200 YEARS, WHICH WILL SHAKE THE WORLD

THE FINAL COUNTDOWN

CHRONOLOGY OF ECLIPSES FROM JULIUS CAESAR TO DIOCLETIAN

HUNGARIAN CALENDAR-ARCHAEOASTRONOMY

ZOLTÁN HUNNIVÁRI

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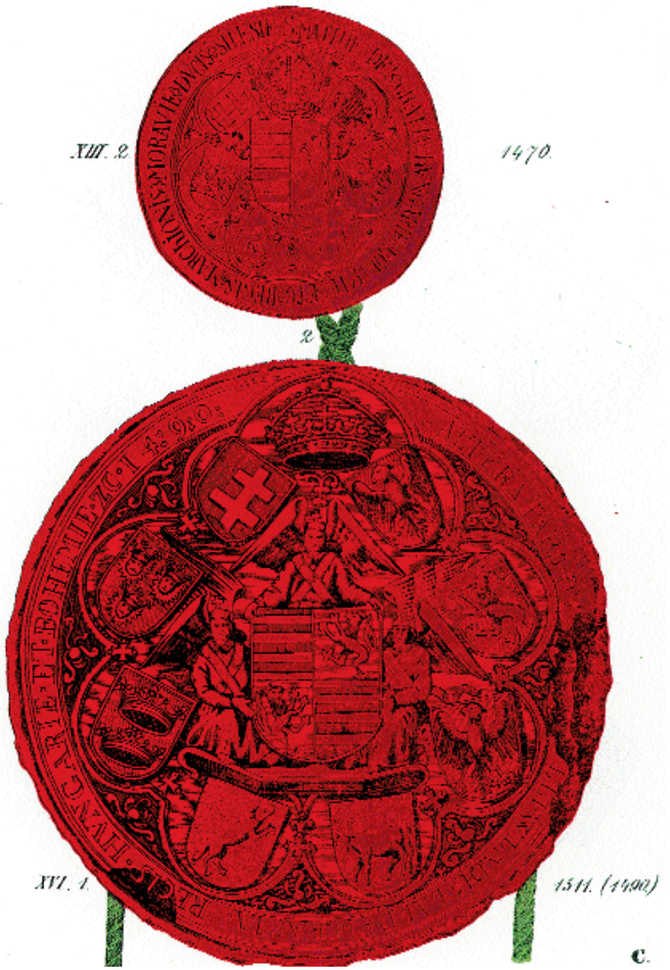
Here we see one thing of wihich we can be sure, both in space and time from the historical chronology standpoint.



The Seal of the King of Hungary from ***AD 1511*** (the year number of 1490 can be seen on the legend of the seal).

Camille-Flanmarionon (München, Deutches Museum)

PREFACE

On the day I wrote these lines I visited a second-hand bookshop where I purchased a copy of volume five of the "Monumenta Germaniae Historica (Tomi V, Pars 1.)." This work contains the edicts issued by Henry III, Holy Roman Emperor from AD 1039 to ***AD 1047*** (Berlin Weidmannsche Buchhandlung, 1926).

Now this is extremely interesting to me, since according to my understanding of recently revised chronology, no such ruler could have existed, at least not with that name or style. Naturally if the ruler didn't exist, he could not have issued any edicts. This means that those mentioned in the book 1 bought are falsifications created through antedating. Why? To prove the cultural supremacy of the Germans, of course! Quid Plura?

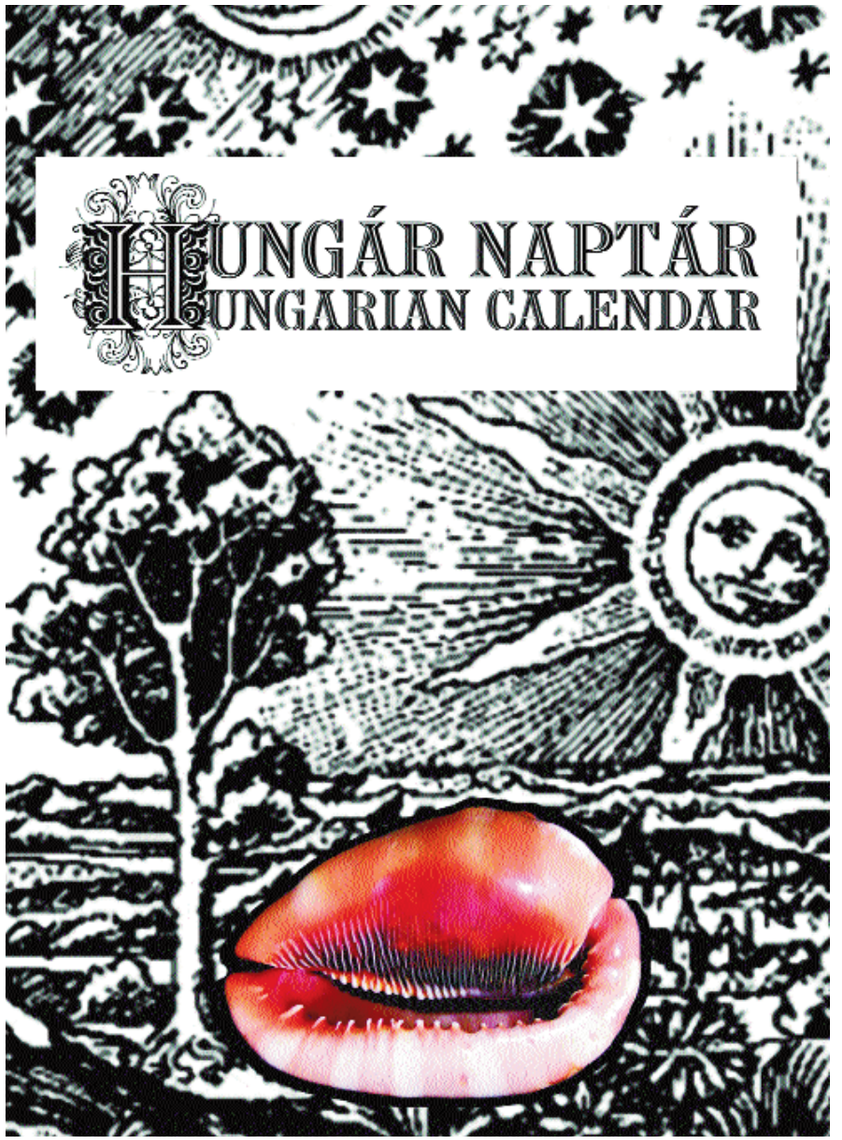
In my previous book "The Hungarian Calendar: 200 years which will shake the world", I promised my English readers support for the new chronology through the help of solar and lunar eclipses. To be frank, I had hoped for a while that someone else, with a more extensive training in astronomy, would step forward to complete the task. Since nobody accepted the challenge, you must rest contented with my unprofessional studies, but I hope you will find their content rewarding. Naturally, there will be those who find my work less than rewarding!

I gratefully acknowledge my debt to major scientists of the past, particularly T. von Oppolzer, F. K. Ginzel and Robert R. Newton, whose works gave me a professional orientation, an opportunity to educate myself in astronomy, and good guidance regarding solar and lunar eclipses. It is a pity they have passed from us before the creation of the Hungarian Calendar.

The graphic representation of historical eclipses is provided by NASA web pages, based on the MUCKE/MEEUS Canon of Solar Eclipses programme. The eclipse maps, figures, tables and predictions appear here by courtesy of Fred Espenak, of NASA's Goddard Space Flight Centre.

I wish all my readers a good read. Please take my analysis as food for thought and hazard a guess for the future consequences.

Zoltán Hunnivári



HUNGÁR NAPTÁR

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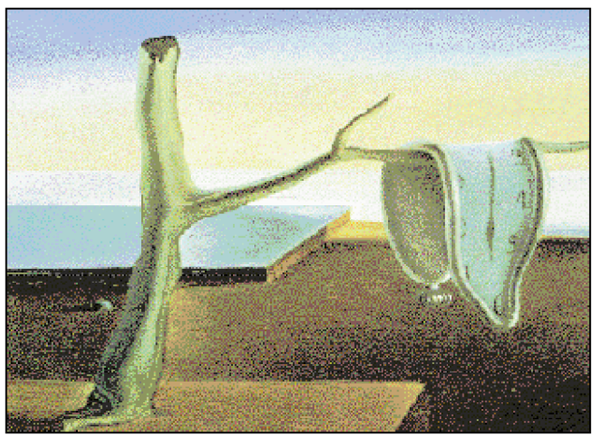


HUNNIVÁRI ZOLTÁN

INTRODUCTION

The aim of this study is to provide astronomical support for the Hungarian calendar hypothesis, by means of a critical analysis concerning those solar and lunar eclipses which occurred during the 350-year period following the introduction of the Julian calendar, and which are recorded in literary works.

I am well aware that not everyone is familiar with the Hungarian calendar hypothesis, so I shall repeat it here briefly.

In the year **46 BC,** Julius Caesar inserted two "leap" months into the calendar between November and December, a total of 54 days (not 90 days, as some suggest!). By doing so, he corrected the old Roman calendar. We count our years backwards from the present, so this year of writing is ***AD 2005.*** However, if we count backwards from the present astronomically, we discover that Julius Caesar made his corrections in the year ***CE 153.***

The consequence of the correction gave January 1st as the starting point, similarly to the Old Roman calendar, which date was determined by the first new moon following the winter solstice.

„Caesar did not reform the Roman calendar, but abandoned it and instituted the solar calendar of 365.25 days which was stable and agreed with the seasons" (Bickerman, p.47).

Caesar disregarded the moon as a tool for measuring time, although it was quite fortunate to have the new moon for the year-beginning of the first year in the reformed calendar.

What does it mean in other words? No account of the moon was taken in this system???

What it means is that from this moment on, the lunar calendar ceased to exist and was replaced by the solar year for time measurement.

The Julian calendar was introduced in the 709th year of Rome (ab urbe condita). At that time it could not be foreseen that subsequent generations [after an elapse of 16 centuries] would mistakenly label the famous year of a.u.c. 709 as 45 BC.

In fact, this year corresponds to ***CE 154*** in the Hungarian Calendar!

It is a very important argument of the Hungarian calendar (HC) - which can be also checked easily by astronomical backward counting - that the time of the vernal equinox, the MEQ point at the introduction of the Julian calendar and at the time of the Augustus as well, occurred on the same date, that is on March 21st [in years ***CE 154*** and ***CE 208*** respectively].

Nothing is new at all in my above statement, since academical science similarly counts the time backward using the year-length of the Julian calendar.

If we would take seriously the database of the Encyclopedias (which contain the date of March 25 as the MEQ date for the time of Julius Caesar), we would be forced to put Julius Caesar back into the fourth century BC.

The Hungarian calendar also offers a solution for the worrying question of why the Gregorian calendar in ***AD 1582*** corrected only 10 days instead of the theoretical (erroneous) 13 days.

The title of my book shows that I wish to discuss the measurement of time, chronology, on the basis of an unorthodox hypothesis. I do not dare to dig into the deep past, going back only to the beginning of the Julian calendar, which can be determined quite well in time, and from which moment (according to our academical science) we count the solar years invariably. From the beginning of the Julian calendar, the „error" of that calendar totals 13 days (10 days + the Gregorian calendar), and the correction was, very rightly, made by the scientists.

Our present chronology, according to which we have just started to live in the year of 2005, has been checked many times. The astronomical programs reassure us that now everything has been in complete order for centuries. Or, more exactly, everything is in almost complete order.

2005 as a year-number is a non-recurring period of time. The year of 2004 - or more exactly the 2004th year of our chronology, that is the 2004th year after the birth of Christ - has passed away. In the process of time-flow the time-determination of an event is non-recurring, indicating the place of a single occurrence uniquely.

In our world, the starting point of the most widely used secular chronology is the year in which Jesus Christ was born, according to the ecclesiastical tradition.

Today we connect this year scientifically to the calculations of Dionysius Exiguus, according to which the year of Jesus` birth, that is the year of the „Incarnation of Our Lord" became the 1st year of the new chronology, and which was the same as the 1st year of the 195th Olympiad, the 754th year of the foundation of Rome, and the 312th year of the Seleucide year-counting method.

Our chronology, based on the calculation of Dionysius Exiguus and on the statements of humanists from the 16th and 17th centuries, seems to be inaccurate and problematical in many ways. First of all because Christ was not born in the „year of Jesus' birth".

The events preceding the birth of Christ are dated with the indication of „before the birth of Christ" only since the 17th century.

Considering the above, it is worth stating briefly what chronology actually means.

In one sentence, it is a professional measurement of time, the counting of time backwards!

„TIME IS THE PROPER DIMENSION OF HISTORY. A fact is historical when it has to be defined not only in space but also in time. A fact is placed in the fourth dimension, that of Time, by measuring its distance from the present. Chronology, an auxiliary of history, enables us to state this time-interval between a historical fact and ourselves by converting the chronological indications of our sources into units of our own time reckoning."

(Bickerman, p.9)

The trial of Galileo Galilei (Aix-en-Provence, Granet Museum)

To explain in one sentence the aim of chronology, perhaps we should call on Bickerman again, citing him as follows:

"The purpose of chronology is therefore to convert the chronological references of our sources into the Julian dates of our era (BC or AD)."

CHRONOLOGY AS SCIENCE

Civilized nations have developed time-measurement and time-counting into a science. This science is Chronology or the science of time, which today has become both a very independent science, and an important auxiliary science of historical science.

In the widest perspective of the word, chronology can be a time scale, a method for putting time into order, or an explanation of time through various eras of history.

Almost everywhere and at all times, time-measurement and time-counting have been related to the motion and alteration of celestial bodies. In our Julian/Gregorian calendar, for this purpose, we need only the concepts of the day and the year.

A method of time-measurement, which is based on the best possible calculation of the motion of celestial bodies, is the subject of mathematical chronology. Historical chronology gives us a picture showing the time-measuring and time-counting methods of different people in different eras. It also seeks to arrange events in their correct order of occurrence and to assign dates to known events.

As I have already mentioned in my "Hungarian Calendar", uninitiated readers are generally convinced that chronology (time reckoning) is completely self-evident (being extremely simple), and there is no reason to doubt the accuracy of its presently accepted database.

In order to counteract this over-confidence a bit, I should say that chronology started to become a science only as late as the 17th-18th centuries, when in different European countries the publications of the first big source-edition serials were initiated. After that, in the 19th century, the most important auxiliary science of historical science finally became an accepted independent science.

But is it really only an auxiliary science? Which has the real prior right, the descriptive history or the historical event, which can be exactly connected to the time? Could we take lightly a perception that such astronomical backward-counting puts the date of Charlemagne's death at ***AD 1004*** instead of ***AD 814*** as has been determined by historians? If we could accept it, what then would be the fate of the Carolingian letters of the 8-9th centuries? Or perhaps historians might be glad to recognize that those manuscripts already determined to be 10th century, now suddenly become contemporaneous and genuine? And other questions follow, since a 10th century Charlemagne drives out the Ottos, Henries, etc. of the same century.

What is the solution?

As long ago as 1929, in a study, Ede Mahler had already directed the attention of his scientist colleagues to the fact that a certain recorded event can only gain historical character, if we can determine where and when that event took place. And such an event only becomes historical after we can determine its time of occurrence, when consequently we can say for sure which place the said event takes in the sequence of occurring factual events. In other words, when we can date the said event exactly, since otherwise the appropriate place for the event remains in the realm of myths.

In short, our chronological science badly needs independent astronomical verification. The solar and lunar eclipses that can be retro-calculated, can well assist the effort to provide the seal of historical genuineness for certain literary data.

The hypothesis of the Hungarian Calendar accepts the possibility of retro-calculation, but firmly states that this backward-counting was misunderstood and wrongly performed. Consequently, at the

identification of the events preceding the year of ***AD 880,*** a considerable error (of between 190 and 200 years) occurred. The identification of the astronomical events following ***CE 1080*** was performed correctly, but the solar and lunar eclipses preceding that same year must be examined once again.

Our modern understanding of scientific chronology was introduced by the great French humanist J.J. Scaliger and his opponent, the Jesuit monk, Petavius.

Beyond his works in the field of philology, Scaliger wrote „De emendatione temporum" (1583), the first scientific (?!Z. H.) chronology, which he followed and later, completed, by writing the „Thesaurus temporum"(1606). In his previous work and in his „Elenchus et castigatio anni Gregoriani" Scaliger attacked the calendar reform of Gregory showing the mistakes of that reform. This attack prompted Petavius to write his two works: "De doctrina temporum"(1627) and „Uranologium"(1629), which were designed to oppose Scaliger and to round off his works.

Since the publication of the fundamental works of Scaliger and Petavius, scientific chronology developed further in the direction they pointed out.

There is no need to continue with subsequent events in the development of chronology, since the most important contradiction has already become clear enough.

Scientific chronology had sprung up in the 19th century, while at the same time it was relying in every aspect on the pre-scientific Christian time reckonings of medieval Europe (starting from the Creation of the World) which in many of their elements differed from each other. The highly complicated synchronization between the different calendar systems was done at a time lacking any scientific basis, and in the 19th century only minor corrections were made.

My point is that a safe chronological record, on which we can rely, dates at best from the 14th century (the 200 years prior to Gregory were counted backward correctly). And I would like to point out also, that of course it is quite justified to look for (great) error in historical chronology. Indeed, we should actually seek out those 200 years of extra written history, as I have shown by means of astronomy, and our search should be done in the time period between Pope Gregory and Julius Caesar.

To perform this search, the Hungarian Calendar with its 200-year correction can be an aid. It cannot guarantee the exact determination of a given year number because of the uncertainties of the past, when the „scientific approach" of the 16-19th centuries tried to fix historical events to certain astronomical events, and in doing so misplaced those historical events in time from their original places as correctly recorded in the chronicles. And no-one ever examined those astronomical events, which happened 200 years closer to us in time.

Summarizing the above, it is my firm opinion, that first of all, an exact chronology (supported by astronomical events) must be created, and by the means of this exact chronology we should rethink and rewrite our history.

ASTRONOMY IN THE SERVICE OF HISTORICAL SCIENCE

It is a well-known fact that the records of numerous astronomical observations reached us through various chronicles and in old accounts of travels, and for ages there have been more or less successful efforts (naturally with less success in the case of the older events) to identify those astronomical observations.

It is an open secret for historians that history is mostly written after the events by the victors. Consequently, in every case the veracity-content of the record must be examined very carefully.

Archaeoastronomy is an interesting branch of science, since it connects astronomy, an exact natural science, with historical science, which is an extremely subjective one. What principally connects them is time. Both parties must learn something additional, the astronomer by getting some historical knowledge, and the historians, for their part, by gaining some experience in recognizing astronomical phenomena.

Nobody can question the „historical" events which took place on 11th of August 1999, when above Eurasia a total solar eclipse was observed. But how far can we travel into the past and still have the same sense of security. Academical science is very optimistic in this regard, since we are told at school that we can journey safely as far back as the beginning of the first millennium BC. That is to say, by studying astronomical phenomena (mainly meaning solar and lunar eclipses) we can go back to the past and can examine about 2800 years.

Because of the fact that the year-length of the Julian/Gregorian calendar, which is in use today, can be calculated only from its introduction (45 BC), in my book I do not wish to mention any earlier events. After 400 years of research, the representatives of official science have long ago reached a consensus and declared that our chronology completely coincides with astronomical chronology.

For a better understanding, their certainty in complete synchronism relies on the following:

Our chronology is determined by absolutely safe corner-stones, as for example, the beginning, 45 BC, and the death of Caesar on the ides of March in 44 BC - and, going into the AD period, - the „engraved in stone" date of the death of Augustus Caesar, which is determined as

19th of August AD 14!

These corner-stones are as steady as a rock, the astronomical descriptions of available literary sources, which „seem" to be very exact, cannot shift them at all. When the researchers could not find a suitable astronomical solar eclipse for the time just preceding the death of Augustus, they qualified such ancient records as „no more than artistic license".

Or we can have another comment; "In ancient times the Sun was often credited with an eclipse around the time of the death of a famous person"…

By the way, as we shall see, scientists were forced to use similar methods in order to square events with their own consciences. In other cases, when the visibility of great astronomical events could not be questioned, their quick answer explaining the lack of historical records was that the sources have not survived up to our own times.

The certainty of our chronology is further supported by radiocarbon testing of archaeological finds as well. And lately, dendrochronology is joining the team with its certificates of one-year accuracy.

On the basis of the above arguments, both uninitiated and professional readers might reasonably consider the author of the Hungarian Calendar to be a madman or a swindler (according to the taste of the reader). After all, if Caesar was killed in ***44 BC,*** as academical science has it, than it is impossible to assassinate him again after another 198 years in ***AD 155,*** by which time Antonius Pius was already emperor and Marcus Aurelius, that great Greek philosopher, was in his 8th year as a Caesar.

Since 2002, the year in which the Hungarian Calendar hypothesis was published, I was forced to realize that **archaeoastronomy is very similar to a "no-man's land".**

Astronomers bring historical arguments, while historians operate with astronomical arguments to disprove the possibility of the time-shift.

Hungarian astronomers had been provoked continuously to contribute their share, but they refused to discuss the subject, washing their hands of the fact that in the year 45 BC the MEQ date was different from March 21 and March 25 equally. They said that it is not their concern.

And when they were forced to answer the question, why is it, really, that 2,050 years ago the MEQ fell on March 23, they offered as a solution, the two-day measuring error committed by astronomers.

The historians, likewise, are the champions of the traditional chronology referring to the Chinese observations of solar and lunar eclipses, and using Halley's comet as a proof. And naturally, the coin findings with no date on them also seem to support the standpoint of the historians, and in their 2,050 year long chronological system not a single year is allowed to be left out by the radiocarbon and dendrochronological dating of the various archaeological findings.

Realizing that the solar eclipses of the Hungarian Calendar, analogical but closer to us in time by about 200 years, were completely ignored by the public, I forced myself to look for a more exact proof.

During my search I found an article about 5 wreckages of Roman galleys, which were found in the 1980s in the centre of Mainz, Germany (near the hotel Hilton). The Romans built these galleys at a time when they were still patrolling the river Rhine very carefully.

They were moving between guard-stations installed every 20 miles, starting down the river in the morning and returning up the river in the afternoon. It was quite difficult for the barbarians to begin an attack unexpectedly while this ancient river-guard was on duty.

The archaeologist Dr. Olaf Höckman examined one of the galleys, or more exactly the oak tree from which it was built, and determined that the wood originates from ***CE 376***. On further very careful examination of two fragments of the galleys, he realized that the galleys were repaired twice, first in **CE 386,** and then in **CE 394.** After that, all five galleys ended their river-mission peacefully, finding untroubled shelter in a dock as aged wrecks resting in peace next to each other, since the Rhine gradually changed its course. I believe in dendrochronology, so I accept their dating as correct! The only problem is, that during those identified years, the Caesars were Septimus Severus and Caracalla!

Around the time of AD 386 in the Rhine region, times had already changed from peaceful to worse, with barbarian raids an everyday event. The Alemann prince, Rando, plundered the Rhine country continuously from AD 368 and on. Consequently, there was no longer any chance of river-patrolling. If these galleys were still in use at that time they would certainly have been burnt, and they could not have survived to our times as intact wrecks.

After this small digression let us turn back to the starting year of the Julian calendar, which is **HC/CE 154** according to the Hungarian Calendar.

Starting from this year we shall study the solar and lunar eclipses available in literary sources. The illustration of the solar eclipses comes from the era preceding the appearance of „delta-T", and I mainly rely on the figures of Ginzel. Of course, after the introduction of the Hungarian Calendar, all the historical delta-T preceding the measured ones must be recalculated, and in doing so we can have a more exact picture of the recalculated solar eclipses as well.

Before I actually start the description of the astronomical events for the time period mentioned in the title of my book, I must agree with myself alone, (since I do not as yet have anybody else to consult) on one practical question, and that is the indication of the time/dating.

It is widely known that the pattern of our recent chronology (which can be proved to have been already in use from **CE 1254**) is based on the year of the birth of Jesus Christ. For instance in the date ***AD 1300,*** the prefix „AD" stands for „Anno Domini" which is Latin for „in the year of the Lord." Similarly, in the date **45 BC,** the suffix „BC" stands for „Before Christ."

After the acceptance of the Hungarian Calendar the prefix „AD" will not be identical to the religiously neutral abbreviation „CE" (for „Common Era") nor the suffix „BC" to BCE (for „Before Common Era").

The estimated 5-9 year difference in connection with the birth of Jesus could not oust the AD/BC dating method, remaining in use even in scientific works.

The Hungarian Calendar, with certain preconditions, puts the birth of Jesus in the year CE 194,but relaxing these preconditions locates the year anywhere between ***CE 191–194.***

Having such a big difference in years, the historical Christian chronology cannot be maintained any more.

Since my book is published in a transition period, and I would like to explain the time shift in a way that everybody can understand, I apply the following indication system:

The starting point of the calendar: ***45 BC = HC/CE 154*** (where CE 154 retro-calculated astronomically).

AD 1 = HC/CE 199! [Hungarian Calendar/Common Era]

(In my book the ***BC*** or ***BCE*** years are not the subjects of calculation, so the concept of a „0" year cannot make any trouble for us either.)

Perhaps it is needless to say that when we search for astronomical events, which happened in times closer to us by 200 years, and when we identify them properly, we at the same time invalidate all the earlier identified astronomical events.

Actually, up to a certain border-point. (Recently I expressed my opinion that we should consider an invented history for the period between 880–1070, but it is not so simple to declare this firmly, since the suspected history modifications must be examined carefully before any final conclusions. The periods will be presumably different for the Hungarian, French, English and German histories.)

Moreover, it is not obligatory to search constantly for an event at an exact 198 year distance, since it is only a freak of fortune that the real event and the mistakenly identified one are separated from each other by exactly such a time-distance.

But why should my reader believe more in me than in scientific research of a 400-year period of time?

My heaviest arguments, of course, will be those astronomical events, which resisted all of science's efforts to be identified during the past 400 years. They tried the identification but with no success at all.

On the other hand, on the basis of the Hungarian Calendar the events happen to be there, at which place they must be situated according to the orthodox science as well.

Showing a couple of such decisive events on behalf of the Hungarian Calendar settles the case. There is no more need to continue the comparison of the earlier (by 200 years) mistaken event with the real one, and it does not make sense to muse on which is the better of the two! It is more so in a case when we have a literary reference with day accuracy, since such a reference can be only a product of later retrocalculation. ***Surely nobody could hear in the first century about an erroneous idea (of starting year identification) created by „Dionysius Exiguus of the 6th century"…***

The period (first century) of my study is a Dark Age (according to science) as far as natural phenomena are concerned, since from the Imperial period the works of contemporary historians have seldom survived, and originals have been lost with only later transcripts available.

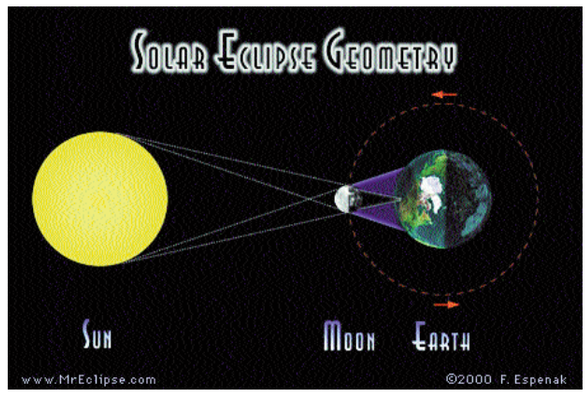
It is no accident that D. Justin Schove writes: "Eclipse records of the first century are so few that elaborate attempts to adjust the usual chronology could still be discussed in the nineteenth century." (p.1)

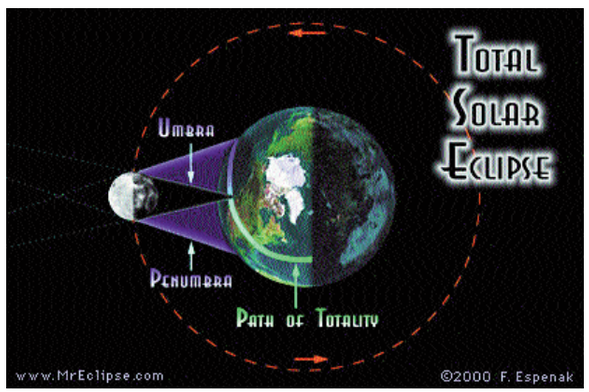
The situation is made more complicated by another fact: although the usual AD system of year counting was not yet known at that time, nevertheless we have two solar eclipses which were dated by an accuracy of year, month and day (AD 45 and AD 59).

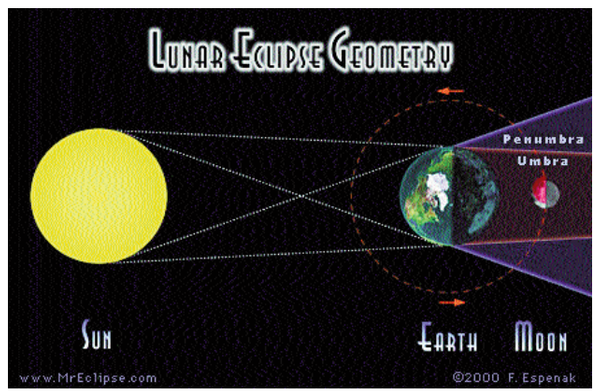
Here the solar and lunar eclipses will be presented according to the year numbers of the Hungarian Calendar, but of course together with their counterpart which had been mistakenly accepted or not accepted in the scientific literature.

After such an introduction I think it is clear that my dates are the same as the dates of astronomical retro-counting.

THE RADICALLY NEW CHRONOLOGY OF THE HUNGARIAN CALENDAR WITH THE PRESENTATION OF THE ECLIPSES







Let me start in an unorthodox way with my listing of an event from a traditionally „false solar eclipse", since in our chronology, as I have already mentioned, there is one absolutely safe corner-stone, which is the year of ***AD 14.*** For centuries the scientists tried to solve the problem: why is it that for that year which is determined with absolute certainty, suitable solar eclipse for Italy can not be found? Up to the end of the 19th century there were heated debates caused by the fact that within the period starting from the beginning of the first century and ending with the death of Augustus Caesar on 19th of August, scientists also could not find for Italy any solar eclipse which happened to be close to totality. The weakening of the preconditions for the search did not particularly help, since for the period of ***AD 8 – AD 16*** there is no solar eclipse that could be connected to the Romans. The believers in historically recorded eclipses had, as their counter-argument, the eclipse of 15th February ***AD 17*** (see the Total and Annular Solar Eclipse Paths: 0001-0020). The track of this eclipse in Ginzel passes from Libya via Greece to the Danube delta, and the track thus crossed the Mediterranean. Of course, the three year long period is too great, it would upset the chronology in full, would disturb the list of the consuls, and in general it would question all the results of the careful scientific activities which were performed earlier.

Considering this danger the researchers reached a consensus, stating that 19th of August ***AD 14*** (the day of the death) is indeed an unmovable chronological corner-stone, while, in relation to it, the solar eclipse of ***AD 17*** is false.

Naturally, the sources cannot be silenced, which is why for more than one hundred years the systematical invalidation, doubting and discrediting of these sources continues. Using scientific methods, I need hardly add.

The result of 100 years in this vein prompts Schove's reaction:

„In ancient times the Sun was often credited with an eclipse around the time of the death of a famous person. Such a statement usually amounts to no more than a stock of literary compliment. Augustus seems to be no exception." (Schove, p.5)

In such a case the typical counter-argument is, immediately at hand, stating that the author is not contemporary, he was collecting data considerably later from uncertain sources and compiled his report from them. Using this technique, Dio Cassius (who is usually very respectable) also becomes discredited. (LVI, p.29)

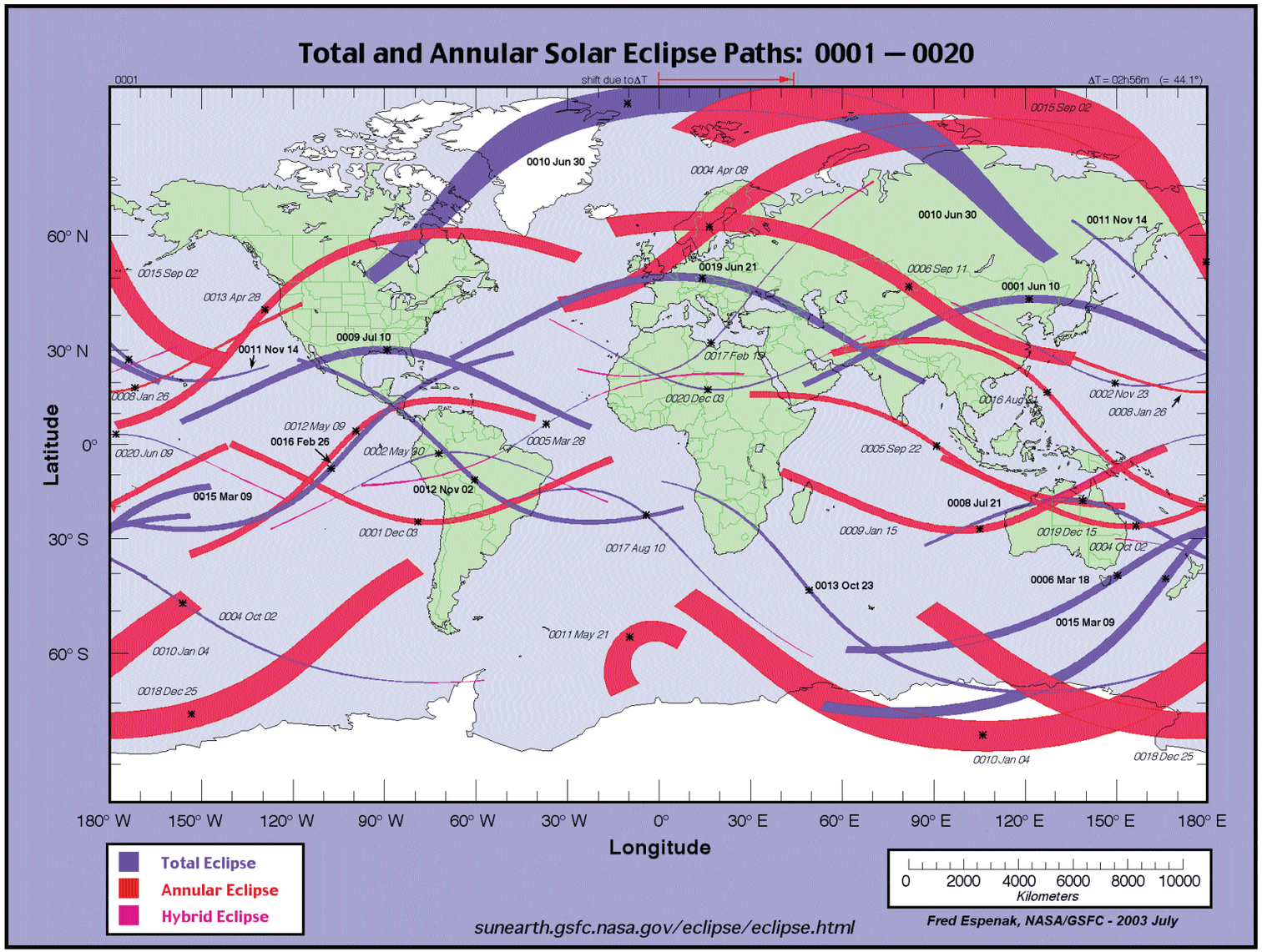
Eusebius, who put his record in nice chronological order when saying „Defectio solis facta et Augustus…moritur" [Obscuration of the Sun happened and Augustus…died.], was accused that he „does not claim totality, or even that the eclipse occurred before the death of Augustus." (Schove, p.6)

Naturally, Schove does not deny the existence of these sources, but he thinks that the false „solar eclipse of ***AD 17*** is the probable basis for the reports of Dio and Eusebius."(Schove,p.6)

And it is obvious in such cases, when the solar eclipse looked for (in the wrong place) cannot be found, an argument is formed, that „there is possible confusion with the observed lunar eclipse of AD 14." (Schove, p.6)

It is our good luck that the 198 year long time-difference of the Hungarian Calendar gives us a surprising result:

58 years after the introduction of the Julian calendar that is on 14th August **HC/CE 212,** which is earlier by five days than the time of the death of Augustus, the various astronomical programs indicate a solar eclipse, which completely satisfies all my needs. According to the illustrations of Oppolzer, Ginzel and Espenak *(http://sunearth.gsfc.nasa.gov/eclipse/eclipse.html)* as well, the total solar eclipse can be observed at a nearly analogical area. The track of totality starts from the Spanish Carthago Nova at the moment of sunrise, runs in the direction of Sardinia, while at Neapol, Nola and Arpi the darkness is total. In Rome it was morning time so the dark-



ening of the sun was probably 98%. Since it is approximately a solar eclipse of West-East direction, it does not mean anything either that the illustration of Espenak indicates 2h 23m delta-T for the given time-period.

Let us specify the solar eclipse:

HC/CE 212 S. 212. Aug. 14

Total solar eclipse above Southern-Europe

http://sunearth.gsfc.nasa.gov/eclipse/SEcat/SE0201-0300.html

0212 Aug 14 06:48 T 87 0.431 1.025 39.8N 85.8E 64 96 02m12s

Sources: Cassius Dio, Roman History,LVI,29,Loeb Classical Library, Translation by Earnest Cary

"During a horse-race at the Augustalia, which were celebrated in honour of his birthday, a madman seated himself in the chair which was dedicated to Julius Caesar, and taking his crown, put it on. This incident disturbed everybody, for it seemed to have some bearing upon Augustus, as, indeed, proved true. For in the following year, when Sextus Apuleius and Sextus Pompeius were consuls, Augustus set out for Campania, and after superintending the games at Neapolis, passed away shortly afterward at Nola.

Indeed, not a few omens had appeared, and these by no means difficult of interpretation, all pointing to his fate for him. Thus, the sun suffered a total eclipse and most of the sky seemed to be on fire: glowing embers appeared to be falling from it and blood-red comets were seen. When a meeting of the senate had been appointed on account of the emperor's illness, in order that they might offer prayers, the senate-house was found closed and an owl sitting on it hooted. A thunderbolt fell upon his statue that stood upon the Capitol and blotted out the first letter of the name "Caesar". This led the seers to declare that on the hundredth day after that he should attain to some divine state. They deduced this from the fact that the letter "C" signifies "one hundred" among the Latins, and the remainder of the word means "god" among the Etruscans. Now these signs appeared beforehand while he was still alive: but people of later days were struck also by coincidences in the case of the consuls and of Servius Sulpicius Galba."

Eusebius/Jerome (ed/Schoenr, II 1866,147 or ed. Fotheringham, 1923, p.253)

"Defectio solis facta et Augustus…moritur."

In English:

"Obscuration of the Sun happened and Augustus…died."

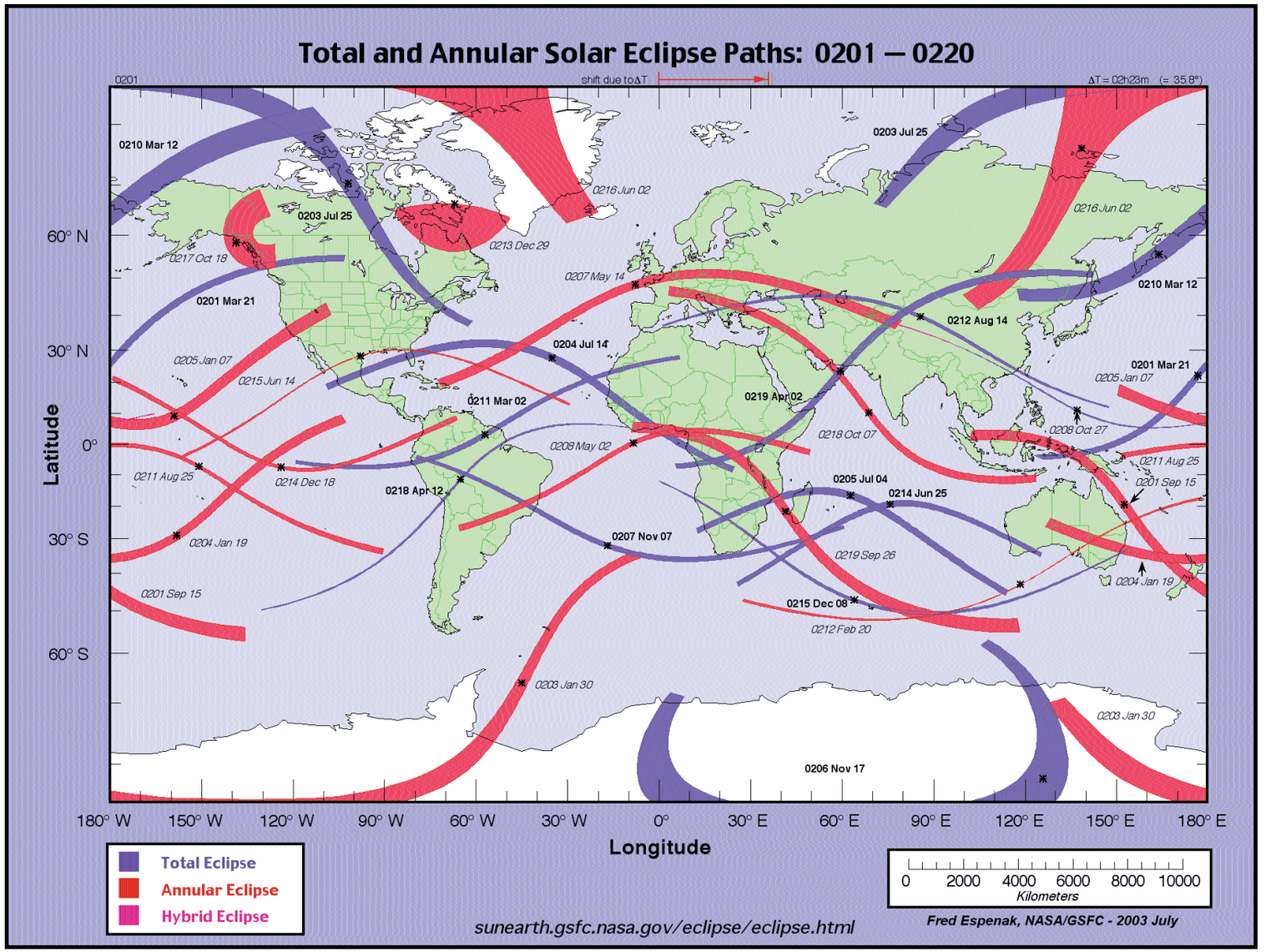
I do not wish to illustrate and to compare with the above genuine eclipse any of the solar eclipses which are situated in invented, imagined times and oriented badly, since the comparison does not make sense. Naturally, my statement relates also to the event of Schove (Schove, p.5), which is indicated as "S.17, Feb.15 FALSE YEAR FOR ECLIPSE OF AUGUSTUS SOLAR ECLIPSE AFTER HIS DEATH".

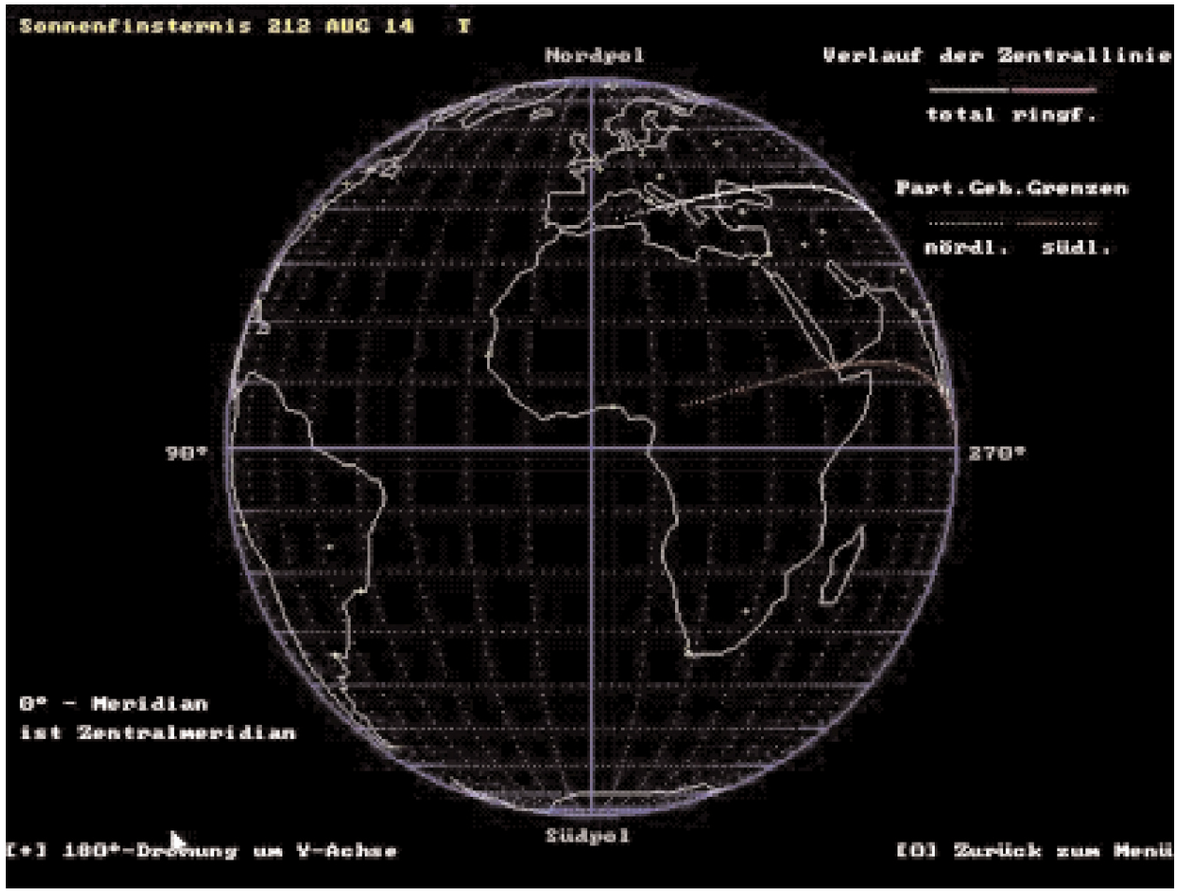
This solar eclipse cannot be connected in any way to Augustus Caesar who died 195 years later at Nola!

Below I show you the figure of solar eclipses for the period of **CE 201-220** from the above-mentioned NASA web page, and the map of the **CE 212.** Aug.14 solar eclipse with 122.3 minutes of delta-T proposed by Mucke/Meeus.

I could actually end my study with the analysis of this solar eclipse. Determining the calendar by retro-calculation produces the solar eclipse (wich was looked for during the last 400 years by the science) exactly at the time and place originally recorded, too improbable to be mere coincidence.

Augustus Caesar did not live to see his 76th birthday (autumnal equinox, 23rd of September), and just a bit earlier than that date we have an observable total solar eclipse in the area of Rome, Neapolis and Nola.





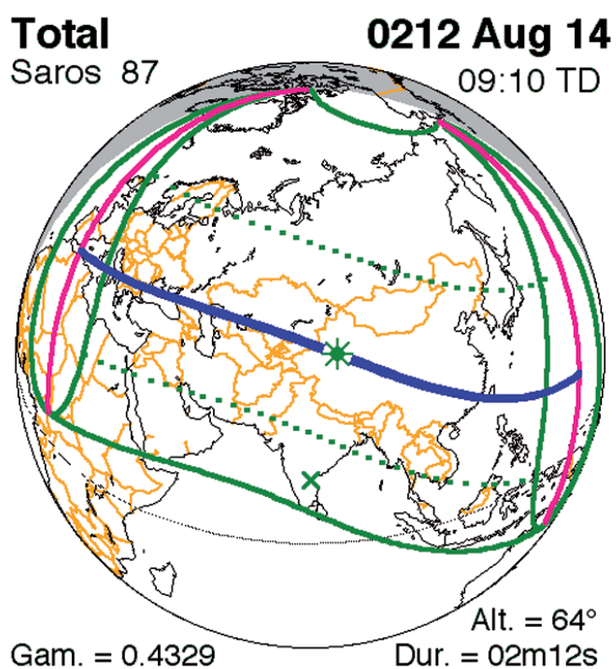
By the way, my method of identification of this eclipse compliments the scientists who are studying the ancient world. They reconstructed carefully and very accurately the ancient relative chronology, and very rightly did not allow their well-established system to be disturbed by an indeed false solar eclipse which at a distance of 3 years from its rightful place.

Now the Hungarian Calendar simply has the only task of screening out the non-contemporary literary sources, while academical science must declare that Ptolemaios, or more precisely that humanist who forged under his name, is a swindler. (But not an ancient swindler, as Robert R. Newton had already qualified him.)

Naturally, considering the 200-year time-shift, all of the historical solar eclipses identified earlier mistakenly, should be re-examined again, and the delta-T values must be recalculated once more.

I think there will not be a need to change the starting year of our present calendar, since the time indeed can be counted further on from the year of **CE 1,** just by taking into consideration a different historical framework. The year of **CE 154** as the beginning of the Julian calendar can be remembered easily, and the year of CE 199 (which up to now was considered as AD 1) is also not a difficulty for calculations. For a long time it has been accepted that the birth of Jesus can precede by 4-7 years the year of AD 1. The 2002 Hungarian edition of the Hungarian Calendar indicated the year of Jesus' birth as **CE 194,** supposing that he lived 33 years.

Finally, in connection with this solar eclipse about Augustus we shall remember that he was born in **CE 136** on the day of the autumnal equinox, and in **CE 212** he passed away before 23rd of September.



Five Millennium Canon of Solar Eclipses (Espenak & Meeus)

For the sake of those who are still not convinced by my argumentation I will continue with the listing of the astronomical events.

For a change I offer you the lunar eclipse, which followed the death of Augustus Caesar.

Its traditional date is the night of 26–27 of September in AD 14. (The more detailed studies tell us that it was more likely in the early morning.)

Before I give the date of the genuine lunar eclipse let us restate the opinion on the basis of the earlier research. Let us point out the most important fact: the above identification has been accepted! Despite its problematical character. I dare to say, despite the tremendous problems connected with it!

Schove is quite laconic when he says that "The eclipse occurred fairly soon after the death of Augustus, as the Pannonian legions mutinied in the hope of extorting better pay and conditions of services from the new emperor, Tiberius, or, alternatively, deposing him." (Schove, p.4)

On the basis of the traditional chronology this lunar eclipse is of obvious importance, since there is none other available after the death of Augustus on 19th of Aug. The researchers were forced to use what they had at hand…

A little acquaintanceship with Roman history would suggest what might have happened when legions mutinied (in this case, three Pannonian legions), involving the saluting of a new emperor and a March on Rome. Tacitus says that things went differently on this occasion, in so far as Junius Blaesus, on hearing of the death of Augustus and the accession of Tiberius, had allowed his men a rest from military duties, either for mourning or rejoicing.

Percennius, who had once been a leader of one of the theatrical factions, and learnt from the applause he received as an actor how to stir up a crowd, "in conversations at night or at nightfall, gradually influenced" one part of the soldiers.

After some time this former leader of one of the theatrical factions gathered round him all the most disaffected soldiers. (XVI)

Finally, when there were others ready to join the mutiny, he called a gathering for discussion of their demands. (XVII)

They then piled up turf and raised a mound so that they might have a more conspicuous meeting-place. (XVIII)

After the intervention of tribune Blaesus, with the consummate tact of an orator, the turbulent soldiers decided on sending the son of Blaesus as an envoy to the emperor in order to state their case. (XIX)

Meanwhile the companies, which prior to the mutiny had been sent to Nauportus to make roads and bridges, also started to revolt, and plundered the neighbouring villages and Nauportus itself. (XX)

Hearing about the mutiny, Tiberius sent his son Drusus to Pannonia accompanied by dignitaries of the State and with two praetorian cohorts, in order to take the necessary measures according to the situation. (XXIV)

Drusus arrived… (XXV)

The night, which had threatened an outbreak of violence, was calmed by an accidental event: in the clear sky the moon grew suddenly dark. (XXVIII)

The question was raised very early whether the interval of about 39 days between the death of Augustus on Aug.19 and the eclipse on Sept. 27 is sufficient to accommodate the events which have to occur: news of the death of Augustus travels from Nola and Rome to Pannonia, the revolt occurs, a messenger travels from Pannonia to Tiberius, Drusus and his cohorts make their way to Pannonia, presumably from Rome.

Schove laconically decides this question: "Ginzel 1899 (197) considers the time be sufficient."

I declare, on the contrary, that the time is insufficient! But I declare a lot more serious things!

As an example I declare that the mutiny of the "leader of one of the theatrical factions" is simply a literary work, which was written by Poggio Bracciolini (the great son of Firenze) at the beginning of the 15th century, and on the basis of the Roman History of Dio Cassius.

I do not wish to deny the possibility of a revolt in Pannonia following the death of Augustus; I only exclude the possibility of such an early (as September) lunar eclipse connected to it.

The author who uses the pseudonym of Tacitus knows very well the traditional chronology, which is why he is forced to mention an early starting winter and the winter camp of soldiers, because his source contains the hint about a lunar eclipse of certain winter-time. He is quite aware of the fact that his literary retrocalculated lunar eclipse for AD 14 got a late September date; while in his source the winter would be mentioned. Naturally the winter is completely different in Rome than it is in Pannonia.

And beyond this, in connection with this mistaken lunar eclipse there is another very big deficiency, which was already offered to the researchers for consideration by Struyck and Stockwell. Since the middle of the eclipse according to their calculation was at 6h30m, the soldiers could not be impressed with an especially large-scale effect, considering the fact that the bigger part of the eclipse occurred in daylight.

To put it simply, I can examine this early morning lunar eclipse of 27th Sept. in AD 14 from every angle but I get the same result all the time, which is that this eclipse is bleeding from many wounds…

Using the Hungarian Calendar, however, we search for eclipses approximately 198 years closer to us in time, and a considerably different picture emerges. We have a lunar eclipse five months after the death of Augustus.

My offer as the date of the genuine lunar eclipse is 24th January in **HC/CE 213!** In January the sun rises considerably later in the morning, so the middle of the total lunar eclipse calculated to happen at 6h34m local time, could be a lot more attractive than the other one, which happened at dawn in AD 14.

Below I present, in full, the contents of the two related literary works:

P. Cornelius Tacitus, "The Annals" I.16–I.28

"This was the state of affairs at Rome when a mutiny broke out in the legions of Pannonia, which could be traced to no fresh cause except the change of emperors and the prospect it held out of license in tumult and of profit from a civil war. In the summer camp three legions were quartered, under the command of Junius Blaesus, who on hearing of the death of Augustus and the accession of Tiberius, had allowed his men a rest from military duties, either for mourning or rejoicing."

"That terrible night which threatened an explosion of crime was calmed by a mere accident. Suddenly in a clear sky the moon's radiance seemed to die away. This the solders in their ignorance of the cause regarded as an omen of their condition, comparing the failure of her light to their own efforts, and imagining that their attempts would end prosperously should her brightness and splendour be restored to the goddess. And so they raised a din with brazen instruments and the combined notes of trumpets and horns, with joy or sorrow, as she brightened or grew dark. When clouds arose and obstructed their sight, and it was thought she was buried in the gloom, with that proneness to superstition which steals over minds once thoroughly cowed, they lamented that this was a portent of never-ending hardship, and that heaven frowned on their deeds."

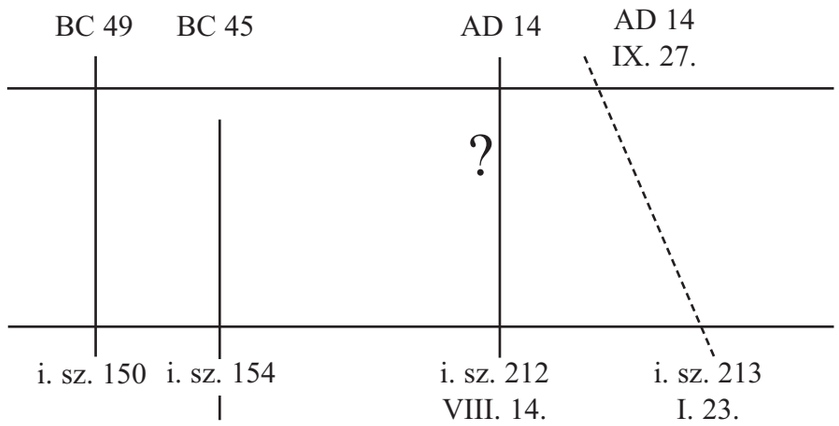
Cassius Dio, Roman History

Loeb Classical Library, Translation by Earnest Cary

"This rival, then, he got rid of at once, but of Germanicus he stood in great fear. For the troops of Pannonia had mutinied as soon as they learned of the death of Augustus, and coming together into one camp and strengthening it, they committed many rebellious acts. Among other things they attempted to kill their commander, Junius Blaesus, and arrested and tortured his slaves. Their demands were, in brief, that their term of service should be limited to sixteen years, that they should be paid a denarius per day, and that they should receive their prizes then and there in the camp; and they threatened, in case they did not obtain these demands, to cause the province to revolt and then to march upon Rome. However, they were at this time finally and with no little difficulty won over by Blaesus, and sent envoys to Tiberius at Rome in their behalf; for they hoped in connection with the change in the government to gain all their desires, either by frightening Tiberius or by giving the supreme power to another. Later, when Drusus came against them with the Pretorians, they fell to rioting when no definite answer was given them, and they wounded some of his followers and placed a guard round about him in the night to prevent his escape. But when the moon suffered eclipse, they took the omen to heart and their spirit abated, so that they did no further harm to this detachment and dispatched envoys again to Tiberius."

Summarizing all the above said, I can state for sure that a starting date of CE 154 for the Julian calendar is supported by a solar eclipse of great effect, and by a lunar eclipse that occurred at a realistic time.

On the other side, academical science devoted to consensus in its research activities, cannot produce or document any suitable solar eclipse and any lunar eclipse, which could be fitted realistically to the death of Augustus.



THE PERIOD BETWEEN 49 BC – AD 14 ADJUSTED FOR THE 198 YEAR TIME-SHIFT

34. Totale Mondfinsternis 14 n. Chr. September 27. (Datum nach Petavius, Scaliger, Zech)

Tacitus annal. I 16:

Hic rerum urbanarum status erat, cum Pannonicas legiones seditio incessit . . . . fine Augusti (♈ 18. August) et initiis Tiberii auditis . . . . c. 28. Noctem minacem et in scelus erupturam fors lenivit: nam luna claro repente caelo visa languescere. Id miles rationis ignarus omen praesentium accepit, suis laboribus defectionem sideris adsimulans . . . prout splendidior obscuriorve, laetari aut maerere; et postquam ortae nubes offecere visui creditumque conditam tenebris . . . sibi aeternum laborem portendi, sua facinora aversari deos lamentantur.

Dio Cassius LVII, 4:

ἐθορύβησαν μὲν γὰρ καὶ οἱ ἐν τῇ Παννονίᾳ στρατιῶται, ἐπειδὴ τάχιστα τῆς τοῦ Αὐγούστου μεταλλαγῆς ἤσθοντο . . . . τῆς δὲ δὴ σελήνης ἐκλειπούσης ἐνθυμηθέντες ἀτεμβλένθησαν, ὥστε κακὸν μὲν μηδὲν ἔτ' αὐτοὺς ποιῆσαι, πρέσβεις δ' αὖθις πρὸς τὸν Τιβέριον ἀποστεῖλαι.

Denn es meuterten auch die pannonischen Soldaten, sobald sie den Hintritt des Augustus erfahren hatten. . . . Da aber eine Mondfinsternis eintrat, so nahmen sie sich dies zu Herzen und wurden in ihrem Entschlusse wankend, sodass sie nichts Schlimmes mehr thaten, dagegen Gesandte an Tiberius schickten.

Das Datum der Finsternis ist nach Petavius und Scaliger 14 n. Chr. September 27. Die 40 Tage zwischen dem Tode des Augustus (18. August) und dem 27. September reichen für die Ereignisse hin: Der Aufstand bricht aus, ein Abgeordneter eilt zu Tiberius, welcher den Drusus in das Lager absendet. Dieser wird trotzig empfangen; da tritt die Mondfinsternis ein und erschreckt die Soldaten. Bald darauf (Tac. I 30) beginnt frühzeitig der Winter mit Regengüssen. Hiermit ist das Datum der Finsternis im besten Einklange. Es finden:

	Petavius (I 822) für Pannonien	Wurm*) für Nauportus (59ᵐ v. Gr.)	Zech (11) Nauportus	Hofmann (41) Nauportus	
Anfg. d. Part.	3ʰ18ᵐ,5	3ʰ49ᵐ	3ʰ36ᵐ m. Zt.	3ʰ40ᵐ m. Zt.	Der Mond ging vor dem Ende der Totalität unter.
„ „ Total.	4 22,0	4 49	4 35	4 39	
Ende „ „	6 7,0	6 25	6 14	6 18	
„ „ Part.	7 7,5	7 25	7 13	7 17	
Grösse	19ᵐ,5	19ᵐ,2	20ᵐ,2	20ᵐ,1	

Struyck (139). Stockwell (Astron. Journ. X 186 7) bemängelt an der Mondfinsternis, dass sie zu spät in die Morgenstunden falle (nach seiner Rechnung die Mitte der Finsternis 6ʰ30ᵐ Pannonien), in welchen die Dämmerung einen erheblichen Teil des Eindrucks auf die Soldaten habe wegnehmen müssen. Er substituirt 13 Oktober 7, welche in die ersten Abendstunden fällt, aber nur 3½ᵐ ist; daraus schliesst er auf eine Korrektur des Todesjahres des Augustus 13 statt 14 n. Chr. Dagegen hat sich Lynn gewehrt (Ast. Journ. XI 43 u. Observatory XIV 235; ein ausführlicher Beweis für das Todesjahr des Augustus 14 n. Chr. und die Widerlegung der Meinungen von Linbrunn u. A. steht auch in der unten angeführten Abhandlung von Wurm p. 10 ff.) — Riccioli (I 367) — Seyffarth (456) 17 n. Chr. Januar 30. (s. Abschnitt IV, No. 978).

*) Bengels Archiv für Theologie und ihre neueste Litteratur. Bd. II.

Spezieller Kanon: Mondfinsternis 14 n. Chr. September 27.

	für Nauportus (λ = 59ᵐ,1 v. Gr.)		
Anf. der Part.	3ʰ38ᵐ,9 m. Zt.		Da der Mond 6ʰ total verfinstert unterging, der Sonnenaufgang 6ʰ erfolgte, bleibt der Eindruck noch bedeutend.
„ „ Total.	4 37,9	„	
Mitte	5 27,3	„	
Ende „ Total.	6 16,7	„	
„ „ Part.	7 15,7	„	
Grösse	20ᵐ,0.		

Für die Stockwell'sche Finsternis 13 Oktober 7 giebt No. 974 Abschnitt IV des „Speziellen Kanon": Anfang 19ʰ3ᵐ, Mitte 20ʰ0ᵐ, Ende 20ʰ59ᵐ m. Zt. Nauportus; 8ᵐ,2; ganz sichtbar.

Total Lunar Eclipse of 0014 Sep 27

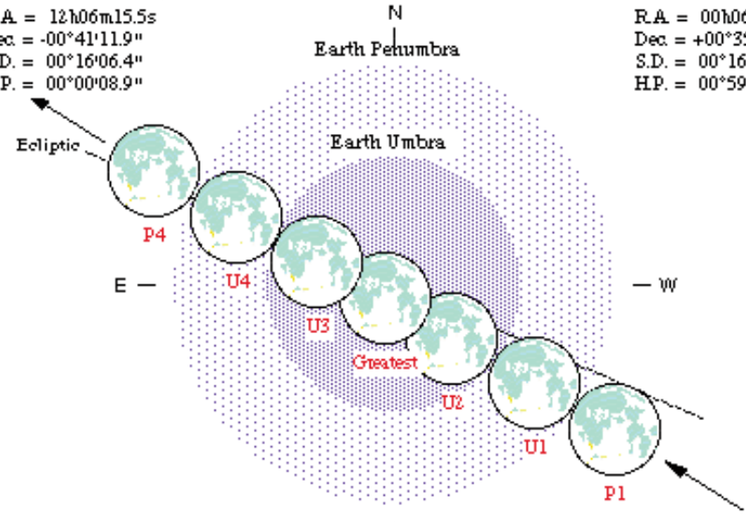
Geocentric Conjunction = 04:31:09.2 UT J.D. = 1726440.688300
Greatest Eclipse = 04:37:41.7 UT J.D. = 1726440.692844

Penumbral Magnitude = 2.68167 P. Radius = 1.2840° Gamma = -0.10867
Umbral Magnitude = 1.66611 U. Radius = 0.7364° Axis = 0.10752°

Saros Series = 66 Member = 39 of 84

Sun at Greatest Eclipse
(Geocentric Coordinates)
R.A. = 12h06m15.5s
Dec. = -00°41'11.9"
S.D. = 00°16'06.4"
H.P. = 00°00'08.9"

Moon at Greatest Eclipse
(Geocentric Coordinates)
R.A. = 00h06m28.2s
Dec. = +00°35'34.6"
S.D. = 00°16'10.7"
H.P. = 00°59'22.4"



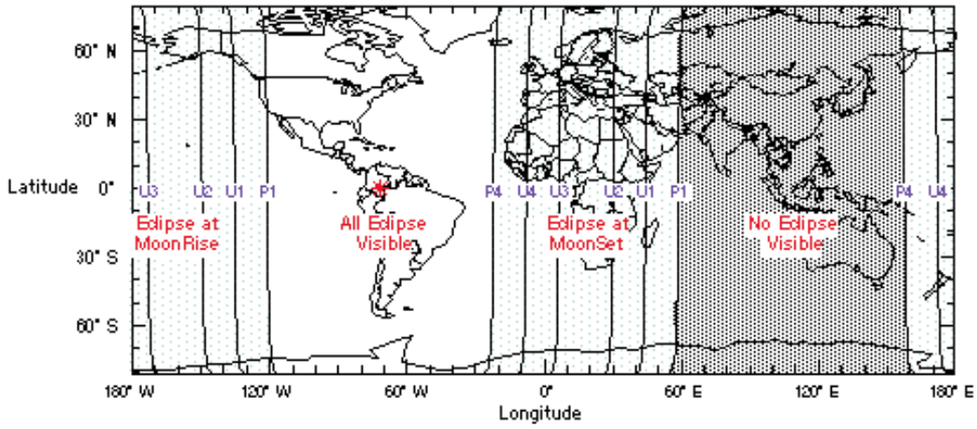
Eclipse Semi-Durations
Penumbral = 02h47m37s
Umbral = 01h48m10s
Total = 00h49m07s

Eph. = Newcomb/ILE
ΔT = 9660.0 s

0 15 30 45 60
Arc-Minutes

Eclipse Contacts
P1 = 01:50:07 UT
U1 = 02:49:31 UT
U2 = 03:48:34 UT
U3 = 05:26:48 UT
U4 = 06:25:51 UT
P4 = 07:25:22 UT

F. Espenak, NASA/GSFC - 2001 Oct 11
http://sunearth.gsfc.nasa.gov/eclipse/eclipse.html



Feeling more reassured by the above results let us turn to another eclipse. In the previously mentioned basic work of Ginzel, under serial-number 33 for **AD 5** we have an annular-total solar eclipse on the date of 28th March. In order to find this solar eclipse on the map of Espenak we should watch carefully the Amazon-Dakar area (Figure 0001-0020). Unfortunately Ginzel does not remain faithful to himself when he tries to prove that despite its very small phase, the eclipse could be seen in Rome. ("Die kleine Phase konnte beim dem tiefen Stande der Sonne wahrnehmbar sein.")

Dio Cassius records events according to the years in which consuls held office rather than by date. When the author discusses events of 200 years in the past, it is proper to mention a spectacular solar eclipse. And it is also a fact that nobody used to accuse Dio of being precise chronologist or that he usually arranged his commentary in strict chronological order. By the way, Dio became a historian after he had a divine inspiration in a dream (I wonder from which god he received his gift?). His words are well chosen, his manner of writing is rhetorical, and he frequently deviates from the subject.

The identification of this solar eclipse is very old and connected to Calvisius (1620) and Petavius (1627). Naturally not all astronomers were satisfied with this solar eclipse running along the Amazon-Dakar line, which is why Seyffart for example had chosen 6th February **AD 7** instead. But this was also unsuitable, since its total path did not contact the surface of our globe. Why was it in the past, and why is it even today that everybody is attached to this mistaken identification? The reason is, naturally, that Dio Cassius named the consuls, and as we have seen at the death of Augustus Caesar, in the case of Roman chronology the priority is always given to the consuls, whenever the consuls and the solar eclipses "are fighting" each other! I have already agreed with this concept in the case of Augustus, and now I support this idea once again. But only on condition that our source remains free from invented additions in brackets…

Let us see what Dio writes:"

At this time, in the consulship of Cornelius and Valerius Messala."

I cannot see any good reason to accept the action of some people, who provided Dio with bracketed explanations as additions: " (Cn) Cornelius (Cinna) und (L.) Valerius Messala".

"My" consuls can be put in 3 BC,and their names are as follows:

L.Cornelius Lentulus

M.Valerius Messala

Using the 198-year shift of the Hungarian Calendar it is quite straightforward to find the genuine solar eclipse, which is:

HC/CE 197 S.197. June 3!

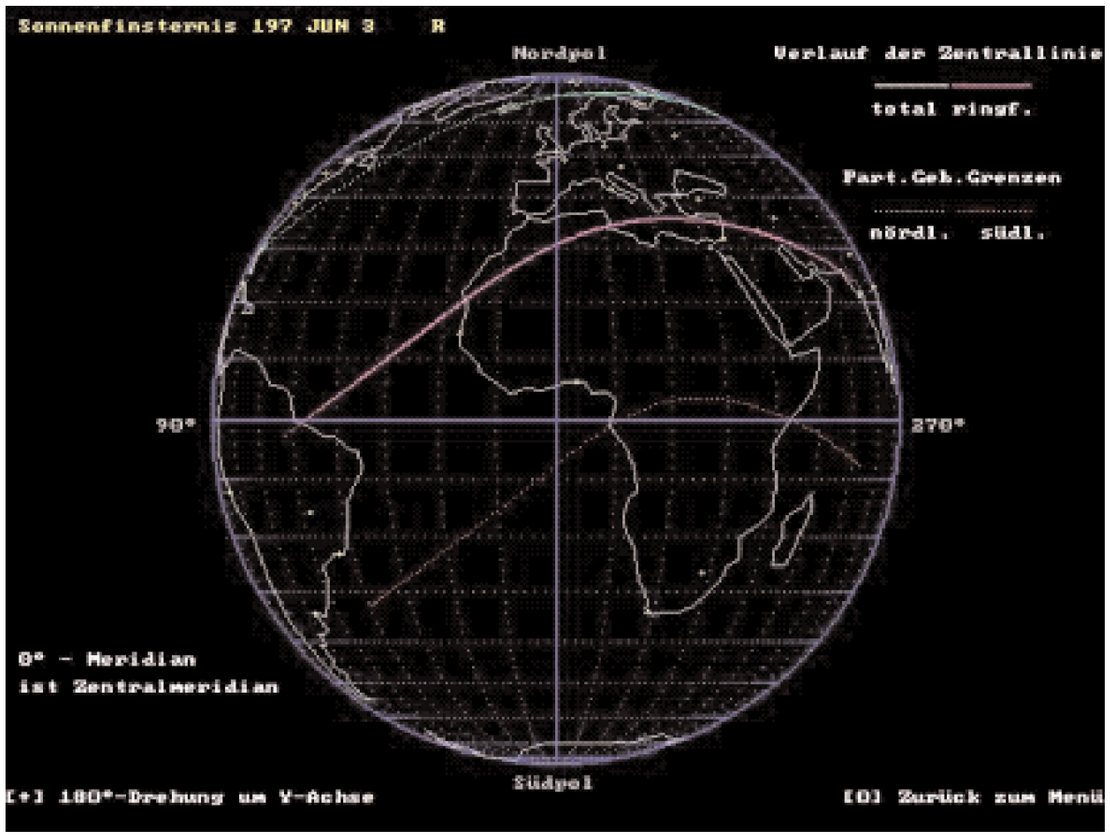
This hybrid eclipse, illustrated by Oppolzer and Ginzel, had the track of totality moving along the line of Tunis, Crete and Cyprus, just a bit further south than Sicily. It can also satisfy the most fastidious tastes. And it is well visible in Rome.

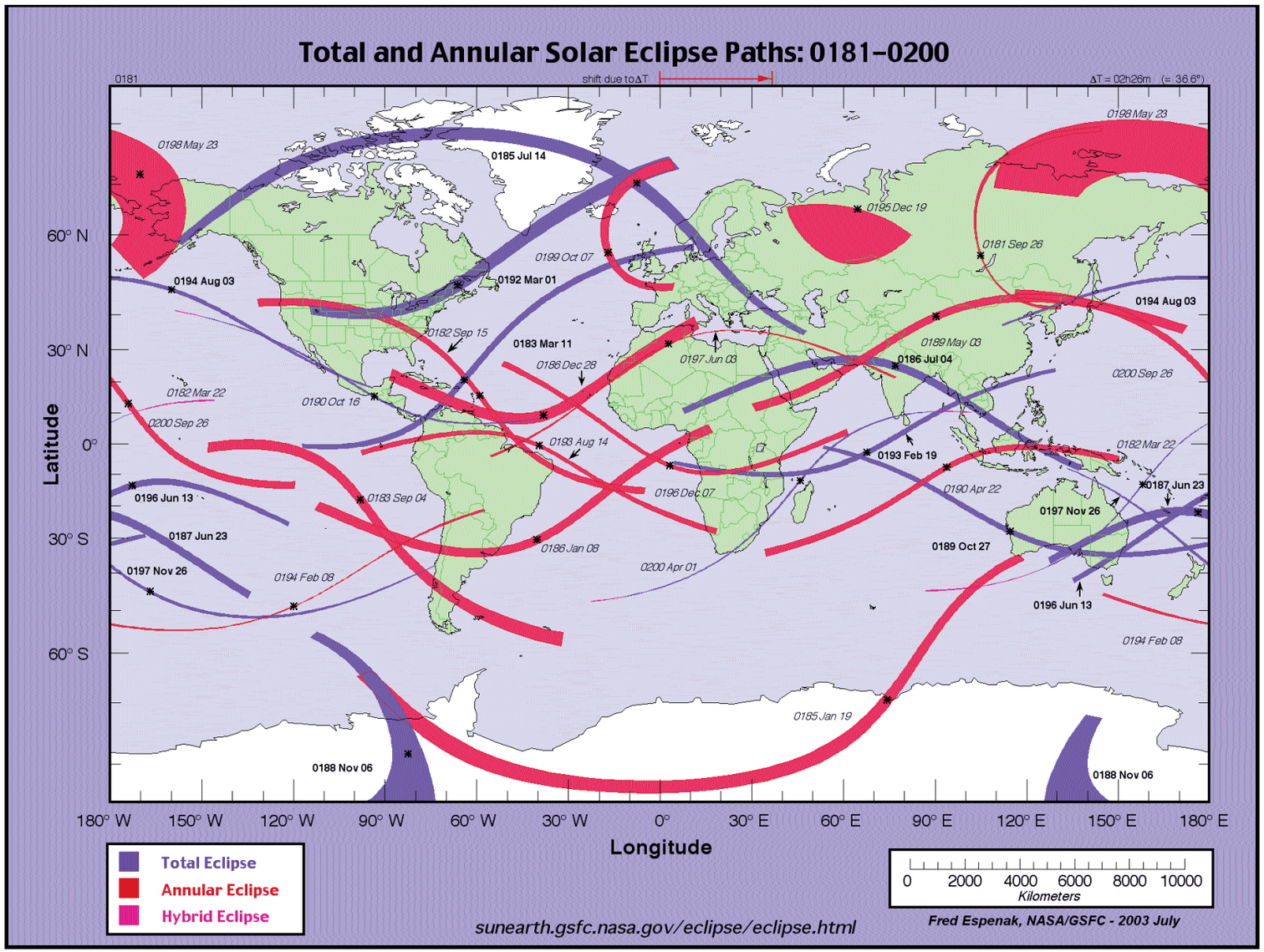
Unlike for Schove, for me it is not necessary to include the road makers and the miners of southern Spain among the observers. And unfortunately for Schove, the Dakar-Khartoum rally was not yet organized either, since such participants might have really seen the solar eclipse of AD 5 very clearly.

In the case of my solar eclipse, the academical officials might not worry about the delta-T either, since its shadow has a West-East direction.

In the system of co-ordinates of the Hungarian Calendar, this solar eclipse took place two years after the death of Herod, or in other words, preceding by 15 years the death of Augustus, in the year of the above mentioned consuls. The orthodox year corresponding to the consular year is 3 BC, and not AD 5. So we can witness 1 (one) year of error in the system (referring to the 199 years of difference). Generally, the traditional error of the list of the consuls is exactly the same.

According to Mucke/Meeus the delta-T = 124.6 minutes.




Total and Annular Solar Eclipse Paths: 0181–0200
0181
shift due to ΔT
ΔT = 02h26m (= 36.6°)
0198 May 23
0185 Jul 14
0195 Dec 19
0181 Sep 26
0199 Oct 07
0192 Mar 01
0194 Aug 03
0182 Sep 15
0183 Mar 11
0186 Dec 28
0197 Jun 03
0189 May 03
0186 Jul 04
0200 Sep 26
0182 Mar 22
0190 Oct 16
0193 Aug 14
0193 Feb 19
0190 Apr 22
0187 Jun 23
0196 Jun 13
0183 Sep 04
0196 Dec 07
0197 Nov 26
0189 Oct 27
0186 Jan 08
0200 Apr 01
0194 Feb 08
0185 Jan 19
0188 Nov 06
60° N
30° N
0°
30° S
60° S
Latitude
180° W
150° W
120° W
90° W
60° W
30° W
0°
30° E
60° E
90° E
120° E
150° E
180° E
Longitude
Total Eclipse
Annular Eclipse
Hybrid Eclipse
0
2000
4000
6000
8000
10000
Kilometers
sunearth.gsfc.nasa.gov/eclipse/eclipse.html
Fred Espenak, NASA/GSFC - 2003 July

The specialist-scientists dealing with the Roman relative chronology must decide between themselves who is to blame: was it Dio who made the mistake of one year or seven years, or they just simply muddle things up dealing with one pair of consuls.

According to the Hungarian Calendar, based on Dio and the solar eclipse itself, the correct year is **2 BC.** For an example, if we replace the consuls of **2 BC** with the consuls of 3 BC, our system is becoming perfect. Another possibility would be that one pair of consuls had been left out from the time preceding **3 BC.**

The beauty of my argument is that I did not need assistance from the lost "Universal Chronicle" of L. Cornelius Bocchus nor from Seneca either. And I did not need to create (as Schove was forced to do) a hypothesis like "Possibly this small eclipse had been predicted by astronomers and was noticed because it was expected".

33. Ringförmig-totale Sonnenfinsternis 5 n. Chr. März 28. (Datum nach Petavius).

Dio Cassius LV, 22:

τότε δ' οὖν ἔτι τε τοῦ Κορνηλίου καὶ ἔτι Οὐαλερίου Μεσσάλου ὑπάτων σεισμοί τε ἐξαίσιοι συνέβησαν . . . τοῦ τε ἡλίου τι ἐκλειπὸς ἐφάνετο.

Damals unter dem Konsulat des (Cn.) Cornelius (Cinna) und des (L.) Valerius Messala ereigneten sich sowohl ungeheure Erdbeben . . . als auch fand eine partiale Sonnenfinsternis statt.

Die Konsuln Cinna und Messala werden u. c. 759 = 5 nach Chr. gesetzt, wodurch sich das Jahr der Finsternis bestimmt. Petavius (I 821), Riccioli (I 367) und Struyck (139) geben das Datum 5 n. Chr. März 28; die Bearbeitung von ersteren und die neuere Rechnung von Hofmann (40) geben:

— 197 —

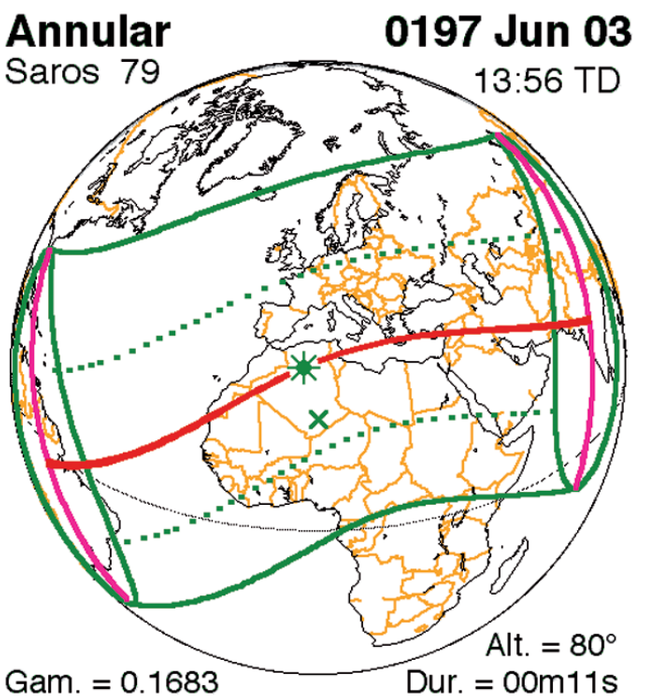
Petavius	Hofmann
Anfang 15^h21^m Rom	Maxim. 4",9 um 17^h11^m,4 Rom
Mitte 16 13	(Ende bei Sonnenuntergang).
Ende 17 2	
Grösse 4",7	

Seyffarth (455) 7 n. Chr. Februar 6 (für Rom nur 2",8.)

Spezieller Kanon: Maximum für Rom nahe 5" (16^h53^m,4). Die kleine Phase konnte bei dem tiefen Stande der Sonne wahrnehmbar sein.

Anyone still not sufficiently convinced by my explanation, should consider that the error of Dio is 6 years in comparison with the Hungarian Calendar. And naturally the sceptic should read book LV of Dio!

Anyhow, I am offering a well-observable annular solar eclipse, while Ginzel's event cannot be observed at all in hilly Rome at sunset.



Five Millennium Canon of Solar Eclipses (Espenak & Meeus)

Meanwhile, moving backward in time, let us check the following solar eclipse, against which cannot be proposed too much by traditional chronology:

HC/CE 164 S.164, Sept .4.
An annular solar eclipse above the skies of Southern Europe

0164 Sep 04 08:46 A 76 0.201 0.963 17.9 53.7E 78 136 03m 48s

When, during the spring of 2002, I became convinced that we have 200 years of error in our chronology, I remarked about this annular solar eclipse (which occurred physically at very good observation points): a corresponding literary source must be found!

It took quite a lot of time before I came across the source. And I found it, of all places, in the footnote (see below) to Ginzel's solar eclipses under his serial number of 31. The Chronicon Paschale records a solar eclipse in the XII year, somewhat anachronistically,

*) Das *Chronicon paschale* (Corp. hist. Byzant. Bonn 1832 p. 360, 361) erwähnt 2 Sonnenfinsternisse zu den Jahren 36 u. 31 v. Chr. (Über die Chronologie des Chron. pasch. s. Ideler, Handb. II 350 u. 466).

1. (717 u. c. = Ol. 186,1). Ἰνδ. ζ. ιβ' ἐν.	XII Ind. VII.
Πουβλικόλα καὶ Νέρβα Κοσσῶν.	Publicola et Nerva Cocc. coss.
β Αὐγούστου Καίσαρος	II. Augusti Caesari.
ἔκλειψις ἡλίου ἐγένετο.	Solis eclipsis accidit.
2. (722 u. c. = Ol. 187,2). Ἰνδ. ιε'. ιζ'. ἐν.	XVI Ind. XI
Ὀκταβιανοῦ Αὐγούστου τὸ β' καὶ Κορβήλιον.	Octav. Aug. II et Corvilio coss.
Αὐγούστου Καίσαρος ς'.	VI. August. Cls.
Ἔκλειψις ἡλίου ἐγένετο.	Solis eclipsis facta est.

Diese beiden Finsternisse sind von Struyck (138) auf 36 v. Chr. Mai 19 und 31 v. Chr. August 20 gesetzt worden. Wie Karte IX zeigt, sind beide namentlich in Spanien auffällig. Da das Chron. pasch. erst unter Heraclius (610—641) geschrieben und auf Quellen sehr verschiedener Art aufgebaut ist, ausserdem sicher römische Konsularfasten dabei benützt sind (darauf deuten auch obige, den Charakter der Konsulartafel-Annalen tragende Notizen), so wäre die Möglichkeit vorhanden, dass beide Finsternismachrichten einer für uns verloren gegangenen römischen Quelle entstammen. — Zwischen beide fällt noch, was nicht zu übersehen sein möchte, die in Rom sehr bedeutend gewesene Finsternis von 35 v. Chr. November 1.

25*

mentioning the VII INDICTION. It is very clear that here we have the result of a retrocalculation, since the "indictio" starting from September 1st was invented a lot later.

As we learn from official records, the Chronicon Paschale was compiled during the time of emperor Heraclius, from sources quite varied in credibility. Scientifically, it was said of it, that the compilation had happened on the basis of Roman contemporary works that had already been lost before our own time.

According to the recently accepted calculation, on the basis of the consuls' table (list) this solar eclipse is placed at the year of 36 BC or a.u.c.718. (This is the year of Publicola and Nerva as consuls.)

One hundred years earlier the solution for the same problem was given as a.u.c. 717 (Ol.186,1) and **36 BC,** May 19, certified by a solar eclipse.

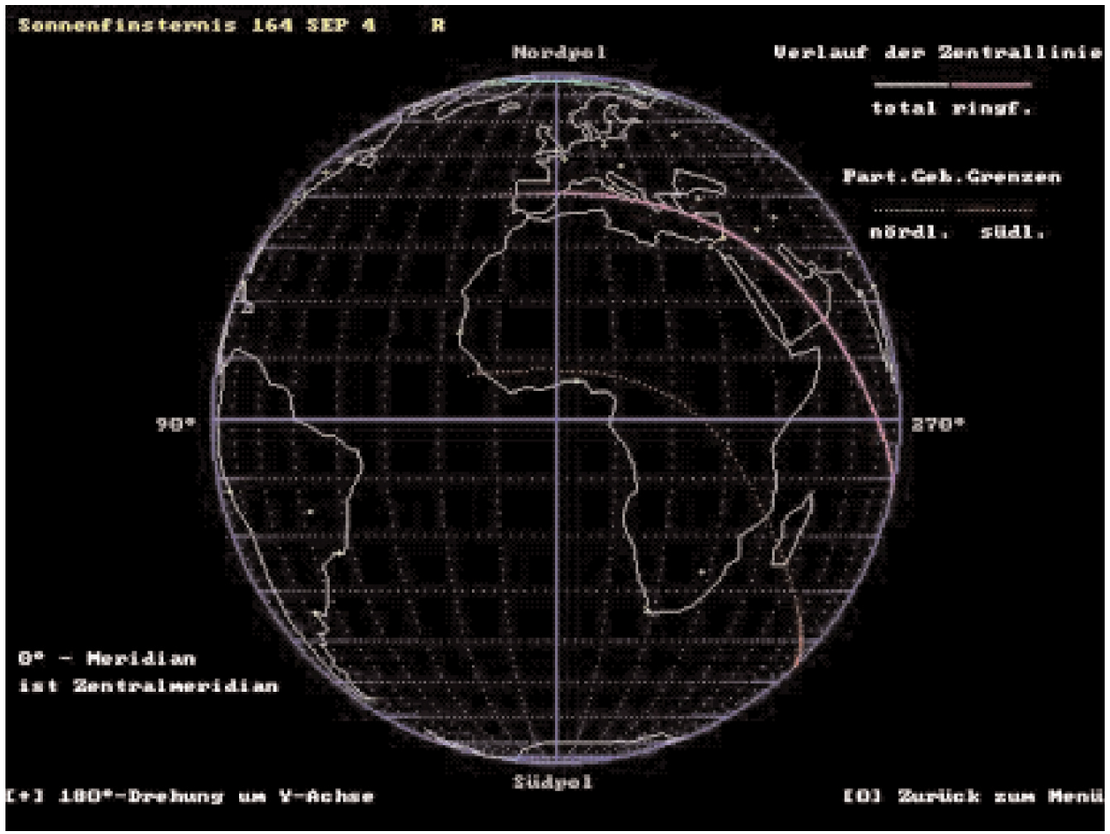
The source of the Chronicon Paschale was taken very seriously, and if we check the track of totality of the total solar eclipse, we can conclude that it is not so bad. Moving from Rabat to the Lybian coast, and further south than Alexandria. Researchers have been wont to accept events a lot worse than this, especially in those cases when it is very difficult to guess the location.

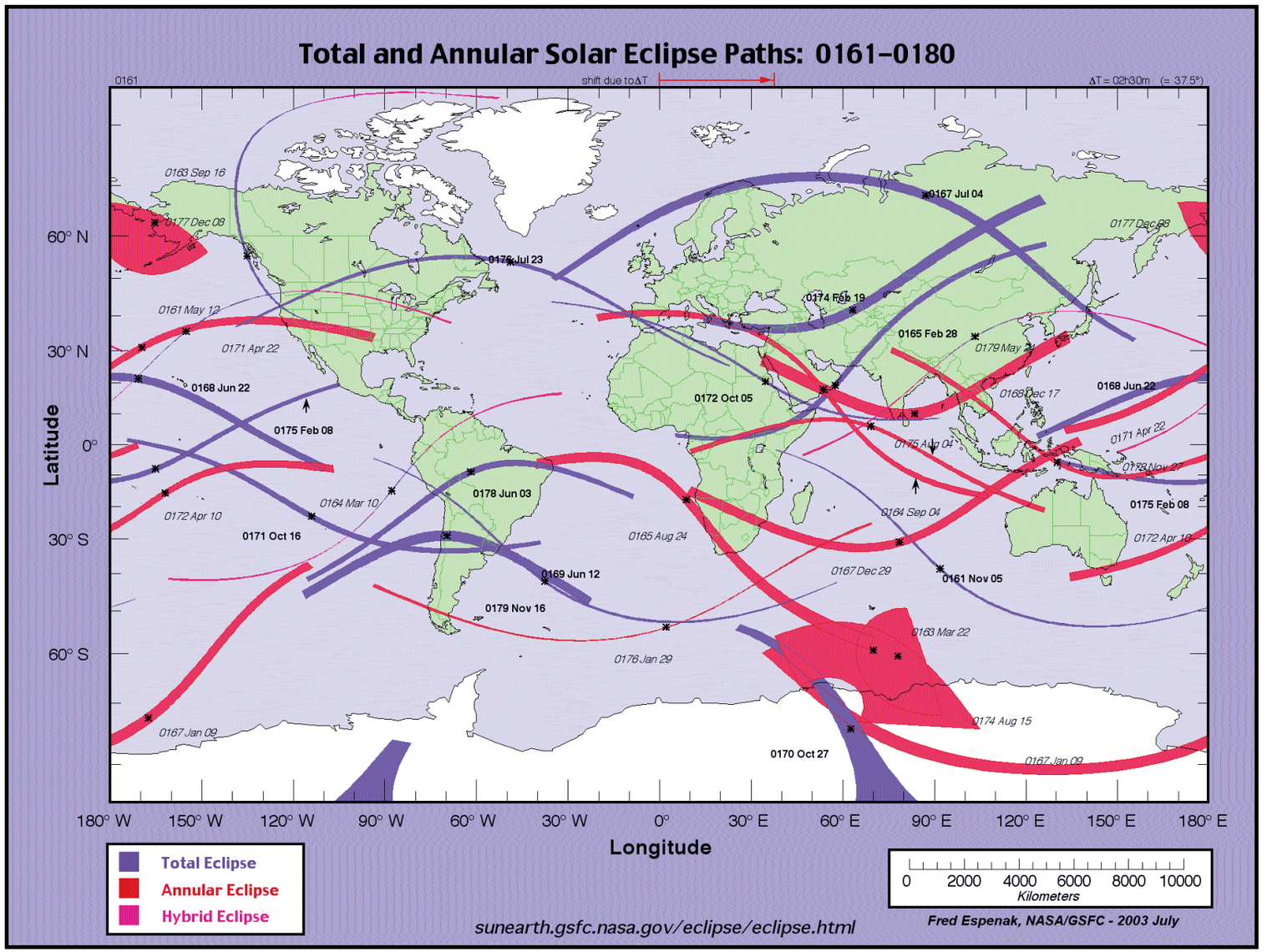
I offer Alexandria as the location. And for "year XII" my suggestion is that it means the 12th year of a calendar beginning in **CE 154.** (According to the retrocalculation made by the Byzantine author the 12th year had started from 1st of September.)

In any event, the solar eclipse (36 BC) was not considered by science, so I can only state that this dropped false event is situated just 199 years distant from the solar eclipse preferred by me.

Chronicon Paschale (Corp. Hist. Byzant.Bonn 1832 p.360, 361)
"XII Ind. VII.
Publicola et Nerva Cocc,coss.
II. Augusti Caesari.
Solis eclipsis accidit

See below the map of this solar eclipse with a delta-T = 129.9 proposed by Mucke/Meeus:




Total and Annular Solar Eclipse Paths: 0161–0180
0161
shift due to ΔT
ΔT = 02h30m (= 37.5°)
0163 Sep 16
0177 Dec 08
0176 Jul 23
0167 Jul 04
0177 Dec 08
0174 Feb 19
0161 May 12
0171 Apr 22
0165 Feb 28
0179 May
0168 Jun 22
0172 Oct 05
0168 Dec 17
0168 Jun 22
0175 Feb 08
0175 Aug 04
0171 Apr 22
0178 Nov 27
0178 Jun 03
0164 Mar 10
0172 Apr 10
0171 Oct 16
0165 Aug 24
0164 Sep 04
0175 Feb 08
0172 Apr 10
0169 Jun 12
0167 Dec 29
0161 Nov 05
0179 Nov 16
0163 Mar 22
0176 Jan 29
0174 Aug 15
0167 Jan 09
0170 Oct 27
0167 Jan 09
60° N
30° N
0°
30° S
60° S
Latitude
180° W
150° W
120° W
90° W
60° W
30° W
0°
30° E
60° E
90° E
120° E
150° E
180° E
Longitude
Total Eclipse
Annular Eclipse
Hybrid Eclipse
0
2000
4000
6000
8000
10000
Kilometers
sunearth.gsfc.nasa.gov/eclipse/eclipse.html
Fred Espenak, NASA/GSFC - 2003 July

Let us continue with another solar eclipse:

HC/CE 168 S.168, Dec. 17.

0168 Dec 17 06:17 A 83 0.556 0.916 10.2N 83.7E 56 386 12m 15s

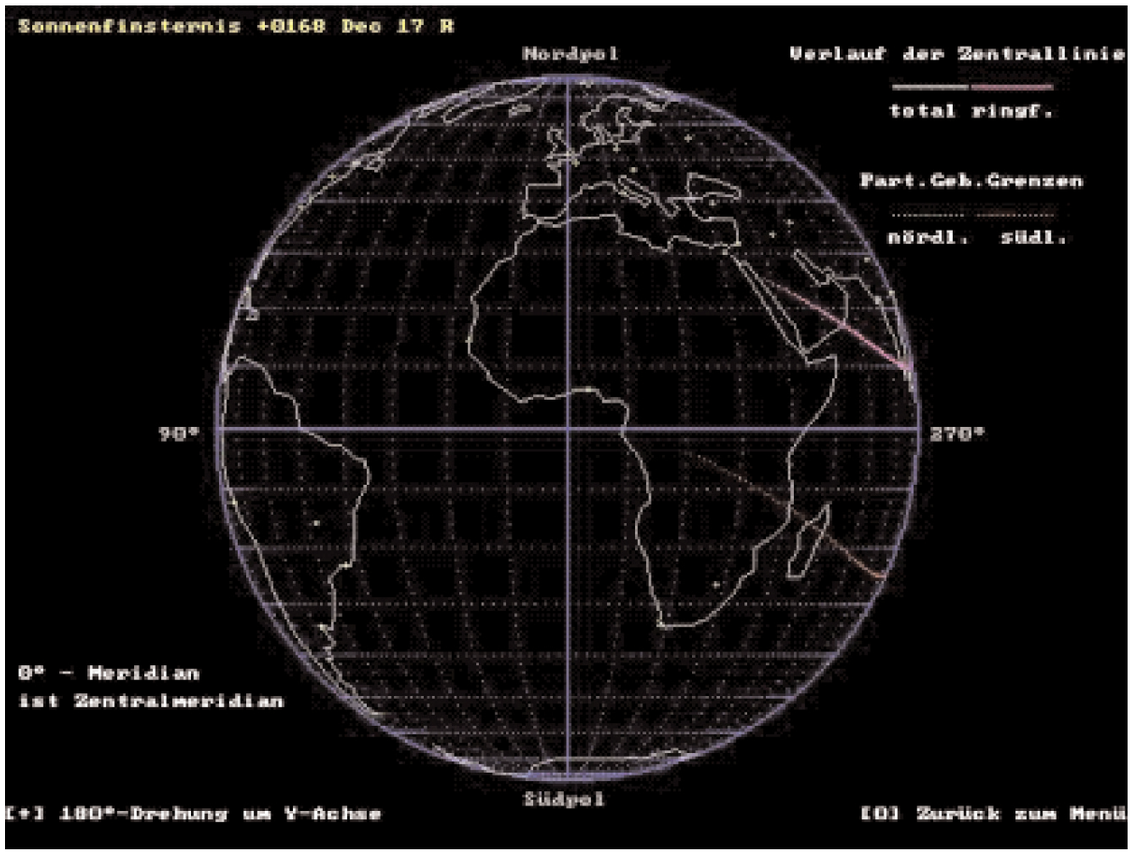
On the map of the solar eclipses it is not a striking phenomenon, and worse, the observer who made the report for us, saw it in the morning together with the sunrise. The location is the same as the location of the previous case, which is Alexandria. In 198 years of time-distance there is really no suitable event, although offers were suggested, as for example **31 BC,** Aug. 20!

I do not wish to analyse this wrongly identified weak event, which has been already dropped by science as well. Perhaps the names of the consuls are important, since according to the traditional chronology Messala Corvinus should be placed in **31 BC.**

Chronicon Paschale (Corp. Hist. Byzant. Bonn 1832 p.360, 361)
XVI Ind. XI
Octav. Aug.II et Corvilio coss.
VI. August Caes.
Solis eclipsis facta est.

Ptolemy disguised himself as an ancient scientist from Alexandria, but nobody heeded his warning finger.
THERE IS SOMETHING WRONG WITH THE CHRONOLOGY!

The map of this solar eclipse with delta-T = 129.3 minute, proposed by Mucke/Meeus:



HC/CE 195 M.195. Jan.13.

For a change let us take a lunar eclipse that was examined so many times by so many, many researchers:

Source: **Flavius Josephus, "Antiquities of the Jews", XVII, 6, 4**

"But the people, on account of Herod's barbarous temper, and for fear he should be so cruel and to inflict punishment on them, said what was done was done without their approbation, and that it seemed to them that the actors might well be punished for what they had done. But as for Herod, he dealt more mildly with others [of the assembly] but he deprived Matthias of the high priesthood, as in part an occasion of this action, and made Joazar, who was Matthias's wife's brother, high priest in his stead. Now it happened, that during the time of the high priesthood of this Matthias, there was another person made high priest for a single day, that very day which the Jews observed as a fast. The occasion was this: This Matthias the high priest, on the night before that day when the fast was to be celebrated, seemed, in a dream, to have conversation with his wife; and because he could not officiate himself on that account, Joseph, the son of Ellemus, his kinsman, assisted him in that sacred office. But Herod deprived this Matthias of the high priesthood, and burnt the other Matthias, who had raised the sedition, with his companions, alive. And that very night there was an eclipse of the moon."

Under serial-number 32, Ginzel gives us the summary of opinions developed up to the end of the 19th century. At that time it was already the firm opinion of the majority of scientists that this was the lunar eclipse in 4 BC, preceding the date of March 13, which was the date of the death of Herod. Of course we have quite a big problem here, since fitting in all the events between March 13 and the Jewish Passover would be like packing sardines in a tin. It is simply not possible. If one cannot disregard this problem, one could take Sept.15. in 5 BC. But the 7 months are a bit more than necessary.

Closer to us in time by 198 years, the Hungarian Calendar offers us the following chronological sequence:

HC/CE 195, Jan.13: "Herod deprived this Matthias of the high priesthood, and burnt the other Matthias, who had raised the sedition, with his companions, alive. And that very night there was an eclipse of the moon."

HC/CE 195, around Jan.25: Herod the Great orders the execution of Antipater.

HC/CE 195: At the end of January Herod the Great dies.

HC/CE 195, late January – early February: the preparation of his funeral.

HC/CE 195, February: his body is ceremonially carried to Herodium, after the funeral seven days of mourning are held.

HC/CE 195, March: His successor, Herod Archelaus, is awarded Jerusalem.

HC/CE 195, 18th of April: the day of the Jewish Passover.

This total lunar eclipse satisfies all requirements, since in Jerusalem, during winter- time, in January and in the evening:

at seven o'clock the Moon steps into the penumbra (P1)

at 7h54m PM the Moon steps into the umbra (U1)

at 8h54m PM is the start of the total eclipse (U2)

at 10h24m PM is the end of the total eclipse (U3)

at 11h24m PM the Moon steps out from the umbra (U4)

at 00h19m AM the Moon steps out from the penumbra (P4)

On the basis of Ginzel (below) I bring up the idea about the 5 BC March 23. version.

32. Partielle Mondfinsternis 4 v. Chr. März 13. (?) (Datum nach Petavius).

Josephus, antiqn. XVII, 6,4 (§ 167).

Ἡρώδης δὲ τόν τε Ματθίαν ἐπεπαίκει τῆς ἀρχιερωσύνης, καὶ τὸν ἕτερον Ματθίαν, ὃς ἐγηγέρκει τὴν στάσιν, καὶ ἄνδρας ἐκ τῶν εἰκείων αὐτοῦ ἔκαυσεν ζῶντας, καὶ ἡ σελήνη δὲ τῇ αὐτῇ νυκτὶ ἐξέλιπεν.

Herodes aber hatte den Hohenpriester Matthias abgesetzt und verbrannte den anderen Matthias, der den Aufstand angefacht hatte, nebst Männern aus dessen nächster Umgebung lebendig. In derselben Nacht aber fand eine Mondfinsternis statt.

Die hier erwähnte Mondfinsternis diente von jeher den Chronologen als hauptsächlichstes Hilfsmittel zur Bestimmung des Todesjahres des Herodes (Herodes regierte 37 Jahre, die Mondfinsternis fiel nach Flav. Joseph. kurz vor seinem Tod, vor das Passah) und im Anschlusse daran zur Lösung der Frage nach dem Geburtsjahre Christi. Da Ostern (15. Nisan) auf den 11. April fiel, musste die Zeit zwischen diesem Datum und der Verbrennung der aufrührerischen Schriftgelehrten auch die Krankheit des Herodes, den Versuch zu seiner Wiederherstellung und seinen Tod umfassen. Schon Petavius und Kepler haben das Datum der Mondfinsternis 4 v. Chr. März 13 angegeben, aus welchem Kepler den Schluss zog, dass die Geburt Christi anni jul. 41 oder 40 (5 Jahre vor die gewöhnliche Annahme) zu setzen sei. Seitdem ist diese Mondfinsternis der Hauptstützpunkt zur Bestimmung des Todesjahres des Herodes geblieben. Auch Wurm (s. die später zitierte Abhdlg.) nimmt diese Finsternis an. Es finden:

Petavius (I 820)		Kepler (T. Rudolph. *103)		Struyck (p. 97)		Ideler (Handb. d. Chr. II 391/2)		Hofmann (39)	
Anfg. 1ʰ 17ᵐ	Jerus.	3ʰ 20ᵐ	Judaea	Anfg. 2ʰ 2ᵐ,8	Jerus.	Anfg. 1ʰ 59ᵐ m. Zt.	Jerus.	Anfg. 2ʰ 10ᵐ m. Zt.	Jerus.
Ende 4 13		5 15		Mitte 3 21,4		Ende 4 23 „		Mitte 3 20 „	
				Ende 4 40,0				Ende 4 30 „	
Grösse 6"		5",6		5",7		4",7		4",4	

Indessen blieb auch die Mondfinsternis 1 v. Chr. Januar 9/10 bei Calvisius, Scaliger und Riccioli nicht unbeachtet; letzterer (I 367) macht darauf aufmerksam, dass ausserdem die Mondfinsternis 1 v. Chr. Dezember 29 in Judäa sichtbar gewesen sei. Von den neueren Astronomen ist Hind (Nature VI 252) für die Finsternis 1 v. Chr. Januar 9 eingetreten, welche bedeutender sei und auch von Bosanquet befürwortet werde; er findet (mit Hansens Elementen, dessen Säcul. Acceler. und den Leverrier'schen Tafeln) Anfang 23ʰ23ᵐ m. Zt. Jerus., Ende 2ʰ57ᵐ, die Dauer der Totalität 1ʰ39ᵐ, die Verfinsterung total. Besonders lebhaft für die Finsternis 1 Januar 9 ist in neuerer Zeit Fl. Riess eingetreten (Geburtsjahr Christi, 1880, Freiburg i. Br.) hauptsächlich auf Grund des Einwandes, dass sich bei der Finsternis 4 März 13 die Ereignisse bis zum Osterfest (Verschlimmerung der Krankheit des Herodes, Bäder in Kallirrhoe, Rückreise nach Jerusalem, Gefangennahme der Optimaten, Hinrichtung des Antipater, Tod des Herodes, Leichenfeier und Trauer, Übersiedelung des Hofes, Osterfest) schlecht in einer Zeit von 30 Tagen unterbringen lassen. Gegen das Riess'sche Datum ist vornehmlich P. Schegg „das Todesjahr des Herodes und das Todesjahr Christi" 1882; s. a. die Erwiderung von Riess „Nochmals das Geburtsjahr Christi" 1883. Riess giebt für die Mondfinsternis (Hansens Tafeln und Sonnentafeln Hansen-Olufsen):

Anfang der Part.	23ʰ30ᵐ,7 m. Zt. Jerus.			
„ „ Total.	0	28,0		
Mitte	1	16,3	Grösse 22",6	
Ende der Total.	2	4,5		
„ „ Part.	3	1,8		

Stockwell (Astr. Journ. X 187/8) ist gegen beide Mondfinsternisse, setzt den Tod des Herodes 4 v. Chr. (s. die Gründe a. a. O.), findet die Mondfinsternis 5 v. Chr. September 15 als 7 Monate vor das Passah 4 v. Chr. fallend, genügend, den historischen Ereignissen gerecht zu werden. — Seyffarth (454) für 1 v. Chr. Januar 9. — Über die Litteratur zum Geburts- und Todesjahre Christi s. m. Ideler, Handb. II 393 ff. und II 412 ff.

Spezieller Kanon:

Mondfinsternis 4 v. Chr. März 13.			Mondfinsternis 1 v. Chr. Januar 9/10.			
Anfang	1ʰ51ᵐ,5	m. Zt. Jerus.	Anfg. d. Part.	23ʰ45ᵐ,1	m. Zt. Jerus.	
Mitte	3 1,3	„	„ „ Total.	0 12,5	„	
Ende	4 13,1	„	Mitte	1 32,6	„	
Grösse	4",5		Ende d. Total.	2 22,7	„	
			„ „ Part.	3 20,1	„	
			Grösse	21",6		

Der ganze Verlauf beider war in Jerusalem sichtbar. Von der Mondfinsternis 1 v. Chr. Dezember 29 (Riccioli) war nur das Ende in Jerusalem sichtbar, von 5 v. Chr. September 15 (No. 959 des Speziellen Kanon) der ganze Verlauf. — Die Entscheidung der hereinspielenden Streitfragen bleibt hier wohl mehr als anders wo, nicht dem Astronomen, sondern dem Historiker überlassen.

Total Lunar Eclipse of-0004 Mar 23

Geocentric Conjunction = 18:33:35.7 UT J.D. = 1719679.273329
Greatest Eclipse = 18:32:13.6 UT J.D. = 1719679.272380

Penumbral Magnitude = 2.84739 P. Radius = 1.2538° Gamma = -0.02207
Umbral Magnitude = 1.81830 U. Radius = 0.7135° Axis = 0.02126°

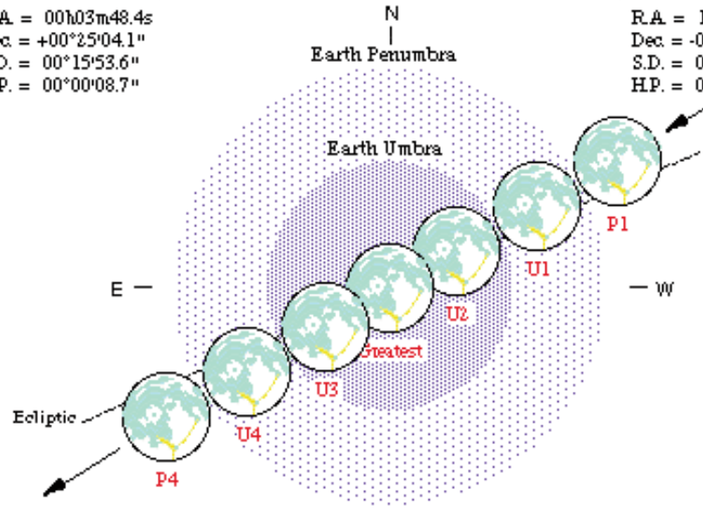
Saros Series = 61 Member = 49 of 83

Sun at Greatest Eclipse
(Geocentric Coordinates)

R.A. = 00h03m48.4s
Dec. = +00°25'04.1"
S.D. = 00°15'53.6"
H.P. = 00°00'08.7"

Moon at Greatest Eclipse
(Geocentric Coordinates)

R.A. = 12h03m45.9s
Dec. = -00°26'10.8"
S.D. = 00°15'45.1"
H.P. = 00°57'48.7"



Eclipse Semi-Durations

Penumbral = 02h53m11s
Umbral = 01h51m26s
Total = 00h51m26s

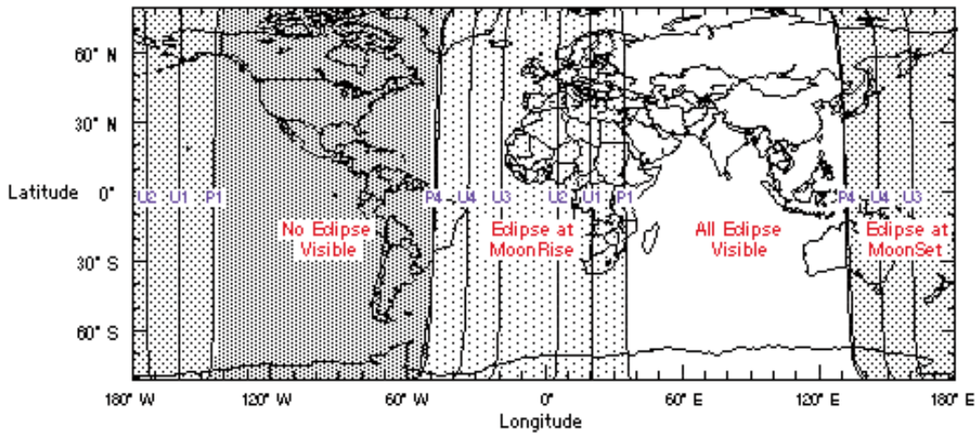
Eph. = Newcomb/ILE
ΔT = 9897.0 s

0 15 30 45 60
Arc-Minutes

F. Espenak, NASA/GSFC - 2001 Oct 10
http://sunearth.gsfc.nasa.gov/eclipse/eclipse.html

Eclipse Contacts

P1 = 15:39:00 UT
U1 = 16:40:48 UT
U2 = 17:40:48 UT
U3 = 19:23:41 UT
U4 = 20:23:41 UT
P4 = 21:25:21 UT



After examining the first 60 years of the Julian calendar there is time for us to strike a balance, since we have found that four literary solar eclipses and two lunar eclipses are in perfect harmony with the starting point of **CE 154.**

On the other hand, for the academical science it took 400 years, with the greatest difficulty, to harmonize only two lunar eclipses from the same set of events, with the traditional chronology starting from **45 BC**.It is a well known fact that the lunar eclipse is a very frequent event, the observation of which in space and in time is possible on a wider by magnitudes scale, than in the case of the solar eclipse. Consequently it is not a big achievement to prove the chronology by the means of lunar eclipses, especially when one or two years of deviation is generously allowed.

Modern science cannot use three of these four solar eclipses in order to prove the chronology because they are not suitable to it at all, while in the case of the fourth we can see, that a very weak solar eclipse is the result of a serious mistake (overlooking the consuls), rendered to a year which is also erroneous by the way. The rendering of course was an intentional one, since in 3 BC in the Mediterranean area there was no suitable solar eclipse.

In my opinion it does not make any sense to illustrate the historically wrongly identified solar eclipses, and after this it is not necessary to open a debate whether the wrongly identified solar eclipse is a better or a worse one than the genuine solar eclipse.

Let us proceed with a very famous solar eclipse, known by the following title in archaeoastronomy:

"CRUCIFIXION" SOLAR ECLIPSE IN ASIA MINOR

There is no doubt this event did not occur in **AD 29, AD 31, AD 33** nor in **AD 227, AD 229** nor **AD 231.** And why is this?

It is well accepted that any daytime darkness at the Crucifixion itself (Matt. XXVII, 45: Mark XV, 33: Luke XXIII, 44–45) must have been meteorological (e.g. cloud, fog, dust-storm), since the Passover occurs near Full Moon, at which only a lunar eclipse can occur.

As is well known, the crucifixion can be connected to LUNA XIV, that is to full moon, consequently there is no place for a solar eclipse.(On the other hand the probability of a lunar eclipse is quite great!)

This knowledge could not prevent researchers from producing a great library of works discussing this "Crucifixion solar eclipse".

Below I show two examples from the rejected ideas.

In my opinion the three hours of darkness mentioned by Luke the evangelist is related to the lunar eclipse, which must be looked for somewhere at AD 29 + 198 years on one day earlier than the day preceding the Jewish Passover.

According to Luke we have:

"23:44 And it was about the sixth hour, and there was darkness over all the earth until the ninth hour.

23:45 And the sun was darkened, and the veil of the temple was rent in the midst.

23:46 And when Jesus had cried with a loud voice, he said, Father, into thy hands I commend my spirit: and having said thus, he gave up the ghost."

My suggestion is the total lunar eclipse [Luna XIV] of 19th of April in **CE 227,** which occurred a half day earlier than the Jewish Passover beginning on Friday evening. The record of "he had resurrected on the third day, on Sunday" [22nd of April is a Sunday] supports my hypothesis specifically.

35. Totale Sonnenfinsternis 29 n. Chr. November 24. (Datum nach Wurm, Ginzel, Hofmann).

Eusebios bei *Synkellos* S. 614, 7 (Bonn), Eusebios ed. Schoene II 148:

Ἰησοῦς ὁ Χριστός, ὁ υἱὸς τοῦ θεοῦ, ὁ κύριος ἡμῶν, κατὰ τὰς περὶ αὐτοῦ προφητείας ἐπὶ τὸ πάθος προῆλθε ἔτους ιθ' τῆς Τιβερίου βασιλείας, καθ' ὃν καιρὸν καὶ ἐν ἄλλοις μὲν Ἑλληνικοῖς ὑπομνήμασιν εὕρομεν ἱστορούμενα κατὰ λέξιν ταῦτα· ὁ ἥλιος ἐξέλιπε· Βιθυνία ἐσείσθη· Νικαίας τὰ πολλὰ ἔπεσεν· ἃ καὶ συνᾴδει τοῖς περὶ τὸ πάθος τοῦ σωτῆρος ἡμῶν συμβεβηκόσι· γράφει δὲ καὶ Φλέγων ὁ τὰς Ὀλυμπιάδας γράψας περὶ τῶν αὐτῶν ἐν τῷ ιγ' βήμασιν αὐτοῖς τάδε. τῷ δ' ἔτει τῆς σβ' ὀλυμπιάδος ἐγένετο ἔκλειψις ἡλίου μεγίστη τῶν ἐγνωρισμένων πρότερον, καὶ νὺξ ὥρᾳ ἕκτῃ τῆς ἡμέρας ἐγένετο ὥστε καὶ ἀστέρας ἐν οὐρανῷ φανῆναι, σεισμός τε μέγας κατὰ Βιθυνίαν γενόμενος τὰ πολλὰ Νικαίας κατεστρέψατο· καὶ ταῦτα μὲν ὁ δηλωθεὶς ἀνὴρ· τεκμήριον δ' ἂν γένοιτο τοῦ κατὰ τόδε τὸ ἔτος πεπονθέναι τὸν σωτῆρα ἡ τοῦ κυρίου κατὰ Ἰωάννην εὐαγγελίου μαρτυρία, ἥτις μετὰ τὸ ιε' ἔτος Τιβερίου τριετῆ χρόνον τῆς διδασκαλίας αὐτοῦ διαγενέσθαι μαρτυρεῖ . . .

Jesus Christus, der Sohn Gottes, ging nach den über ihn geschehenen Prophezeiungen im 19. Jahre des Tiberius zu seinem Leiden; für diese Zeit finden wir auch in anderen griechischen Denkbüchern dies wörtlich erzählt: die Sonne erlosch, in Bithynien geschah ein Erdbeben, der grösste Teil von Nicäa stürzte ein, — das stimmt auch mit dem, was sich beim Leiden unseres Herrn ereignete. Auch Phlegon, der die Olympiaden geschrieben hat, meldet hierüber im dreizehnten Buche wörtlich folgendes: im vierten Jahre der zweihundertzweiten Olympiade ereignete sich eine Sonnenfinsternis, welche bedeutender ist als alle früher bekannten und in der sechsten Tagesstunde ward es Nacht, sodass die Sterne am Himmel sich zeigten; und ein grosses Erdbeben, das in Bithynien entstanden, zerstörte den grössten Teil Nicäas. So weit der genannte Mann. Als Bestätigung dessen, dass der Heiland in diesem Jahre gelitten, kann das Zeugnis des Evangeliums des Herrn nach Johannes gelten, welches bezeugt, dass nach dem 15. Jahre des Tiberius drei Jahre seiner Lehrzeit verflossen gewesen seien.

cf. *Africanus* bei *Synkellos* S. 610, 13:

Φλέγων ἱστορεῖ ἐπὶ Τιβερίου Καίσαρος ἐν πανσελήνῳ ἔκλειψιν ἡλίου γεγονέναι τελείαν ἀπὸ ὥρας ἕκτης μέχρις ἐνάτης ἥλιον ὡς ταύτην . . .

Phlegon erzählt, dass zur Zeit des Kaiser Tiberius eine vollständige Sonnenfinsternis von der 6. bis 9. Stunde bei Vollmond eingetreten sei: offenbar die unsrige.

Für Astronomen sind hier einige historische Bemerkungen notwendig. Die erste Erwähnung der Finsternis findet sich spät nach ihrer Ereignung bei Phlegon aus Tralles. Dieser, ein Freigelassener des Hadrian (117—138) schrieb die *Ὀλυμπιάδες* von Ol. 1—229 in 16 Bänden. Von seinem Werke sind nur einige Kapitel erhalten geblieben durch Synkellos (Geheimsekretär unter dem Byzantiner Patriarchen Tarasios 784—806) und Photios (Patriarch v. Byzanz 9. Jahrh.) Eusebios, welcher den Phlegon zitiert, war 314—340 Bischof v. Cäsarea in Palästina; seine Kirchengeschichte schöpft viel aus den altchristlichen Schriftstellern Papias, Dionysios u. a. und reichte bis zum Konzil von Nicäa (325). Der Geburtsort Phlegons, die Stadt Tralles in Carien, lag unter $\lambda = 27^{\circ},83$, $\varphi = 37^{\circ},84$; (auf modernen Karten identisch mit den Ruinen Ghiuzel-Hissar bei Aidin). Da die Erzählungen bei Eusebios und Phlegon vornehmlich

kleinasiatische Ereignisse betreffen, bei letzterem Bithynien und die Finsternis in augenscheinlichen Zusammenhang gebracht werden und ausserdem die Stadt Nicaea in den ersten Jahrhunderten n. Chr. als ein Hauptort der Geschichte der christlichen Kirche anzusehen ist, so kann mit vieler Wahrscheinlichkeit angenommen werden, dass die Finsternis auf Nicäa, mindestens aber auf Bithynien überhaupt, zu beziehen sein wird, wenn sich auch keine absolute Gewissheit erlangen lässt. —

Ideler hat schon nachgewiesen (Handb. d. Chr. II 465 ff.), dass sich bei Julius Africanus, Eusebius, Hieronymus und anderen Chronographen des Orientes eine Olympiadenzählung findet, die um nahe 2 Jahre zu früh anfängt. (Vergl. hierüber auch Art de vér. les dates, II. partie, vol. 1 p. 5). Dies ist hier bei der Angabe des Eusebios resp. Phlegon der Fall; der Anfang von Ol. 202, 4 wäre nach der gewöhnlichen Zählung der Sommer 32 n. Chr.*). Allein Wurm hat schon gezeigt, dass in der ganzen 202. Olympiade im Orient beziehungsweise Bithynien nur eine sehr grosse Sonnenfinsternis u. z. im Jahre 29 November 24 (Ol. 202, 1) möglich ist. In einer sehr eingehenden Untersuchung (IV Abschnitt der Abhlg. „Astronomische Beiträge zur genäherten Bestimmung des Geburts- und Todesjahres Jesu", Beugels Archiv für Theologie und ihre neueste Litteratur, Tübingen 1818, vol. II 1—78, 261—364) entscheidet er zwischen den Finsternissen 29 November 24, 32 April 28, 33 September 12 und 34 September 1, findet sämtliche unbrauchbar mit Ausnahme der ersten und kommt zu folgendem Schlusse: „Da bei Eusebios die Olympiade gewiss, das Jahr aber zweifelhaft ist, und wenn der Ausdruck *καθ' ὃν καιρόν* (in welchem Jahre oder um welche Zeit) in einem weiteren Sinne sich nehmen lässt, so sehe ich keinen Grund, warum nicht beide Erzählungen bei Eusebios sich auf die Sonnenfinsternis 29 November 24 sollten beziehen können, so wie sie schon Kepler anfangs darauf bezogen (Eclog. chron. 1615), später aber (Tab. Rudolph. c. 17 sucht er die Sonnenfinsternis des Phlegon im Jahre 31) seine Meinung geändert hat." Es ist astronomisch sehr bemerkenswert, dass die Finsternis selbst mit den damaligen noch mangelhaften Mondtafeln für Nicäa sich sehr bedeutend zeigte (nach Wurm daselbst 11",2 Maximum, um $10^h 49^m$ m. Zt.) und dass darum Wurm, der die notwendige Verbesserung der Rechnungsgrundlagen einsah und selbst auch nach einer Verbesserung der hundertjährigen Bewegung des Mondknotens von Bürg gestrebt hat (Zeitsch. f. Astr. Lindenau-Bohnenberger III 29 ff.), die Wichtigkeit der Finsternis für die Mondtheorie bemerkt, indem er hinzusetzt „eine ganz geringe Verbesserung der Mondbreite würde sie für Nicäa total machen." Die Beziehung des 19. Jahres des Tiberius (32 n. Chr.) bei Eusebios auf die angebliche Sonnenfinsternis bei Christi Tode ist irrig und hat in dem gläubigen Sinne des Chronographen ihren Grund; die Finsternis des Phlegon und die Erscheinung bei Christi Tode sind vielmehr, wie Wurm nachdrücklich betont, zwei gänzlich verschiedene Dinge. Über die an Phlegons Datierung der Olympiaden sich knüpfenden Meinungsverschiedenheiten sehe man § 33 der Abhandlung Wurms. — Oppolzers „Syzygientafeln für den Mond" haben mich seinerzeit (G. I 31) die Sonnenfinsternis für Nicäa sofort total finden lassen, nachdem sich die Zentralitätsgrenzen wie folgt ergeben:

Nordgrenze		Südgrenze	
$\lambda = 12^0,1$	$\varphi = 53^0,0$	$\lambda = 12^0,3$	$\varphi = 52^0,1$
20,8	47,4	20,9	46,3
28,5	41,7	28,5	40,4
35,3	36,8	35,3	35,1
41,4	31,5	41,3	30,3

und Nicäa in dieser Zone lag (Maximum 12",02). Hofmann (42) nimmt die Finsternis ebenfalls an und findet 12",00 als Maximum. Hind (Nature VI 252) folgt, ohne Wurms Arbeit zu kennen, der Versicherung Idelers (Handb. II 418) und findet die Zentralitäts-Kurve über Sinope und nahe Ninive laufend. —

*) Nach jener sogenannten „späteren Olympiadenrechnung" fängt das 4. Jahr der 202. Olympiade im September 29 n. Chr. an. (Vgl. Schram: Hilfstafeln für Chronologie p. 32, Denkschriften d. Wien. Akad. d. W. 46 Bd. Math. C. 1883.) — Bei *Johannes Philoponos de opificio mundi* II 21, wo überliefert wird *τῷ δευτέρῳ ἔτει τῆς διακοσιοστῆς δευτέρας ὀλυμπιάδος*, ändert der neueste Herausgeber Reichardt (Leipzig 1897 p. 99) *τῷ δ' ἔτει* mit Berufung auf eine spätere Stelle. — Über die Chronologie des Jul. Africanus s. Gelzer, Jul. Afric. u. d. orient. Chronol. I 39, 46, 51.

Stockwell (Ast. Journ. XII 123) benützt die Finsternis, um nachzuweisen, dass Ol. 1 = 777 v. Chr.*) — Seyffarth (456) 33 n. Chr. September 12 (unsichtbar für Nicäa.) — Für die Fixierung des Todesjahres Christi sollen hier nur die Ergebnisse einiger neueren Schriftsteller berührt werden (über die älteren s. Ideler Handb. II 412 ff.) Zumpt (Geburtsjahr Christi, Leipzig 1869) findet als höchste Grenze des Todesjahres 32 n. Chr., als wahrscheinlichstes das 15. Jahr Tiberius, 29 n. Chr.; hiemit stimmt auch Sepp (Thaten und Lehren Jesu, Schaffhausen 1864), Riess (a. a. O.) dagegen findet 33 n. Chr. Die Kreuzigung hat im Frühjahre, vor Ostern, stattgefunden. Obwohl nun Zumpt behauptet, dass die genauere Angabe des Todesjahres Christi geradezu eine Erfindung der ersten Christen sei, wird man sich von dem kirchlichen Datum nicht entfernen dürfen. Da die Phlegon'sche Finsternis in den November fällt, so schliesst sich, selbst wenn das Todesjahr 29 nach Zumpt richtig sein sollte, jeder Versuch von selbst aus, der ein Zusammenbringen derselben mit der biblischen Finsternis bei Christi Tod (Matthäus XXVII 50) versuchen möchte. Die früheren Chronologen haben sich zum Teil abgemüht, durch Substitutionen von „Wundern" die Verwandlung des die Osterzeit bedingenden Vollmondes in Neumond zu bewirken und eine „übernatürliche" Sonnenfinsternis herzustellen; diese und die sonst bezüglichen Hypothesen findet man zusammengestellt bei Riccioli (I 357, c. 18 de miraculo eclipsis solis in morte Christi), auf welchen ich etwaige Interessenten verweise.

Spezieller Kanon: Maximum für Nicäa: 12",0 um 10ᵏ45ᵐ,8 w. Zt.

Nach Phlegon in der sechsten Tagesstunde (nach 11ʰ), also gut übereinstimmend. Über die Lage der Zentralitätszone s. m. Karte X. Durch den Umstand, dass die Beschreibung auf Totalität lautet und jedenfalls auf Nicäa (mindestens Bithynien) zu beziehen ist, wird die Finsternis zu einem wichtigen Prüfungsmittel für die Mondtheorie. Auch für Cäsarea in Palästina, den Bischofsitz des Eusebios, ist die Finsternis noch fast 11 Zoll: sollte vielleicht Eusebios dort noch eine alte Erinnerung an die Finsternis vorgefunden haben, die ihn geneigter machte, den Worten Phlegons Glauben zu schenken? — Sollten einige Historiker Bedenken gegen das Jahr 29 n. Chr. haben, so müssten sich deren Widerlegungen gegen Idelers „spätere Olympiadenrechnung" wenden, oder es müsste gestattet sein, in Phlegons Werke (von welchem wir ohnehin nur Bruchstücke kennen) eine Irrung oder Entstellung des Jahres durch Spätere anzunehmen. Wie aus Abschnitt II und aus Karte X ersichtlich, lässt sich von bedeutenden Sonnenfinsternissen zwischen 28—34 n. Chr. nur die von 29 November 24 angeben.

Total Solar Eclipse of 0029 Nov 24

Geocentric Conjunction = 09:10:37.3 UT J.D. = 1731977.882376
Greatest Eclipse = 09:35:30.3 UT J.D. = 1731977.899656

Eclipse Magnitude = 1.02160 Gamma = 0.74615

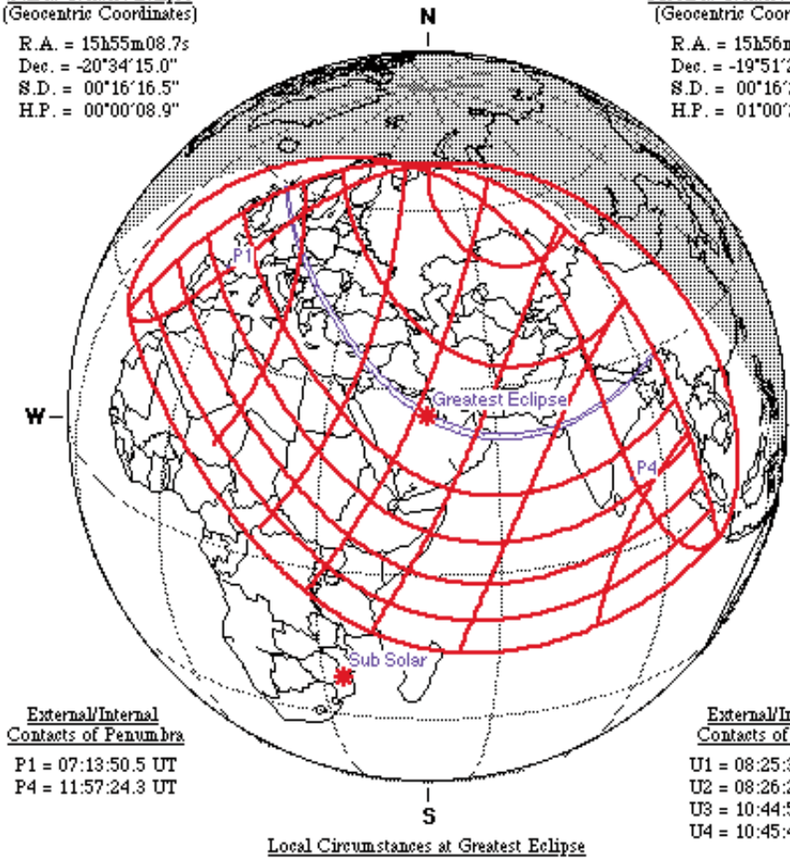
Saros Series = 62 Member = 52 of 71

Sun at Greatest Eclipse
(Geocentric Coordinates)

R.A. = 15h55m08.7s
Dec. = -20°34′15.0"
S.D. = 00°16′16.5"
H.P. = 00°00′08.9"

Moon at Greatest Eclipse
(Geocentric Coordinates)

R.A. = 15h56m06.5s
Dec. = -19°51′25.6"
S.D. = 00°16′26.6"
H.P. = 01°00′21.1"



External/Internal Contacts of Penumbra

P1 = 07:13:50.5 UT
P4 = 11:57:24.3 UT

External/Internal Contacts of Umbra

U1 = 08:25:32.9 UT
U2 = 08:26:25.1 UT
U3 = 10:44:53.5 UT
U4 = 10:45:41.8 UT

Local Circumstances at Greatest Eclipse

Lat. = 25°46.5′N Sun Alt. = 41.6°
Long. = 048°13.3′E Sun Azm. = 198.3°
Path Width = 109.4 km Duration = 01m58.5s

Ephemeris & Constants

Eph. = Newcomb/ILE
ΔT = 8375.4 s
k1 = 0.2724880
k2 = 0.2722810
Δb = 0.0" Δl = 0.0"

Geocentric Libration
(Optical + Physical)

l = 3.33°
b = -0.94°
c = 10.43°
Brown Lun. No. =-23130

0 1000 2000 3000 4000 5000
Kilometers

F. Espenak, NASA/GSFC - 1997 Jul 28

sunearth.gsfc.nasa.gov/eclipse/eclipse.html

Total Solar Eclipse of 0033 Mar 19

Geocentric Conjunction = 10:19:11.7 UT J.D. = 1733188.929996
Greatest Eclipse = 11:00:54.6 UT J.D. = 1733188.958965

Eclipse Magnitude = 1.05753 Gamma = -0.72067

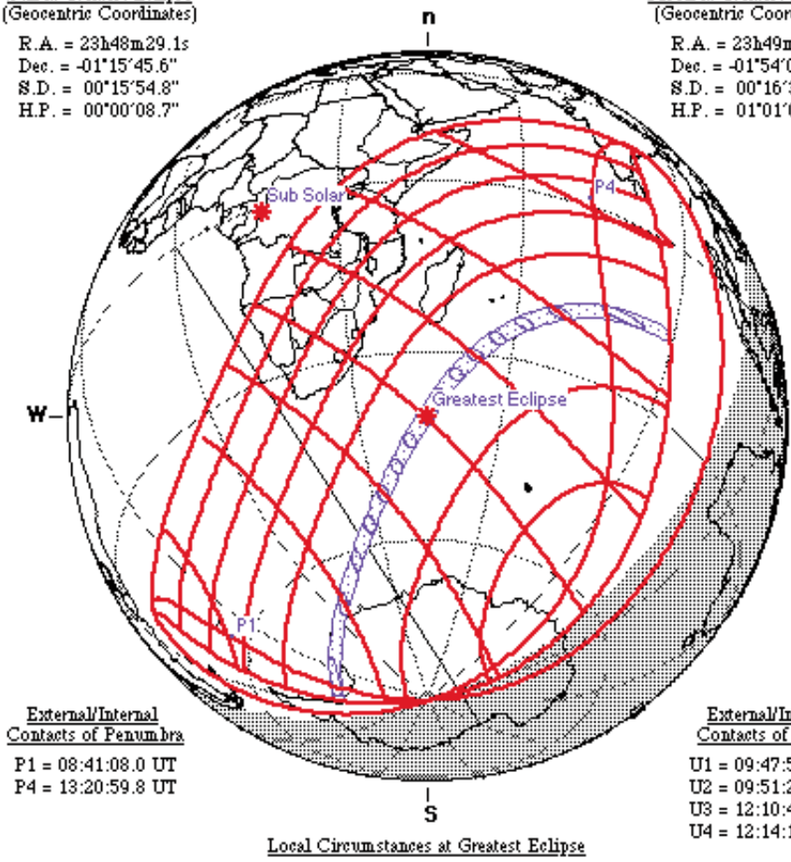
Saros Series = 59 Member = 60 of 72

Sun at Greatest Eclipse
(Geocentric Coordinates)

R.A. = 23h48m29.1s
Dec. = -01°15′45.6″
S.D. = 00°15′54.8″
H.P. = 00°00′08.7″

Moon at Greatest Eclipse
(Geocentric Coordinates)

R.A. = 23h49m54.9s
Dec. = -01°54′03.3″
S.D. = 00°16′38.1″
H.P. = 01°01′03.0″



External/Internal Contacts of Penumbra

P1 = 08:41:08.0 UT
P4 = 13:20:59.8 UT

External/Internal Contacts of Umbra

U1 = 09:47:56.8 UT
U2 = 09:51:27.8 UT
U3 = 12:10:48.2 UT
U4 = 12:14:16.7 UT

Local Circumstances at Greatest Eclipse

Lat. = 40°20.3′S Sun Alt. = 43.7°
Long. = 044°29.0′E Sun Azm. = 320.4°
Path Width = 268.2 km Duration = 04m05.5s

Ephemeris & Constants

Eph. = Newcomb/ILE
ΔT = 8338.5 s
k1 = 0.2724880
k2 = 0.2722810
Δb = 0.0″ Δl = 0.0″

Geocentric Libration
(Optical + Physical)

l = 1.81°
b = 0.93°
c = -22.17°
Brown Lun. No. =-23089

0 1000 2000 3000 4000 5000
Kilometers

F. Espenak, NASA/GSFC - Mon, Apr 21, 1997
sunearth.gsfc.nasa.gov/eclipse/eclipse.html

On the basis of the dates of the Crucifixion and the death of Herod **[HC/CE 195]** we can also outline the year of Jesus' birth, which is any year between the years 191-194. If we decide he was 33 years of his age when he died, then the correct year is **CE 194,** but if we rely on the world chronicle of Theophanes (which must be corrected by 8 years) then the right year is **CE 191!**

36. Partielle Mondfinsternis 33 n. Chr. April 3.

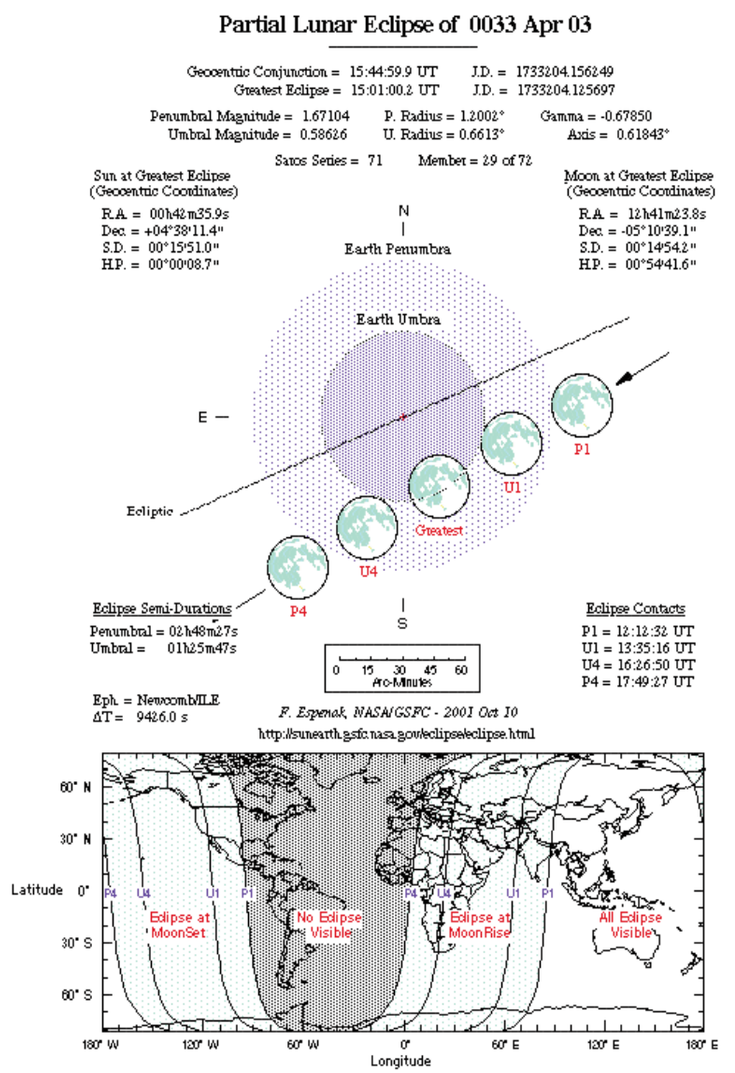
Bei den Erklärungsversuchen der biblischen Finsternis bei Christi Tode haben einige ältere Chronologen die Mondfinsternis nicht ausser Acht gelassen, die auf den 14. Nisan des Jahres 33 n. Chr. (3. April) fällt, welches Datum mit dem kirchlichen der Kreuzigung völlig kongruent ist. Die Mondfinsternis ist u. a. schon von Riccioli (I 361), Wurm (a. a. O.) angezeigt; Riccioli giebt als Grösse 7",9, gegen Abend in Jerusalem sichtbar, Calvisius 8",5 (Struyck p. 99). Der Tag ist ein Freitag. Da es sich hier um keine beobachtete historische, sondern nur um eine berechnete Finsternis handelt (die Finsternis ist auch von Hind, Nature VI 252 u. von Bruhns, Ber. d. Ges. d. W. Leipz. XXX 98 berechnet) so soll nur noch darauf hingewiesen werden, dass es von den 9 zwischen 29—33 n. Chr. möglichen Mondfinsternissen die einzige ist, die für Jerusalem auf den Nachmittag fällt (vgl. G. I 33) und dass meine „empirischen Korrektionen" den Verlauf der Finsternis wie folgt ergeben:

*) Bei dieser Gelegenheit stelle ich hier Stockwells Korrektionen der Chronologie nach dessen eigener Angabe (Astr. Journ. XII 123) zusammen: Plutarchs Sonnenfinsternis 113 n. Chr. Juni 1. — Jerusalems Zerstörung 69 statt 70 n. Chr. — Vespasians Regierung 68 statt 69 n. Chr. — Phlegons Finsternis 29 November 24. — Augustus Tod 13 statt 14 n. Chr. — Das letzte Jahr der Konfusion im römischen Kalender 17 statt 46 v. Chr. — Der spanische Krieg unter Caesar 46 und 47 v. Chr. — Ermordung Caesars 45 statt 44 v. Chr. — Herodes Tod 4 v. Chr. — Jerusalems Einnahme durch Pompejus 65 v. Chr. — Schlacht bei Pydna 3. September 172 v. Chr. — Pelopidas Finsternis 13. Juli 364 v. Chr. — Ennius Finsternis 3. September 404 v. Chr. — Alexander d. Gr. Geburt 357 v. Chr. — Xerxes Zug 481 statt 480 v. Chr. — Larissa Finsternis 547 v. Chr. Oktober 23. — Thales Finsternis 603 v. Chr. Mai 18. — Roms Gründung 754 v. Chr. April 22. — Die erste Olympiade 777 v. Chr. statt 776.

— 201 —

Anfang	15h 44m,4	m. Zt. Jerus.	
Mitte	17 10,7	„	
Ende	18 37,0	„	
Grösse	7",1		

The idea of a lunar eclipse connected to the Crucifixion, according to the traditional chronology.



A new generation of 21st century philologists will learn a lot from the following solar eclipse, which occurred on the "birthday" of emperor Claudius.

Ginzel (p.237) gives it under serial-number 37. His source is **Dio Cassius LX 26,** which you can read as follows:

Cassius Dio, Roman History, LX, 26, Loeb Classical Library, Translation by Earnest Cary.

"25.The next year Marcus Vinicius and Statilius Corvinus became consuls, the former for a second time…

26.Since there was to be an eclipse of the sun on his birthday, he feared that there might be some disturbance in consequence, inasmuch as some other portents had already occurred; he therefore issued a proclamation in which he stated not only the fact that there was to be an eclipse, and when, and for how long, but also the reasons for which this was bound to happen. These reasons I will now give. The moon, which revolves in its orbit (or so it is believed), either directly below it or perhaps with Mercury and Venus intervening, has a longitudinal motion, just as the sun has, and a vertical motion, as the other perhaps likewise has, but it has also a latitudinal motion such as the sun never shows under any conditions. When, therefore, the moon gets in a direct line with the sun over our heads and passes under its blazing orb, it obscures the rays from that body that extend toward the earth. To some of the earth's inhabitants this obscuration lasts for a longer and to others for a shorter time, whereas to still others it does not occur for even the briefest moment. For since the sun always has a light of its own, it is never deprived of it, and consequently to all those between whom and the sun the moon does not pass, so as to throw a shadow over it, it always appears entire. This, then, is what happens to the sun, and it was made public by Claudius at that time. But now that I have once touched upon this subject, it will not be out of place to give the explanation of a lunar eclipse also. Whenever, then, the moon gets directly opposite the sun (for it is eclipsed only at full moon, just as the sun is eclipsed at the time of new moon) and runs into the cone-shaped shadow of the earth, a thing that happens whenever it passes through the mean point in its latitudinal motion, it is then deprived of the sun's light and appears by itself as it really is. Such is the explanation of these phenomena.

27. At the close of that year Valerius Asiaticus and Marcus Silanus became consuls, the former for a second time."

[Suetonius says that the birthday of Claudius was August 1st.]

In this case Ginzel does not let me down, since he doubts that anyone could see the eclipse in Rome with the naked eye. Of course, on the basis of the source-text, he points out that here we have a case with an event calculated in advance.

Leaving Ginzel aside, the biggest problem with this solar eclipse remains the same, that it really could not be observed, but it is on this eclipse that the identification of the age and birthday of Claudius. (**AD 45.** August 1) is based.

37. Totale Sonnenfinsternis 45 n. Chr. August 1. (Datum nach Petavius).

Dio Cassius LX 26, 1:

καὶ ἐπειδὴ ὁ ἥλιος ἐν τοῖς γενεθλίοις αὐτοῦ (sc. Κλαυδίου) ἐκλείψειν ἔμελλεν, ἐφοβήθη τε μή τις ἐκ τούτου ταραχὴ γένηται, ἐπεὶ ἄλλα ἄτια τέρατα συνεβεβήκει, καὶ προέγραψεν οὐ μόνον ὅτι τε ἐκλείψει καὶ ὁπότε καὶ ἐφ' ὁπόσον, ἀλλὰ καὶ τὰς αἰτίας δι' ἃς ἀναγκαίως γενήσεσθαι τοῦτο ἔμελλεν.

Und da sich die Sonne an seinem Geburtstage (des Claudius) verfinstern sollte, besorgte er, es möchte eine Verwirrung entstehen, zumal auch einige andere Wundererscheinungen eingetreten waren. Daher liess er nicht blos das Eintreten der Finsternis sowie deren Zeit und Grösse, sondern auch die Gründe bekannt machen, welche diese mit Notwendigkeit herbeiführen mussten.

Das Datum der Finsternis (nach Petavius) steht sicher, denn Kaiser Claudius feierte seinen Geburtstag am 1. August (Sueton. Claud. 2, Dio LX 5,3). Es handelt sich bei der Finsternis um eine vorausgesagte, berechnete; ob die kleine Phase, die sich in Rom zeigen konnte, wirklich mit freiem Auge wahrgenommen worden ist, bleibt recht fraglich. Petavius (I 823) giebt als Maximum für Rom $3^{d},8^{h}\,52^{m}$; Wurm (a. a. O. II 9) $3^{d},5$ um $9^{h}\,51^{m}$, Hofmann (43) $3^{d},9$ um $9^{h}\,19^{m}$; ebenso ich (G. I 36). — Riccioli (I 367), Struyck (139). — Seyffarth (457) 47 Juni 25.

After all, how could Cassius Dio, or more precisely John Xiphilinus "The Epitomizer" [what a nice name] know about this solar eclipse which can only be observed very well in the Dakar-Khartoum-Indian ocean area? Naturally, he tells us that the solar eclipse is the result of calculation!

The question arises: since when could people calculate solar eclipses? During the time of the emperors Claudius and Caracalla it is certain that they lacked the ability!

(I do not know the opinion of Neugebauer in connection with this question.)

My opinion in connection with this solar eclipse and birthday-date is that, in the days of Xiphilinus, [the precise dating of his time I leave to more professional researchers] efforts had already been made to retrocalculate solar eclipses with an accuracy of one day, for the whole of the Earth, but the determination of the track of their totality was still in its infancy.

Anyhow, after that another historian, Suetonius, also connected the birthday of Claudius to this solar eclipse. Consequently he must be located into the times after Xiphilinus, since Suetonius mentioned 1st of August. This is the only message of this "predicted" solar eclipse for the source-critics dealing with Suetonius.

Such a non-visible but calculated solar eclipse can shake the complete structural system of the science to its foundations, including the creditability of C-14 tests and the "science" of paleography!

But enough criticism, let us see the genuine solar eclipse, since during the time of the emperor Claudius there really was a solar eclipse in Rome, although I cannot prove that it occurred on the birthday of Claudius. Perhaps it did…

My offer is as follows:

HC/CE 241 S.241. Jan.29

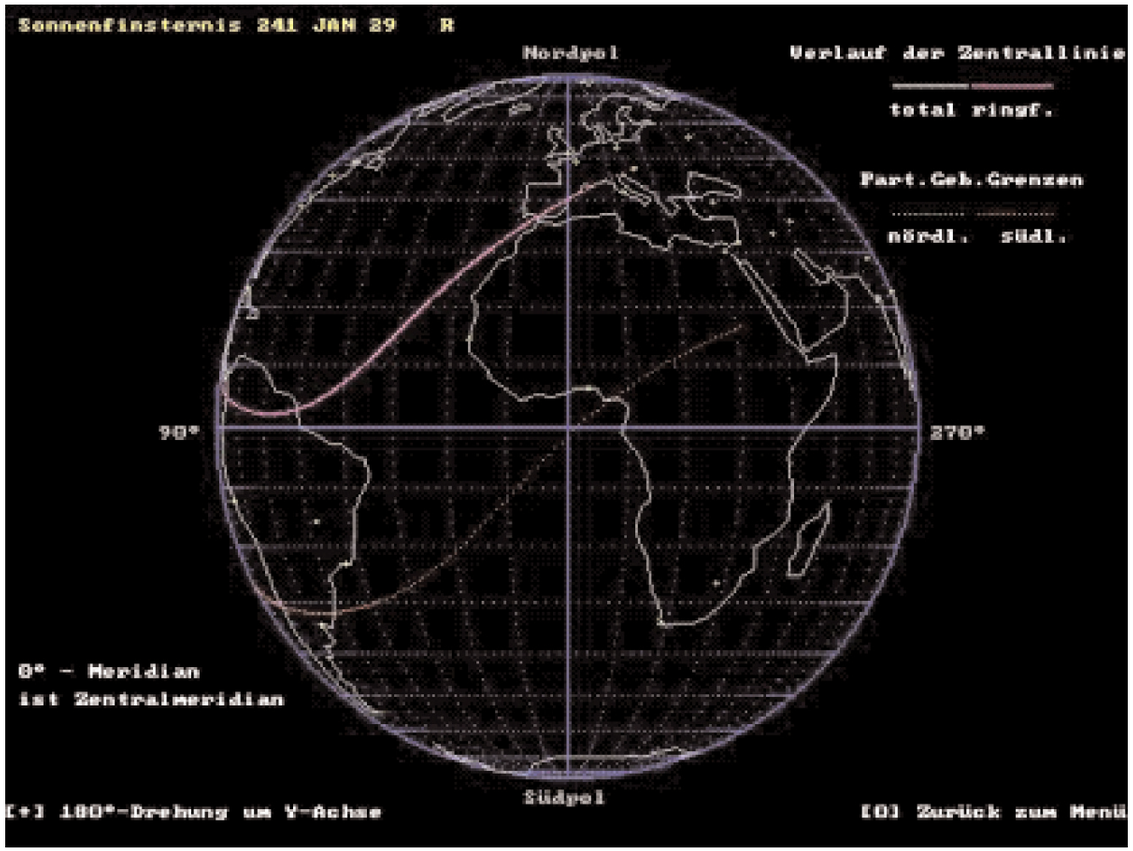
The track of totality of this annular solar eclipse, illustrated also by Oppolzer and Ginzel, was running on the line of Gibraltar-Northern-Italy and ended up in Pannonia [Hungary]. I have no reason to doubt that in the original source of Xiphilinus there was the report of the solar eclipse occurring on the birthday of emperor Claudius. And it follows from this fact that the year of **CE 241** is the 5th year of the reign of Claudius!

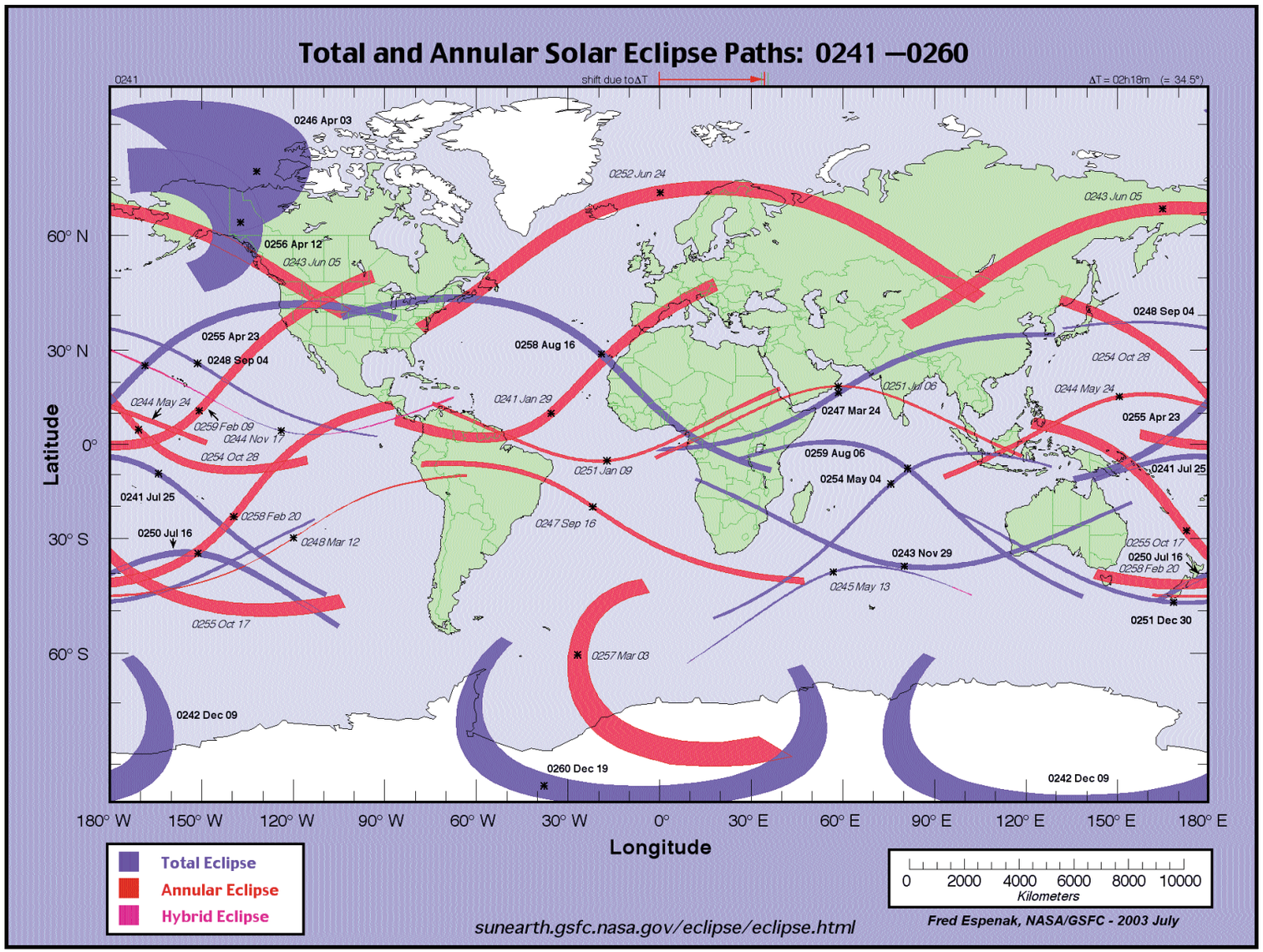
It is not significant at all, that between my offered event and the solar eclipse which could not be observable in Rome, the difference is only 196 years, and not 198 years. This only proves that the relative Roman chronology is more or less correct. I did not investigate, but I am quite sure, that in connection with such a solar eclipse which is given with "day accuracy in an era which was ahead of the correct times of such calculation accuracy", the researchers might also have been in doubt in connection with the inerrancy of the lists of the consuls, assuming two years of error.

Nor is it really provable, a posteriori, that the year of the solar eclipse can actually be connected to the consulship of Marcus Vinicius and Statilius Corvinus, or instead, rather to the times of Valerius Asiaticus and Marcus Silanus. The date in January can make it possible for a historian writing at a considerably later time to confuse the pairs of the consuls. In comparison with the 198 years of error this small confusion is a minor thing…

(One earlier researcher, Seyffart, had also shifted certain consuls and emperors by two years in comparison with the orthodox chronology, in order to create a situation in which the solar eclipse becomes explicable. I can totally understand his course of action.)

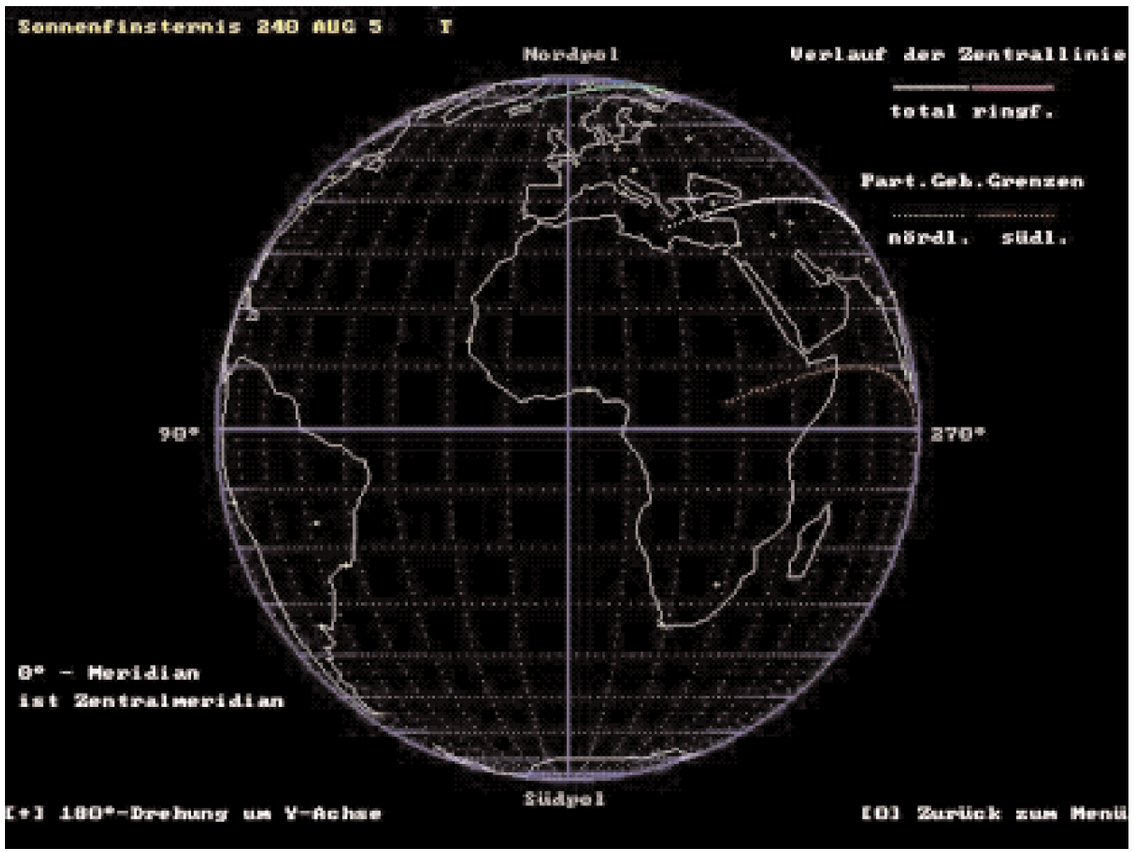
The map of this solar eclipse with delta-T = 117.8 minutes proposed by Mucke/Meeus:

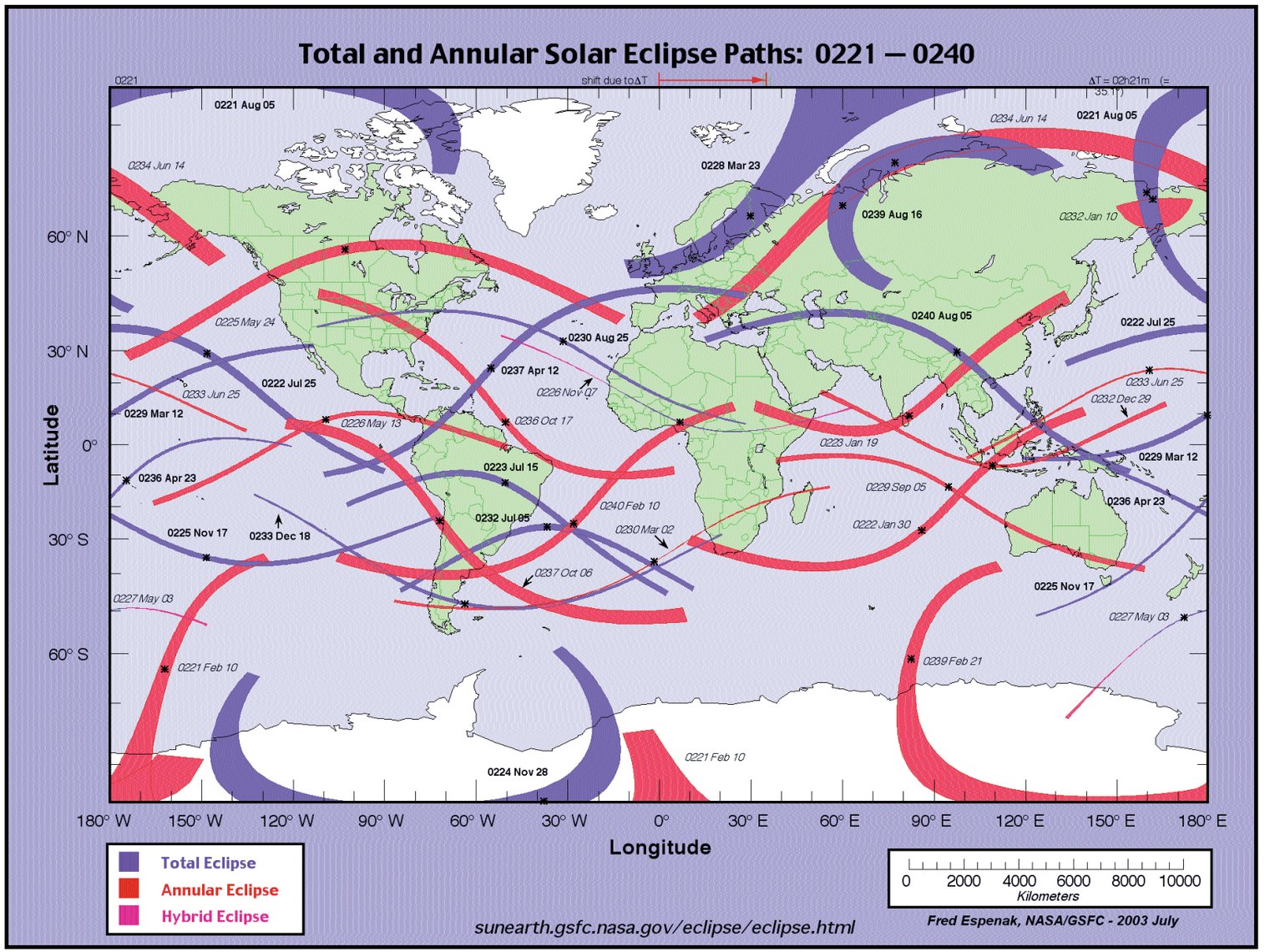



Total and Annular Solar Eclipse Paths: 0241 –0260
0241
shift due to ΔT
ΔT = 02h18m (= 34.5°)
0246 Apr 03
0252 Jun 24
0243 Jun 05
0256 Apr 12
0243 Jun 05
0248 Sep 04
0255 Apr 23
0248 Sep 04
0258 Aug 16
0254 Oct 28
0244 May 24
0241 Jan 29
0251 Jul 06
0244 May 24
0247 Mar 24
0255 Apr 23
0259 Feb 09
0244 Nov 17
0254 Oct 28
0259 Aug 06
0251 Jan 09
0241 Jul 25
0254 May 04
0241 Jul 25
0258 Feb 20
0247 Sep 16
0250 Jul 16
0248 Mar 12
0243 Nov 29
0255 Oct 17
0250 Jul 16
0258 Feb 20
0245 May 13
0255 Oct 17
0251 Dec 30
0257 Mar 03
0242 Dec 09
0260 Dec 19
0242 Dec 09
60° N
30° N
0°
30° S
60° S
Latitude
180° W
150° W
120° W
90° W
60° W
30° W
0°
30° E
60° E
90° E
120° E
150° E
180° E
Longitude
Total Eclipse
Annular Eclipse
Hybrid Eclipse
0
2000
4000
6000
8000
10000
Kilometers
sunearth.gsfc.nasa.gov/eclipse/eclipse.html
Fred Espenak, NASA/GSFC - 2003 July

Another possibility cannot be excluded completely either. It might be that the literary source is related to the solar eclipse of **HC/CE 240.** Aug.5. (The NONIS/KALENDIS meanings could easily cause a confusion of ideas for a later copyist.)

The map of this solar eclipse with delta-T = 117.9 minutes proposed by Mucke/Meeus:





Naturally the dismissal of the wrongly identified (at **AD 45**) and retrocalculated solar eclipse leads to a very serious consequence!

Up to now it was the definite proof for the correct use and the leap year distribution of the Julian calendar, at a time 30 years after the death of Augustus Caesar. From this moment on, this proof can be forgotten forever.

Moreover,

this solar eclipse was the one that was also used to prove the correctness of the AD year counting method arising only 500 years later.

This solar eclipse had proved in a wonderful way that during the time of Caracalla, the chronological concepts of the later Dionysius Exiguus and The Venerable Bede were already known to Dio Cassius…

And in a final addition the author of the source could ascertain when the emperor Claudius was born according the Julian calendar, which is mathematically regular and retrocalculated to earlier time, and which is in use by astronomy in the 20th century.

But from now on, that's all ended!!!

Astrolabe

Staying with the same source-system of the same author, we can see that for the following year Dio Cassius reports to us the appearance of an island, and this year is a special one, namely the 800th year of the foundation of Rome. This information gives us the right to suppose that the year of **HC/CE 241** is equivalent to the 799th year of the foundation of Rome. Based on this statement, we already have an error of three years in the synchronization of the traditional chronology, since **AD 1** seems to be in harmony with the year of a.u.c. 757, and not with the year of a.u.c. 754. I am quite aware of the fact that a volcanic eruption and the rise of an island can not be an event which can be determined exactly and assigned to an exact astronomical year and day, in a situation where this event is just mentioned generally.

Luckily for us, in our case the event is connected to the consuls:

Cassius Dio, Roman History, LX, 29

"In the following year, which was the eight hundredth year of Rome, Claudius became consul for the fourth and Lucius Vitellius for the third time…

This year a small islet hitherto unknown, made its appearance to the island of Thera."

This source has good support from the work of Sextus Aurelius Victor, which says the following:

Caesars, 4,12

"On the 6-th year of his [Claudius] reign, from the total of 14, the 800th anniversary of the foundation of the city was celebrated in Rome […] In the Aegean sea a large island suddenly appeared, during a night on which an eclipse of the moon had occurred" (D.J. Schove, p.9)

The record relates to the 6th year of Claudius (**AD 46** of the traditional chronology) and at the same time to the 800th year of the foundation of Rome (traditionally **AD 47**). The obvious contradiction took up the attention of the chronologists starting with Scaliger in 1598.

No other ancient source mentions the appearance of an islet together with an eclipse of the moon, but others write about the new islet by itself.

Dio Cassius, LX, 29: "This year a small islet, hitherto unknown, made its appearance close to the island of Thera."

L.Seneca, "Naturales quaestiones"

II, 26,6: "According to Posidonius, an island arose in the Aegean Sea, in the tradition of our forefathers. …The same thing happened again in our own time during the second consulship of Valerius Asiaticus.

….

VI, 21,1: "Does anyone doubt that air brought Thera and Therasia into the light of day, as well as that island which in our own time was born before our eyes in the Aegean Sea?"

These other sources differ on the details of the islet's appearance, but they all agree that the location is the Thera archipelago. All those, which mention a year, specify that year within the range of **AD 44–49.** The exception is Pliny, since he names the year as **AD 19.**

During the last four hundred years, academical researcher-scientists tried to save at any costs the name of this „great contemporary scientist of the ancient world". Since it is obvious that his statement about **AD 19** ruins his reputation, it must be unthinkable that a contemporary witness could make such a big mistake. According to the researchers, the only possible explanation is that the copyists corrupted and misunderstood his records, and then interpreted his corrupted lines to state that Pliny really meant **AD 46.**

Nobody would have thought it of him that perhaps he can be a later author of the Middle Ages, who tries to make us believe he is from the ancient world!

When studying his monumental „Natural History", I could not understand from the outset how it could contain so many errors in years' 'corner-stones' (dates of vernal and autumnal equinoxes and

of summer and winter solstices). Representatives of academical science, for their part, solved the problem elegantly by ignoring its existence.

From this moment on, let us leave them with their problem.

Back in the 19th century, Ginzel still placed this lunar eclipse to New Year's night of **AD 46/47,** but today it is placed at **AD 46.** July 6., thanks exactly to Pliny! Why? Because of the fact that Pliny mentioned the date of July 8th as the time of the islet's appearance, making an error of 30 years at the same time.

I do not wish to waste more time discussing an erroneous dating, preferring to turn instead to the genuine lunar eclipse as follows:

38. Totale Mondfinsternis 47 n. Chr. Januar 1. (Datum nach Hofmann).

Dio Cassius LX 29:

§ 1: *ἐν δὲ τῷ ἑξῆς ἔτει ὅ τε Κλαύδιος τὸ τέταρτον καὶ Οὐιτέλλιος Λούκιος τὸ τρίτον ἐπατεύσαν τῇ Ῥώμῃ ἔτους ὄντος ἑπτακοσιοστοῦ . . .* § 7: *ἀνεφάνη δὲ καὶ νησίδιόν τι ἐν τῷ ἔτει τούτῳ παρὰ τῇ Θήρᾳ τῇ νήσῳ, οὐκ ὂν πρότερον.*

Im folgenden Jahre, dem 800. der Stadt, waren Claudius zum vierten u. L. Vitellius zum dritten male Konsuln . . . in diesem Jahre ward auch eine kleine Insel bei Thera sichtbar, welche früher nicht existiert hatte.

Seneca nat. quaest. II 26,6:

Idem (das Aufsteigen der Insel im aegäischen Meere) nostra memoria Valerio Asiatico consule iterum accidit. *VI 21,1:* Theren et Therasiam et hanc nostrae aetatis insulam, spectantibus nobis in Aegaeo mari natam . .

Aurelius Victor de Caes. 4,11 (ed. Pichlmayr p. 7,5):

(Claudii anno sexto) in Aegaeo mari repente insula ingens emersit nocte, qua defectus lunae acciderat.

Die Erhebung der vulkanischen Insel bei Thera (Santorin) ist bezeichnet durch die Konsuln von 46 und 47 n. Chr., bei Seneca und Aurel. Victor. Letzterer Schriftsteller fügt noch eine Mondfinsternis hinzu. Das Datum dafür hat schon Struyck (p. 139) angegeben. Hofmann (44) findet für das aegäische Meer bei der Mondfinsternis 46 Dezember 31:

Anfang der Total.	21^h	52^m	
Mitte	22	41	Grösse $21^{\prime\prime},9$
Ende der Total.	23	30	

Da es zweifelhaft sein dürfte, ob es sich um eine bei Thera oder in Rom wahrgenommene, oder überhaupt beobachtete Mondfinsternis handelt, (auffällig ist, dass der Zeitgenosse Seneca nichts darüber berichtet), so glaube ich der Finsternis (s. No. 1017 Abschnitt IV des Speziellen Kanon) keine nähere Rechnung schuldig zu sein. — Seyffarth (457) 48 Juni 14.

HC/CE 242.M. 242. June 29.

This lunar eclipse can satisfy all our needs, since
at 20 h 46 m the Moon steps into the penumbra (P1)
at 21 h 46 m the moon steps into the umbra (U1)
at 22 h 41 m the total lunar eclipse begins (U2)
at 0 h 16 m the total lunar eclipse ends (U3)
at 1 h 21 m the Moon steps out from the umbra (U4)
at 2 h 16 m the Moon steps out from the penumbra (P4)

In connection with the above case, historians need only remember that this is the 6th year of the reign of Claudius and the 800th year of the foundation of Rome (a.u.c. 800) according to the sourses.

Our next solar eclipse will be one retro-calculated for a period 200 years earlier.

The line of events presented up to now show us clearly that the reign of Nero Caesar occurred somewhere between the period of **HC/CE 252** and **266.** Consequently, Agrippina could not be killed on 30th April in **AD 59,** when there was a total solar eclipse visible to the south from Sicily.

Pliny errs when he gives us the date with day-exactness, merely showing he can count. And he is sufficiently daring to give us the data about the hour for Armenia!(It happened in Campania between the 7th and 8th hour of the day, and in Armenia between the 10th and 11th hour.)

It is very remarkable precision from the ancient world, from such an author, who at the same time has a very confused opinion about the names of the consuls supporting the appearance of the islet and in connection with the dates of the main corner-stones of the year.

Let us see the sources:

Pliny, ”Natural History”, II, 180, Loeb Classical Library, v.330.

“Consequently inhabitants of the East do not perceive evening eclipses of the sun and moon, nor do those dwelling in the West see morning eclipses, while the latter see eclipses at midday later than we do. The victory of Alexander the Great is said to have caused an eclipse of the moon at Arbela at 8 p.m. while the same eclipse in Sicily was when the moon was just rising. An eclipse of the sun that occurred on April 30 in the consulship of Vipstanus and Fonteius a few years ago was visible in Campania between 1 and 2 p.m. but was reported by Corbulo commanding in Armenia as observed between 4 and 5:this was because the curve of the globe discloses and hides different phenomena for different localities.”

Cassius Dio is no better, judging by the reference in epitomizer Xiphilinus. He indicates a total solar eclipse with the stars visible, in the midst of the sacrifices that were offered in Agrippina’s honour. The researcher-scientists usually take this to be artistic license.

Loeb Classical Library, Translation by Earnest Cary

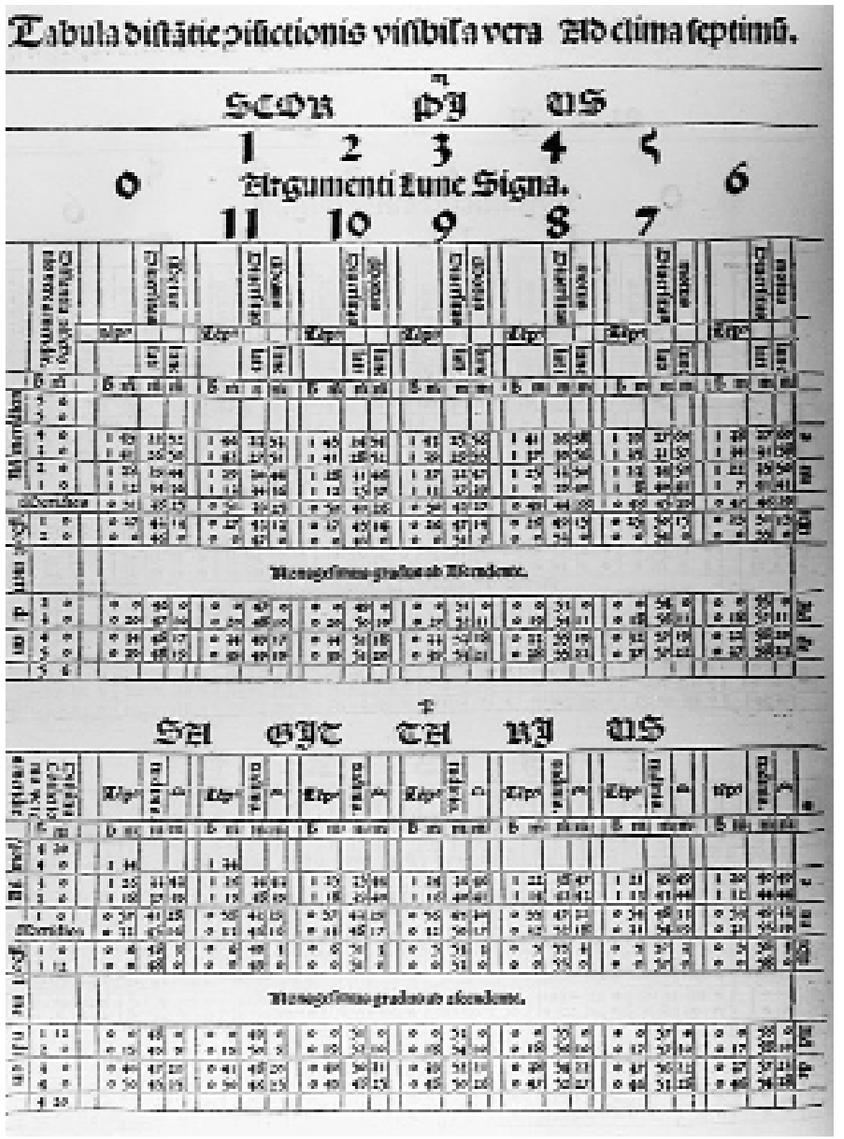
“Nevertheless, in the midst of the sacrifices that were offered in Agrippina’s honour in pursuance of a decree, the sun suffered a total eclipse and the stars could be seen. Also the elephants which drew the chariot of Augustus, when they had entered the Circus and proceeded as far as the senators’ seats, stopped at that point and refused to go any farther. And there was another incident in which one might surely have recognized the hand of Heaven. I refer to the thunderbolt that descended upon Nero’s dinner and consumed it all as it was being brought to him, like some harpy snatching away his food.”

Tacitus, ”The Annals”, XIV, 12

“There occurred too a thick succession of portents, which meant nothing. A woman gave birth to a snake, and another was killed by a thunderbolt in her husband’s embrace. Then the sun was suddenly darkened and the fourteen districts of the city were struck by lightning. All this happened quite without any providential design; so much so, that for many subsequent years Nero prolonged his reign and his crimes.”

Tacitus, ”The Annals”, XIII, 41

„Corbulo then encamped on the spot, and considered whether he should push on his legions without their baggage to Artaxata and blockade the city, on which, he supposed, Tiridates had fallen back. […] Then too there was a wonderful occurrence, almost a divine interposition. While the whole space outside the town, up to its buildings, was bright with sunlight, the enclosure within the walls suddenly shrouded in a black cloud, seamed with lightning-flashes, and thus the city was thought to be given up to destruction, as if heaven was wroth against it.”



Total Solar Eclipse of 0059 Apr 30

Geocentric Conjunction = 12:40:04.9 UT J.D. = 1742727.027835
Greatest Eclipse = 12:32:43.7 UT J.D. = 1742727.022728

Eclipse Magnitude = 1.01912 Gamma = 0.27854

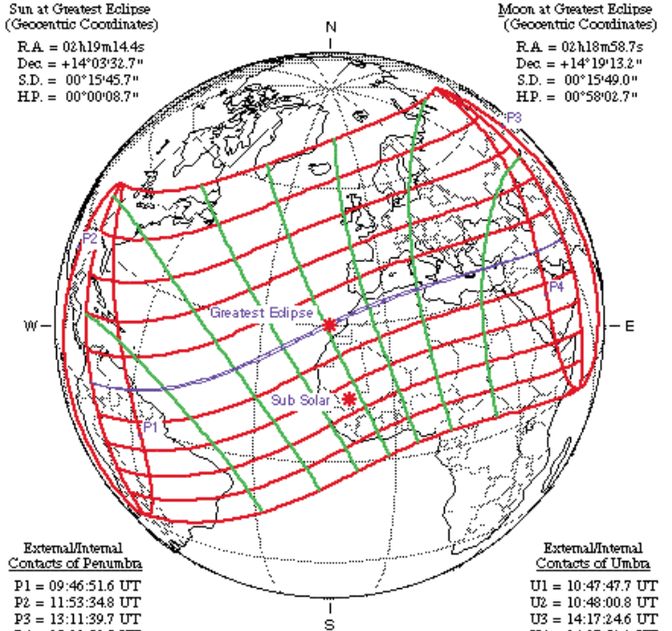
Saros Series = 68 Member = 39 of 72

Sun at Greatest Eclipse (Geocentric Coordinates)

R.A. = 02h19m14.4s
Dec. = +14°03'32.7"
S.D. = 00°15'45.7"
H.P. = 00°00'08.7"

Moon at Greatest Eclipse (Geocentric Coordinates)

R.A. = 02h18m58.7s
Dec. = +14°19'13.2"
S.D. = 00°15'49.0"
H.P. = 00°58'02.7"



External/Internal Contacts of Penumbra

P1 = 09:46:51.6 UT
P2 = 11:53:34.8 UT
P3 = 13:11:39.7 UT
P4 = 15:18:38.3 UT

External/Internal Contacts of Umbra

U1 = 10:47:47.7 UT
U2 = 10:48:00.8 UT
U3 = 14:17:24.6 UT
U4 = 14:17:32.2 UT

Local Circumstances at Greatest Eclipse

Lat. = 29°54.6'N Sun Alt. = 73.7°
Long. = 013°44.5'W Sun Azm. = 164.9°
Path Width = 68.0 km Duration = 01m49.9s

Ephemeris & Constants

Eph. = Newcomb/ILE
ΔT = 9101.0 s
k1 = 0.2724880
k2 = 0.2722810
Δb = 0.0" Δl = 0.0"

Geocentric Libration (Optical + Physical)

l = 4.66°
b = -0.31°
c = -20.80°

Brown Lun. No. =-23050

0 1000 2000 3000 4000 5000
Kilometers

F. Espenak, NASA/GSFC - 2001 Sep 20
sunearth.gsfc.nasa.gov/eclipse/eclipse.html

Studying the scientific literature on historical solar eclipses, I pay special attention to those events, which can be placed very firmly in time in the system of the traditional chronology, but for which, at the same time, you can find neither solar nor lunar eclipses near or far, for those same events. Two such events, that is, two solar eclipses, were recorded for us by Philostratus, and based on him the two eclipses used to be mentioned as „the solar eclipses of Apollonius".

I start with the first one, the identification of which is very problematical. The work of Philostratus, describing the life of Apollonius of Tyana, has for a long time been labeled as an historical novel. Probably this opinion was strengthened by the fact that his solar eclipses could not be identified. However, we can also learn from this work that shortly before the solar eclipse Apollonius met a flesh and blood, real consul, who held his office in **AD 66**. Based on this, in 1878 Seyffart identified our event as an event of **AD 67.** May 31, while the critical edition of the source refers to **AD 64** Aug.1. Of course neither is correct, in spite of the fact that Ginzel, although reluctantly, accepted Seyffart's idea.

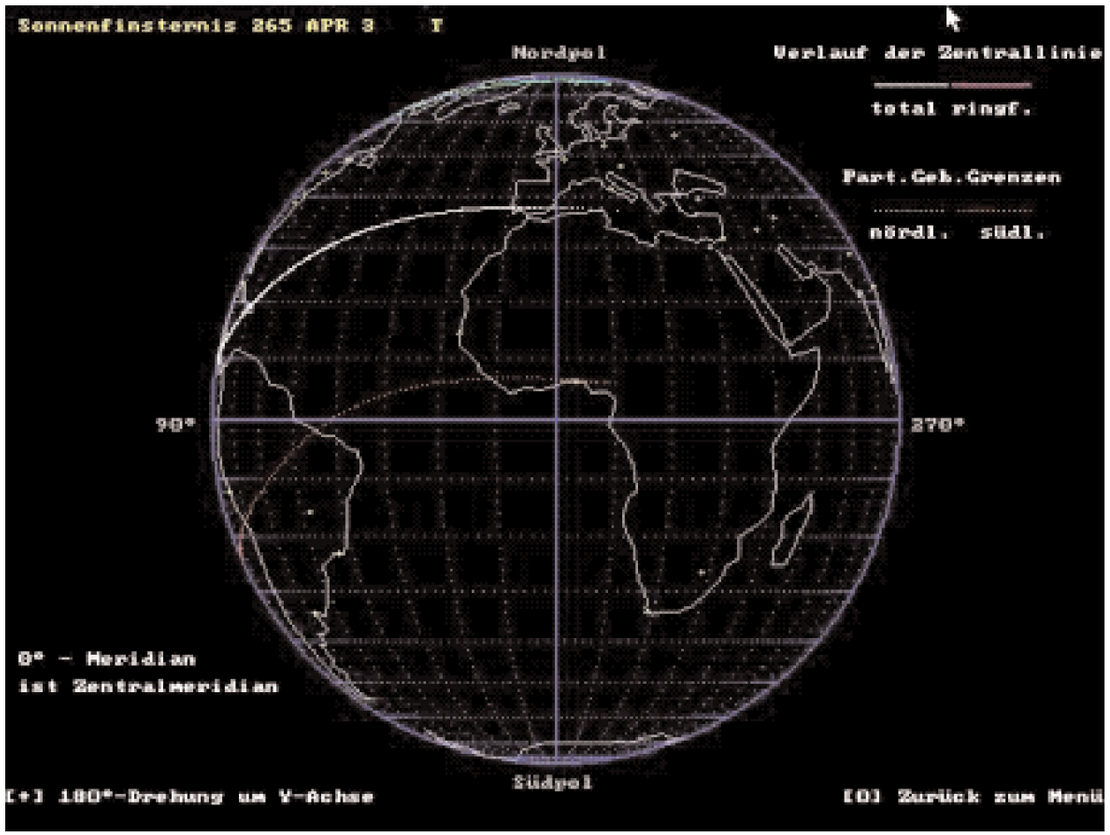
Let us quote the source:

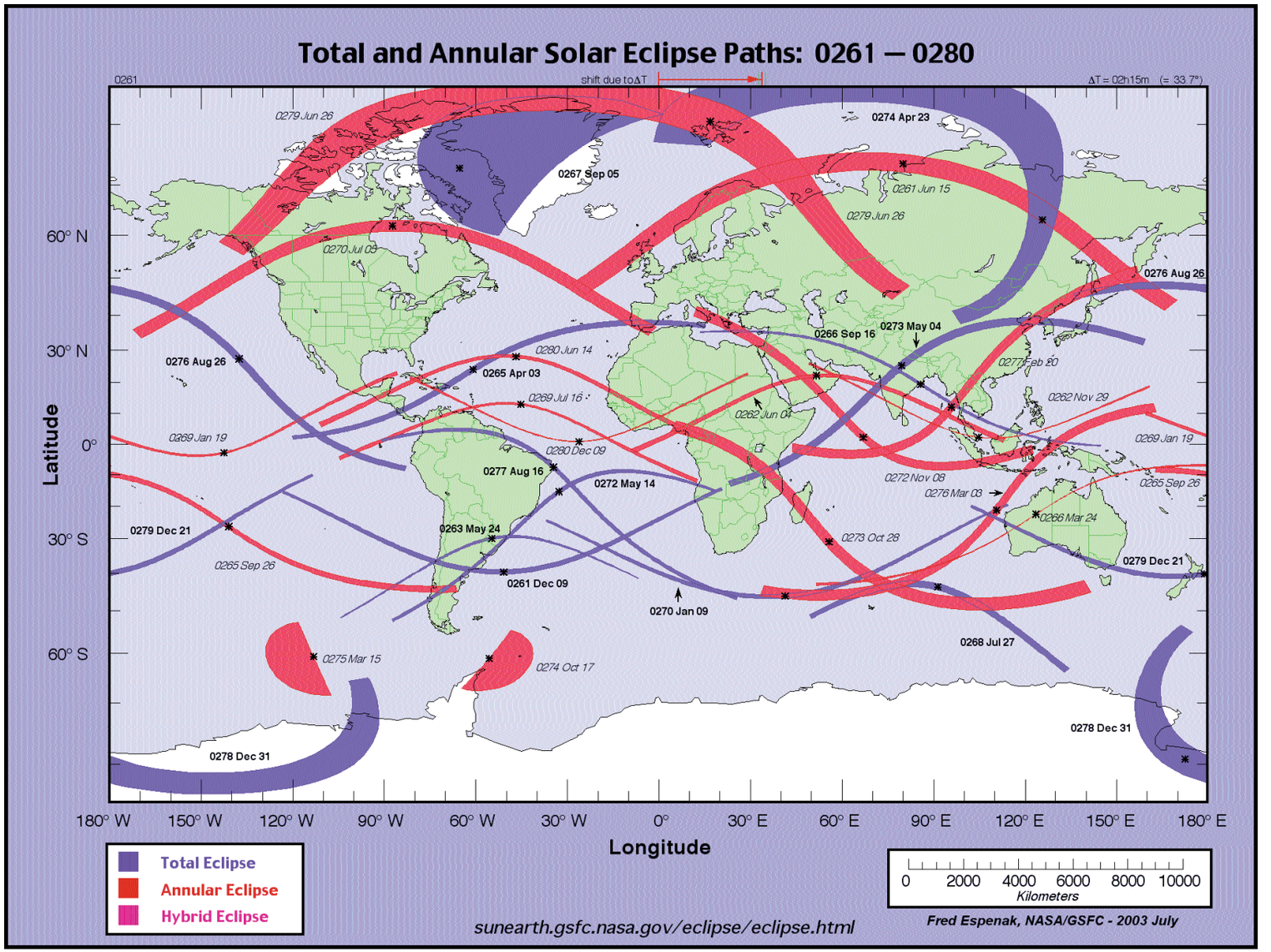
Philostratus, "The life of Apollonius of Tyana", LCL, tr.F.C. Conybeare, 1960

„Just at the time when he was holding these conversations with the people of Hellas, the following remarkable portent overspread the heavens. The orb of the sun was surrounded by a wreath, which resembled a rainbow, but dimmed the sunlight. That the heavenly sign portended a revolution was of course clear to all."

Considering the offered location of Rome, and considering the 198 year shift of the Hungarian Calendar we can state that the Romans could observe a very spectacular solar eclipse on April 3rd in HC/CE 265 a little before sunset.

The delta-T = 114.1 proposed by Mucke/Meeus.




Total and Annular Solar Eclipse Paths: 0261 — 0280
0261
shift due to ΔT
ΔT = 02h15m (= 33.7°)
0279 Jun 26
0274 Apr 23
0267 Sep 05
0261 Jun 15
0279 Jun 26
0270 Jul 08
0276 Aug 26
0273 May 04
0266 Sep 16
0280 Jun 14
0276 Aug 26
0265 Apr 03
0277 Feb 20
0269 Jul 16
0262 Nov 29
0262 Jun 04
0269 Jan 19
0269 Jan 19
0280 Dec 09
0277 Aug 16
0272 May 14
0272 Nov 08
0265 Sep 26
0276 Mar 03
0266 Mar 24
0279 Dec 21
0263 May 24
0273 Oct 28
0265 Sep 26
0279 Dec 21
0261 Dec 09
0270 Jan 09
0268 Jul 27
0275 Mar 15
0274 Oct 17
0278 Dec 31
0278 Dec 31
60° N
30° N
0°
30° S
60° S
Latitude
180° W
150° W
120° W
90° W
60° W
30° W
0°
30° E
60° E
90° E
120° E
150° E
180° E
Longitude
Total Eclipse
Annular Eclipse
Hybrid Eclipse
0
2000
4000
6000
8000
10000
Kilometers
sunearth.gsfc.nasa.gov/eclipse/eclipse.html
Fred Espenak, NASA/GSFC - 2003 July

The professional literature recognizes this solar eclipse with a remark that nobody recorded it! (SUNSET IN S.W. MEDITERRANEAN-NO RECORD)

I think there is no need to point out that the solar eclipse of **HC/CE 265** (identified by me) is not to be compared with the erroneous ***AD 67*** one, and there is no need to calculate the year-difference, which just results in 198 years.

If a recalculation of the delta-T would change the shadow of this solar eclipse of West-East direction, then the correct date for it would be **HC/CE 266.** Sept.16. (A one-year difference.)

After all the above said, it remains only for the historians to consider that the consulship of Telesinus must be attached to this year!

For those of my Readers who still suspect that we only have an unlucky coincidence in connection with the 198 years, let us examine the "INVISIBLE 'SECOND' APOLLONIAN 'ECLIPSE'" of Philostratus:

Based on the source this event is placed in the vicinity of ***AD 95,*** which is later by 28 years than the first solar eclipse. The academical standpoint in connection with this case is its complete rejection. The author also gives the location. Apollonius was in Greece.

Here is the source:

Flavius Philostratus, "Life of Apollonius of Tyana", VIII,23

"…about this time while he was pursuing his studies in Greece, such an omen was observable in the heavens. A crown resembling Iris surrounded the disc of the Sun and darkened its rays."

The source also indicates that the author speaks about an annular solar eclipse, and from Chapter 25 we can also learn that the event took place around the time of the assassination of Domitian, which happened on AD 96 Sept.18 in the usual chronology.

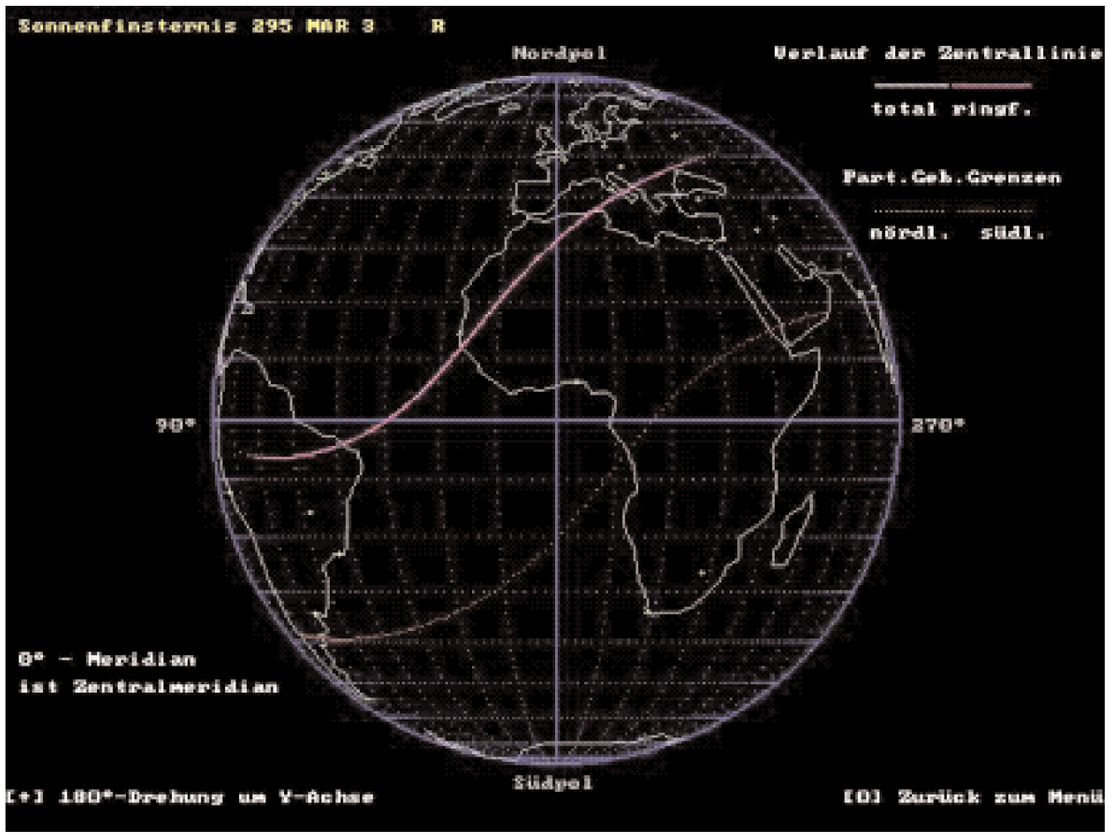
Ginzel, in 1899, found no suitable eclipse around this time and location, so he regarded the description as referring to something other than an eclipse.

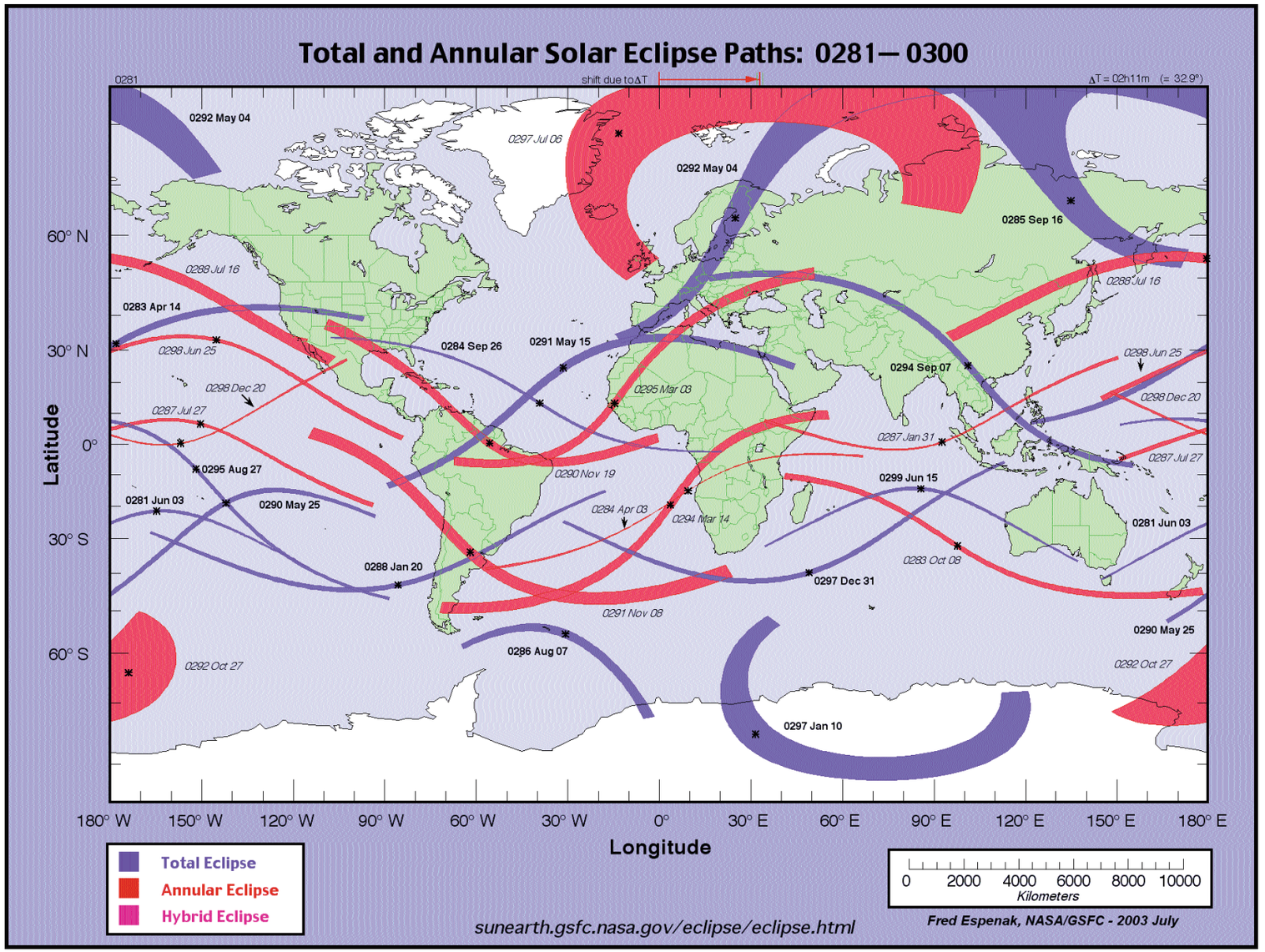
Apart from this, other researchers have sometimes taken the passage, if hesitantly, as referring to the solar eclipse of ***AD 95 May 22,*** the track of totality of which starts in the Indian Ocean and ends in the Pacific…

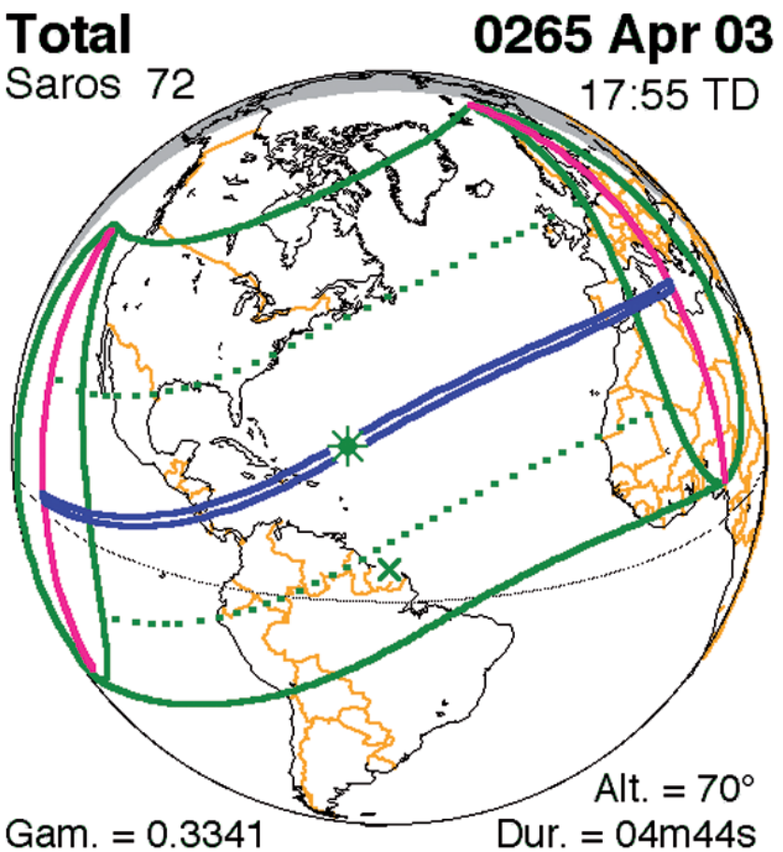
I do not intend to follow them, since the annular solar eclipse of **HC/CE 295**.March 3. was visible also at the required location that is in Greece!

*) Eine angebliche Sonnenfinsternis aus dem Leben des Apollonius von Tyana wird hier nur deshalb angemerkt, weil sie von Seyffarth (p. 458) zitiert wird, und auch nur wegen dieses Zitates ist die Finsternis seinerzeit von mir (G. I 39) berechnet worden. Ich hatte, in der Voraussetzung, dass sich Apollonius damals in Rom befand und die Äusserung vor dem Konsul Telesinus gemacht haben soll, eine unter Nero 66 oder 67 n. Chr. in Rom sichtbare Finsternis gesucht und die von 67 Mai 31 für Rom 9^{u},2 gefunden. Da die Schriftstelle (Philostratos vit. Apollonii IV 43) recht mystisch gehalten ist, so ist ohnehin sehr fraglich, ob es sich um eine reelle Finsternis handelt, daher auch nicht der Mühe werth zu untersuchen, ob der Thaumaturg Apollonius damals sich noch in Rom befand oder diese Stadt schon verlassen hatte.

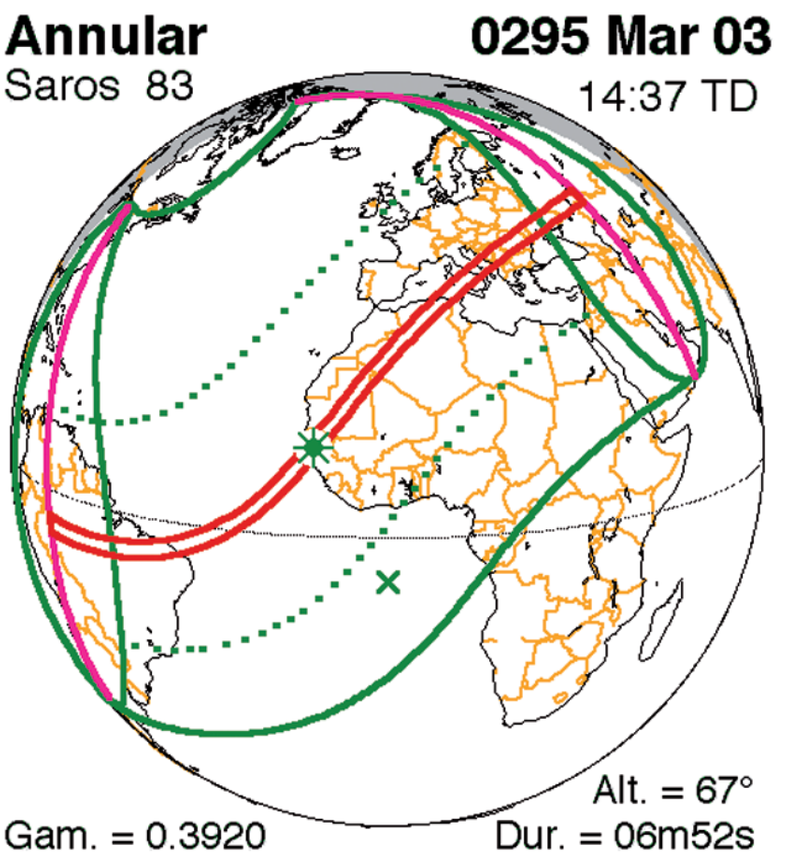
Below is the map with the delta-T = 109.6 minutes proposed by Mucke/Meeus:




Total and Annular Solar Eclipse Paths: 0281— 0300
0281
shift due to ΔT
ΔT = 02h11m (= 32.9°)
0292 May 04
0297 Jul 06
0292 May 04
0285 Sep 16
0288 Jul 16
0288 Jul 16
0283 Apr 14
0298 Jun 25
0298 Jun 25
0284 Sep 26
0291 May 15
0294 Sep 07
0298 Dec 20
0298 Dec 20
0295 Mar 03
0287 Jul 27
0287 Jan 31
0287 Jul 27
0295 Aug 27
0290 Nov 19
0299 Jun 15
0281 Jun 03
0290 May 25
0284 Apr 03
0294 Mar 14
0281 Jun 03
0283 Oct 08
0288 Jan 20
0297 Dec 31
0291 Nov 08
0290 May 25
0286 Aug 07
0292 Oct 27
0292 Oct 27
0297 Jan 10
60° N
30° N
0°
30° S
60° S
Latitude
180° W
150° W
120° W
90° W
60° W
30° W
0°
30° E
60° E
90° E
120° E
150° E
180° E
Longitude
Total Eclipse
Annular Eclipse
Hybrid Eclipse
0
2000
4000
6000
8000
10000
Kilometers
sunearth.gsfc.nasa.gov/eclipse/eclipse.html
Fred Espenak, NASA/GSFC - 2003 July



Five Millennium Canon of Solar Eclipses (Espenak & Meeus)



Five Millennium Canon of Solar Eclipses (Espenak & Meeus)

Since this solar eclipse was perfectly visible in Rome as well, it is possible that references may be found in other sources.

Speaking of the emperor Nerva, Sextus Aurelius Victor, in the section of his Roman History entitled ‘De vita et moribus imperatorum Romanorum’, often called the epitome, Chap. xii (Nerva) par.13, says:

“On the day on which he [Nerva] died, the eclipse of the sun took place.”

The date of Nerva’s death, like the date of the death of Augustus, is an unmovable corner-stone with a day-exactness (which is AD 98. Jan.25.), and for this date the usual chronology cannot offer anything, there was no solar eclipse in January within the range of ***AD 97*** and ***99.***

Taking into consideration that here we have a less than two-year time-gap in comparison with the previous source of Philostratus, and supposing that our literary source from Victor recorded for us the date of Nerva’s death with erroneous indication of the month and the day, it might be that the different sources relate to the same solar eclipse when mentioning Apollonius in Greece and Nerva in Rome.

In this case we have real solar eclipse contrary to the traditionally “forgered one”.

I am very confident in drawing the attention of the interested researchers to the date of 295. March 3, as the DATE OF THE NEW UNMOVABLE CORNER-STONE OF THE ROMAN HISTORY!

Consequently the date of Nerva’s death is 295. March 3rd following the record of Sextus AureliusVictor!

*) Zweifelhaft bleiben folgende beiden Sonnenfinsternisse:

a) *Philostratus Vita Apollonii Tyan.* VIII 23: *τὸν τοῦ ἡλίου κύκλον περιελθὼν στέφανος ἐοικὼς ἴριδι τὴν ἀκτῖνα ἐμείωσεν.* (Ein einem Regenbogen vergleichbarer Kranz, der sich um die Sonnenscheibe herumlegte, verminderte ihr Licht). -- Eine event. Sonnenfinsternis müsste 96 n. Chr. oder vorher fallen, und da c. 24 gesagt wird, Apollonius habe sich damals 2 Jahre in Griechenland aufgehalten, dort (Böotien?) sichtbar gewesen sein. Wie Abschnitt II zeigt, giebt es um diese Zeit keine entsprechende Finsternis.

b) *Pseudo-Victor* (epit. XII 12): eoque die, quo (Nerva 96—98 n. Chr.) interiit, solis defectis facta est. In den Jahren 96—98 ist nach Abschn. II keine Sonnenfinsternis, die in Rom halbwegs sichtbar sein konnte, beibringbar. Die Finsternis 98 März 21, die Calvisius angegeben hat, findet schon Struyck (102) für Rom nur $3^{\prime\prime}$; nach dem „Speziellen Kanon“ ist sie $3^{\prime\prime},5$, fiele also, wenn der Todestag Nervas 17. Januar 98 gesetzt wird, 63 Tage nach dessen Tod. — Seyffarth (461) proponiert, unter Verschiebung des Todesjahres auf 99, die Finsternis 99 September 2 (Rom fast ganz unsichtbar). (Vgl. C. I 49). Riccioli 1 367.

I think it is now appropriate to reverse the system I have followed thus far, of the occurrence of the solar and lunar eclipses; by showing the astronomical event first and then attaching it to its related historical background.

My proposed dates are:

HC/CE 267. Feb. 26.

HC/CE 267. Aug.22.

HC/CE 268. Feb.15.

All three dates indicate a total lunar eclipse in Europe. At a distance of 200 years from the correct location, placing them around the time of AD 68-69, the researchers tried to identify and recognize these eclipses as the ones that were recorded by Dio Cassius about the time of the emperor Vitellius. The researchers' attempt was not very successful.

See the source and Schove's attempt below:

Dio Cassius, Vol. VIII,

Loeb Classical Library, v.176, translation by Earnest Cary.

„While he was behaving in this way, evil omens occurred. A comet was seen, and the moon, contrary to precedent, appeared to suffer two eclipses, being obscured on the fourth and on the seventh day. Also people saw two suns at once, one in the west weak and pale, and one in the east brilliant and powerful. On the Capitol many huge footprints were seen, presumably of some spirits that had descended from it. The solders who had slept there on the night in question said that the temple of Jupiter had opened of itself with great clangor and that some of the guards had been so terrified that they fainted."

„The great confusion which under these conditions prevailed in the camp of Vitellius was increased that night by an eclipse of the moon. It was not so much its being obscured (though even such phenomena cause fear to men who are excited) as the fact that it appeared both blood-coloured and black and gave out still other terrifying colours. Not even for this, however, would the men change their mind or yield; but when they came to blows with each other, they fought most eagerly, although, as I said, the Vitellians were leaderless; for Alienus had been imprisoned at Cremona."

According to Schove, 5 „candidates" are possible: 09.11.67, 05.05.68, 29.10.68, 25.04.69 and 18.10.69."Fourth" and „seventh" day may be explained if we note that 29.10.68 = 4 Kal Nov and 25.04.69 = 7 Kal May.

Using my three proposed dates, they can start afresh the process of identification.

40. Ringförmig-totale Sonnenfinsternis 71 n. Chr. März 20.*) (Datum nach Strayck u. Ginzel.)

Plutarch, de facie in orbe lunae.

c. 19:

ὅτι μὲν γὰρ οὐδὲν οὕτως τῶν περὶ τὸν ἥλιον γενομένων ὅμοιόν ἐστιν ὡς ἔκλειψις ἡλίου δύσει, ὁότε μοι, ταύτης ἔναγχος τῆς συνόδου ἀνησθέντες, ἢ πολλὰ μὲν ἄστρα πολλαχόθεν τοῦ οὐρανοῦ διέφηνεν, εὐθὺς ἐκ μεσημβρίας ἀρξαμένη, κρᾶσιν δέ, οἷαν τὸ λυκαυγές, τῷ ἀέρι παρέσχεν.

Dass von allen Erscheinungen an der Sonne nichts so ähnlich ist dem Sonnenuntergange als eine Sonnenfinsternis, geht ihr mir zu, wenn ihr euch der neulichen Zusammenkunft (von ☉ u. ☽) erinnert; diese hatte gleich nach Mittag begonnen, viele Sterne an vielen Punkten des Himmels sichtbar gemacht und der Luft eine Färbung gleich der Dämmerung verliehen.

41. Sonnen- und Mondfinsternis 71 n. Chr. März 20 und 71 März 4. (Datum nach Zech.)

Plinius N. H. II § 57:

Nam ut quindecim diebus utrumque sidus quaereretur et nostro aevo accidit, imperatoribus Vespasianis patre tertium filio (II del. Henzen) consulibus.

Aus den Abschnitten II und IV geht hervor, dass zur Zeit Vespasians zweimal der Fall eintrat, dass innerhalb 15 Tagen zwei zu Rom sichtbare Sonnen- und Mondfinsternisse einander gefolgt sind:

partielle Mondfinsternis 71 n. Chr. März 4
und ringf.-totale Sonnenfinsternis 71 „ „ 20
und partielle Mondfinsternis 74 „ Dezember 22;
totale Sonnenfinsternis 75 „ Januar 5

Zech und Hofmann haben Zeit und Grösse dieser Finsternisse wie folgt gefunden:

*) „Gleich nach Mittag begonnen" bei Plutarch. Den „Beginn" d. h. den Eintritt des Mondes auf der Sonne können Plutarch und überhaupt die Alten, die mit freiem Auge beobachten mussten, nicht angeben, am allerwenigsten bei so hoch stehender Sonne wie im vorliegenden Falle. Es handelt sich bei allen diesen, blos durch Zufall, ohne vorherige Instruktion durch astronomische Rechnung, wahrgenommenen Finsternissen immer nur um die Zeit, bei welcher die Phase bereits sich ihrem Maximum näherte und dadurch die Aufmerksamkeit Einzelner auf sich lenkte. Darum bedürfen die Vergleichungen unserer Rechnungsergebnisse mit den alten Meldungen ziemlicher Liberalität. Der Erste, der eine Sonnenfinsternis genauer beobachtete, war Theon (s. Finsternis No. 55); die Beobachtung, obgleich durch Rechnung vorbereitet, mag ihm sauer genug geworden sein.

Mondfinsternis 71 März 4

Anfang $19^h\ 36^m$	m. Zt. Rom	Zech 13, 14
Ende 21 57		
Grösse 5",1		
Anfang $19^h\ 44^m$	m. Zt. Rom	Hofmann 47
Ende 22 5		
Grösse 5",0		

Mondfinsternis 74 Dezember 22

Anfang $7^h\ 10^m$	m. Zt. Rom	Zech 13, 14
Ende 9 41		
Grösse 5",2		

Von Hofmann nicht berechnet, weil sie kurz vor ☉ Aufg. fällt und daher wenig sichtbar ist.

Sonnenfinsternis 71 März 20.

Maximum = 9",6	(Rom)	$10^h\ 1^m$	Zech
„ 9,9		10 10	Hofmann

Sonnenfinsternis 75 Januar 5

Maximum 11",1	(Rom)	$15^h\ 8^m$	Zech
„ 11,2		15 18	Hofmann

Die erste Mondfinsternis ist in Rom dem ganzen Verlaufe nach sichtbar, die zweite Mondfinsternis nur bei Anfang, und dies, wegen dem schon 25^m später erfolgenden Sonnenaufgange, unter ungünstigen Umständen. Es ist also die erste Kombination 71 März 4 und 71 März 20 die von Plinius gemeinte. Der Annahme des Jahres 71 n. Chr. steht nur entgegen, dass Vespasian sein drittes Konsulat gleichzeitig mit Nerva bekleidete, dass die Jahresbezeichnung bei Plinius verdorben ist und (nach Zech p. 52) der Zusatz filio iterum von einem Abschreiber herrührt, vielmehr nur imp. Vespasianis cons. III. zu lesen ist. Mit dieser Hypothese übereinstimmend Hofmann (47) und G. (I 45). — Stockwell (Ast. Journ. X 187) folgert aus den Finsternissen des Jahres 71, dass dieses Jahr das 3. Regierungsjahr des Vespasian, sein Regierungsanfang 68 falle; gegen diese Folgerung Lynn (Observatory XIV 235). — Seyffarth (460). Riccioli (I 367). Strayck (139).

Spezieller Kanon: Betreff der Sonnenfinsternis 71 März 20 ist nur noch hinzuzufügen, dass das Maximum um $10^h\ 8^m$,2 w. Zt. für Rom 9",55 beträgt. Unter Festhaltung der Zech'schen Lesart wird die Plinius'sche Sonnenfinsternis mit jener des Plutarch (s. vorher) identisch*).

Hybrid Solar Eclipse of 0071 Mar 20

Geocentric Conjunction = 10:09:27.5 UT J.D. = 1747068.923235
Greatest Eclipse = 09:29:34.7 UT J.D. = 1747068.895540

Eclipse Magnitude = 1.00699 Gamma = 0.65160

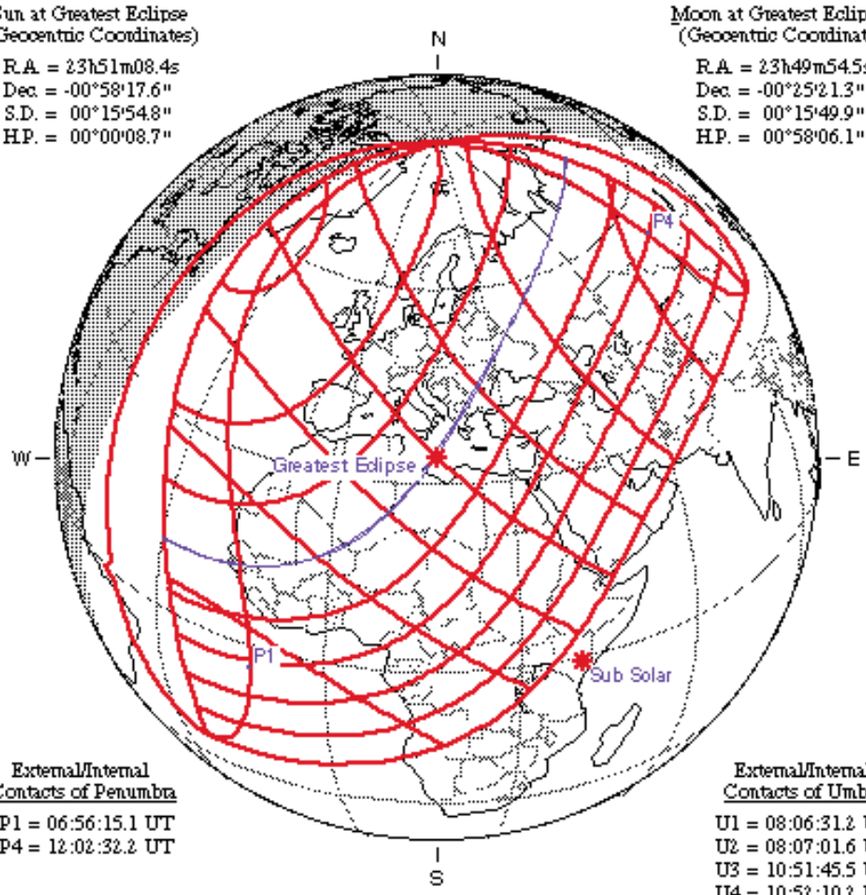
Saros Series = 79 Member = 29 of 71

Sun at Greatest Eclipse
(Geocentric Coordinates)

R.A. = 23h51m08.4s
Dec. = -00°58'17.6"
S.D. = 00°15'54.8"
H.P. = 00°00'08.7"

Moon at Greatest Eclipse
(Geocentric Coordinates)

R.A. = 23h49m54.5s
Dec. = -00°25'21.3"
S.D. = 00°15'49.9"
H.P. = 00°58'06.1"



External/Internal
Contacts of Penumbra

P1 = 06:56:15.1 UT
P4 = 12:02:32.2 UT

External/Internal
Contacts of Umbra

U1 = 08:06:31.2 UT
U2 = 08:07:01.6 UT
U3 = 10:51:45.5 UT
U4 = 10:52:10.2 UT

Local Circumstances at Greatest Eclipse

Lat = 33°57.5'N Sun Alt = 49.1°
Long. = 017°13.7'E Sun Azm. = 144.1°
Path Width = 31.2 km Duration = 00m35.3s

Ephemeris & Constants

Eph. = Newcomb/ILE
ΔT = 8956.0 s
k1 = 0.2724880
k2 = 0.2722810
Δb = 0.0" Δl = 0.0"

Geocentric Libration
(Optical + Physical)

l = -5.30°
b = -0.78°
c = -22.14°

Brown Lun. No. =-22903

0 1000 2000 3000 4000 5000
Kilometers

F. Espenak, NASA/GSFC - 2001 Aug 23

sunearth.gsfc.nasa.gov/eclipse/eclipse.html

Partial Lunar Eclipse of 0071 Mar 04

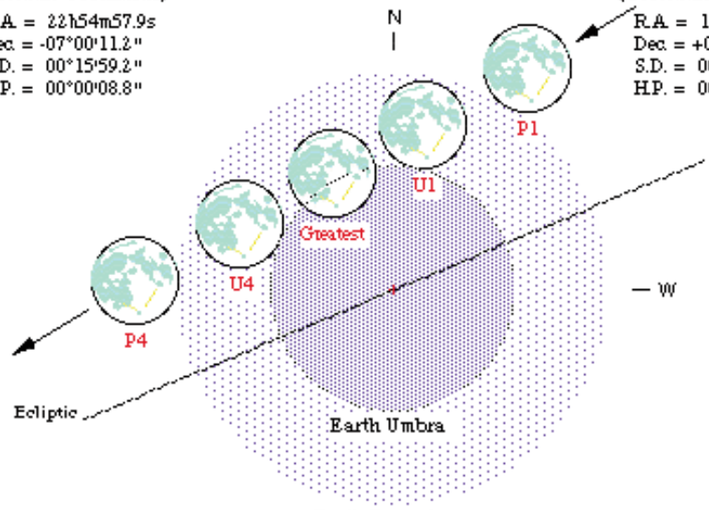
Geocentric Conjunction = 19:22:15.2 UT J.D. = 1747053.307120
Greatest Eclipse = 20:08:58.4 UT J.D. = 1747053.339565

Penumbral Magnitude = 1.44110 P. Radius = 1.2572° Gamma = 0.78971
Umbral Magnitude = 0.40768 U. Radius = 0.7136° Axis = 0.76214°

Saros Series = 53 Member = 60 of 72

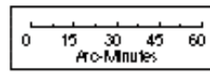
Sun at Greatest Eclipse
(Geocentric Coordinates)
R.A. = 22h54m57.9s
Dec. = -07°00'11.2"
S.D. = 00°15'59.2"
H.P. = 00°00'08.8"

Moon at Greatest Eclipse
(Geocentric Coordinates)
R.A. = 10h56m25.4s
Dec. = +07°40'26.4"
S.D. = 00°15'46.8"
H.P. = 00°57'54.8"



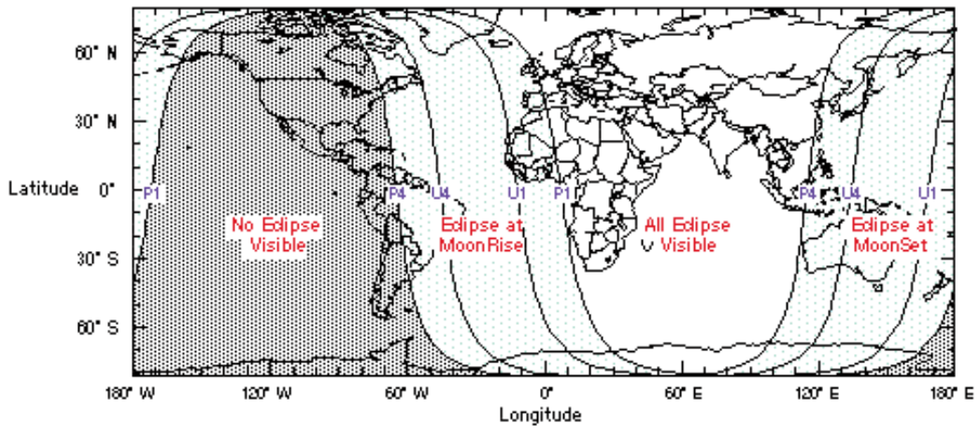
Eclipse Semi-Durations
Penumbral = 02h29m48s
Umbral = 01h09m32s

Eclipse Contacts
P1 = 17:39:10 UT
U1 = 18:59:22 UT
U4 = 21:18:26 UT
P4 = 22:38:47 UT



Eph. = Newcomb/ILE
ΔT = 8956.0 s

F. Espenak, NASA/GSFC - 2001 Oct 10
http://sunearth.gsfc.nasa.gov/eclipse/eclipse.html



There was an annular solar eclipse on 8th of November in **HC/CE 272,** which was clearly visible in Greece and Southern-Italy. So we are quite justified when we try to find out what the sources were writing about this time-period.

First let us see Pliny whom I have already assessed earlier as a later author of the Middle Ages who can retrocalculate cleverly. The researchers assign to him an annular solar eclipse with the date of ***AD 71.*** March 20:

Pliny, ”Natural History”, II, 56-57, Loeb Classical Library, v.330.

„It is certain that eclipses recur in cycles of 223 months – eclipses of the sun only when the moon is in her last or first phase (this is called their ’conjunction’), eclipses of the moon only at full moon – and always within the period of their last occurrence; but that yearly at fixed days and hours eclipses of either star occur below the earth, and that even when they occur above the earth they are not visible everywhere, sometimes owing to clouds, more often because the earth’s globe stands in the way of the world’s curvature. Less than 200 years ago the penetration of Hipparchus discovered that an eclipse of the moon also sometimes occurs four months after the one before and an eclipse of the sun six months, and that the latter when above earth is hidden twice in thirty days, but this eclipse is visible to different nations, and – the most remarkable features of this remarkable occurrence – that when it comes about that the moon is obscured by the shadow of the earth, this sometimes happens to it from the west side and sometimes from the east; and he also discovered for what exact reason, although the shadow causing the eclipse must from sunrise onward be below the earth, it happened once in the past that the moon was eclipsed in the west while both luminaries were visible above the earth. For the eclipse of both sun and moon within 15 days of each other has occurred even in our time, in the year of the third consulship of the elder Emperor Vespasian and the second consulship of the younger.”

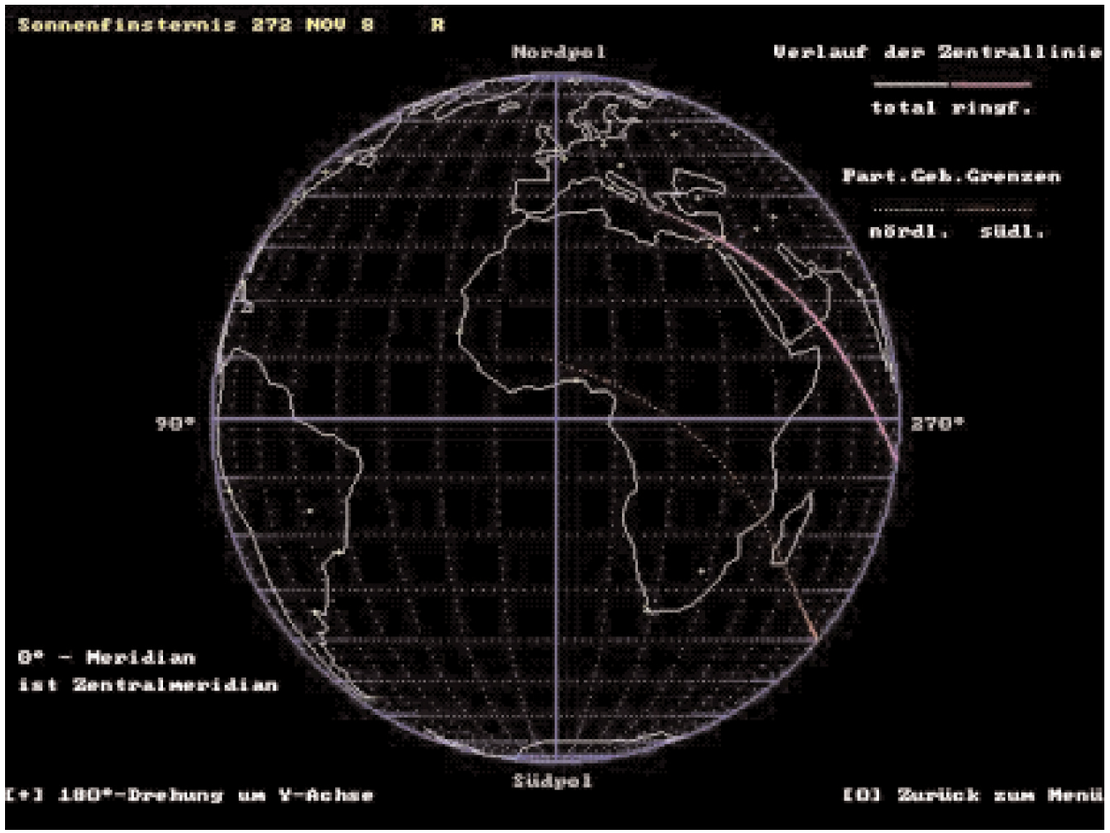
It is possible that Pliny, when he was retro-calculating, had in his possession ancient sources describing the studied time-period, and he tried to make these more professional. At this time he does not give any exact year, month and day, mentioning only the consuls, but in giving the names of the consuls he makes a blatant error.

Based on his statement, we are forced to think that Nerva is the son of Vespasian. At the same time we know for sure that Titus is the son of Vespasian. Ginzel responds to the difficulty that Nerva was not the son of Vespasian by supposing that Pliny referred merely to ’patre III’, and „that mention of his son is a later interpolation”.

Such a blatant error by Pliny only strengthens my hypothesis about him. Pliny, who is pretending to be an ancient author, in fact lived in the 13th century, and he had observed personally in Southern-Italy on 23rd March and 7th April in **HC/CE 1270** the solar and lunar eclipses following each other within a 15 day distance.

By the way, in 1979 Robert R. Newton reexamined once more this solar eclipse of Pliny and he rejected it for scientific use as an uncertain event, since its date and location are not certain.

The delta-T = 113.1 minutes proposed by Mucke/Meeus



For centuries there have been attempts to identify a solar eclipse for the same period of time, an eclipse connected to the name of Plutarch:

Plutarch, The Face of the Moon

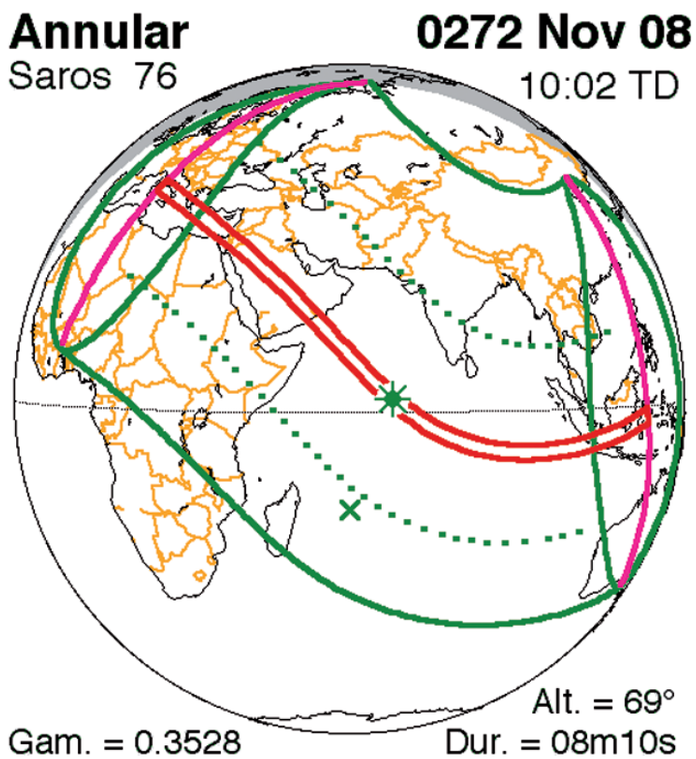
„[ ]Now grant me that nothing that happens to the Sun is so like its setting as a solar eclipse. You will if you call to mind this conjunction recently which, beginning just after noonday, made many stars shine out from many parts of the sky and tempered the air in the manner of twilight. If you have forgotten it…”

(Fotheringham; Newton, 1970, p.114–117; Stephenson, p. 360–364)

Since the scientists were looking for this eclipse in the wrong time-interval, it is not surprising that Robert R. Newton in 1970 wrote the following about it:

„I do not take the passage from Plutarch to be a description of a specific eclipse. If it be one, it is unidentifiable both in time and place.”

It is my pleasure to declare that the place is Greece, and the time is **HC/CE 272.** Nov. 8!



Five Millennium Canon of Solar Eclipses (Espenak & Meeus)

On the map of the solar eclipses we can see a total solar eclipse of West-East direction above the middle part of Europe on the date of **HC/CE 319** May 6 (that is during the reign of Hadrian,if we apply the traditional chronology + 200 years),which eclipse was a visible one and has a literary source of Fasti Vindobonenses,recorded in c. ***AD 576.***

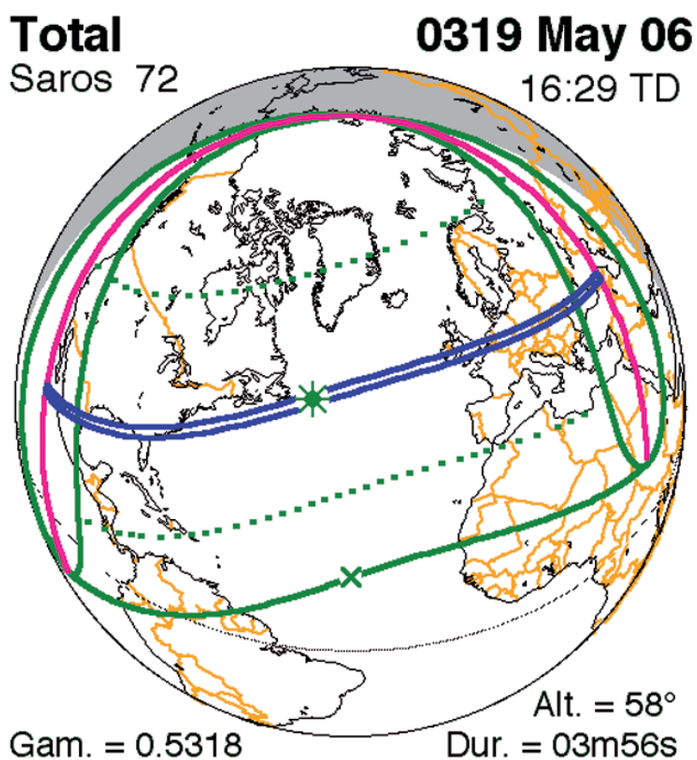
The source says the following:

„Hadrian and Salinator.Under these consuls an eclipse of the sun took place.” (R.Newton,1972)

According to the traditional chronology the office of these two consuls is connected to ***AD 118.*** In Rome at around 05 hours PM of local time there was an annular solar eclipse of 88%.

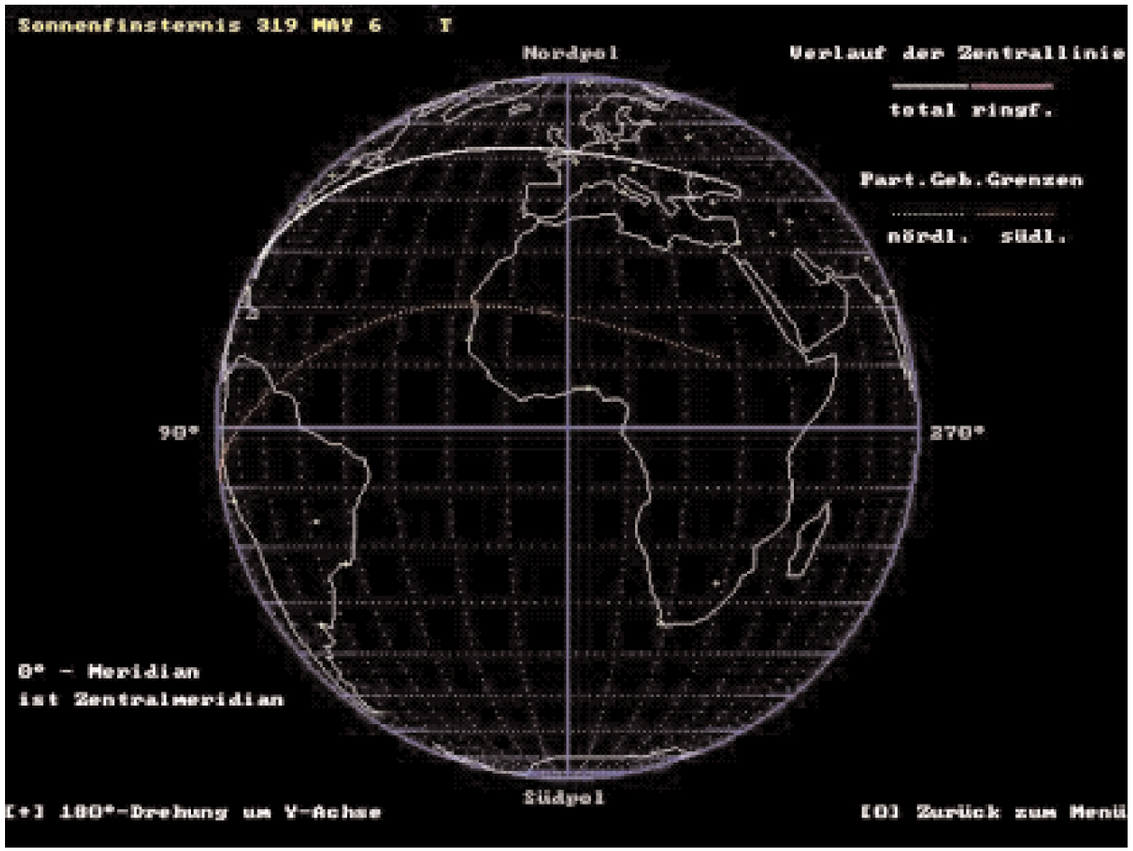
In the more northern parts of the Roman Empire the visibility of the eclipse could be even more perfect for an observer.

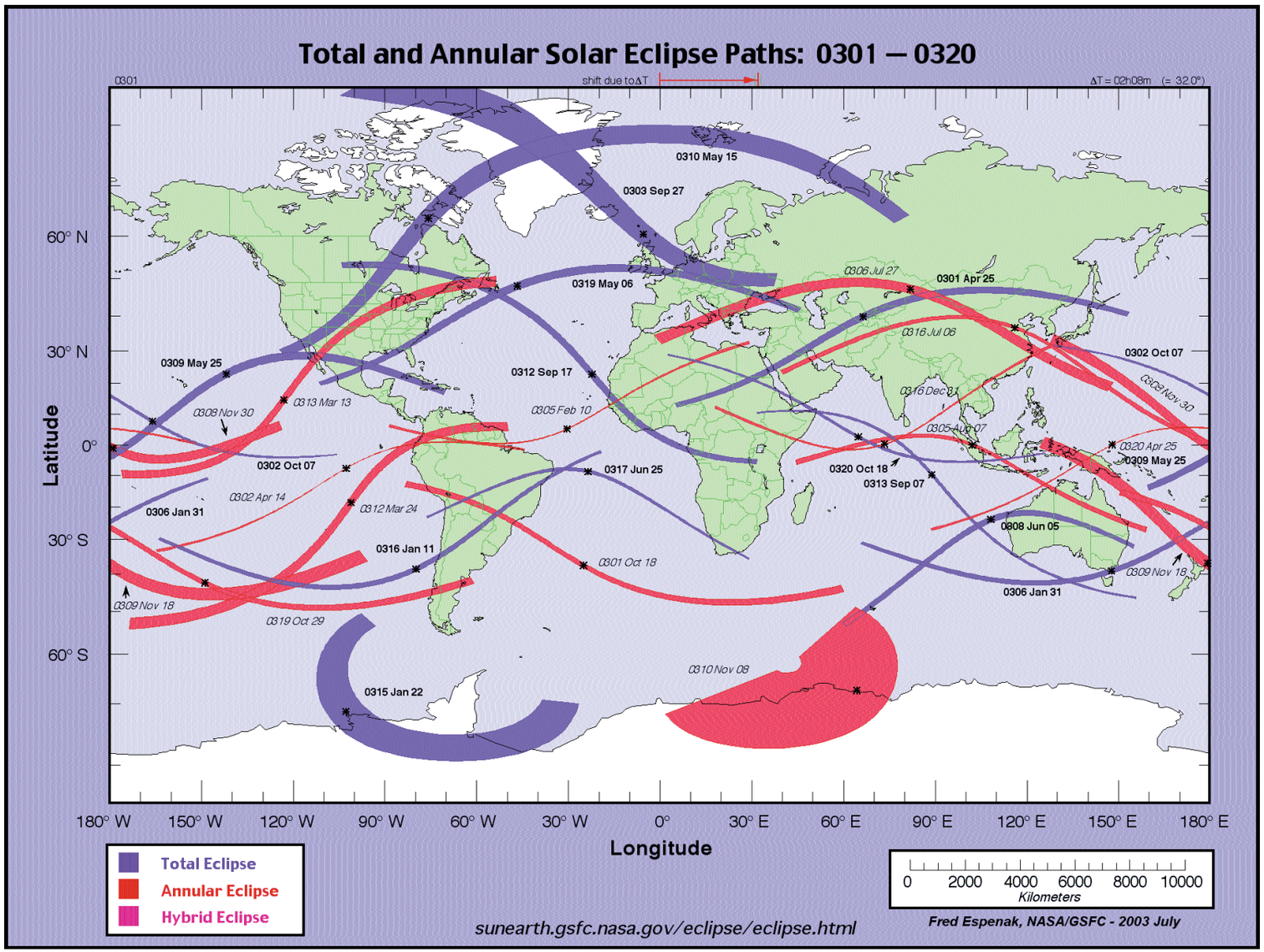
The Hungarian readers can be familiar with this identification since 2002,while R.Newton qualifies the reality of the ***AD 118*** Sept 3 solar eclipse as low as 20 %.



Five Millennium Canon of Solar Eclipses (Espenak & Meeus)

The delta T = 106,1 minutes proposed by Mucke/Meeus

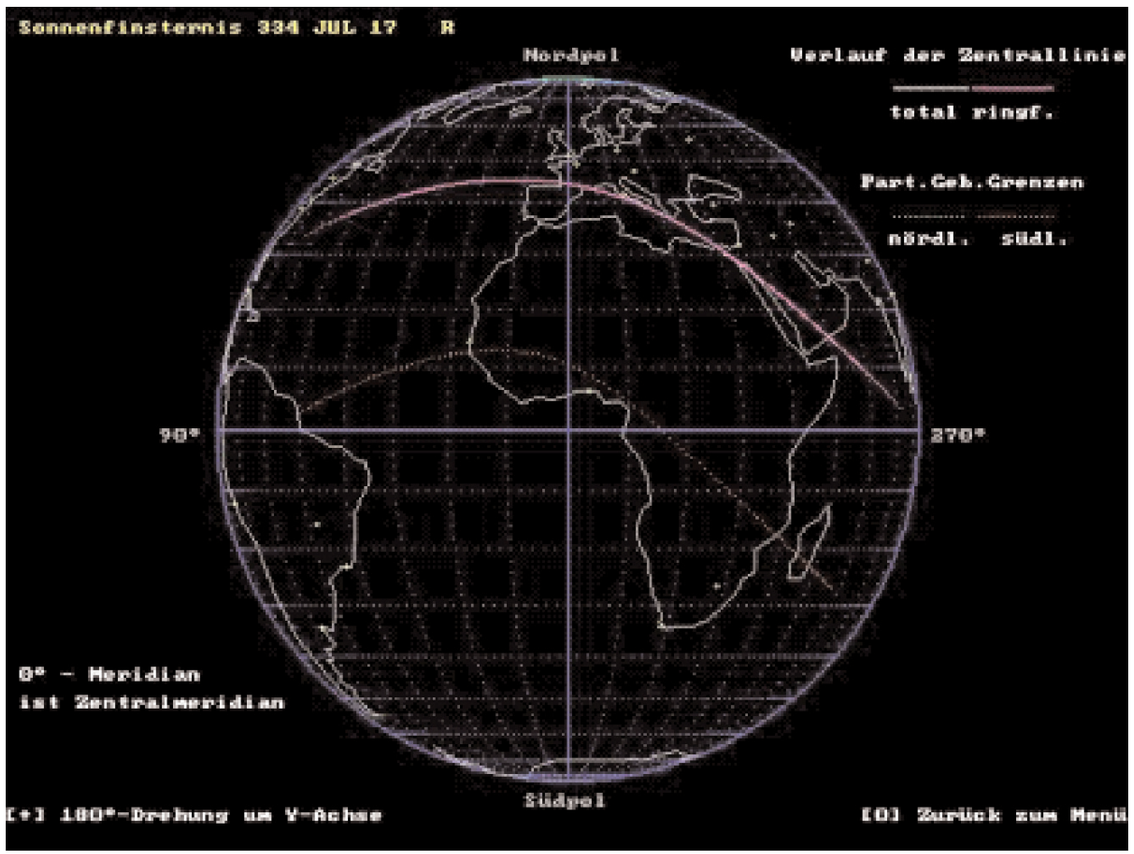


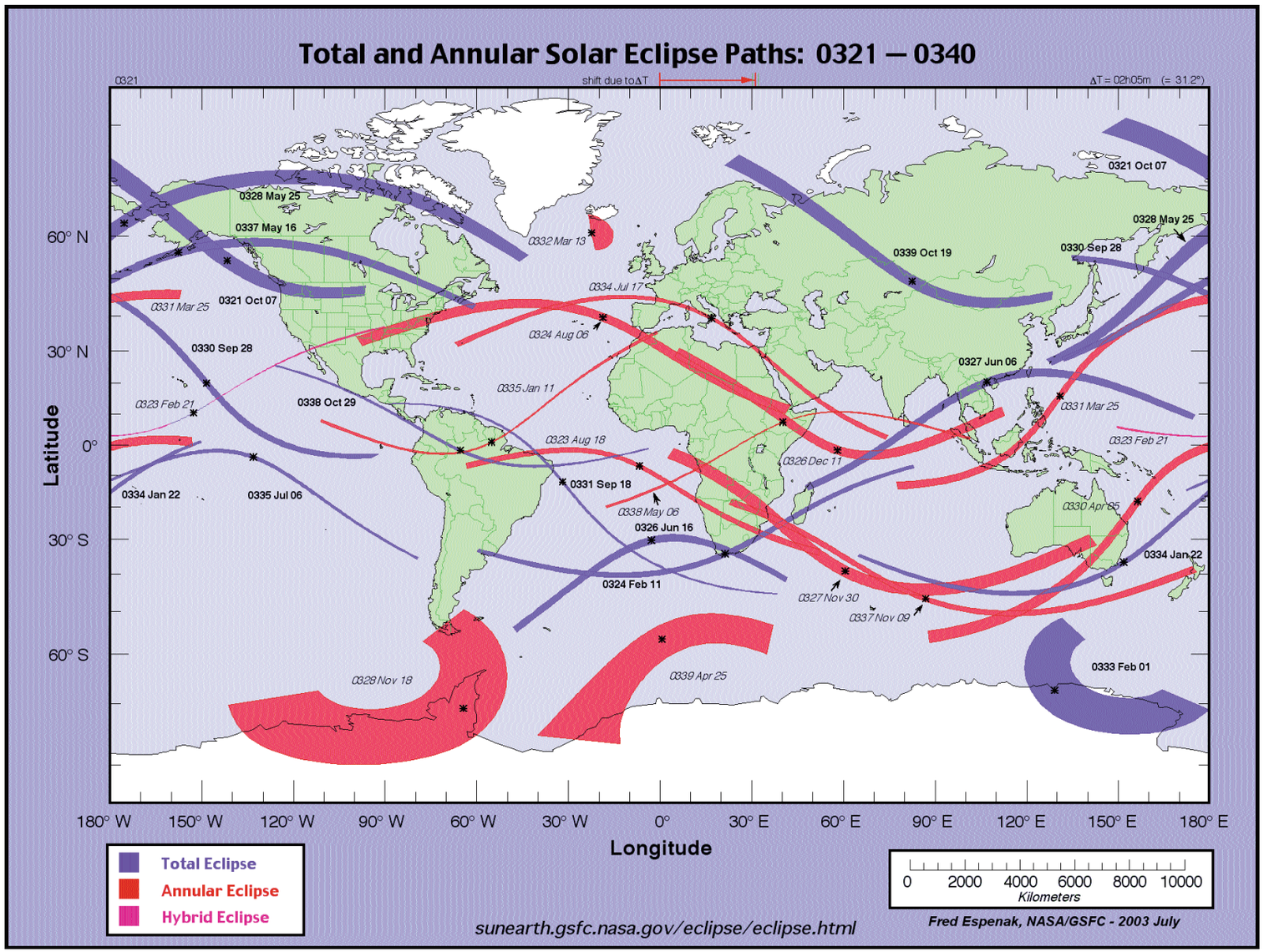

Total and Annular Solar Eclipse Paths: 0301 – 0320
0301
shift due to ΔT
ΔT = 02h08m (= 32.0°)
0310 May 15
0303 Sep 27
0319 May 06
0306 Jul 27
0301 Apr 25
0316 Jul 06
0302 Oct 07
0309 May 25
0312 Sep 17
0313 Mar 13
0308 Nov 30
0305 Feb 10
0316 Dec 31
0305 Aug 07
0320 Apr 25
0309 May 25
0302 Oct 07
0317 Jun 25
0320 Oct 18
0313 Sep 07
0302 Apr 14
0306 Jan 31
0312 Mar 24
0808 Jun 05
0316 Jan 11
0301 Oct 18
0309 Nov 18
0306 Jan 31
0309 Nov 18
0319 Oct 29
0310 Nov 08
0315 Jan 22
60° N
30° N
0°
30° S
60° S
Latitude
180° W
150° W
120° W
90° W
60° W
30° W
0°
30° E
60° E
90° E
120° E
150° E
180° E
Longitude
Total Eclipse
Annular Eclipse
Hybrid Eclipse
0
2000
4000
6000
8000
10000
Kilometers
sunearth.gsfc.nasa.gov/eclipse/eclipse.html
Fred Espenak, NASA/GSFC - 2003 July

On the 17th of July in **HC/CE 334** there was a spectacular annular solar eclipse, which was visible in all directions in the Roman Empire, and was an especially good sight for the peoples of Italy. The time was the second last year of the reign of Emperor Hadrian.

Having this new date, new possibilities are opening to revaluate the contemporary sources. I myself could not find any reference.

The delta-T = 103.9 minutes proposed by Mucke/Meeus





HC/CE 386 Apr.15.Eclipse of Commodus

Two sources have been claimed as evidence for a sizeable solar eclipse visible at Rome in the reign of Commodus:

1.Aelius Lampridius, Commodus Antonius, XVI.Scriptores Historiae Augustae,

Loeb Classical Library, ed. D.Magie, v.139.

„The prodigies that occurred in his reign, both those which concerned the state and those which affected Commodus personally, were as follows. A comet appeared. Footprints of the gods were seen in the forum departing from it. Before the war of the deserters the heavens were ablaze. On the Calends of January a swift coming mist and darkness arose in the circle; and before dawn there had already been fire-birds and ill-boding portents."

42b. Herodiani, Ab excessu Divi Marci Herodian, History, I,14,1
Loeb ed., C.R.Whittaker, v.I. 1969, pp.88–89

„some stars shone continuously by day, others became elongated and seemed to hang in the middle of the sky"

42. Ringförmige Sonnenfinsternis 186 n. Chr. Dezember 28. (Datum nach Struyck).

Lampridius in Commodo Ant. 16,2 (Peter ed. II p. 109, 27 ff.).

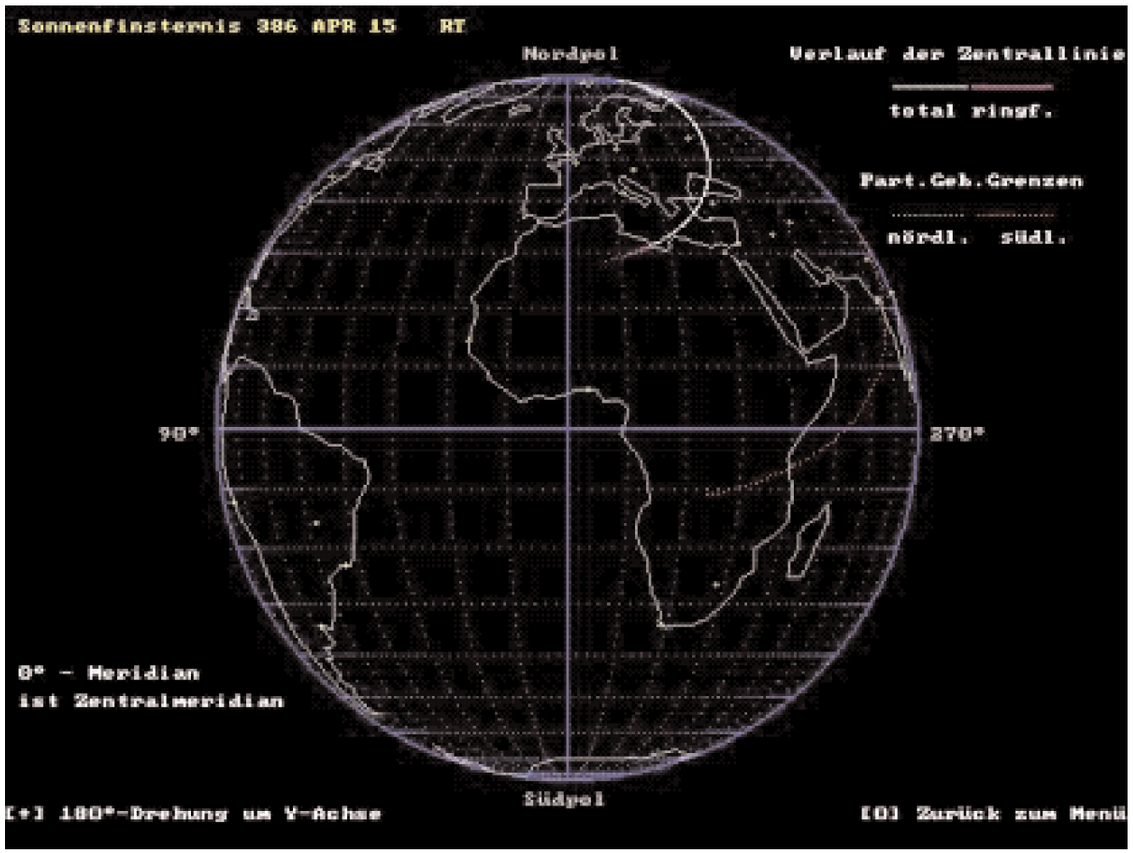
Prodigia . . . vestigia deorum in foro visa sunt exeuntia. et ante bellum desertorum caelum arsit. et repentina caligo ac tenebra in circo Kalendis Januariis oborta.

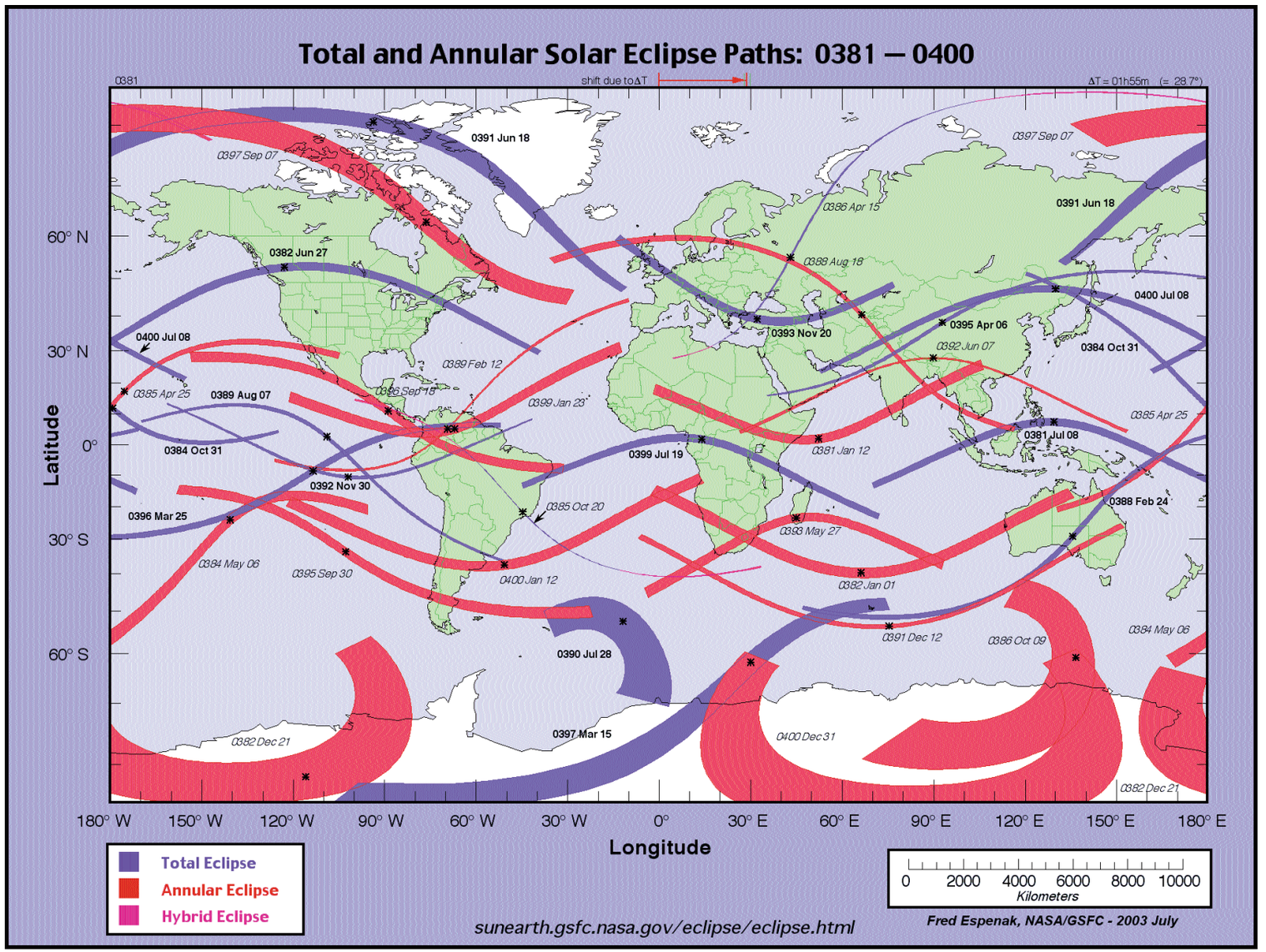
Lampridius ist einer der zu den sog. scriptores historiae Augustae gehörenden Schriftsteller und schrieb im ersten Drittel des 4. Jahrh. Da diese Autoren ihren Erzählungsstoff hauptsächlich aus den Ereignissen am Hofe des Kaisers nehmen, so dürfte die Beobachtung der unter Commodus (180—192) um den Januaranfang vorgefallenen Sonnenfinsternis aus Rom stammen. Struyck (103) hat das Datum 186 Dezember 28 bestimmt.

Spezieller Kanon: Zwischen 180—192 ist um Januar (vgl. Abschnitt II) in Rom nur die Sonnenfinsternis 186 Dezember 28 sichtbar und zwar, wie aus Karte XI ersichtlich, bei Sonnenuntergang.

Das Maximum um $16^h 43^m,2$ w. Zt. beträgt $10^m,5$, der Sonnenuntergang erfolgt 11^m früher, die Phase für diesen Moment ist $9^m,5$, also die Erscheinung sehr auffällig.

The map of Mucke/Meeus shows the shaded zone clearly covered by the shadow, which was very effective also in the city of Rome. (delta-T = 96.6)





HC/CE 402. Nov. 11

THE ECLIPSE OF TERTULLIAN

The solar eclipse observed in the region of Utica, near Carthage, is known under the above name. Its traditional identification alters within a wide range, that is between ***AD 197*** and ***212.***

Schove reassures us that „it is practically certain" that this eclipse took place on 212 Aug.14!

Tertullian, when he was writing a protesting letter to the Roman governor, Scapula, about the persecution of Christians, said the following:

„That sun, too, in the metropolis of Utica, with light all but extinguished, was a portent which could not have occurred from an ordinary eclipse, situated as the lord of the day was in his height and house. You have the astrologers, consult them about it. "[Schove, p.34]

Ginzel in his time regarded three identifications as worth computing.

I have accepted the date of 402.Nov.11 without any special computation. The time-distance between the genuine event of **HC/CE 402** and the erroneous proposed identifications alternates within a wide range (from 190 and 205 years).

However it is not the problem of the Hungarian Calendar. Apart from this, neither can we exclude the solar eclipse of **HC/CE 386.** april 15. Hopefully the future will show who is right!

43. Ringförmig-totale Sonnenfinsternis 197 n. Chr. Juni 3. (??) (Datum nach Struyck).

Tertullian ad Scapulam c. 8 (I 543 Oehler):

Nam et sol ille in conventu Uticensi extincto paene lumine adeo portentum fuit, ut non potuerit ex ordinario deliquio hoc pati positus in suo hypsomate et domicilio.

Scaliger hat diese Finsternis nicht zu bestimmen vermocht, Struyck (103) hat zuerst dafür die Sonnenfinsternis 197 Juni 3 angegeben. Sie ist noch in der Gegenwart ein Objekt der Meinungsverschiedenheiten. In suo hypsomate et domicilio kann nämlich entweder im astrologischen Sinne, als Eintritt der Sonne in ein Thierkreiszeichen oder einer ähnlichen astrologischen Definition entsprechend, oder aber als Bezeichnung der Mittagshöhe (als die Sonne ihre Mittagshöhe erreichte) aufgefasst werden. In conventu Uticensi ist nicht streng local, sondern im Begriffe Gerichtssprengel der ganzen Provinz, zu verstehen. Nöldechen (Bd. V der Texte u. Unters. z. Gesch. der altchristl. Liter. ed. Gebhardt u. Harnack) und Neumann (der römische Staat u. die allgem. Kirche bis Diocletian I 1890) haben hypsomate als Eintritt der Sonne in den Widder genommen und die totale Sonnenfinsternis 211 März 2 angenommen. Joh. Schmidt (Rhein. Mus. f. Philol. XLVI 77) ist dem astrologischen Begriffe des Eintritts der Sonne in den Löwen gefolgt und hat die totale von 212 August 14 acceptiert; C. A. H. Kellner (Bonner Univers. Progr. 1890 August) ist bei hypsomate als „Mittagshöhe" stehen geblieben und hat demgemäss die ringförmig-totale schon von Struyck aufgestellte 197 Juni 3 behauptet. Man vergl. noch Zeitschrift für wissensch. Theologie 32. Bd. (1889) 429 und Tissot, fastes de la province romaine d'Afrique p. 144. — Seyffarth (462) 200 April 1 (unsichtbar für Utica.)

Spezieller Kanon: Die 2 Finsternisse von 197 u. 212 n. Chr. findet man auf den Karten XI u. XII. Die Rechnung für Utica ergiebt:

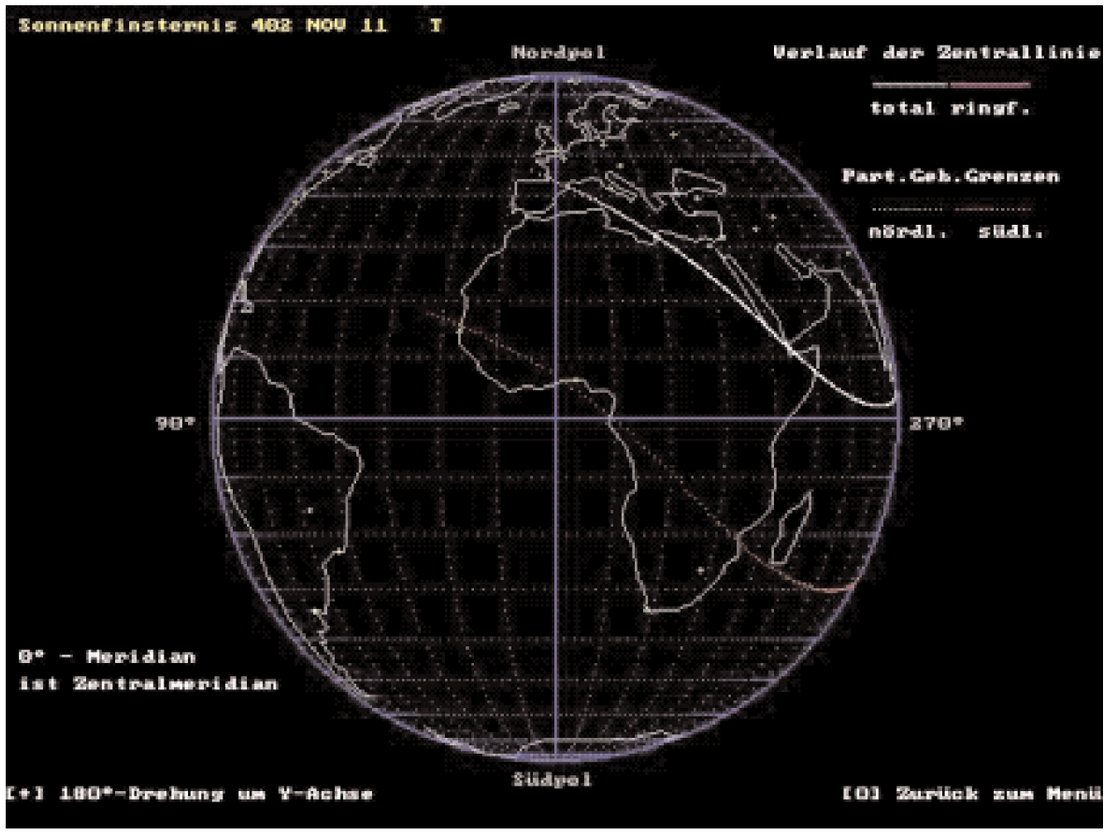
197 Juni 3 Maximum 11",01 um $12^h\,54^m$ w. Zt.
211 März 2 Phase bei Sonnenuntergang ($17^h\,37^m$) = 5",38.
212 August 14 Maximum 11",17 um $5^h\,56^m$ (42^m nach ☉ Aufgang.)

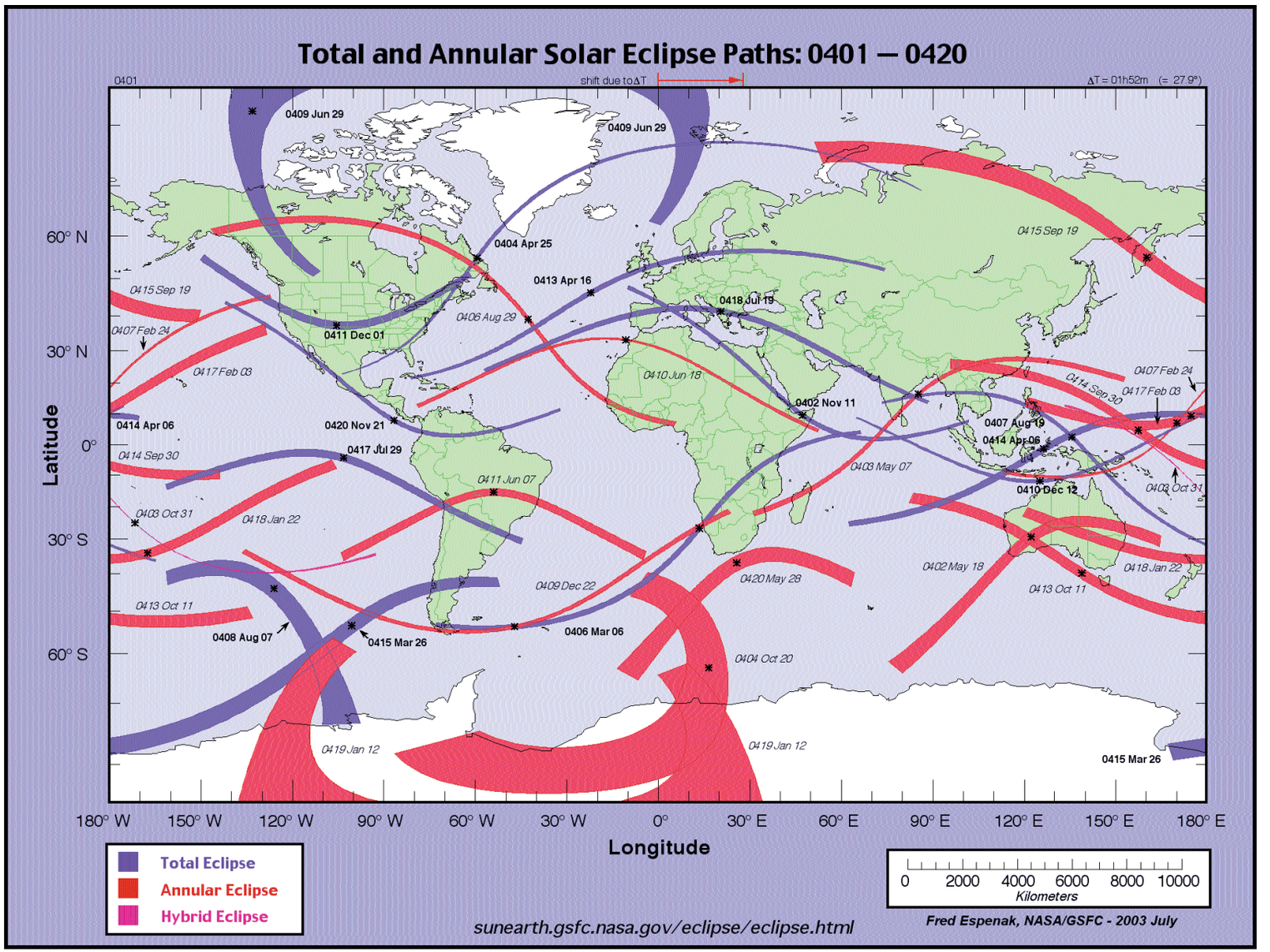
Sämtliche 3 Finsternisse sind sehr gut für's freie Auge sichtbar (auch die zweite, wegen der leichten Wahrnehmbarkeit kleinerer Phasen bei untergehender Sonne). Zur besseren Beurteilung der Sachlage folgt hier noch der berechnete Eintritt der Sonne in das

Zeichen des Löwen : im Jahre 212 am 24. Juli um $8^h\,25^m$ m. Zt. Utica
" " Widders: " 211 am 21. März um $21^h\,55^m$ " "

Die Entscheidung verbleibt dem Historiker.

The delta-T = 94.4 minutes




Total and Annular Solar Eclipse Paths: 0401 – 0420
0401
shift due to ΔT
ΔT = 01h52m (= 27.9°)
0409 Jun 29
0409 Jun 29
0404 Apr 25
0413 Apr 16
0418 Jul 19
0406 Aug 29
0411 Dec 01
0415 Sep 19
0415 Sep 19
0407 Feb 24
0417 Feb 03
0410 Jun 18
0402 Nov 11
0414 Sep 30
0407 Feb 24
0417 Feb 03
0414 Apr 06
0420 Nov 21
0417 Jul 29
0407 Aug 19
0414 Apr 06
0414 Sep 30
0403 May 07
0411 Jun 07
0410 Dec 12
0403 Oct 31
0403 Oct 31
0418 Jan 22
0402 May 18
0418 Jan 22
0420 May 28
0409 Dec 22
0413 Oct 11
0413 Oct 11
0408 Aug 07
0415 Mar 26
0406 Mar 06
0404 Oct 20
0419 Jan 12
0419 Jan 12
0415 Mar 26
60° N
30° N
0°
30° S
60° S
Latitude
180° W
150° W
120° W
90° W
60° W
30° W
0°
30° E
60° E
90° E
120° E
150° E
180° E
Longitude
Total Eclipse
Annular Eclipse
Hybrid Eclipse
0
2000
4000
6000
8000
10000
Kilometers
sunearth.gsfc.nasa.gov/eclipse/eclipse.html
Fred Espenak, NASA/GSFC - 2003 July

HC/CE 418. July 19.

Here we have a solar eclipse that is well known to the astronomers, and for the last four hundred years they have connected its identification to the consulship of Honorius and Theodosius.

In 2002, on page 113 of my first book (Hungár naptár – the first description of the Hungarian Calendar hypothesis for the Hungarian public) relating to eclipses, I refuted the historical background of this eclipse, but it was in vain, a deaf ear was turned to my statement. At that time I wrote: ”The literary source of this impressive solar eclipse must be searched for in the time of Emperor Caracalla.”

The only ancient writer to describe this eclipse for us, through his later epitomizer, is Cassius Dio. Speaking of the end of the 14-month reign of the usurper Macrinus (usual chronology ***AD 217***. April – 218 June), he says:

„It seems to me that this also had been indicated in advance as clearly as any event that ever happened. For a very distinct eclipse of the sun occurred just before that time and the comet was seen for a considerable period;…”

Since it is a solar eclipse that passes over the whole of the basin of the Mediterranean Sea in a West-East direction, there is no need to search eagerly for a specific location. As a place of observation I can accept Rome, Smyrna, Pergamun, whichever one the author could visit.

Needless to say, this solar eclipse once again is a VERY FIRM chronological corner-stone, and the ancient Roman history can be fixed to it very safely.

44. Ringförmige Sonnenfinsternis 218 n. Chr. Oktober 7. (Datum nach Hofmann).

Dio Cassius LXXVIII 30,1:

ἡλίου τε γὰρ ἐκλείψις περιφανεστάτη ὑπὸ τὰς ἡμέρας ἐκείνας ἐγένετο . . . Denn eine sehr auffällige Sonnenfinsternis fand um jene Zeit statt.

Macrinus war 4 Tage nach der Ermordung des Caracalla (217 April 8) zum Kaiser ausgerufen worden; nach kaum 14 monatlicher Regierung (218 Juni 8) wurde auch er beseitigt und Heliogabalus zum Kaiser erhoben. In dieses Jahr fällt nach Dio, welcher damals selbst als höchster Beamter zu Pergamum und Smyrna weilte, eine („sehr ansehnliche“, „berühmte“) Sonnenfinsternis. Aus Karte XII geht hervor, dass während des ganzen Zeitraumes 200—300 n. Chr. in Mysien (Pergamum, Smyrna) nur 3—4 Sonnenfinsternisse einen höheren Grad von Auffälligkeit erreichen konnten: 218 Oktober 7, 240 August 5, 266 September 16 und 272 November 8, es bleibt also nur die erste für die Zeit des Macrinus annehmbar. Zu bedenken wäre, dass nach Dio die Finsternis dem gewaltsamen Tode des Kaisers vorher ging und im Zusammenhange damit erzählt wird. Man hat deshalb früher die Finsternis in der ersten Hälfte des Jahres gesucht. Nach der obigen Sachlage hat sich Hofmann (54) doch für 218 Oktober 7 entscheiden

– 207 –

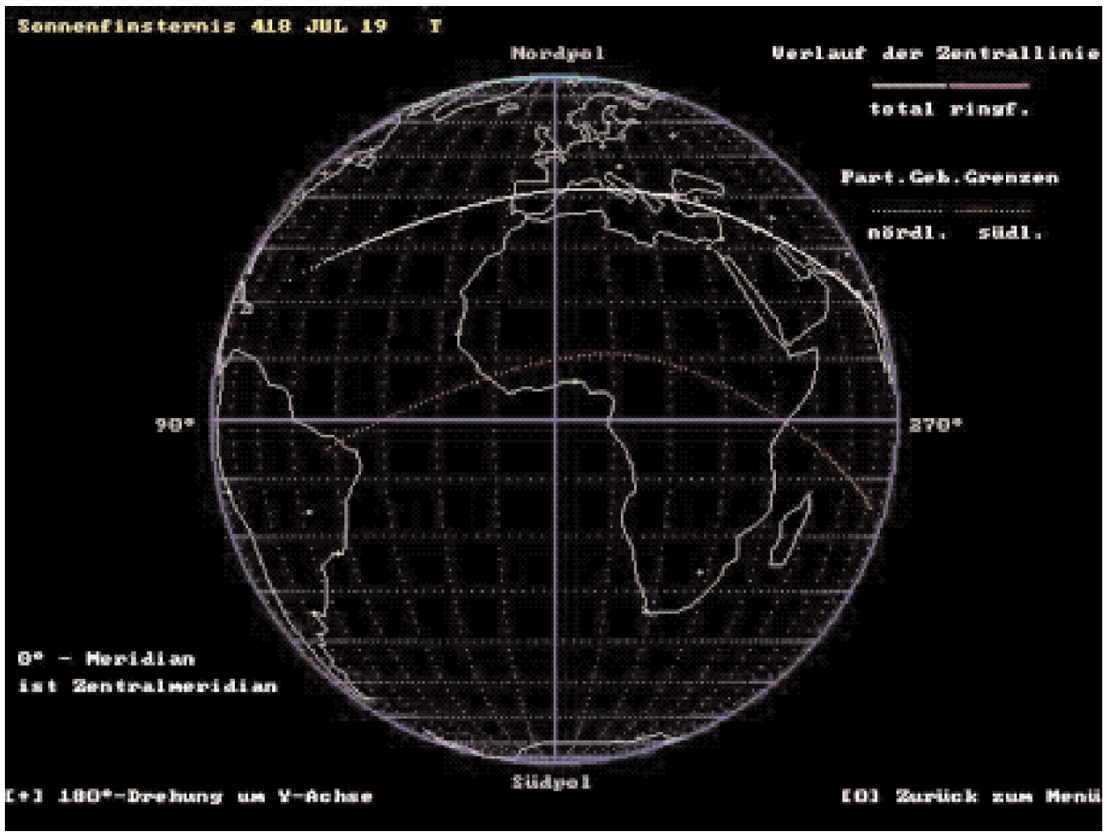
müssen (für Rom 11″,1), indem er hierzu bemerkt, dass bei Dio entweder eine Vergesslichkeit oder eine Verwechslung seines Epitomators Xiphilinus (von dem wir dieses Buch nur im Auszuge besitzen) vorliege. — Seyffarth (462) 219 April 2 (in Mysien kaum 3″).

Spezieller Kanon: Das Maximum für Rom ist

10″,4 um 7^h 4^m,4 w. Zt.; für Pergamum über 10″,6

und dort zwei Stunden nach Sonnenaufgang fallend. Diese Phase ist bereits hinreichend auffällig für die Allgemeinheit und für den Ausdruck bei Dio „sehr ansehnlich“ genügend.

Delta-T = 92.2 minutes



Total Solar Eclipse of 0418 Jul 19

Geocentric Conjunction = 11:08:02.7 UT J.D. = 1873931.963920
Greatest Eclipse = 11:11:31.6 UT J.D. = 1873931.966338

Eclipse Magnitude = 1.04591 Gamma = 0.34605

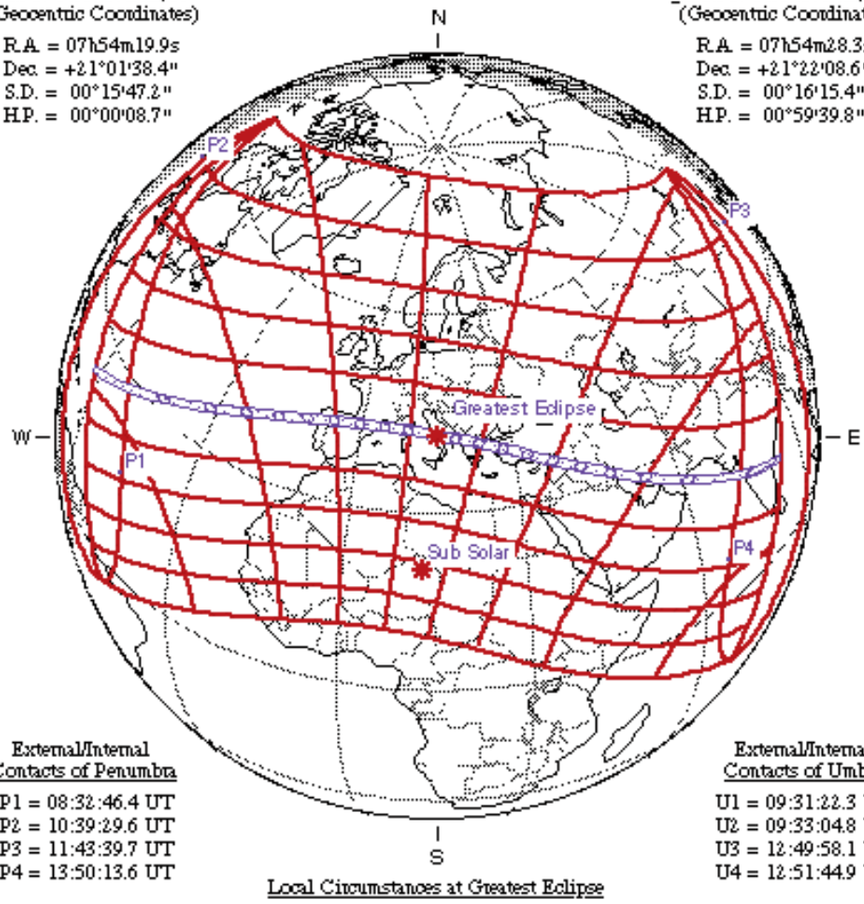
Saros Series = 91 Member = 33 of 74

Sun at Greatest Eclipse
(Geocentric Coordinates)

R.A. = 07h54m19.9s
Dec. = +21°01'38.4"
S.D. = 00°15'47.2"
H.P. = 00°00'08.7"

Moon at Greatest Eclipse
(Geocentric Coordinates)

R.A. = 07h54m28.3s
Dec. = +21°22'08.6"
S.D. = 00°16'15.4"
H.P. = 00°59'39.8"



External/Internal
Contacts of Penumbra

P1 = 08:32:46.4 UT
P2 = 10:39:29.6 UT
P3 = 11:43:39.7 UT
P4 = 13:50:13.6 UT

External/Internal
Contacts of Umbra

U1 = 09:31:22.3 UT
U2 = 09:33:04.8 UT
U3 = 12:49:58.1 UT
U4 = 12:51:44.9 UT

Local Circumstances at Greatest Eclipse

Lat. = 41°23.0'N Sun Alt. = 69.5°
Long. = 015°24.0'E Sun Azm. = 186.7°
Path Width = 163.2 km Duration = 03m52.0s

Ephemeris & Constants

Eph. = Newcomb/ILE
ΔT = 5278.0 s
k1 = 0.2724880
k2 = 0.2722810
Δb = 0.0" Δl = 0.0"

Geocentric Libration
(Optical + Physical)

l = -4.01°
b = -0.42°
c = 12.59°

Brown Lun. No. =-18607

0 1000 2000 3000 4000 5000
Kilometers

F. Espenak, NASA/GSFC - 2001 Aug 23
sunearth.gsfc.nasa.gov/eclipse/eclipse.html

HC/CE 487. Nov. 1.

The record of the Consularia Constantinopolitana speaks about a solar eclipse that occurred in the time of the consulship of Tiberianus and Dione.

In 2002 I solved the identification of this solar eclipse on pages 100-102 of the "Hungár naptár":

'The source contains the following:' „Tiberianus and Dione consuls. Under these consuls there was a darkness in the middle of the day, and in this year Constantius and Maximinus were elevated to Caesars on the calends of March."

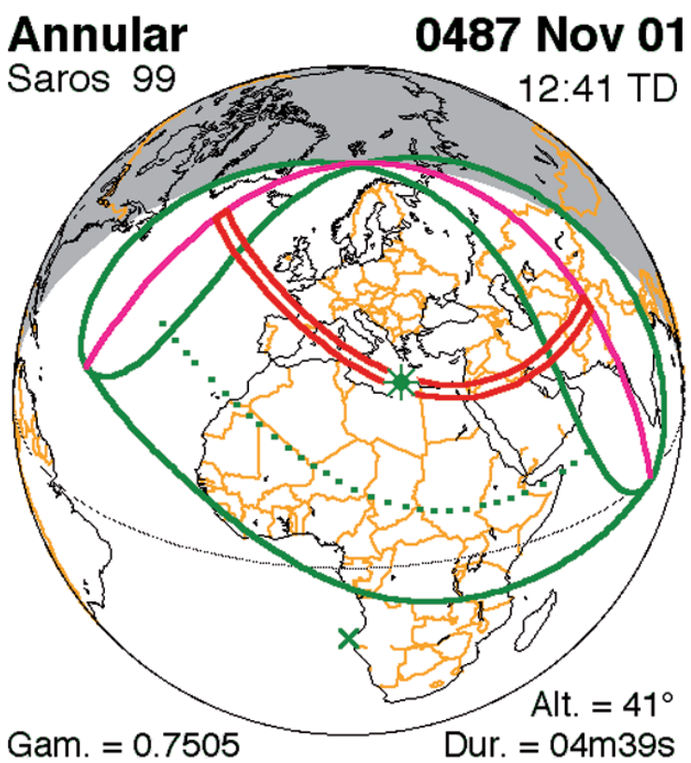
There seems to be universal agreement that the consular year of Tiberianus and Dio was ***AD 291.*** The researchers are trying hard with two solar eclipses – namely 291.May 15 and May 4 – but the result is not so remarkable.

Using the Hungarian Calendar our source can be connected to 487. Nov.1, and the place of course is Rome! At 12:03 local time, we have an almost perfect annular solar eclipse with 99 % excellent visibility. Since the solar eclipse had a West-East direction [at Barcelona 100%!], it was observable everywhere on the territory of the Roman Empire. (Oppolzer, Nr.4022.)

This is another such case when there is no need to compare our well-identified solar eclipse with the erroneous suggested ideas.

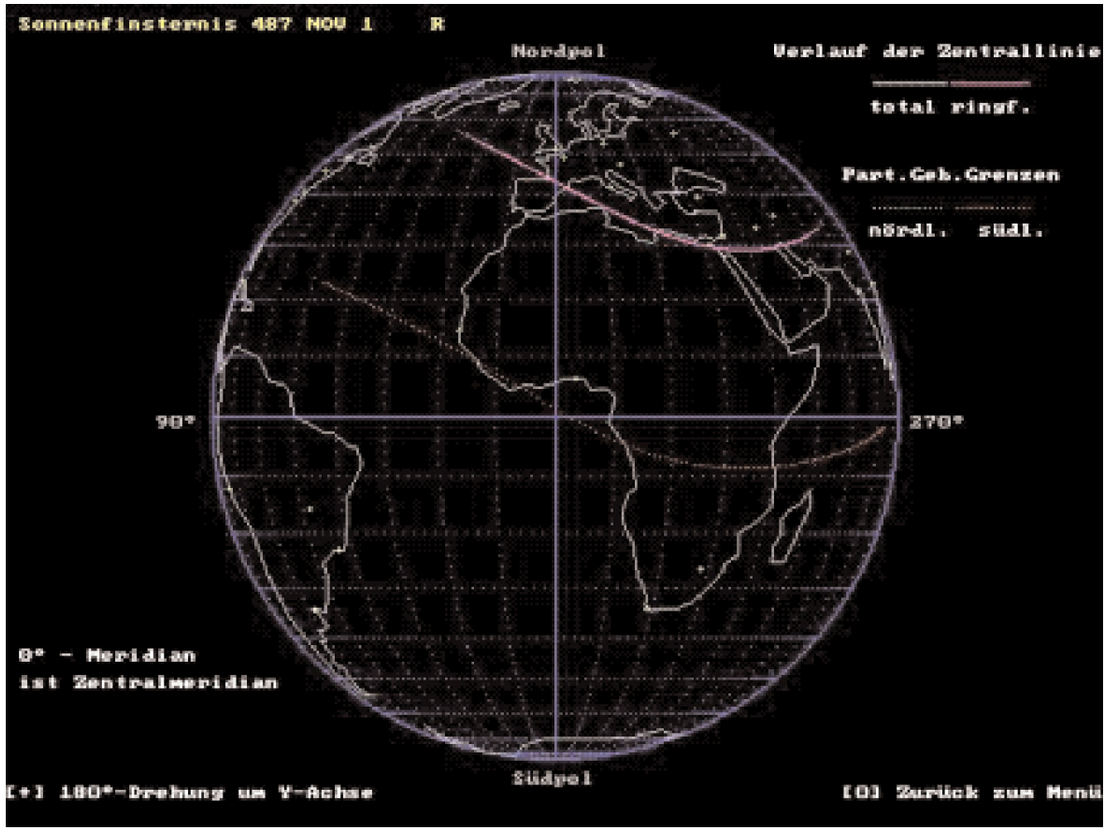
My only remark on the chronology is that the elevation to Caesars of Constantius and Maximinus can be put to the year of 293 [487–194] after the birth of Jesus Christ!

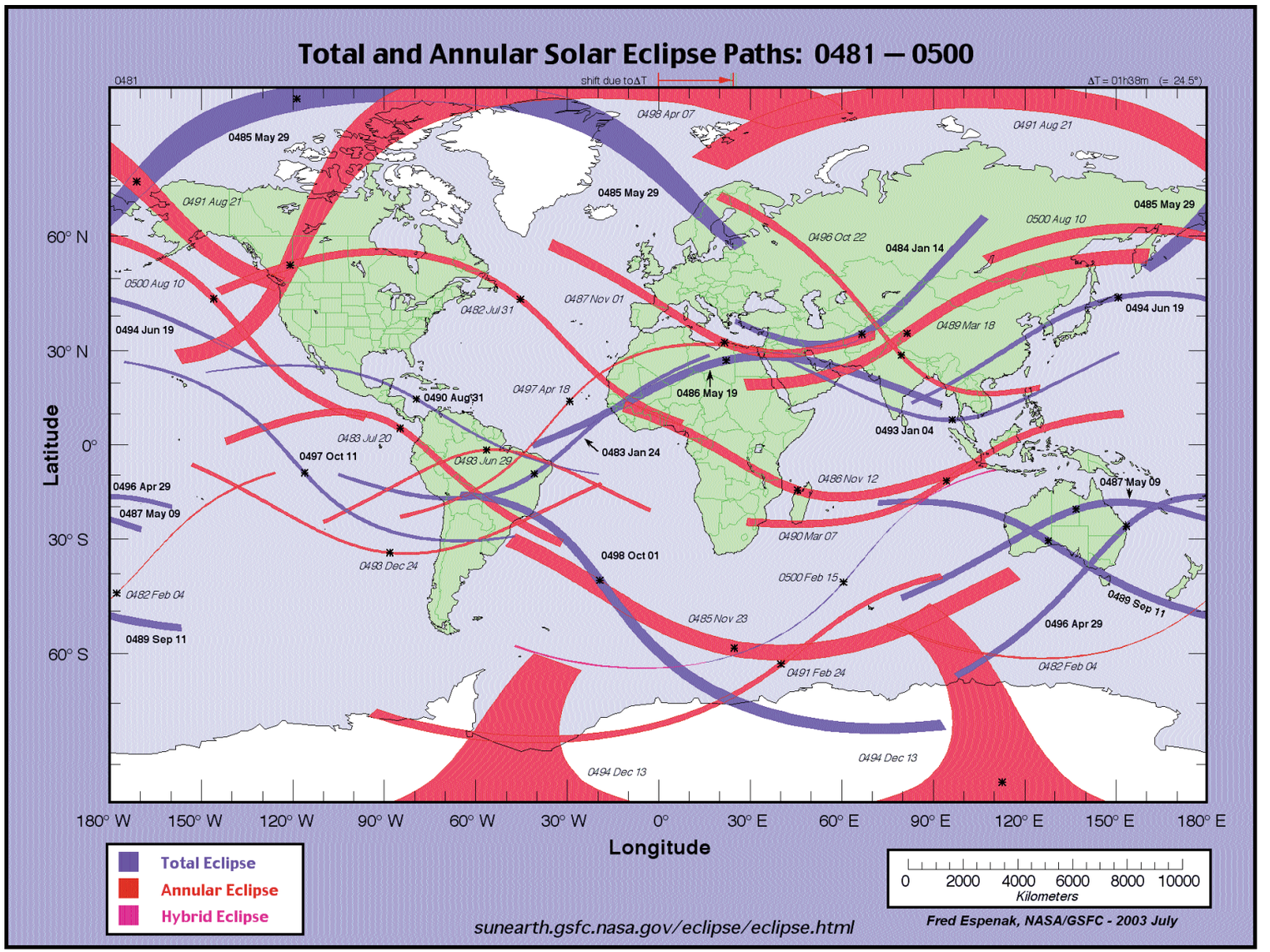
In fact historical science is teaching the same, independent of any suggested ideas.



Five Millennium Canon of Solar Eclipses (Espenak & Meeus)

The delta-T = 83 minutes




Total and Annular Solar Eclipse Paths: 0481 – 0500
0481
shift due to ΔT
ΔT = 01h38m (= 24.5°)
0485 May 29
0498 Apr 07
0491 Aug 21
0485 May 29
0491 Aug 21
0485 May 29
0500 Aug 10
0496 Oct 22
0484 Jan 14
0500 Aug 10
0487 Nov 01
0482 Jul 31
0494 Jun 19
0489 Mar 18
0494 Jun 19
0497 Apr 18
0490 Aug 31
0486 May 19
0493 Jan 04
0483 Jul 20
0497 Oct 11
0493 Jun 29
0483 Jan 24
0486 Nov 12
0496 Apr 29
0487 May 09
0487 May 09
0490 Mar 07
0498 Oct 01
0493 Dec 24
0500 Feb 15
0482 Feb 04
0489 Sep 11
0485 Nov 23
0496 Apr 29
0489 Sep 11
0491 Feb 24
0482 Feb 04
0494 Dec 13
0494 Dec 13
60° N
30° N
0°
30° S
60° S
Latitude
180° W
150° W
120° W
90° W
60° W
30° W
0°
30° E
60° E
90° E
120° E
150° E
180° E
Longitude
Total Eclipse
Annular Eclipse
Hybrid Eclipse
0
2000
4000
6000
8000
10000
Kilometers
sunearth.gsfc.nasa.gov/eclipse/eclipse.html
Fred Espenak, NASA/GSFC - 2003 July

AFTER-WORD

I have completed my final calculation, at least for the first 350 years of the Julian calendar!

The error of 200 years – more exactly 198 years – was proved once again by the means of the identification of historical solar eclipses.

I wonder what will happen now? Is there a way out of this situation for the academical sciences? It seems, recently the scientists are very self-confident. Just a few weeks ago, Ponori Thewrewk Aurél, a leading Hungarian astronomer reassured the readers of the journal „Demokrata" that from our history not even 300 seconds could be left out, not to mention 300 years!

Let us quote him:

„The thing is, that from the movement of the planets one can not leave out as much as 300 years, and what is more, nor could as small an amount as 300 seconds be left out, since during that period of time there also were for example solar eclipses, which can be exactly computed backward, and which were recorded, consequently a hypothesis created on a historical basis can be refuted easily by means of the astronomical background."

It is not at all that I wish to doubt the righteousness of the backward computation, since I myself identified historical records using the programs of specialist-scientists. I only feel the misleading attempt of critics, when they try to accuse me of doubting the evenly periodic movement of the solar system. It is not at all true. The only thing is, that those historical records were identified erroneously. And believe it or not the extent of the error is 200 years!

Against the Hungarian Calendar I suspect that academical science possibly can later offer a clever way out, namely by making an authoritative statement that it is impossible to compute backward the astronomical events for times earlier than the year of 1100.This kind of action was witnessed by us earlier in the case of the vernal equinoxes, when academical science changed the limit of error for the measurement of the vernal equinoxes. (Independently of all this – believe me – the earlier chronology is also correct.)

During the happy old times, when there was no threat from the ghost of the invented time and history, the scientists were competing with each other in proving the possibility that the Romans by the means of the obelisk of Caesar Augustus could determine the occurrence of the vernal and autumnal equinoxes up to a one-hour exactness (the limit of error was only one hour).

For today this limit of error has been increased up to 2, not hours but days.

Of course it is suggested very cautiously. Young, no-name Titans are encouraged from the back to write about this increase of the limit of error, and the effect is watched carefully.

They take into their arsenal such a result as my hypothesis of the March 23 date for the vernal equinox, then they classify the author of their source as a pitiable amateur.

Obviously they themselves do not understand, why it is that both dates of March 21 (left for us from the tradition) and of March 25 (stated for us by the humanists) are incorrect.

In my previous book, the „Hungarian Calendar", I said very clearly to my Readers that „I make no claim that either the sun or the earth stopped in their courses during the last three thousand years, nor do I suggest they traveled backwards. "After publishing it, this „Hungár naptár" received only sporadic hostile response from the public, and a few critical remarks from Hungarian astronomers.

I suppose that those of my Readers who understood the essence of „Hungár naptár" were also puzzled by the fact that the Hungarian astronomers who could see and read the Hungarian Calendar, did not initiate any dispute to refute the statements of my book. Our astronomers had the chance to sit down calmly and re-examine the historical solar eclipses, and to find a solution for the mounting problems. To the Hungarian scientists, astronomers and historians there was an advantage of 3 years in comparison to the rest of the world, but they did not use the opportunity.

I was very glad to receive the only critical notes from Sándor Keszthelyi (an amateur astronomer), his remarks showing me clearly what a great gulf there is between the astronomers and me.

Mr. Keszthelyi, as all other astronomers, can only start from the statement that everything is in complete order concerning the historical solar eclipses, so nothing to worry about their identifications.

They can have this firm opinion because of the fact that the books of Ginzel, Robert R. Newton and Schove are not available for them, and the essence of these books can reach the camp of the astronomers and the interested public through only one channel, without leaving any question mark or doubt.

Opinions such as Schove expresses frequently cannot be read anywhere:

„The first three centuries of the Christian era, when the Roman Empire was at its height, is a Dark Age as far as natural phenomena are concerned…

Eclipse records of the first century are so few that elaborate attempts to adjust the usual chronology could still be discussed in the nineteenth century…

The eclipses of the second century are less well documented than even those of the first…"

Going back to my critic, he is saying that it is not quite fair, that the solar eclipses proposed by me are not always situated at the same time-distance from the ideas offered by the academical science! (Usually I have larger time-distances!)

I sincerely hope that in this book of mine I could prove once and for all, that the official science could not demonstrate any exact and proper solar eclipse, while using the Hungarian Calendar in every case we can always find perfectly the only eclipse about which the source (which is corrupted in many cases) reports to us. (Needless to say that official science had no chance to find the proper eclipse when searching with a phase-shift of about 200 years.)

And in the future it will be completely useless to calculate the time-gap between the proper solar eclipse and the erroneous suggested ideas.

I hope that English speaking Hungarian astronomers will also study this book of mine. They will recognize that their chance of being the first in accepting the Hungarian Calendar has been lost by now, but I hope they will use their best abilities to produce a more professional translation into English of my recent book, and they will propagate the essence of this book amongst their foreign colleagues.

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