

- [1] Appointed-times and Years are known from Lights in the Sky, Gen 1:14-18
- [2] Uses of Appointed-times [4150 *moed*]
- [3] A Month is a Cycle of the Moon
- [4] Relevant Astronomy of the Moon and Calculating the Conjunction
- [5] Full Moon occurs about the 14th and 15th Days of the Biblical Month
- [6] A Biblical Month has a Maximum of 30 Days
- [7] The Aaronic Priesthood has a Role regarding the Calendar
- [8] Hebrew *chodesh* refers to the Day that Begins each Month
- [9] Isa 47:13 shows that a Month begins with the New Crescent
- [10] Use of Adar and Elul in Jerusalem shows the Month begins with the New Crescent
- [11] The Month in Israel began Correctly after the Babylonian Captivity
- [12] Philo of Alexandria and the New Crescent in the First Century
- [13] The time of the New Moon as a Feast in Scripture and in Jewish History
- [14] The Feast of the New Moon in I Samuel 20
- [15] Psalm 81:3 and the Hebrew double word *b-keseh*
- [16] From Where should the New Crescent be Sighted?
- [17] Summary of Reasons why the Conjunction did not begin the Biblical Month
- [18] The Sun is Required in Gen 1:14 for Years
- [19] Light Triggers and the Vernal Equinox
- [20] What is the Biblical Vernal Equinox?
- [21] Central Passover Observance Requires Knowledge of the first Month at its Start
- [22] Adoption of the Babylonian Month Names in Jerusalem, and the Vernal Equinox
- [23] Book of Esther shows Basic Agreement of the Babylonian and Jewish Calendar
- [24] The Passover Letter shows the Jerusalem Nisan was the Babylonian Nisanu
- [25] Philo explains when the First Month of the Biblical Year begins
- [26] Summary of Evidence that favors the First Month on or after the Vernal Equinox
- [27] Claims that the Barley in Israel determines the First Month
- [28] Bibliography

[1] Appointed-times and Years are known from Lights in the Sky, Gen 1:14-18

Gen 1:14, “And the Almighty said: Let there be lights in the expanse of the heavens to separate between the daytime and the night, and let them be for signs, and for appointed-times [4150 *moed*], and for days and years.”

Gen 1:15, “And let them be for lights in the expanse of the heavens to give light on the earth, and it was so.”

Gen 1:16, “And the Almighty made the two great lights, the greater light to rule the daytime and the lesser light to rule the night, and [He made] the stars [to rule the night].”

Gen 1:17, “And the Almighty set them in the expanse of the heavens to give light upon the earth”

Gen 1:18, “and to rule by daytime and by night, and to separate between the light and the darkness.”

In verse 14 the word *moed* appears, and all 222 occurrences of this word are shown separated into nine categories below. From these categories we note that the only ones that make sense in the context of periodically occurring events based on the heavenly lights are the annual festival(s), the seventh day Sabbath, and bird migrations. Since the latter only occurs once and the former occurs 40 times, it only seems sensible to understand the appointed-times here to refer to the annual festivals and the Sabbath.

Since the annual festivals are determined by, or embedded in, the calendar, this verse makes the calendar dependent on or determined by the lights in the heavens.

In verse 15 the word “them” refers back to the subject in verse 14, namely the lights. Thus verse 15 is saying in essence, “let the lights be for lights ... **to give light** on the earth”. Even the names of the heavenly bodies are absent to put emphasis on the “light bringing” purpose and mission of these heavenly light bodies to fulfill the need to determine “signs, appointed-times, days, and years”. The triply emphasized mission of light from the heavenly bodies (in verses 14-15) **to give light** to determine appointed-times (festivals and the Sabbath) and years must be given its appropriate place in thought and use. **Specifically verse 15 states “to give light”, and thus it is the giving of light by the lights that is the key principle for the calendar.**

[2] Uses of Appointed-times [4150 *moed*]

9 Usages, 222 Occurrences

Appointed Meeting (Tent of Meeting) - 146 Occurrences

Ex 27:21 Ex 28:43 Ex 29:4 Ex 29:10 Ex 29:11
Ex 29:30 Ex 29:32 Ex 29:42 Ex 29:44 Ex 30:16
Ex 30:18 Ex 30:20 Ex 30:26 Ex 30:36 Ex 31:7
Ex 33:7 Ex 33:7 Ex 35:21 Ex 38:8 Ex 38:30
Ex 39:32 Ex 39:40 Ex 40:2 Ex 40:6 Ex 40:7
Ex 40:12 Ex 40:22 Ex 40:24 Ex 40:26 Ex 40:29
Ex 40:30 Ex 40:32 Ex 40:34 Ex 40:35 Lev 1:1
Lev 1:3 Lev 1:5 Lev 3:2 Lev 3:8 Lev 3:13
Lev 4:4 Lev 4:5 Lev 4:7 Lev 4:7 Lev 4:14
Lev 4:16 Lev 4:18 Lev 4:18 Lev 6:16 Lev 6:26
Lev 6:30 Lev 8:3 Lev 8:4 Lev 8:31 Lev 8:33
Lev 8:35 Lev 9:5 Lev 9:23 Lev 10:7 Lev 10:9
Lev 12:6 Lev 14:11 Lev 14:23 Lev 15:14 Lev 15:29
Lev 16:7 Lev 16:16 Lev 16:17 Lev 16:20 Lev 16:23
Lev 16:33 Lev 17:4 Lev 17:5 Lev 17:6 Lev 17:9
Lev 19:21 Lev 24:3 Num 1:1 Num 2:2 Num 2:17
Num 3:7 Num 3:8 Num 3:25 Num 3:25 Num 3:38
Num 4:3 Num 4:4 Num 4:15 Num 4:23 Num 4:25
Num 4:25 Num 4:28 Num 4:30 Num 4:31 Num 4:33
Num 4:35 Num 4:37 Num 4:39 Num 4:41 Num 4:43
Num 4:47 Num 6:10 Num 6:13 Num 6:18 Num 7:5
Num 7:89 Num 8:9 Num 8:15 Num 8:19 Num 8:22
Num 8:24 Num 8:26 Num 10:3 Num 11:16 Num 12:4
Num 14:10 Num 16:18 Num 16:19 Num 16:42 Num 16:43
Num 16:50 Num 17:4 Num 18:4 Num 18:6 Num 18:21
Num 18:22 Num 18:23 Num 18:31 Num 19:4 Num 20:6
Num 25:6 Num 27:2 Num 31:54 Deut 31:14 Deut 31:14
Josh 18:1 Josh 19:51 I Sam 2:22 I Ki 8:4 I Chr 6:32
I Chr 9:21 I Chr 23:32 II Chr 1:3 II Chr 1:6 II Chr 1:13
II Chr 5:5

Annual Dated Festival/Festivals - 40 Occurrences

(In the context of Lev 23:2, 4 mentioned below, the seventh day Sabbath is included with the festivals in the use of *moed*. Hence, as a periodic time, the Sabbath is included

with the festivals under the use of *moed*. This indicates that the Sabbath is also a festival, but there is no biblical evidence that an annual festival is also a Sabbath (= specific Hebrew word *shabat*), except for the Day of Atonement – see Lev 16:31; 23:32.)

Gen 1:14 Ex 13:10 Ex 23:15 Ex 34:18 Lev 23:2
Lev 23:2 Lev 23:4 Lev 23:4 Lev 23:37 Lev 23:44
Num 9:2 Num 9:3 Num 9:7 Num 9:13 Num 10:10
Num 15:3 Num 29:39 Deut 16:6 Deut 31:10 I Chr 23:31
II Chr 2:4 II Chr 30:22 II Chr 31:3 Ezr 3:5 Neh 10:33
Ps 104:19 Isa 1:14 Isa 33:20 Lam 1:4 Lam 2:6B
Lam 2:7 Lam 2:22 Ezek 36:38 Ezek 44:24 Ezek 45:17
Ezek 46:9 Ezek 46:11 Hos 2:11 Hos 9:5 Hos 12:9

Appointed Time - 22 Occurrences

Gen 17:21 Gen 18:14 Gen 21:2 Ex 9:5 Num 28:2
I Sam 9:24 I Sam 13:8 I Sam 13:11 I Sam 20:35 II Sam 20:5
II Sam 24:15 II Ki 4:16 II KI 4:17 Ps 75:2 Ps 102:13
Jer 46:17 Dan 8:19 Dan 11:27 Dan 11:29 Dan 11:35
Hab 2:3 Zech 8:19

Appointed Place - 7 Occurrences

Josh 8:14 Job 30:23 Ps 74:4 Ps 74:8 Isa 14:13
Lam 2:6A Zeph 3:18

Appointed People - 2 Occurrences Num 16:2; Lam 1:15

Appointed Prophetic Time Interval - 2 Occurrences Dan 12:7; 12:7

Appointed Sign - 1 Occurrence Judg 20:38

Bird Migration - 1 Occurrence Jer 8:7

General Season - 1 Occurrence Hos 2:9

[3] A Month is a Cycle of the Moon

From above, the meaning of appointed-times in Gen 1:14 is festivals and the Sabbath, and these are determined by lights in the heavens.

I Ki 6:38, "And in the eleventh year in the month [3391 *yerach*] Bul, it [is] the eighth month [2320 *chodesh*], the house was finished for all its parts and for all its plans, [and] thus he built it seven years."

I Ki 8:2, "And all the men of Israel were assembled toward King Solomon at the feast in the month [3391 *yerach*] Ethanim, which [is] the seventh month [2320 *chodesh*]."

Strong's number 3394 for moon (*yahrayach*) and Strong's number 3391 for month (*yerach*) have the same three Hebrew consonants and look the same when the vowels points are removed. In the Hebrew language the 22 letters shown in the sections of Ps 119 are called consonants even though some of them act as vowels. The original Hebrew text of the Scriptures only had these 22 consonants. The vowel points (and some such marks are more than points, but that is the term by which they are called in Hebrew school) were added to aid pronunciation by the Masoretes about the year 650. This identical original appearance in the Hebrew word for moon (3394) and this Hebrew word for month (3391) shows that a biblical month is based upon the moon. These verses, I Ki 6:38; 8:2, also have another word for month [2320 *chodesh*], and it shows that the two different words, *yerach* and *chodesh*, indicate the same thing, a month.

Ps 104:19, "He made the moon [3394 *yahrayach*] for appointed-times [4150 *moed*], the sun knows its going-away."

This strengthens the direct evidence seen above first, connecting the moon with the month. This use of appointed-times further corroborates that the moon is one of the heavenly bodies specifically indicated in Gen 1:14 because *moed* is used 40 times in reference to the festivals and the Sabbath. None of the other categories of the use of *moed* make good sense for this verse.

Ps 104:19 does not have the word "all". It does not say "for *all* appointed-times". If it did have the word "all", it would even appear to somehow make the Sabbath depend on the moon.

The moon has a repeating cycle of slightly more than 29.53 days. Some pattern of cyclical light from the moon must begin a month based upon the above Scriptures.

[4] Relevant Astronomy of the Moon and Calculating the Conjunction

The moon's orbit around the earth is an ellipse, and the earth is not in the center of the ellipse. Because of the elliptical orbit of the moon, the day of the conjunction cannot be known from the day of the full moon. When Richard A. Parker was a professor at the University of Chicago, he wrote the following on the bottom of page 6 of Parker 1950: "The necessary time for full moon varies from 13.73 to 15.80 days after conjunction." This is a difference of 2.07 days, which is about 49 hours 41 minutes. This shows that the conjunction (i. e., astronomical new moon) is not exactly opposite the full moon in length of time.

If one considers counting days beginning with the sundown-to-sundown day on which the conjunction occurs, then the full moon occurs from the 14th to the 17th day of the count. The 17th is very rare.

If one considers counting days beginning with the sundown-to-sundown day that begins with the sighting of the new crescent in the western sky, then the full moon occurs from the 12th to the 16th day of the count. The 16th is very rare. Typically the full moon occurs on the 13th, 14th, or 15th day of the count.

With the above variation in the time from the exact moment of the full moon to the time of the next conjunction (a variation difference of 2.07 days) when the moon is not seen, it is certainly a great difficulty to compute the time of the conjunction. Even computing the day of the conjunction is a great problem because you cannot know the day unless you can first estimate the time.

On page 169 of van der Waerden 1960 he wrote, "The months beginning with the conjunction will [in this quoted paper] be called *exact lunar months* or *conjunction months*. These months are a theoretical construction; they could not be used in practice in classical times, because before [the Greek astronomer] Kallippos (330 B.C.) astronomers were not able to predict the true conjunction."

When Alexander the Great conquered the Persian Empire, he demanded that the Babylonian astronomers transfer their knowledge to the Greek astronomers who did not know how to compute the conjunction. The transfer of Babylonian methods of predicting solar eclipses (these happen at rare conjunctions) enabled the Greeks to know how to calculate the conjunction using Greek geometry. The Babylonians did not use geometry for their calculations and had no interest in the conjunction except for solar eclipses. Kallippos acquired Babylonian mathematical astronomy and then applied it to Greek geometry in order to be able to predict conjunctions c. 330 BCE.

In order to perform the computations needed for mathematical astronomy, the Babylonians used the base 60 positional numbering system, which used powers of 60 in columns and the equivalent of a zero as we today use powers of 10 in columns to perform simple long division of general numbers with fractions. The Greek mathematical astronomers copied this Babylonian mathematical system for their astronomy. This enabled the Babylonians and Greeks to perform the long divisions needed for approximating astronomical predictions of the time of eclipses and conjunctions. The ancient Egyptians from before the time of Alexander the Great had their own method for writing their hieratic numerals, which did *not* use any number base with positional powers and they had no zero to be able to distinguish 5, 50, 500, etc. The ancient Egyptian hieratic numerals were similar in concept to the Roman numeral system, which made long division of numbers with fractions very cumbersome and not suited to mathematical astronomy. The ancient Egyptians did not have mathematical astronomy, and did not have computations for eclipses and conjunctions, and their numbering system was too awkward for success in that scientific realm. On pages 58-59 of Schniedewind 2013, he wrote, “The influence of Egyptian scribal culture would become widespread in early Israel. In addition to learning the practices of accounting (that is, using hieratic [= Egyptian] numerals) and of writing with ink, the early Israelites borrowed several linguistic terms relating to the scribal profession from Egyptian.” On page 101 he wrote, “Excavations at Kadesh Barnea (Tell el-Qudeirat) have recovered some of the best examples of scribal exercises in ancient Judah. Kadesh Barnea was a remote fortress that served trading caravans in the middle of the vast Negev highlands. The excavations recovered ten ostraca dating to the late monarchy. Ostraca 1-6 and 9 date to the last phase of the Iron Age fortress (ca. 600 B.C.E.) and appear to be scribal exercises. The most elaborate example includes six columns with lists of hieratic numbers as well as hieratic abbreviations for accounting terms such as *shekel* and *homer*.” Coins from ancient Israel also avoid any indication of a positional numbering system with a base and a zero, thus also showing the lack of ability to perform general long division as required for serious mathematical astronomy that would be needed to compute the conjunction. The Babylonians kept their methods a secret until Alexander the Great conquered the Persian Empire and commanded them to share their methods with the Greeks. Not even the Dead Sea Scrolls show the Babylonian methods copied by the Greeks. The point of all this history is to show that the supposition that at the time of Moses ancient Israel could calculate the conjunction and use that as the basis for knowing when the month began is a fantasy.

[5] Full Moon occurs about the 14th and 15th Days of the Biblical Month

When Abraham departed from Haran and permanently moved to the Promised Land, the language of his environment changed from Akkadian to Canaanite. He was accompanied

by a few hundred people who were essentially his servants. During a span of a few hundred years the Akkadian language that this small group with Abraham spoke gradually changed to a form of the Canaanite language because they were greatly outnumbered by Canaanites in their midst. Just to the north of the Canaanites, and even blending with them was the Ugaritic Kingdom. Thousands of ancient documents written in the Ugaritic language have been discovered and translated. The vocabulary of Ugaritic and ancient Hebrew is almost the same.

Scholars who know biblical Hebrew have no problem understanding ancient Ugaritic. Words that are the same in two closely related languages such as biblical Hebrew and ancient Ugaritic, and that appear in the same contexts are called cognate words, indicating that they have the same meaning in both languages. When the ancient Hebrews borrowed words from their neighbors and accepted them into their own language, the meaning was obviously borrowed along with the word, although over much time ancient Hebrew did modify or expand the meanings of some of its words. However, technical words are not expected to change in their technical meaning.

Both of the Hebrew words that mean month, namely *yerach* and *chodesh*, also occur in the Ugaritic language, and they are cognates, indicating that their month and the Israelite month began the same way. We can learn some of the meaning of these words in ancient Hebrew through one clear context in ancient Ugaritic. In one Ugaritic text dated c. 1300 BCE, the written day of the month is numbered 14, along with subsequent discussion that may indicate the next day, appears. On pages 232-233 of Olmo Lete 1999 we read, "In any case, this is the only indication of *time* for the ritual act: the 14th-15th day of the month, *ym mlat* (lit. 'day of fullness')." This same Ugaritic text is also discussed in more detail on pages 20-21 of de Tarragon 1980. On page 18 de Tarragon discusses the Ugaritic expression "*bym hdt*" [= in day *chodesh*], using only consonants because there are no vowels just as with ancient Hebrew, where the dot under the first "h" indicates the first letter of the Hebrew *chodesh*. His comment on page 18 about this Ugaritic expression (using my translation from his French) is, "It designates the new-moon, the day of the new moon." He says this expression occurs ten times among a few Ugaritic texts that he studied. Hence the full moon occurs about day 14-15 of the *chodesh*.

This Ugaritic text involving the full moon **defeats** the theory that the ancient biblical month before the Babylonian captivity **began** with the day of the full moon. Those who champion this theory argue for it on the basis of an interpretation of Ps 81:3.

[6] A Biblical Month has a Maximum of 30 Days

A. Noah's Flood and the Length of a Biblical Month

A cycle of the moon averages a little more than 29.5 days. Gen 7:11 mentions that the flood began on the 17th day of the second month. In Gen 8:3-4 the wording seems to imply that 150 days passed until the 17th day of the seventh month. Here five months total 150 days, which divides out to 30 days per month. Some people have claimed from this data that during the time of Noah all months had 30 days and the astronomy of the moon around the earth was different from what it became. The Tanak does *not* say that *all* months during the life of Noah had 30 days! This is an interpretation of the little information that is supplied. Because of the rain and then the clouds, it would have been difficult or impossible to see the moon during this time. Perhaps the time near the full moon may have been visible through the clouds during some of these months, but generally speaking, the visibility of the moon was greatly blocked during this period of time. The disruption of sighting the moon during this period would have led to a maximum month time of 30 days as indicated here.

B. The Two Witnesses Prophecy for 1260 Days = 42 x 30 Days = 42 Months

Based upon Isa 13:9-10; Joel 2:1-2; Ezek 32:7-8 there will be a future time when the sky will be darkened for some length of time, and the “day of YHWH” is associated with this time period. The context of Dan 7:21-27 fits that of the “day of YHWH”. Dan 7:25 has the phrase “time and times and half a time”. This identical expression is also mentioned in Dan 12:7 and Rev 12:14. The context of Rev 12:14 fits perfectly with Rev 12:6, and the latter is explicitly stated to be 1260 days. The beast of Rev 13:6 fits perfectly with the beast of Dan 7:25, which is the fourth beast in Dan 7:7-8, 19-27. The “time and times and half a time” in Dan 7:25 was already shown to refer to 1260 days. Therefore, the 42 months that are mentioned in Rev 13:4-6 is the same time period of 1260 days, which is a “time and times and half a time”. In this circumstance a month divides out to be 30 days. **This may be explained by recognizing that the moon will not give its light, as shown in Isa 13:9-10; Ezek 32:7-8.**

This indicates that a month has 30 days if the moon does not give its light or is mostly not visible, thus giving a limit of 30. If there is a succession of months for which the sky is cloudy or rainy over all of Israel where people reside on days near the start of each of those months, then each of those months will have the maximum number of days per month, namely 30 days. Then, when the weather first becomes clear at the start of a month, that month may have less than 29 days to make up for the artificial prolongation of some months to 30 days. **This shows that a calculated conjunction is not used.**

[7] The Aaronic Priesthood has a Role regarding the Calendar

According to the law of Moses certain activities related to the calendar are required to be performed by the Aaronic priesthood. Specifically, at the beginning of each month, in the context of Num 10:1-10, notice the following activity of the priesthood.

Num 10:8, “And Aaron's sons, the priests, shall blow with [the two silver] trumpets.”
Num 10:10, “And on [the] day of your gladness, and on your appointed-times [4150 *moed*], and on the beginnings of your months [2320 *chodesh*], you [priests] shall blow with [the two silver] trumpets over your burnt offerings and over [the] sacrifices of your peace offerings, and they shall be to you for a memorial before your Almighty; I am YHWH your Almighty.”

Ps 133 shows Calendrical Unity via the Authority of the Aaronic Priesthood

Ps 133:1, “A song of the upward-steps, by David, Behold how good and how pleasant [is the] dwelling of brothers, yes-indeed in-unity.”

Ps 133:2, “[It is] like the good oil upon the head, descending upon the beard, Aaron's beard, descending upon the edge of his garments.”

Ps 133:3, “Like the dew of Hermon descending upon the mountains of Zion, because there YHWH commanded the blessing of life forever.”

To speak of pleasantness in unity, as seen in verse 1, implies a mental peace that can only come by willing agreement with the decision of the priesthood (Ps 133:1-2). If knowledge to achieve spiritual unity is attained, it should produce uniformity in recognizing the days of holy convocation, the appointed-times.

Through the symbol of oil, Ps 133:2 shows calendrical unity through the authority of the Aaronic Priesthood. Verse 1 shows that this unity is good and pleasant.

Positive evidence that calendrical unity was only to be achieved through the authority of the Aaronic priesthood does exist in Ps 133. In that psalm the unity of the brethren was to be achieved through the symbolism of the anointing oil upon Aaron's beard, which is the bestowing of authority upon that priesthood to bring about unity.

The Aaronic priesthood blew the two silver trumpets to officially declare that a new month had begun.

[8] Hebrew *chodesh* refers to the Day that Begins each Month

Now compare Num 10:10 with I Chr 23:30-31.

Num 10:10, “And on [the] day of your gladness, and on your appointed-times [4150 *moed*], and on the beginnings of your months [2320 *chodesh*], you [priests] shall blow with [the two silver] trumpets over your burnt offerings and over [the] sacrifices of your peace offerings, and they shall be to you for a memorial before your Almighty; I am YHWH your Almighty.”

I Chr 23:30, “and [the sons of Aaron are] to stand every morning to thank and to praise YHWH, and likewise at evening,”

I Chr 23:31, “and for all the burnt offerings to YHWH for the Sabbaths, for the new-moons [2320 *chodesh*], and for the appointed-times [4150 *moed*] in the count [of animals], [according to the] ordinance concerning them continually before YHWH.”

In I Chr 23:31 above we notice that the burnt offerings on the new moons [2320 *chodesh*] are mentioned, and in Num 10:10 above we notice that the burnt offerings on the beginnings of your months [2320 *chodesh*] are mentioned. The whole phrase “beginnings of your months” appears in verse 10 compared to “new-moons” in verse 31, showing that a month begins with a new moon. Verse 31 translated this word *chodesh* as “new-moons”, while verse 10 translated the same word as “months”. Other examples also show a double meaning for this word. Some examples where *chodesh* means “month” are Gen 29:14; Num 10:11; I Ki 5:14. Some examples where *chodesh* means “new-moon” are II Ki 4:23; Ezek 46:3; Hos 2:11; Amos 8:5.

[9] Isa 47:13 shows that a Month begins with the New Crescent

Isa 47:13 is a most interesting verse of Scripture because it teaches much about the Hebrew word *chodesh*. The period of Isaiah's visions is from c. 760 to c. 700 BCE. Isa 47:1, 11 is a prophecy that eventually Babylon would be defeated, and Isa 47:13 is a taunt directed at Babylon.

On page 8 of Rochberg 2004, she wrote, "The nightly watch of the sky seems to have been standard Babylonian practice since the reign of King Nabonassar (747-734 B.C.)." On page 2 of Swerdlow 1998, he wrote, "Prognosticate by the new moon they [the Babylonian astrologers] did, and by the full moon, and by the appearance of the moon, and by eclipses of the sun and moon, and by the risings and settings and conjunctions of stars and planets, and by halos and clouds and rain and winds, in short, by anything in the heavens, astronomical or meteorological, that could be taken as ominous, a prophetic sign given by the gods." When Swerdlow began with the words "prognosticate by", he meant that based upon the conditions that prevail during the time of the events mentioned, they would make predictions about the future with the intent that they would come to pass. With this historical context in mind, here is a literal translation of Isa 47:13.

Isa 47:13, "You [Babylon] are wearied with your many consultations. Now let [the] astrologers [1895 *havar*] of [the] heavens [8064 *shamayim*] stand up and save you, those who look-intensely [2372 *chozeh*] at [the] stars, those-who-make-known [3045 *yada*] at [the] new-moons [2320 *chodesh*], what will happen to you."

Some translations and commentaries on this verse attempt to interpret it in a manner that makes it appear to divide up the heavens into the signs of the zodiac. This is an error because the origin of the zodiac as 12 equally divided signs of the year began between 464 and 454 BCE. Horoscopes are based on the zodiac. The year 410 BCE is the earliest known text of a horoscope. The origin of both the zodiac and horoscopes is ancient Babylon. Today's knowledge of ancient Babylonian history makes it clear that *havar* should mean "astrologers". The context indicates that the declarations of the astrologers are predictions or prognostications. History shows that at this time the Babylonian temple astrologer-astronomers made predictions about the king and the nation.

In this verse the Hebrew word *chodesh* [2320] occurs in the plural, and it is preceded by the single letter lamed, which is a preposition that is pronounced "l". Pronounced together it is *leh-chadasheem*. The question arises concerning whether *leh-chadasheem* means "every month (i. e., monthly)" or "at the new moons" in Isa 47:13. Consider the following factors.

(1) This plural form of *chodesh* with this preposition lamed occurs in five other places in the Tanak. These are I Chr 23:31; II Chr 2:4; 8:13; 31:3; Ezra 3:5. This preposition is flexible and its meaning depends on the context. It often means *at, for, or on*". In all six cases (Isa 47:13 being the sixth case) it may be consistently translated "at [the] new-moons". In the five examples outside Isaiah the context prevents it from meaning "every month".

(2) The translation "every month" is usually given in Num 28:14; I Chr 27:1; Est 3:7 where *chodesh* in the singular occurs twice in all three verses, and the preposition lamed is absent before these three double cases. The end of Num 28:14 literally means "month on month for [the] months of the year". In the Hebrew it is "*chodesh* [singular] *b-chadshoh* [preposition bet and singular] *l-chadshay* [preposition lamed and plural] *ha-shanah*". Here the plural form of *chodesh* is different from the plural form in Isa 47:13, though both have the preposition lamed. These three consistent examples show that the expression that is literally "month on month" (no lamed and no plural) means "every month"; thus there is no need for another expression to mean every month.

(3) In theoretical Hebrew grammar it would be a possibility for *leh-chadasheem* in Isa 47:13 to mean "every month", but there is no biblical context in which this is an example that is implied by the context. On page 395 of BDB, Isa 47:13 is quoted to end as follows: "who declare, at the new moons, of (the things) which are to come". Yet BDB contradicts itself on this, because on page 516, column 1, 9 lines from the bottom of the page, BDB states "*every month*" for *leh-chadasheem* in Isa 47:13. The Hebrew preposition lamed is very flexible, having a wide variety of meanings, so this is given as a grammatical possibility. Nevertheless, no known context implies that this was a method that was in fact used in the ancient Hebrew language to mean "every month".

(4) During the era of Isaiah, on each night the Babylonian astrologers examined the sky for anything unusual, and then such unusual events were used as the basis for prognostications. It would be needlessly redundant for the end of Isa 47:13 to mean "monthly" when in fact the examination of the heavens was a nightly matter. However, prognostications were made for every new moon even if it was a very typical new moon. More emphasis was placed on the new moons because that was of central importance to the Babylonian calendar since it began each month. Translations of reports to the Assyrian kings by those who supervised the nightly watchers of the skies that includes the time of the later life of Isaiah may be found in the book by Hermann Hunger 1992.

The above considerations provide good reasons to reject the proposal found in some translations that *leh-chadasheem* in Isa 47:13 means "every month".

Because Babylonian prognostications were made for every Babylonian new moon regardless of whether anything unusual was seen at that evening, Isa 47:13 shows that the Hebrew word *chodesh*, new-moon, is also applicable to the Babylonian new moon!!! This shows that the fundamental concept that underlies the Israelite new-moon and the Babylonian new moon are the same. Since the Babylonian new moon day began with the sighting of the new crescent, provided that there was subsequent official recognition of this sighting, but without allowing a month to have more than 30 days, the same concept should apply to the biblical new-moon.

An astronomical reason for a biblical month to consist of a whole number of days is that each new crescent first becomes visible close to sundown, which is the time that the Sabbath begins and a numbered day of the month begins. A biblical month is from one new crescent to the next new crescent, which is a whole number of days. We thus see that from the biblical viewpoint, the average synodic month as a precise fraction of days, hours, and minutes is never hinted at in Scripture and is foreign to biblical thought.

[10] Use of Adar and Elul in Jerusalem shows the Month begins with the New Crescent

In the context of Jerusalem Ezra 6:15 mentions the month Adar and Neh 6:15 mentions the month Elul. These are Hebrew transliterations of month names in the Babylonian calendar, but these verses are in the context of Jerusalem. Scripture is a witness here that ancient Israel adopted the month names of the Babylonian calendar by the time of Ezra and Nehemiah, c. 450 BCE. At this time ancient Israel was not an independent nation, but was a province of the Persian Empire. Nehemiah was appointed governor, evidently by the Persian king (Neh 5:14).

In the year 538 BCE Persia defeated the Babylonian Empire and adopted the Babylonian calendar, although they did not prevent local calendars from continuing to exist. For example, the local Persian calendar (the Zoroastrian religious calendar) still continued and the Egyptian civil calendar still continued. In fact the Persians dated legal documents in both the Babylonian calendar and the Egyptian civil calendar, thus using two calendars simultaneously. The Persian Empire allowed the ethnic groups within its jurisdiction to use whatever calendar they desired, so that Israel was not forced to use the month names of the Babylonian calendar.

The adoption of the Babylonian calendar's month names into Israel in Jerusalem would cause confusion within the same empire unless a biblical month began by the same concept as the month in the Babylonian calendar. The sighting of the new crescent in the western sky near sundown followed by the proclamation of the new month by the

Babylonian authority began the month in the Babylonian calendar. However, a month was not permitted to have more than 30 days in that calendar. In Jerusalem the Aaronic priesthood had the authority to declare the beginning of each month.

[11] The Month in Israel began Correctly after the Babylonian Captivity

Using the conjunction (astronomical new moon) to start the month is contrary to the biblical emphasis and stress on the use of visible *light* to determine the appointed times. Some advocates of the conjunction theory for the beginning of the month claim that before the Babylonian captivity under Nebuchadnezzar, ancient Israel (specifically the House of Judah) determined the start of a month with the sundown that began a day, but the moon was invisible near that sundown. These people go on to claim that after the return from captivity under Ezra and Nehemiah, Israel, under the influence of the Babylonian calendar and Persian political dominance, no longer continued the alleged original practice of using the conjunction since the time of Moses. To judge the rationality of this view, let us read a couple of verses from Neh 8.

Neh 8:2, “And Ezra the priest brought the law before the assembly of men and women and all who could hear with understanding on the first day of the seventh month.”

Neh 8:9, “And Nehemiah who [was] the governor, and Ezra the priest the scribe, and the Levites who taught the people, said to all the people: Today is holy to YHWH your Almighty.”

Since the day that is stated to be the first day of the seventh month is definitely declared to be holy, it must have been determined correctly, and this was after the return from the captivity under Ezra and Nehemiah. Hence they could not have adopted a pagan practice contrary to what was correct under the law as taught by Moses. The Aaronic priesthood had the proper pattern to determine the start of a month set in motion from this day onward down through the later centuries until the Temple was destroyed in 70 CE, and there is no known time during which the priesthood is thought to have had any significant doctrinal upheaval in its own ranks during this period.

[12] Philo of Alexandria and the New Crescent in the First Century

As a Jew living in Alexandria, Egypt in the early first century, Philo (c. 20 BCE – c. 50) discusses the new moon from his Jewish perspective. When he mentions the word feast, it will be shown in bold for emphasis because this is significant in early Jewish history.

On page 333 of Philo_7 (Special Laws 2:41) Philo wrote, “The third [feast recorded in the law] is the new moon which follows the conjunction of the moon with the sun.”

Since this follows the conjunction, it must refer to the (visible) new crescent.

On pages 391 and 393 of Philo_7 (Special Laws 2:141-142) Philo wrote, “Following the order stated above, we record the third type of **feast** which we proceed to explain. This is the New Moon, or the beginning of the lunar month, namely the period between one conjunction and the next, the length of which has been accurately calculated in the astronomical schools. The new moon holds its place among the **feasts** for many reasons. First, because it is the beginning of the month, and the beginning, both in number and in time, deserves honour. Secondly, because when it [the new moon] arrives, nothing in heaven is left without light, for while at the conjunction, when the moon is lost to sight under the sun, the side which faces earth is darkened, when the new month begins it resumes its natural brightness. The third reason is, that the stronger or more powerful element [the sun] at that time [of the new moon] supplies the help [light] which is needed to the smaller and weaker [the moon]. For it is just then [at the new moon] that the sun begins to illumine the moon with the light which we perceive and the moon reveals its own beauty to the eye.”

In Alexandria, the leading center of Greek mathematical astronomy at that time, the conjunction is a well known concept to Philo, and he mentions the conjunction as a contrasting time to the new moon. It is clear that to Philo the Jew in the early first century in Alexandria, the new moon is the new crescent, and this begins the first day of the Jewish month. Evidently the Greek geometrical abstract concept of the conjunction had filtered down to the educated non-astronomer, Philo. He used this concept in writing to his audience without defining it, so he understood that his audience would also understand this term. To Philo, the new moon is the new crescent, and he calls this time a feast for the Jews.

[13] The time of the New Moon as a Feast in Scripture and in Jewish History

II Ki 4:23, “And he said, “Why will you go to him [the prophet] today, [it is] neither new-moon nor Sabbath? She said, “[To have] peace.”

Amos 8:4-5, “Hear this, you who oppress the poor and make the humble of the land to cease, saying, 'When will the new-moon be passed so that we may buy grain? Or the Sabbath [be passed] so that we may open the wheat?' To shrink the ephah, to inflate the shekel, and to falsify the deceitful scales;”.

These two passages show that in the culture of ancient Israel the new-moon (*chodesh*) was treated as a public holiday or day of feasting. Refraining from work on a new-moon is not stated as a commandment in the law of Moses, except for the first day of the seventh month (Lev 23:24-25; Num 29:1).

When quoting from Philo of Alexandria above, twice it was noted that he called the day of the beginning of the lunar month a feast. Although there is a gap of about eight centuries from Amos (c. 750 BCE) in Scripture to Philo in the history of the first century, this is consistent in cultural behavior.

Horace was a Roman poet and satirist who wrote in Latin and lived from 65 BCE to 8 BCE. Philo was born about the time that Horace completed his satires in Rome. On page 20 of the book by Horace, Satire 1.9.67-70 states: “‘Surely you wanted to tell me something, something confidential?’ ‘Oh, yes, but I'll choose a better time. Today is the thirtieth Sabbath. Why offend the circumcised Jews?’ ‘I don't care about religion’, I moan”.

Here the expression “thirtieth Sabbath” is a literal translation of Horace's Latin expression *tricesima Sabbata*. On page 375 of the book by Louis Feldman 1996 we find the following comment on this expression as found in the satire, “In summary, Horace's allusion in *tricesima Sabbata* is more effective if it refers not to some meaningless nonsense but rather to the thirtieth, a Sabbath, that is, the New Moon, so prominently celebrated in Horace's time.”

Here it must be understood that the Jews in Rome desired to have a holiday (not holy day) to commemorate the start of the new month. The Romans understood that the word Sabbath to a Jew meant a day on which he did not work at his ordinary job. It was easier for the Jews to tell the Romans that the new moon day that was the thirtieth of each lunar month was always a Sabbath (called the thirtieth Sabbath) than to use other more accurate words from the biblical viewpoint. Biblically the new moon was not a Sabbath,

but the Jews called it a Sabbath to simplify the implications of not working to the Romans.

The first of the two possible days of sighting the new crescent would place the first day of the month on the 30th day of the old month. Hence in Jewish culture of that time the 30th day would be a vacation day or a feast day, and by loose extension (not technically correct), called a Sabbath. Since Horace expected his Roman readers to understand him, this new moon feast, called the “thirtieth Sabbath” was well known in Rome in the late second century BCE. Rome was about 1500 miles from Jerusalem where the Aaronic priesthood blew the two silver trumpets to announce the beginning of each month. Jews in Rome had no method to know when the new month was officially declared in Jerusalem. They arbitrarily picked the thirtieth day of each lunar month upon which to celebrate the new moon, although they knew this method might be one day in error compared to the authorities in Jerusalem. They did the best they could under their circumstances. They knew that their own sighting of the new crescent could be at most one day in error if the weather was clear so they could make an adjustment toward counting the next 30 days for the next “thirtieth Sabbath”.

When Saul was the king of Israel, there was a national headquarters near his dwelling, and the Aaronic priesthood officially announced the start of each month with the blowing of two silver trumpets nearby. When the Second Temple existed in the first century, the Aaronic priesthood also similarly declared the start of each month. In both situations it was necessary to depend on human witnesses for sighting the new crescent. The priesthood had the authority to make the decision after questioning witnesses. In order to avoid the danger of witnesses traveling at night, the waiting for questioning of witnesses would occur during the daytime on the thirtieth day of the ending month. The general population would often not know in advance whether witnesses would appear and their testimony would be accepted. Jewish society anticipated this event throughout the daytime of the thirtieth day because some witnesses might have to travel for a considerable distance. As soon as the two silver trumpets were blown, the priesthood would be able to perform their specific sacrifices, prayers, and songs related to the beginning of the month. In order for the general population to witness these ceremonies, they would have to be nearby waiting, although people who lived far off, such as in II Ki 4:23, would have a regional feast. It is clear that the whole thirtieth day would be a day of anticipation, not knowing in advance what would happen unless most people had seen the new moon the previous evening.

With this background, it will be easier to understand I Samuel 20, and that chapter will provide further clarification on the feast of the new moon.

[14] The Feast of the New Moon in I Samuel 20

At this time David has already experienced attempts by King Saul to kill him (I Sam 18:10-11; 19:9-10). His friend Jonathan has great difficulty believing that his father wants to kill David. In order to convince Jonathan that Saul wants to kill David, David devises a plan to cause Saul to reveal his attitude toward David in the presence of Jonathan. Notice that this plan involves a day count of three.

I Sam 20:5, 12, 19 all contain the word “third”. This is the key that proves that David and Jonathan expected that there would be two successive days of a festive meal at the king's table. In verses 27 and 34 the majority of translations are incorrect.

The Hebrew word for bread is *lechem*, and this word occurs in I Sam 20:24, 27. Yet *lechem* is often translated “meal” in this context. David was expected to appear at the king's table on two successive days to have a festive meal (*lechem*) associated with the beginning of the month. David and Jonathan expected that there would be two successive days of a feast. If the prior month had only 29 days this would be expected the majority of the time because the average length of a month is close to 29.5 days. However, during certain periods of the year there are astronomical reasons why there might be at least two 29-day months in a row or at least two 30-day months in a row.

At the beginning of I Samuel 20 when David and Jonathan were first speaking with one another, it becomes clear from a literal translation of verse 12, that the day of their initial conversation was counted as the first day. Then the daytime of the first festive meal at the king's table was counted as the second day. Then the daytime of the second festive meal is counted as the third day. This is called inclusive time reckoning, and this is surely used based on verse 12. The Hebrew words *machar* (4279 = tomorrow, in verses 5, 12, 18) and *me-macharat* (4283 = on the morrow, in verse 27) refer to the daytime portion of the day; this is normal usage for these words. In fact, most of the time that these words are used, the context shows activity beginning in the morning. I Sam 20:35 shows that the the festive meal began in the morning.

I Sam 20:12, “And Jonathan said to David, '[Before] YHWH [the] Almighty of Israel, when I have examined my father about this time tomorrow [and] the third [day], and behold [if his attitude is] good toward David, then shall I not send to you and reveal it to your ear?’”

Since David and Jonathan expected that there would be two successive days of a feast relating to the start of the new month, then why would they call “tomorrow” in verses 5 and 18 the new-moon? First of all, it must be understood that until the priests blow the

two silver trumpets on the thirtieth day, it is not known that it will be the actual day of the new-moon. The paraphrase of I Sam 20:27 by Josephus given soon implies that the meaning of “new-moon” (*chodesh*) in verses 5, 18, and 24 should be understood from that culture as meaning new-moon-feast, not necessarily the day to be declared the first day of the upcoming month.

I Sam 20:5, “Then David said to Jonathan, “Behold tomorrow [is the] new-moon-feast and I should surely sit with the king to eat. So let me go that I may hide myself in [the] field until the third evening.”

I Sam 20:18, “And Jonathan said to him: 'Tomorrow [is the] new-moon-feast and you will be missed because your seat will be empty.'”

I Sam 20:19, “And [in the] third [evening] you will go down quickly and go to the place that you hid yourself there in [the] day of work, and you shall remain by the stone Ezel.”

I Sam 20:24, “Then David hid himself in the field. And the new-moon-feast came, and the king seated himself to the meal to eat.”

When reading Josephus, one must be on guard for any reason that Josephus might have for distortion in his account of an event. In his description of I Samuel 20 it is difficult to see any reason why he might deliberately distort any technicalities of the event. I Samuel 20 should not have been a controversy among Jews in the time of Josephus. He was certainly living at a time when Hebrew was still spoken among the upper class in Jerusalem where he was reared in the first century. Josephus was born in the year 37, so he was 32 or 33 years old when the Temple was destroyed in 70.

Josephus corroborates the translation of *second new-moon* in his paraphrase of I Sam 20:27. On pages 283 and 285 of Josephus_5, Ant 6:236, we read, “But when, on the second day of the feast of the new moon, David again did not appear, he asked his son Jonathan why, both on the past day and on this, the son of Jesse had been absent from the festive meal.”

The Greek word that Josephus uses for “new moon” in the above translation is *noumeenia* (Strong's number 3561), not the Greek word *meen* (Strong's number 3376), which means “month”. Thus the NASB, taking the Hebrew syntax as it is, translates it so as to agree with Josephus who chose the Greek word for “new moon” rather than the Greek word for “month”. The William Whiston translation is very poor here because he translates it as though Josephus used the other Greek word (*meen*).

The next discussion involves the typically incorrect translation of verses 27 and 34

which Josephus has already solved.

The Hebrew syntax in verses 27 and 34 is the same for one phrase that is not like any place in the Hebrew Scriptures where a numbered day of the month is mentioned. The Hebrew word order is “the *chodesh* the second”, which occurs that way four times in the Hebrew Bible: I Sam 20:27, 34; I Ki 6:1; I Chr 27:4. In the latter two places it means “the second month”. This expression “the *chodesh* the second” does not have the Hebrew word *yom* for “day”, does not have a preposition attached to the beginning of the number, and has the number after the word *chodesh*. These three factors do not occur in any place where a numbered day of the month is mentioned in the Tanak. A Hebrew expression for a numbered day of the month occurs 98 times in the Bible. In 92 of these cases the Hebrew preposition *bh* (meaning “in” or “on”) precedes the number. In two of these cases the Hebrew preposition *ad* (meaning “until”) precedes the number. In 39 of these cases the Hebrew word *yom* (meaning “day”) occurs at the number. While there are a total of four cases (Ezra 3:6; 10:17; Est 9:19, 21) in the Tanak where a numbered day of the month is mentioned and no preposition is prefixed to the number, all of these cases do have the Hebrew word *yom*, and none of these four cases have the number after the word *chodesh*. There is no example in Scripture with the syntax as in I Sam 20:27, 34 to indicate that it could mean a numbered day of the month.

I Sam 20:27, “And it happened on the morrow of the new-moon-feast the second, [the] place of David was missed. Then Saul said to Jonathan his son, Why didn't [the] son of Jesse come to the meal either yesterday or today?”

I Sam 20:34 “And Jonathan arose from the table in fierce anger, and he did not eat food on [the] day of the new-moon-feast the second because he was grieving for David, for his father had dishonored him.”

I Sam 20:35, “Then in [the] morning it happened that Jonathan went out [into] the field toward [the] time-appointed [*moed*] by David, and a little boy [was] with him.

The morning in verse 35 shows that the festive meal had begun in the morning of the third day and Jonathan departed from that feast while it was still morning. Jonathan was hoping to find David before the planned time in the evening.

This shows an uncertainty of which day among two successive days would start the month. Hence no calculated calendar could have been used at this time of Israel's history. Ancient Israel did not employ predictive astronomy for their calendar.

[15] Psalm 81:3 and the Hebrew double word *b-keseh*

Ps 81:3, “Blow at [the] new-moon [2320 *chodesh*] [the] shofar, [and blow it] at [the] full-moon [3677 *b-keseh*] on [the] day of our feast.”

There is a prefixed preposition attached to *keseh*, and this should settle any doubt about its meaning when this is discussed in some detail.

Philo wrote in one place that the full moon occurs on the 14th day of the month, and in another place that the full moon occurs on the 15th day of the month. Instead of imagining that he was contradicting himself, it is best to understand that to Philo the full moon was not the exact full moon, but the approximately round moon. This is further corroborated by the translation of the Tanak into the Syriac Peshitta, where the Syriac word in this verse is also *keseh*, and other examples of *keseh* in the Peshitta show that it means near the middle of the month, but not necessarily precisely the middle of the month, so that it is not forced to indicate perfect roundness of the moon. The Syriac language is an offshoot of first century Aramaic, which has much in common with Hebrew. Thus *keseh* is a cognate word in Syriac and Hebrew.

The Hebrew preposition *bh* most typically means “in”, “at”, or “on”. The controversy to some people does not involve the meaning of this preposition, but instead, the meaning of *keseh* along with its attachment to this preposition.

The KJV translates *keseh* in this verse as “the time appointed”. This translation is based on Rashi's opinion from the middle ages. Rashi had an aversion for translating it full moon, so he claimed that the text was corrupted in one letter, and thus he promoted the theory that it meant “time appointed”. This should be rejected.

Modern translations of *keseh* as “full moon” are correct because (1) ancient Semitic languages have contexts that show cognate words to *keseh* with this meaning; (2) Aquila's literal translation from the early second century has this meaning; (3) the Syriac Peshitta has the cognate word here, which meant the approximate time of the middle of the month; and (4) Jerome's translation from the Tanak to Latin has the meaning “the middle of the month”, where this interpretation came from those Jews who taught Jerome Hebrew before 400 CE.

Three verses from the Psalms will be presented that have a sentence structure similar to Ps 81:3 to show that the reader need not insist that the full moon defines the new moon based upon the grammar of this verse. Hence it is permissible to add the words “and blow it” to the translation in order to give the correct sense to the reader. The sentence structure of Ps 81:3 has the following three characteristics:
(1) The Hebrew word for “and” does not exist in the verse.

- (2) The Hebrew has two or more prepositional phrases with the same preposition.
- (3) Only one verb occurs, and this precedes the prepositional phrases.

These characteristics apply to the following three verses, all translated according to YLT because it preserves the Hebrew sufficiently to note the grammar.

Ps 13:2. “Till when do I set counsels in my soul? Sorrow in my heart daily?” Here “soul” and “heart” are not identical. The phrases are not near synonyms.

Ps 50:9, “I take not from thy house a bullock, From thy folds he goats.” Here “thy house” and “thy folds” are not identical. The phrases are not near synonyms.

Ps 116:8, “For Thou hast delivered my soul from death, My eyes from tears, my feet from overthrowing.” Here “death”, “tears”, and “overflowing” are not identical. The phrases are not near synonyms.

These poetic examples show that the two prepositional phrases in Ps 81:3 need not be near synonyms on the basis of the grammar.

I have heard the claim that *b-keseh* means “at its covering”, and this is used to help support the claim that the new-moon is the conjunction. Note the following.

- (1) Gen 1:14-15 refutes the use of the conjunction to determine the beginning of a biblical month because the conjunction is based on a calculation, and this is not a light.
- (2) The time between the old crescent and the new crescent can allow from one to three nights during which the moon cannot be seen under clear weather conditions. In practice, this means that the approximate time of the conjunction could not have been known without a very complex computation.
- (3) According to the known history of astronomy at the time of Moses, neither the Israelites, nor the Egyptians, nor the Babylonians had the ability to calculate the time of the conjunction.
- (4) From Isaiah 47:13 the use of *chodesh* shows that the Babylonian new moon and the Israelite new moon were the same, and the Babylonian new moon began with the sighting of the new crescent. This is contrary to the use of the conjunction.
- (5) Ezra 6:15 and Neh 6:15 use the Babylonian month names from Jerusalem, and this use of month names that avoid the conjunction is also contrary to the use of the

conjunction.

(6) A careful study of I Samuel 20 shows that they did not know in advance how many days there would be in the month that was ending. Thus the conjunction was not used to determine the start of a month.

(7) According to Philo of Alexandria the Jewish month began with the sighting of the new crescent after the conjunction.

(8) The word *keseh* in Ps 81:3 cannot be the verb *kasah* (3680, having the meaning “to cover”) for grammatical reasons to be explained next.

The only way that the verb *kasah* (3680), meaning “to cover” or “to conceal”, can have the preposition *bh* prefixed to it (as it is in Ps 81:3) is if the verb has the infinitive construct form. The infinitive construct form of this verb is *ksoht*, not *keseh*. The form *ksoht* does not occur in Ps 81:3. Hence the verb *kasah* [3680] cannot be the Hebrew word in Ps 81:3. It so happens that a different grammatical form of this verb does look like *keseh*, but this is invalid grammar, so it simply cannot be the word here. Two references showing that when the preposition *bh* is prefixed to a verb, that verb must have the infinitive construct form are now provided to the reader.

(1) Note 2 on page 85 of the biblical Hebrew grammar book by William Harper states, “Only to the Infinitive Construct may prepositions be prefixed or suffixes added.”

(2) Pages 88-91 of BDB discusses the preposition *bh* in its various uses. Beginning at the bottom of page 90 under category V, it states, “Followed by an inf. c.” This is an abbreviation for “infinitive construct”, and hence this category of meaning includes a verb that follows *bh*. Some other meanings of *bh* relate to the opposite order when a verb comes first and *bh* comes second (beyond the verb and not attached to the verb). Only category V pertains to *bh* and a verb following it.

[16] From Where should the New Crescent be Sighted?

All biblical contexts that mention the festivals seem to take it for granted that there are no conflicts and that there is just one day that is holy for each specific commanded assembly. The only exception might be the start of the seventh month where ancient Israel would occasionally keep two successive days unless the first day of the two was confirmed to be the first day of the month (I Sam 20). The Aaronic priesthood was the authority that provided unity (Ps 133). They were only supposed to dwell within Israel (Num 35:2-8).

The borderline for visibility is wide and fuzzy. Humidity and a great height above sea level can even cause gaps in visibility. The wide fuzzy path of first visibility of the new crescent not only has gaps, but its path on the surface of the earth is curved and the curve varies from month to month for any one place. Any rule to reconcile this is arbitrary and subject to debate.

We do not have any Aaronic priesthood functioning today, but if we are given the same information that they could have through postings on web sites, then we could presumably arrive at the same decision they would, thus simulating the priesthood..

The way to attain peace and unity is to use the implication of Paul in Acts 18:21 in which he showed respect for the determination of the calendar by the Levitical priesthood by wanting to be there for the feast.

The problems with using local visibility are:

- (1) How is it defined in today's world?
- (2) How is it consistent with Num 10:10; Isa 2:3; Micah 4:2 where the priests determine the new month from Israel?
- (3) How can it avoid confusion and disunity (Ps 133)?
- (4) Does it avoid arbitrary decisions of distance for accepting witnesses?
- (5) It will sometimes cause part of the world to keep the festivals one month later than other parts as in 2007.

The advantages of using visibility of the new crescent within Israel are:

- (1) The definition is simple.
- (2) It is consistent with Num 10:10; Isa 2:3; Micah 4:2.
- (3) It is unifying and avoids confusion – Ps 133, thus respecting the Aaronic priesthood.
- (4) Over 90 percent of the time it is not a borderline situation and it is predictable.

The use of the international date line (IDL) for the 24-hour day, starting with sundown as it gradually sweeps across the globe, has attained worldwide acceptance by keepers of the Sabbath. The sighting of the new crescent from within the boundaries of Israel should determine the day, and this day should be accepted around the world based upon the IDL with sundown as it sweeps across the globe. Places to the east of Israel may sometimes have to observe two days for the first day of the seventh month as was done according to I Sam 20.

[17] Summary of Reasons why the Conjunction did not begin the Biblical Month

- (1) Gen 1:14 speaks of lights in the heavens to determine the appointed times (*moedim*), and lights are not the computation of a point in the darkness. With clear weather there can be from one to three nights of not seeing the moon surrounding the time of the conjunction.
- (2) Excavations from ancient Israel show that they copied the numbering system from ancient Egypt which is not a positional numbering system. It had no positional values with a base and a zero, thus making general long division of fractions very cumbersome, and this is required for computing the conjunction. Ancient Egypt did not have mathematical astronomy, and did not compute the conjunction. The Babylonians did not develop methods to compute the conjunction until about 1000 years after Moses. Conjectures that Moses could compute the conjunction are a fantasy. The day of the conjunction cannot be known from the day of the full moon because of the elliptical orbit of the moon and the fact that the moon does not move at a uniform angular speed.
- (3) I Samuel 20 shows that David and Jonathan did not know which of the next two days would start the new month. If a computation of the conjunction had been used, they would have known the day.
- (4) The future Day of YHWH will be a period of time when the visibility of the heavenly lights will be greatly diminished. Hence the moon will not be visible near the days when it is thin. At this time Scripture reveals that 1260 days will be 42 months, thus making each month 30 days. This contradicts a prediction of the conjunction, which averages a little more than 29.5 days per month.
- (5) Isa 47:13 uses the Hebrew word *chodesh* for the start of the month where it is applied to the Babylonian calendar, which began each month with the sighting of the new crescent, but not permitting a month to have more than 30 days when the weather is poor for sighting. Ezra 6:15 and Neh 6:15 uses the Babylonian month names in the context of Jerusalem. Israel adopted the Babylonian month names for their months. All this indicates that the month in Israel began with the new crescent, not the conjunction. Nehemiah 8:2, 9 shows that after the return from the Babylonian exile, the people in Jerusalem under the leadership of the priest Ezra and the governor Nehemiah correctly kept the holy day of the first day of the seventh month. Hence they did not adopt a pagan beginning of the month in Babylon.
- (6) Philo of Alexandria from the first century is a witness that the Jews according to his understanding began each month with the sighting of the new crescent.

[18] The Sun is Required in Gen 1:14 for Years

Probing into Gen 1:14 with regard to its last word *years*, what could the lights in the heavens involve for years? Candidates include the sun, moon, stars, planets, and comets. The fact that the Feast of Tabernacles relates to a time literally described as “*in your gathering of the produce*” (the Hebrew does not actually have a past tense for this in Ex

23:16; Lev 23:39; Deut 16:13), implies that the biblical year closely approximates the agricultural year, so that the long-term average length of the biblical year is the same as the ordinary tropical year, which is about 365.2422 days. This eliminates the planets and comets from consideration for *years*, because their pattern of visibility has no relation to the period of the tropical year. In fact this also rules out the stars because the phenomenon described in astronomy books under the name "*precession of the equinoxes*" causes the time of the visibility of the constellations (certain star clusters that were given names) to advance 14.1 days for each 1000 tropical years. With the elimination of the stars, planets, and comets, only the sun and moon are left to consider. The moon determines the start of the months, but it does not determine which month is the first month. By process of natural elimination, the sun must be involved for the determination of years from the literal and direct viewpoint of Gen 1:14.

[19] Light Triggers and the Vernal Equinox

In order to understand what is intended from Gen 1:14 for *years*, we should look for a consistent pattern in what we already know about the beginning of *days* and *months*. Light from the heavenly bodies is a trigger for the events described. The light trigger for distinguishing a new day is the transition from light to dark of the sun. The light trigger for beginning a new month is the new crescent in the western sky. Gen 1:14 declares that the lights themselves determine these matters, not a prediction of these lights, and not an approximate calculation of these lights.

For these two events (start of a day and start of a month):

- (1) The light trigger occurs at the beginning of the event; and
- (2) Only the lights themselves, no advance prediction or calculation is present. We should expect these two characteristics of a light trigger to apply to the determination of *years*. This continues the pattern.

To continue this biblical pattern we should expect these two characteristics of a light trigger to apply to the determination of each new year. Deut 11:12 has the expression "*from the beginning of the year*", showing that a biblical year has a definite beginning. Num 28:14 has the expression "*each month throughout the months of the year*". Hence a year consists of whole months, and the months are numbered as seen in Lev 23. We need to consider a light trigger that determines the first month. To be consistent with the pattern having the two characteristics described, we should seek a light trigger that identifies which new crescent is the first in the year, it should occur at or shortly before that event, and the trigger should not require advance prediction.

As already mentioned, the sun must be involved. There are only four repeatable signs of the sun that recur in an annual pattern: the two equinoxes and the two solstices. Among these four, only the vernal equinox fits the time of the year that the Israelites left Egypt

for the following reason.

Jer 36:22, “Now the king was sitting in the winter house in the ninth month, with [a fire] burning in the hearth before him.”

This shows that the ninth month occurs in the winter. Since there are roughly three months per season, this would imply that the sixth month occurs in the autumn, the third month occurs in the summer, and the first month occurs in the spring. Of course the spring begins with the vernal equinox. Another Scripture that corroborates the involvement of the vernal equinox is Ex 34:22, which calls the Feast of Weeks the “*firstfruits of the harvest of wheat*”. This occurs in Israel from about mid-May through early July. If you back up from this 50 days plus about another 20 with consideration for the count to the Feast of Weeks, that is about two months and 10 days. This also approximates the time of the vernal equinox. Hence two separate biblical identifiers lead to the vernal equinox. The other three signs of the sun are too far away in time to be candidates. Thus Scriptural descriptive approximations are used to point to the vernal equinox as the only candidate for Gen 1:14.

Therefore, from Gen 1:14 (along with some helping Scriptures) we note that the vernal equinox is the trigger of light from the sun that points to the new crescent that begins the first month.

[20] What is the Biblical Vernal Equinox?

In this modern age astronomers define some astronomical terms in a way that would have been impossible for ancient people. This is primarily due to the fact that modern science has a three dimensional view of the solar system that ancient people did not have, and modern science recognizes that the sun is the body around which the other heavenly bodies of the solar system revolve compared to the ancient view that the sun and stars circled the earth (except for two known ancient astronomers whose views were not accepted). Another reason for differences in ancient definitions is that ancient people sometimes made incorrect assumptions besides the assumption that the sun and planets encircled the earth. Comparatively few people among today's laymen have examined the ancient meaning of the vernal equinox, and hence there is much confusion over the meaning of the vernal equinox.

What is the meaning of the vernal equinox from the biblical viewpoint? From page 353 of Ruggles 2005 we note the following about the three greatest pyramids in Egypt, all from Giza, “The sides of each of the Giza pyramids were carefully aligned upon the cardinal directions (north-south or east-west). This alignment followed established practice, but the accuracy with which it was achieved at Giza is truly impressive, particularly in the case of Khufu's pyramid [the greatest one]. Each of its sides is cardinally aligned to within six arc minutes, or one-tenth of a degree. This is equivalent to no more than one-fifth of the apparent diameter of the sun or moon. The other

pyramids are only slightly less well aligned. Khafre's to within about eight arc minutes and Menkaure's to within sixteen.”

Estimates are that these pyramids were built before the time of Moses. In fact, radiocarbon dating, which makes some assumptions for its accuracy, dates these three pyramids to about 4500 BCE, near the time of the flood. The earth's axis and tilt has remained virtually constant for those years despite all the earthquakes and other upheavals this planet experienced because those pyramids have kept their east-west line in agreement with the equinoxes. When Ruggles used the term *equinox* in the above quote without any qualification, as a modern scientist he used it in a sense that agrees *in time* with the modern definition of equinox.

Ancient peoples could determine the true east-west line based upon the the fact that on the days of the equinoxes (and only on those days), the sun's path (and the sun's shadow of a vertically hanging rope) falls along the same straight line all day from sunrise to sunset. This is the straight line definition of the equinoxes. The vernal equinox is the day of the equinox when the weather is changing from cold toward hot in the northern hemisphere where Israel lies. This definition holds true for all areas except near the poles of the earth.

There is a spiritual significance to this straight line meaning of the vernal equinox. The straight line all day long of the sun's shadow relates to the straight path of your behavior that does not go to the right or the left.

Deut 5:32, “And you shall be careful to do as YHWH your Almighty commanded you. You shall not turn aside to the right or the left.”

The equinox represents a path of righteousness because it shows a straight line path all day. These are the only days on which it symbolizes being straight.

Mal 4:2, “But for you who fear My name the *sun* of righteousness will rise with healing in its wings, and you will go forth and skip about like calves from the stall.”

This indicates sinlessness and perfection, and the authority to make a person righteous and healthy. Specifically the vernal equinox shows the perfect time to await the first month. Any other clock for this purpose is a counterfeit.

The modern definition of the equinox is equivalent to the ancient method of seeking the day on which the sun's shadow makes a straight line all day.

Concerning the extremely high accuracy of aligning the largest ancient Egyptian pyramids with the east-west direction, and hence a precise knowledge of the time of the equinoxes by the ancient Egyptians, Neugebauer 1980 wrote on pages 1-2, “It is therefore perhaps permissible to suggest as a possible method a procedure which combines greatest simplicity with high accuracy, without astronomical theory whatsoever beyond the primitive experience of symmetry of shadows in the course of

one day.” A diagram and further discussion by Neugebauer explain how the Egyptians could have achieved the accurate alignments without any mathematically sophisticated theory. The reason he sought and proposed this method is simply that his studies into ancient Egyptian mathematics and astronomy did not hint at any Egyptian ability to accurately predict the time of the equinoxes.

The concept of equal daytime and nighttime is really not part of what is implied in Gen 1:14 for lights in the heavens for ancient peoples. Equal daytime and nighttime is not a light marker when you stop to think about it!! Instead, this concept of equal daytime and nighttime is an accurate *measure of time*, which is not a light marker. Night is not a light. The abstract concept of equal daytime and nighttime requires a measure of nighttime compared with a measure of daytime. This requires the existence of some instrument that can accurately measure time to almost one minute of accuracy in a day. During the days near the equinoxes, the length of daylight changes by two minutes per day, so that some instrument that can accurately measure time to a resolution less than this would be required to make a true judgment of equal daytime and nighttime. A measure of time for a night is not a light. The concept of equal daytime and nighttime is really foreign to Gen 1:14.

Until the year 1656 when Christiaan Huygens invented the pendulum clock, there were no clocks accurate enough to determine when daytime and nighttime were equal. The biblical equinox is the straight line path all day, not equal daytime with nighttime. Many ancient peoples made the assumption that daytime and nighttime were equal on the days of the equinoxes, but this assumption was not capable of being verified in practice in ancient times. This incorrect ancient assumption should be rejected as the biblical meaning of the equinox. Only the practical meaning that could be physically determined should be accepted, and this is the straight line path of the sun all day. The straight line path would determine the same day all over the earth except near the poles. In contrast to this, the day of equal daytime and nighttime varies by as much as several days depending on the latitude of the observer on the earth because the refraction of the sun's light rays differs according to the latitude, and refraction will alter the length of daytime. Even Talmudic literature refers to the time of the equinoxes as the time of equal daytime and nighttime, showing a false assumption that is contrary to the naturally intended meaning of Gen 1:14.

[21] Central Passover Observance Requires Knowledge of the first Month at its Start

Consider why the vernal equinox must occur at or shortly before the first new crescent to fulfill the trigger pattern and avoid advance prediction. For example, let us suppose that someone proposes that the first new crescent is the one for which the 15th day of that month is on or after the vernal equinox. That would mean when the new crescent for that month is seen, one would have to know in advance that when the 15th day arrives, it

will be on or after the vernal equinox. Someone may argue why it should matter whether we know in advance. Why can't people merely wait until the 15th day arrives and compare that with the vernal equinox? In other words, why is it necessary to know at the beginning of the month whether it is the first month or the 13th? Consider the people in ancient Israel and what they were expected to do for the first month.

When people are expected to leave their homes to attend the Passover festival in one central location (Deut 12:5-7) throughout all Israel, they need to know at the beginning of the month whether it is the first month or the 13th month so they can make preparations of clothing, food, exchange of goods for silver, wagon repair, long distance travel over hilly land (Deut 11:11, and Jerusalem is about 2500 feet above sea level), etc. The whole family was ideally expected to go (Ex 12:25-27), so that travel was not rapid. They must prepare and leave in advance in order to arrive for the Passover. Gen 1:14 literally speaks of the lights in the heavens, not predicted lights in the heaven.

The conclusion is that the new crescent that occurs on or after the vernal equinox begins the first month. This definition for the first month is a natural result from Gen 1:14 and a few other Scriptures that relate to the year, such as Deut 12:5-7.

[22] Adoption of the Babylonian Month Names in Jerusalem, and the Vernal Equinox

The conclusion from Gen 1:14 that the first month is the one whose first day occurs on or after the vernal equinox will now be corroborated with a historical event that has a basis from Scripture. The biblical books of Ezra and Nehemiah show the adoption of the Babylonian calendar's month names in the context of Jerusalem as previously discussed concerning the beginning of each month. In the fifth century when the Babylonian calendar became patterned (from 499 BCE onward), it began its first month on or after the vernal equinox. This agrees with the understanding described in the last chapter based upon central observance of the Passover. Biblical books written before 499 BCE, such as Daniel, did not use month names from the Babylonian calendar.

[23] Book of Esther shows Basic Agreement of the Babylonian and Jewish Calendar

During the time that Esther was queen, scholars are uncertain who the Persian king was that is known in secular history. The viewpoints that are most in harmony with the Scripture are all in the fifth century BCE. Beginning in 499 BCE, the Babylonian calendar first became synchronized with the vernal equinox.

Est 9:20-21 [NASB], "Then Mordecai recorded these events, and he sent letters to all the Jews who were in all the provinces of King Ahasuerus, both near and far [this would include Judah], obliging them to celebrate the 14th day of the month Adar, and the 15th day of the same month annually..." Est 9:1 states that the 12th month is Adar. The

context is the region called Susa (Est 9:6), and Est 9:26-32 shows this to be the origin of the Jewish festival of Purim. Ezra 6:15 mentions the same month name Adar in Jerusalem taken from the Babylonian calendar's 12th month. Since the above refers to Adar in all the provinces and this name Adar was also used in Jerusalem (one of the provinces), this name should almost always refer to the same lunar month, whether in Persia (the Babylonian calendar) or in the province of Judea.

[24] The Passover Letter shows the Jerusalem Nisan was the Babylonian Nisanu

In southern Egypt, the Persian Empire controlled the city of Scyene and the military base on the island of Elephantine where ancient documents have been discovered with events dated in both the Egyptian civil calendar and the Babylonian calendar. Before 1990 there was a debate within the scholarly community concerning whether these documents were dated using the Jewish calendar or the Babylonian calendar, but since the 1990 paper by Bezalel Porten was published, we have solid grounds for the scholarly acceptance that the Babylonian calendar was used in Scyene and Elephantine.

In Neh 13:30 the words of Nehemiah are, “Thus I purified them [the people in Judah] from everything foreign...” Nehemiah had the authority to keep the religion pure even though Judah was part of the Persian Empire. Persia allowed the different peoples within its empire to keep their own religion.

We understand how the ancient Babylonian calendar works because their eclipse records agree with modern computer simulation data for those eclipses. There are hundreds of eclipse records from ancient Babylon between 747 BCE and the first century. About 200 of them also have the time of day based on their water clocks whose smallest unit of time was four minutes (= 1/360 of one day). Using computers and the formulas of astronomy to compute the time of those eclipses that were time-stamped by the ancient astronomers, John M. Steele has published papers showing that the accuracy of their water clocks averaged eight minutes for the time of those eclipses!! The only way that all that data could work out so precisely is that modern scholars have certainly proved that we know the dates of the ancient Babylonian calendar except for some one day possibilities based on rain or clouds hindering the sighting of the new crescent.

One of the Aramaic letters found at Elephantine is known in scholarly circles today as the Passover Papyrus. The Hebrew-Aramaic alphabetic characters in this letter along with an English translation are found on pages 56-57 of Lindenberg. In the following quotations from the letter, the square brackets and the contents within them appear on page 57 of Lindenberg. The letter contains “This year, year five of King Darius”, which dates the letter in 419/418 BCE. There are gaps in the letter because it is poorly

preserved. The addressing of the letter says “[To] my brothers Yedanyah and his colleagues, the Jewish garrison, from your brother Hananyah”. It was written from one Jew in friendship to the Jews on the island with whom the author had familiarity. Part of the preserved text of the letter says, “Be scrupulously pure. Do not [do] any work [...]. Do not drink any [...] nor [eat] anything leavened [... at] sunset until the twenty-first day of Nisan [...]”. Another translation of this same segment of this letter is on page 283 of Whitters where he adds in square brackets some guesses in gaps in the text as follows, “be pure and take heed. [Do n]o work [on the 15th and the 21st day, no]r drink [fermented drink, nor eat] anything [in] which the[re] is leaven [from the 14th at] sundown until the 21st of Nis”. Note that the final letter of Nisan is missing in the poorly preserved papyrus so only “Nis” is shown. This provides historical evidence that after the return from exile under Ezra and Nehemiah, Jews named the first month Nisan as a substitute for the word *aviv*. On page 283 Whitters comments, “The letter came from one Hananiah, who apparently wanted the Jews in Egypt to celebrate Passover and Unleavened Bread appropriately. The address and greeting rule out a local Egyptian official or Persian overlord.” If the name Nisan was not significant for the first month to Jews, the letter could simply have said the first month or used an expression with Abib (Hebrew *aviv*) to signify the first month. This should be accepted as ancient historical evidence outside the Tanak that Jews of the fifth century BCE considered the Babylonian month name Nisanu as equivalent to the first month of their year. Since the Babylonian calendar at that time in history began its first month on or after the equinox, the same should apply to the Jewish calendar at that time.

[25] Philo explains when the First Month of the Biblical Year begins

Philo wrote on page 151 of Philo_7 (Special Laws I.90), “Who else could have shewn us nights and days and months and years and time in general except the revolutions, harmonious and grand beyond all description, of the sun and the moon and the other stars?” ***Notice that the way Philo asks this question emphatically shows that agriculture is not the way to determine years and the first month in his mind from the early first century.*** We should not treat Philo as if he is equivalent to the authority of the Tanak, but he is a witness from Alexandria in the early first century.

Philo would accept the Greek use of the first day of the sign of the zodiac “Aries” (not the visible constellation) as the day of the vernal equinox. This is different from most of the Roman Empire in the first century where the eighth day of Aries (Latin word meaning ram) was taken as the vernal equinox.

Philo discusses Ex 12:2 on pages 2-5 of Philo_QE (Exodus, Book 1.1). On page 2 he wrote, “This month (shall be) for you the beginning of months; it is the first in the

months of the year.’ (Scripture) thinks it proper to reckon the cycle of months from the vernal equinox. Moreover, (this month) is said to be the ‘first’ and the ‘beginning’ by synonymy, since these (terms) are explained by each other, for it is said to be the first in order and in power; similarly that time which proceeds from the vernal equinox also appears (as) the beginning both in order and in power, in the same way as the head (is the beginning) of a living creature. And thus those who are learned in astronomy have given this name [the Ram] to the before-mentioned time [the vernal equinox]. For they [astronomers] call the Ram the head of the zodiac since in it the sun appears to produce the vernal equinox.” Then on page 3 he writes, “And that (Scripture) presupposes the vernal equinox to be the beginning of the cycle of months is clear from the notions of time held in the ordinances and traditions of various nations.”

Concerning this last sentence, page 391 of Samuel 1988 states, “In the areas of Syria and the East controlled by the Seleucid kings, the Macedonian calendar was adjusted to make its months coincide with the months of the Babylonian calendar, which was in turn regulated locally by a nineteen-year cycle. The system was in general use in the East, and persisted in an adjusted form in cities all over the eastern regions well into the period of Roman domination.” The first day of Nisan in the Babylonian calendar since 499 BCE never fell before the vernal equinox.

When Philo speaks of the “traditions of various nations”, from Samuel’s statement he is referring to the continuation of the Babylonian calendar whose first month did not begin before the day of the vernal equinox. This is the only place where Philo makes a statement about the first month that is capable of some explicit comparison with the vernal equinox.

[26] Summary of Evidence that favors the First Month on or after the Vernal Equinox

- (1) Gen 1:14-18; Ex 34:22; Jer 36:22 were explained to show that a light trigger from a heavenly light determines the beginning of the year, and specifically the light trigger is the vernal equinox. The new crescent on or after the day of the vernal equinox begins the first month of the year, using Deut 12:5-7 (“one place” and the needed time to arrive).
- (2) The Babylonian calendar's first month was named Nisanu, which the Jews transliterated into Hebrew as Nisan. From 499 BCE onward the Babylonian calendar did not permit Nisan to begin before the vernal equinox. Ezra 6:15; Neh 6:15 show the use of Babylonian month names in Jerusalem, yet with Jews using these names throughout the Persian Empire.
- (3) Est 9:1, 20-21 shows the twelfth month to be Adar in the whole Persian Empire.
- (4) The Passover Letter in 419/418 BCE, written from a Jew in Judea to Jews on the island of Elephantine near the southern border of Egypt where Persians administered the

Babylonian calendar, explained that Nisan was the month of Passover. This shows that the Jew who wrote the letter from Judea expected that Nisan in the Babylonian calendar would be the same as Nisan in Judea, since that was the month of Passover. Thus the month names in Jerusalem were expected to agree with the same month names in Persia. (5) Philo of Alexandria in the first century states that the vernal equinox begins the first month as in other nations (those toward the east still used the Babylonian calendar, but often with Macedonian month names due to Greek influence).

[27] Claims that the Barley in Israel determines the First Month

A. Explanation of the Meaning of Abib (= *aviv*)

Ex 9:31, “And the flax and the barley were ruined because the barley [was in the] ear [= *aviv*] and the flax [was in] bud.”

Ex 9:32, “But the wheat and the spelt were not ruined, for they [ripen] late.”

The full context of the hail plague in Egypt in Exodus 9 shows that all the barley was ruined throughout all the land of Egypt. Barley was grown near the banks of the Nile River for a distance of 500 miles from the Mediterranean Sea southward. It was warmer in the south of Egypt than in the north, so that the period of variation in the ripening of barley in Egypt before the Aswan Dam was built was five weeks. For all of the five weeks variation in ripening, the word *aviv* is used in Ex 9:31 to describe the state of the barley. This length of variation in the growth of barley shows that *aviv* in Scripture applies to a wide range of stages of growth of barley rather than only one stage of ripening. Five weeks is longer than one month. Therefore, *aviv* is much too loose a word to pin down only one month to which it may refer. The variation of climate in Israel causes the ripening of barley to vary over a seven week period depending on the location in Israel, and the meaning of *aviv* is very loose, covering several stages of growth of barley. This is too wide a range to pin down only one month from such a vague description. In order to use **barley as a trigger** to determine the first month, it would have to signify a clearly discernible objective test in Israel that would provide a “yes or no” decision by the end of a month that would be the last of the months of the year that was ending. Since the meaning of *aviv* is wide rather than narrow, such a **trigger** is impossible with the use of barley. The word *aviv* means “ear or ears [of grain]”. Examples of texts in ancient Semitic languages show that the last word in verse 32 should **not** be translated “dark”.

B. In the context of the hail plague, if the barley had been ripe in far northern Egypt, it would have been harvested already in far southern Egypt where it was five weeks further advanced in growth. This shows that some of the barley was unripe yet called *aviv*.

C. Heat, the Atmosphere, the Sun, and the Ripening of Barley

On the sunlit side of the moon, the temperature on the surface of the moon is a little above that of boiling water because of the energy from the sun. This heat is caused by the lack of an atmosphere on the moon. It is the presence of an atmosphere on the earth that reduces the heat energy from the sun differently at different times of the year in different places on the earth. It is actually the atmospheric conditions on earth that are especially influenced by the tilt of the earth's axis that enables the temperature to warm as the winter is ending in Israel. Thus the atmospheric conditions on earth allow an increase in heat and thereby enables the winter barley to grow and ripen. In ancient Israel as shown by usage in the Scripture, it was understood that the sun was responsible for heat in the summer, but the word for light was not recognized as being responsible for heat. The word that was repeatedly stressed in Gen 1:14-18 is *light*, not heat. The biblical trigger is light, not heat. The word “**sun**” (indicative of heat) is not used in Gen 1:14-18. Thus Gen 1:14-18 is genuinely an astronomical context, not an agricultural context because of its use of light and its avoidance of heat. Heat would indicate an influence on crops such as barley. Light does not do this as it is used in Scripture. A primary point is also that the sun is **not** responsible for the ripening of barley, but instead it is the increase in heat that is caused by the **atmosphere** on the earth. Without the atmosphere, the surface on the earth would exceed the temperature of boiling water. Of course ancient people would not know this, and of course without the sun there would be no heat at all. The point here is that the subject in the sentence of Gen 1:14-15 is heavenly bodies and light from them. The context is astronomy with appointed-times, not agriculture. A clear light trigger is needed from this context. The claim that Gen 1:14-15 is to be interpreted in a manner that makes the light from the sun merely an indirect source for the ripening of barley, transforms this from a literal context to a figurative context.

D. The Context of the first Passover in the Promised Land

When the Israelites celebrated the Passover (Josh 5:10-12) very soon after they first crossed over the Jordan River, they did not go looking for the state of the barley in various regions of Israel. They were in the lower Jordan River valley where barley regularly ripens the soonest in the seven weeks variation within Israel. Barley is in the ear (*aviv*) in February in the lower Jordan River valley. While no one who wants to use barley to begin the first month seems to want to begin the first month in February, that is what such a viewpoint would favor based on the wide use in the meaning of *aviv* indicated by the hail plague. Those who favor the use of barley to determine the first month claim that *aviv* refers to **only one stage** of the ripening of barley, which

contradicts its use in the hail plague throughout all of Egypt.

E. The Context of the firstfruits offering in Lev 2:14

Lev 2:14, “And if you-offer a cereal-offering of firstfruits [= *bikurim*] to YHWH, you-shall-offer ears [= *aviv*] roasted/parched-grain [= *kali*] with fire, [that is] fresh-grain [*karmel*] crushed-grain [for a] cereal-offering of your-firstfruits [= *bikurim*];

Lev 2:15, and you-shall-put oil upon-it and lay frankincense upon-it; it [is] an offering.

Lev 2:16, And the priest shall burn its-memorial-portion from its-crushed grain and from its-oil with all its-frankincense, an [offering by] fire to YHWH.”

Nothing in the description of the firstfruits offering in Lev 2:14 restricts *aviv* to only one stage of the ripening of barley. This is further evidence of the inability to use the concept of *aviv* as a narrowly defined trigger for a “yes or no” objective decision. Since Scripture does give the clear meaning from the hail plague that *aviv* is broad in the scope of the stages of ripening of the ears or heads, it is not suitable as a trigger for Gen 1:14 where years is concerned.

F. The Definite Article before *aviv* in the “month of *aviv*”

In the Hebrew text where all six places in which the “month of *aviv*” occurs, the Hebrew definite article exists before the word *aviv*. This is also true of the month name Ethanim (the seventh month) in I Ki 8:2. What distinguishes the first month and the seventh month from all other months is that the greatest number of festivals fall in those months. In fact, the only festival that occurs outside of those two months is the Feast of Weeks. We have no historical record that explains the reason that these two month names have the definite article before them, so people are free to speculate upon the reason. One reasonable speculation is that these months are special in the sense that they contain most of the festivals. Reasons for having a definite article before Hebrew nouns vary, unlike typical use of the English language. Some proponents in favor of using the barley to determine the first month claim that the definite article before *aviv* proves that the description implied by the word *aviv* is so specific that it cannot apply to any other month. This is a false speculation because the use of *aviv* in the context of the hail plague shows that it applies to multiple stages of the growth of barley, which spans five weeks in Egypt. The claim that the use of the definite article before Ethanim makes its descriptive meaning unique to defining the seventh month (along with the corresponding claim about the first month), is shown to be false because there are always five months between the first month and the seventh month, and how could a description always guarantee exactly five months? The evidence is that the use of *aviv* in “month of *aviv*” is intended to be a characteristic of that month, but not so unique that it

specifically defines the month in a unique way.

G. Implications of the Vague Context of Ex 12:2

Ex 12:2, “This month [shall be] to you [the] beginning of [the] months. It [shall be the] first of [the] months of the year.”

Ex 13:4, “This day you are going out in the month of *aviv*.”

Ex 34:18, “You shall keep [the] feast of the *matsot*. Seven days you shall eat *matsot*, which I commanded you at [the] appointed-time of the month of *aviv* because in the month of *aviv* you went out from Egypt.”

Some proponents of the use of barley to determine the first month claim that the context (placement) of Ex 12:2 in Scripture proves that the first month is determined by the description embodied in the word *aviv*. The problem with this claim is simply that the use of the word *aviv* that precedes this (Ex 9:31 on the hail plague) and that follows this (Ex 13:4 “month of *aviv*”) are not in the same context with Ex 12:2. Based upon the reports of ripe barley and early ears of barley from Egypt, the hail plague occurred between mid-January and mid-February when translated into our modern calendar. This is well before the time context of Ex 12:2. In Ex 12:2 there is advance instruction of what will soon happen in the first month. Then there is a discussion of what did happen. Then there is a discussion of what to do in future years. After this, Ex 13:4 occurs. Thus Ex 13:4 is outside the context of Ex 12:2. It is merely wishful thinking to claim that *aviv* is in the context of Ex 12:2. Moses should not be expected to be thinking of barley in Israel at the words of Ex 12:2 because he had never before been in the land of Israel to see barley there. It requires speculation to explain the placement of the first month on the basis of Ex 12:2 and Ex 34:18.

H. Wide Variation in the use of *aviv* applied to Israel

With the seven week variation in the time for the general harvest of barley in Israel based upon the different temperature ranges in that land, the word *aviv* applies to barley in Israel from sometime in February to sometime in June. Hence the word *aviv* in the phrase “month of *aviv*” does not uniquely apply to the first month as a description.

I. Does the word “harvest” in Lev 23:10 mean “harvest-ready”?

Lev 23:10, “Speak to [the] children of Israel and say to them, ‘When you come into the land which I am going to give to you and reap its harvest, then you shall bring [the] first [= *raysheet*] sheaf [= *omer*] of your harvest to the priest.

Lev 23:11, “And he shall wave the sheaf before YHWH for your acceptance on the

morrow of the Sabbath the priest shall wave it,

Lev 23:12, “on [the] day that you wave the sheaf you shall offer a year old male lamb without blemish for a burnt offering to YHWH

Lev 23:13, “and a cereal offering with it, two-tenths [of an ephah] of fine flour mixed with oil, an offering by fire to YHWH, a pleasing odor and its drink offering of a fourth of a hin of wine.

Lev 23:14, “You shall not eat bread, nor roasted/parched-grain, nor fresh grain until this same day, until you have brought [the] offering of your Almighty. It is a statute forever throughout your generations in all your dwellings.”

The wave sheaf offering is discussed in Lev 23: 9-16; Deut 16:9-10 where the word “harvest” occurs in Lev 23:10. BDB provides three meanings for this Hebrew word translated “harvest”. It does not have to mean “harvest-ready” as relating to the time for the general harvest in one location or many locations in Israel. Concerning the phrase “When you come into the land which I am going to give to you”, it means “in the years that begin with your entrance into the land promised to Abraham, Isaac, and Jacob”. One of the meanings of the word “harvest” is the crop itself, without regard to its state of ripeness. Whatever you cut is part of the harvest regardless of its stage of ripeness.

Giving the sheaf to the priest is a ceremonial act. The word “sheaf” is explained by its translation in the Septuagint as *dragma*. The Septuagint was made at a time when this ceremony was actively being performed each year, so that it should not have been a difficult or mysterious word to the translators. This Greek word refers to a small bundle of cut stalks bearing ears of barley.

The specific Hebrew word in Lev 23:10 for “first” is not the word *bikurim* as in Lev 2:14 for firstfruits. The description in Lev 23:10-14 does not follow the instruction in Lev 2:14-16. Attempts to associate these passages with one another is mere speculation. There is no discussion concerning the state of the ripening of the barley in the context of the wave sheaf offering, nor is there any discussion about what happens to the wave sheaf offering after it is held up by the priest. Presumably it could be burned or used by the priesthood, but nothing is said. It is best not to make assumptions when there is a lack of evidence.

In Lev 23:10 the Hebrew words for “reap” and “bring” are in the plural form, showing that people as a mass were expected to bring their wave sheaf offering to the priest. It does not use the word for “all”, so that many would bring a sheaf to the priesthood, but not all people. There is no statement that the priest goes out looking for it.

J. What does Deut 16:1 mean?

Deut 16:1, “Keep [the laws of] the month of *aviv* and perform the Passover to YHWH your Almighty because in the month of *aviv* YHWH your Almighty redeemed you from Egypt [by] night.”

The first Hebrew word of Deut 16:1, *shamar*, translated “keep” is ambiguous. It is also the first Hebrew word in Deut 5:12 with a similar meaning. An ambiguous verse should not be used as significant evidence to establish a controversial viewpoint.

K. Does Deut 16:9 prohibit harvesting grain until the day of the wave sheaf?

Deut 16:9, “Seven weeks you shall count for yourself from [about the time] you begin [to put the] sickle to standing-grain, you shall begin to count seven weeks.”

Some proponents of the use of barley to determine the first month claim that Deut 16:9 prohibits the harvest of grain until the day of the wave sheaf offering. Such thinking only comes from adding words that are not in the Hebrew as shown by words in brackets in the above translation. The only prohibition is in eating of the new grain until the wave sheaf offering, as seen in Lev 23:14. Deut 16:9-10 is a loose summary because it mentions seven weeks rather than the more precise 50 days and omits other details.

Conclusion: The barley harvest in Israel does have some loose time association with the first month, but there is no legal precise relationship. The word *aviv* is too broad in meaning to be used as a precise trigger to determine the first month. **The word *aviv* means “ear or ears [of grain]”**. The word *aviv* can refer to unripe ears as in far northern Egypt during the hail plague.

In recent years three different groups of people have examined barley in Israel for the purpose of attempting to determine the first month on that basis. One group is associated with Nehemia Gordon, another with Brian Convery, and another with the Assemblies of Yahweh from Bethel, Pennsylvania. In several recent years these groups have disagreed on the first month. This is just as it was during the middle ages when similar groups disagreed. A single field of barley does not have all its ears in the same stage of growth. That makes it difficult to to decide whether a field fulfills whatever condition the observer desires it to fulfill for the alleged definition. Scripture does not say “month of the **first** *aviv*”, but people who desire to define the month through searching for it, treat the expression as if the word “**first**” was there. This is an assumption. Barley is not a light in the heavens (Gen 1:14).

[28] Bibliography

BDB. *The New Brown–Driver–Briggs–Gesenius Hebrew and English Lexicon*. Revised from a previous lexicon of Wilhelm Gesenius by Francis Brown, Samuel Rolles Driver, and Charles A. Briggs. Peabody, MA: Hendrickson Publishers, 1979. This reprint has Strong's numbers added.

de Tarragon, Jean-Michel, o.p. *Le Culte a Ugarit*. Paris: J. Gabalda et Cie, 1980

Feldman, Louis H. "The Enigma of Horace's Thirtieth Sabbath", pp. 351-376. *Studies in Hellenistic Judaism*. Leiden: Brill, 1996

Harper, William R. *Elements of Hebrew by an Inductive Method*. Revised by J. M. Powis Smith. Chicago: The University of Chicago Press, 1921

Horace. *Horace's Satires and Epistles*. Translated from Latin by Jacob Fuchs. New York: W. W. Norton & Company, 1977

Hunger, Hermann. *Astrological Reports to Assyrian Kings*. This is volume 8 in the series *State Archives of Assyria*. Translation with introduction and commentary. Helsinki: Helsinki University Press, 1992

Josephus_5. *Josephus*, Vol. 5, translated by Henry St. John Thackeray. Cambridge, MA: Harvard University Press, 1966

Lindenberger, James M. *Ancient Aramaic and Hebrew Letters*. Edited by Kent Harold Richards. Atlanta: Scholars Press, 1994

NASB. *New American Standard Bible*

Neugebauer, Otto. "On the Orientation of Pyramids", pp. 1-3. *Centaurus*, Vol. 24, 1980

Olmo Lete, Gregorio Del. *Canaanite Religion according to the Liturgical Texts of Ugarit*, Bethesda, MD: CDL Press, 1999

Parker, Richard Anthony. *The Calendars of Ancient Egypt*. Chicago: University of Chicago Press, 1950

Philo_7. *Philo*, Vol. 7, by Philo of Alexandria, translated by F. H. Colson. Cambridge, MA: Harvard University Press, 1958

Philo_QE. *Philo Supplement II: Questions and Answers on Exodus*, by Philo of Alexandria, translated by Ralph Marcus. Cambridge, MA: Harvard University Press,

1953

Porten, Bezalel. "The Calendar of Aramaic Texts from Achaemenid and Ptolemaic Egypt", pp. 13-32. *Irano-Judaica: Studies Relating to Jewish Contacts with Persian Culture throughout the Ages*, Vol.2. Edited by Shaul Shaked. Jerusalem: Ben-Zvi Institute for the Study of Jewish Communities in the East, 1990

Rochberg, Francesca. *The Heavenly Writing: Divination, Horoscopy, and Astronomy in Mesopotamian Culture*. Cambridge: Cambridge University Press, 2004

Ruggles, Clive. *Ancient Astronomy: An Encyclopedia of Cosmology and Myth*. Santa Barbara, CA: ABC-CLIO, 2005

Samuel, Alan E. "Calendars and Time-Telling", pp. 389-395. *Civilization of the Ancient Mediterranean*, Vol. 1, edited by Michael Grant and Rachel Kitzinger. New York: Charles Scribner's Sons, 1988

Schniedewind, William M. *A Social History of Hebrew: Its origins through the Rabbinic Period*, New Haven: Yale University Press, 2013

Swerdlow, Noel M. *The Babylonian Theory of the Planets*. Princeton: Princeton University Press, 1998

van der Waerden, Bartel L. "Greek Astronomical Calendars and their Relation to the Athenian Civil Calendar", pp. 168-180. *The Journal of Hellenic Studies*, Vol. 80, 1960

Whitters, Mark F. "Some New Observations about Jewish Festal Letters", pp. 272-288. *Journal for the Study of Judaism*, Vol. 32, 2001

YLT. *Young's Literal Translation of the Bible*, rev. ed. Robert Young. Minneapolis: Bethany Fellowship, 1898