THE VENUS TABLETS
OF AMMIZADUGA

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I. THE DATING OF THE HAMURABI DYNASTY

1. Introduction. One of the treasured possessions of the British Museum is the Assyrian library of cuneiform clay tablets which once belonged to King Assur-banipal. This library, which was founded in the 7th century B.C., represented the learning of that age. Among its many branches was a section dealing with astrology. This section had at least 70 tablets, each with the title, "When the gods rise and end", forming an astrological series. Within that group, the Sb11 tablet dealt with the planet Venus.

This Sb11 tablet gives a sequence of setting and rising dates of Venus as observed over a period of 21-years, with the appropriate astrological omens added. Since no undamaged tablet containing this important document has so far been excavated, the text has had to be reconstructed from the various portions of different tablets which have been found. These fragments are known collectively as the Venus tablets.

2. Father Kugler's Discovery of the Year Name. Now, this Venus tablet astronomical record would have had no greater significance for dating purposes than the other astrological information in the series, had it not been itself dated by the Babylonian scribes. This fact was not immediately realised, however, because of the initial difficulties experienced by scholars in translating the newly-discovered cuneiform symbols.

In 1912, Father Francis X. Kugler, who was a German professor of astronomy, correctly translated the phrase, "Year of the golden throne", which had been inserted between the dates of the 8th and 9th years on the tablet. He pointed out that this is a year name belonging to the First Babylonian or Hammurabi dynasty; being, in fact, the date-formula for the 8th year of King Ammizaduga.1

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Year names were in use by the Babylonians throughout the 300 years of the Hammurabi dynasty, but the custom dates from much earlier times. Each year was designated by some important event which had taken place, sometimes in the previous year, sometimes during the year itself. Thus the year name would record the occurrence for posterity. When set out in their correct sequence, these year names provide a condensed history of the dynasty.

The story begins with an initial period of military expansion and consolidation, followed by 25 years of peaceful development. Then came the campaigns of Hammurabi, which gave the Babylonians temporary control of all Mesopotamia. Six years after his death, however, a Kassite invasion paved the way for a successful revolt in the South. As a result, the Babylonians remained in control of only a very small area around their capital city. In due course, a Kassite incursion ended the dynasty, and in the resulting confusion the Kassites moved in and gained control of Babylonia.

The exact length of the Kassite period is very much more difficult to determine than that of the Hammurabi dynasty. Not only did they abolish the use of year names, but even the inscriptions which they left are less numerous than might be expected. Thus, when Dr. Kugler made his great discovery, the relationship of the events in the dynasty to each other was known, but not the relationship of the Hammurabi dynasty itself to the present day. The better relationship was very uncertain.

However, Dr. Kugler’s discovery meant that the choice of possible dates for the dynasty could be limited. Previously, only archaeological evidence was available for this purpose. Now the astronomical conditions recorded by the Venus tablets had to be compared with, Thus, any date assigned to Ammiadadu must allow for a particular relationship between the planet Venus and the moon.

3. The Early Chronology. Astronomical measurements before the First World War were in general agreement that Hammurabi lived some time around 2,000 B.C. Thus when Dr. Kugler in 1912, announced his discovery of the date-formula and proposed on astronomical grounds that Hammurabi should be dated 1763 B.C. to 1751 B.C., his arguments met with general acceptance. He based his chronology upon a solution of the Venus tablets which assigned the years 1777 B.C. to 1560 B.C. to Ammiadadu. The evidence must have seemed very convincing at first, till it began to be realized that other solutions to the astronomical problem were possible. Then doubts were expressed by some authorities.

First the Austrian archeologist, Professor E. F. Weidner, wrote in 1914, that in
his opinions. Dr. Kugler's restoration of the chronology was «extremely problematical». He himself thought, in 1917, that this chronology should be based on a solution dated 1809 B.C. to 1786 B.C. 4

Dr. Kugler, while disagreeing with Professor Westphal's proposed dating, nevertheless began to accept the argument put forward for a late chronology. So in 1923, he abandoned his own earlier solution in favour of another dated 1801 B.C. to 1780 B.C. 5

Meanwhile, Professor S. Langdon of Oxford university had requested the British astronomer, Dr. J. K. Fochtingham to analyse the Venus tablet data on astronomical grounds. This analysis revealed a solution dated 1921 B.C. to 1900 B.C. Professor Langdon put that solution forward in 1925. 6

Finaler, in 1927, Monsieur F. Thureau-Dangin, Chief Conservator of Oriental Antiquities at the Louvre Museum, adopted the only remaining possible chronology within the accepted limits. His solution of the Venus tablets gave an Ammizadda's reign, the dates 1857 B.C. to 1836 B.C. 7

Thus there were now five rival solutions of the Venus tablets. The problem was to determine which was the correct one.

4. The Langdon-Fothtingham-Schoch Investigation. This task was undertaken by Professor Langdon and Dr. Fothtingham. They employed the German astronomer and mathematician, Herr Carl Schoch, to construct up-to-date astronomical tables. These tables yielded for each solution seemingly accurate setting and rising dates of Venus which were compared with the ancient record. The comparison disclosed that Ammizadda could not have lived in either 1809 B.C. or 1801 B.C.; but the other three dates remained theoretically possible.

5 According to Dr. Fothtingham in Chapter V of The Venus Tablets of Ammizadda.


7 See note 4.

8 S. Langdon, Oxford Edition of Cuneiform Text (1925), Vol. II. Professor Langdon's conclusion is in the Preface to volume II. Dr. Fothtingham summarizes his argument in Chapter V of The Venus Tablets of Ammizadda.
To narrow down the choice, the legal documents of the period were examined. Among them were found written agreements between landlord and tenant for the division of the date-harvest. The practice was for the date crop to be counted some time before the harvest, and a contract signed, by which the tenant undertook to supply to his superior a given quantity of ripe dates by a given day in the month TESRIT, or by the first day of the next month, ASARIMMA. Judging by similar Neo-Babylonian documents, which can be related to the Gregorian calendar with certainty, and also on the basis of present-day harvest conditions, the final delivery date would not normally come before October 14th. (Gregorian).

Now, the respective contract and delivery dates computed for the five solutions vary within a limit of two months. For the two solutions, 1377 B.C. and 1421 B.C., the landlord named in each contract would have only received his quota after 14th December. According to the other three solutions, however, his share in the harvest would appear to have been delivered too early in the month. Thus, provided the crops opened 20 earlier than at present, which seemed a reasonable assumption, the choice appeared to lie between the first two solutions. Other documents, connected with the wheat and barley harvests, confirmed this conclusion.

The final choice, however, had to depend upon a different type of evidence. Some of the documents were dated on the 30th day of the month. From this it was inferred that those particular months must have contained 30 days. Accordingly, these attested 30-day months were compared with the corresponding lunar months computed for each solution. The percentage agreement for the 1371 B.C. solution was 72; which was the highest percentage from all the solutions. By contrast, the 1421 B.C. solution had only 35%. The logical conclusion seemed to be that Annimadu was king of Babylon from 1371 B.C. to 1300 B.C.

These findings were made public in 1925, when they appeared in book form, under the title, The Venus Tablets of Annimadu. In general, that proposed chronology was accepted up to the beginning of the Second World War.

5. Macnaghten's Chronology. One other alternative system of dating did, however, appear in 1930. This was Mr. Macnaghten's book, A Scheme of Babylonian Chronology. Mr. Macnaghten, who is a member of the legal profession, had made a study of ancient astronomy. He discovered that certain year names of the Hammurabi period, which record the entrances of Babylonian gods, fall on dates which are apparently related in some way to the synodic periods of the

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1 See p. 1, note 1.
planets. The inference was that an enunciation of one of the "planetary gods" occurred whenever the associated planet was at a certain position during the month of Ninlu. Unfortunately, there is no evidence among the surviving records to establish whether that was indeed the case; and, if so, what particular aspect of the planetary phenomena the Babylonians were interested in. However, if the theory was correct, it offered an avenue of approach which might lead to the date of the Hammurabi dynasty.

It is, perhaps, unfortunate that when this enquiry was carried out, solutions later than 1700 B.C. were not thought possible. Within the then historical limits, Mr. Macnaghten established that for a solution dated 2260 B.C. to 2239 B.C., the enunciation of the planetary god was apparently being carried out when the heliacal rising of their respective planets took place during Ninlu. In fact, it was not the heliacal rising, but the maximum brightness which was the deciding factor. However, that information could not have been derived from a study confined to the early solutions. Thus, on the basis of the knowledge available at the time, Mr. Macnaghten decided quite logically, that Ammi-maşu-úr must have ascended from 2260 B.C. to 2239 B.C., and worked out his chronology accordingly.

Macnaghten's Chronology was the last to be based on a very early date. Fresh evidence was about to be published, which pointed in the opposite direction.

8. Smith and Ungnad's Solution. The palace archives of the Royal City of Mari, had been discovered by the French archaeological expedition led by Professor Parrot. Mari was looted and destroyed by the troops of Hammurabi, during the latter part of that monarch's reign. Accordingly, the archives contained interesting information about happenings around the early part of his reign. This information was now becoming available to Assyriologists as translation of the tablets progressed.

One of the contemporaries of Hammurabi, according to the archives, was almost certainly Yatim-Li-um, king of Alalak. Alalak was then a town near the Mediterranean coast, strategically sited on the trade route from the upper part of the Euphrates valley. The ruins were still being excavated by the British expedition...
under Sir Leonard Woolley, but runeiform tablets from Yarim-Lim's own archives had by now been found. Thus his Period could be safely assigned to a particular level of the excavation.

Apart from these tables, objects of Egyptian origin had been unearthed at various levels of the site. These discoveries made it possible to synchronize the development of the town of Alalakh with the main periods of Egyptian history. So Egyptian chronology could now be used as a guide to Babylonian dating. The result of this link-up was a provisional date of \( \leq 1600 \) for the end of the First Babylonian Dynasty.

Professor Sydney Smith, who was at that time Keeper of the Department of Western Asiatic Antiquities at the British Museum, had realized the significance of the reference to Yarim-Lim in the Mari records. In 1940, he published a brochure entitled *Alalakh and Chronology*, in which he set out the archeological and documentary arguments for a revision of the dating of the Hammurati dynasty. The shortened chronology which he suggested was based on the Venus tablet solution, 1646 B.C. to 1625 B.C. That solution was computed by Brigadier-General J. W. Sowell.

Professor Sydney Smith was not, however, the only person trying to establish a new chronology. The German expert, Professor Arthur Ungnad had been working quite independently of the British investigation, and following a different method. Yet he reached the same conclusion as Professor Sydney Smith, and published his results in the same year.

7. Siderovsky's Solution. Meanwhile, another investigator had been working on the problem. This was Monsieur David Siderovsky, Monsieur Siderovsky was by profession a Chemical Scientist, but his hobby was ancient oriental astronomy, mathematics, and chronology. He had already written a number of books on these subjects, and was also a member of the "Societé Asiatique".

In 1940, the same year in which Professor Sydney Smith's brochure appeared, Monsieur Siderovsky published findings which were somewhat different. He based
his chronology on an earlier solution of the Venus tablets. Assumings, according to that solution, ranged from 1723 B.C. to 1680 B.C. 12

A Turkish scholar, Nemet Turfan, reached a similar conclusion independently in the following year. However, his date for Hammurabi was approximate, whereas Monsemir Szemerényi based his chronology on a more precise astronomical date 13.

Monsemir Turfan-Danin examined very closely the arguments for the two rival chronologies. He thought the link with Egyptian history was not yet definite enough to rule out either system of dating. Certainly, both seemed to be within the bounds of historical possibility 14.

However, Professor Sidney Smith’s chronology had by now been adopted by the American archaeologist, Professor W. P. Libby. It seemed likely to gain universal acceptance, but the situation was again altered by the publication of a new approach to the problem 16.

8. The Cornelius Solution. In 1942, Dr. P. Cornelius proposed an even later date for Hammurabi than that hithefted been thought possible 17. Dr. Cornelius, who is a member of the Federation of German Historians, deduced the date of Hammurabi, not from archeological evidence, but from a historical source.

During the Seleucid Period, a history of Mesopotamia had been written by Berossus, who was a priest from the Mandik temple at Babylon. It deals with the period from the Deluge to Alexander the Great. The book itself, which was known as the “Babylonica”, has unfortunately not survived; but extracts are quoted by various Classical writers. Among these quotations is a list of kings from the First to Tiglat-Pileser III 18. This list was regarded by scholars as being somewhat unreliable, but Dr. Cornelius now showed that it could be interpreted to agree with Babylonian tradition. It runs as follows:

15 Loc. cit.
Berosos' list of kings

1st dynasty: 66 kings, reigning 34,000 years.
2nd " 5 or 21 Marians " 224 "
3rd " 11 kings " 48 "
4th " 49 Chaldeans " 458 "
5th " 9 Arabian " 245 "
6th " 1 Assyrian and 45 kings " 536 "

Berosos' list as it stands, is incomplete. Since his history stopped at Alexander the Great, his 1st presumably continued in its original form to that historical landmark. Accordingly, Dr. Cornelius added a further 409 years to fill the gap from Tiglath-Pileser III to Alexander. This gave a total of 36,000 years for the period covered by the list. Since the starting date of the 1st dynasty is obviously conjectural, the over-all total must be an approximation. Thus the assumed figure of 36,000 years is very probably correct. Accordingly, it should not be affected by any copying errors.

The identification of the six dynasties is a necessary preliminary to establishing the year of Ammisaduqa. The first one, of course, is largely made up of mythical kings; but it agrees well with Babylonian tradition. The second one comprises 21 kings of Gutium in Media. So the word “Marian” should be altered to read “Median”.

Three Sumerian dynasties are grouped together to form the 3rd dynasty. They are the 4th and 5th dynasties of Ur and the 3rd dynasty of Ur, which together total 11 reigns covering a period of 148 years. The list, of course, only gives 41 years, but the time allowed for the previous dynasty is much too long. The Medes only reigned for 124 years. So 109 years can be deducted from the 2nd dynasty total and added to that of the 3rd dynasty. This adjustment leaves the over-all total unaltered.

The Hammurabi dynasty is included in Berosos' 4th dynasty. It is grouped with the dynasties of Larsa, Isin, and the Sea Country. The Kassite rulers are represented by the 9 Asars of the 5th dynasty, though, presumably, the figure 9 is corrupt. Finally, the 1 Assyrian is Tukulti-Ninurta I, who conquered Southern Mesopotamia and destroyed Babylon.

The dating of Ammisaduqa follows logically once these identifications have been made. Alexander the Great died in 323 B.C. Adding 409 years to this date gives 732 B.C. for Tiglath-Pileser III. Moving back from there a further 1229 years,
which is the total of the last three dynasties, leads to 1961 B.C. for the founding of the Larsa dynasty. Then, working down through each reign, and knowing the relationship between the Larsa and the Hammurabian dynasties, the year 1952 B.C. for Hammurabi’s accession to the throne, is finally arrived at. This date might vary within narrow limits, since in a few cases, the exact length of a reign may be in doubt.

However, whether by coincidence or otherwise, a possible solution of the written tablets happens to be 1952 B.C. to 1541 B.C. Since this could so easily not have been the case, that fact seemed to be a very strong argument in favour of acceptance of this new Chronology. Moreover, the Cornelius chronology appeared at a very opportune time.

During the season 1932/33, when excavations were being conducted by the Oriental Institute of the University of Chicago, an Assyrian kinglist was found at Khorsabad. This list covered the period from Shamsi-Adad I to Ashur-Nirari V.

The name of the Assyrian king Shamsi-Adad I had been found on letters from the archives of Mari. He wrote to his son, Yasha-Mah-Adad, who was king of Mari. Shamsi-Adad, in fact, conquered that city and put his son on the throne. Since some of the letters refer to Hammurabi, it follows that Hammurabi and Shamsi-Adad I must have been contemporaries.

Previously, it had been thought that Hammurabi lived two generations before Shamsi-Adad. Then, some time before 1930, a recorded oath was discovered, dated the 16th year of Hammurabi. It had been sworn "by the god Mandishu, and the king Hammurabi and Shamsi-Adad." The Mari letters now confirm the evidence of the oath. Since Shamsi-Adad lived certainly later than 1900 B.C., all the early chronologies were ruled out by this discovery, apart from any other reason.

Unfortunately, the Khorsabad king list cannot give an exact date for Shamsi-Adad. The tablet on which it was written was preserved in almost perfect condition till the moment of its discovery. It is thought that the page of the excavator must have damaged the surface before its presence could be detected. As a result of this mishap, the length of five reigns has been lost. So Shamsi-Adad can only

be dated to within ten years before, or after 1734 B.C. It follows that Hammurabi also must have lived about that year.

Hammurabi, according to Dr. Cornelius, reigned from 1728 B.C. to 1696 B.C. This period is certainly within the historical limits required by the Khorsabad king-list. The list itself was being prepared for publication by Professor Arno Pfoebel of the University of Chicago, when Dr. Cornelius' findings were published. He seems to confirm those findings by announcing that, according to his list, Shams-Adel's reign was from 1726 B.C. to 1694 B.C. Professor Althing then revised his chronology so as to conform to the Cornelius dating of the Hammurabi dynasty 10.

9. Professor van der Waerden's Investigations. Support for the Cornelius dating came next from Professor van der Waerden of Leipzig. In December 1942, he presented a mathematical treatise at a sitting of the Leipzig Academy 11. In this he included a comparison of Venus data computed for the three latent scribes.

The astronomical tables which he used were not those of Herodotus. They were, in fact, earlier tables compiled by the German astronomer Professor Paul V. Neugebauer, and first published in 1914 12. School's planetary tables were becoming obsolete, whereas those of Neugebauer yielded more accurate results.

Exact agreement between record and computation was not, of course, to be expected. It was well known that when the Scribes copied from earlier documents they sometimes made mistakes. Also, the weather conditions under which the observations were taken are not recorded. Apart from that, slight variations occur in the results from different mathematical tables. Accordingly, a reasonable margin of error should be permitted when comparing these computed results with the recorded astronomical data. Professor van der Waerden allowed two or three days difference at Inferior conjunctions, where the apparent brightness of the planet changes rapidly; and eight days at Superior conjunctions, where the change is more gradual. Within these limits he classified agreement as "good".

10 C. Kraus, Frühwerk Mesopotamien, Denkmal Chronologie. (See footnote 14.) Page 480.
11 B. L. van der Waerden, Die Beschaffenheit der Texte und Textstand Sichtbarkeit der Venus in den Lösungen des Astronomen. (See footnote 6.)
12 J. V. Neugebauer, Tafeln zur astronomischen Chronologie, Leipzig, 1914.
The results of his comparison he listed as follows:

<table>
<thead>
<tr>
<th>SOLUTION</th>
<th>DATE (JULIAN)</th>
<th>&quot;GOOD&quot; EXAMPLES</th>
<th>GOOD AGREEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sidersky</td>
<td>-1701 to -1685</td>
<td>26 out of 50</td>
<td>that is 52 %</td>
</tr>
<tr>
<td>Ungnad</td>
<td>-1645 to -1625</td>
<td>27 out of 50</td>
<td>that is 54 %</td>
</tr>
<tr>
<td>Cornelius</td>
<td>-1361 to -1361</td>
<td>29 out of 50</td>
<td>that is 58 %</td>
</tr>
</tbody>
</table>

So the Cornelius data was found to be giving the best agreement. Naturally, this helped the argument in favour of accepting that solution.

Not everyone, however, was convinced of the merits of the Cornelius chronology. Professor van der Meer of the University of Amsterdam had examined the evidence, and his findings were published in 1944. His data for Hammurabi was almost identical with that of Smith and Ungnad.

In the following year Professor Sydney Smith himself was dating Hammurabi’s reign as from 1792 B.C. to 1750 B.C.; whereas Professor Albright was pointing out links between the histories of Egypt and Mesopotamia which he considered strengthened the case for the Cornelius chronology.

Then in 1946, Professor van der Waarden republished his arguments in a more developed form. He now focussed his attention on the alternative solutions proposed by Ungnad and by Cornelius. That of Sidersky would appear to be ruled out by his previous findings. He decided also not to use text data which gives information obviously incorrect. As a result, overall agreement based on the remainder of the text is much improved.

Now, the Cornelius solution gives slightly better agreement than its rival between text and calculation. Unfortunately, the difference is not enough to decide which of the two is the correct one.

However, one very significant factor was revealed by the new comparison. The Cornelius solution has a balanced distribution of positive and negative differences between the records and the computation. There are thirteen positive variations, eight negative and five zero. This is roughly what might be expected from a random distribution.

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12. JESOL 9, 1944, pages 157-145 and page 192. P. van der Meer, Chronologis der Ägyptisch-Assyrischen (Konung C. Kim, Zwischen Monumente, Deutsche Ausgrabungen, See Commentary 18), Page 400.
The alternative solution has met positive differences, twenty-five negative, and two zero. On the theory of probability, the chances are 1,300 of finding such a preponderance of negative values.

Moreover, the chances are less than 1/2 that the Cornelius set of differences should be smaller than those of Ugarit for the setting and rising dates at hyperborea conjunction. Similarly, the chances of the same effect being found at the inferior conjunction interval is also less than 1/2.

Finally, there is the unlikely chance of agreement between the Beqee'eh list and the Venus tablets. This could only occur four times in two hundred years, a probability of 1/50.

So combining these probabilities, it would appear that the chances of them all accidentally occurring together are less than:

\[
1/30 \times 1/2 \times 1/2 \times 1/390 = 1/20,900.
\]

Faced with this probability fraction, who could doubt that Dr. Cornelius had found the correct solution? Yet there was one serious obstacle to be overcome before the Cornelius chronology could be accepted.

When the harvest contract documents compiled by Dr. Ewing were dated by this solution, the labourers coming to reap the harvest appear to be arriving from two to three weeks too early. If the documents are dated correctly, a change in climatic conditions must be inferred to allow barley and dates to ripen three weeks earlier in old-Babylonian times than during the Persian period and today. Could such a change in climate be possible?

Dr. Cornelius himself, writing two years earlier, considered that insufficient information was available about past climatic conditions. The correct procedure, he argued, should be to establish reliable calendar dates, and from these to determine the climatic conditions, not the other way round 41.

When Professor van der Waarden reviewed the evidence, he was unable to establish directly any change of climate affecting the Haran script period. Nevertheless, it seemed "highly probable, that before 1,000 B.C. the climate was warmer than

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now, not only in Europe, where it is certain, but also in Near Asia." He concluded that there appeared to be nothing impossible in the assumption that during the period of the First Babylonian dynasty, barley and date crops were ripening three weeks earlier than at the present time.

Further investigation, however, has not confirmed this climatic change. It seems more likely that the climate has not changed significantly since the 5th millennium B.C. Thus, Professor M.A. Beck of the University of Amsterdam, in a book published in 1962, states that from 5,000 B.C. onwards "the inhabitants of Mesopotamia lived in climatic conditions which probably differed little from those existing at present." 28

So the anomaly remains unresolved. While the Cornelius chronology certainly lined up with a Venus tablet solution, the reasons related to that solution appear to be incorrect.

10. Other Solutions. The reason why it has proved so difficult to establish a precise astronomical date from the Venus tablets is, of course, the lack of really close agreement between the astronomical record and the computed data of the various solutions. Had the scribes set out deliberately to confuse posterity, they could hardly have chosen a better distribution of copyists' mistakes. The unfortunate effect has been, that with each of the three solutions already considered there is another similar solution separated from it by an eight year interval.

However, the alternative dating of Sidersky's solution can be safely ignored. It would make his date sequence occur eight years earlier; whereas Sidersky's chronology is thought to be quite early enough. By contrast, the other two solutions have their alternative dates fixed by the succeeding 8-year Venus cycle. Thus all the arguments in favour of Smith and Ungnad's solution apply equally to a solution dated 1638 B.C. to 1617 B.C. Moreover, the alternative dates, 1574 B.C. to 1553 B.C., have been suggested for the Cornelius solution. The exact period of time between the beginning of the Larsa dynasty and Ammisaduqa's reign, which determines the choice of Venus tablet solution, was uncertain; but possibly not to the extent of eight years.

Perhaps because of this duality of the astronomical findings, Professor van der Meer, when he abandoned his earlier conclusions in favour of a solution designed

to fit in with the known sequence of events in the countries around Mesopotamia, selected the date 1514 B.C. for the first year of Assur-Adad's 15. Placed midway between the two possible solutions, it should only be four years out, assuming one of these solutions to be correct; whereas, an astronomical date might prove to be eight years out.

However, the mobility seems now to have been to rely on archaeological and historical, rather than astronomical, evidence. A chronology with Hammurabi dated twenty-four years after the date given by Dr. Comelius, was adopted by Professor E. F. Weidner 16. On the basis of the Venus tablet evidence that system of dating would be impossible; though, apart from that, there were no doubts, good reasons for selecting it.

15. The "Middle" Chronology. The name of these wide variations in the dates proposed by various experts is, of course, inconsistencies in the interpretation of the available historical evidence. Thus dynasties which may have ruled simultaneously were listed sequentially by the Babylonians. Also, gaps in the sequence, due to damaged tablets, cause further uncertainty.

Thus there was doubt, also, about when the Kassite period began. It might have followed immediately after the end of the Hammurabi dynasty; or the Kassites could have been already established in some other part of the country before that event took place.

It would now seem, on the evidence of one of the king lists, that the first king of the Kassite dynasty should be dated about 1540 B.C. On the assumption that the Kassites established themselves somewhere in Mesopotamia on that day, they should have entered the country, according to Sierskis's chronology, in the reign of Assur-Adad. That might well be possible; bearing in mind that the first Kassite king, at least, probably never reigned from Babylon. On the other hand, according to Smith and L'assal's chronology, the Kassites should have appeared during the reign of Samashu; and the year names of Samashu certainly record a Kassite invasion. On the basis of the Comelius chronology, however, the Kassites ought to have been already somewhere in the country before the reign of Hammurabi. Since there is no mention of them in the Mari archives.

this is not very likely. So, on that evidence alone, the Cornelius chronology seems least likely to be correct than the other two.

The Siderisky chronology, however, requires a very high average for certain reigns in Assyria and Babylonia. While that fact suggests that the chronology may well be incorrect, it is not conclusive. The most that can be said on the evidence available, is that the "middle" chronology, based either on Smith and Ungnad's solution, or on the solution dated eight years later, is the most probable.19