## Signs from Heaven and the Date of Chanukkah

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This account of the chronology of the rededication of the Temple by the Maccabees combines historical and astronomical evidence. We shall argue that the date when the Maccabees rededicated the Temple, commemorated each year at Chanukkah, was influenced by unexpected signs from heaven—the appearance of Halley's comet and a total eclipse of the moon, which were both visible over Jerusalem on the evening of 3 October 164 BCE.

### *When Did the Rededication of the Temple Take Place?*

The precise chronology of the Maccabaean Wars has presented scholars with difficult problems of detail: it may be no coincidence that one of the leading scholars in Maccabaean studies, Elias Bickerman, also became the author of the standard work on ancient chronology.[1] The oldest rabbinic text about Chanukkah, *Megillat Taanit,* states in the section on Kislev:

> On the twenty-fifth begin the eight days of Chanukkah, during which funeral eulogies are not allowed.

This text, found also in Talmud *Shab.* 21b, is certainly no older than the first century CE, and may be much later.

The date of the rededication of the Temple is given in 1 Macc. 4.52 as 'the twenty-fifth of the ninth month (that is the month of Kislev) in the year 148'. The year referred to was in the Seleucid era, which started in 312 BCE: the year 148 thus began in 164 BCE.[2] The Hebrew month of Kislev normally begins in November or December, but

1. E.J. Bickerman, *Der Gott der Makkabäer* (Berlin: Schocken, 1937); and E.J. Bickerman, *Chronology of the Ancient World* (London: Thames and Hudson, rev. edn, 1980).

2. Bickerman, *Chronology of the Ancient World*, p. 71.

Jonathan Goldstein[3] has argued that in the year in question Kislev began in September. The Jewish calendar, like other lunisolar calendars in the ancient Near East, depends on the intercalation of an extra month seven times every 19 years in order to keep the lunar calendar in line with the seasons.[4] At this period the Babylonians intercalated every 3rd, 6th, 8th, 11th, 14th 17th and 19th year of the 19-year cycle. During the Maccabaean war, the years 167–166 and 164–163 BCE were intercalated in the Seleucid calendar. The Jews had no fixed cycle of intercalations, and the Council of Elders would proclaim an extra month when necessary. Goldstein argues that because the high priest had been in custody, the Council had not been convened during the war, and therefore two intercalations had been missed. The years missed were 167–166 and 165–164. Antiochus may have specifically prohibited intercalation ('He shall think to change *times* and laws', Dan. 7.25). The rededication of the Temple altar, 25 Kislev, therefore took place on 16 October 164 BCE. Goldstein's theory is persuasive, although it is difficult to see why Antiochus would have prohibited intercalation when his own calendar operated on the same system.

### *Why Did the Maccabees Choose this Date?*

Goldstein's October dating goes against the consensus of modern scholars since the 1950s that Antiochus Epiphanes died before the rededication of the Temple in Jerusalem. (The order of events as recounted in 1 Maccabees places the rededication first: the order in 2 Maccabees places the death of the hated king first.) Either way round, it seems impossible that the death of Antiochus could have influenced the choice of date, since he died in Persia, and the news did not reach Jerusalem until January 163 BCE.[5] We must therefore seek an alternative explanation for the choice of date for the rededication.

The question is further complicated by a contradiction of dates in 1 Maccabees. At 1 Macc. 4.54 the date of rededication is described as the precise anniversary of that on which 'the gentiles had profaned the altar'. Josephus agrees (*Ant.* 12.7.6) that the date of Chanukkah marked the precise anniversary of the profanation three years before. However 1 Maccabees also gives the date of profanation not as 25th Kislev, but the 15th (1 Macc. 1.54). Goldstein, following the well-known principle of textual criticism that the more difficult reading is less likely to have been changed, argues that the 15th is the correct date for the profanation, and that the statement that the rededication fell on the anniversary is wrong. It may be an interpolation based on the dates in 2 Maccabees.[6]

The 25th of the month may have been the birthday of Antiochus (2 Macc. 6.7). It was certainly the date for the imposed monthly offering which had to be made on the desecrated altar. Everyone knows that Christmas is also celebrated on the 25th. Is there any link? The December date of the feast of Christmas is normally said to have begun at Rome in the fourth century CE to draw Christians away from the pagan solstice feast of *Natalis Solis Invicti*, the Mithraic festival of the birth of the sun. But, in or shortly before 386 CE,[7] St John Chrysostom described the first official celebration at Antioch, in which case the date may have come from a Syrian festival. As the Syrians, like the Jews, followed a lunar calendar, it is possible that the same festival may have given the date for both Christmas and the imposed monthly offering to Antiochus to take place on the 25th of each month.[8]

The first book of Maccabees is a book of propaganda written towards the end of the first century BCE, 60 years after the rededication of the Temple. The description of the event in ch. 4 gives a very orderly account: the sanctuary was cleaned, the profaned altar dismantled, a new altar built, new vessels made, the lights lit and then

3. J. Goldstein (ed.), *1 Maccabees* (AB; New York: Doubleday, 1976). All subsequent references to Goldstein are to this work, unless indicated otherwise.

4. Many Dead Sea Scrolls use a solar calendar (see M. Abegg, 'A Reader's Guide to the Qumran Calendar Texts', in M. Wise, M. Abegg and E. Cook [eds.], *The Dead Sea Scrolls: A New Translation* [San Francisco: Harper, 1996], pp. 296-301). There is no evidence that such calendars were used at the time of the Maccabees.

5. This is Goldstein's interpretation of *Meg. Ta'an*, 12 Adar and of Dan. 8.14. A cuneiform text from Babylon shows that news of his death did not reach there until November/December 164 BCE.

6. This is the view given by Goldstein in his edition of *1 Maccabees*, p. 54. However Goldstein later modified this view, arguing that the first profane sacrifices were in fact offered on 25 Kislev, 167 BCE. For the revised view see J. Goldstein (ed.), *2 Maccabees* (AB; New York: Doubleday, 1983), pp. 379-80.

7. See A. Baumstark, *Liturgie Comparée Principes et Méthodes pour l'Etude Historique des Liturgies Chrétiennes* (rev. B. Botte; Chevotogne: Editions de Chevetogne, 3rd edn, 1953), p. 170; L. Duchesne, *Christian Worship, Its Origin and Evolution: A Study of the Latin Liturgy up to the Time of Charlemagne* (trans. M.L. McClure; London: SPCK, 5th edn, 1927), p. 259; S. Rae (ed.), *The Faber Book of Christmas* (London: Faber & Faber, 1996), pp. 74-75.

8. Links between Chanukkah and Christmas are further explored in M. Hilton, *The Christian Effect on Jewish Life* (London: SCM Press, 1994), Chapter 1.

on 25th Kislev the first sacrifice was made. The narrative gives the impression that all this was arranged as quickly as possible. However, the impression of speed does not fit the chronology. *Megillat Taanit*, the rabbinic list of days on which fasting was prohibited, gives many dates relating to events in the Maccabaean war. The end of the prohibition of Jewish observance was to be observed annually on 28th Adar, nearly eight lunar months before the rededication (cf. 2 Macc. 11.27-33). The new altar was used for the resumption of meal offerings on 27th Cheshvan, one month before the rededication. Before that date the 'abomination of desolation' must have been removed from the altar. The date of its removal is not mentioned in *Megillat Taanit*, which leads Jonathan Goldstein to speculate (based on Dan. 9.27) that it must have been done on Rosh Hashanah or Yom Kippur of the year 3597 (164 BCE). On these festival dates a special celebration for future years could not have been proclaimed, and the event would therefore not have been listed in *Megillat Taanit*.

Why did Judas Maccabee and his followers wait so long? We can but speculate. Jonathan Goldstein suggests[9] that the Pietists were waiting for the prophecies of the books of Daniel and Enoch to be fulfilled: the Seleucid Empire would come to an end, dead Jews would be resurrected, and God's Temple would miraculously descend from Heaven. God would act against Antiochus at the end of three-and-a-half years of persecutions (Dan. 7.25), that is, at Rosh Hashanah in 164 BCE.

Goldstein speculates that because the year had not been intercalated, the Maccabees decided to wait beyond Tishri, until Kislev, the month that would have contained the autumn festivals had the intercalations taken place. Although the persecutions had ended in the spring, it was too late to add the extra month, which comes after Adar. 'Would God himself, in performing his promised miracles, be bound by the imperfect calendar? Or would he follow what normally would have been the correct Jewish calendar? To allow for all possibilities Judas and his men had to wait through two more months.'[10] But even when the month of Kislev arrived, they did not then feel it appropriate to carry out the rededication during what should have been the festive period, so they waited until the 23rd of the month, after the last festive date. By this time they realized that the prophecies of heavenly intervention could not be correct. Two days of preparation were necessary for the ceremony, and this explains why

9. Goldstein, *1 Maccabees*, pp. 273-81.
10. Goldstein, *1 Maccabees*, p. 276.



it took place on 25th Kislev. They had a precedent: for 1 Kgs 8.2 and 8.65, taken together, would have suggested that King Solomon doubled the length of the festival of Tabernacles for the dedication of the first Temple.

Goldstein's ingenious theory is rooted in his belief that no miracles really occurred for the Maccabees: that the first Chanukkah, which in rabbinic Judaism became the time of a *nes gadol*, a great miracle, was in fact celebrated on that date because of an *absence* of miracles. One senses that in his repeated emphasis that no miracle occurred for the Maccabees, that Goldstein is perhaps deliberately trying to counter the rabbinic view of the festival.

Unfortunately for Goldstein's theory, signs from heaven did occur! Goldstein marshals impressive literary and historical texts to back up his theories, but was totally unaware that Halley's comet was visible over Jerusalem in the autumn of 164 BCE, that it was possibly even recorded in the Book of Daniel, and that on 3 October its appearance coincided with a total lunar eclipse.

### *Halley's Comet in 164 BCE*

Stephenson, Yau and Hunger[11] investigated Babylonian astronomers' records, engraved on clay tablets, and have shown convincingly that Halley's comet made one of its periodic appearances in the autumn of 164 BCE.

Prior to their study there was a lack of known early historic records. Visits of Halley's comet had been well documented back to 12 BCE. Before then, the records were unreliable. Early Chinese data and Roman and Greek sources mention several comets but these cannot be identified because accurate times or positions were not noted. Although Halley's comet was due to appear in 164 BCE predictions of the dates when it might have been visible varied by as much as 150 days. Stephenson *et al.* reduced this uncertainty to 17 days, allowing us to refine our ideas of what the comet would have looked like in Jerusalem in 164 BCE.

The uncertainty arose because the orbit of a comet gradually changes. The orbits of all bodies in the solar system are slightly unstable for various reasons. Of the two main factors affecting a comet the first is the interaction of the gravity fields of the several planets, which pull at each other and at anything else within reach.

11. F.R. Stephenson, K.K.C. Yau, and H. Hunger, 'Records of Halley's Comet on Babylonian Tablets', *Nature* 314 (April 1985), pp. 587-92.

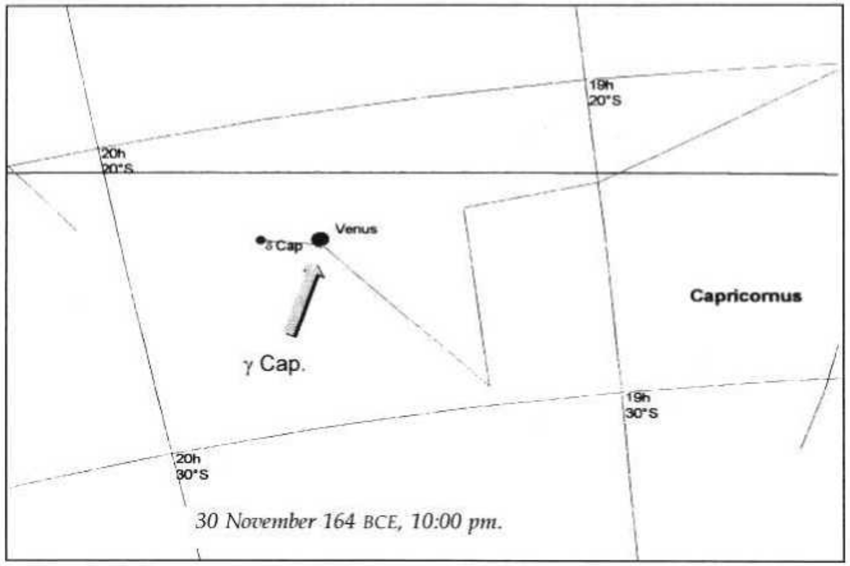
The second is the solar wind which leaves the sun at some 900 km per second and has two unpredictable effects on the comet's orbit; first, the heat vaporizes some of its constituent ices as it nears the sun, causing random jets of gas to thrust out from weak spots in its surface and drive it in different directions; secondly, the force of the wind blows the comet around and, as wind strength varies depending on the activity of the sun, this effect is also variable.

Two of the Babylonian tablets particularly interested Stephenson and his co-workers because, although fragmented and undated, they recorded that a comet was observed and gave enough contemporaneous observations to allow dates to be assigned.

First we need to establish that the word *Ṣallamu* used on the tablets really means a comet. The Babylonians used this word to describe several different objects. It could, for example, mean a meteor or fireball. However, this *Ṣallamu* was visible for some weeks. Only a comet could be so long lived. In order to understand how we know that the comet was Halley's we must now appreciate how the dating was done.

The tablets are engraved on both sides and cover consecutive but unspecified months. Several measurements of the moon were noted. The moon travels round the sky once a month, so its position will not usually tell us any specific dates. Planets move slower than the moon and are not in the same place very often. Some observations note the positions of two or more planets at the same time. Planets seldom coincide in repeating such arrangements so that one can work out a date with some confidence given the positions of several planets.

One observation which was particularly useful stated that 'about the twelfth of this month Venus was two fingers above γ Capricornis'. (Astronomers name the brighter stars in each constellation using the letters of the Greek alphabet, starting with α for the brightest. γ Capricornis is thus the third brightest star in the constellation of Capricorn.) Most Babylonian observations were made in cubits, a cubit being some 2.5 degrees, with a margin of error of about half a degree. 'Two fingers' is only about one fifth of a degree and is therefore a relatively precise measurement. Such close conjunctions between planets and stars are rare. This one is mentioned on both the tablets and is shown in Fig. 1.[12] (A calendar is given in the appendix at the end of this article comparing Seleucid dates with the Julian ones with which we are more familiar.) We checked how often Venus passed within a similar distance of this star in the 20 years between 170 BCE and 150 BCE. The answer was three times.



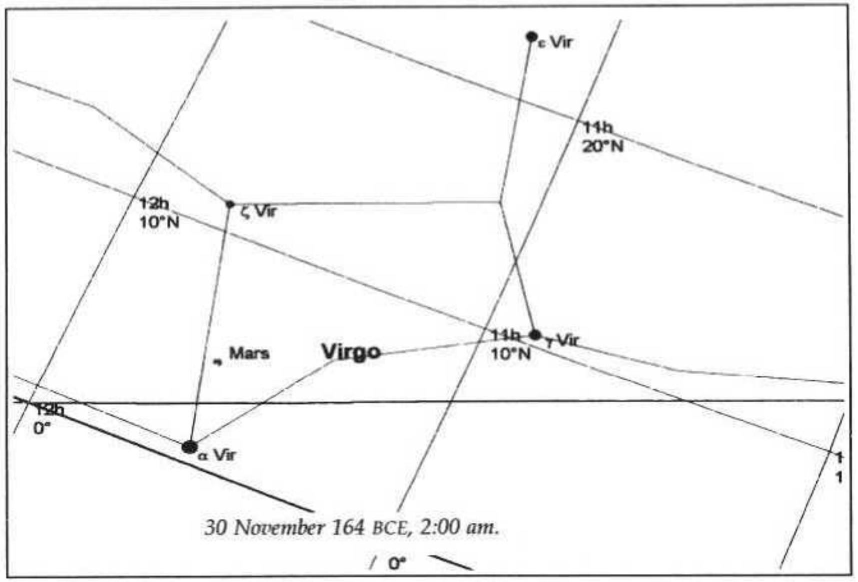

This is the 13th night of the Babylonian month IX. 2 fingers is about 0.2 degrees. Venus and the star were so close that they overlap on this map.

Fig. 1. *'About the 12th of this month Venus was 2 fingers above γ Cap.'*

One of the tablets, referring to the same day also says the following: '...whereas, towards morning, Mars was above α Virginis' (this is the star named Spica, the brightest star in the constellation Virgo—see Fig. 2). A similar check showed that Mars neared this star only 11 times in the same 20 years. Significantly, the coincidence of Venus above γ Capricornis and Mars above α Virginis was a unique event during those 20 years. Stephenson and his team made similar checks. They did not just look at 20 years. They covered 400 years, starting from the time that the Babylonians began using the star names written on the tablets and finishing at year 40 of the present era; we have no more Babylonian diaries after that date. All the

12. Figs 1, 2 and 3 were prepared using the Redshift© Multimedia Astronomy program, version 2 (Maris Multimedia, 99 Mansell Street, London E1 8AX; Internet: www.maris.com). This program uses the positions calculated for the Astronomical almanac by the USA's Jet Propulsion Laboratory's 'DE 102' computer program. Positions are accurate to between 10 and 30 arcseconds for the planets and a few arcminutes for the moon. Compared to Babylonian records, where a cubit could mean anything between 2 and 3 degrees, errors of a fraction of a degree, let alone of an arcminute, are insignificant.

planets were where the tablets said they were only once. That was in months VIII and IX of the 148th year of the Seleucid calendar, corresponding to October and November 164 BCE.



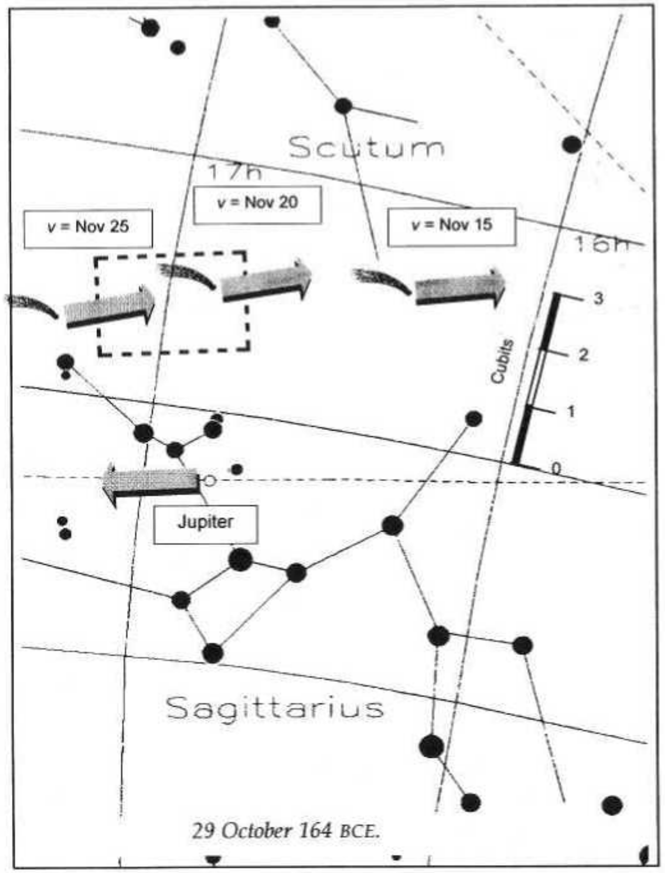

This is the 12th night of the Babylonian month IX and is 20 hours before Fig. 1. Mars was moving east. It was directly above α Vir. 24 hours later.

Fig. 2. '*...whereas, towards morning, Mars was above α Vir.*'

Having confirmed that the Babylonians saw a comet and the months and year in which they saw it, how do we know it was Halley's? The observation that the comet was '1 cubit in front of Jupiter, 3 cubits high toward the north' is very helpful. Figure 3 explains what this tells us. Jupiter is shown below centre. The arrow indicates the amount and direction in which Jupiter moved across the sky during the seven days after 29 October 164 BCE (which is the date of the map). One of the critical factors which determines how a comet will look to us on earth is the date of its perihelion (*v*), when it swings closest to the sun. This date allows astronomers to calculate where it will be on its orbit at any time. The 150 day uncertainty in the perihelion date of Halley's comet has already been mentioned. In Fig. 3 the dotted box shows the area 3 cubits north and 1 cubit in front of Jupiter during the seven days after the 29 October, allowing for the Babylonians' errors in measurement. They could only have recorded Halley's comet if it was in that box. Three possible positions for



Halley's comet have also been drawn on the map, for different dates of perihelion, with arrows indicating a week's movement, just as for Jupiter. This shows that Halley's comet would have fitted in the box




Jupiter is just below centre. The arrow shows where it will move in the next seven days. Halley's comet is drawn in three places corresponding to the perihelion dates shown, its track similarly indicated by arrows. They go in opposite directions because Halley's comet is in a retrograde orbit (i.e. travelling the other way round the sun to the planets). The dotted box is the area 1 cubit in front and 3 cubits north of Jupiter's track in the week, allowing for normal errors in Babylonian measurements. If the comet seen was Halley's it had to fit in the box. It does fit over a range of values for perihelion date (*v*). Stephenson *et al.* used this method to narrow down the range of *v* as far as possible. By enlarging the box to include all possible sightings of Jupiter and the comet they concluded that *v* had to be between 9 and 26 November 164 BCE.

Fig. 3. '*[The comet was] ...in the region of Sagittarius, 1 cubit in front of Jupiter, 3 cubits to the north.*'

at some time in that week if its perihelion dates had been approximately between 18 and 26 November, and confirms that it was Halley's comet which was recorded since bright comets do not appear often enough for two to be in the same part of the sky at the same time. Stephenson *et al.* used this method to narrow down the range of possible perihelion dates for Halley's comet in 164 BCE to the 17 days between 9 and 26 November.

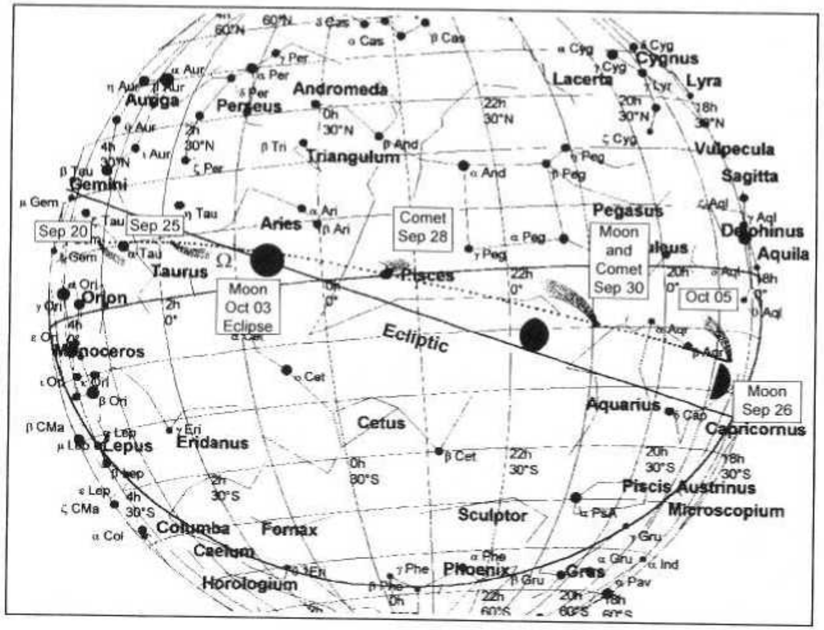
Another observation says 'The comet which had previously appeared in the east in the path of Anu in the area of Pleiades and Taurus, to the west...and passed along the path of Ea'. The significant word in this passage is 'previously'. In Fig. 3 we established that Halley's comet was visible in October. The word 'previously' means 'in a month previous to the one in which the present record is being written' and tells us that Halley's comet had been seen by the Babylonian astronomers at least as early as September. Fig. 4 illustrates this.

To understand this map you should imagine that you are in Jerusalem, facing roughly south, and looking up towards the point in the sky which is about halfway between horizon and zenith. Now imagine that the half of the sky behind your head is cut away and the half which is left and which you can see is painted on the inside of a hemispherical bowl. This map is a flat representation of that bowl, distorted at the edges because we are projecting a three-dimensional object on to a flat piece of paper. The heavy line curving round the bottom marks the horizon. East is to the left and west to the right.

The map shows the path of Halley's comet as a dotted line. Pictures of a comet are drawn on the line in the correct positions for the stated dates, assuming that perihelion was on 12 November. This confirms the observation that the comet was seen 'previously...in the east in the path of Anu in the area of Pleiades and Taurus' (i.e. in September) and passed westwards 'along the path of Ea'. (Anu, Enlil and Ea were Babylonian deities synonymous with the equatorial, northern and southern skies respectively.) It also shows the importance of the perihelion date. The comet travelled right across the sky between 20 September and 5 October, a period of only about 17 days. Note that the comet moved very fast round about 28 September because it was very near to the earth at that time. Because of this rapidity, an error in perihelion date of only a single day would be very significant. (We will explain this further in the next paragraph, when we look at Figs. 5–9.) The comet could have been spectacular because of its nearness but unfortunately there was also a bright moon in the sky and this would have dazzled the eye and



reduced the effect. Dated positions of the moon between first quarter and full are also shown on the map. The light of the moon and the uncertainty of the perihelion date make it difficult to be sure exactly when Halley's comet was seen at its best.




The positions of the moon during the first half of month VII are shown. The positions of Halley's comet presuppose a perihelion date ($v$) of 15 November. Because of the 17 day uncertainty in $v$, it could have been several days ahead of or behind the positions shown. This difference is significant while the comet is near the earth and travelling quickly across the sky. It becomes less so in early September and late October, when the comet was more distant and therefore appeared to move more slowly. Note how the tail swings because our perspective changes. Near 28 September, the comet was seen end on and would not have looked very impressive.

Fig. 4. *The Autumn Night Sky in the Middle East in 164* BCE.

However, we can be certain about a number of aspects of this apparition of Halley's comet. Figures 5 to 9 illustrate them by showing views of the Jerusalem night sky on selected evenings to build up a picture of events.[13] In all these maps the bold black line represents

13. 'Dance of the Planets' (DOP) computer software offers an 'Observer's Companion' which calculated the positions of Halley's comet for different perihelion dates and the searches on the dates of planetary conjunctions. It drew Figs 5 to 9 (ARC Science Simulations, PO Box 1955, Loveland, CO 80539, USA;

the southern horizon, from north-east round to north-west. Arrows point to the head of the comet and a line depicts the direction and approximate length of its tail. Because we do not know the exact perihelion date ($v$), we have shown the position of the comet for the whole 17 day range of $v$ established by Stephenson *et al.*, making plots every three days for values between 9 and 27 November. Each map therefore shows every possible position for Halley's comet at the time indicated.

First, obviously, people did see the comet: astronomers had picked it up in September, if not before, thus allowing time for the news of it to spread during the ensuing month. Figure 5 shows that it was in the area of Taurus and the Pleiades around the end of September. It also shows that we can be quite definite about where it was at this time because a small area of sky contained all its possible positions.

Figure 6 shows that a number of things happened in the ensuing week. First, it illustrates what a big difference the value of $v$ made at the time the comet neared the earth and swept past. Secondly, it shows that the tail of the comet swung round as it passed, because the perspective of view changed. If the comet had a $v$ value of 15 November, it would have been seen head on with no tail to speak of. Thirdly, it shows that the moon was intruding. Had the comet had values of $v$ between 13 and 26 November, it would have been so small as to be hard to see. Had the values of $v$ been higher, then the moon would have been very close and drowned the spectacle of the comet with its light.

Figure 7 is the interesting night of 3 October. The moon was full but rose in total eclipse. An eclipsed moon is always reddish in colour and proximity to the horizon would have made it redder still. Both these effects occur for the same reason that sunsets are red. Nights are usually very clear in Jerusalem at this time of year and there is every chance that many people saw the eclipse. (Even if they did not see it, the Babylonians knew it was happening.) With the moon darkened by the earth's shadow, the comet at last had a proper chance to shine, even if only for an hour or so. Unless $v$ was 21 November or later, Halley's comet would have been clearly visible, and with quite a long tail. The sight of a blood red moon and a comet in the sky together must have been seen as a very significant portent indeed.

Internet: www.arcinc.com). It is an older program than Redshift© and gave a time about half an hour later than Redshift© for the eclipse of the Moon on 3 October 164 BCE. This difference between the two only amounts to about 15 arcminutes. Planetary calculations agreed even better.



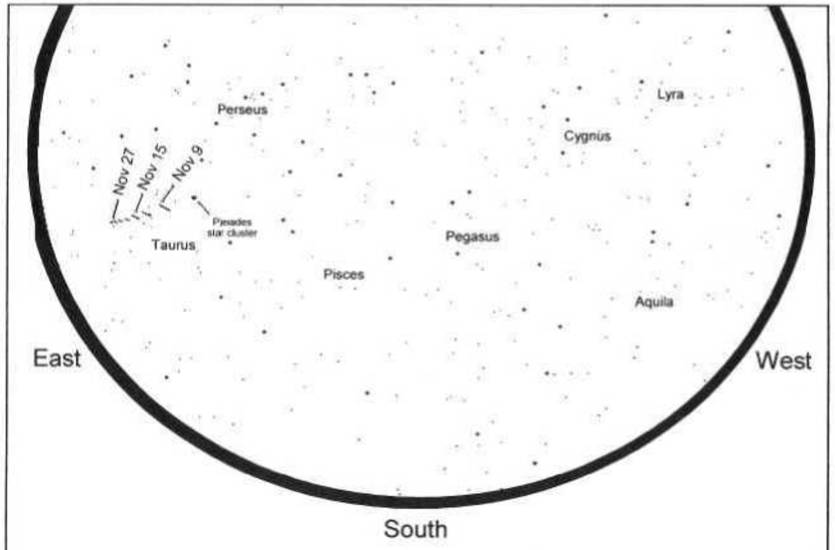



Fig. 5. *22 September 164* BCE *(day 3 of month VII), 9:30 pm.*

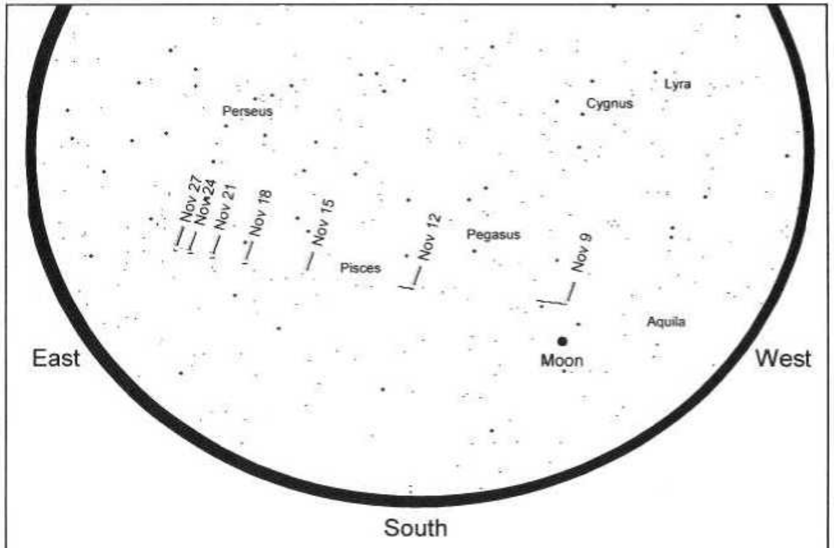



Fig. 6. *28 September 164* BCE *(day 8 of month VII), 9:30 pm.*

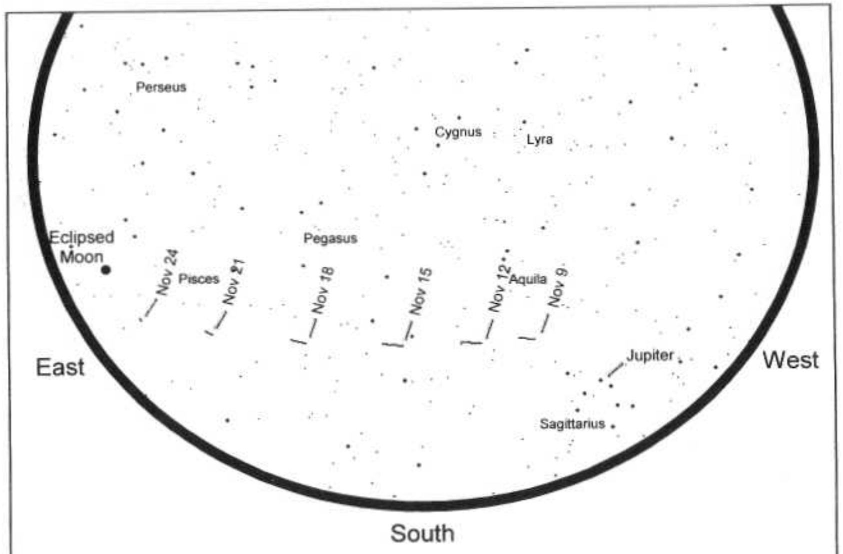



Fig. 7. *3 October 164* BCE *(day 13 of month VII), 6:30 pm.*

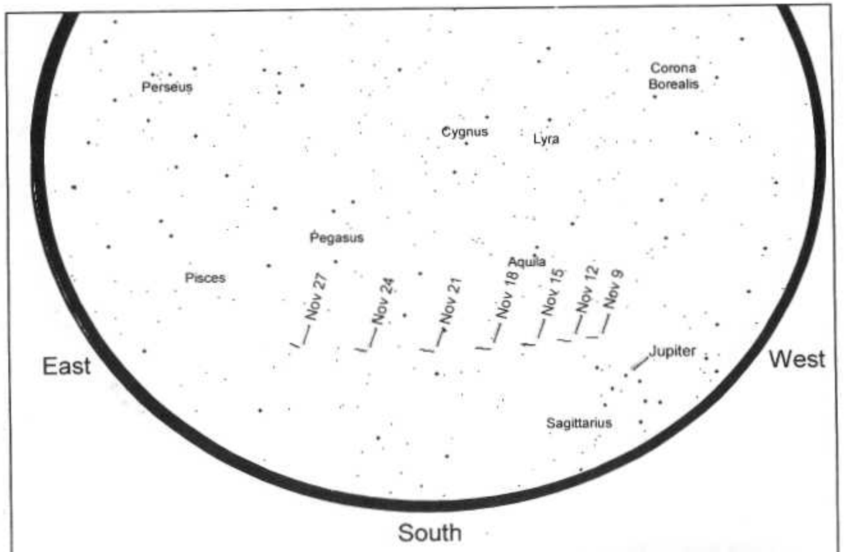



Fig. 8. *8 October 164* BCE *(day 18 of month VII), 6:30 pm.*



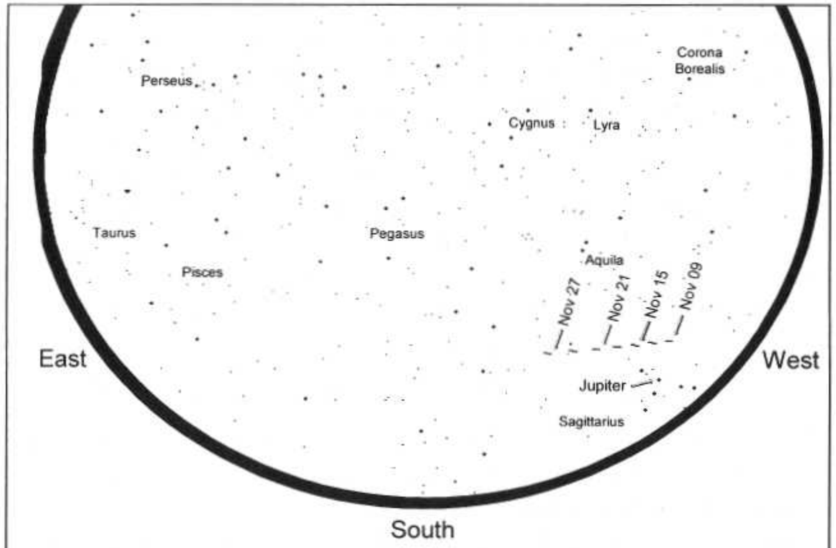



Fig. 9. *20 October 164* BCE *(new moon of month VIII), 6:30 pm.*

By 8 October (Fig. 8) the waning moon did not rise in the early part of the night to prevent people seeing the comet. The tail was not as long as a few days earlier, but this was a definite window of opportunity. The comet was visible over a few nights, quite high in the sky, and with a reasonable length of tail, whatever the value of *v* was.

Finally, we near the end of October when the observations of Halley's position in relation to Jupiter were made (Fig. 9). Soon the fading comet would disappear into the evening twilight on its way to swing round the far side of the sun.

### *Is There a Biblical Reference to the Comet?*

Wolters[14] was interested in the use of the word *zohar* in Dan. 12.3. The root occurs twice: *yazhiru kezohar harakia* 'they shall shine like the brightness of the firmament'. The new RSV translation is:

> Those who are wise shall shine like the brightness of the sky (or dome), and those who lead many to righteousness like the stars for ever and ever.

14. A. Wolters, '*Zōhar hārāqîa*' (Daniel 12.3) and Halley's Comet', *JSOT* 61 (1994), pp. 111-20.

Wolters looks at the structure of the verse, the common usages of the words and at parallel passages in the Bible and elsewhere to argue that Daniel is talking about a comet. The parallelism with 'stars' in the second half of the verse is especially convincing. He suggests that the passage 'the brightness of the firmament' would be better translated as 'the warning lights of the firmament', and that this was a play on words with hidden meanings. The Pietists who refused to give in to Antiochus were trying to 'teach' the others to stick to the right ways and they were 'shining examples'. But the root *zhr* normally means 'to warn': the comet was a celestial warning light.

### *How Would the 'Signs from Heaven' Have Been Interpreted?*

Eclipses have long been unsettling. At least one documented account shows that the Hebrews considered eclipses of the sun to be portents of unrest well before the second century BCE. This refers to an eclipse in the month of Sivan (15 June 763 BCE). Assyrian records talk of 'Insurrection in the cities of Ashur' and Amos 8.9 mentions the same eclipse saying, '"On that day", says the Lord God, "I will make the sun go down at noon, and darken the earth in broad daylight".'

The Babylonians believed that the sun and moon were born together, the sun to rule the day, the moon the night. The moon was a symbol of growth and fragility because it waxes and wanes. Eclipses were viewed with concern because they brought the risk of a permanent end—in other words, of death. Antiochus was identified with the sun-god: he was the first Seleucid king to issue coins portraying his own head with a crown of rays,[15] so the significance of an eclipse of the sun would have been obvious. An eclipse of the moon, cut off just when it was full and at its brightest, might also have been troubling.

Like the Babylonians, the Jews followed the lunar calendar and were influenced by similar traditional beliefs. But if the Maccabees were waiting for some heavenly sign, clearly they had one on the night of 3 October. The combined effect of the eclipse and the comet was very striking. Why do the sources not mention it directly? The answer is that all the sources—Daniel, the books of the Maccabees, and Josephus—are very selective about what they recorded. As we shall see, there may be an indirect reference in Josephus to the eclipse: but the Jewish authors would not have mentioned the eclipse directly if it was interpreted as a bad omen at the time of the Maccabees' triumph. As for the comet, this may be alluded to in a phrase in 2 Maccabees. To understand this requires an explanation of the traditions associated with the dedication of a new altar.

15. Goldstein, *1 Maccabees*, p. 146.



Bezalel Bar-Kochva[16] questions Goldstein's theory that intercalations could have been missed during the Maccabaean war, and therefore places the date of the rededication in December 164. But the evidence of the comet and eclipse gives new support for Goldstein's theory. He insists that the Maccabees were waiting for some kind of heavenly sign. They undoubtedly hoped that fire from heaven would kindle the fire on the new altar. Lev. 9.24 describes the 'fire from before the Eternal' which kindled the first offering on Aaron's altar. 2 Chron. 7.1 states that 'fire descended from heaven' to consume the first offering in Solomon's Temple: and 2 Macc. 1.22 imagines Nehemiah's procedure as follows: the sun kindled a liquid which had been sprinkled over the wood and the first offerings. To kindle an ordinary fire there would be to repeat the sin of Nadav and Avihu (Lev. 10.1-2).

However, none of the sources state that a similar miracle happened for the Maccabees. Goldstein suggests that it was because no heavenly fire had appeared, that some of the sources do not refer to a 'dedication' (Hebrew: Chanukkah) at all, but rather to a 'purification' of the Temple. The author of the anonymous letter preserved in 2 Maccabees 1–2 calls the festival 'Days of Tabernacles and Days of the Fire'. Nowhere else do we hear of a Jewish 'Days of Fire'. It therefore seems possible that the reference is to the appearance of Halley's comet. Aaron's and Solomon's altars had been dedicated in the proper fashion, by ignition from heaven. Nehemiah's altar was kindled by the action of the sun on petrol, a wonder to all around but not really a miracle. In their day, the Maccabees had to be content with a remarkable sign *in* the heavens. Later, the rabbis interpreted Lev. 1.7 to mean that an ordinary flame could kindle the fire on the altar (Talmud *Yoma* 21b).

It is tempting to speculate that the later designation of Chanukkah as a 'festival of lights' is connected with the title 'days of fire'. The kindling of lights in honour of the festival is first attested in *Megillat Taanit*, 25 Kislev, where it is linked to the previously unknown 'miracle of the oil'. Clearly, by this time, the appearance of Halley's comet and the lunar eclipse of 164 BCE had long been forgotten. Many sources may have contributed to the development of the new

16. B. Bar-Kochva, *Judas Maccabaeus* (Cambridge: Cambridge University Press, 1989), p. 279.

custom. The 'days of fire' may have been one; pagan solstice festivals may have been another.

Josephus, too, calls Chanukkah the 'festival of Lights' (*Ant.* 12.7.7). Surprisingly, however, he does not connect the name with the kindling of the Temple menorah. The reason he gives is normally taken to mean that the 'sudden deliverance was like a light appearing in the darkness of despair.'[17] However, when we look at the Greek text we find that the actual words used are φανηναι την εξουσιαν, 'the appearance of authority'. Although the word εξουσια usually means 'authority, permission', it is occasionally used in the sense of 'heavenly power'.[18] There is a tantalizing possibility that Josephus's text is a veiled reference to the eclipse.[19]

As we have seen, Goldstein insists that the first Chanukkah was celebrated in October. This places the eclipse at the full moon in the middle of the month of Kislev in the year 164 BCE, at the very beginning of the festival which would have been Sukkot in the intercalated calendar. If Goldstein is right in his theory that the Maccabees did not wish to carry out the rededication during what should have been the festive period, then it seems reasonable to follow his view that the 25th Kislev, 16 October, was the earliest practicable date, allowing time for the necessary preparations. If the eclipse was regarded as a bad omen, the Maccabees would have been in a hurry to carry out the rededication before disaster struck. But if Wolter's interpretation of Daniel and our interpretation of 2 Maccabees are correct, the comet must have been seen as a positive sign for the Jewish fighters, announcing the triumph of the righteous and the imminent death of the hated tyrant king. Taken together, we suggest that the two signs gave a message like this: 'You may now kindle fire on the altar. For the king is doomed: you righteous people shine like the brightness of the comet, but beware! a defeat is on its way.' This must have spurred the Maccabees to act quickly. Two thousand years later, we still observe Chanukkah on the date they chose. It is indeed remarkable that the 'signs from heaven' have had such a long-lasting effect.

17. This is the interpretation of Ralph Marcus, editor of the Loeb edition of Josephus (Cambridge, MA: Heinemann, 1933).

18. G. Kittel, *Theological Dictionary of the New Testament* (Grand Rapids, MI: Eerdmans), II, p. 572.

19. We are indebted to Dr George Brooke of Manchester University for this suggestion.



## Appendix

*Seleucid Lunar Calendar for the Autumn Nights of 164 BCE*

The calendar is lunar. Each month begins when the thin crescent new moon is first seen after sunset. Each new Seleucid day begins at sunset. In the Julian calendar, each day starts at midnight. A night on the Seleucid calendar therefore spans two Julian dates. This is why the comparative dates are stepped on the calendar below.

| Julian Date | Night of Lunar Month | Time of New Moon | Julian Date | Night of Lunar Month | Time of New Moon | Julian Date | Night of Lunar Month | Time of New Moon |
|---|---|---|---|---|---|---|---|---|
| 19/09 | New Moon | 17:00 | 19/10 | New Moon | 06:00 | 17/11 | New Moon | 18:00 |
| 20/09 | 1 | | 20/10 | 1 | | 18/11 | 1 | |
| 21/09 | 2 | Month VII | 21/10 | 2 | Month VIII | 19/11 | 2 | Month IX |
| 22/09 | 3 | | 22/10 | 3 | | 20/11 | 3 | |
| 23/09 | 4 | | 23/10 | 4 | | 21/11 | 4 | |
| 24/09 | 5 | SE 147 | 24/10 | 5 | SE 148 | 22/11 | 5 | SE 149 |
| 25/09 | 6 | | 25/10 | 6 | | 23/11 | 6 | |
| 26/09 | 7 | | 26/10 | 7 | | 24/11 | 7 | |
| 27/09 | 8 | | 27/10 | 8 | | 25/11 | 8 | |
| 28/09 | 9 | | 28/10 | 9 | | 26/11 | 9 | |
| 30/09 | 10 | | 30/10 | 10 | | 27/11 | 10 | |
| 01/10 | 11 | | 31/10 | 11 | | 28/11 | 11 | |
| 02/10 | 12 | | 01/11 | 12 | | 29/11 | 12 | |
| 03/10 | 13 | | 02/11 | 13 | | 30/11 | 13 | |
| 04/10 | 14 | Eclipse | 03/11 | 14 | | 01/12 | 14 | |
| 05/10 | 15 | | 04/11 | 15 | | 02/12 | 15 | |
| 06/10 | 16 | | 05/11 | 16 | | 03/12 | 16 | |
| 07/10 | 17 | | 06/11 | 17 | | 04/12 | 17 | |
| 08/10 | 18 | | 07/11 | 18 | | 05/12 | 18 | |
| 09/10 | 19 | | 08/11 | 19 | | 06/12 | 19 | |
| 10/10 | 20 | | 09/11 | 20 | | 07/12 | 20 | |
| 11/10 | 21 | | 10/11 | 21 | | 08/12 | 21 | |
| 12/10 | 22 | | 11/11 | 22 | | 09/12 | 22 | |
| 13/10 | 23 | | 12/11 | 23 | | 10/12 | 23 | |
| 14/10 | 24 | | 13/11 | 24 | | 11/12 | 24 | |
| 15/10 | 25 | | 14/11 | 25 | | 12/12 | 25 | |
| 16/10 | 26 | | 15/11 | 26 | | 13/12 | 26 | |
| 17/10 | 27 | | 16/11 | 27 | | 14/12 | 27 | |
| 18/10 | 28 | | 17/11 | 28 | | 15/12 | 28 | |
| | | | | | | 16/12 | | |