



f-r-cox@comcast.net
<http://code251.com/>

CODE 166	CODE 196	CODE 228	CODE 243	CODE 251	CODE 294
CODE 427	CODE 490	CODE 590	CODE 666	CODE 01010	CODE 1260
CODE1447	CODE 1900	CODE 1975	CODE 2300	CODE 6000	CODE 144000

Lunar and Solar Years... When do they Actually Begin?

by Floyd R. Cox (Revised 4/05/2017)

You may call this my “Book Report” on calendars. If we cannot determine just when years are supposed to begin, we will overlook and miss a mysterious pattern found in lunar and solar cycles.

The first clue is that we have months named September, October, November and December in the 7th, 8th, 9th, and 10th months of the the solar year.

In Exodus 12:2, the Israelites left Egypt on the 15th day of the first month, and the month is without a name. In the wilderness. They gathered manna after the 16th day of the second month began on Sunday morning. By this, it is possible to determine the week days of the first month.

Nevertheless, the rabbis of Jerusalem begin their calendar with Adam, which represents the years since the first man appeared in the fall, on the first day of the seventh month. But Jewish rabbis in Babylon claimed their calendar began 177 days earlier and dated their documents from beginning in the spring.

The first month, Abid, was the time of the barley harvest. This means that March is the first month, and, in the ninth month, the king of Judea was at his winter palace (Jer 36:22).

The Next Three Clues

The second clue is that there is a time every spring when days and nights are equal, and it is called “Equal Nights” or equinox. It is one day in which the sun rises in the east and only makes a shadow east and west from where it rises in the morning until where it sets in the evening.

After March 21, the shadow begins to gradually move to the south as the sun moves northward until June 21, the longest day of the year. After June 21, the sun and its shadow move back overhead until September 21, when days and nights are equal again, and, after this, the sun moves on southward, until December 21, to create the longest night of the year. A sundial tracks the four seasons.

A third clue is that the Greeks in Alexandria discovered long before the first century that the sun moves north from the equator each year until it reaches a well located in southern Egypt close to today’s Aswan Dam. On June 21 at noon, the sun shined straight down to the bottom of the well.

The fourth clue is that a stake placed adjacent to the well had no shadow on June 21 at noontime, but, if the stake were moved to Alexandria, it would make a shadow of seven degrees at that time. This enabled the early Greeks to determine the distance in seven degrees and the distance in 360 were calculated to within one day even before the first century. Every four years the Nile flooded one day earlier on the calendar, and Venus rose one day earlier. This was corrected by Julius Caesar in 45 BC with his new Julian calendar.

Perhaps How the First Year a Calendar Began

A fifth clue is that, if some lunar years have begun on the first day of spring, on the equinox, then perhaps the first new moon on the first lunar calendar began on that date (as illustrated in TABLE 1). This would explain how there have been solar eclipses on March 21, when the moon is directly between the earth and the sun. These include eclipses on 3/20/2015 AD, and 19 years later, on 3/20/2034, and 19 years later, on 3/2/2053, and 19 years later, on 3/19/2072.

The sixth clue is that the solar year is 365.24219 and 12 moons are only 354.367 days. The difference is **10.8752 (almost 11) days**. In this case, the first month of that first lunar year would arrive 11 days earlier in the second year. The second moon of that first year would then become the first moon after March 21. After this, the lunar year would then continue arriving 11 days earlier every year.

When did the first lunar year begin? There have been times during the past 2,000 years when the 19-year cycle would have begun with the first new moon in the spring, after March 21, that is, after the spring equinox, when days and nights are equal.

Calendars that Start too Early

1	Mar 21 -11	Apr 20 -11	April 20 is too late (March 21 and April 20 are the earliest and latest dates in 19 yrs)
2	Mar 10 -11	Apr 09 -11	March 10 is too early for barley harvest (delay until April 9)
3	Feb 28 (+30 -11 =+19)	Mar 29 (+30 -11 =+19)	February 28 is too early (delay 29 days until March 29) (Add 1 month, 30 days minus 11 days = 19 days)
4	Mar 19	Apr 17	(If March 19 is too early, add 19 days: Mar 19 + 19 = Apr 17)

There are at times solar eclipses during the spring equinox, on the first new moon of a new lunar year and new solar year. Before 2015, there were new moons on March 19 in 1977, and these are in the same 19-year cycle. See TABLE 1. However, this does not always happen because the eclipses of 2015, 2034, 2053 AD are in another cycle called the 18-year eclipse cycle.

- PARADIGM SHIFTS
- Decoding the Oracles
- When Years Actually Begin
- Dance of the Planets 243, 251 and 427
- Sabbath Begins at Sunrise or Sunset?
- Myths About The Three Temples
- Numbers Unveiled in Dreams and Visions
- Jews Preserved the Oracles?
- Date of Creation
- Age of the Universe
- The Next World
- Samaritan Code
- Hebrew Roots Myopia
- First Century "King of the North"
- Introduction to Code 251
- Summary of Code 251
- Rabbi Code
- Hidden Feast Code
- The Third Temple Code
- Three Views on Exodus

TABLE 1.

19 years after 3 AD	New Moons on the Equinox
3	3/21
22	3/21
30	3/22
31	3/11 or 4/10
41	3/21
60	3/20
79	3/20
98	3/21
117	3/21
136	3/21
155	3/20
174	3/20
193	3/20
212	3/20
231	3/21
250	3/20
269	3/20
288	3/19
307	3/20
326	3/20
1594	3/22
1586	3/20
1583	3/23
1582	3/20
1939	3/20
1958	3/20
1977	3/19
1996	Eclipse 3/19
1997	3/09
1998	3/28
1999	3/17
2000	3/06
2001	3/25
2002	3/14
2003	3/03
2004	3/20---
2005	3/10
2006	2/29
2007	3/19---
2008	3-07
2009	3/26
2010	3-15
2011	3/04
2012	3/22---
2013	3/11
2014	3/01
2015	Eclipse 3/20
2034	Eclipse 3/20
2053	Eclipse 3/20
2072	Eclipse 3/19

A seventh clue consists of 532 years ($4 \times 7 \times 19 = 532$). Counting backwards 532 years before Herod conquered Jerusalem in 37 BC brings us to 569 BC, when King Nebuchednezzar became as a wild animal for seven years. 569 was 49 years before the second temple was founded in 520 BC.

King Herod's 532-Year Cycle

(NASA For Dummies)

Again, Herod captured Jerusalem in 37 BC, and the Jewish date for Creation is 3761 BC. This makes 3724 years (532×7 down to 37 BC, when Herod conquered Jerusalem. The gospels begin with the time of Herod and his three sons ruled Judea.

By recombining sabbatical and jubilee cycles in various ways, one can produce a variety of other cycles: ($28 \times 7 = 196$) ($19 \times 7 = 133$) ($49 \times 4 = 196$) ($49 \times 6 = 294$) ($49 \times 12 = 588$).

Likewise, by combining the Hebrew calendar with the solar calendar, one can create another variety: ($4 \times 19 = 76$) ($7 \times 19 = 133$) ($4 \times 7 \times 19 = 532$). There is evidence that the Roman church in 532 AD copied its "Easter Cycle" from the Hebrew lunar-solar cycle of 532 years used by the Jews before the time of King Herod.

By combining the 4-year, 7-year and 19-year cycles into a 532-year cycle ($4 \times 7 \times 19 = 532$), this would place the date of Creation at a time when all cycles began at the same time. However, to do this, The Hebrew calendar subtracted four jubilees, that is, 196 years. Its date for the temple is 832 BC instead of 968 BC. This subtracts 136 years, and it subtracts 60 years between Abraham and his father. This makes 196 years. Creation, then, must have been in 3957 BC instead of 196 years later, in 3761 BC.

Moreover, 532 years before Herod conquered Jerusalem, King Nebuchadnezzar of Babylon became a wild animal for seven years in 569 BC, which is 49 years before the second temple was founded in 520 BC. 520 was 27 sabbaticals before Alexandar visited Jerusalem in 331 BC, which was six jubilees before 37 BC, which was 502 years (251×2) years after Cyrus captured Babylon.

Science, on the other hand, calculates the orbits of the earth and moon according to their precise elliptical orbits. This would mean that the 28-year cycle is one day too long every 128 years, and the 235 moons every 19 years are one day too long every 228 calendar years (19×12).

When dealing with religion, we need to separate calendars from the science of astronomy. In religion, new moons are related to a calendar. The Easter cycle is based upon merging the four-year cycle, the seven-year sabbatical cycle, the 19-year cycle and the 28-year cycle every 532 years ($4 \times 7 \times 19 = 532$ years).

The four, seven and 19 years have exactly 365.25 days. This is the solar calendar.

The lunar calendar begins every 19 years on the same date on the solar cycle. If one cycle ever begins on the equinox, on March 21, then both the lunar and solar years would start the next 19 years at that time.

Three Versions for the 19-year Cycle

Religion places high days on new moons and full moons near or after the spring equinox of 3-21 on the Gregorian calendar. Easter is on the first Sunday during the first full moon after the spring equinox. This would mean that Easter could fall as early as March 22, 23, 24, 25, 26, or 27, or it could be as late as April 18, 19, 20, 21, 22, 23, 24 or 25.

The Hebrew calendar begins with the new moon closest to the equinox. This means the Jewish version of the 19 new moons is not allowed to occur before March 11 (as in 2013 AD) or after April 5 (as in 2019 AD), when Passover is on April 19. If the Wave Sheaf offering were on April 19, then Pentecost would be on June 9, only 12 days before summer.

Another method is to begin the 19-year cycle with the first new moon after the spring equinox. After this, the cycle needs to have a limit for the latest date allowed during the 19 years. If the earliest day were on 3/21, then the latest date would be on April 19 ($11+19=30$).

This is interesting because it is also the latest date to begin the year before the latest Wave Sheaf (Easter) on April 25. Does the first full moon actually appear as late as April 18, 28 days after the spring equinox? The new moon does, but not the full moon on a new year.

In contrast, the Hebrew calendar, which begins in the fall, is 177 days after the first new moon in the spring. The fall calendar is 163 days after Passover (which is on the 14th day of the first moon) (177 -14+163). Again, the scribes and rabbis in Babylon dated their documents from the spring calendar.

Dates When the Eclipse Cycle Touches the Equinox

Sometimes the Hebrew calendar will begin on the equinox and produce a solar eclipse. In 71 AD, on the first day of the Hebrew calendar, Nisan 1, there was an eclipse of the sun that made a shadow that passed over Greece. Stars could be seen at about noontime.

TABLE 1 illustrates other years that begin on the equinox, some having solar eclipses in 1996, 2015, 2034, 2053, 2072. These dates are 19 years apart. Note that the years beginning on 3/21 still need to somehow be associated with the 19-year cycle. The Hebrew cycle is on 4 AD and 1998 AD. The Babylonian is on 747 BC, 622 AD and 1990 AD. The Hebrew 19-year cycle is from 1998 to 2017. The Easter cycle followed 326 AD. Note also that 3, 41, and 60 AD all fell on 3/20 or 3/21. However, 31 AD began on 3/11 or 4/10. It seems obvious that 3/11 would be too early to begin reaping barley. The first month was named for reaping barley. It was the month for barley.

The Julian Calendar

The Easter cycle was based upon the Julian calendar with its 365.25-day years. 7 days were added every 28 years (1 day per every 4 years) in order to turn the 365-day calendar one having 365.25 days. Nevertheless, this made the year too long. It gained one day every 128 years on the tropical year, and the seasons shifted 10 days by the time Pope Gregory corrected it in 1582 (3/20/326 AD to 1582 AD) (1280 years/128 = 10 days).

If we try to date the Crucifixion in the first century, 14 days after a new year began, do we use a 19-year calendar as a clue? Before 326 AD, the Julian Calendar and Gregorian (Proleptic) Calendar had the same dates. 128 years later (in 198 AD), the Julian Calendar would have gained one day on the Gregorian. 128 years later (in 70 AD), it would have gained two days. This means that 4/10, 31 AD on the Gregorian calendar would be 4/12, 31 AD on the Gregorian. NASA has the new moon on 4/10, 31 AD with an eclipse of the full moon on April 25.

When was the Crucifixion?

Some have denied that Christ was crucified on April 25, 31 AD, because they have been influenced by the Hebrew calendar, which allows years to begin as early as March 11 and 13 (as in 2013 and 2021 AD).

Using this calendar, the year began on Wednesday, March 22, in 30 AD and March 11 in 31 AD. These were both dates for new moons in 30 and 31 AD as verified by NASA [HERE](#).

However, if years cannot begin before the spring equinox on about March 21, then the latest date for a year to begin would be on April 19 as in TABLE 2.

The new moon on March 11, 31 AD was followed by a new moon on April 10, 31 AD as in TABLE 2, which was followed by a full moon on Wednesday, April 25, and there was a lunar eclipse at that time.

April 11, 31 AD on the Julian calendar would be April 9, 31 AD on the Gregorian calendar. NASA has the new moon on April 10, 31 AD. These two calendars were 10 days apart in 1582.

TABLE 2a. Dates When Years Begin (Revised 4/04/17)

19 yrs BC 63 to 31 AD	Source found HERE		NASA Found HERE		
	March	April	March	April	
	19-yr Cycle		19-yr Cycle		
0	82 / 63 / 44 / 25 / 06 / 13	3/30	4/29	3/30	4/29
1	81 / 62 / 43 / 24 / 05 / 14	3/20	4/18	3/18	4/17
2	80 / 61 / 42 / 23 / 04 / 15	3/09	4/07	3/09	4/07
3	79 / 60 / 41 / 22 / 03 / 16	3/27	4/26	3/27	4/25
4	78 / 59 / 40 / 21 / 02 / 17	3/16	4/15	3/16	4/15
5	77 / 58 / 39 / 20 / 01 / 18	3/05	4/04	3/06	4/04
6	76 / 57 / 38 / 19 / 00 / 19	3/24	4/22	3/24	4/22
7	75 / 56 / 37 / 18 / 01 / 20	3/13	4/12	3/13	4/11
8	74 / 55 / 36 / 17 / 02 / 21	3/02	4/01	3/02	4/31
9	73 / 54 / 35 / 16 / 03 / 22	3/21	4/20	3/21	4/19
10	72 / 53 / 34 / 15 / 04 / 23	3/11	4/09	3/10	4/08
11	71 / 52 / 33 / 14 / 05 / 24	3/29	4/27	3/28	4/26
12	70 / 51 / 32 / 13 / 06 / 25	3/18	4/16	3/18	4/16
13	69 / 50 / 31 / 12 / 07 / 26	3/07	4/05	3/07	4/06
14	68 / 49 / 30 / 11 / 08 / 27	3/26	4/24	3/26	4/25
15	67 / 48 / 29 / 10 / 09 / 28	3/14	4/13	3/15	4/13
16	66 / 47 / 28 / 09 / 10 / 29	3/04	4/02	3/04	4/02
17	65 / 46 / 27 / 08 / 11 / 30	3/23	4/21	3/22	4/21
18	64 / 45 / 26 / 07 / 12 / 31	3/12	4/10	3/11	4/10
19	82 / 63 / 44 / 25 / 06 / 13	3/30	4/29	3/30	4/29

Note that all years begin between 3/20 and 4/19 as in year 9 (30 days).

TABLE 2b. Dates When Years Begin (Revised 4/04/17)

19 yrs <u>AD 1990 (Babylonian)</u> <u>AD 1998 (Hebrew)</u>	Source found HERE		NASA Found HERE	
	March	April	March	April
	19-yr Cycle Lunar year begins on:		19-yr Cycle Lunar year begins on:	
0 1970 / 1989 / 2008		4/07	3/07	4/06
1 1971 / 1990 / 2009	3/27		3/26	4/26
2 1972 / 1991 / 2010		4/15	3/15	4/14
3 1973 / 1992 / 2011		4/04	3/04	4/03
4 1974 / 1993 / 2012	3/24		3/23	4/21
5 1975 / 1994 / 2013		4/12	3/12	4/11
6 1976 / 1995 / 2014		4/01	3/31	3/29
7 1977 / 1996 / 2015	3/21		3/19	4/17
8 1978 / 1997 / 2016		4/09	3/09	4/07
9 1979 / 1998 /	3/29		3/28	4/26
10 1980 / 1999 /		4/17	3/17	4/16
11 1981 / 2000 /		4/06	3/06	4/04
12 1982 / 2001 /	3/26		3/25	4/23
13 1983 / 2002 /		4/14	3/14	4/12
14 1984 / 2003 /		4/03	3/03	4/01
15 1985 / 2004 /	3/23		3/20	4/19
16 1986 / 2005 /		4/11	3/10	4/08
17 1987 / 2006 /		3/31		3/29
18 1988 / 2007 /	3/20	19	3/19	4/17
	-11	-11	-11	-11
19 1989 / 2008 /	3/10	4/07	3/08	4/06
	+19	+19	+19	+19
1 1990 / 2009 /	3/27	4/27	3/26	4/26
	-11	-11	-11	-11
2 1991 / 2010 /	3/19	4/15	3/15	4/14

Note that all years begin between 3/20 and 4/19 as in year 9.

Notes on TABLE 3 with Lunar Dates from [HERE](#)

This table illustrates how the lunar years begin 11 days earlier each year (actually **10.8752** days) when compared with when the solar year begins every March 21 as it did on 1985 AD. The next month would begin on April 20.

- In 1985, the first new moon was on March 21 or April 20
- In 1986, the first new moon was on March 10 or April 09 after subtracting 11 days.
- In 1987, the first new moon was on March 29 or April 29 after adding 19 days (30-11= 19)
- In 1988, the first new moon was on March 17 or April 16 after subtracting 11 days.
- In 1989, the first new moon was on March 07 or April 05 after subtracting 11 days.
- In 1990, the first new moon was on March 26 or April 25 after adding 19 days (compare TABLE 2b).

1989 begins the Hebrew 19-year cycle and 1990 begins the Babylonian 19-year cycle.

Of course a calendar requires whole days to be added or subtracted; therefore, 11 days are subtracted instead 10.8752 days. 365.24219 days per solar year (12 months) minus 354.367 (12 moons) per lunar year = **10.8752 days**.

12 times in 19 years the new moons in March are too early to begin a lunar year.

Comments on TABLES 1 & 2

Nobody can control when new moons are. All we can do is choose when a new moon on the calendar is too early or too late.

The 235 moons in 19 years are .08522 days longer than 19 years in the Gregorian calendar (as in TABLE 3), that is, one day longer in 228 years (12 x 19).

Note that the 19-years start over on the same date every year, for 228 years on the Gregorian calendar.

In TABLE 2b, a year within the 19-year cycle cannot begin after April 18 (as in 1985); therefore, it began on March 20. In 1986, the first new moon could not begin before March 20; therefore it began on April 8. Years beginning after April 19 may not allow Pentecost to arrive being still in the spring, before summer.

Likewise in 31 AD. The year began after the new moon of April 10. March 12 was too early to expect a barley harvest 14 days later, on March 24. Passover was on April 25 in 31 AD.

A very similar choice the Millerites made in 1844 as explained [HERE](#). There are several reasons for delaying the Passover until the second month, but these do not actually add a thirteenth month to the entire calendar like the Millerites did (Num 9:11; 2 Chr 30:2-3).

TABLE 3. The 19-Year Cycle (AD 1960 to 2015) Revised 3-23-2017
Note: 365.24219 (12 months) minus 354.367 (12 moons) = **10.8752 days**

New Moons 15 days or less before 3-21 (Dates are mostly from <https://www.timeanddate.com/>)

Blue represents the 19 years closest to the equinox

19-yr Cycle	AD	New Moons Feb 27 to Mar 28 19-Year	Extra Moons 1 to 7 Mar 29 to April 9 Sequence	Epact or Annual lunar-solar gap = -10.8752 days	Seven Moons added in 19 Years Days before or after 3-21
1	1979	Mar 28 -11	Apr 26 -11	3/28 -10.8752	3/28 = 7 days after 3/21. Full moon = 4/12
2	1980	Mar 16 -11	Apr 15 -11	3/16 -10.8752	3-16 = 5 days before 3/21. Full moon = 3/31
3	1981	Mar 06 (+30 -11) +19	(1.) Apr 04 (+30 -11) +19	4/04 -10.8752 -32.6256	3-06 = 15 days before 3/21. Full moon = 3/20 4-04 = 14 days after 3/21. Full moon = 4/19 (1.) + 29.530588 = -3.0951.
4	1982	Mar 25 -11	Apr 23 -11	3-25 - 3.0951 -10.8752	3-25 = 4 days after 3/21. Full moon = 4/08
5	1983	Mar 14 -11	Apr 13 -11	3-14 -10.8752	3/14 = 7 days before 3/21. Full moon = 3/28
6	1984	Mar 02 (+30 -11) +19	(2.) Apr 01 (+30 -11) +19	4-01 -24.8455 -10.8752 -35.7207	3/02 = 19 days before 3/21. Full moon = 3/17 4/01 = 11 days after 3/21. Full moon = 4/15 (2.) + 29.530588 = -6.19011
7	1985	Mar 21 -11	4-20 -11	3-21 -6.19011 -10.8752	April too late (Earliest and latest dates in 19 yrs) 3/21 = 0 days before 3-21. Full moon = 4/05
8	1986	Mar 10 -11	4-09 -11	3-10 -10.8752	3/10 = 11 days before 3-21. Full moon = 3/26
9	1987	Feb 28 (+30 -11 =19) +19	(3.) Mar 29 (+30 -11 =19) +19	3-29 -27.9405 -10.8752	3/29 = 8 days after 3-21. Full moon = 4/14
10	1988	Mar 18 -11	4-16 -11	3-18 38.8157 -9.2851	(3.) +29.530588 = -9.28512 3/18 = 3 days to 3-21 Full moon = 4/02
11	1989	Mar 07 (+30 -11) +19	(4.) Apr 06 (+30 -11) +19	4-06 -10.8752 -20.1603 -10.8752	3/07 = 14 days before 3/21. Full moon = 3/22 4/06 = 16 days after 3/21. Full moon = 4/21
12	1990	Mar 26 -11	Apr 25 -11	4-25 -31.0355 -1.5049	(4.) +29.530588 = -1.50493 3/26 = 5 days after 21 st Full moon = 4/10 (1990 is 228 x 6 after 622 AD) April too late
13	1991	Mar 16 -11	Apr 14 -11	4-14 -10.8752	3-16 = 5 days before 3-21. Full moon = 3/30
14	1992	Mar 04 (+30 -11) +19	(5.) Apr 03 (+30 -11) +19	4-13 -10.8752 -23.2553 -10.8752	3/04 = 17 days before 3/21. Full moon = 3/18 4/03 = 13 days after 3-21. Full moon = 4/17
15	1993	Mar 23 -11	Apr 22 -11	4-22 -34.1305 -4.5999	(5.) +29.530588 = -4.59994 3-23 = 2 days after Full moon = 4/06
16	1994	Mar 12 -11	Apr-11 -11	4-11 -10.8752	3/12 = 9 days before 3/21 Full moon = 3/27 4/11 (4-10 in 31 AD) = 21 days after 3/21 Full moon = 4/25
17	1995	Mar 01 (+30 -11) +19	(6.) Mar 31 (+30 -11) +19	3-31 -10.8752 -26.3503 -10.8752	3/31 = 10 days after 3/21 Full moon = 3/27
18	1996	Mar 19 -11	Apr-17 -11	4-17 -37.2255 -7.6949	(6.) +29.530588 = -7.69496 3-19 = 2 days before 3/19 too early? Matches the Millerite dilemma in 1844. Millerites intercalated 1 month to 4-17 in the 17 th year. 3/19 = 2 days before 3/21. Full moon = 4/04 4/18 = 28 days after 3/21. Full moon = 5/03
19	1997	Mar 09 (+30 -11) +19	(7.) Apr 07 (+30 -11) +19	4-07 -10.8752 -10.8752	3/09 = 12 days before 3/21. Full moon = 3/24 4/07 = 27 days after 3/21. Full moon = 4/22
1	1998	Mar 28 -11	Apr 26 -11	3-28 -29.4453 +00.0852	(7.) +29.530588 = +0.08522 3-28 = 7 days after 3-21 Full moon = 4/12 4/26 = 36 days after 3-21 Full moon = 5/11

TABLE 4. The 19-Year Cycle (AD 1960 to 2015) Revised 3-23-2017
Note: 365.24219 (12 months) minus 354.367 (12 moons) = **10.8752 days**
 19 years actually begin with Epact (lunar-solar gaps):
 3,14, 25, 6, 17, 28, 9, 20, 1, 12, 23, 4, 15, 26, 7, 18, 29, 11 & 22.

Dates for New Moons are mostly from <https://www.timeanddate.com/>

19-yr Cycle	AD	New Moons Feb 27 to Mar 28	Extra Moons 1 to 7 Mar 29 to April 9	Epact or Annual lunar-solar gap = -10.8752 days	Seven Moons added in 19 Years
		19-Year	Sequence		
1	1979	Mar 28	Apr 26	00.0000	4-26 is too late. Revert to 3-28
		-11	-11	-10.8752	
2	1980	Mar 16	Apr 15		3-16 is too early (Delay to 4-15)
		-11	-11	-10.8752	
3	1981	Mar 06	(1.) Apr 04		3-06 is too early (Intercalate 1 month)
		(+30 -11)	(+30 -11)	-10.8752	
		+19	+19	-32.6256	(1.) + 29.530588 = -3.0951
4	1982	Mar 25	Apr 23	-3.0951	4-23 is too late. Use 3-25
		-11	-11	-10.8752	
5	1983	Mar 14	Apr 13		3-14 is too early (Delay to 4-13)
		-11	-11	-10.8752	
6	1984	Mar 02	(2.) Apr 01	-24.8455	3-02 is too early (Intercalate 1 month)
		(+30 -11)	(+30 -11)	-10.8752	
		+19	+19	-35.7207	(2.) + 29.530588 = -6.19011
7	1985	Mar 21	4-20	-6.190112	4-20 is too late (Earliest and latest dates in 19 yrs)
		-11	-11	-10.8752	
8	1986	Mar 10	4-09		3-10 is too early (Delay to 4-09)
		-11	-11	-10.8752	
9	1987	Feb 28	(3.) Mar 29	-27.940512	2-28 is too early (Intercalate 1 month)
		(+30 -11)	(+30 -11)	-10.8752	
		+19	+19	38.815712	(3.) + 29.530588 = -9.28512
10	1988	Mar 18	4-16	-9.285124	March 18 is too early (Delay to 4-16)
		-11	-11	-10.8752	
11	1989	Mar 07	(4.) Apr 06	-20.160324	March 07 is too early (Intercalate 1 month)
		(+30 -11)	(+30 -11)	-10.8752	
		+19	+19	-31.035524	(4.) + 29.530588 = -1.50493
12	1990	Mar 26	Apr 25	-1.504936	(1990 is 228 x 6 after 622 AD) April too late
		-11	-11	-10.8752	
13	1991	Mar 16	Apr 14		3-16 is too early (Delay to 4-14)
		-11	-11	-10.8752	
14	1992	Mar 04	(5.) Apr 03	-23.255336	3-04 is too early (Intercalate 1 month)
		(+30 -11)	(+30 -11)	-10.8752	
		+19	+19	-34.130536	(5.) + 29.530588 = -4.59994
15	1993	Mar 23	Apr 22	-4.599948	3-23 is 2 days after 3-21. April too late
		-11	-11	-10.8752	
16	1994	Mar 12	Apr-11		(4-10 as in 31 AD)
		-11	-11	-10.8752	
17	1995	Mar 01	(6.) Mar 30	-26.350348	3-01 is too early (delay to 3-30)
		(+30 -11)	(+30 -11)	-10.8752	
		+19	+19	-37.225548	(6.) + 29.530588 = -7.69496
18	1096	Mar 19	Apr-18	-7.69496	March too early? Matches the Millerite dilemma in 1844 (delay?)
		-11	-11	-10.8752	
19	1997	Mar 09	(7.) Apr 07		March 9 is too early (Intercalate one month)
		(+30 -11)	(+30 -11)	-10.8752	
		+19	+19	-29.44536	(7.) + 29.530588 = +.08522
1	1998	Mar 28	Apr 26	00.0000	3-28 is 7 days after 3-21. April 26 is too late

Other 19-Year and Jubilees Cycles

TABLE 5. 19-Year Cycles and Jubilees Found in History

Years	19-year Cycles	Cycles Found in Alleged History
3724	196 x 19	3724 years (532 x 7) from 3761 to 37 BC, from Creation to Herod's capture of Jerusalem. Also equal to 196 19-year cycles or 4 jubilees x 19 (or 235 moons times 196 = 46,060 moons).
931	49 x 19	931 years are equal to 968 BC (the temple) to 37 BC (Herod's capture of Jerusalem). (3724 equals 532 x 7 or 931 x 4). Adam allegedly died in his 931 st year, during a jubilee.
532	28 x 19	532 years are equal to 28 yrs (4 sabbaticals or 7 leap years) times 19, the lunar cycle (28 x 19 = 532). After 532 AD, this was called the Easter Cycle. It was one day longer than the Julian calendar of 365.25 days every 128 years (each consisting of 365.242198 days)
437	23 x 19	5405 moons (235 x 437) are equal to 159,610.833 days. 437 years are equal to 159,612.837 days.
323	17 x 19	
304	16 x 19	304 years equal 4 Calippic Cycles of 76 years each. Calippus added one day in the 304 th years. 235 x 16 moons are 1.37 days shorter than 304 years.
228	12 x 19	228 years equal 83276.26 days. 2820 moons (235 x 12) are equal to 83275.22 days.
133	07 x 19	133 years are divisible by 7-year sabbaticals and 19-year cycles.
95	05 x 19	There are 95 years between 532 and 437 years.
76	04 x 19	Calippic Cycle by Hipparchus: Tropical year is 1/300 th of a day shorter than 365.25-day years.
19	01 x 19	Nabonasser's calendar, Ptolemy's Almagest, Metonic Cycle = 19 years = 235 moons =

304 yrs = 111035 days / 3760 moons = 29.53058510638298 days
 228 yrs = 83275.22 days / 2820 moons = 29.53053021985815603 days
 437 yrs = 159612.833 days / 5405 moons = 29.53058889916744 days
 One synodic month = 29.530588853 days

OTHER TOPICS

The "Last Jubilee"?	Mystery of the Shemitah	Holy Days and Jewish Proselytizing	6,000-Year Jubilee Calendar	Littleberry Cox
Context of Revelation	Unconnected Jubilee Cycles	Numbers Unveiled in Dreams & Visions	1900-Year Calendar	Y-DNA
Other Myths	Samaritan Code	Jewish Code 49	Kings	Genetics
H. W. Armstrong & the Feast Days	H. W. Armstrong 50-year Jubilees	Adventist Code 50	Accurate Lunar Solar Calendar	Summary of Code 490
Rabbi Code	Hidden Feast Code	Myths About Three Temples	Sabbaticals-3	Sabbaticals-4
Sabbaticals-1	Sabbaticals-2	Jubilee in 2022 AD?	Sabbaticals-3	Sabbaticals-4
Sundials	Books	Hebrew Roots Myopia	Duality	Letters
Christian Passover on the 14 th or 15 th ?	First Century King of the North	Jubilees & "Lost Israelites" in Prophecy	Missing Dimension of the Hebrew Calendar	Sabbath Begins at Sunrise or Sunset?

TABLE 6a. Dates When Years Begin (Revised 4/04/17)

19 yrs BC 63 to 31 AD	Source found HERE		NASA Found HERE	
	March	April	March	April
	19-yr Cycle		19-yr Cycle	
0 82 / 63 / 44 / 25 / 06 / 13	3/30	4/29	3/30	4/29
1 81 / 62 / 43 / 24 / 05 / 14	3/20	4/18	3/18	4/17
2 80 / 61 / 42 / 23 / 04 / 15	3/09	4/07	3/09	4/07
3 79 / 60 / 41 / 22 / 03 / 16	3/27	4/26	3/27	4/25
4 78 / 59 / 40 / 21 / 02 / 17	3/16	4/15	3/16	4/15
5 77 / 58 / 39 / 20 / 01 / 18	3/05	4/04	3/06	4/04
6 76 / 57 / 38 / 19 / 00 / 19	3/24	4/22	3/24	4/22
7 75 / 56 / 37 / 18 / 01 / 20	3/13	4/12	3/13	4/11
8 74 / 55 / 36 / 17 / 02 / 21	3/02	4/01	3/02	4/31
9 73 / 54 / 35 / 16 / 03 / 22	3/21	4/20	3/21	4/19
10 72 / 53 / 34 / 15 / 04 / 23	3/11	4/09	3/10	4/08
11 71 / 52 / 33 / 14 / 05 / 24	3/29	4/27	3/28	4/26
12 70 / 51 / 32 / 13 / 06 / 25	3/18	4/16	3/18	4/16
13 69 / 50 / 31 / 12 / 07 / 26	3/07	4/05	3/07	4/06
14 68 / 49 / 30 / 11 / 08 / 27	3/26	4/24	3/26	4/25
15 67 / 48 / 29 / 10 / 09 / 28	3/14	4/13	3/15	4/13
16 66 / 47 / 28 / 09 / 10 / 29	3/04	4/02	3/04	4/02
17 65 / 46 / 27 / 08 / 11 / 30	3/23	4/21	3/22	4/21
18 64 / 45 / 26 / 07 / 12 / 31	3/12	4/10	3/11	4/10
19 82 / 63 / 44 / 25 / 06 / 13	3/30	4/29	3/30	4/29

TABLE 6b. Dates When Years Begin (Revised 4/04/17)

19 yrs AD 166	Source found HERE		NASA Found HERE	
	March	April	March	April
	19-yr Cycle		19-yr Cycle	
0 146 / 165 / 184	3/28	4/26	3/29	4/28
1 147 / 166 / 185	3/17	4/16	3/19	4/17
2 148 / 167 / 186	3/07	4/05	3/09	4/07
3 149 / 168 / 187	3/24	4/23	3/27	4/25
4 150 / 169 / 188	3/14	4/12	3/16	4/14
5 151 / 170 / 189	3/03	4/02	3/05	4/04
6 152 / 171 / 190	3/23	4/21	3/24	4/22
7 153 / 172 / 191	3/11	4/10	3/12	4/10
8 154 / 173 / 192	3/30	4/28	3/31	4/29
9 155 / 174 / 193	3/19	4/18	3/20	4/19
10 156 / 175 / 194	3/08	4/07	3/10	4/09
11 157 / 176 / 195	3/26	4/25	3/28	4/26
12 158 / 177 / 196	3/15	4/14	3/17	4/16
13 159 / 178 / 197	3/05	4/03	3/07	4/05
14 160 / 179 / 198	3/24	4/22	3/26	4/24
15 161 / 180 / 199	3/12	4/11	3/14	4/12
16 162 / 181 / 200	3/02	4/31	3/03	4/01
17 163 / 182 / 201	3/21	4/19	3/22	4/20
18 164 / 183 / 202	3/10	4/09	3/11	4/10
19 165 / 184 / 203	3/28	4/26	3/29	4/28

Note that all years begin between 3/20 and 4/19 as in year 9 (30 days).

TABLE 6c. Dates When Years Begin (Revised 4/04/17)

19 yrs AD 394	Source found HERE		NASA Found HERE	
	March	April	March	April
	19-yr Cycle		19-yr Cycle	
0 374 / 393 / 412	3/28	4/28	3/29	4/27
1 375 / 394 / 413		4/16	3/18	4/16
2 376 / 395 / 414		4/05	3/07	4/06
3 377 / 396 / 415	3/25		3/25	4/24
4 378 / 397 / 416		4/13	3/15	4/13
5 379 / 398 / 417		4/02	3/05	4/03
6 380 / 399 / 418	3/22		3/24	4/22
7 381 / 400 / 419		4/10	3/12	4/10
8 382 / 401 / 420	3/30		3/30	4/29
9 383 / 402 / 421	3/18	4/18	3/19	4/18
10 384 / 403 / 422		4/07	3/09	4/07
11 385 / 404 / 423	3/27		3/27	4/25
12 386 / 405 / 424		4/15	3/16	4/15
13 387 / 406 / 425		4/04	3/06	4/04
14 388 / 407 / 426	3/24		3/25	4/23
15 389 / 408 / 427	3/21	4/12	3/13	4/12
16 390 / 409 / 428	3/10	4/01	3/02	4/01
17 391 / 410 / 429	3/21	4/20	3/21	4/20
18 392 / 411 / 430	3/10	4/08	3/10	4/09
19 393 / 412 / 431	3/29	4/28	3/29	4/27

TABLE 6d. Dates When Years Begin (Revised 4/04/17)

19 yrs AD 622	Source found HERE		NASA Found HERE	
	March	April	March	April
	19-yr Cycle		19-yr Cycle	
0 602 / 621 / 640	3/28		3/28	4/27
1 603 / 622 / 641		4/16	3/17	4/16
2 604 / 623 / 642		4/05	3/07	4/05
3 605 / 624 / 643	3/25		3/24	4/23
4 606 / 625 / 644		4/13	3/14	4/12
5 607 / 626 / 645		4/02	3/03	4/02
6 608 / 627 / 646	3/22		3/23	4/21
7 609 / 628 / 647		4/10	3/11	4/10
8 610 / 629 / 648	3/30		3/30	4/28
9 611 / 630 / 649		4/18	3/19	4/18
10 612 / 631 / 650		4/07	3/08	4/07
11 613 / 632 / 651	3/27		3/26	4/25
12 614 / 633 / 652		4/15	3/15	4/14
13 615 / 634 / 653		4/04	3/05	4/03
14 616 / 635 / 654	3/24		3/24	4/22
15 617 / 636 / 655		4/12	3/12	4/11
16 618 / 637 / 656		4/01	3/31	4/30
17 619 / 638 / 657	3/21		3/21	4/19
18 620 / 639 / 658		4/08	3/10	4/09
19 621 / 640 / 659	3/28		3/28	4/27

TABLE 6e. Dates When Years Begin (Revised 4/04/17)

19 yrs <u>AD 1990 (Babylonian)</u> <u>AD 1998 (Hebrew)</u>	Source found HERE		NASA Found HERE	
	March	April	March	April
	19-yr Cycle New Crescent		19-yr Cycle New Conjunction	
0 1970 / 1989 / 1908		4/07	3/07	4/06
1 1971 / 1990 / 2009	3/27		3/26	4/26
2 1972 / 1991 / 2010		4/15	3/15	4/14
3 1973 / 1992 / 2011		4/04	3/04	4/03
4 1974 / 1993 / 2012	3/24		3/23	4/21
5 1975 / 1994 / 2013		4/12	3/12	4/11
6 1976 / 1995 / 2014		4/01	3/31	3/29
7 1977 / 1996 / 2015	3/21		3/19	7/17
8 1978 / 1997 / 1916		4/10	3/09	4/07
9 1979 / 1998 / 2017	3/29		3/28	4/26
10 1980 / 1999 / 2018		4/17	3/17	4/16
11 1981 / 2000 / 2019		4/06	3/06	4/04
12 1982 / 2001 / 2020	3/26		3/25	4/23
13 1983 / 2002 / 2021		4/14	3/14	4/12
14 1984 / 2003 / 2022		4/03	3/03	4/01
15 1985 / 2004 / 2023	3/23		3/20	4/19
16 1986 / 2005 / 2024		4/11	3/10	4/08
17 1987 / 2006 / 2025		3/31	3/29	4/27
18 1988 / 2007 / 2026	3/20		3/19	4/17
19 1989 / 2008 / 2027		4/07	3/07	4/06

When the calendar began, the new solar year and the first new moon both likely began on 3/21, and, if so, the second month began 30 days later, on April 20 ($3/21+30=4/20$), as illustrated below. (In TABLE 1 and TABLE 2, March 21 is the seventh year of the 19-year cycle.)

If so, in the second lunar year, the solar year began 11 days earlier, on March 10th, and the previously second month began 11 days earlier, on April 9, and it, therefore, becomes the first new moon (month) after March 21 as illustrated below. March 10 was too early.

In the third lunar year, what was originally the first new moon now arrives 22 days before the spring equinox, that is, February 28, and what was originally the second moon of the year on April 20 now arrives 22 days earlier to March 29, and it remains the first new moon after the spring equinox as illustrated below.

The end of the third year arrives 33 days before the spring equinox; therefore, an extra moon (30 days) needs to be added. This is actually 19 days because 11 days are again subtracted ($30-11$ equals 19).

Calendars that Start too Early

1	<u>Mar 21</u>	<u>Apr 20</u>	April 20 is too late (March 21 and April 20 are the earliest and latest dates in 19 yrs)
	<u>-11</u>	<u>-11</u>	
2	<u>Mar 10</u>	<u>Apr 09</u>	March 10 is too early for barley harvest (delay until April 9)
	<u>-11</u>	<u>-11</u>	
3	<u>Feb 28</u>	<u>Mar 29</u>	February 28 is too early (delay 29 days until March 29) (Add 1 month, 30 days minus 11 days = 19 days)
	<u>(+30 -11 =+19)</u>	<u>(+30 -11 =+19)</u>	
4	<u>Mar 19</u>	<u>Apr 17</u>	(If March 19 is too early, add 19 days: Mar 19 + 19 = Apr 17)

This process becomes very tricky. Some Jewish calendars allow the second year to arrive on 3/10, that is, 11 days before the equinox and allow the third year to arrive 22 days before the equinox, when it is still winter, and there could likely be snow on the ground (Dates based on a link found [HERE](#)) (228-year cycle described [HERE](#)). As illustrated, the first two moons in the 19-year cycle can begin on March 21 and April 20, and April 20 is too late. The second year begins 11 days earlier, on 3-10 and 4/09, and March 10 is too early; therefore, 4/09 becomes the first new moon after March 21. The lunar year jumps from March 21 to April 9. Don't fall for the argument that, "If the Bible doesn't tell us exactly how to begin each year, we must return to our Hebrew Roots."

Each 19 years begin and end on the same date for 228 years. After this, the 235 moons in every 19 years expand one day later than 228 years on our solar calendar (12×19 years plus 1 day equals 12×235 moons). This one-day mismatch can be resolved by adding one day to the solar calendar. Calendars can be adjusted, but the lunar cycle remains fixed. This can be accomplished by finding the latest day in the 19-year cycle, that is, about 4/20, and exchange it for about March 21 (the earliest dates in the 19-year sequence). The cycle begins with about 3-21 and ends with about 4-20 (year 7 in TABLE 1).

**TABLE 6f. 228-Year Intercalary Cycle (New Moons)
from 747 BC to 622 AD, 1368 years (Revised 4/01/17)**

The 19-year cycle needs corrected one day every 228 years
(Dates based on link found [HERE](#)) (228-year cycle described [HERE](#))
The intercalary moon is represented by +19 days (-11 + 30 = +19)
Revised 3-28-2017

228-yr cycle		228		228		228		228		228		228			
Babylon 19-yr. New Moon Sequence Spring to Spring	Hebrew 19-yr. New Moon Sequence Fall to Fall	747 BC Nabonassar Calendar		519		291		63 BC		166 AD		394		622 AD Muhammad Calendar 1368 yrs 228 x 6	
		←-----													
0		3-13	4-12	3-13	4-12	3-13	4-11	3-11	4-10	3-11	4-10	3-10	4-09	3-10	4-09
			-11	-11	-11	-11	-11	-11	-11	+19	+19	+19	+19	+19	+19
747	1	3-02	4-01	3-02	4-02	3-03	3-31	3-01	3-30	3-29	4-28	3-28	4-27	3-28	4-26
		-11	-11	+19	+19	+19	+19	+19	+19	-11	-11	-11	-11	-11	-11
2	14	3-22	3-21	4-19	3-21	4-19	3-20	4-18	3-19	4-17	3-18	4-16	3-17	4-16	
		+19	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11
3	15		4-10	3-10	4-09	3-10	4-08	3-09	4-08	3-08	4-07	3-07	4-06	3-07	4-05
			-11	+19	+19	+19	+19	+19	+19	+19	+19	+19	+19	+19	+19
4	16	3-30		3-28	4-26	3-27	4-26	3-27	4-26	4-08	4-25	3-25	4-24	3-24	4-23
		+19		-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11
5	17		4-18	3-18	4-16	3-17	4-15	3-16	4-15	3-27	4-26	3-15	4-13	3-14	4-12
			-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11
6	18		4-07	5-07	4-06	3-06	4-05	3-05	4-04	3-15	4-15	3-14	4-03	3-03	4-04
			-11	+19	+19	+19	+19	+19	+19	+19	+19	+19	+19	+19	+19
7	19	3-27		3-26	4-25	3-25	4-24	3-24	4-23	3-24	4-22	3-24	4-22	3-23	4-21
		+19		-11	11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11
8	1		4-15	3-15	4-13	3-14	4-12	3-13	4-11	3-12	4-10	3-12	4-10	3-11	4-10
			-11	-11	-11	-11	-11	-11	-11	-11	-11	+19	+19	+19	+19
9	2		4-04	3-04	4-02	3-03	4-0	3-02	4-01	3-01	3-31	3-30	4-29	3-30	4-28
			-11	+19	+19	+19	+19	+19	+19	+19	+19	-11	-11	-11	-11
10	3	3-24		3-22	4-21	3-22	4-21	3-21	4-20	3-20	4-19	3-19	4-18	3-19	4-18
		+19		-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11
11	4		4-12	3-12	4-10	3-11	4-10	3-11	4-09	3-10	4-08	3-09	4-07	3-08	4-07
			-11	+19	+19	+19	+19	+19	+19	+19	+19	+19	+19	+19	+19
12	5	4-01		3-29	4-28	3-29	4-28	3-30	4-27	3-28	4-26	3-27	4-25	3-27	4-25
		-11		-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11
13	6	3-21		3-19	4-17	3-18	4-17	3-18	4-17	3-17	4-16	3-16	4-15	3-15	4-14
		+19		-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11
14	7		4-08	3-09	4-07	3-08	4-06	3-07	4-06	3-07	4-05	3-06	4-04	3-05	4-03
			-11	+19	+19	+19	+19	+19	+19	+19	+19	+19	+19	+19	+19
15	8	3-28		3-28	4-26	3-27	4-25	3-26	4-24	3-26	4-24	3-25	4-23	3-24	4-22
		+19		-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11
16	9		4-16	3-16	4-15	3-15	4-14	3-14	4-13	3-14	4-12	3-13	4-12	3-12	4-11
			-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11
17	10		4-05	3-06	4-04	3-05	4-03	3-04	4-02	3-03	4-01	3-02	4-01	3-02	3-31
			-11	+19	+19	+19	+19	+19	+19	+19	+19	+19	+19	+19	+19
18	11	3-25		3-24	4-23	3-24	4-22	3-23	4-21	3-22	4-20	3-21	4-20	3-21	4-19
		+19		-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11
19	12		4-12	3-13	4-12	3-13	4-12	3-12	4-11	3-11	4-10	3-10	4-09	3-10	4-09
			-11	-11	-11	-11	-11	-11	-11	+19	+19	+19	+19	+19	+19

When Does the Year Begin?

When did the original 19-year cycle begin? There are several views.

The first view says that years begin in the spring; thus we have September, October, November and December being the 7th, 8th, 9th, and 10th months. This is the solar year. The lunar year is adjusted seven times every 19 years to keep it aligned with the solar year, when did the first lunar year begin? It must have originally begun with the first new moon in the spring, on about March 21. The second month begins on about April 20 (3/21+30 = 4/20).

In another view, in the second year, what was previously the first month arrives 11 days earlier than March 21 on March 10th. It begins before spring, when it is still winter. Then, if we move it back another 11 days, to February 28, in the third year, there could likely be snow on the ground; therefore, an extra month (30-11=19) is added to start the fourth year on about March 30 (2/28 + 30 = 3/30) as in TABLE 4a (Dates based on a link found [HERE](#)) (228-year cycle described [HERE](#)).

TABLE 4a illustrates how April 19, 20, & 21 can become March 21 (instead of 4/20) during the next 228 years.

To find the years that began with the spring equinox, after March 21, we do not need to feel bound to the Jewish tradition. Simply refer to the NASA lunar cycles, which date the new moons and eclipses within minutes and seconds of being accurate for 5,000 years. Don't fall for the argument used by the Messianic Movement that, "If the Bible doesn't tell us exactly how to begin each year, we must return to our Jewish Roots."

Earliest and Latest New Years Allowed

The above dates for the first new moons are from NASA at: <http://astropixels.com/ephemeris/phasescat/phasescat.html>

. Many of the online Hebrew lunar calendars supply dates of Jewish High Days on new and full moons while ignoring the first new moon of each year. Note that the above dates in the 19-year cycle are in blue and the earliest dates in blue are not before March 20. Latest dates are before April 19. Obviously, if a new year began after April 19, it would not be the first new moon after the spring equinox. March 20 to April 19 equals 30 days, that is, one moon. Obviously, many countries begin their year on the first day of spring, which means that a new moon before March 20 or 21 would be in previous year.

Nevertheless, the Hebrew calendar allows the first new moon to be earlier than March 20 six times in 19 years. These early dates would likely mean the Passover might place the Passover on a date when snow is on the ground and much too early to reap the barley harvest during the seven days of Passover. Thus, there arises a need to delay the Passover in those early years for one month... but not the entire year.

The above dates are on the Gregorian calendar, which preserves the date of the spring equinox as March 20, 21 or 22. This can be kept as a solar calendar, but it lacks one day every 228 years when compared with the lunar calendar, the 19-year cycle of new moons. This means the Gregorian calendar lacks 6 days every 1368 years (from 747 BC to 622 AD) and lacks 12 days in 2736 years (from 747 BC to 1990 AD). This Gregorian lunar calendar can be created by subtracting 11 days after April 1 instead of adding the usual 19 days. This will turn the next month into March 21 instead of April 20.

To place the new moons on the proper Gregorian calendar dates, one day needs to be added to the calendar every 228 years and keep it as a separate lunar calendar. The lunar cycle new moons are calculated by NASA by calculating the time and date when the center of the earth is aligned with the center of the moon and the center of the sun. These dates are one or two days before the first slim crescent of the new moon is actually observed visually.

Comments on TABLES

A chart can begin the new year with the closest new moon to the spring equinox. This would mean the first moon cannot be before March 6 (15 days before March 21), and second month cannot be after April 5 (15 days after March 21) during each 19-year cycle.

After March 7, the full moon would be on the 14th day, on March 21. Notice that the year is intercalated in years 3, 6, 9, 14, 17 and 19, that is, 7 times in 19 years. Annual dates during these 19 years will closely match repeating cycles in 1998 and 2017.

In a year that begins with a new moon on March 21, the full moon would arrive on the 14th day, on April 4. Easter every year is the first Sunday during the first full moon after the spring equinox. It is always on Sunday during this first full moon, but it cannot fall on the day of the equinox. This full moon begins 14 days after the nearest new moon before the equinox.

This means the full moon begins 14 days after the new moons on (1. Mar 28) (2. Mar 16) (3. Mar 6 or Apr 4) (4. Mar 25) (5. Mar 14) (6. Mar 2 or Apr 1) (7. Mar 21) (8. Mar 10) (9. Mar 29) (10. Mar 18) (11. Mar 7 or Apr 6) (12. Mar 26) (13. Mar 16) (14. Apr 3) (15. Mar 23) (16. Mar 12) (17. Mar 30) (18. Mar 19) (19. Mar 9).

Notes: (-11 x 19 = -132) and (+19 x 7 = +133)

In 166 AD, the latest 19-year sequence began on 4-19, and Pentecost would be about 91 days later, on about 6-20, the last day of spring (against the Gregorian calendar). This sequence would repeat until a calendar correction on 3-21, 394 AD, which would return the sequence back to 3-21 and prevent Pentecost from ever being in the summer. This correction would be needed again every 342 years, in 737, 1078, 1420, 1762 and 2104 AD.

The latest Passover would be on about 5-03 (4-19 + 14), and earliest would be on about 4-03 (3-21 + 14).

In contrast, the Easter cycle began years as early as 15 days before the spring equinox, and Passover could be as early as one day before the equinox on 3-21 (against the Gregorian calendar).

Easter Cycle both Jewish and Catholic?

TABLE 3 & 4 illustrate how various astronomers have tried unsuccessfully to merge the 19-year lunar cycle and 28-year sabbatical calendar with the solar calendar.

Alexander and later Julius Caesar found that the Egyptian calendar had only 365 days and needed an extra leap day every four years. This increased it to 365.25 days, and it merged with the sabbatical calendar every 28 years (4 years x 7 = 28), and this was merged with the 19-year cycle every 532 years by multiplying 28 by 19, which the church at Rome called the Easter Cycle (after 525 AD).

I have discovered that the Jews were also aware of the 532-year cycle. From their date of Creation in 3761 BC to 37 BC, when Herod conquered Jerusalem, there were 3724 years, that is, 532 times 7. This may imply that the Jewish solar calendar actually consisted of 365.25 days, which would be longer than the astronomical years one day every 128 years (years consisting of 365.242198 days). It would be one week too long every 896 years (128 x 7 = 896) and 46 days too long in 6,000 years.

3724 years from Adam to Herod are also equal to 196 19-year cycles or 4 jubilees x 19 (or 235 moons times 196 = 46,060 moons). 931 years are equal to 968 BC (from the temple) to 37 BC (Herod's capture of Jerusalem). (3724 equals 532 x 7 or 931 x 4). And, according to the Book of Jubilees, Adam died in his 931st year, during a jubilee year (19 x 49). This would also end a 19-year cycle (49 x 19). Herod captured Jerusalem 931 years after the temple was founded, and the time from Herod back to the Jewish date of Creation is 961 times four.

The Easter Cycle

Easter Sunday is also counted from after the spring equinox. Again this supports the view that new years begin in the spring. It is on the first Sunday after the first full moon. Therefore, the earliest Easter Sunday can be as early as March 22 or as late as April 25 (7 days after April 18).

The Hebrew calendar would prefer having the Passover on the 14th day after the new year and then place Easter (the Wave Sheaf offering) during the next seven days, whichever falls on Sunday (on the day of the Wave Sheaf). This implies that Christ was risen when the first of the firstfruits was reaped (I Cor 15:20-23; Jas 1:18; Rev 14:4).

Another cycle (also called the Easter Cycle) consists of 4 years times seven years times 19 years. This equals 532 years. Counting backwards 532 years before Herod conquered Jerusalem in 37 BC brings us to 569 BC, when King Nebuchednezzar became as a wild animal for seven years. This was 49 years before the second temple was founded in 520 BC. Herod was 294 years (6 jubilees) before Alexander allowed the Jews to observe their land rests without paying taxes. This also aligns with a sabbatical Ussher places in 590 BC (as in Ussher's *Annals*) and a sabbatical in 968 BC, when the temple was founded. Herod also aligns with sabbaticals allegedly found in Daniel 9 (458, 423 BC and 34 AD) and the sabbatical in the Book of Maccabees, in 163 BC ($163 - 37 = 126 = 7 \times 18$). Since Herod built the temple, this adds some new context to the first century "in the days of Herod" (Lk 1:5). One of his sons killed John the Baptist. Another son appeared at the time of the Crucifixion.

The Earliest Jewish New Year

According to an online Hebrew Calendar, from 2013 to 2026, the earliest Passover is on March 25, 2013, and the latest is on April 22. This means the new year would begin 14 days earlier, as early as March 11 or as late as April 8. March 11 is 10 days before the spring equinox, that is, on March 21 (See TABLE 2).