

Leap year theories compared.

The role of the menorah in the temple service.

Taken from Ken Johnson's book - Ancient Dead Sea Scrolls Calendar. Do purchase and read it, for those of you big fans of this calendar study! 😊 Shalom, [Rojo Mathews](#)

Menorah as a Timepiece

The tabernacle of Moses always faced east. This would allow a priest in the tabernacle to record the day that the spring equinox occurred by observing the sunrise that morning.



Josephus says this about the Menorah:



"Over against this table, near the southern wall, was set a candlestick of cast gold, hollow within, and being of the weight of one hundred pound: which the Hebrews call cinchares: which, if it be turned into the Greek language, it denotes a talent. It was made with its knobs, and lilies, and pomegranates, and bowls: which ornaments amounted to seventy in all.

By which means the shaft elevated itself on high from a single base, and spread itself into as many branches as there are planets: including the sun among them. It terminated in seven heads, in one row, all standing parallel to one another; and these branches carried seven lamps, one by one, in imitation of the number of the planets: these lamps looked to the east and to the south, the candlestick being situate obliquely." Josephus' *Antiquities 3.6.7*

According to Josephus the lamps on the Menorah "imitated the number" of the planets. That might mean that they were named after the planets. Originally the days of the week were numbered one through seven, or one through six and "the Sabbath." Later, the days of the week were named after the planets. Saturday, Sunday, and Monday are obvious in English as Saturn, the sun and the moon. Tuesday, Wednesday, Thursday, and Friday are easier seen in the French language than the English language. Tuesday is mardi (Mars). Wednesday is mercredi (Mercury). Thursday is jeudi (Jupiter). Friday is vendredi (Venus).

Pagans later named their gods after the planets. So, by saying that the lamps on the Menorah were named after the planets, he could very easily be saying they represented the days of the week. The lamps could be "slanted" or turned to face either east or south. I believe Josephus has given us the Zadok priests' method of recording the day of the week that the spring equinox occurred, and thereby showing when to add the leap week into the calendar.



It would start with the lamps all pointing the same way except the marker lamp pointing the other way. The Essenes used Wednesday to start their calendar because Genesis 1:14-19 records that the sun, moon, and stars were created on the fourth day of the week. Wednesday would be the middle or fourth lamp in the row. The next spring equinox would occur 365 days later, one day more than the 364-day calendar that they used. This would place the spring equinox on Thursday instead of Wednesday. So, the priest would turn the fourth lamp back in line with the others and turn the fifth lamp to mark that the equinox occurred

on Thursday that year.



Continuing this pattern, the second year's equinox would fall on a Friday and the third year's equinox would fall on a Saturday.



In the fourth year something interesting would happen. The marker would naturally be moved from Saturday to Sunday, back to the first lamp on the Menorah. This would signal that the year was a leap year adding a "leap week." However, since this would be the fourth year in the cycle, it would also have an extra day (the 366th day on the Gregorian calendar). By adding this extra day, the marker would move from Saturday to Monday, instead of Saturday to Sunday.



The fifth year the marker would move to Tuesday, then in the sixth year it would move to Wednesday, and then in the seventh year it would move to Thursday. In the eighth year it should move to Friday but every four years we need to add that extra day (the 366th day on the Gregorian Calendar), so it would actually move from Thursday to Saturday.

The ninth year would be a normal year, it would only move from Saturday to Sunday (only one day). The marker would move off of Saturday, the seventh lamp, and return to the left side of the Menorah landing on Sunday. That means we would add a seven-day leap week. After eleven cycles the pattern repeats.

Sun	Mon	Tue	Wed	Thu	Fri	Sat
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			X	1yr	2yr	3yr
->	4yr	5yr	6yr	7yr	->	8yr
9yr	10yr	11yr	->	12yr	13yr	14yr
15yr	->	16yr	17yr	18yr	19yr	->
20yr	21yr	22yr	23yr	->	24yr	25yr
26yr	27yr	->	28yr	29yr	30yr	31yr
->	32yr	33yr	34yr	35yr	->	36yr
37yr	38yr	39yr	->	40yr	41yr	42yr
43yr	->	44yr	45yr	46yr	47yr	->
48yr	49yr	50yr	51yr	->	52yr	53yr
54yr	55yr	->	X			

This would keep the calendar correct for approximately 20,806 years, until another "extra day" would add up. But, when it does, the priests could simply add an extra skip day on the Menorah and start all over. In other words, it is a self-correcting calendar. It would never get off.

This method keeps both the seven-day sequence uninterrupted and keeps the start of the new year within *three* days of the equinox. If you count the number of years between leap years using this method, it is either five or six years long. I believe this is more evidence that we are using the correct method.

After the Equinox Debate

The method taught in this chapter only allows the spring equinox to occur a maximum of three days away from the first of the new year, three days before to three days after.

There are those who believe that the sign of the spring equinox must always be before the Wednesday which is the new year. With their method, the counting and marking of the Menorah would be the same as this one, but they would place the leap week when the marker moves from Tuesday to Wednesday instead of moving from Saturday to Sunday. Their method would allow the spring equinox to vary a total of seven days away from the first day of the new year. This is the major reason I believe the "after the equinox" method is incorrect. The seasons would get too far out of alignment. It seems more natural to have the leap week when the Menorah lamp counter goes back a week.

Leap Years

What is not stated clearly is how to calculate leap years. We need this to finish the calendar calculations. First, we will look at all possible theories and eliminate the ones that do not fit the evidence and see what is left.

Theory 1 – No Leap Year

The first theory is that there was no leap year, leap month, leap week, or leap day at all. The Muslim calendar is like this. It follows the moon phases and never corrects itself. If the Dead Sea Scroll Calendar did this, we would eventually have summer in winter and Passover would be in the fall. Scripture states the year always begins in the spring month of Nisan, also called Abib.

"You are to begin your calendar with this month; it will be the first month of the year for you." *Exodus 12:2 CJB*

Enoch states the year always begins with the spring equinox when the daylight hours and hours of darkness are equal and that the base calendar is 364 days long.

"On that day the night decreases to nine parts day and nine parts night, and the night is equal to the day and the year is exactly 364 days long." *Ancient Book of Enoch 72:32*

Looking at these two sources and considering the fact that the Dead Sea Scroll calendar has the solstices and equinoxes built into it proves there has to be some kind of correction to keep the seasons correctly.

Theory 2 – A Leap Month

This theory would have us add a whole month to the calendar every so many years. This is how the modern Jewish calendar does it. It works for the modern Jewish calendar because it is a lunar/solar calendar. This method does not work with the solar year given in the Dead Sea Scrolls. It would be twenty-two years or more before we would add a leap month to this calendar the way the Essenes did their calculations. That would make the seasons off by fifteen to thirty days before a correction. We have two witnesses against the idea of using the lunar leap month.

Before the discovery of the Book of Enoch in the Dead Sea Scrolls, the only full version we had was from the Ethiopic. The Ethiopic version mentions both the sun and the moon in the section for calendar calculations. This has led some to assume there is some lunar calculation required for the calendar. The version found in the Dead Sea Scrolls has "sun and stars" in place of the Ethiopic "sun and moon." This would indicate that we are to use *only* the sun and stars to properly calculate the calendar. The moon is only to be used to check the calculations, to ensure their accuracy.

"The sun and the stars bring in all the years exactly, so that they do not advance or delay their position by a single day unto eternity" *Ancient Book of Enoch 74:12*

The Book of Jubilees predicted that the Jews would abandon the God-given solar year and adopt lunar calculations. This would corrupt the calendar.

"For there will be those who will assuredly make observations of the moon – now it disturbeth the seasons and cometh in from year to year ten days too soon. For this reason the years will come upon them when they will disturb the order, and make an abominable day the day of testimony, and an unclean day a feast day, and they will confound all the days, the holy with the unclean, and the unclean day with the holy; for they will go wrong as to the months and sabbaths and feasts and jubilees. For this reason I command and testify to thee that thou mayest testify to them; for after thy death thy children will disturb them, so that they will not make the year 364 days only, and for this reason they will go wrong as to the new moons and seasons and sabbaths and festivals..." *Ancient Book of Jubilees 6:36-38*

With all of this evidence I think we can safely conclude there should be no leap month.

Theory 3 – A Leap Day

The third theory is to add a day or two at the end of the year to make the first of the year come out evenly with the spring equinox. This sounds like the most accurate way of doing it, but it would break the seven-day cycle. We can see in the calendar scrolls (4Q230-231a) the moon phases were added to the base

calendar. The moon phases show there was no leap day each year to compensate for the drift.

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1 ☾	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17 ☽	18
19	20	21	22	23	24	25
26	27	28	29	30 ☽	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17 ☽	18	19	20	21	22	23
24	25	26	27	28	29	30 ☽
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16 ☽	17	18	19	20	21
22	23	24	25	26	27	28
29 ☽	30					

The priestly calendar scrolls (4Q230-231a) have a repeating six-year cycle. In year one of that cycle the first of Nisan is a Wednesday. It is also a full moon. The new moon appears on Friday, Nisan 17 and the second full moon, called a blue moon, appears on Thursday Nisan 30. The moon phases are recorded every month for six years. A close look at these calendar scrolls demonstrate no leap days in the first six years. If we added a leap day anywhere in the six-year period, the moon phases would be off.

It has been noted that 4Q230-31 do not take into account that the moon adds a day every two years and ten months, which calls into question if it can be trusted for accuracy. Dead Sea Scroll 4Q317 shows the calendar calculations with the same moon phases but it has scribal notes correcting the moon phases of 4Q319-320. All together these scrolls show that the Essenes were just using the moon as a second witness to mark time.

The addition of moon phases to the base calendar prove they did not use a leap day every year. These moon phases also help to pinpoint the year the Essenes were using for the calculations. The full moon would only show up on the same day in the same week every nineteen years. Coupling that with the spring equinox occurring on the Tuesday of that same week makes it much rarer: only once in over five hundred years.

Theory 4 – A Leap Week

The fourth theory is to intercalate a leap week every so many years. This is the only theory left so it must be the correct one. This would keep the seven-day cycle uninterrupted and keep the seasons in check. But how do we find out exactly when to add the leap week to the end of the year? There have been several theories proposed to answer this question.

Leap Week Theory 1 – Shemittahs and Jubilees

In this theory we would add a leap week at the end of every Shemittah (seven-year period) and add an extra leap week every Jubilee year (every fiftieth year). At first, this sounds logical because Shemittahs and Jubilees are a major part of the calendar system. The problem with this design is that there would be a maximum of thirteen days away from the equinox before the Jubilee year, and it would still have 6.11 days after the first Jubilee year. There would have to be extra leap weeks added somewhere, so the theory is incomplete and makes the year off too many days.

Leap Week Theory 2 – Shemittahs and Sun Cycles

Another way of using Shemittah years for leap years is to replace the extra leap week on the Jubilee with one on every twenty-eight-year sun cycle. A ritual is performed every twenty-eight years thanking God for the creation of the sun and the calendar (see the Birkat Hachama in the chapter on the Modern Jewish Calendar). Adding a leap week at the end of each Shemittah and each twenty-