The Biblical Basis of the Sacred Calendar
Part One: The Sacred Calendar in Hebrew Scripture

The "calendar question" (that is, "What type of 'sacred calendar' has God's approval?") is nothing new among God's people. Since at least Second Temple times, whenever the authority of God's human servants has been undermined or compromised, some (wishing to establish their own authority) have *attacked or perverted* the biblical calendar. In recent times, many brethren and even ministers of the Church of God have come to doubt the authority of our received sacred calendar, partly because of clever arguments by the factious, and partly because of the sheer complexity of the details behind the sacred calendar itself.

This two-part series addresses some of the technical issues behind the "calendar question", as well as other biblical and historical evidences for the *authority and accuracy* of the sacred calendar God's Church uses today. It was originally written in response to several papers and articles, and its content is laid out accordingly. While it does not (and cannot) deal with every technical issue that might be raised, I believe it gives a discussion sufficiently thorough to settle the question.

Let us begin with an overview of the heart of the sacred calendar: the Sabbath and Festivals, and especially the Holy Days.

The Sabbath and Holy Days

In addition to the Ten Commandments (Exodus 20:1-17), God gave Israel a set of statutes and judgments (Exodus 21:1-33), to which God added over a period of forty years. They were "case laws": *specific, case-by-case applications* of the principles embodied in the Ten Commandments.

The Fourth Commandment gives man a day of rest, worship, instruction and fellowship: the *seventh-day Sabbath*. By observing this day, we may know that the Creator sanctifies us as His people (Exodus 31:13, 16-17). We also picture the future reconciliation of God, man and the physical creation through Jesus Christ (Ephesians 1:10; Colossians 1:20), especially in the Millennium (Acts 4:20-21; Hebrews 4:1-11; 2 Peter 3:8-13; Revelation 20:1-6).

As "case laws" showing the *full application* of the principles behind the Fourth Commandment, God also revealed to Israel *seven annual Festivals* containing *seven annual Holy Days*. They portray God's plan of salvation: the means by which He will reconcile the world to Himself. The details of their observance thus comprise "a shadow of the things to come" (Colossians 2:16-17).

God wants His people to observe these days together, in harmony with His laws and principles and with each other. To do this, His people must have *clear and consistent* rules for the setting and observance of these days.

The Sacred Calendar

The dates of the weekly Sabbath, Festivals and Holy Days are set according to a sacred calendar that is nowhere fully detailed in the Bible. Rather, the Bible assumes that the sacred calendar *exists*, that it has been preserved *accurately*, and that those faithful to God *know* about it. Otherwise, when would God's servants know when to *proclaim* these days or to *keep* them?

We know God entrusted His "oracles" in Hebrew (including the commands regarding the Sabbath, Festivals and Holy Days) to the Jews. This means that God must also have preserved the sacred calendar through the Jews -- *despite themselves, if necessary* (Romans 3:1-4).

The first step in proving this is a comparison of the principles behind our present sacred calendar with the calendrical principles that the Bible itself outlines. Once we do this, we may know (the *Interpreter's Dictionary of the Bible* and likeminded sources notwithstanding) that there *is* such a thing *in principle* as a "biblical" calendar: in all essentials, the same "sacred calendar" that we use today in the Church of God.

Some Basic Calendar Astronomy

The biblical calendar (in both its sacred and civil forms) is a *lunisolar* calendar. It is not based merely on the solar year as is a purely solar calendar (such as our Gregorian calendar), nor merely on the lunar month as is a purely lunar calendar (such as that used by Islam). Rather, it uses the relationship of the lunar month to the solar year as its basis.

In the biblical calendar, the lunar month and the calendrical month are *not identical*. This is because the lunar month is an uneven number of days long. Moreover, the lunar month varies somewhat in length, due to the "eccentric" (non-circular, elliptical) orbits of the earth and moon. This means that the calendrical month must be either 29 or 30 days long -- that is, either somewhat less or somewhat more than the length of the lunar month.

For that matter, in the biblical calendar the length of the calendrical year is *not the same* as the length of the solar year. This is because 12 lunar months do not divide evenly into one solar year. A calendrical year must therefore have either 12 calendrical months (and thus be shorter than the solar year) or 13 calendrical months (and thus be longer than a solar year).

A basic question we need to ask, then, is: When does the calendrical "month" (in Hebrew, *chodesh* or "renewal") begin in the biblical calendar?

In antiquity there were *two basic ways* of reckoning the calendrical month. One way was to *observe* the phases of the moon and to mark the beginning of the calendrical month when the moon was at a particular phase -- usually, when the moon was first visible as a crescent after sunset. (The moon in such a phase is often called a "new crescent" or -- borrowing from the Greek -- a *phasis*.) The only other way was to *calculate* the average length of the lunar month, and with it the *mean conjunction* (the average time of the "new moon" or "dark moon" -- in Hebrew, the *molad*), on the basis of the exact timing of solar and especially lunar eclipses as measured over a period of years. The *true conjunction* (which may precede or follow the mean conjunction by a number of hours) cannot be observed from earth, except from very restricted geographical locales during total solar eclipses.

These two methods of reckoning the calendrical month *do not give the same results* month by month, even if one assumes that the *calendar day* begins at the same longitude. Just before the fall equinox, the new crescent cannot be seen from Jerusalem less than 20 hours after the true conjunction (or six hours after the mean conjunction or *molad*). When the crescent appears, it is already at least one calendar day old,[1] or even two or three days old,[2] as measured from either the true or mean conjunction.A calendar which begins its months with the new crescent will set the "default position" of the first day of the month *one day later* than a calendar which begins its months with the mean conjunction.

One would expect that a culture that called its month a "renewal" (as well as *yareach*, literally "moon") would begin its calendrical month with the *molad*, not with the *phasis*.[3] The astronomical lunar cycle begins its "renewal" with the astronomical new moon or true conjunction, not with the new crescent. Again, the sun and moon align with the earth at the astronomical new moon, not at the new crescent.[4] However, because the astronomical new moon normally cannot be seen from earth (and could not be

predicted with accuracy until modern times), ancient man used *mean* values for the timing of the conjunction of the sun and moon. *All else being equal*, then, the first day of the calendrical month (*rosh chodesh* in Hebrew) should fall on the day of the mean conjunction or *molad* -- not on the day when the new crescent appears. As we will see, this is exactly what the Bible implies.

But the beginning of the lunar month is only one aspect of the "calendar question". Before we proceed further, let us list the astronomical phenomena to which a calendar-maker might refer:

1) The day-night cycle (which varies seasonally depending on one's latitude);
2) The conjunctions and oppositions of the sun and moon;
3) Solar and lunar eclipses (which are related to the above);
4) The phases of the moon (in particular, the new crescent or *phasis* and the full moon);
5) The rising and setting points and times of the moon on the horizon;
6) The solstices and equinoxes of the solar year (which begin the seasons);
7) Planetary conjunctions, oppositions, and elongations of position from the sun;
8) The rising and setting points and times of certain "fixed stars";
9) Transient phenomena such as comets, meteors, novae and supernovae.

While the phenomena in category 9) have been observed and recorded by many peoples across history, by their very irregularity they are of no use to the calendar-maker. Some ancient calendars do use some of the phenomena listed in category 7) - but never any form of the Hebrew sacred calendar.5 All of the other phenomena were of keen interest to ancient man. Which of these are the bases of the sacred calendar?

"Signs...Appointed Times...Days...Years"

Like the Sabbath itself, the astronomical principles behind the sacred calendar date to Creation Week.6 They are given in Genesis 1:3-4 and 1:14.

Let us examine Genesis 1:14 first. "Then God said, 'Let there be lights [the sun, moon and stars: 1:15-18] in the expanse of the heavens to divide the day from the night; *and let them be for signs and for appointed times, and for days and years*...". This is a literal translation of the Hebrew Masoretic Text - the very "oracles of God" as preserved by the Jews. This text even indicates the correct punctuation (through a series of "musical accents" accurately preserved but long misunderstood by Judaism).7

This verse is written in *priestly* language,8 which means it has something to do with *worship*. Its terms are listed in their order of importance. The verbal grammar and the phrase structure (syntax) of the verse shows that "signs" and "appointed times" are connected, as are "days" and "years" in a different way. We know the motions of the sun in the sky determine the "days". What, then, determines the "signs" and "appointed times"? Do "years" here refer to solar years (determined by the sun alone), or calendrical years (determined by both the moon and sun)?

An Astronomical Hierarchy

* "**Signs**" translates *'otot* (the plural of *'ot*). A "sign" not only marks *something else* as noteworthy; it is *noteworthy of itself*. The "signs of the heavens" caused superstitious fear among the pagans - as if the phenomena were omens of present or coming events (Jeremiah 10:2). These were *extraordinary*, yet *obvious* phenomena. Reasonably, these "signs" were either the same as or included the "signs" mentioned in Genesis 1:14, which are related to the motions of the sun and moon relative to each other and to the "fixed stars". Moreover, since Jeremiah 10:3-5 seems to refer to an early precursor of the "Christmas tree" (a symbol connected with the "rebirth" of the sun at the winter solstice), it is reasonable that at least some of the "signs" in both passages relate to the solar seasons.

Which of the visible astronomical phenomena listed above fit all of the above criteria?

a) Solar and lunar eclipses;9
b) The solstices and equinoxes of the solar year.

The first set of "signs" point to two events God wanted man to note: *the conjunction and the opposition of the sun and the moon*. The second set point to *the beginnings of the solar seasons* on which human agriculture depends. (Cf. Deuteronomy 33:15.) Both sets of events were measured very carefully by ancient cultures.

On the basis of careful observation of lunar eclipses in particular, one may calculate not only the length of the mean lunar month, but also the timing of the mean conjunction of the sun and moon. This latter event is called the *molad* ("birth [of the moon]") in the Hebrew calendar. Note the true conjunction10 may precede or follow the mean conjunction11 by several hours, according to the time of year. In the month of Tishri, the true conjunction may precede the mean conjunction by as much as 14 hours or follow it by up to six or seven hours.12 In any case, calculations of the *molad* must use a mean length for the lunar month, because the motions of the sun and moon are irregular, and because the true conjunction is normally *invisible*. (This explains in part why a calendar based on observation of the new crescent is irreconcilable with one based on calculation of the *molad*.)

Solar eclipses, though far more dramatic events (when total) than lunar eclipses, are not nearly as useful as lunar eclipses for determining either the length of the month or the timing of the mean or true conjunction of the sun and moon. For one thing, a total solar eclipse is visible only over a small portion of the earth, and even then is seen by every observer at a different time. The chief value of solar eclipses to the calendar maker is that they allow him to correct the calendar over time for the variable rotation of the earth. (The importance of this fact will become apparent in Part II of this series.)

Yet the sacred calendar and its festivals are linked to the "full moon" (*keseh*) as well as the "new moon" or *chodesh* (Psalm 81:3, RSV). Timing the heavenly "signs" of Genesis 1:14 (in particular, the lunar eclipses, which can be exactly timed over the whole night side of the earth at once) enables one to predict the dates of future lunar and solar eclipses, and also to calculate the mean dates and times of the new and full moons for calendrical purposes.

Everyone who has seen moonrise on the Night to be Much Observed and the first night of Tabernacles may appreciate the results of such calculations! Abib/Nisan 15 and Tishri 15 coincide in principle with the dates of mean opposition of the sun and moon: that is, the calendar days of the full moon. This might not necessarily be true if the months began with the new crescent as seen at sunset, Jerusalem time.13

As noted, the interval between the true conjunction and the *molad* (whether astronomical or calendrical) is variable. The length of the calendar month (thanks to the length of the average lunar month) also varies (between 29 and 30 calendar days). Tishri 1 (for astronomical and religious reasons) may fall locally on the day of the *molad* or one or two days after it.14 Finally, for everyone to keep the *same calendar day* all over the world, *two full "clock" days* must pass for an observer at the longitude where the calendar day begins. When the Sabbath begins (on Friday at sunset) at our present International Date Line (IDL), it is still Thursday night in western North America, Hawaii and many South Pacific countries!

Any lunisolar calendar must take into account *all* these factors and more. One may try to do this by watching for the new crescent, and *never* come up with a sacred calendar that everyone can agree to follow. Or one may determine the beginning of the months by rules of calculation (based on the sound astronomical theory outlined by Genesis 1), and come up with a unified, systematic calendar that works for everyone, everywhere.

Now it may still "seem right" to *some men* to define the "new moon" as the new crescent rather than the mean conjunction. It's not natural for man to trust in something that he cannot see, even in physical

matters. So God gave the heavenly "signs" (lunar and solar eclipses): things man *can* see which point to something he *cannot* see (that is, God's design behind the heavenly cycles).

Thus we can know when the *rosh chodesh* (in Psalm 81:3, simply *chodesh*) falls in the sacred calendar. All else being equal, it is the day on which the *molad* (not the new crescent) falls. But all else is *not* equal all the time! That is why there are *postponements* to the date of Tishri 1 (to which the dates of all the other calendrical "new moons" are adjusted). We will return to these in due time.

* "**Appointed times**" translates *mo`adim* (singular *mo`ed*). The word signifies a time *specifically set or appointed* by a person or circumstance. Translators differ as to the significance of *mo`ed* in Genesis 1:14 because they do not accept the simplest explanation of all the relevant facts.

We know that "He made the moon for **appointed times** [*mo`adim*]", in contrast to the sun which determines the beginning and ending of the day (Psalm 104:19, literal translation). We also know that *mo`ed* may be connected with the seasons of the solar year (Genesis 18:10, 14, in which "the time of life" means the spring season - cf. RSV; see also Leviticus 23:1-4). In Genesis 1:14, then, the "appointed times", like the "signs" with which they are linked, are events determined by both the moon and the sun, this time by *the lunar phase cycles in combination with the solar seasons*.

This correlation of the months with the seasons is directly responsible for the 19-year cycle of the Hebrew and certain other calendars. (Nineteen solar [tropical] years equal almost exactly 235 lunar [synodic] months.) This alignment, coupled with the biblical commands regarding the timing of Passover and Tabernacles, is also the reason why there are *seven intercalary or "leap" years* inserted among *twelve common years* in the 19-year cycle. These numbers *seven* and *twelve* are significant, in the light of their importance in the Bible. They point to the *completeness and perfect organization* of the calendar.

The relevant biblical commands are found in Deuteronomy 16:1 (with parallel verses in Exodus, Leviticus and Numbers); Exodus 23:16; and Exodus 34:22. According to Deuteronomy 16:1 and its parallels, Passover must fall in the first month of spring - that is, "in the month of Abib [green ears or buds]". The ripening of early barley and the appearance of new buds on trees is closely linked to the timing of the spring equinox. A lunar month in which the spring equinox falls after the calendar date of the full moon (the 15th of the month) cannot be "the month of Abib". When such a circumstance occurs, the following full lunar month is to be reckoned as the first month of the sacred year (cf. Exodus 12:1-2).15

The following simple table illustrates the relationship between "the month of Abib" and the spring equinox:
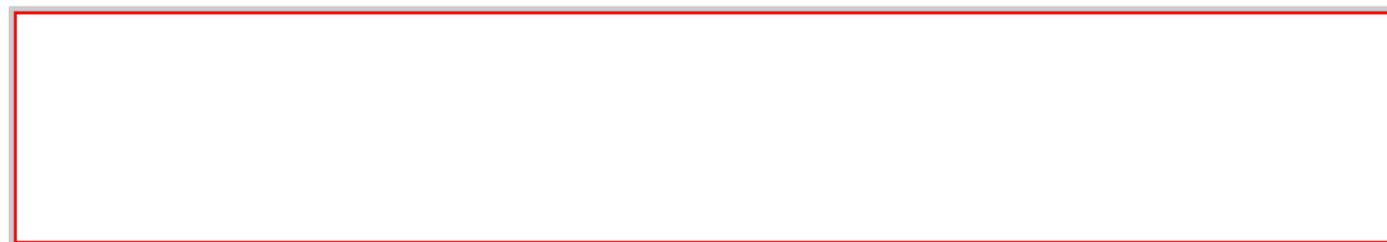
Notice that in our received calendar (as based on rules of calculation first published in extant sources by Hillel II16), "the month of Abib" is not always the month in which the spring equinox occurs. In the first illustrated sequence, the 15th day of the lunar month (in principle, the calendar day of the mean full moon) in which the equinox occurs falls after (but not too far after) the spring equinox; yet it is the following month which is "the month of Abib". (In this case, the year is a leap year, for reasons that will be explained below.) In the second, the 15th of the lunar month falls a little later, relative to the spring equinox. This month is, unquestionably, "the month of Abib". In the third sequence, the spring equinox occurs well after the 15th day of the lunar month in which it falls.17 In this latter case, once again, the

month in which the equinox falls is not "the month of Abib"; the following month is.

A common misconception is that "the month of Abib" is simply the first full lunar month after the spring equinox. Nowhere does the Bible indicate this is so. "The month of *Abib*" is the month of *green ears* -- the time when plants bud forth their leaves, and when the early grain crop ripens. Both the sun and the moon (in that order) set the timing for this occurrence (cf. Deuteronomy 33:14 once again). The moon's maximum influence in this regard is at the *full* moon, not at the *new* moon. (Traditional farmers plant at the *new* moon, but harvest at the *full* moon.) Thus, the *spring equinox* must occur first, and after that the *full* (not necessarily the *new*) moon. If the spring equinox falls within a lunar month after the new moon, but before the full moon, that month is (*in principle*) the first month of spring, "the month of Abib". Only when biblically defined circumstances related to the timing of Tabernacles (which shall be discussed below) are involved is such a month *not* "the month of Abib".

Exodus 23:16 ("…*betse't ha-Shanah*") and 34:22 ("…*tequfat ha-Shanah*"), which relate to the timing of Tabernacles, pose special problems through their terminology. Does *betse't ha-Shanah* ("**when the year goes out**") refer to the beginning or the end of the year? Does *tequfat ha-Shanah* (literally "**turning of the year**") refer to the year's "turning" to its end, or to the "turning" of one year into another? And what kind of "year" is meant here? In our received calendar, Tabernacles falls in the *seventh* month of the *sacred* year and the *first* month of the *civil* year (which begins with Trumpets)!

In the contexts of these verses, it is obvious that the *agricultural* year is meant. The agricultural year (as measured against the "signs of heaven") ends at the *fall equinox* of the *solar year*. "When the year goes out" refers to the *exit or departure* of the year -- but as the year *begins*, not as it *ends* as the usual usage of the verb root *yatsa`* might suggest.18 At or after the beginning of the agricultural year, then, Tabernacles is to be observed.

Likewise, "turning of the year" refers neither to a specific point in time19 nor to the time leading to the end of the agricultural year, but to the time when one agricultural year "turns" into another.20 Again, this "turning" is not a specific date (as in the Rabbinic calendar21), but a *period* of time, by the very nature of the word *tequfah*: a period, once again, centered on the date of the *fall equinox*.

Thus there are three intersecting periods of time we must consider:

1) The seven days of Tabernacles (plus the "eighth day");
2) The period after the fall equinox ("when the year goes out");
3) The period surrounding the fall equinox ("[during the] turning of the year").

A simple chart of their intersection looks like this (* = the 15th day of the lunar month; all periods are approximate):

Thus in our received calendar, and also according to Rabbinic tradition, *Tabernacles can never occur wholly in summer*. It may occur *partially or entirely after* the fall equinox - but never entirely *before* it. Only thus can the *biblical commands* be reconciled with the changing correlation between the lunar months and the solar seasons (in this case, between the month of Tishri and the fall equinox).

Thus in every Metonic (19-year or 235-month lunisolar) cycle, *twelve years* (here, as reckoned from Tishri 1) have but *one* lunar month during which Passover may be kept, and *one* lunar month in the fall during which Tabernacles may be kept. Such years are (by definition) *common years*. They have only *twelve lunar months* in them. All other years are (by definition) *intercalary or leap years*. They have *thirteen lunar months* in them - and are always followed immediately by common years.

What is it then, *in principle*, that defines a common year in biblical terms (as translated into astronomical terms)? The spring equinox must fall within a given lunar month before the calendar day of the full moon, *or* after the calendar day of the full moon within the previous lunar month; *and* the fall equinox must fall before or during (never after) the seven-day period beginning with the calendar day of the full moon, six lunar months (counted inclusively) later. *In such years, only one month in the spring and one month in the fall meet the biblical criteria for determining the months of Abib (Nisan) and Tishri.*

During leap years, by contrast, two lunar months in the spring, in the fall or (rarely) in both the spring and fall22 may fulfill the above biblical and astronomical criteria. In all such cases, the *later* of any pair of months is the month that is defined as Abib and/or Tishri. (The third seasonal Festival -- Pentecost -- adds its own control: its date must be reckoned inclusively fifty days after "the morrow [within the Days of Unleavened Bread] after the [weekly] Sabbath". It occurs as one approaches another milestone in the agricultural year: the summer solstice.)23

The following table illustrates (in part) the relationship between the lunar months and the solar seasons throughout the solar year, and the timing of "the month of Abib" and Tabernacles relative to these factors (all periods are approximate due to graphic limitations):24

In the first example row, two months in spring may fulfill *a priori* the biblical conditions for "the month of Abib". The spring equinox occurs in the lunar month shaded in light gray. It also occurs just before the 15th day of that month. Should that month be the month of Abib? No, because six months later (counting inclusively) Tabernacles would fall wholly in the summer. It would indeed fall "(during the) turning of the year", but not "when the year goes out". In such a case, the year (as reckoned from the preceding Tishri 1) is always a leap year. In the second example row, the fall equinox occurs during Tabernacles; in the third example row, before it. In both cases, the spring equinox falls within (i.e., on or after the first day of) "the month of Abib". Such years (again, as reckoned from the preceding Tishri 1 in all cases) are by definition common years.

Thus within the Metonic cycle, there is a regular sequence of common and leap years, which shifts against the solar seasons over the centuries.25 There are other lunisolar cycles available to calendar makers (such as the 11-year Babylonian and 18-year Greek Saros cycles), and leap year sequences other than those used historically in the Hebrew calendar. No alternatives, though, are as suitable for keeping the Festivals aligned with the seasons. However, *no* regular sequence of leap years in a 19-year cycle can keep the sabbatical year from falling in a leap year from time to time, whether the Jubilee cycle is observed or not.26

Note that three 19-year cycles (57 years) equal one 50-year Jubilee cycle plus one 7-year Land Sabbath

cycle. Thus the 19-year, Sabbatical and Jubilee Year cycles correlate with each other in a "full cycle" of 950 years. (*One more Jubilee cycle would bring us to **1000 years**: the length of the prophetic **Millennium**. This can hardly be a coincidence!*) During one full cycle, 7 out of 19 Jubilees (about 37%) would be leap years, while 49 out of 135 Sabbatical Years (about 36%) would be leap years. Since there is no biblical law or principle forbidding this from occurring, God evidently intended not to *eliminate*, but to *minimize* whatever hardship an extra-long Sabbatical or Jubilee Year would cause.

If we assume that from Ezra's time onward, only the Sabbatical Years were observed (cf. Nehemiah 10:31), then leap years and Sabbatical Years would have coincided more often, causing greater hardship (in addition to that eventually imposed by the Romans). On the other hand, later Jewish sources suggest that the Juiblee Year was indeed observed so long as the Second Temple was standing (see footnote 26 once more). Either way, it is no surprise that many rabbis (after the fall of the Second Temple) concluded one should not intercalate on Sabbatical or post-Sabbatical Years. Even so, some recommended intercalation on the year preceding, some the year following the Land Sabbath, depending on whether they believed importing "herbs" from "unclean" lands outside Israel was permitted (*Sanhedrin* 12a, Soncino edition, p. 53). The result? Confusion and an *increasingly irregular* sequence of leap years -- not *increasing regularity* as the *Encyclopedia Judaica* supposes ("Calendar", vol. 5, col. 49).

Now we are ready to explain other uses of *mo`ed* in connection with the Festivals. We read in Leviticus 23:4 (KJV): "These are the *feasts* [*mo`adim*] of the LORD...which ye shall proclaim in their *seasons* [*mo`adim*]." The second usage of *mo`adim* refers to the *appointed times* as set by the lunar cycles against the solar seasons in a 19-year cycle (as implied by Genesis 1:14). The first usage refers by extension to the religious observances on specific days during these "appointed times".27 But in the first usage, *mo`adim* does not mean *exactly* the same thing as in Genesis 1:14 (though this usage *derives* from that of Genesis 1:14).

In Deuteronomy 16:6, *mo`ed* is translated "season" in the KJV. Here it refers to the anniversary of the very night when Israel left Egypt: a night in the spring, when the moon is full (the 15th of Abib or Nisan). It does not refer to the solar "season" of spring as such. But the "passover" eaten on that night (and discussed in verses 3-7) was not the lamb mentioned in verse 2, but a bullock from the herd (same verse). This other "passover" was later called *Chagigah* ("**Festivity**") in the Second Temple service.28 Once this is understood, the "Nisan 14/15 Passover question" may be resolved.

* "**Days**" (*yamim*, the plural of *yom*) are determined by the apparent motions of the sun in the sky (as caused by the earth's rotation). As we will see, days may be reckoned noon-to-noon (for astronomical purposes) or sunset-to-sunset (for calendrical and religious purposes).

We find in Leviticus 23:32 and other verses that the *calendar day* is measured *sunset-to-sunset*. What is not commonly recognized is that the language of Genesis 1 implies the existence of a *round earth*, with the narrator recounting events as they appeared to occur at the "prime meridian" of the earth. "And the evening and the morning were..." literally means "and it came to be evening, and it came to be morning...", implying a *sunrise-to-sunrise local day*. (The implications of this will be spelled out more fully below.)

* "**Years**" (*shanim*, plural of *shanah*) are determined by the apparent motion of the sun against the stars (thanks to the earth's revolution around the sun), which occur even as the sun makes its daily motion through the sky.29 These "years" may be measured differently: against a particular star (the sidereal year), from noon to noon (the solar year), relative to the spring equinox (the tropical year), relative to the fall equinox (the agricultural year, as observed in the land of Israel), and so on. Since the sacred calendar and its Festivals are so closely linked to the harvest seasons, it is closely connected with the tropical and agricultural years as well as the solar year.

Thus Genesis 1:14 describes the *astronomical hierarchy* on which the sacred calendar is to be based. One other factor must be considered: where the calendar day begins on the earth's surface, as implied by

Genesis 1:3-5 and other passages.

Noon, Sunset and Calendar Days

The timing of the *molad* is reckoned according to the equatorial day, in which the length of day and night is always equal (cf. *Judaica*, columns 44 and 46). This makes perfect sense on a round earth (with or without a tilted axis, if one raises this issue regarding the world before the Flood).

It is only an assumption, however, that the Hebrew calendar reckons the *molad* in terms of Jerusalem time (*loc. cit.*). The medieval Jewish sage Maimonides assumed this, based on Isaiah 2:3: "...for out of Zion shall go forth the law, and the word of the LORD from Jerusalem." In effect, he was stating that the calendar day (for purposes of calculation) begins at Jerusalem, not east or west of it. But he was not *stating* an ancient tradition, but attempting to *account* for one.

Jerusalem's location at or near the "navel [geographical center] of the earth" (Ezekiel 38:12) makes it an ideal center for God's future worldwide government and Work. It is *not*, however, ideally located as a referent for *worldwide* (as opposed to *local*) time-keeping. Its longitude is too far west to mark either an "international date line" (IDL) or a meridian six hours west of an IDL (from which noon may be measured for calendrical purposes). It is also too far east to mark the "prime meridian" (PM), which now passes through Greenwich, England. The easternmost "end of the earth" (i.e., of the earth's land masses) is not at Jerusalem, but many thousands of miles east of it. Logically, the calendar day (as marked by an IDL) should begin there - not at a city west (even in antiquity) of a considerable majority of the earth's human inhabitants.

Thus a sacred calendar based on *Jerusalem time* (in which the calendar day begins at Jerusalem) rather than *world time* (in which the calendar day begins at an IDL) is by necessity a *local* calendar - and therefore truly useful only for Jerusalem and its environs. Since God intended from the beginning that *all humans everywhere* keep His Festivals (cf. Acts 15:18, KJV), let us take the simplest possible assumptions (based on what God reveals to us about Creation Week) and see where they lead us.30

First, we see from Genesis 1:3-5 that God based the lunisolar calendar on world time, not local time -- which implies an IDL east of Jerusalem, "the navel of the earth". Next, He started the calendar's daily and weekly cycles on Day One of Creation Week, and the monthly, seasonal and solar cycles on Day Four. Further, Day Four likely would have marked the fall (not the spring) equinox, making the season fall in the Northern Hemisphere and days and nights equal all over the earth. (We assume the season was fall because God created seed-bearing plants and trees on Day Three.31) Next, when God separated light from darkness (1:3-5), the eastern half of the terminator (the boundary between day and night) would have fallen on the meridian just east of the easternmost "end of the earth". This meridian would have marked the IDL, the basis of world time. (The location of the IDL, of course, has been adjusted in modern times for the benefit of the earth's inhabitants.) The western half of the terminator, by contrast, would have falled on the "prime meridian" or PM (180 degrees or 12 hours west of the IDL). Finally (and this is most important), the narrator of Genesis 1 would have described events using the language of appearance, and as they would have appeared at the prime meridian.

Let us now go back in time to Genesis 1:3-5. At the terminator, the first calendar day (Day One, Year One) now begins (verse 4). (Let us assume for argument's sake that the IDL is at our present 180 degrees longitude.) It is now sunset at the eastern "end of the earth" (modern Siberia). Ninety degrees of longitude west of the terminator (in modern Afghanistan), the local time is now 12:00 noon on Day Zero of the calendar. At the PM (i.e., at the meridian passing through modern Greenwich, England, where the narrator's viewpoint actually is), the local time is now 6:00 a.m. on Day Zero of the calendar. (Do not be confused by this. It is simply a matter of how one *counts* the days on a round earth.)

"And it came to be evening, and it came to be morning: Day One" (verse 5, literal Hebrew). In other

words, "the day ended with evening, and the night with morning" (*The New BDBG Lexicon*, reference *boqer*, p. 134a). The simplest explanation of this wording is that the *local day* as the narrator describes it begins and ends at sunrise. Such an observer would see the evening (`*erev*) come twelve hours later at sunset, then the morning (*boqer*) come twelve hours later still at sunrise. Whereas an observer at the latitude of modern Afghanistanwould see the evening come six hours after noon, then the morning twelve hours later, and finally noon six hours later still. However, the *calendar day* is being reckoned not from sunrise at the PM, nor from noon over Afghanistan, but from sunset at the IDL.[32] Thus, at the latitude of modern Afghanistan, an observer would experience six hours of daylight on (the calendrical) Day Zero before he begins Day One. Eighteen hours after sunset, he would reach noon on Day One just as Day Two begins at the terminator.

We now go forward to verse 13: "And it came to be evening, and it came to be morning: Day Three" (literally, "a Third Day"). Day Four of Year One is about to begin at the IDL. Everywhere else in the world, Day Three has not yet ended. In Afghanistan, the local time is now 12 noon, Day Three. (It is now 6:00 am on Day Three at the PM.) *At this very moment* -- the exact time when the cycles of "signs, appointed times, days and years" have been "set to zero" and are beginning -- the moon is in conjunction with the sun, marking the very first "new moon" of Tishri (on what is now the Feast of Trumpets).[33] Reasonably, the sun is also in total eclipse, marking the very first heavenly "sign" in the history of man's world.

Now on what calendar day of Creation Week does the conjunction fall? On Day Three? *No, on Day Four!* The calendar day is reckoned from sunset at the IDL, not from sunrise at the PM or from noon over Afghanistan -- and still less from the meridian of Jerusalem (where it is still the forenoon of Day Three).

About 14.7 (modern) days later, the moon is in opposition with the sun, marking the first full moon in world history. Quite possibly, it is *exactly 15 days later* -- for in Noah's day, a *month* (*chodesh*) had exactly *30 days* (cf. the chronology of Genesis 7:11-8:14). It is now noon over Afghanistan (Day 18) and sunset at the IDL (Day 19). Once again, the calendar day is reckoned from sunset at the IDL, not from noon over Afghanistan -- so this opposition occurs on Day 19 (not Day 18) of the world calendar.

All this illustrates the biblical reason for Postponement Rule 2: *When Molad Tishri occurs at noon or later, Tishri 1 is postponed until the next calendar day.* This rule is a necessary consequence of keeping time on a round earth, if one begins the calendar day at sunset when it arrives at the easternmost "end of the earth".

Until about the middle of the last century, astronomical time (i.e., time as used to measure and calculate astronomical events) has always been reckoned noon-to-noon, not sunset-to-sunset. Therefore, the calculations of the Hebrew calendar must deal with astronomical time. Yet we know that the Hebrew calendrical day begins at sunset, and locally whenever sunset arrives at a particular place on earth. The only possible explanation is that at some point in history, a Molad Tishri occurred at noon on one calendar day at a given latitude, even as another calendar day began at sunset at a latitude six hours to the east. This side of Creation Week, we have no proof as yet as to when that point in history could be. However, our Hebrew calendar does have a *benchmark* from which the Molad Tishri may be calculated for any given year: Sunday, October 6, 3761 B.C., 23 hours 204 parts, as converted to the common civil calendar. (One hour is comprised of 1,080 parts.) While Rabbinic Judaism considers 3761 B.C. the year of the world's creation, the Talmudic chronology upon which this supposition is based is faulty when compared with biblical indications.[34]

In any case, we cannot justify the "noon-or-after" postponement by saying that the Sanhedrin needed at least six hours to announce the impending arrival of Tishri 1. This is an attempt to *reconcile the irreconcilable* (a calendar based on calculation and a calendar based on observation). The Bible commands that the Feast of Trumpets be kept on *one day*, not *two* -- which *proves all by itself* that the biblical "new moons" were set by *calculation of the mean conjunction*, not by *observation of the new crescent*. Notice by contrast that the empirical methods used by the Pharisees often *forced* the post-Temple Diaspora, and often even the post-Temple Sanhedrin, to keep the Feast of Trumpets over two

days. (In the case of the Sanhedrin, this is because it was uncertain until the very last moment when the witnesses of the new crescent would arrive, and therefore whether the Sanhedrin would sanctify the 30th or the 31st day since the previous new crescent as being the "new moon".) Nor can we account for this rule by claiming (as did the Talmudists and Maimonides) that "if the *molad* falls before noon, the moon can be seen the same day near sunset". *This is not true all the time, or anything like it!*

First, apart from *exact knowledge* of the irregularities of the motions of the sun and moon (which the Jews *did not have* and *could not have had*), one must base a lunisolar calendar either on the calculation of mean values or on direct observation. Under these conditions, if the calendar is based on the calculation of Molad Tishri, then one may know *years* (even *centuries*) in advance when Tishri 1 will occur. If the calendar is based on observation of the new crescent, one *cannot know in advance* when the first day of any month will occur -- in which case one cannot "sanctify the new moon" until the new crescent *actually appears* at sunset!

Second, the new crescent of Tishri cannot be seen from Jerusalem less than 20 hours after the true astronomical conjunction (or less than six hours after the mean astronomical conjunction, the same *in principle* as the calculated *molad*), and then only at sunset. (The new crescent may appear at sunset *nearly 72 hours* after the true conjunction!) Remember, too, the true conjunction can precede Molad Tishri by a maximum of 14 hours or follow it by a maximum of six to seven hours. Finally, the Jews had no way of knowing in advance *how far apart* Molad Tishri and the true conjunction would be, or even *which would occur first!*

True, the *minimum* time between Molad Tishri and the new crescent is six hours (noon to sunset). But this is a very rare event. An exceptional event cannot be used to justify a general rule.35 Besides (and this is most important), a local calendar that begins each month with the new crescent *does not require* a "noon-or-after" postponement of any kind. According to the Talmud, the Pharisee-led Sanhedrin had to "sanctify the new moon" during the "day" (*Sanhedrin* 11b); but that meant in practice *between sunset and full dark*.

So the very existence of Rule 2 in our present calendar proves that our received calendar is *not the same* as that of the Pharisees and their Rabbinic heirs. A "noon-or-after" postponement for Tishri 1 only makes sense in a calendar that begins the months with the mean conjunction -- and that only as reckoned according to *world time*, not *Jerusalem time*. Were the *molad* reckoned against noon Jerusalem time, the calendar would put the effective "date line" more than *fifty degrees of longitude west* of where it should be for the benefit of everyone.

The Other Three Postponements

Is there a *biblical* reason for Postponement Rule 1 (Trumpets cannot fall on the first, fourth or sixth days of the week)? If so, then since we know that Rule 2 also has a biblical basis (one dating back to Creation Week), we know that Rules 3 and 4 have a biblical basis in principle as well. These last two rules are but corollaries of the first two, and of the necessary limits on the lengths of the common and leap years in a 19-year cycle (that is, in a calendar based on calculation of the *molad*).36

What reason does Rabbinic Judaism give for Rule 1? Mainly, to keep Atonement from falling on the sixth or first day of the week, and to keep the seventh day of the Feast of Tabernacles (called *Hoshannah Rabbah* by Rabbinic Judaism) from falling on the Sabbath.37 But why are these days singled out (and one of them not even being a Holy Day)? Could this Jewish tradition be yet another *post hoc* explanation obscuring the *real* reason for this rule?

Some in the Church of God have sought to justify the rule by this means: If Trumpets could fall on Sunday, Wednesday or Friday, there would be *four, two or four* consecutive Holy Day/Sabbath combinations in a given year. Preventing this from happening would have a number of benefits, especially for women (who bear the brunt of food preparation for their families, now as in the past). Given the biblical

example of a "day of preparation" before the weekly Sabbath, this reasoning makes a certain amount of sense (cf. Exodus 16:23) .38

But Rule 1 *specifically* affects four Holy Days in a row: Trumpets, Atonement, the first day of Tabernacles, and the Last Great Day. If Trumpets could fall on a Sunday, Wednesday or Friday, then *three, one or all four fall Holy Days* could occur back-to-back with the weekly Sabbath.39 Under Rule 1, *none* of these days can fall before or after the Sabbath. But despite Rule 1, the Passover and all of the spring Holy Days can and do occur (in the case of the true Pentecost, *every year*) back-to-back with the weekly Sabbath.

The fall Holy Days (in contrast to the spring Holy Days) are called High Holy Days by Rabbinic Judaism. (Do not confuse this Jewish usage with the description of Abib/Nisan 15 as a "high day" in John 19:31.) When we examine the Scriptures, we see that there is in fact a *hierarchy of holiness* in the Festivals: Atonement, the weekly Sabbath, the other fall Holy Days, and the spring Holy Days, *in that order*.

First, what do the fall Holy Days have in common which sets them apart from the spring Holy Days?

> * They occur within the space of one month (and in the fall).
>
> * Each is called a *shabbaton* ("sabbatism", "complete rest", etc.), a term which is also applied to the weekly Sabbath (but not to the spring Holy Days).40
>
> * Three of them are separate, one-day Festivals (the other being the sole Holy Day out of seven Festival days). This makes the meaning of each day stand out more readily than otherwise. Among the spring Holy Days, only Pentecost is a one-day Festival (and is related by a count of days to Unleavened Bread as well).
>
> * They are associated (even in Rabbinic Judaism) with God's *future judgment* of the world.41

What do Atonement and the weekly Sabbath have in common?

> * They are both specifically called *shabbat shabbaton*, "a sabbath of complete rest" (Leviticus 23:3, 32). This is true of none of the other Holy Days. (In particular, the other Fall Holy Days are simply called *shabbaton*, not *shabbat shabbaton*.)
>
> * No work of *any kind* is permitted on these days (same verses). On the other Holy Days, no *servile* work is permitted. (The prohibition against "work" on the last Day of Unleavened Bread, found in Deuteronomy 16:8, does not specify either "any work" or "servile work". It is simply a general prohibition.)
>
> * Under the Old Covenant, he who worked on either of these days was to be "cut off from among his people" (Leviticus 23:30; Exodus 31:14). Once again, this is not stated about the other Holy Days.

Thus, while all Holy Days are "sabbaths" (compare John 19:31), not every Holy Day is called *shabbaton*, let alone *shabbat shabbaton*. Atonement has the greatest restriction on "work"; then, the weekly Sabbath; then, the fall Holy Days; then, the spring Holy Days.42 Note how the terminology and the restrictions on "work" correlate: Atonement is called *shabbat shabbaton* (and enjoins fasting besides). The weekly Sabbath (on which one may eat but not cook food: Exodus 16:23) is likewise called *shabbat shabbaton*. The other fall Holy Days (which are special "feast days" of eating and drinking) are called simply *shabbaton*; and the spring Holy Days (notably the first Day of Unleavened Bread,43 on which we are specifically told food may be prepared: Exodus 12:16) are called by none of these terms.44

This correlation is what defines the "hierarchy of holiness" mentioned above - and it leads us to the *real*

reason for Postponement Rule 1. If the weekly Sabbath and the fall Holy Days (especially Atonement) could fall back-to-back, it would become much more difficult to keep any of them as God intended, let alone to discern their true meaning. Rule 1 solves this problem, while keeping the *lesser* problems posed by Sabbath/Holy Day combinations in the spring to a bare minimum.

So *all four postponement rules* have a basis in biblical principles (two of them out of logical necessity). They are *judgments* based on the letter and spirit of the "oracles of God". Three of the rules are also founded in practical calendar astronomy; and the fourth (Rule 1) is an act of mercy.[45]

These rules are also founded in the *spiritual* principle behind true Sabbath-keeping. As the Sabbath was made for man, not man for the Sabbath (Mark 2:27), so the sacred calendar and its Festivals were meant to serve man, not man the calendar and Festivals. The same principle applies to the astronomical cycles on which the sacred calendar is based (cf. Deuteronomy 4:19).

There are other principles that apply here as well. Would God have us serve the *creation* rather than the *Creator* (Romans 1:25)? Would He have us walk by *sight* rather than *faith* (2 Corinthians 5:7)? Would He prefer a calendar that is *not* "done decently and in order" (1 Corinthians 15:40), or that leads to *confusion* rather than to *peace* (15:33)? Yet we are led to these things, if we misunderstand the implications of what God reveals about how the calendar relates to the cycles He ordained in creation!

Based on Biblical and Practical Principles

So we have a *biblical* (and *practical*) principle behind the use of the *molad* rather than the new crescent to mark the "default position" of the "new moon". We have *equally* biblical (and practical) principles behind the 19-year cycle and its sequence of 12 common and 7 leap years. We have practical, biblical principles behind Postponement Rules 1 and 2, and by extension behind Rules 3 and 4 as well. Only the sabbatical and Jubilee years are ignored by our calendar; but these are no longer observed in this age, not even by Rabbinic Judaism. (Their observance must await the "world to come" and its "restoration of all things".)

But the other biblical principles are still used *correctly and in their proper order* by the sacred calendar today. They were used in the sacred calendar of ancient Israel, because God's nature and character have not changed, nor have the ordinances of the heavens established in Genesis 1 (cf. Psalm 148:1-6). Were these biblical principles also used in the sacred calendar of Jesus' day? The basic answer to this question will be given in the second article in this series. ###

FOOTNOTES

1. In Rabbinic Hebrew, such a new crescent is called *yareach ben yomo* (in English idiom, "a day-old moon").

2. "In the region of Jerusalem...shortly before the autumnal [fall) equinox the minimum interval from the true conjunction to the *phasis* [new crescent] is approximately 20 hours, while the maximum is close to 72 hours, with the minimum of approximately 18 hours shortly before the vernal [spring] equinox and the various respective maxima and minima throughout the year" ("Calendar", *Encyclopedia Judaica*, col. 46).

3. The Babylonians and Persians began the months with the new crescent in their lunisolar calendar, and some Jews -- particularly the Pharisees and early Rabbis, but also the Karaites -- followed their example. Their confusion of biblical and Babylonian principles has led some to look to the *Babylonian* calendar as a guide to reconstructing the original *Hebrew* calendar!

4. The timing and position of the new crescent depend on the interval of time from the true conjunction (i.e., the astronomical new moon) to sunset, the season of the year, the moon's position above or below the ecliptic (the yearly path of the sun), and the observer's geographical location ("Calendar", *Judaica*, col. 45).

5. As justification for the very long lives of the ancients, Josephus states the following: "God afforded them a longer time of life on account of their virtue and the good use they made of it in astronomical and geometrical discoveries, which would not have afforded the time of foretelling [the periods of the stars] unless they had lived six hundred years; for the Great Year is completed in that interval" (*Antiquities of the Jews*, Bk. III, ch. 9 (106), translated by William Whiston). The "Great Year" is the cycle of years determined by the oppositions of Jupiter and Saturn. However, though Josephus mentions it as common knowledge to ancient scholars, he does not link it to the sacred calendar.

6. This does not mean the benchmark of the Jewish calendar actually dates back to Creation Week. The current "world era" of Judaism (Year One = 3761 BC) is based on a misreckoning of biblical chronology. For example, it counts 892 years "from Noah to Abraham". What it actually counts is the number of years from Noah's birth to Terah's 70th year. Yet a comparison of Genesis 11:26, 32 and 12:4 with Acts 7:4 shows Abraham must have been born no less than 60 years later.

7. Suzanne Haik-Vantoura of Paris deciphered these "musical accents". The first edition of her French book was published in 1976; the second edition (1978) was translated in 1991 as *The Music of the Bible Revealed* (BIBAL Press/King David's Harp, Inc.). In any case, the comma after "appointed times" is dictated by the "grammatical rules" post-imposed upon the notation by Rabbinic Judaism, as well as by Haik-Vantoura's musical "deciphering key". (For further information on Haik-Vantoura's discovery, the reader may visit http://www.kingdavidsharp.com/ and http://thesongofsongs.tripod.com/.)

8. This is apparently why the "Documentary Hypothesis" claims this verse comes from a "priestly" (P) source. Cf. *The New Brown-Driver-Briggs-Genesius Hebrew-Aramaic Lexicon*, 1979, pp. 17a, 417b.

9. Lunar eclipses are especially valuable for the calendar maker, because they can be observed by everyone on the night side of the earth at the same "world time". Solar eclipses, on the other hand, can only be observed by a few people on the day side of earth; and every observer sees the eclipse at a different "local time" as well as a different "world time".

10. Solar eclipses (especially total ones) point (in theory if not in practice) to the astronomical true conjunction. Unfortunately, during a total solar eclipse there is but one point on the path of the moon's shadow across the earth where one may actually observe the moment of true conjunction.

11. The astronomical mean conjunction is *in principle* (if no longer *in exact timing*) the same as the calculated *molad*. Cumulative errors in the calculations of the sacred calendar and perturbations in the lunar and planetary orbits ensure that the two no longer coincide exactly.

12. "Owing to inequalities in the rate of both the solar and the lunar motion in longitude, the mean

conjunction [*molad*] may precede or be preceded by the true conjunction. The absolute maximum interval between them, arising from the combined effect of the maximum quotas of the solar and lunar anomaly is approximately 14 hours. In Tishri ... approximately 14 hours is the maximum interval from the true conjunction to the mean conjunction, whereas the maximum interval from the mean conjunction to the true conjunction will not exceed six to seven hours; in Nisan ... approximately 14 hours is the maximum interval from the mean conjunction to the true conjunction and only six-seven hours from the true conjunction to the mean conjunction; with varying seasonal maximum and minima in the other months of the year." "Calendar", *Judaica*, col. 45.

13. The mean time from the true conjunction to the full moon is about 14.7 days. Since the new crescent may appear up to three clock days after the true conjunction of Tishri, does this mean that the 15th calendar day from the new crescent could begin after the two-clock-day range during which the calendar day of the full moon occurs (cf. below, main text)? This is worth further detailed study.

14. Tishri 1 may also fall "before the day of the *phasis* [new crescent] begins or, in some extremely rare cases, on the day immediately after the *phasis* (never later), with a rather wider range of the occurrence of the New Moon before and after the day of the *phasis* in other months; such oscillation is inherent in a system, like the present Jewish calendar, based on mean values." "Calendar", *Judaica*, col. 46.

15. The musical accentuation confirms that the order of the months in the calendar was changed at this time -- yet only for the sacred year, as the Bible, secular history and Jewish sources such as Josephus all confirm that the civil year continued to be reckoned fall-to-fall.

16. "The persecutions under Constantinus [the Roman Emperor Constantine] finally decided the patriarch, Hillel II, (330-365), to publish rules for the computation of the calendar, which had hitherto been regarded as a secret science….This unselfish promulgation of the calendar, though it destroyed the hold of the patriarchs on the scattered Judeans, fixed the celebration of the Jewish feasts upon the same day everywhere. Later Jewish writers agree that the calendar was fixed by Hillel II, in the year…359 C.E. Some, however, as Isaac Israeli, have fixed the date as late as 500. SAADIA afterward formulated calendar rules [in the tenth century C.E./A.D]…" ("Calendar", *Jewish Encyclopedia*, p. 500a). The *Encyclopedia Judaica* concurs: "By the tenth century the Jewish calendar was exactly the same as today" ("Calendar", p. 50b).

17. Even in the rabbinc calendar, the "secret of intercalation" was this: "Whenever it becomes apparent that the winter will last till the 16th of Nisan [as it would normally be reckoned by the rabbinic calendar], make that year a leap-year [sic] without hesitation." This "secret" was "revealed" by Rabbi Huna ben Abin to Raba in Babylonia (cf. "Calendar", *Jewish Encyclopedia*, p. 500b).

18. Cf. *The New Brown-Driver-Briggs-Genesius Hebrew-Aramaic Lexicon*, p. 423a.

19. Cf. the other three places in the Bible where *tequfah* is used (1 Samuel 1:20; 2 Chronicles 24:23; Psalm 19:6). In all cases, *tequfah* refers to a period, not a single moment or day, of "turning". (Cf. *The New BDBG*, p. 880b.)

20. One might be confused by the usage of the nouns *motsa'o* (from the verb *yatsa'*) and *tequfah* in Psalm 19:6. Yet this verse refers to the *rising* ("exit") of the sun above the horizon and its *turning* to the place where it sets on the opposite horizon. Obviously, the latter follows the former. Yet the "turning of the year" in Exodus 34:22 does not necessarily follow (in time order) the "going out" of the year in Exodus 23:16, especially since the phrase "turning of the year" does not specify progression to an end.

21. In the rabbinic calendar, *tequfah* refers to the specific date of an equinox or a solstice. Thus rabbinic treatises on our received calendar refer to the "four *tequfot*", which are yet calculated by an arbitrary division of a solar year of 365¼ days into four equal parts (Arthur Spier, *The Comprehensive Hebrew Calendar*, pp. 19-20).

22. Such a year was 30-31 A.D., the year Jesus died on our Gregorian calendar. 1996-1997 was another, recent example.

23. Cf. my article, "Passover, Unleavened Bread and Pentecost: The Solution to an Ancient Conundrum," which deals with this matter and many others which have troubled the ministry and membership of the Churches of God.

24. I have made slight adjustments to the lengths of the months (in terms of number of characters

used) from Abib/Nisan to Tishri, in order to make them conincide better with the various lengths of these months (29-30 days). This also makes the graph coincide somewhat better with the actual relationship between the length of the lunar year and that of the solar year. However, the seasons in this graph are all the same length, which is not true in the actual solar year.

25. Currently, the sequence of leap years in a 19-year cycle is: 3, 6, 8, 11, 14, 17 and 19. In Jesus' day (as confirmed by astronomical calculations), the sequence of leap years was: 2, 5, 7, 10, 13, 16 and 18. Notice that in Jesus' day, the pattern was shifted back one year relative to the sequence in use today.

26. As it is claimed: "The gradual regularizing of the intervals of intercalation had to be in terms of the seven-year sabbatical cycle as none of the styles of the 19-year Metonic cycle would have been compatible with the rule not in intercalate in sabbatical and post-sabbatical years..." ("Calendar", *Judaica*, col. 49.) By contrast, Arthur Spier alleges: "[The Jubilee Years] were counted, according to Maimonides [a famous 12th-century codifier of biblical and Talmudic laws], only as long as the Temple was in existence....The 7-year cycles, also called the Shemittah or release year periods, are counted, according to Maimonides and to our present custom, from the year 3829 on [in the Hebrew calendar], *the year of the destruction of the Second Temple which was a Shemittah year* [emphasis mine]. Every year that leaves the remainder zero when divided by seven is a seventh or Shemittah year" (*The Comprehensive Hebrew Calendar*, pp. 21-22). Moreover, Spier asserts the year 3829 in the Hebrew calendar is actually 69 A.D., not 70 A.D. (*op. cit.*, p. 21). The problems of chronology associated with such claims are left to be discussed elsewhere. The Bible at any rate says nothing about the keeping of the Jubilee Year in Second Temple times. But could Jesus have quoted Isaiah 61:1-2 (which uses imagery connected with the "acceptable year of the LORD") during an actual Jubilee Year (Luke 4:16-21)? This was apparently at Pentecost in the year 28 A.D. (Frederick R. Coulter, *A Harmony of the Gospels: The Life of Jesus Christ*, revised edition [York Publishing Co., 1975], pp. 44-45). *Five seven-year cycles later brings us to 70 A.D., the year most scholars accept as the year of the fall of the Temple.*

27. The Talmudists described the Festivals as *mo`adot*, perhaps to distinguish them from the "appointed times" (*mo`adim*) during which they fell. Yet both words are used in the Bible to describe the Festivals (1 Chronicles 23:31; 2 Chronicles 8:13).

28. This solution (the only one to the "Nisan 14/15 question" that does not lead to self-contradictions) is indicated in context by the "musical accents" as deciphered by Haik-Vantoura, and confirmed by a close examination of related biblical texts. The solution deserves an article all by itself.

29. This seems to be why "for" is not put before "years" in "and for days and years". "Days" and "years" are linked in a more intimate way than are "signs" and "appointed times", grammatically and astronomically speaking.

30. We cannot use modern astronomical calculations or natural history to test these assumptions. "Nor can it be ascertained when, if ever, the moment of the *molad* was identical with the moment of the mean conjunction since, because of the great many inequalities in the moon's movement in longitude, it is practically impossible to fix the mean position of the moon at any time" ("Calendar", *Judaica*, column 46.) But Genesis 1:14 indicates just such a time (as we will see): the beginning of Day Four of Creation Week.

31. The Talmudists argued over whether creation occurred in the fall or in the spring. Fall (Northern Hemisphere) seems the more reasonable assumption, since most trees and grasses bear seed in the summer and fall, not in the spring.

32. Until very recent times, astronomical events were reckoned noon-to-noon, while calendar days were reckoned (at least in the Hebrew calendar) sunset-to-sunset.

33. We say *conjunction* rather than *opposition* because the lunar cycle begins with the conjunction. "And God made" the sun and moon "to divide the day from the night" and "to rule over the day and over the night"; yet six hours later, when the sun set over modern Afghanistan, the new crescent moon was probably visible for the first time.

34. The full implications of the above two paragraphs are beyond this present study.

35. This statement by the *Jewish Encyclopedia* notwithstanding: "There was at least the possibility of experts discovering the small sickle of the moon six hours after the [mean] conjunction; and this possibility justified the authors of the calendar in fixing the day of the *molad* as the first of the new month, if the molad took place before noon" ("Calendar", p. 503). In fact, this simply justified the identification of the Rabbinic and the calculated calendars (whereas they are not the same in principle).

36. "Proceedings [of the Sanhedrin] were at times deliberately prolonged or speeded up, with the occasional choice of some observational post favorable for early sighting of the new crescent (*Ein Tov*), in order to avoid whenever possible a festival day, especially the Day of Atonement, falling immediately before or after the Sabbath. In keeping with this, the number of the full months varied between four and eight in the common, and between four and nine in the leap years, with 352-6 days in 12 lunar months, variations greatly in excess of those in the present calendar" ("Calendar", *Judaica*, col. 49). (The phrase "Ein Tov" or `*eyn tov*, "good eye", refers to the location most favorable for sighting the new crescent, not to the new crescent itself.)

37. Some writers allege that Postponement Rule 1 in our received calendar grew out of a simpler postponement rule in the Rabbinic calendar (i.e., Tishri 1 cannot fall on the fourth or sixth days of the week). (Cf. "Calendar", *Judaica*, col. 50.) But this and many other assumptions made by Jewish and other students of the sacred calendar beg the question of how an unsystematic, empirical calendar (based on one set of principles) could have "evolved" into a systematic, theoretical calendar (based on another set of principles).

38. This verse describes the Sabbath as *shabbat shabbaton*, "a sabbath of solemn rest" - a phrase which will become relevant shortly, when we examine Leviticus 23.

39. Besides this, the first Day of Unleavened Bread would fall on the sixth day of the week, which it never does now; but since it can also fall on the first day on occasion, this would not be a serious change.

40. The Bible describes the Sabbath, Festivals and Holy Days in a number of ways. Some of these descriptions apply to all God's "feasts" (*mo`adim*); others do not. For example, the Sabbath, Festivals and Holy Days are all called "holy convocations" (*miqra`ê qodesh*); but only Passover, Unleavened Bread, Pentecost and Tabernacles are each called *chag* (also translated "feast", but signifying a seasonal pilgrimage festival). The interrelationship of certain other terms gives us a vital key to unlocking the biblical reason behind Rule 1 (see main text below).

41. Modern popular Judaism, though, links the seventh day of Tabernacles rather than the Last Great Day to the "last judgment". In Second Temple times, the Last Great Day (called *Sheminit Atseret* by the Jews, based on 2 Chronicles 7:9 and other verses) was a day devoted to prayer for rain.

42. One could say: "All Sabbaths are equal, but some are more equal than others."

43. Of which the opening night is called "a night to be much observed" in Exodus 12:42 (KJV) and the night of "passover" in Deuteronomy 16:2-7. But again, this other "passover" relates to the sacrifice of a *bullock in the sanctuary* on the night of Abib/Nisan 15, not of a *lamb at home* on the night of Abib/Nisan 14.

44. Reasonably, one could also prepare food on the other spring Holy Days, especially Pentecost (which always follows the weekly Sabbath). This would explain why none are called *shabbaton*, and why all of them may fall back-to-back with the weekly Sabbath.

45. These postponements (the statements of Arthur Spier in *The Comprehensive Hebrew Calendar*, p. 15, notwithstanding) are neither "exceptions to the rule" nor "the rule", but the *hierarchical application of additional rules* to the calendar. In the parlance of modern technology, the date of Molad Tishri is the "default position" of Tishri 1 (Trumpets). When circumstances require it, one or more postponements are applied in a particular order. Thus "in more than 60% of all years [Trumpets] does not occur on the day of the Molad Tishri but is postponed according to one of the [postponement rules]" (*loc. cit.*). It is not the *frequency*, however, but the *motivation* of this circumstance that determines what is the "rule".

(C) 2002 by Johanan Rakkav. All Rights Reserved.

"HOW EXCELLENT IS THY NAME!" -- DWIGHT ARMSTRONG

Updated September 7, 2003