267	...219995
170	...354873	...158510	...976200	...808013	...654020	...514292	...388900	...277917
180	...410808	...214726	565032698	...864794	...711086	...571643	...446539	...335845
190	...466749	...270948	...089201	...921581	...768157	...629001	...504184	...393778
200	...522696	...327175	...145710	...978373	...825233	...686363	...561834	...451718
210	...578648	...383407	...202225	568035171	...882316	...743732	...619490	...509663
220	...634606	...439646	...258745	...091974	...939404	...801106	...677152	...567614
230	...690570	...495890	...315271	...148783	...996498	...858487	...734820	...625570
240	...746539	...552139	...371802	...205598	571053598	...915872	...792493	...683533
250	...802513	...608394	...428339	...262419	...110703	...973264	...850173	...741501
260	...858494	...664655	...484882	...319245	...167814	574030661	...907858	...799475
270	...914479	...720922	...541431	...376077	...224931	...088064	...965549	...857455
280	...970471	...777194	...597985	...432914	...282054	...145473	577023245	...915441
290	560026468	...833472	...654545	...489758	...339182	...202888	...080947	...973433
300	...082471	...889755	...711110	...546607	...396316	...260308	...138656	580031430
310	...138479	...946044	...767681	...603461	...453455	...317734	...196369	...089433
320	...194493	563002338	...824258	...660322	...510601	...375166	...254089	...147442
330	...250512	...058639	...880840	...717188	...567752	...432603	...311814	...205457
340	...306537	...114945	...937429	...774059	...624908	...490047	...369546	...263477
350	...362568	...171256	...994022	...830937	...682071	...547496	...427283	...321504
360	...418604	...227573	566050622	...887820	...739239	...604950	...485025	...379536
370	...474646	...283896	...107227	...944709	...796413	...662411	...542774	...437574
380	...530693	...340224	...163837	569001603	...853593	...719877	...600528	...495618
390	...586746	...396558	...220454	...058503	...910778	...777349	...658288	...553667
400	...642805	...452898	...277076	...115409	...967969	...834827	...716054	...611723
410	...698869	...509243	...333704	...172321	572025166	...892310	...773826	...669784
420	...754939	...565594	...390337	...229238	...082368	...949800	...831603	...727851
430	...811015	...621951	...446976	...286161	...139577	575007295	...889386	...785924
440	...867096	...678313	...503621	...343090	...196791	...064795	...947175	...844002
450	...923183	...734681	...560271	...400024	...254010	...122302	578004970	...902087
460	...979275	...791054	...616927	...456964	...311236	...179814	...062770	...960177
470	561035373	...847433	...673589	...513910	...368467	...237332	...120577	581018273
480	...091476	...903818	...730256	...570861	...425704	...294856	...178389	...076375
490	...147586	...960209	...786929	...627818	...482946	...352385	...236206	...134482
500	...203700	564016605	...843608	...684781	...540195	...409920	...294030	...192596

Buergi's table (reconstruction, D. Roegel, 2010)

	176000	176500	177000	177500	178000	178500	179000	179500
0	581192596	584105690	587033385	589975754	592932872	595904811	598891647	601893453
10	...250715	...164100	...092088	590034752	...992165	...964402	...951536	...953643
20	...308840	...222517	...150797	...093756	593051465	596023998	599011431	602013838
30	...366971	...280939	...209512	...152765	...110770	...083601	...071332	...074040
40	...425108	...339367	...268233	...211780	...170081	...143209	...131240	...134247
50	...483250	...397801	...326960	...270801	...229398	...202823	...191153	...194460
60	...541398	...456241	...385693	...329828	...288721	...262444	...251072	...254680
70	...599553	...514686	...444432	...388861	...348050	...322070	...310997	...314905
80	...657712	...573138	...503176	...447900	...407384	...381702	...370928	...375137
90	...715878	...631595	...561926	...506945	...466725	...441340	...430865	...435374
100	...774050	...690058	...620682	...565996	...526072	...500984	...490808	...495618
110	...832227	...748527	...679445	...625052	...585424	...560635	...550757	...555867
120	...890410	...807002	...738212	...684115	...644783	...620291	...610712	...616123
130	...948600	...865483	...796986	...743183	...704147	...679953	...670673	...676385
140	582006794	...923969	...855766	...802258	...763518	...739621	...730641	...736652
150	...064995	...982462	...914552	...861338	...822894	...799295	...790614	...796926
160	...123202	585040960	...973343	...920424	...882276	...858975	...850593	...857206
170	...181414	...099464	588032140	...979516	...941665	...918660	...910578	...917491
180	...239632	...157974	...090944	591038614	594001059	...978352	...970569	...977783
190	...297856	...216490	...149753	...097718	...060459	597038050	600030566	603038081
200	...356086	...275011	...208568	...156828	...119865	...097754	...090569	...098385
210	...414321	...333539	...267389	...215943	...179277	...157464	...150578	...158694
220	...472563	...392072	...326215	...275065	...238695	...217179	...210593	...219010
230	...530810	...450612	...385048	...334192	...298119	...276901	...270614	...279332
240	...589063	...509157	...443886	...393326	...357549	...336629	...330641	...339660
250	...647322	...567708	...502731	...452465	...416984	...396363	...390674	...399994
260	...705587	...626264	...561581	...511610	...476426	...456102	...450713	...460334
270	...763857	...684827	...620437	...570762	...535874	...515848	...510758	...520680
280	...822134	...743395	...679299	...629919	...595327	...575599	...570809	...581032
290	...880416	...801970	...738167	...689082	...654787	...635357	...630866	...641390
300	...938704	...860550	...797041	...748251	...714252	...695120	...690930	...701754
310	...996998	...919136	...855921	...807425	...773724	...754890	...750999	...762125
320	583055298	...977728	...914806	...866606	...833201	...814665	...811074	...822501
330	...113603	586036326	...973698	...925793	...892684	...874447	...871155	...882883
340	...171914	...094929	589032595	...984985	...952174	...934234	...931242	...943271
350	...230232	...153539	...091498	592044184	595011669	...994028	...991335	604003666
360	...288555	...212154	...150408	...103388	...071170	598053827	601051434	...064066
370	...346884	...270775	...209323	...162599	...130677	...113633	...111539	...124472
380	...405218	...329402	...268244	...221815	...190190	...173444	...171651	...184885
390	...463559	...388035	...327170	...281037	...249709	...233261	...231768	...245303
400	...521905	...446674	...386103	...340265	...309234	...293085	...291891	...305728
410	...580257	...505319	...445042	...399499	...368765	...352914	...352020	...366159
420	...638615	...563969	...503986	...458739	...428302	...412749	...412155	...426595
430	...696979	...622626	...562937	...517985	...487845	...472590	...472296	...487038
440	...755349	...681288	...621893	...577237	...547394	...532438	...532444	...547487
450	...813724	...739956	...680855	...636494	...606948	...592291	...592597	...607941
460	...872106	...798630	...739823	...695758	...666509	...652150	...652756	...668402
470	...930493	...857310	...798797	...755028	...726076	...712015	...712921	...728869
480	...988886	...915996	...857777	...814303	...785648	...771887	...773093	...789342
490	584047285	...974687	...916763	...873585	...845227	...831764	...833270	...849821
500	...105690	587033385	...975754	...932872	...904811	...891647	...893453	...910306

Buerger's table (reconstruction, D. Roegel, 2010)

	180000	180500	181000	181500	182000	182500	183000	183500
0	604910306	607942279	610989450	614051894	617129687	620222908	623331632	626455938
10	...970797	608003073	611050549	...113299	...191400	...284930	...393965	...518584
20	605031294	...063874	...111654	...174710	...253119	...346959	...456305	...581236
30	...091797	...124680	...172765	...236128	...314845	...408993	...518650	...643894
40	...152306	...185493	...233882	...297551	...376576	...471034	...581002	...706558
50	...212821	...246311	...295006	...358981	...438314	...533081	...643360	...769229
60	...273343	...307136	...356135	...420417	...500058	...595135	...705725	...831906
70	...333870	...367967	...417271	...481859	...561808	...657194	...768095	...894589
80	...394403	...428803	...478413	...543307	...623564	...719260	...830472	...957279
90	...454943	...489646	...539560	...604762	...685326	...781332	...892855	627019974
100	...515488	...550495	...600714	...666222	...747095	...843410	...955244	...082676
110	...576040	...611350	...661874	...727689	...808870	...905494	624017640	...145385
120	...636597	...672211	...723041	...789161	...870650	...967585	...080042	...208099
130	...697161	...733079	...784213	...850640	...932438	621029681	...142450	...270820
140	...757731	...793952	...845391	...912125	...994231	...091784	...204864	...333547
150	...818307	...854831	...906576	...973617	618056030	...153894	...267284	...396280
160	...878888	...915717	...967767	615035114	...117836	...216009	...329711	...459020
170	...939476	...976608	612028963	...096617	...179648	...278131	...392144	...521766
180	606000070	609037506	...090166	...158127	...241466	...340258	...454583	...584518
190	...060670	...098410	...151375	...219643	...303290	...402392	...517029	...647277
200	...121276	...159320	...212590	...281165	...365120	...464533	...579481	...710041
210	...181888	...220236	...273812	...342693	...426957	...526679	...641938	...772812
220	...242507	...281158	...335039	...404227	...488799	...588832	...704403	...835590
230	...303131	...342086	...396272	...465768	...550648	...650991	...766873	...898373
240	...363761	...403020	...457512	...527314	...612503	...713156	...829350	...961163
250	...424398	...463960	...518758	...588867	...674364	...775327	...891833	628023959
260	...485040	...524907	...580010	...650426	...736232	...837505	...954322	...086761
270	...545689	...585859	...641268	...711991	...798105	...899688	625016817	...149570
280	...606343	...646818	...702532	...773562	...859985	...961878	...079319	...212385
290	...667004	...707782	...763802	...835140	...921871	622024075	...141827	...275206
300	...727670	...768753	...825078	...896723	...983763	...086277	...204341	...338034
310	...788343	...829730	...886361	...958313	619045662	...148486	...266862	...400868
320	...849022	...890713	...947650	616019909	...107566	...210700	...329388	...463708
330	...909707	...951702	613008944	...081511	...169477	...272922	...391921	...526554
340	...970398	610012697	...070245	...143119	...231394	...335149	...454460	...589407
350	607031095	...073698	...131552	...204733	...293317	...397382	...517006	...652266
360	...091798	...134706	...192865	...266353	...355247	...459622	...579558	...715131
370	...152507	...195719	...254185	...327980	...417182	...521868	...642115	...778002
380	...213222	...256739	...315510	...389613	...479124	...584120	...704680	...840880
390	...273944	...317765	...376842	...451252	...541072	...646379	...767250	...903764
400	...334671	...378796	...438179	...512897	...603026	...708643	...829827	...966655
410	...395405	...439834	...499523	...574548	...664986	...770914	...892410	629029551
420	...456144	...500878	...560873	...636206	...726953	...833191	...954999	...092454
430	...516890	...561928	...622229	...697869	...788925	...895475	626017595	...155364
440	...577642	...622984	...683592	...759539	...850904	...957764	...080196	...218279
450	...638399	...684047	...744960	...821215	...912889	623020060	...142804	...281201
460	...699163	...745115	...806334	...882897	...974881	...082362	...205419	...344129
470	...759933	...806190	...867715	...944585	620036878	...144670	...268039	...407063
480	...820709	...867270	...929102	617006280	...098882	...206985	...330666	...470004
490	...881491	...928357	...990495	...067981	...160892	...269305	...393299	...532951
500	...942279	...989450	614051894	...129687	...222908	...331632	...455938	...595904

Buergi's table (reconstruction, D. Roegel, 2010)

	184000	184500	185000	185500	186000	186500	187000	187500
0	629595904	632751609	635923131	639110549	642313943	645533394	648768981	652020786
10	...658864	...814884	...986723	...174460	...378175	...597947	...833858	...085988
20	...721830	...878166	636050322	...238377	...442412	...662507	...898742	...151197
30	...784802	...941453	...113927	...302301	...506657	...727073	...963631	...216412
40	...847781	633004748	...177538	...366231	...570907	...791646	649028528	...281634
50	...910765	...068048	...241156	...430168	...635164	...856225	...093431	...346862
60	...973756	...131355	...304780	...494111	...699428	...920811	...158340	...412097
70	630036754	...194668	...368410	...558060	...763698	...985403	...223256	...477338
80	...099758	...257987	...432047	...622016	...827974	646050001	...288178	...542586
90	...162767	...321313	...495690	...685978	...892257	...114606	...353107	...607840
100	...225784	...384645	...559340	...749947	...956546	...179218	...418042	...673101
110	...288806	...447984	...622996	...813922	643020842	...243836	...482984	...738368
120	...351835	...511329	...686658	...877903	...085144	...308460	...547932	...803642
130	...414870	...574680	...750327	...941891	...149452	...373091	...612887	...868922
140	...477912	...638037	...814002	640005885	...213767	...437728	...677848	...934209
150	...540960	...701401	...877683	...069886	...278089	...502372	...742816	...999502
160	...604014	...764771	...941371	...133893	...342417	...567022	...807790	653064802
170	...667074	...828148	637005065	...197906	...406751	...631679	...872771	...130109
180	...730141	...891530	...068766	...261926	...471092	...696342	...937759	...195422
190	...793214	...954920	...132473	...325952	...535439	...761012	650002752	...260741
200	...856293	634018315	...196186	...389985	...599792	...825688	...067753	...326067
210	...919379	...081717	...259905	...454024	...664152	...890370	...132759	...391400
220	...982471	...145125	...323631	...518069	...728519	...955059	...197773	...456739
230	631045569	...208540	...387364	...582121	...792891	647019755	...262792	...522085
240	...108674	...271960	...451103	...646179	...857271	...084457	...327819	...587437
250	...171784	...335388	...514848	...710244	...921656	...149165	...392851	...652796
260	...234902	...398821	...578599	...774315	...986049	...213880	...457891	...718161
270	...298025	...462261	...642357	...838392	644050447	...278602	...522937	...783533
280	...361155	...525707	...706121	...902476	...114852	...343330	...587989	...848911
290	...424291	...589160	...769892	...966566	...179264	...408064	...653048	...914296
300	...487433	...652619	...833669	641030663	...243682	...472805	...718113	...979688
310	...550582	...716084	...897452	...094766	...308106	...537552	...783185	654045086
320	...613737	...779556	...961242	...158876	...372537	...602306	...848263	...110490
330	...676899	...843034	638025038	...222992	...436974	...667066	...913348	...175901
340	...740066	...906518	...088841	...287114	...501418	...731833	...978439	...241319
350	...803240	...970009	...152649	...351243	...565868	...796606	651043537	...306743
360	...866421	635033506	...216465	...415378	...630325	...861386	...108641	...372174
370	...929607	...097009	...280286	...479519	...694788	...926172	...173752	...437611
380	...992800	...160519	...344114	...543667	...759257	...990964	...238870	...503054
390	632056000	...224035	...407949	...607822	...823733	648055763	...303994	...568505
400	...119205	...287557	...471790	...671982	...888215	...120569	...369124	...633962
410	...182417	...351086	...535637	...736150	...952704	...185381	...434261	...699425
420	...245635	...414621	...599490	...800323	645017199	...250200	...499404	...764895
430	...308860	...478162	...663350	...864503	...081701	...315025	...564554	...830371
440	...372091	...541710	...727217	...928690	...146209	...379856	...629711	...895855
450	...435328	...605264	...791089	...992883	...210724	...444694	...694874	...961344
460	...498572	...668825	...854968	642057082	...275245	...509539	...760043	655026840
470	...561821	...732392	...918854	...121288	...339773	...574389	...825219	...092343
480	...625078	...795965	...982746	...185500	...404307	...639247	...890402	...157852
490	...688340	...859545	639046644	...249718	...468847	...704111	...955591	...223368
500	...751609	...923131	...110549	...313943	...533394	...768981	652020786	...288890

Buergi's table (reconstruction, D. Roegel, 2010)

	188000	188500	189000	189500	190000	190500	191000	191500
0	655288890	658573375	661874322	665191815	668525935	671876768	675244395	678628902
10	...354419	...639232	...940510	...258334	...592788	...943955	...311920	...696765
20	...419955	...705096	662006704	...324860	...659647	672011150	...379451	...764635
30	...485497	...770967	...072904	...391392	...726513	...078351	...446989	...832511
40	...551045	...836844	...139112	...457931	...793386	...145559	...514534	...900394
50	...616600	...902727	...205326	...524477	...860265	...212773	...582085	...968285
60	...682162	...968618	...271546	...591030	...927151	...279995	...649643	679036181
70	...747730	659034515	...337773	...657589	...994044	...347223	...717208	...104085
80	...813305	...100418	...404007	...724154	669060943	...414457	...784780	...171995
90	...878886	...166328	...470247	...790727	...127850	...481699	...852358	...239913
100	...944474	...232245	...536494	...857306	...194762	...548947	...919944	...307837
110	656010069	...298168	...602748	...923892	...261682	...616202	...987536	...375767
120	...075670	...364098	...669008	...990484	...328608	...683463	676055134	...443705
130	...141277	...430034	...735275	666057083	...395541	...750732	...122740	...511649
140	...206891	...495977	...801549	...123689	...462480	...818007	...190352	...579600
150	...272512	...561927	...867829	...190301	...529427	...885289	...257971	...647558
160	...338139	...627883	...934116	...256920	...596380	...952577	...325597	...715523
170	...403773	...693846	663000409	...323546	...663339	673019872	...393229	...783495
180	...469413	...759815	...066709	...390178	...730306	...087174	...460869	...851473
190	...535060	...825791	...133016	...456817	...797279	...154483	...528515	...919458
200	...600714	...891774	...199329	...523463	...864258	...221799	...596168	...987450
210	...666374	...957763	...265649	...590115	...931245	...289121	...663827	680055449
220	...732041	660023759	...331976	...656774	...998238	...356450	...731494	...123454
230	...797714	...089761	...398309	...723440	670065238	...423785	...799167	...191467
240	...863394	...155770	...464649	...790112	...132244	...491128	...866847	...259486
250	...929080	...221786	...530995	...856791	...199257	...558477	...934534	...327512
260	...994773	...287808	...597348	...923477	...266277	...625833	677002227	...395545
270	657060472	...353837	...663708	...990169	...333304	...693195	...069927	...463584
280	...126178	...419872	...730074	667056868	...400337	...760565	...137634	...531631
290	...191891	...485914	...796447	...123574	...467377	...827941	...205348	...599684
300	...257610	...551962	...862827	...190286	...534424	...895323	...273068	...667744
310	...323336	...618018	...929213	...257006	...601478	...962713	...340796	...735810
320	...389068	...684079	...995606	...323731	...668538	674030109	...408530	...803884
330	...454807	...750148	664062006	...390464	...735605	...097512	...476271	...871964
340	...520553	...816223	...128412	...457203	...802678	...164922	...544018	...940052
350	...586305	...882305	...194825	...523948	...869758	...232338	...611773	681008146
360	...652063	...948393	...261244	...590701	...936845	...299762	...679534	...076246
370	...717828	661014488	...327670	...657460	671003939	...367192	...747302	...144354
380	...783600	...080589	...394103	...724226	...071039	...434628	...815077	...212469
390	...849379	...146697	...460543	...790998	...138147	...502072	...882858	...280590
400	...915164	...212812	...526989	...857777	...205260	...569522	...950646	...348718
410	...980955	...278933	...593441	...924563	...272381	...636979	678018441	...416853
420	658046753	...345061	...659901	...991355	...339508	...704443	...086243	...484994
430	...112558	...411195	...726367	668058154	...406642	...771913	...154052	...553143
440	...178369	...477337	...792839	...124960	...473783	...839390	...221867	...621298
450	...244187	...543484	...859319	...191773	...540930	...906874	...289690	...689460
460	...310011	...609639	...925805	...258592	...608084	...974365	...357518	...757629
470	...375842	...675800	...992297	...325418	...675245	675041862	...425354	...825805
480	...441680	...741967	665058796	...392250	...742413	...109367	...493197	...893988
490	...507524	...808141	...125302	...459090	...809587	...176878	...561046	...962177
500	...573375	...874322	...191815	...525935	...876768	...244395	...628902	682030373

Buergi's table (reconstruction, D. Roegel, 2010)

	192000	192500	193000	193500	194000	194500	195000	195500
0	682030373	685448893	688884548	692337423	695807605	699295180	702800236	706322861
10	...098576	...517438	...953436	...406657	...877186	...365110	...870516	...393493
20	...166786	...585990	689022332	...475898	...946773	...435046	...940803	...464132
30	...235003	...654549	...091234	...545145	696016368	...504990	703011097	...534779
40	...303226	...723114	...160143	...614400	...085970	...574940	...081399	...605432
50	...371457	...791686	...229059	...683661	...155578	...644898	...151707	...676093
60	...439694	...860266	...297982	...752929	...225194	...714862	...222022	...746760
70	...507938	...928852	...366912	...822205	...294816	...784834	...292344	...817435
80	...576189	...997444	...435849	...891487	...364446	...854812	...362673	...888117
90	...644446	686066044	...504792	...960776	...434082	...924798	...433010	...958805
100	...712711	...134651	...573743	693030072	...503726	...994790	...503353	707029501
110	...780982	...203264	...642700	...099375	...573376	700064790	...573703	...100204
120	...849260	...271885	...711664	...168685	...643033	...134796	...644061	...170914
130	...917545	...340512	...780635	...238002	...712698	...204810	...714425	...241631
140	...985837	...409146	...849614	...307326	...782369	...274830	...784796	...312356
150	683054135	...477787	...918598	...376657	...852047	...344858	...855175	...383087
160	...122441	...546435	...987590	...445994	...921732	...414892	...925560	...453825
170	...190753	...615089	690056589	...515339	...991425	...484934	...995953	...524570
180	...259072	...683751	...125595	...584690	697061124	...554982	704066353	...595323
190	...327398	...752419	...194607	...654049	...130830	...625038	...136759	...666082
200	...395731	...821094	...263627	...723414	...200543	...695100	...207173	...736849
210	...464070	...889776	...332653	...792787	...270263	...765170	...277594	...807623
220	...532417	...958465	...401686	...862166	...339990	...835246	...348021	...878404
230	...600770	687027161	...470727	...931552	...409724	...905330	...418456	...949191
240	...669130	...095864	...539774	694000945	...479465	...975420	...488898	708019986
250	...737497	...164574	...608828	...070345	...549213	701045518	...559347	...090788
260	...805871	...233290	...677889	...139752	...618968	...115622	...629803	...161597
270	...874251	...302013	...746956	...209166	...688730	...185734	...700266	...232414
280	...942639	...370744	...816031	...278587	...758499	...255852	...770736	...303237
290	684011033	...439481	...885113	...348015	...828275	...325978	...841213	...374067
300	...079434	...508225	...954201	...417450	...898057	...396111	...911697	...444904
310	...147842	...576975	691023297	...486892	...967847	...466250	...982188	...515749
320	...216257	...645733	...092399	...556340	698037644	...536397	705052686	...586601
330	...284678	...714498	...161508	...625796	...107448	...606550	...123192	...657459
340	...353107	...783269	...230624	...695259	...177258	...676711	...193704	...728325
350	...421542	...852047	...299747	...764728	...247076	...746879	...264223	...799198
360	...489984	...920833	...368877	...834205	...316901	...817053	...334750	...870078
370	...558433	...989625	...438014	...903688	...386733	...887235	...405283	...940965
380	...626889	688058424	...507158	...973178	...456571	...957424	...475824	709011859
390	...695352	...127229	...576309	695042676	...526417	702027620	...546371	...082760
400	...763821	...196042	...645466	...112180	...596270	...097822	...616926	...153668
410	...832298	...264862	...714631	...181691	...666129	...168032	...687488	...224584
420	...900781	...333688	...783802	...251209	...735996	...238249	...758056	...295506
430	...969271	...402522	...852981	...320734	...805869	...308473	...828632	...366436
440	685037768	...471362	...922166	...390266	...875750	...378704	...899215	...437372
450	...106272	...540209	...991358	...459805	...945638	...448942	...969805	...508316
460	...174782	...609063	692060557	...529351	699015532	...519186	706040402	...579267
470	...243300	...677924	...129763	...598904	...085434	...589438	...111006	...650225
480	...311824	...746792	...198976	...668464	...155342	...659697	...181617	...721190
490	...380355	...815666	...268196	...738031	...225258	...729963	...252235	...792162
500	...448893	...884548	...337423	...807605	...295180	...800236	...322861	...863141

Buergi's table (reconstruction, D. Roegel, 2010)

	196000	196500	197000	197500	198000	198500	199000	199500
0	709863141	713421167	716997026	720590808	724202604	727832502	731480595	735146973
10	...934127	...492509	717068726	...662867	...275024	...905286	...553743	...220488
20	710005121	...563858	...140432	...734934	...347451	...978076	...626899	...294010
30	...076121	...635214	...212146	...807007	...419886	728050874	...700061	...367539
40	...147129	...706578	...283868	...879088	...492328	...123679	...773231	...441076
50	...218144	...777949	...355596	...951176	...564777	...196491	...846409	...514620
60	...289166	...849326	...427332	721023271	...637234	...269311	...919593	...588172
70	...360194	...920711	...499074	...095373	...709698	...342138	...992785	...661730
80	...431230	...992103	...570824	...167483	...782169	...414972	732065984	...735297
90	...502274	714063503	...642581	...239599	...854647	...487814	...139191	...808870
100	...573324	...134909	...714346	...311723	...927132	...560663	...212405	...882451
110	...644381	...206322	...786117	...383855	...999625	...633519	...285626	...956039
120	...715446	...277743	...857896	...455993	725072125	...706382	...358855	736029635
130	...786517	...349171	...929681	...528139	...144632	...779253	...432091	...103238
140	...857596	...420606	718001474	...600291	...217147	...852130	...505334	...176848
150	...928682	...492048	...073275	...672451	...289668	...925016	...578584	...250466
160	...999774	...563497	...145082	...744619	...362197	...997908	...651842	...324091
170	711070874	...634953	...216896	...816793	...434734	729070808	...725107	...397723
180	...141981	...706417	...288718	...888975	...507277	...143715	...798380	...471363
190	...213096	...777887	...360547	...961164	...579828	...216629	...871660	...545010
200	...284217	...849365	...432383	722033360	...652386	...289551	...944947	...618665
210	...355345	...920850	...504226	...105563	...724951	...362480	733018241	...692327
220	...426481	...992342	...576077	...177774	...797523	...435416	...091543	...765996
230	...497624	715063842	...647934	...249992	...870103	...508360	...164852	...839672
240	...568773	...135348	...719799	...322216	...942690	...581311	...238169	...913356
250	...639930	...206861	...791671	...394449	726015284	...654269	...311493	...987048
260	...711094	...278382	...863550	...466688	...087886	...727234	...384824	737060746
270	...782265	...349910	...935437	...538935	...160495	...800207	...458162	...134452
280	...853444	...421445	719007330	...611189	...233111	...873187	...531508	...208166
290	...924629	...492987	...079231	...683450	...305734	...946174	...604861	...281887
300	...995821	...564536	...151139	...755718	...378365	730019169	...678222	...355615
310	712067021	...636093	...223054	...827994	...451003	...092171	...751590	...429350
320	...138228	...707656	...294976	...900277	...523648	...165180	...824965	...503093
330	...209441	...779227	...366906	...972567	...596300	...238197	...898347	...576844
340	...280662	...850805	...438842	723044864	...668960	...311220	...971737	...650601
350	...351890	...922390	...510786	...117168	...741627	...384252	734045134	...724366
360	...423126	...993982	...582737	...189480	...814301	...457290	...118539	...798139
370	...494368	716065582	...654696	...261799	...886982	...530336	...191951	...871919
380	...565617	...137188	...726661	...334125	...959671	...603389	...265370	...945706
390	...636874	...208802	...798634	...406459	727032367	...676449	...338796	738019500
400	...708138	...280423	...870614	...478799	...105070	...749517	...412230	...093302
410	...779408	...352051	...942601	...551147	...177781	...822592	...485672	...167112
420	...850686	...423686	720014595	...623502	...250498	...895674	...559120	...240928
430	...921971	...495329	...086596	...695865	...323223	...968763	...632576	...314753
440	...993264	...566978	...158605	...768234	...395956	731041860	...706039	...388584
450	713064563	...638635	...230621	...840611	...468695	...114965	...779510	...462423
460	...135869	...710299	...302644	...912995	...541442	...188076	...852988	...536269
470	...207183	...781970	...374674	...985386	...614196	...261195	...926473	...610123
480	...278504	...853648	...446712	724057785	...686958	...334321	...999966	...683984
490	...349832	...925333	...518756	...130191	...759726	...407454	735073466	...757852
500	...421167	...997026	...590808	...202604	...832502	...480595	...146973	...831728

Buergi's table (reconstruction, D. Roegel, 2010)

	200000	200500	201000	201500	202000	202500	203000	203500
0	738831728	742534952	746256737	749997177	753756365	757534395	761331362	765147360
10	...905611	...609205	...331363	750072177	...831741	...610149	...407495	...223875
20	...979502	...683466	...405996	...147184	...907124	...685910	...483636	...300397
30	739053400	...757735	...480637	...222199	...982515	...761678	...559784	...376927
40	...127305	...832010	...555285	...297221	754057913	...837455	...635940	...453465
50	...201218	...906294	...629940	...372251	...133319	...913238	...712104	...530010
60	...275138	...980584	...704603	...447288	...208732	...989030	...788275	...606563
70	...349065	743054882	...779274	...522333	...284153	758064829	...864454	...683124
80	...423000	...129188	...853952	...597385	...359581	...140635	...940640	...759692
90	...496943	...203501	...928637	...672445	...435017	...216449	762016834	...836268
100	...570892	...277821	747003330	...747512	...510461	...292271	...093036	...912852
110	...644849	...352149	...078030	...822587	...585912	...368100	...169245	...989443
120	...718814	...426484	...152738	...897669	...661370	...443937	...245462	766066042
130	...792786	...500827	...227453	...972759	...736837	...519781	...321687	...142649
140	...866765	...575177	...302176	751047856	...812310	...595633	...397919	...219263
150	...940752	...649534	...376906	...122961	...887792	...671493	...474159	...295885
160	740014746	...723899	...451644	...198073	...963280	...747360	...550406	...372514
170	...088747	...798272	...526389	...273193	755038777	...823235	...626661	...449152
180	...162756	...872651	...601142	...348320	...114281	...899117	...702924	...525797
190	...236772	...947039	...675902	...423455	...189792	...975007	...779194	...602449
200	...310796	744021433	...750669	...498597	...265311	759050904	...855472	...679109
210	...384827	...095835	...825444	...573747	...340837	...126809	...931758	...755777
220	...458866	...170245	...900227	...648905	...416372	...202722	763008051	...832453
230	...532911	...244662	...975017	...724069	...491913	...278642	...084352	...909136
240	...606965	...319087	748049815	...799242	...567462	...354570	...160660	...985827
250	...681025	...393518	...124619	...874422	...643019	...430506	...236976	767062526
260	...755094	...467958	...199432	...949609	...718583	...506449	...313300	...139232
270	...829169	...542405	...274252	752024804	...794155	...582399	...389631	...215946
280	...903252	...616859	...349079	...100007	...869735	...658358	...465970	...292667
290	...977342	...691321	...423914	...175217	...945322	...734323	...542317	...369397
300	741051440	...765790	...498757	...250434	756020916	...810297	...618671	...446134
310	...125545	...840266	...573606	...325659	...096518	...886278	...695033	...522878
320	...199658	...914750	...648464	...400892	...172128	...962267	...771402	...599631
330	...273778	...989242	...723329	...476132	...247745	760038263	...847779	...676390
340	...347905	745063741	...798201	...551380	...323370	...114267	...924164	...753158
350	...422040	...138247	...873081	...626635	...399002	...190278	764000557	...829933
360	...496182	...212761	...947968	...701897	...474642	...266297	...076957	...906716
370	...570332	...287282	749022863	...777168	...550290	...342324	...153364	...983507
380	...644489	...361811	...097765	...852445	...625945	...418358	...229780	768060305
390	...718653	...436347	...172675	...927730	...701607	...494400	...306203	...137111
400	...792825	...510891	...247592	753003023	...777277	...570449	...382633	...213925
410	...867004	...585442	...322517	...078324	...852955	...646506	...459072	...290747
420	...941191	...660000	...397449	...153631	...928640	...722571	...535518	...367576
430	742015385	...734566	...472389	...228947	757004333	...798643	...611971	...444412
440	...089587	...809140	...547336	...304270	...080034	...874723	...688432	...521257
450	...163796	...883721	...622291	...379600	...155742	...950810	...764901	...598109
460	...238012	...958309	...697253	...454938	...231457	761026906	...841378	...674969
470	...312236	746032905	...772223	...530284	...307180	...103008	...917862	...751836
480	...386467	...107508	...847200	...605637	...382911	...179119	...994354	...828711
490	...460706	...182119	...922185	...680997	...458649	...255236	765070853	...905594
500	...534952	...256737	...997177	...756365	...534395	...331362	...147360	...982485

Buergi's table (reconstruction, D. Roegel, 2010)

	204000	204500	205000	205500	206000	206500	207000	207500
0	768982485	772836832	776710499	780603581	784516177	788448384	792400300	796372024
10	769059383	...914116	...788170	...681642	...594629	...527229	...479540	...451661
20	...136289	...991408	...865849	...759710	...673088	...606081	...558788	...531306
30	...213203	773068707	...943535	...837786	...751555	...684942	...638043	...610959
40	...290124	...146014	777021230	...915870	...830031	...763810	...717307	...690620
50	...367053	...223328	...098932	...993961	...908514	...842687	...796579	...770289
60	...443990	...300650	...176642	781072061	...987004	...921571	...875859	...849966
70	...520934	...377981	...254360	...150168	785065503	789000463	...955146	...929651
80	...597886	...455318	...332085	...228283	...144010	...079363	793034442	797009344
90	...674846	...532664	...409818	...306406	...222524	...158271	...113745	...089045
100	...751814	...610017	...487559	...384536	...301046	...237187	...193057	...168754
110	...828789	...687378	...565308	...462675	...379576	...316111	...272376	...248471
120	...905772	...764747	...643064	...540821	...458114	...395042	...351703	...328196
130	...982762	...842123	...720829	...618975	...536660	...473982	...431038	...407929
140	770059760	...919508	...798601	...697137	...615214	...552929	...510381	...487669
150	...136766	...996900	...876381	...775307	...693775	...631884	...589732	...567418
160	...213780	774074299	...954168	...853484	...772345	...710848	...669091	...647175
170	...290801	...151707	778031964	...931670	...850922	...789819	...748458	...726940
180	...367831	...229122	...109767	782009863	...929507	...868798	...827833	...806712
190	...444867	...306545	...187578	...088064	786008100	...947785	...907216	...886493
200	...521912	...383975	...265397	...166273	...086701	790026779	...986607	...966282
210	...598964	...461414	...343223	...244489	...165310	...105782	794066005	798046078
220	...676024	...538860	...421058	...322714	...243926	...184793	...145412	...125883
230	...753092	...616314	...498900	...400946	...322551	...263811	...224826	...205695
240	...830167	...693775	...576750	...479186	...401183	...342838	...304249	...285516
250	...907250	...771245	...654607	...557434	...479823	...421872	...383679	...365345
260	...984341	...848722	...732473	...635690	...558471	...500914	...463118	...445181
270	771061439	...926207	...810346	...713953	...637127	...579964	...542564	...525026
280	...138545	775003699	...888227	...792225	...715790	...659022	...622018	...604878
290	...215659	...081200	...966116	...870504	...794462	...738088	...701480	...684739
300	...292781	...158708	779044012	...948791	...873141	...817162	...780951	...764607
310	...369910	...236224	...121917	783027086	...951829	...896244	...860429	...844484
320	...447047	...313747	...199829	...105389	787030524	...975333	...939915	...924368
330	...524192	...391279	...277749	...183699	...109227	791054431	795019409	799004260
340	...601344	...468818	...355677	...262018	...187938	...133536	...098911	...084161
350	...678504	...546365	...433612	...340344	...266657	...212649	...178421	...164069
360	...755672	...623919	...511556	...418678	...345383	...291771	...257938	...243986
370	...832848	...701482	...589507	...497020	...424118	...370900	...337464	...323910
380	...910031	...779052	...667466	...575369	...502860	...450037	...416998	...403842
390	...987222	...856630	...745433	...653727	...581611	...529182	...496540	...483783
400	772064421	...934216	...823407	...732092	...660369	...608335	...576089	...563731
410	...141627	776011809	...901389	...810465	...739135	...687496	...655647	...643688
420	...218841	...089410	...979380	...888846	...817909	...766665	...735213	...723652
430	...296063	...167019	780057377	...967235	...896691	...845841	...814786	...803624
440	...373293	...244636	...135383	784045632	...975480	...925026	...894368	...883605
450	...450530	...322260	...213397	...124037	788054278	792004218	...973957	...963593
460	...527775	...399892	...291418	...202449	...133083	...083419	796053554	800043589
470	...605028	...477532	...369447	...280869	...211896	...162627	...133160	...123594
480	...682288	...555180	...447484	...359297	...290718	...241843	...212773	...203606
490	...759556	...632836	...525529	...437733	...369547	...321067	...292394	...283626
500	...836832	...710499	...603581	...516177	...448384	...400300	...372024	...363655

Buergi's table (reconstruction, D. Roegel, 2010)

	208000	208500	209000	209500	210000	210500	211000	211500
0	800363655	804375293	808407039	812458993	816531257	820623932	824737120	828870925
10	...443691	...455731	...487880	...540239	...612910	...705994	...819594	...953812
20	...523736	...536176	...568729	...621493	...694571	...788064	...902076	829036707
30	...603788	...616630	...649585	...702755	...776241	...870143	...984566	...119611
40	...683848	...697092	...730450	...784026	...857918	...952230	825067064	...202523
50	...763917	...777561	...811323	...865304	...939604	821034326	...149571	...285443
60	...843993	...858039	...892205	...946590	817021298	...116429	...232086	...368372
70	...924077	...938525	...973094	813027885	...103000	...198541	...314609	...451308
80	801004170	805019019	809053991	...109188	...184710	...280660	...397141	...534254
90	...084270	...099521	...134897	...190499	...266429	...362789	...479680	...617207
100	...164379	...180031	...215810	...271818	...348155	...444925	...562228	...700169
110	...244495	...260549	...296732	...353145	...429890	...527069	...644784	...783139
120	...324620	...341075	...377661	...434480	...511633	...609222	...727349	...866117
130	...404752	...421609	...458599	...515824	...593384	...691383	...809922	...949104
140	...484893	...502151	...539545	...597175	...675144	...773552	...892503	830032099
150	...565041	...582701	...620499	...678535	...756911	...855729	...975092	...115102
160	...645198	...663259	...701461	...759903	...838687	...937915	826057689	...198113
170	...725362	...743826	...782431	...841279	...920471	822020109	...140295	...281133
180	...805535	...824400	...863409	...922663	818002263	...102311	...222909	...364161
190	...885715	...904983	...944396	814004055	...084063	...184521	...305532	...447198
200	...965904	...985573	810025390	...085456	...165872	...266739	...388162	...530242
210	802046100	806066172	...106393	...166864	...247688	...348966	...470801	...613295
220	...126305	...146778	...187403	...248281	...329513	...431201	...553448	...696357
230	...206518	...227393	...268422	...329706	...411346	...513444	...636103	...779426
240	...286738	...308016	...349449	...411139	...493187	...595696	...718767	...862504
250	...366967	...388646	...430484	...492580	...575036	...677955	...801439	...945591
260	...447204	...469285	...511527	...574029	...656894	...760223	...884119	831028685
270	...527448	...549932	...592578	...655487	...738759	...842499	...966807	...111788
280	...607701	...630587	...673637	...736952	...820633	...924783	827049504	...194899
290	...687962	...711250	...754705	...818426	...902515	823007076	...132209	...278019
300	...768231	...791921	...835780	...899908	...984406	...089376	...214922	...361146
310	...848507	...872601	...916864	...981398	819066304	...171685	...297644	...444283
320	...928792	...953288	...997955	815062896	...148211	...254002	...380373	...527427
330	803009085	807033983	811079055	...144402	...230126	...336328	...463112	...610580
340	...089386	...114687	...160163	...225916	...312049	...418661	...545858	...693741
350	...169695	...195398	...241279	...307439	...393980	...501003	...628612	...776910
360	...250012	...276118	...322403	...388970	...475919	...583353	...711375	...860088
370	...330337	...356845	...403535	...470509	...557867	...665712	...794146	...943274
380	...410670	...437581	...484676	...552056	...639823	...748078	...876926	832026468
390	...491011	...518325	...565824	...633611	...721787	...830453	...959714	...109671
400	...571360	...599077	...646981	...715174	...803759	...912836	828042509	...192882
410	...651717	...679836	...728146	...796746	...885739	...995227	...125314	...276101
420	...732083	...760604	...809318	...878326	...967728	824077627	...208126	...359329
430	...812456	...841380	...890499	...959913	820049724	...160035	...290947	...442565
440	...892837	...922165	...971688	816041509	...131729	...242451	...373776	...525809
450	...973226	808002957	812052886	...123114	...213743	...324875	...456614	...609061
460	804053624	...083757	...134091	...204726	...295764	...407308	...539459	...692322
470	...134029	...164565	...215304	...286346	...377794	...489748	...622313	...775592
480	...214442	...245382	...296526	...367975	...459831	...572197	...705175	...858869
490	...294864	...326206	...377755	...449612	...541877	...654654	...788046	...942155
500	...375293	...407039	...458993	...531257	...623932	...737120	...870925	833025449

Buergi's table (reconstruction, D. Roegel, 2010)

	212000	212500	213000	213500	214000	214500	215000	215500
0	833025449	837200797	841397074	845614383	849852830	854112521	858393564	862696064
10	...108752	...284518	...481213	...698944	...937815	...197933	...479403	...782333
20	...192063	...368246	...565361	...783514	850022809	...283352	...565251	...868611
30	...275382	...451983	...649518	...868092	...107811	...368781	...651107	...954898
40	...358709	...535728	...733683	...952679	...192822	...454218	...736973	863041194
50	...442045	...619482	...817856	846037274	...277841	...539663	...822846	...127498
60	...525390	...703244	...902038	...121878	...362869	...625117	...908729	...213811
70	...608742	...787014	...986228	...206490	...447905	...710580	...994619	...300132
80	...692103	...870793	842070427	...291111	...532950	...796051	859080519	...386462
90	...775472	...954580	...154634	...375740	...618003	...881530	...166427	...472801
100	...858850	838038375	...238849	...460378	...703065	...967018	...252344	...559148
110	...942236	...122179	...323073	...545024	...788136	855052515	...338269	...645504
120	834025630	...205991	...407306	...629678	...873214	...138020	...424203	...731868
130	...109032	...289812	...491546	...714341	...958302	...223534	...510145	...818242
140	...192443	...373641	...575795	...799013	851043397	...309056	...596096	...904623
150	...275863	...457478	...660053	...883692	...128502	...394587	...682056	...991014
160	...359290	...541324	...744319	...968381	...213615	...480127	...768024	864077413
170	...442726	...625178	...828593	847053078	...298736	...565675	...854001	...163821
180	...526170	...709040	...912876	...137783	...383866	...651231	...939986	...250237
190	...609623	...792911	...997168	...222497	...469004	...736797	860025980	...336662
200	...693084	...876791	843081467	...307219	...554151	...822370	...111983	...423096
210	...776553	...960678	...165775	...391950	...639307	...907952	...197994	...509538
220	...860031	839044574	...250092	...476689	...724471	...993543	...284014	...595989
230	...943517	...128479	...334417	...561437	...809643	856079143	...370042	...682449
240	835027011	...212392	...418750	...646193	...894824	...164750	...456079	...768917
250	...110514	...296313	...503092	...730957	...980013	...250367	...542125	...855394
260	...194025	...380243	...587443	...815730	852065211	...335992	...628179	...941879
270	...277544	...464181	...671801	...900512	...150418	...421626	...714242	865028374
280	...361072	...548127	...756169	...985302	...235633	...507268	...800313	...114876
290	...444608	...632082	...840544	848070101	...320857	...592918	...886393	...201388
300	...528153	...716045	...924928	...154908	...406089	...678578	...972482	...287908
310	...611705	...800017	844009321	...239723	...491329	...764246	861058579	...374437
320	...695267	...883997	...093722	...324547	...576578	...849922	...144685	...460974
330	...778836	...967985	...178131	...409379	...661836	...935607	...230799	...547520
340	...862414	840051982	...262549	...494220	...747102	857021301	...316922	...634075
350	...946000	...135987	...346975	...579070	...832377	...107003	...403054	...720639
360	836029595	...220001	...431410	...663928	...917660	...192713	...489194	...807211
370	...113198	...304023	...515853	...748794	853002952	...278433	...575343	...893791
380	...196809	...388053	...600305	...833669	...088252	...364161	...661501	...980381
390	...280429	...472092	...684765	...918552	...173561	...449897	...747667	866066979
400	...364057	...556139	...769233	849003444	...258878	...535642	...833842	...153585
410	...447693	...640195	...853710	...088345	...344204	...621396	...920025	...240201
420	...531338	...724259	...938195	...173253	...429539	...707158	862006217	...326825
430	...614991	...808331	845022689	...258171	...514882	...792928	...092418	...413457
440	...698653	...892412	...107191	...343097	...600233	...878708	...178627	...500099
450	...782323	...976501	...191702	...428031	...685593	...964496	...264845	...586749
460	...866001	841060599	...276221	...512974	...770962	858050292	...351071	...673407
470	...949687	...144705	...360749	...597925	...856339	...136097	...437307	...760075
480	837033382	...228819	...445285	...682885	...941724	...221911	...523550	...846751
490	...117086	...312942	...529830	...767853	854027119	...307733	...609803	...933436
500	...200797	...397074	...614383	...852830	...112521	...393564	...696064	867020129

Buergi's table (reconstruction, D. Roegel, 2010)

	216000	216500	217000	217500	218000	218500	219000	219500
0	867020129	871365868	875733388	880122800	884534213	888967737	893423483	897901562
10	...106831	...453004	...820962	...210812	...622666	889056634	...512825	...991352
20	...193542	...540149	...908544	...298833	...711129	...145539	...602176	898081151
30	...280261	...627303	...996134	...386863	...799600	...234454	...691537	...170960
40	...366989	...714466	876083734	...474902	...888080	...323377	...780906	...260777
50	...453726	...801638	...171342	...562949	...976568	...412310	...870284	...350603
60	...540471	...888818	...258960	...651006	885065066	...501251	...959671	...440438
70	...627225	...976007	...346585	...739071	...153573	...590201	894049067	...530282
80	...713988	872063204	...434220	...827145	...242088	...679160	...138472	...620135
90	...800759	...150411	...521864	...915227	...330612	...768128	...227886	...709997
100	...887539	...237626	...609516	881003319	...419145	...857105	...317308	...799868
110	...974328	...324849	...697177	...091419	...507687	...946090	...406740	...889748
120	868061125	...412082	...784846	...179528	...596238	890035085	...496181	...979637
130	...147932	...499323	...872525	...267646	...684797	...124088	...585630	899069535
140	...234746	...586573	...960212	...355773	...773366	...213101	...675089	...159442
150	...321570	...673832	877047908	...443909	...861943	...302122	...764556	...249358
160	...408402	...761099	...135613	...532053	...950529	...391152	...854033	...339283
170	...495243	...848375	...223327	...620206	886039125	...480192	...943518	...429217
180	...582092	...935660	...311049	...708368	...127728	...569240	895033013	...519159
190	...668951	873022954	...398780	...796539	...216341	...658296	...122516	...609111
200	...755817	...110256	...486520	...884719	...304963	...747362	...212028	...699072
210	...842693	...197567	...574269	...972907	...393593	...836437	...301549	...789042
220	...929577	...284887	...662026	882061105	...482233	...925521	...391080	...879021
230	869016470	...372215	...749792	...149311	...570881	891014613	...480619	...969009
240	...103372	...459552	...837567	...237526	...659538	...103715	...570167	900059006
250	...190282	...546898	...925351	...325749	...748204	...192825	...659724	...149012
260	...277201	...634253	878013143	...413982	...836879	...281944	...749290	...239027
270	...364129	...721616	...100945	...502223	...925562	...371073	...838865	...329051
280	...451065	...808989	...188755	...590474	887014255	...460210	...928449	...419084
290	...538011	...896369	...276574	...678733	...102956	...549356	896018041	...509125
300	...624964	...983759	...364401	...767001	...191667	...638511	...107643	...599176
310	...711927	874071157	...452238	...855277	...280386	...727674	...197254	...689236
320	...798898	...158565	...540083	...943563	...369114	...816847	...286874	...779305
330	...885878	...245980	...627937	883031857	...457851	...906029	...376502	...869383
340	...972866	...333405	...715800	...120160	...546597	...995220	...466140	...959470
350	870059864	...420838	...803671	...208472	...635351	892084419	...555787	901049566
360	...146870	...508280	...891552	...296793	...724115	...173627	...645442	...139671
370	...233884	...595731	...979441	...385123	...812887	...262845	...735107	...229785
380	...320908	...683191	879067339	...473461	...901669	...352071	...824780	...319908
390	...407940	...770659	...155246	...561809	...990459	...441306	...914463	...410040
400	...494981	...858136	...243161	...650165	888079258	...530550	897004154	...500181
410	...582030	...945622	...331085	...738530	...168066	...619804	...093855	...590331
420	...669088	875033117	...419019	...826904	...256883	...709066	...183564	...680490
430	...756155	...120620	...506960	...915286	...345708	...798336	...273282	...770658
440	...843231	...208132	...594911	884003678	...434543	...887616	...363010	...860835
450	...930315	...295653	...682871	...092078	...523386	...976905	...452746	...951021
460	871017408	...383182	...770839	...180488	...612239	893066203	...542491	902041216
470	...104510	...470721	...858816	...268906	...701100	...155509	...632246	...131420
480	...191620	...558268	...946802	...357333	...789970	...244825	...722009	...221634
490	...278740	...645824	880034797	...445768	...878849	...334149	...811781	...311856
500	...365868	...733388	...122800	...534213	...967737	...423483	...901562	...402087

Buergi's table (reconstruction, D. Roegel, 2010)

	220000	220500	221000	221500	222000	222500	223000	223500
0	902402087	906925169	911470923	916039461	920630898	925245348	929882927	934543751
10	...492327	907015862	...562070	...131065	...722961	...337873	...975915	...637205
20	...582576	...106564	...653226	...222678	...815033	...430406	930068913	...730669
30	...672835	...197274	...744392	...314300	...907115	...522949	...161920	...824142
40	...763102	...287994	...835566	...405932	...999205	...615502	...254936	...917625
50	...853378	...378723	...926750	...497572	921091305	...708063	...347962	935011116
60	...943664	...469461	912017942	...589222	...183414	...800634	...440996	...104618
70	903033958	...560208	...109144	...680881	...275533	...893214	...534040	...198128
80	...124261	...650964	...200355	...772549	...367660	...985803	...627094	...291648
90	...214574	...741729	...291575	...864226	...459797	926078402	...720157	...385177
100	...304895	...832503	...382804	...955913	...551943	...171010	...813229	...478715
110	...395226	...923286	...474042	917047608	...644098	...263627	...906310	...572263
120	...485565	908014078	...565290	...139313	...736263	...356253	...999401	...665821
130	...575914	...104880	...656546	...231027	...828436	...448889	931092501	...759387
140	...666271	...195690	...747812	...322750	...920619	...541534	...185610	...852963
150	...756638	...286510	...839087	...414482	922012811	...634188	...278728	...946548
160	...847014	...377339	...930371	...506224	...105012	...726851	...371856	936040143
170	...937398	...468176	913021664	...597974	...197223	...819524	...464993	...133747
180	904027792	...559023	...112966	...689734	...289443	...912206	...558140	...227360
190	...118195	...649879	...204277	...781503	...381672	927004897	...651296	...320983
200	...208607	...740744	...295598	...873281	...473910	...097598	...744461	...414615
210	...299027	...831618	...386927	...965069	...566157	...190307	...837635	...508257
220	...389457	...922501	...478266	918056865	...658414	...283026	...930819	...601908
230	...479896	909013393	...569614	...148671	...750680	...375755	932024012	...695568
240	...570344	...104295	...660971	...240486	...842955	...468492	...117215	...789237
250	...660801	...195205	...752337	...332310	...935239	...561239	...210426	...882916
260	...751267	...286125	...843712	...424143	923027532	...653995	...303647	...976605
270	...841743	...377053	...935096	...515985	...119835	...746761	...396878	937070302
280	...932227	...467991	914026490	...607837	...212147	...839535	...490117	...164009
290	905022720	...558938	...117892	...699698	...304468	...932319	...583366	...257726
300	...113222	...649894	...209304	...791568	...396799	928025113	...676625	...351451
310	...203734	...740859	...300725	...883447	...489139	...117915	...769892	...445187
320	...294254	...831833	...392155	...975335	...581487	...210727	...863169	...538931
330	...384783	...922816	...483595	919067233	...673846	...303548	...956456	...632685
340	...475322	910013808	...575043	...159140	...766213	...396378	933049751	...726448
350	...565869	...104810	...666500	...251055	...858590	...489218	...143056	...820221
360	...656426	...195820	...757967	...342981	...950975	...582067	...236371	...914003
370	...746992	...286840	...849443	...434915	924043371	...674925	...329694	938007794
380	...837566	...377868	...940928	...526858	...135775	...767793	...423027	...101595
390	...928150	...468906	915032422	...618811	...228188	...860669	...516369	...195405
400	906018743	...559953	...123925	...710773	...320611	...953555	...609721	...289225
410	...109345	...651009	...215437	...802744	...413043	929046451	...703082	...383054
420	...199956	...742074	...306959	...894724	...505485	...139355	...796452	...476892
430	...290576	...833148	...398490	...986714	...597935	...232269	...889832	...570740
440	...381205	...924232	...490030	920078712	...690395	...325193	...983221	...664597
450	...471843	911015324	...581579	...170720	...782864	...418125	934076619	...758463
460	...562490	...106426	...673137	...262737	...875342	...511067	...170027	...852339
470	...653146	...197536	...764704	...354764	...967830	...604018	...263444	...946224
480	...743812	...288656	...856281	...446799	925060327	...696978	...356870	939040119
490	...834486	...379785	...947866	...538844	...152833	...789948	...450306	...134023
500	...925169	...470923	916039461	...630898	...245348	...882927	...543751	...227936

Buergi's table (reconstruction, D. Roegel, 2010)

	224000	224500	225000	225500	226000	226500	227000	227500
0	939227936	943935600	948666860	953421834	958200641	963003401	967830234	972681260
10	...321859	944029994	...761726	...517176	...296461	...099701	...927017	...778528
20	...415791	...124397	...856603	...612528	...392291	...196011	968023809	...875806
30	...509733	...218809	...951488	...707889	...488130	...292331	...120612	...973093
40	...603684	...313231	949046383	...803260	...583979	...388660	...217424	973070391
50	...697644	...407662	...141288	...898640	...679837	...484999	...314246	...167698
60	...791614	...502103	...236202	...994030	...775705	...581348	...411077	...265015
70	...885593	...596553	...331126	954089429	...871583	...677706	...507918	...362341
80	...979582	...691013	...426059	...184838	...967470	...774073	...604769	...459677
90	940073580	...785482	...521001	...280257	959063367	...870451	...701629	...557023
100	...167587	...879960	...615954	...375685	...159273	...966838	...798500	...654379
110	...261604	...974448	...710915	...471122	...255189	964063235	...895379	...751744
120	...355630	945068946	...805886	...566569	...351114	...159641	...992269	...849120
130	...449666	...163453	...900867	...662026	...447050	...256057	969089168	...946504
140	...543710	...257969	...995857	...757492	...542994	...352483	...186077	974043899
150	...637765	...352495	950090857	...852968	...638949	...448918	...282996	...141303
160	...731829	...447030	...185866	...948453	...734913	...545363	...379924	...238718
170	...825902	...541575	...280884	955043948	...830886	...641817	...476862	...336141
180	...919984	...636129	...375912	...139453	...926869	...738281	...573810	...433575
190	941014076	...730693	...470950	...234967	960022862	...834755	...670767	...531018
200	...108178	...825266	...565997	...330490	...118864	...931239	...767734	...628472
210	...202289	...919848	...661054	...426023	...214876	965027732	...864711	...725934
220	...296409	946014440	...756120	...521566	...310897	...124235	...961697	...823407
230	...390539	...109042	...851195	...617118	...406929	...220747	970058694	...920889
240	...484678	...203653	...946280	...712680	...502969	...317269	...155699	975018381
250	...578826	...298273	951041375	...808251	...599020	...413801	...252715	...115883
260	...672984	...392903	...136479	...903832	...695079	...510342	...349740	...213395
270	...767151	...487542	...231593	...999422	...791149	...606893	...446775	...310916
280	...861328	...582191	...326716	956095022	...887228	...703454	...543820	...408447
290	...955514	...676849	...421849	...190632	...983317	...800024	...640874	...505988
300	942049710	...771517	...516991	...286251	961079415	...896604	...737938	...603539
310	...143915	...866194	...612143	...381879	...175523	...993194	...835012	...701099
320	...238129	...960881	...707304	...477517	...271641	966089793	...932096	...798669
330	...332353	947055577	...802475	...573165	...367768	...186402	971029189	...896249
340	...426586	...150282	...897655	...668822	...463905	...283021	...126292	...993839
350	...520829	...244997	...992845	...764489	...560051	...379649	...223405	976091438
360	...615081	...339722	952088044	...860166	...656207	...476287	...320527	...189047
370	...709342	...434456	...183253	...955852	...752373	...572935	...417659	...286666
380	...803613	...529199	...278471	957051547	...848548	...669592	...514801	...384295
390	...897894	...623952	...373699	...147253	...944733	...766259	...611952	...481933
400	...992183	...718714	...468936	...242967	962040927	...862936	...709113	...579581
410	943086483	...813486	...564183	...338692	...137131	...959622	...806284	...677239
420	...180791	...908268	...659439	...434425	...233345	967056318	...903465	...774907
430	...275109	948003058	...754705	...530169	...329568	...153024	972000655	...872585
440	...369437	...097859	...849981	...625922	...425801	...249739	...097855	...970272
450	...463774	...192669	...945266	...721684	...522044	...346464	...195065	977067969
460	...558120	...287488	953040560	...817457	...618296	...443198	...292285	...165676
470	...652476	...382317	...135864	...913238	...714558	...539943	...389514	...263392
480	...746841	...477155	...231178	958009030	...810829	...636697	...486753	...361119
490	...841216	...572003	...326501	...104831	...907110	...733460	...584001	...458855
500	...935600	...666860	...421834	...200641	963003401	...830234	...681260	...556601

Buergi's table (reconstruction, D. Roegel, 2010)

	228000	228500	229000	229500	230000 ^o	230000
0	977556601	982456378	987380714	992329732	0000	997303557
10	...654356	...554623	...479452	...428965	10000	...403287
20	...752122	...652879	...578200	...528208	20000	...503027
30	...849897	...751144	...676958	...627461	30000	...602778
40	...947682	...849419	...775726	...726724	40000	...702538
50	978045477	...947704	...874503	...825997	50000	...802308
60	...143281	983045999	...973291	...925279	60000	...902088
70	...241096	...144304	988072088	993024572	70000	998001879
80	...338920	...242618	...170895	...123874	80000	...101679
90	...436754	...340942	...269712	...223187	90000	...201489
100	...534597	...439276	...368539	...322509	230100000	...301309
110	...632451	...537620	...467376	...421841	10000	...401139
120	...730314	...635974	...566223	...521183	20000	...500979
130	...828187	...734338	...665079	...620535	30000	...600829
140	...926070	...832711	...763946	...719897	40000	...700690
150	979023962	...931094	...862822	...819269	50000	...800560
160	...121865	984029488	...961709	...918651	60000	...900440
170	...219777	...127890	989060605	994018043	70000	999000330
180	...317699	...226303	...159511	...117445	80000	...100230
190	...415631	...324726	...258427	...216857	90000	...200140
200	...513572	...423158	...357353	...316278	230200000	...300060
210	...611524	...521601	...456288	...415710	10000	...399990
220	...709485	...620053	...555234	...515152	20000	...499930
230	...807456	...718515	...654190	...614603	30000	...599880
240	...905436	...816987	...753155	...714065	40000	...699840
250	980003427	...915468	...852130	...813536	50000	...799810
260	...101427	985013960	...951116	...913017	60000	...899790
270	...199437	...112461	990050111	995012509	230270000	999999780
280	...297457	...210973	...149116	...112010	10	880
290	...395487	...309494	...248131	...211521	20	980
300	...493527	...408025	...347155	...311042	1	90
310	...591576	...506565	...446190	...410573	230270022	1000000000
320	...689635	...605116	...545235	...510114		
330	...787704	...703677	...644289	...609665	Also enden sich die zwo Summen Za- len in 9. Zyphern/ vñ ist die Rote 230270022– 230270023+ Die Schwarze aber ist ganz mit 9. nollen als 1000000000 vnd so dieselben gan- zen Zalen/ nicht gnug geben mögen/ so mag man dieselben 2.3.4. 5.6.7.8.9. zusammen addieren.	
340	...885783	...802247	...743354	...709226		
350	...983872	...900827	...842428	...808797		
360	981081970	...999417	...941512	...908378		
370	...180078	986098017	991040606	996007969		
380	...278196	...196627	...139710	...107570		
390	...376324	...295247	...238824	...207181		
400	...474462	...393876	...337948	...306801		
410	...572609	...492516	...437082	...406432		
420	...670766	...591165	...536226	...506073		
430	...768933	...689824	...635379	...605723		
440	...867110	...788493	...734543	...705384		
450	...965297	...887172	...833716	...805054		
460	982063494	...985861	...932900	...904735		
470	...161700	987084559	992032093	997004425		
480	...259916	...183268	...131296	...104126		
490	...358142	...281986	...230509	...203836		
500	...456378	...380714	...329732	...303557		