Knowing the Biblical Calendar, 2nd edition (c) by Herb Solinsky. January 9, 2022

Preface

This book was written in two parts. Chapters 1 through 12 constitute part 1 and the other chapters constitute part 2. Part 1 was written to be read by the casual reader who wants a complete understanding of the biblical calendar but without getting into some degree of technicality. After chapter 12 some technicality or deeper thought will perhaps be required. This arrangement serves the purpose of making it easier for the casual reader to understand the biblical calendar without getting bogged down into too many details. In this document the primary emphasis is on the Hebrew words and Hebrew text of the Bible using Strong's numbers and transliterations of Hebrew words so that the reader is not expected to know Hebrew. This document does not discuss the history of the calendar after the Second Temple was destroyed in 70 CE. Some readers may be familiar with certain statements found in rabbinic literature such as the Mishnah, the Tosefta, and the two versions of the Talmud. Appendix I was written to explain why these rabbinic sources are not used at all to explain the biblical calendar. Unless stated otherwise, all translations are literal translations by the writer.

This document bases its reasoning on the Tanak, which is the Bible preserved by the Jews, mostly written in Hebrew, with a small amount in Aramaic. This is discussed in Appendix K to enable the reader to know what should be considered inspired for use as evidence of the biblical calendar.

Many readers may be in a hurry to know the conclusion before investing the time to read ahead to find the conclusion. To serve those readers, here is the conclusion before demonstrating the evidence. The biblical month begins with the biblical day in which the Aaronic priests were to blow two trumpets during the daytime, based upon accepting the testimony of witnesses for having seen the new crescent of the moon near the prior sunset. The first month of the year is the one whose daytime declaration by the Aaronic priests occurs on or first after the vernal equinox as visually determined in the daytime. Hence the first day of the first month can occur on the day of the vernal equinox. The witnesses for testimony to the Aaronic priests should be from Israel (where the priests were given land to dwell).

[1] Introduction and Purpose

This document was written with the motivation to follow Lev 23:1-4. Before giving its translation, it is desirable to mention a couple of preliminary items. The reader who desires to study when a biblical numbered day of the month begins or the weekly Sabbath begins and ends is encouraged to read Appendix A.

A most important Hebrew word in this study is the Hebrew word *moed*, having Strong's number 4150. All 222 occurrences of this word appear in Appendix B. It is hoped that the reader will take the time to examine the nine categories of usage into which this word occurs. A few significant places in which this word occurs are Gen 1:14, Lev 23:1-4, and Ps 104:19, all of which will be translated. One reason that Appendix B was included is so that the reader can notice that in 40 places the word *moed* is used for festival timing, Sabbath timing, or astronomical timing.

Lev 23:1, "And YHWH spoke to Moses, saying,

Lev 23:2, 'Speak to the children of Israel, and you shall say to them, the appointed-times [4150 *moed*] of YHWH which you shall proclaim them holy convocations, they are these, My appointed-times [4150 *moed*].

Lev 23:3, Six days shall work be done but on the seventh day [is] a Sabbath of solemn-rest, a holy convocation; you shall not do any work. It is a Sabbath to YHWH in all your dwellings.

Lev 23:4, These are [the] appointed-times [4150 *moed*] of YHWH which you shall proclaim them at their appointed-time [4150 *moed*].'"

Verse 4 is telling us that each of the appointed-times should be proclaimed **only at their appointed-time, not at some other time.** Lev 23 mentions all the commanded holy days (including the Sabbath). It is YHWH who declares these days holy. When Neh 8:2, 9 mentions that the first day of the seventh month is being kept, it states "this day is holy to YHWH". Could a different day be holy as the first day of the seventh month?

In biblical history, no one was authorized to change the nature of the biblical months, when they begin, or the time of the first month. The goal before us is to study these matters.

[2] Appointed-times are known from Light-Bearers, Gen 1:14-18

We begin with the foundational verses for the calendar, which are Gen 1:14-18. First it is valuable to remark that the vast majority of translations are a little sloppy in this passage. One place of sloppiness is in translating *moed* (4150) in Gen 1:14, and in this case it is easy to mislead the reader. See Appendix L for an explanation of the Hebrew word *ma-ohr,* having Strong's number 3974, which is used in Gen 1:14-16 below. This

word is not usually translated carefully in most translations, and this is the second place where there is typically sloppiness.

Gen 1:14, “And the Almighty said, ‘Let there be light-bearers [3974] 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 light-bearers [3974] in the expanse of the heavens to give light [215] on the earth’, and it was so.

Gen 1:16, And the Almighty made the two great light-bearers [3974], the greater light-bearer [3974] to rule the daytime and the lesser light-bearer [3974] 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 [215] upon the earth

Gen 1:18, and to rule by daytime and by night, and to separate between the light [216] and the darkness. And the Almighty saw that it was good.”

In verse 14 the word *moed* appears, and all 222 occurrences of this word are shown in Appendix B. From this appendix we note that the only categories that make sense in the context of periodically occurring events based on the heavenly light-bearers are the annual festival(s), the 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 these events are determined by, or embedded in, the calendar, this verse makes the calendar dependent on or determined by the light-bearers [3974] in the heavens.

In verse 15 the word “them” refers back to the subject in verse 14, namely the light-bearers [3974]. Thus verse 15 is saying in essence, “let the light-bearers [3974] be for lights ... **to give light** on the earth”. Even the names of the heavenly bodies are absent to put emphasis on the “light bearing” 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 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 light-bearers [3974] that is the key principle.**

The word “signs” [226 *oht*] in Gen 1:14 is used for the rainbow in Gen 9:12-13, for the ten plagues in Egypt, for the Sabbath in Ex 31:13, 17, for a miracle in Judg 6:17, for the prediction of two deaths in I Sam 2:34, and in other ways. Gen 1:14 is saying that the light-bearers [3974] in the heavens are examples of signs. Carefully reread Gen 1:14 to note that it is not saying that signs [226 *oht*] are to determine the appointed-times and

years. The subject of the sentence is the light-bearers [3974] in the sky, not the signs. The light from the light-bearers [3974] in the sky determine signs. The light from the light-bearers [3974] in the sky determine appointed-times. The light from the light-bearers [3974] in the sky determine days. The light from the light-bearers [3974] in the sky determine years. Verse 15 shows that it is some aspect of the light from these light-bearers [3974] in the sky that cause the determination.

The nature of the rulership of the heavenly lights mentioned in verses 16-18 is the dominance of their light, which again puts emphasis on the visible light from these light-bearers [3974]. At the end of verse 16, concerning the stars, there is an addition in brackets "to rule the night" because that is exactly what is mentioned about the lights, including the stars, in verse 18.

What is the reason for the emphasis on light-bearers [3974] rather than using the much more frequent word *ohr, w*hich has many figurative uses? This deliberate literalness was in anticipation that in the far future people would desire to use their growth in mathematical abilities and astronomical knowledge to make a computation that would approximate what the lights show. The specific use of light-bearers [3974] is a literal usage that forbids the substitution of a computation in place of the actual light-bearers [3974]. For over 1,000 years the majority Jewish viewpoint for their calendar is to use a calculation as a substitute for the light-bearers, which is contrary to Scripture.

Some people conjecture that the ancient Egyptians at the time of Moses had knowledge of advanced mathematical astronomy and Moses learned this from the Egyptians, Acts 7:22. Appendix C is devoted to this matter.

The astronomical new moon is defined as the moment of time during the cycle of the moon around the earth when the moon is closest to the straight line between the sun and the earth. The astronomical new moon is also called the conjunction. On rare occasions there is a solar eclipse at the time of the conjunction. Except when there is a solar eclipse, the moon cannot be seen at all during the time of a conjunction. Some people have claimed that the biblical new-moon (to start the month) is at the conjunction. This is contrary to the biblical emphasis and stress on the use of light-bearers [3974] to determine the appointed times. Some advocates of the conjunction theory claim that before the Babylonian exile 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 exile under Ezra and Nehemiah, Israel, under the influence of the Babylonian calendar and Persian political dominance, no longer continued the alleged original practice 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 exile 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 for this purpose.

Conclusions from this chapter:

(1) Gen 1:14-15 includes the concept that festivals, the Sabbath, and years are to be determined by the light-bearers [3974] in the heavens.

(2) Thus the biblical calendar is determined by light-bearers [3974] in the heavens.

(3) The theory that the conjunction should be used to determine the biblical month is contrary to the emphasis on light-bearers [3974].

(4) The explicit usage of **light-bearers** rather than the more common word **light** also shows that vegetation does not determine the calendar.

[3] The Sun and Moon determine the Festivals in Gen 1:14

From Lev 23:2-4 we note that the Sabbath is an "appointed-time" [4150 *moed*]. The Sabbath is often called the seventh day because it repeats in a seven-day cycle. The Sabbath is determined by counting days, and days are determined by rulership of the stars and moon during the night followed by rulership of the sun during the daytime, Ps 136:8-9 (see below). This alternation of darkness and light is a result of the alternation of which light-bearers rule. This includes the sun, so that the sun is involved in determining this appointed-time, the Sabbath, but the moon is not involved for the following reason. Each specific cycle of the moon around the earth there are from one to three nights during which the moon cannot be seen at all, even with clear weather. During this period of invisibility of the moon, the days that are counted to arrive at the Sabbath have no contribution in counting light by the moon because the moon cannot be seen at that time. Notice the following description of rulership or dominance by the light of the heavenly bodies.

Ps 136:7, "To Him who made the great lights ..."

Ps 136:8, “The sun to rule in [the] daytime ...”

Ps 136:9, “The moon and the stars to rule in [the] night ...”

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

These verses show that the sun and moon are called the greater and lesser light-bearers, but the stars are also said to rule in the night. If it is not cloudy or rainy all night (and sometimes it is), it is possible to count the days by counting the nights during which one sees the stars as well as the daytimes during which one sees light given by the sun. However it is not possible to count days by counting the light from the moon due to its varying period of invisibility each month.

Ex 34:22 mentions that the Feast of Weeks occurs at about the time of the firstfruits of the wheat harvest. 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), also implies that the biblical year closely approximates the agricultural year. Hence the length of the years in Gen 1:14 must have the long-term average of the agricultural year, which approximates the tropical year of 365.2422 days.

The axis of the earth traces out a conical shape once each 25,800 years, and this causes the visible constellations to vary in relation to the vernal equinox once in a cycle of 25,800 years. Astronomy books call this cycle of 25,800 years the “*precession of the equinoxes”* because the equinoxes appear to move in relation to when the constellations appear during this long cycle. This causes the time of the visibility of the constellations in relation to the vernal equinox to advance 14.1566 days for each 1000 years. From the time of Moses until now is about 3500 years, which is about 49 days in the precession cycle. Hence the cycle of the appearance of the stars does not keep pace with the length of the year mentioned in Gen 1:14. The conclusion is that the stars are not used to determine the festivals because they do not determine months or years.

The time cycle of the planets and comets is different from the time cycle of years in Gen 1:14. All the kinds of light-bearers in the heavens have been considered: the sun, the moon, the stars, the planets, and the comets.

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

This verse does not have the word **“all”** before “appointed-times”, so that it does not make the Sabbath dependent on the moon. In this verse, the question is this: What are the appointed-times referring to in relation to the moon? When the nine categories for

the 222 occurrences of *moed* in Appendix B are examined, all except its use for festivals are ruled out for the use of the moon. This shows that the moon is for the festivals. The next task before us is to show that the moon is used to determine the biblical months.

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 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 vowels 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.

There are two different Hebrew words for month: *yerach* [3391] and *chodesh* [2320]. Both of these two words occur together in the following two verses.

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*]."

These verses, I Ki 6:38; 8:2, indicate the same thing, a month. The two words, *yerach* and *chodesh* for month, were both in the cognate language of the land before Abraham and his servants emigrated there. Thus both words became part of the Hebrew language.

The use of the sun rather than the moon to determine the count to the Sabbath as an appointed-time, as well as declaring the moon to be for appointed-times as festivals in Ps 104:19, show that the sun and moon determine the appointed-times.

Another chapter below that explains Ps 81:3 also shows that a time cycle of the moon determines the festivals.

The moon has a repeating cycle around the earth that averages slightly more than 29.53 days. However, the moon’s path around the earth is not a circle, it is an ellipse. Also, the earth is not in the center of this elliptical orbit. The closer the moon is to the earth, the faster it moves in angular velocity. For these astronomical reasons, with clear weather, it is possible to have several successive months of 29 days each, as well as several successive months of 30 days each (more than two in succession is extremely rare). In ancient times, without sophisticated mathematical methods, people did not know in advance whether a month would have 29 or 30 days with clear weather.

Some pattern of cyclical light from the moon must begin a month based upon the above Scriptures, especially Gen 1:14-15 which puts emphasis on “light-bearers in the

heavens" (from verse 14) and "let them be for light-bearers … to give light on the earth" (from verse 15)".

Conclusions from this chapter:

(1) The sun and the moon determine the biblical calendar.

(2) The moon determines the biblical month.

(3) Distinctive light from the moon determines the start of the biblical month.

(4) In ancient Israel, with clear weather, it was not possible to know in advance whether a month would have 29 or 30 days.

[4] 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 calendric 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. Also, as seen above, two priests were required to blow two silver trumpets on the new-moons.

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

Num 35:7 shows that the Levites were given 48 cities in Israel in which to live.

Since the priests were Levites and their residence was in Israel, the new month should be based upon observation within Israel.

Positive evidence that calendric 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. The priesthood had no authority to change the calendar.

[5] The Day that Begins each Month, *chodesh,* and Ps 81:3

In Num 10:10 stated above, notice the phrase "beginnings of your months [2320 *chodesh*]" and also the mention of burnt offerings. This same phrase occurs, also with burnt offerings, in Num 28:11, "And at the beginnings of your months [2320 *chodesh*] you shall offer a burnt offering to YHWH, two young bulls, and one ram, seven male lambs a year old, without blemish."

Compare this with the statement for burnt offerings in I Chr 23:31.

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 over all burnt offerings to YHWH, presenting on Sabbaths, on new-moons [2320 *chodesh*], and on appointed-times [4150 *moed*], according to their required number, periodically before YHWH."

Notice that here the time for burnt offerings called "new-moons" are equated with "beginnings of your months" in Num 10:10 and Num 28:11. This shows that a new-moon is the beginning of a month. **The translation "new-moon" for *chodesh* is justified because a biblical month is based upon a cycle of the moon and the Hebrew word *chodesh*, when vowels are removed, becomes identical to the Hebrew word *chadash* when its vowels are removed. The Hebrew word *chadash* is used as both an adjective (meaning new) and a verb (meaning to make new, or to renew).**

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. The context determines which meaning of *chodesh* is appropriate.

When *chodesh* means new-moon, the question remains to understand what new-moon means. Since Gen 1:14 refers to light-bearers in the sky, when the weather is clear, it must mean something visible, and it must be something that is new. When one considers what one sees as the moon goes through its periodic cycle during clear weather, here is

what is seen during each successive 24-hour period. There are from one to three nights of total darkness (even if the weather is clear). Then one sees a thin new crescent in the western sky near sunset. Then for about two weeks the crescent gets larger and larger. Then the moon is round, called the full moon. Then the moon gets less than a round moon, gradually getting further less, until it becomes a narrow crescent in the eastern sky near daybreak in the morning. In this cyclical pattern, the only description that fits the concept of being new, is the new crescent in the western sky near sunset. More evidence than this simple explanation is needed to convince most people that the key to the biblical month is that it is based upon the sighting of the new crescent in the western sky near sunset.

Appendix E provides evidence that the biblical 14th day or 15th day of the month occurs about the time of the full moon. Thus the new-moon must occur approximately opposite the time of the full moon.

Consider the calendar implications from Ps 81:3. This literal translation closely follows the Hebrew word order, and then there is a discussion about it.

Ps 81:3, “Blow, at [the] new-moon [2320 *chodesh*] [the] shofar, at [the] full-moon [3677 *keseh*] on [the] day of our feast [2282 *chag*].”

Good questions that some people raise about Ps 81:3 are whether the word *keseh* really means full moon as well as whether this verse says something unexpected about the new-moon. This is discussed in Appendix F.

Although the word *chag* is grammatically singular, from this verse it would seem to apply to what is described earlier in this verse when the shofar (ram’s horn) is blown.

The last word *chag* is almost always used of the festivals of Lev 23, and it is used most often for the three festivals in which the general population of Israel was expected to go to the one central place where the priesthood would officiate during holy days.

It has already been discussed that *chodesh* means either the first day of the month or the month, but the context within Ps 81:3 shows that it cannot mean the whole month here. It has already been discussed by comparing Num 10:10 with I Chr 23:31 that the word *chodesh* is a reference to the beginning of the month, which means the first day of the month, so that *chodesh* is often correctly translated new-moon. All three of Lev 23:24; Num 29:1; Neh 8:2 agree that the first day of he seventh month month is holy (Neh 8:9 says “this day is holy to YHWH”, and Lev 23:24; Num 29:1 call for a holy convocation on that day). Ps 81:3 includes reference to the first day of the seventh month in its use of “at the new-moon” that is a *chag*.

Lev 23:6-7 shows that the 15th day of the first month is a holy day and Lev 23:34-35 shows that the 15th day of the seventh month is a holy day. The 15th day is two weeks

after the first day of the month. Appendix E shows that the moon is approximately full on the 15th day of the month. Thus Ps 81:3 mentions both the new-moon (*chodesh)* and the full moon (*keseh*) in the context of a festival (*chag*). The moon appears roundish two weeks after the first day of the month (the *chodesh*). Since Ps 81:3 expects the reader to understand that this is a normal annual pattern, it implies that the biblical month is a cycle of the moon. Certainly a key to this is the meaning of *keseh*, discussed in detail in Appendix F.

Thus Ps 81:3 shows: (1) that a time cycle of the moon is a month; (2) that the 15th day of the month is when the moon looks approximately round; and (3) that the month begins approximately opposite the full moon.

Thus Ps 81:3 corroborates the common sense view given above that the light-bearer trigger that normally begins the month is the sighting of the new crescent in the western sky near sunset.

There is historical evidence presented in Appendix G that the Babylonian calendar began its months with the sighting of the new crescent in the western sky near sunset. Appendix G provides biblical evidence that the new crescent starts the month, although Num 10:10 makes the Aaronic priesthood responsible to blow two silver trumpets to officially declare the new month regardless of whether it was seen by very few or very many people near sundown. This evidence will be presented in the next chapter.

The conclusion is that during clear weather, the sighting of the new crescent is what the new-moon indicated. However, even this must be understood in the context of the duties of the Aaronic priesthood in Israel, because they had the oversight of the calendar as shown in Num 10:10.

Soon the duties of the Aaronic priesthood in relation to the new-moon will be discussed.

[6] 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 Bible 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.

[7] The Future Day of YHWH and the Length of a Biblical Month

Rev 11:1-3 shows that at a future time there will be two witnesses that prophesy for 1260 days = 42 x 30 days = 42 months. Some details are now discussed.

Based upon Isa 13:9-10; Ezek 32:7-8; Joel 2:1-2 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; Joel 2:10-11.**

The examples of the flood in the days of Noah and the Day of YHWH indicate 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.**

Conclusions from this chapter:

(1) A biblical month cannot have more than 30 days.

(2) When the moon's visibility is prevented after the 29th day of the month, then the current month has 30 days.

(3) A calculated conjunction is not used to determine the start of a month.

[8] I Samuel 20 and the duties of the Aaronic Priesthood

(A) The Context of I Samuel 20

I Samuel 20 is very instructive to show how the biblical month began during the time of Samuel the prophet when King Saul reigned. Knowing that the Aaronic priesthood had the responsibility to blow two silver trumpets to announce the day upon which the new month began (Num 10:10), it will show implications for the priesthood. It will be shown

from the wording of this chapter that no calculated calendar could have been used at this time in Israel's history.

At this time of David's young adulthood, he has already experienced attempts by King Saul to kill him (I Sam 18:10-11; 19:9-10), but his very close friend Jonathan, the king's son, 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.

(B) The Day Count of Three

Notice that this plan involves a day count of three from the following literal parts of verses.

I Sam 20:5, “until the third evening”.

I Sam 20:12, “about [this] time the third morrow”.

I Sam 20:19, “and [on the] third [day]”.

This shows their advance supposition that it would probably take two successive days for Saul’s actions to bring to light his attitude toward David. They speculated that Jonathan would witness two consecutive days of Saul's behavior. The context assumes that the reader will automatically understand this without any explanation. We need to carefully examine the context to note what the writer of the text expected the reader to know.

I Sam 20:5, “And David said to Jonathan, Behold, tomorrow [4279 *machar*] [is a] new-moon, and I should sit with the king to eat ...”.

I Sam 20:18, “And Jonathan said to him, Tomorrow [4279 *machar*] [is a] new-moon, and you will be missed because your seat will be empty”.

In these verses the word “tomorrow” refers to the next daytime, which begins in the morning rather than at sundown. The meal at the king’s table would certainly be during the daytime indicated by the word “tomorrow”. The sighting of the new crescent, if it would be seen, would be near sundown of the daytime that David and Jonathan were speaking to one another.

(C) The role of the Priesthood from the Context

The priesthood would preside in a court to receive witnesses for having seen the new crescent if it was seen. The court would not meet in the dark because people would not be expected to travel to the court at night due to lack of street lighting on roads in ancient times. They would receive witnesses in the court during the daytime that followed the meeting between David and Jonathan, if there were any

witnesses. This indicates that sometimes it might be difficult to see the new crescent so there might be very few witnesses, but at other times it might be easy for almost everyone to see the new crescent. It was only when the two silver trumpets were blown that the beginning of the new month was legally declared. However, if the new month was not declared after 29 days, then the ending month would have the maximum of 30 days, which would not require witnesses.

Therefore, whether very few or very many people saw the new crescent near sundown, that time of sighting did not legally begin the new month. It was only legally begun when the two priests blew the two trumpets during the daytime that followed the sighting (Num 10:10).

(D) The Festive Meal in Celebration after the 29th Day of the Month

The context of I Samuel 20 shows that there was a festive meal at the king's table during the daytime that followed the conversation between David and Jonathan. Below, Amos 8:5 will be mentioned to show that in ancient Israel, the day that followed the 29 days of the ending month was treated as a national holiday in Israel, but not a holy day. That national holiday was an anticipated time to discover whether the priests at the court would blow the two silver trumpets to announce the beginning of the new month.

This shows that even if it was very noticeable that the new crescent had appeared, the people had to wait until the two priests blew the silver trumpets during the daytime before the new month was officially declared.

According to the choice of words in these two verses, the beginning of the festivity relating to the new moon is in the morning rather than at sundown. In these verses there is no reference to the standard Hebrew word for day, which is *yom*, Strong's number 3117. The use of the Hebrew word for new moon in these verses is not referring to a 24-hour day, but instead it refers to the time of festivity.

These two verses show that it was considered important for David to be present at a banquet hosted by the king due to an anticipated "new moon", and there was a seat reserved for David. There is nothing in the context to suggest that this was the beginning of the seventh month and that a holy convocation was to take place. Indeed, if this had been the beginning of the seventh month, verses 5 and 18 would have more to say about why David would be missed! The reason given is the new moon, nothing more.

(E) The Unique Syntax in I Sam 20:27, 34

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 Hebrew Bible. 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 Hebrew Bible 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.

Because the syntax of this phrase in these two verses is never used for a day of the month, and because its meaning as “new moon” here gives a satisfying explanation to the context including the planned meeting of Jonathan and David on the third day from their initial meeting, *chodesh* will be translated “new-moon” below.

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

When the NASB is used, items in square brackets will show where the NASB has italics, indicating that no Hebrew word occurs for the italics. It may sometimes be useful to consider omitting the words in square brackets in the NASB because they are not based on words in the Hebrew text.

I Sam 20:27 [NASB], “And it came about the next day, the second [day of] the new moon that David's place was empty ...”

I Sam 20:27 [NET], “But the next morning, the second day of the new moon, David’s place was still vacant ...”

Thus there was something special about that meal on two successive days that made David's presence expected at both meals.

In verses 28 through 33 Saul and Jonathan dialogue with one another so that Jonathan becomes convinced that Saul wants to kill David.

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

I Sam 20:34 [NASB], “Then Jonathan arose from the table in fierce anger, and did not

eat food on the second day of the new moon, for he was grieved over David because his father had dishonored him."

I Sam 20:34 [NET], "Jonathan got up from the table enraged, He did not eat any food on that second day of the new moon, for he was upset that his father had humiliated David."

Notice that the NET replaces the literal pronoun "him" with the noun "David" for clarification to the reader. NET is an original committee translation that sometimes adds clarifying words that are not in the Hebrew. Footnotes often explain the reason for the added words, and sometimes the translation is controversial as with many translations.

(F) The Final Context

I Sam 20:35 literally states, "And it happened in [the] morning that Jonathan went out [into] the field at [the] time appointed [with] David, and a little boy [was] with him."

The morning in verse 35 is within the third day that David and Jonathan had planned to meet.

The special meal at the king's table on two successive days during which the presence of David, a national hero, was expected, shows that both meals were to commemorate the start of the month. The need existed to have two days of commemorative meals because they did not know in advance which of the two days would in fact begin the new month. From I Sam 20:27 we can say that David and Jonathan did not know in advance which of two successive days would officially be declared the new moon day, because otherwise there would not have been a need for two successive days of a festive meal during which David was expected to appear. The phrase in I Sam 20:5, 18 that "tomorrow is a new-moon" is literally misleading because it can be expected to cause the reader to think that they knew in advance that tomorrow would in fact actually be the first day of the new month. It should be translated "tomorrow is the new moon [festivity]".

I Sam 20:5, 18 was applied to the first day to come, and the designation of "new-moon the second" was given to the second day to come. The need to have a second day of commemoration indicates that on the first of the two days, the new moon was not officially declared by the Aaronic priesthood to be the start of a new month by the blowing of two silver trumpets in accordance with Num 10:10.

At the time that David and Jonathan first met, one would surmise that the previous month had 29 days in it, so that it was most likely that the current month that was nearly over would have 30 days. Thus, when David and Jonathan first met, they planned for the current month to be a 30-day month so that their next meeting would be on the third day rather than on the second day. They believed it was most likely that a second festive meal day would be needed due to an expected 30-day month. Therefore, when I Sam

20:5 and 18 speak of “tomorrow [is the] new-moon”, that refers to the festive national holiday (not holy day) on the first of two successive days during which the new month might begin. The author of I Samuel 20 expected the reader to understand that there was to be at least one, and possibly two, successive days of festive meals at the king's table at the start of each month.

The start of a month is used to determine festivals, so by Gen 1:14, the light of a heavenly body must determine the start of a month. The first light of the moon would not anciently be known until it was seen. I Sam 20 is evidence that the day of the new moon was not pre-calculated, because otherwise there would not have been a need to plan for two successive days of festive meals. A pre-calculation would have been calculated to precisely one day rather than a choice of two days.

I Sam 20:5 and 18 should be understood to mean “tomorrow [is the] new-moon [festivity]” rather than the officially declared new moon. In other words, David and Jonathan did not really know that “tomorrow” would actually be the first day of the new month. In fact they expected that “tomorrow” would not be the first day of the new month!

(G) Other Commentaries on I Samuel 20

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 Sam 20 it is difficult to see any reason why he might deliberately distort any technicalities of the story. This chapter 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*).

Page 861 of the chapter by Moshe David Herr translates I Sam 20:27 “But on the morrow of the second new moon ...”, and translates I Sam 20:34 “... and he ate no food

the second new moon day". According to pages 84-85 of the book by Cahn, the Karaite Benjamin Nahawendi c. 825 CE understood I Sam 20:27, 34 similarly. The German interlinear translation by Rita Steurer also translated these verses using the German translation equivalent to "second new moon" rather than "second day of the month". The German word for new moon is different from the German word for month.

On page 36 of the book by Solomon Gandz he wrote, "There can be no doubt that 'on the morrow of the second new moon' [in verse 27] has the same meaning as 'on day of the second new moon' [in verse 34] and that both phrases refer to the second day of the new moon festival, on which a festive meal was given at the King's table and in which David was supposed to take part." The very title of the chapter by Gandz is "The Origin of the Two New Moon Days", and his analysis is consistent with the analysis given here, although his arrangement of the explanation is different and he does not use all of the logic presented here.

Within the above quote from Gandz, I have added the items in square brackets, and the two expressions enclosed within apostrophes have, in Gandz' work, the Hebrew words rather than the literal translation that I have substituted. Gandz discusses this chapter and Jewish commentaries upon it during the past 1700 years.

(H) Additional Contexts for the Celebration after Day 29 of the Month

Horace was a Roman poet and satirist who wrote in Latin and lived from 65 BCE to 8 BCE. 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 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 desired to have a holiday (not holy day) on the new moon days. 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 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 practice of that time the 30th would be a holiday or a vacation day, and by loose extension (not technically correct), called a Sabbath. Since Horace expected his readers to understand him, this new moon holiday, called the “thirtieth Sabbath” was well known in Rome in the late second century BCE.

It was common knowledge in the Roman empire during Horace's adulthood that Jews refrained from work on the first of the two possible days on which the new month might begin. This harmonizes perfectly with the implications from the Hebrew in I Sam 20:27, 34 and the whole chapter. The paraphrase by Josephus also agrees with this.

If Israelite society at the time of King Saul, when the prophet Samuel was still alive, was using a calculation to determine the start of the next month, there would have been no point in having two successive days of festive meals associated with the new moon, which shows an uncertainty of which day among two successive days that would start the month. Thus no calculated calendar could have been used at this time of Israel's history. Ancient Israel did not employ predictive astronomy for their calendar.

(I) Applying I Samuel 20 to II Kings 4:23 and Amos 8:5

In II Ki 4:8-11 we see that a woman in Shunem made a room available for Elisha to lodge at whenever he was in that neighborhood. According to maps that are commonly available in some Bibles, and according to Josh 19:18, which shows Shunem within the boundary for the tribe of Issachar, Shunem was about 10 miles to the southwest of the Sea of Galilee (named differently in Elisha's day). This is in the southern part of Galilee, about 60 miles north of Jerusalem, certainly not local to Jerusalem to be able to hear two silver trumpets blowing, and then soon going to witness a priestly ceremony for the beginning of the month. In II Ki 4:22 she asked her husband to prepare a donkey for her to ride upon to visit Elisha. In verse 23 her husband responded, “Why are you going to him today? It is neither the new-moon nor the Sabbath.” This shows that under normal circumstances this wealthy woman rode a donkey to visit Elisha on the new moon and on the Sabbath. However, in I Sam 20, the day for a new moon festivity was simply called the new moon, and it occurred immediately after the 29th day of the month. The same is true in the days of the Roman poet Horace before the first century. Based upon this, we should understand the question in I Ki 4:23 to mean, “It is neither the new-moon [festivity] nor the Sabbath.” This new moon festivity may be the first of two successive days of festivity.

Recognizing now, that the context with the Hebrew word *chodesh* for “new-moon” may mean "new moon [festival]", the reader should not be surprised if this translation is proposed for appropriate contexts. The prophet Amos criticizes many people in the land who complain as follows in Amos 8:5, “When will the new-moon [festival] be past that we may sell grain and the Sabbath [be over] that we may trade wheat?” This indicates

that there were restrictions by the national government against some activities on the new moon festival, but it does not indicate that there was some law within the law of Moses that prevented certain work on such days; there is no such law. There is no sin where there is no law. Nevertheless, Amos 8:5 along with II Ki 4:23 does indicate that the population beyond Jerusalem did involve themselves to some degree with the new moon festivity.

Since the new moon festivity had significance throughout Israel, it would especially have significance where the high priest, the ark, and the ceremonial sacrifices took place. Although ceremonial details are not specified in Scripture, this implies that people near the ark would witness the priestly ceremonies associated with the beginning of the month. However, there is no commandment in the law of Moses that ordinary work was forbidden or that attendance at this priestly ceremony was required for the beginning of the months.

[9] Introduction to the Determination of the First Month

The names of the heavenly bodies are absent from Gen 1:14-18 to put emphasis on the "light-bearing" purpose and mission of these heavenly lights to fulfill the need to determine "signs, appointed-times, days, and years".

The moon determines the start of the months, but it does not determine which month is the first month. By process of natural elimination as shown above, the sun must be involved for the determination of years from the viewpoint of Gen 1:14-18.

[10] Light Triggers

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 the sun's rulership by daytime to the stars' rulership by night (Ps 136:8-9 and see Appendix A). The light trigger for beginning a new month is the new crescent in the western sky. Gen 1:14 declares that the light-bearers 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.

It will now be shown that a biblical year consists of a whole number of biblical months rather than a smaller subdivision such as days. A biblical reason for this is that Num 28:14 has the Hebrew expression *chodesh bh chadshoh lh chadshay ha shanah*, meaning "month by month for months of the year", but idiomatically "each month throughout the year". Also, I Chr 27:1 has the Hebrew expression *chodesh bh chodesh lh col chadshay ha shanah*, meaning "month by month for all months of the year", but idiomatically "each month throughout the whole year".

A later chapter will give an example of a biblical year that has 13 months, and explain that a biblical year must have 12 or 13 months.

Hence a biblical year consists of whole months, and the months are numbered as seen in Leviticus 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. The Hebrew Bible does show a knowledge of the vernal equinox through

the Hebrew word *tkufah*, which is discussed in a separate chapter below.

Next, consider why the vernal equinox must occur at or shortly before the first new crescent to fulfill the 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 most of Jerusalem is about 2500 feet above sea level with Mt, Zion a few hundred feet higher), 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 light-bearers in the heavens, not predicted lights in the heaven.

How long a time does it take for people in Israel to travel to Jerusalem for the Passover? We must consider the longest distance to travel because all of Israel was expected to go to the festival. Travel by wagon is slow because the typical beast of burden was a mule, which is very slow. People would have to walk along with the wagon, and people average walking slowly, along with needing time to rest, sleep, and eat. A large family would need time for bathroom stops for various people at different times. From Ex 12:26-27 we see that children were expected to be at the festival. The paths of travel would be uphill in general. It is obviously difficult to be precise on this matter. If travel averages 2 miles per hour and the distance to Jerusalem is 70 miles for some locations, that would be 35 hours of travel. Now the question is how many hours of real progress can be made in one day, with all the stopping needed. Probably no more than 6 hours of progress in travel per day. Dividing 35 by 6 is about six days, at least, and one day would be the Sabbath. Hence for many people the trip should be about a week or slightly more. Rain could cause the trip to halt for a while because the wagon could be stuck in mud if it kept moving. Hence the worst case could be more than a week. For safety in arriving before the Passover, some people would want to be cautious in case of bad weather, and hence they should seek to leave with a few extra days to spare. For some people they would probably leave at least 10 days before the 14th day.

However, before they depart for the journey, they need to inspect the condition of the wagon and perhaps make some wagon repair. They would also need to pack clothing for a possible large family. They would also need to pack food provisions for the journey. From these considerations we note that the total time for getting ready and traveling would likely require about two weeks. Hence they should know whether it is the first month or the 13th month when the new crescent is sighted.

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.

The Gregorian calendar is in use around the world today. This calendar is based on the tropical year of 365.2422 days, which is the approximate time from one vernal equinox to the next vernal equinox. In this calendar the vernal equinox falls on March 20 or 21, but about once each 400 years it can fall on March 19. Someone might propose that when the vernal equinox arrives, count each day as time progresses close to the next vernal equinox. The thinking would be that the total day count should be 365 or 366 days to the next vernal equinox. In most years this would enable a nearly accurate judgment of how to compare the 15th day of the newly beginning month to the vernal equinox in the example discussed above. There are two problems with this approach. The first is that there would be years in which it would be difficult to make the judgment because we would not know if the final count would be 365 or 366. The second objection is that Gen 1:14 bases the years on the light-bearers in the heavens, not on counting with a prediction.

[11] 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 circled 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.

The ancient meaning of the vernal equinox must be what ancient people could determine for themselves with ancient technology, and it must agree with the light principle of Gen 1:14.

What is the meaning of the vernal equinox from the biblical viewpoint?

Is the vernal equinox when the daytime and the night are equal in length? The concept of equal daytime and night is really not part of what is implied in Gen 1:14 for lights in the heavens for ancient peoples. Equal daytime and night is not a light marker when you stop to think about it!! Instead, this concept of equal daytime and night involves an accurate *measure of time*, which is not a light marker. Night is not a light. The abstract concept of equal daytime and night requires a measure of night 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 night. A measure of time for a night is not a light. The concept of equal daytime and night is really foreign to Gen 1:14.

The ancient Babylonians used a water clock to record and preserve the time of their eclipse observations. Modern computers with astronomy programs have compared their recorded eclipse times with computer generated accurate times for the lunar eclipses. The result is that the average error of their eclipse times is eight minutes (Steele 1997), which is far in excess of the accuracy required to determine the time of equal daytime and night. The rate of water dropping varies according to the temperature. It is colder at night. From one night to the next night, the temperature will vary.

Until the year 1656 when Christiaan Huygens invented the pendulum clock, there were no known clocks accurate enough to determine when daytime and night were equal.

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 pryamids 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 years ago (c. 2500 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.

In Neugebauer 1980 a method was described that showed how ancient people could determine the day of the vernal equinox accurately. Here is a description of the method.

Set up a vertical pole in the ground with a pointed tip at the top so that the pole will not move in a wind. This should be set up on level ground where there are no shadow obstructions such as nearby trees or tall buildings. The pole should be at least a yard tall for good results. About five feet would be more ideal.

During the days approaching the equinox and then for the two days following it, do the following.

From 9:00 am to 3:00 pm at half hour intervals do the following.

Put a thin vertical stick in the ground (like a thin ice cream pop stick) at the point on the ground where the tip of the pole casts a shadow on the ground. It only needs to stick up about 3 inches from the ground and sink enough so that a wind will not blow it over.

Then in the afternoon after 3:00 pm notice that for that one daytime the sticks trace out a curve on the ground.

Each day as you get closer to the equinox, the curve traced out by those sticks gets more like a straight line.

On the day of the equinox it becomes a straight line.

On the day following the equinox it becomes less like a straight line.

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, although an obvious modification is needed for the southern hemisphere.

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

The spiritual meaning of the straight line as righteousness is seen in the following: Deut 5:32; 28:14; Josh 1:7: Ps 5:8; Isa 40:3; 42:16; Jer 31:9; Mat 3:3 etc.

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.”

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 sinless 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 pole tip of the sun's shadow makes a straight line.

The biblical equinox is the straight line path, not equal daytime with night. Many ancient peoples made the **assumption that daytime and night 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 because the Almighty could not expect His ancient people to use a definition for which no instrument existed, and such an instrument is not a light in the heavens.

Only the practical meaning that could be physically determined should be accepted, and this is the straight line path of the sun. The day of equal daytime and night 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.

It is unfortunate that the Latin word “equinox” literally means “equal night” according to its compositional parts. This word reflects the false assumption of the Romans who used this Latin word. We are saddled with this word, but it does not really define the ancient practical meaning of equinox.

[12] Adoption of the Babylonian Month Names

(A) Introduction

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.

We understand how the ancient Babylonian calendar worked because their eclipse records agree with modern computer simulation data for those eclipses. It is also necessary to have the Babylonian king lists with the length of their reign. This was known from Claudius Ptolemy c. 150 CE. The eclipses were recorded with the year of the king’s reign, the month number, and the day of the month. There are nearly 200 eclipse records from ancient Babylon preserved on clay tablets between 747 BCE and the first century BCE. Most of them also have the time during the night of the eclipse sightings based on their water clocks. Using computers and mathematical astronomy to compute the time of those eclipses that were time-stamped by the ancient astronomers, we know how the ancient Babylonian calendar worked and we are even able to

approximate the accuracy of their water clocks. The average accuracy of their water clocks for timing the eclipses was 8 minutes. Temperature affects the rate of water dripping. The eclipse records of the Babylonians are what enables accurate dating of certain historical events from 747 BCE onward into the first century BCE.

When Solomon's Temple was destroyed by the Babylonians in 586 BCE, the skilled residents of Jerusalem were taken into exile between the Tigris and Euphrates rivers. In Jer 29:1-14 we note that Jeremiah commanded the Jews who were exiled in Babylonia to be peaceful and productive in Babylonia, and then later YHWH would cause some of them to return to Jerusalem. There were multiple stages in time during which some of these exiles returned to Jerusalem as recorded in Ezra and Nehemiah.

(B) Babylonian Month Names in Ezra and Nehemiah

Certain events in the books of Ezra and Nehemiah are dated using Babylonian month names in matters that specifically pertain to the Jews. When the Jews mentioned the day of the month in their own calendar using the same month names as the Babylonians in their calendar, their dates must have almost always been the same. Otherwise there would be much confusion in dates among the Jews compared to society around them, and thus the Jews would **not** have wanted to use those month names in their calendar. By examining the month names and the context, we can note the adoption of these month names into the calendar of the Jews.

Appendix G explains how we know that the Babylonians began their months with the declaration that followed the sighting of the new crescent in the western sky near sunset as did ancient Israel. The Aramaic first month in the Babylonian calendar is named Nisanu, but the later Jewish transliteration into Hebrew dropped the final vowel making it Nisan. For simplicity, we use the same spelling for both.

The Aaronic priesthood that was restored in Jerusalem under the leadership of Ezra kept the calendar correctly from the days of Ezra and Nehemiah until the first century as indicated in Neh 8:2-9 and Luke 2:41-42.

In the context of Jerusalem in Ezra 6:15 there is mention of the month named Adar without mentioning that it is the twelfth month using the Babylonian month name.

In the context of Jerusalem in Neh 6:15 there is mention of the month named Elul without mentioning that it is the sixth month using the Babylonian month name.

In the context of Persia in Neh 1:1 there is mention of the month named Chislev without mentioning that it is the ninth month using the Babylonian month name.

In the context of Persia in Neh 2:1 there is mention of the month named Nisan without mentioning that it is the first month using the Babylonian month name.

We see that in Nehemiah, both in the context of Persia as well as in the context of

Jerusalem that Babylonian month names are used without mentioning the number of the month. The reader is expected to know the month number from its name. There is no reason to imagine that the month name meant something different in the context of Persia compared to Jerusalem.

From 499 BCE until the Babylonian calendar's last recorded year of 75 CE, its first day of the first month Nisan did not begin before the vernal equinox, and there are examples when it did begin exactly on the day of the vernal equinox. See Appendix J for documentation of this.

During the century from 499 to 400 BCE Nisan 1 in the Babylonian calendar fell on the day of the vernal equinox five times. Prior to the year 499 BCE the Babylonian calendar **did** allow the **beginning** of its first month Nisan to swing erratically on either side of the vernal equinox. See Appendix J for documentation of this.

Ezra traveled to Jerusalem in 457 BCE. Neheniah traveled to Jerusalem in 444 BCE. These books might have been written a little after the last date in these books and this could possibly affect how the writers decided to write the month names.

In the year 539 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.

Neh 5:14 shows that Nehemiah was appointed governor of Judah under the Persian King Artaxerxes. Judah was part of the Persian empire, not a fully independent nation. Yet 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.

(C) Babylonian Month Names in Esther

Now evidence is presented from the Book of Esther showing that the month names of the Babylonian calendar were used by both the Babylonians and the Jews with the expectation that their timing was the same for both (almost always), at that time in history.

The entire setting of Esther is the Persian capital city of Susa called Shushan in Hebrew. The king is named Ahasuerus as typically transliterated. On p. 54 of Williamson 1985 we find the following concerning the name Ahasuerus, “From Old Persian *Khshayarsha*, it occurs in *AramP* as *chasheersh* (2:1) and *chashee’rsh* (5:1), thus making identity with Xerxes certain.”

The reign of Xerxes is 485-465 BCE. The last dated year written in Esther is the twelfth year in Est 3:17, which is in 474 BCE, The Book of Esther may have been committed to writing some years after this. The Book of Esther has Babylonian month names in ten places: Est 2:11; 3:17; 8:9, 12; 9:1, 15, 17, 18, 19, 21.

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 9:26-32 shows this to be the origin of the Jewish festival of Purim to be kept by all Jews from that time onward.

This shows that all of the Jews in all of the Persian empire, including those in Jerusalem would know the same month Adar in which to keep the festival Purim. If there was often a time difference between the month with a name in the Babylonian (Persian) calendar and the month with the same name in the Jewish calendar, then within the same empire that would cause much confusion.

(D) Babylonian Month Names in Zechariah

Zechariah is the only other book in the Tanak that has Babylonian month names. All three dates in Zechariah show Darius to be the king at that time. His reign is 521-486 BCE, so his second year is 520 BCE. Zech 1:1 mentions the second year of Darius, month 8 but does not mention the name of the month.

Zech 1:7 [NKJV], “On the twenty-fourth day of the eleventh month, which is the month Shebat, in the second year of Dartus ….”

Zech 7:1 mentions the fourth year of King Darius (518 BCE), the fourth day of the ninth month, Chislev.

Thus two dates have Babylonian month names along with the number of the month. There are many other prophecies in Zechariah, but no dates for them are given. We do not know how long Zechariah lived and when his words were put into final form with these dates. However, Ezra tells us a little more about Zechariah.

Ezra 6:14, “And [the] elders of [the] Jews built and prospered through [the] prophesying of Haggai [the] prophet and Zechariah son of Iddo. They built and finished [it] by [the] command of [the] Almighty of Israel and by decree of Cyrus, and Darius, and Artaxerxes, king of Persia.

Ezra 6:15, And this house was finished on [the] third day of [the] month Adar which is [in the] sixth year of [the] reign of Darius [the] king.”

The sixth year of the reign of Darius is 516 BCE. Beyond this year we have no explicit mention of the life of Zechariah, but the final compiling of the Book of Zechariah may

have been performed much later. The last dated year in the Book of Daniel is in Dan 10:1 where the third year of King Cyrus is mentioned, which is 536 BCE. No Babylonian month names are mentioned in Daniel, yet all of it is in Babylon.

(E) Conclusion

The overall conclusion from the evidence of the adoption of the Babylonian month names as seen in the Tanak is that the calendar used by the Aaronic priesthood in Jerusalem after the return from exile is that the first month Nisan begins with the day of the sighting of the new crescent that occurs on or first after the vernal equinox, with the understanding that the first day of Nisan is not declared until the two silver trumpets are blown by the priests in accordance with Num 10:10. The declaration occurs during the same daytime that the observation for the vernal equinox takes place.

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

In southern Egypt, the Persian empire controlled the city of Syene and the military base on the island of Elephantine where about 100 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 dictated from Jerusalem or the Babylonian calendar dictated from the temple in the city of Babylon. However, since the 1990 paper by Bezalel Porten was published, we have solid grounds for scholarly acceptance that the whole region was under the command of Persian leadership. The reason for the scholarly debate was that there were many Jewish mercenaries who worked for the Persians while they lived on the island of Elephantine.

One of the Aramaic letters found buried 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 pp. 56-57 of Lindenberger 1994. In the following quotations from the letter, the square brackets and the contents within them appear on page 57 of Lindenberger. 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 2001 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 p. 283 Whitters 1991 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.

There was a distance of over 570 miles from Jerusalem to the island of Elephantine, and it was all uphill from the mouth of the Nile River on the northern coast to Elephantine. It would not be feasible that this letter would get from Jerusalem to Elephantine in time for any report about the condition of barley in Israel, and nothing in the letter mentions barley or *aviv*.

[14] Summary of Evidence that favors Specific use of 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 Jewish month to be Adar in the 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 this letter that has survived in the very dry desert from over 2400 years ago on this island is primary historical evidence that the month names in Jerusalem were expected to agree in time 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). See Appendix M.

[15] Example of a Biblical Year with 13 Months

The Bible has an example of a year with 13 months, showing that the biblical year was not an exact tropical year. Here is the example. The time difference between Ezek 1:1-2 and Ezek 8:1 is the difference between month 4 day 5 in the 5th year of King Jehoiachin's exile and month 6 day 5 in the 6th year of his exile. This is 14 or 15 months depending on whether the 5th year of his exile had 12 or 13 months. If the difference is 14 months, this is about 29.5 times 14 (= 413) days with an overestimate of 30 times 14 (= 420) days. The overestimate of 420 days is 17 days short of the known events because Ezek 3:15 accounts for 7 days and Ezek 4:4-6 accounts for 390 plus 40 days, the total being 437 days. Thus the difference must have been 15 months, which is about 29.5 times 15 (= 442.5) days, just five or six days more than the known events of that time period.

This example of a year with 13 months is further biblical evidence that a year consists of a whole number of months.

[16] Astronomy and the Hebrew word *tkufah*

The Hebrew word *tkufah* (Strong;s number 8622) occurs four times in the Hebrew Bible. All four contexts may be explained with the same uniform meaning for *tkufah*. These four contexts will be discussed in an order that most easily allows the context to be explained.

Ps 19:1-6 is most certainly an astronomical context that has the Hebrew word *tkufah*. The end of verse 6 states “nothing is covered from its [the sun's] heat”. The heat of the sun is noteworthy in the summer, and the summer begins with the summer solstice and ends with the autumnal equinox.

My literal translation of verses 4-6 is presented next. This is not easy to translate in a fashion that makes all of its words clear because of what the reader is expected to understand about astronomy in the context. This requires a commentary.

Jewish scholars who have placed verse numberings in their Hebrew text, have labeled verse 1 only for the title “To the chief musician. A psalm of David”. Hence the Hebrew text labels verses 4-6 as verses 5-7, and the latter numbering is often used in the reference BDB. The most significant key to understanding the context of verse 6 is the use of the Hebrew word *katseh* in verse 4 and also at the start of verse 6, and the related word *katsah* beyond the middle of verse 6. The use of these three places is highlighted in square brackets in the literal translation below, and the location in BDB is also shown.

Ps 19:4, “Their [= the heavenly bodies] trail has gone through all the earth, and into [the] end [7097 *katseh* BDB p. 892 left middle] of [the] world. Their-decrees [4405 *meelah* BDB p. 576 left bottom] for [the] sun have established a tent [= boundaries of travel during the course of a full year] in them [= in the decrees].

Ps 19:5, And he [= the sun] goes out from his chamber as a bridegroom. He rejoices like a mighty [man] to run its path [734 *orach* BDB p. 73 left middle].

Ps 19:6, He [= the sun] goes forth [4161 *motsa* BDB p. 425 right middle] from [the] end [7097 *katseh* BDB p. 892 left middle] of the heavens and his summer-solstice [8622 *tkufah* BDB p. 880 right bottom] in-accordance-with [the] ends-of-them [7098 *katsah* BDB p. 892 right top], and nothing is covered from its heat.

Ps 19:6, He [= the sun] goes forth [4161 *motsa* BDB p. 425 right middle] from [the] end [7097 *katseh* BDB p. 892 left middle] of the heavens and his [summer] season [8622 *tkufah* BDB p. 880 right bottom] in-accordance-with [the] ends-of-them [7098 *katsah* BDB p. 892 right top], and nothing is covered from its heat.”

The sun reaches its most northern daily path at the summer solstice approximately when the amount of daylight is the longest in the northern hemisphere. This most northern path is in fact an “end” of all the daily paths during the year and relates to 7097 in verse 6. The forms of 7097 in both verses 4 and 6 are in the singular, translated “end”. In verse 6 the use of 7098 is in the plural form ending -*ot* and with a final letter *mem* at its termination. The reference AKOT in Ps 19:7 states “p” for the plural form at this Hebrew expression. Kohlenberger's interlinear for this expression correctly shows “ends-of-them” where the final *mem* means “of them”. Although AKOT is strict in its statement of the grammatical form of the word as “p” for plural, their interlinear translation is sometimes sloppy if it appears to be difficult to translate in a way that makes common sense, and hence AKOT wrote “end of them” instead of the literal “ends of them”.

Now the question arises concerning the meaning of the plural “ends”. In verse 4 we note the use of “tent” that was established by decrees, the laws of physics spoken by the Almighty, that keep the position of the sun within its bounds of travel. This tent is the visible boundaries of travel of the sun during the course of a full year. There are two annual ends of travel. The northern end is defined by the path of the sun at the summer solstice and the southern end is defined by the path of the sun at the winter solstice. Verse 6 looks at the totality of paths of the sun as those paths appear from one place in the northern hemisphere (rather than to what occurs on any single day).

In verse 6 above there is the expression “in-accordance-with” that is found on p. 754 (left upper) in BDB for the Hebrew preposition *al*, which is Strong's numbers 5920-5921. On line 10 BDB has “*in accordance with* a law”. Here this refers to the decrees from verse 4 (spoken words of the Almighty that established the laws of physics that

govern the movement of the sun). Verse 4 calls this the tent of the sun's movement. The northern boundary of the tent is the summer solstice and the southern boundary of the tent is the winter solstice.

Since the greater part of the heat of the sun is felt during the middle of the summer, it seems appropriate to accept the meaning of "summer-season" for *tkufah* in Ps 19:6. Here is a paraphrase of Ps 19:6 based on the whole context.

Ps 19:6, "The sun goes forth from the [northern] end of the heavens and its summer season in accordance with the boundaries of its decrees, and nothing is covered from its heat."

In the book chapter by Johann Maier one of the Dead Sea Scrolls is discussed that contains the Hebrew word *tkufah*. On p. 146 Maier wrote, "The Songs themselves are attached to the thirteen Sabbaths of one quarter or season (*tqufah*) of a year, according to the editor the first quarter (the Nisan season) only." Here we see the Hebrew word *tkufah* used for the season of spring, which begins with the vernal equinox and ends with the summer solstice. This shows that in the culture of the first century in Judea the word *tkufah* was used for the season that began with the vernal equinox and ended with the summer solstice.

In BDB on p. 880 at the bottom right, the meaning for *tkufah* is "coming round, circuit". This guess for its meaning will also lead to BDB's subjective meaning for the preposition *lh* (the single letter *lamed*) that is prefixed to *tkufah* in both I Sam 1:20 and II Chr 24:23 to be discussed next. This prepositional prefix is discussed on pp. 510-518 of BDB. Meaning 6 concerns the context "of time", and this is discussed with categories and examples from p. 516 right bottom to p. 517 left middle. In this section, the following meanings for this preposition are seen: (a) "at"; (b) "on"; (c) "against"; (d) "for"; (e) "before"; (f) "hereafter"; (g) "when"; (h) "to denote the *close* of a period [of time]"; (i) "towards"; (j) "to"; (k) "for"; and (l) "during".

Since the meaning of "[summer] season" for *tkufah* was indicated from the context of Ps 19:6, this concept of season will be kept in mind for the sake of consistency, if possible, in other examples. A meaning for the prepositional prefix *lh* will be selected from those given above by BDB.

II Chr 24:23, "And it came to be during [the spring] season [= *tkufah*] of the year [the] army of Aram marched against him."

Here the word "during" was used for the prepositional prefix *lh*.

I Sam 1:20 is an interesting challenge to translate, but there is a very plausible explanation that leads to consistency with the above. First a translation will be given, and then an explanation will follow.

I Sam 1:20, "And it came to be at-the-close-of [two] full seasons [= *tkufah* in the plural

form] Hannah conceived and she gave birth to a son."

Here the expression "at-the-close-of" was used for the prepositional prefix *lh*. The expression with *tkufah* in the plural in the Hebrew is literally "seasons of the days". This is a parallel to the biblical idiom "month of days" where the word "month" is *chodesh* in Gen 29:14; Num 11:20, 21 and the word "month" is *yerach* in Deut 21:13; II Ki 15:13. Virtually all translations take the expression "month of days" to mean "full month". Through parallelism with the concept of "days", "seasons of the days" would mean "full seasons". In Dan 7:25 we find "for time, times, and half a time". Here the plural "times" without any qualifier is taken by commentaries to mean "two". Parallelism with this example would imply that the meaning is "two full seasons" as in the above translation.

From the above, it is sensible that *tkufah* means "season" in Ps 19:6; I Sam 1:20; II Chr 24:23. The only other example with *tkufah* is in Ex 34:22 to be discussed next.

A literal translation of Ex 34:22 is, "And you shall observe [the] Feast of Weeks, [the] firstfruits of [the] harvest of wheat, and [the] Feast of the Ingathering [during the autumn] season [= *tkufah*] of the year."

In the above translation it is plausible that ancient Israelites understood that the preposition *lh* was implied because of its use in I Sam 1:20 and II Chr24:23. The addition of the word "during" comes from one of the choices above from BDB.

Thus all four uses of *tkufah* may sensibly be translated as "season" in the sense of the four seasons of the year. These examples show summer, spring, and autumn. All four seasons are bounded by an equinox and a solstice. Hence there is biblical evidence that the ancient Israelite culture included the use of the equinoxes and the solstices.

Consistency in meaning that is sensible in all contexts is a strong argument in favor of "season" for the meaning of *tkufah*. There is no technical reason that *tkufah* should refer to the harvest of crops, especially when *tkufah* occurs in a clearly astronomical context in Ps 19:6.

Ex 23:16 has the literal ending, "... and [the] Feast of the Ingathering at [the] end of the year in your gathering of your produce from the field". The year in ancient Israel is often taken to have a reckoning from spring to spring as the religious year, and a reckoning from fall to fall as the civil year. In this latter sense of the civil year, the word "end" would apply.

Gen 1:14 does not have the word *tkufah*, but at least we can say that the Hebrew language does show the awareness of equinoxes and solstices according to the Dead Sea Scrolls as well as according to its use in Scripture.

[17] The Length of a Biblical Year and its Number of Days

We now continue with the discussion of the 13-month year mentioned above in Ezekiel.

If one should claim that the 5th year of the king's exile was a tropical year, and an overestimate of 366 days (“leap” year) plus 60 days (two extra months) is allowed, the total is 426 days, which is still far short of the 437 days for the known events.

Thus, although the biblical year maintains an approximately fixed relationship to the agricultural year, the example with 13 months shows that the biblical year is not a tropical year, which is the time from one vernal equinox to the next vernal equinox, although even this has a very small variation.

A biblical year cannot contain fewer than 12 months because Est 9:20-23, 26 maintains that each year on the 14th and 15th days of the month Adar the Jews are to celebrate the festival called Purim. Est 8:12 states that Adar is the 12th month. If a year could only have 11 months, then the Jews would be unable to celebrate Purim that year. Further evidence of a requirement of at least 12 months in the year comes from I Ki 4:7 and I Chr 27:1-15.

Hence a biblical year contains 12 months or 13 months, or approximately 354 days or 384 days. This is an illustration of the fact that the modern cultural concept of a tropical year always having 365 or 366 days need not necessarily be practiced in some ancient societies. The Bible does not use the concept of a year that has 365 or 366 days and does not have any example of counting days of a year beginning with the vernal equinox.

The Bible has an unusual example of a year that is not approximately 354 days or 384 days. This was already discussed in the chapter titled “The Future Day of YHWH and the Length of a Biblical Month”. In this chapter the phrase “time and times and half a time” was mentioned to occur in Dan 7:25 and Rev 12:14. The expanded context from that chapter shows this to be 1260 days = 42 months. This is understood to mean 3 ½ years. With 3 ½ years = 1260 days = 42 months, this implies that each of these years has 360 days = 12 months of 30 days each. Therefore this is an example of a year with 360 days. In this example Isa 13:9-10; Ezek 32:7-8; Joel 2:1-2, 10-11 shows that the sun will be darkened so that it will not be possible to witness the vernal equinox. This is another unusual aspect of this future time.

Certainly Ezek 4:4-5 shows a count of 390 days so it is abundantly obvious that people could and did count days when the need arose, but there is no example of counting days of a year in Scripture, especially not counting days from the day of the vernal equinox. This is a modern idea, not a biblical idea although as seen above, the Hebrew word *tkufah* does refer to a season which is bounded by an equinox and a solstice.

The conclusion is that a biblical year has a length of 12 lunar months or 13 lunar months, or in the exceptional case when the sun is darkened and the two witnesses prophesy in the future, the year will have 12 months of 30 days each, for a total of 360 days in that unusual period.

The most typical Hebrew word for day is *yom*, which has Strong's number 3117. This word is given the space of 3 ½ pages in BDB (on pp. 398-401), because it has a wide variety of usages and meanings depending on the context. Now the focus will be on the contexts where its use in the plural means "time". This is meaning 6 on p. 399.

The following are examples where literal translations have "days", but the context shows that the meaning is "time": Gen 30:14; Josh 3:15; II Sam 21:9; II Ki 15:18. There is no specific count of days.

The next example uses the period of weeks. Dan 10:2, 3 mentions "three weeks of time", where "time" is literally "days". The context does not imply that days were counted. It only indicates that it was known that three weeks transpired. It may have been three consecutive periods from Sunday to Sabbath (or from Monday to Sunday).

The next example is Deut 21:13 where "*yerach* of time" means month of time. Here "days" has the meaning "time". Again there is no implication that days were counted.

The next examples are Gen 29:14; Num 11:20, 21 where "*chodesh* of time" means month of time. Here "days" has the meaning "time". Again there is no implication that days were counted.

The next group of examples are Gen 41:1; Lev 25:29; 30; II Sam 13:23; 14:28; Jer 28:11 where "year(s) of time" has the word for days where the meaning is time. Again there is no implication that days were counted. A year is 12 or 13 months. The fact that the Hebrew word for days appears does not imply that days were counted during the course of a year. These examples come from meaning 6 on p. 399 of BDB where the meaning is "time".

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

The following literal translations are provided as a reference to Scriptures that are sometimes claimed by some people to show that barley determines the first month of the biblical year. These translations are based on a thorough study of the Hebrew words from all biblical contexts, several lexicons, and several commentaries over many years.

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

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

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 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."

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

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.'”

Deut 16:1, “Keep [the laws of] the month of *aviv* and perform the Passover...”

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.”

Proponents of using barley attempt to use barley instead of the vernal equinox, with the claim that the sun is only used in an indirect way to influence the barley growth. Here is a response to such thinking.

(1) The context of the hail plague in Egypt in Exodus 9 states 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. 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]".

(2) 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.

(3) 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.

(4) 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.

(5) 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, not only ignores the ancient Israelite cultural usage of light as found in the Tanak, but it avoids a literal understanding of Gen 1:14-15, and thus casts aside the very Scripture that is intended to explain how to determine the first month on the basis of a light trigger. The presence of "years" in Gen 1:14 prevents the light trigger for years from being cast aside. The other corroborating evidence from the Passover Letter and the biblical use of Babylonian month names is also cast aside. Neh 8:2, 9 shows that those who returned from the Babylonian exile had preserved the calender from before the exile because they knew to declare a date as **holy**.

(6) 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 that 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.

(7) Some proponents of the use of barley to determine the first month claim that the placement of Ex 12:2 (see the translation above) 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.

(8) 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 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.

(9) The wave sheaf offering is discussed in Lev 23:10 where the word "harvest" occurs. 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 in Israel.

(10) The wave sheaf offering is explicitly discussed in Lev 23:9-16; Deut 16:9-10. In these verses there is no discussion concerning the state of the ripening of the barley, 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.

(11) 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 from their land (cut before they departed for the feast) 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. The word for sheaf (*omer*) has two different meanings in the Tanak. The Septuagint translation into Greek is *dragma*, which is not ambiguous in Greek, and it means a bundle that is cut down by a swing of a sickle. This is a small bundle of cut stalks bearing ears of barley.

(12) The description of what happens to the firstfruits in Lev 2:14-16 is a contrast to what is mentioned about the wave sheaf offering, which is not specifically called "firstfruits". Instead, the word for "first" or "beginning" is used in Lev 23:10.

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

(14) 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.

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]".**

[19] Appendix A: The Start and End of a Numbered Day of the Month & Sabbath

(A) Introduction to the Literal Day in the Tanak

The goal is to explain when the Sabbath day begins and ends, and more generally, to explain when any biblical numbered day of the biblical month begins and ends. This is not necessarily equivalent to explaining the literal meaning of the word "day" in general, because it will be seen that the general use of the word "day" has multiple meanings. This presents some problems because translations are quite inconsistent in how certain Hebrew words are translated. This leads to confusion in the minds of English readers. For this reason the literal translations presented will be consistent in translation and avoid using the same translation for two different Hebrew words of significance for this study. When no specific translation is mentioned, it is by the author. If a specific translation is given, sometimes the prefix "m-" appears before the abbreviation of the translation, such as "m-NKJV". This means that the NKJV is used with the exception that it is modified in order to hold fast to the concept of consistency of translation, namely always using the same English word for specific Hebrew words that are of significance in this study.

The translation method to be applied in this study would not be practical in general because Hebrew has many synonyms that are not distinguishable by different English words, and many Hebrew words have several different meanings. Such Hebrew words cannot always be translated with the same English word and still maintain normal sense.

The method of discovery to be employed is to first establish some preliminary approximate findings for some words, and then later return to discuss some of those words again and achieve a more refined understanding, but nothing contradictory. Patience is needed with this approach of letting the context determine the meaning rather than some lexicon or dictionary. All such reference works are modern; there is no known Hebrew dictionary that was made in ancient times.

(B) The Sabbath Day

In Gen 2:2-3 we read, "And on the seventh day [3117 *yom*] [the] Almighty ended His work which He had done, and He rested [7673 *shabat* (verb)] on the seventh day [*yom*] from all His work which He had done. Then [the] Almighty blessed the seventh day [*yom*] and sanctified it, because in it [He] rested [7673 *shabat* (verb)] from all His work

that [the] Almighty created for preparing." As indicated above, whenever the translation "day" occurs in this study, it will be from *yom.* This passage does not mention the law for human rest, nor the noun "Sabbath" from the Hebrew word *shabat* (Strong's number 7676), yet it does contain the verb *shabat* twice*,* which has the same three consonants as the noun. Thus it is an obvious reference to the noun Sabbath, and indicates that the meaning of the noun includes the concept of rest.

The significant Hebrew word *shabaton* (Strong's number 7677) is often not translated consistently, but "solemn-rest" will always be used in this study. This word occurs eleven times in the Bible: Ex 16:23; 31:15; 35:2; Lev 16:31; 23:3, 24, 32, 39, 39; 25:4, 5. In Ex 31:15 we read, "Work shall be done [for] six days, but on the seventh day [is] a Sabbath of solemn-rest, holy to YHWH. Whoever does work on the Sabbath day, he shall surely be put to death." Comparing this with Gen 2:2-3 it is clear that the seventh day that was blessed and sanctified is named the Sabbath day and is a day of abstaining from work. Ex 20:8-11; Deut 5:12-15 corroborates this. Since the Sabbath is called the seventh day and is a contrast to the other six days for work (Ex 20:9-10; 31:15; Deut 5:13-14), the Sabbath is a periodic cycle with six days between each consecutive pair of Sabbaths. There are some exceptional days mentioned in Lev 23 on which no work is to be done, and such exceptional days may occur on the six days between two consecutive seventh day Sabbaths. Other than these explicit exceptions, work is expected to be performed on the six days.

(C) Day and Night

There are examples in which day and night are opposites. In Jer 36:30 we read, "Therefore thus says YHWH concerning Jehoiakim king of Judah: 'He shall have no one to sit on [the] throne of David and his dead body shall be cast out to [the] heat by day and to [the] frost by night [3915 *lailah*].'" Here day and night are opposites, showing it is cooler at night than during the day. In Gen 31:39 we read, "That which was torn by beasts I did not bring to you; I bore the loss of it myself. You required it from my hand, whether stolen [by] day or stolen [by] night." Here again is an example where day and night are opposites. Some other corroborating examples of these opposites are in Gen 8:22; I Sam 28:20; I Ki 8:29; Ps 74:16; 88:1; 136:8-9; Eccl 8:16; Isa 27:3; 62:6; Amos 5:8. In these examples "day" refers to the daylight part of a 24-hour day. Explicit discussion of a 24-hour day is discussed next.

(D) A 24-Hour Day

As in the English language, Hebrew often has multiple meanings for one word, and it will now become quite clear that this is true for the Hebrew word *yom*.

Before giving a translation of Lev 8:35, note that it contains the Hebrew word *yomam* (Strong's number 3119), which is to be translated "daytime". This word is a form of *yom*

used in a different Hebrew grammatical senses from *yom*. It may be argued that this word should also be translated day, as it usually is, but in order to distinguish between these words in translation, *yomam* is translated "daytime". Lev 8:35 states, "Therefore you shall abide [at the] door of the tent of meeting daytime [3119 *yomam* (adverb)] and night [for] seven days, and keeping [the] charge of YHWH, so that you may not die; for so I have been commanded." Here "seven days" refers to seven periods, each of which is a day and a night, so that "day" (used in the plural) here, is a daytime followed by a nighttime, a natural 24-hour period. Est 4:16 states, "Go gather all the Jews present in Shushan, and fast for me; neither eat nor drink [for] three days, night and day. Also I and my maids will fast likewise. And then I will go to the king, which is against [the] law; and if I perish, I perish!" Here "day" (used in the plural) is a nighttime followed by a daytime, a natural 24-hour period. These two examples differ in which comes first; one example has the daytime first in the 24-hour day, while the other has the nighttime first. But neither of these examples involves the Sabbath or a numbered day of the month, the primary focus of this study.

Ps 32:3-4 states, "When I kept silent my bones grew old through my groaning all the day. For daytime and night Your hand was heavy upon me; my strength was turned into the drought of summer." Here one day is shown to be a daytime followed by a nighttime, a natural 24-hour day.

Neh 1:6 states (m-NKJV), "please let Your ear be attentive and Your eyes open, that You may hear the prayer of Your servant which I pray before You this day, daytime and night, for the children of Israel Your servants, and confess the sins of the children of Israel which we have sinned against You." Here one day is shown to be a daytime (Hebrew *yomam*) followed by a nighttime, a natural 24-hour day.

(E) Morning, Evening, and On the Morrow

The Hebrew word *boker* (Strong's number 1242) is a significant word, to be translated "morning". The Hebrew word *erev* (Strong's number 6153) is a significant word, to be translated "evening". Here are some of the verses that make it clear that morning and evening are time periods of the 24-hour day that are separated from one another. Lev 6:20 states, "This is the offering which Aaron and his sons are to present to YHWH on the day when he is anointed; the tenth of an ephah of fine flour as a regular grain offering, half of it in the morning and half of it in the evening." Deut 28:67 states (NKJV), "In the morning you shall say, 'Oh, that it were evening!' And at evening you shall say, 'Oh, that it were morning!' because of the fear which terrifies your heart, and because of the sight which your eyes see." Ps 55:17 states (NKJV), "Evening and morning and at noon I will pray, and cry aloud, and He shall hear my voice." II Chr 31:3 states, "The king also appointed a portion of his possessions for the burnt offerings: for the morning and evening burnt offerings, the burnt offerings for the Sabbaths and the

new moons and the set feasts, as it is written in the law of YHWH."

For the sake of consistency for the reader, the Hebrew phrase *ad erev* will always be translated "until evening" and the Hebrew phrase *ad ha erev* will always be translated "until the evening" in this study. The Hebrew word *ad* is Strong's number 5704, which is a preposition whose meaning varies according to the expression in which it appears. The Hebrew word *ha* means "the". The presence or absence of the Hebrew word *ha* for "the" in the phrase "until the evening" seems to have no real significance as illustrated in Ex 18:13-14 (m-RSV), "On the morrow Moses sat to judge the people, and the people stood about Moses from morning until the evening. When Moses' father-in-law saw all that he was doing for the people, he said, 'What is this you are doing for the people? Why do you sit alone, and all the people stand about you from morning until evening?'" Here notice that verse 13 has "until the evening", while verse 14 merely has "until evening", yet both refer to the same event. The meaning of "until evening" in Ex 18:13-14 is generalized in Ps 104:23 where we find (m-NKJV), "Man goes out to his work and to his labor until evening." In an agricultural society where outdoor light is needed for earning a living by most people, this particular context would imply that "until evening" has the approximate sense of "until daylight fades". Later, more will be said about the phrase "until evening".

In Ex 18:13 immediately above, the phrase "on the morrow" is a translation of the Hebrew phrase *me macharat* where the flexible preposition *me* is Strong's number 4480 and *macharat* is Strong's number 4283 which means "morrow" and refers to the period of time following the normal sleep pattern. For example, again with the Hebrew phrase *me marharat*, in Gen 19:33-34 we read (JPS17), "And they made their father drink wine that night. And the first-born went in, and lay with her father; and he knew not when she lay down, nor when she arose. And it came to pass on the morrow, that the first-born said unto the younger: 'Behold, I lay yesternight with my father. Let us make him drink wine this night also; and go thou in, and lie with him, that we may preserve seed of our father.'" The translation "yesternight" is from the Hebrew word *emesh* (Strong's number 570) which also occurs in Gen 31:29, 42. (In the Hebrew, the two words *me macharat* have no space between them, as is typical with many prepositions.) Unfortunately, most translations use the word "day" instead of "morrow" here, which could give the reader the false impression that the Hebrew word *yom* may occur. For the sake of consistency for the reader, the Hebrew phrase *me macharat* will always be translated "on the morrow" in this study. Note that in Gen 19:34 above, the conversation that occurred "on the morrow" followed an event that occurred in the night, so that both the event and the conversation took place within the same sundown to sundown 24-hour period.

In order to illustrate the flexibility of the Hebrew word *erev*, two examples will now be given to show that the word erev can sometimes refer to a time in the afternoon before sunset.

Gen 24:11, “And he made the camels kneel down outside [the] city by [the] well of water at [the] time of evening [*erev*], at [the] time when the women draw water.”

Jer 6:4, “Prepare to-do-battle against it and let us attack at noon. Woe to us for the day [*yom*] declines, for [the] shadows of evening [*erev*] lengthen.”

(F) A Numbered Day of the Month

In Ex 12:18-19 we read (NKJV), “In the first month, on the fourteenth day of the month at evening, you shall eat unleavened bread, until the twenty-first day of the month at evening. For seven days no leaven shall be found in your houses, since whoever eats what is leavened, that same person shall be cut off from the congregation of Israel, whether he is a stranger or a native of the land.” The unbroken time interval for eating only unleavened bread is here given a beginning time and an ending time, the whole period of which is stated to be seven days in length. Here “day” (used in the plural) is a 24-hour day, each of which begins “at evening” and ends “at evening”. This context involves a numbered day of the month, a matter of primary interest in this study.

Lev 23:27 states, “Also the tenth of this seventh month shall be the day of atonement. It shall be a holy convocation for you; you shall afflict your souls, and offer an offering made by fire to YHWH.” This tenth day of the seventh month continues to be discussed down through to Lev 23:32 which states (m-NKJV), “It shall be to you a Sabbath of solemn rest, and you shall afflict your souls; on the ninth of the month at evening, from evening until evening, you shall celebrate your Sabbath.” The Sabbath (Hebrew *shabat*) mentioned here twice, is the day of atonement rather than the Sabbath of the seventh day. (*shabat* is also used this way in Lev 16:31.) As in Ex 12:18 above, this verse mentions a numbered day of the month beginning “at evening”. Since an “evening” is mentioned in Lev 23:32 as both the beginning and ending of this day, this is surely a 24-hour day rather than a daytime. Each of the seven days in Ex 12:18 is a 24-hour day also. Thus, as numbered days of the month, we have consistency of Ex 12:18 with Lev 23:32. This also makes the beginning and ending of *shabat* in agreement with the beginning and ending of a numbered day of the month.

(G) Light and Darkness

In Ps 104:20 we read (NKJV), “You make darkness and it is night, in which all the beasts of the forest creep about.” In Gen 1:4-5 we read, “And the Almighty saw that the light was good; and the Almighty separated the light from the darkness. And the Almighty called the light day, and the darkness He called night. And there was evening and there was morning one day.” In this very first time that the words “day” and “night” occur, they are here defined in the Bible. Here the first use of “day” (Hebrew *yom*) is given the meaning “light”, which obviously concerns its meaning in the sense of the daytime portion of a natural 24-hour day, rather than the 24-hour meaning of “day”. Gen

1:4-5 does not explain how much light is needed at the extremities in order to be considered still day. The word “evening” occurs here for the first time, but is not defined in chapter 1 of Genesis. The possible meaning of the second use of “day” at the end of Gen 1:5 partly depends upon the meaning of “evening”, which we now discuss. From Gen 1:4 we know that night is defined by darkness, except that when heavy rain prevails, daytime may appear dark. We are excluding such exceptions that muddy the water of discussion.

There are two passages of the Bible that demonstrate that evening lasts into the night. We will consistently translate the Hebrew word *neshef* (Strong's number 5399) as twilight. In Job 7:3-4 we read (m-RSV), “... so I am alotted months of emptiness, and nights of misery are apportioned to me. When I lie down I say, ‘When shall I arise?’ But the evening is long, and I am full of tossing til the twilight.” Here many translations give “night” as the meaning of the Hebrew word *erev*. The word translated “is long” in “the evening is long” is a translation of the Hebrew word *madad* (Strong's number 4058) which also occurs in I Ki 17:21 which reads,
“And he stretched himself out on the child three times, and cried out to YHWH and said, ‘O YHWH my Almighty, I pray, let this child's soul come back to him.’” Here “stretched himself” is the translation of the Hebrew word *madad*. Job is saying (in Job 7:3-4) that when he lies down, his conscious time in the evening is prolonged due to his physical discomfort.

Concerning the evening lasting into night, the other Scripture to be discussed is Ps 30:5. In order to understand how far “evening” extends here, the key issue is the Hebrew word following *erev*, which is the verb *leen* (Strong's number 3885). In Ps 30:5 we read (m-NKJV), “For His anger is but for a moment, His favor is for life; weeping may endure for an evening, but joy comes in the morning.” Here the Hebrew verb *leen* is translated “may endure”. This Hebrew verb *leen* occurs 85 times in the Old Testament, but it has two categories of meaning that are not related to one another; one is “to remain (or lodge)” and the other is “to murmur (or complain)”. The latter meaning occurs 16 times (if Ps 59:15 is included as “howl” or “growl”), leaving 69 times upon which to decide the implications of *leen*. Of these 69 times, the word “night” is understood from the context or explicitly stated 51 times; for example, Judg 19:7 states (NKJV), “And when the man stood to depart, his father-in-law urged him; so he lodged there again.” Here the NASB has “spent the night” instead of “lodged”. I Ki 19:9 reads, “Then he came to a cave, and lodged there; and behold, the word of YHWH came to him, and He said to him, ‘What are you doing here, Elijah?’” Here the NKJV has “spent the night” instead of “lodged.” What about the other 18 (= 69 - 51) times, which includes Ps 30:5, our current focus? In all 17 cases (excluding Ps 30:5) the time period is not precise, but understood to be at least a night, and often many years. One highly figurative example in which Job's friends have been provoking him for many days is Job 17:2 in which Job says

(NKJV), “Are not mockers with me? And does not my eye dwell on their provocation?” Here “dwell” is used for the Hebrew word *leen*. It thus seems understandable that JPS17, NASB, NKJV, and RSV translate the Hebrew word *erev* in Ps 30:5 as “night,” yet the literal meaning is “evening”. On the basis of the use of *leen* in the rest of the Tanak, it does seem that in Ps 30:5 evening extends into some of the night, perhaps until sleep comes. But in poetic language where there is a scarcity of words, translators often take liberties to capture their own thoughts on the intent of the Hebrew.

Recognizing that the biblical evening extends into the night, we are in a better position to comment on the use of “day” at the end of Gen 1:5, which reads, “And there was evening and there was morning one day.” This must refer to a 24-hour day rather than a daytime. We can only guess at why there is such brevity in the description of this day as well as the next five days. What happened at the very beginning of the first day? Any answer involves speculation.

(H) The Stars

Note the words “stars” and “light” in Jer 31:35 where we read, “Thus says YHWH, Who gives the sun for a light by daytime, the ordinances of the moon and the stars for a light by night, Who disturbs the sea, and its waves roar (YHWH of hosts is His name).” The light coming from these heavenly bodies determine or separate daytime and night.

In Ps 136:7-9 we read (NKJV), “To Him who made great lights, for His mercy endures forever, the sun to rule by day, for His mercy endures forever, the moon and stars to rule by night, for His mercy endures forever.” This serves as a commentary to Gen 1:16 which states, “And the Almighty made the two great lights: the greater light to rule the day, and the lesser light to rule the night; and the stars.” The amount of the night that is ruled by the light of the moon varies greatly during the month, from no rulership at the astronomical new moon to full rulership at the full moon. Gen 1:14 mentions the purpose of defining “years”, so the context of Gen 1:16 indicates general purposes for the sun, moon, planets, comets, and stars, rather than a precise description of what happened on that specific fourth day. Any claim that Gen 1:16 proves that the fourth day was a full moon is reading too much into that verse and ignoring the context of general purposes for the heavenly bodies. The thought of rulership by a heavenly body refers to dominance of its light. Since the moon itself has so much variation in dominance, as a sign for separating daytime from night, the role of the moon is speculative at best. On the other hand, as long as the weather is relatively clear, the stars are an excellent sign for separating daytime from night. Gen 1:14-16 does not mention the words “sun” or “moon”, which puts emphasis on their function to serve as lights.

Sunset is the time when the circle of the sun first disappears over the horizon. After sunset, there is still a period of light from the sun (the sun rules) until the light from the stars begins to rule. The length of this time period, which is most of twilight, varies with

the season and the latitude of the observer. At the equator this time is several minutes, but it can last a couple of hours in southern Canada and much longer when approaching the poles of the earth. If there had been a human observer on the earth during the first three days, he would have not been able to see the circle of the sun at all because, according to Gen 1:14, the heavenly lights were not yet “created”. Thus there was no sunset during the first three 24-hour days, yet there were three periods of dark and light. In order to have consistency in light for rulership during the first three daytimes in comparison to the fourth day and beyond, it would seem that “sunset” is not the precise separator between daytime and night. Before discussing sunset in the Bible, there is another significant Scripture that involves the stars.

The Hebrew word *sachar* (Strong's number 7837) will consistently be translated “dawn”. Neh 4:16 states (RSV), “From that day on, half of my servants worked on construction, and half of them held the spears, shields, bows, and coats of mail; and the leaders stood behind all the house of Judah.” Note that one half of them were defending and one half of them were productive. Neh 4:21 states (RSV), “So we labored at the work, and half of them held the spears from the break of dawn till the stars came out.” The break of dawn is near the start of the twilight of the morning, about the time when stars cease being visible. The defenders were active from about the time of the loss of the visibility of the stars to appearance of the stars. Neh 4:22 states (JPS17), “Likewise at the same time said I unto the people: ‘Let every one with his servant lodge within Jerusalem, that in the night they may be a guard to us, and may labour in the day.’” Thus the defenders were to spend the night sleeping in Jerusalem with the others, but during the “day” defined by the light of the stars at both ends, the defenders were to be active. This is consistent with the concept of the light from the sun ruling the day in the sense that it prevents the stars from being visible. It is consistent with the first three days during which there was no sunset. Thus, daytime is when the stars are not visible. Israel is a land with significant hills and valleys, thus making sunset come at varying times depending on one's physical location. On the other hand, visibility of the stars is more uniform throughout Israel.

(I) Sunset is Not Technically in the Bible

There is no single Hebrew word for sunset in the Bible. In Josh 10:26-27 we read (m-NASB), “So afterward Joshua struck them and put them to death, and he hanged them on five trees; and they hung on the trees until the evening. And it came about at sunset that Joshua commanded, and they took them down from the trees and threw them into the cave where they had hidden themselves, and put large stones over the mouth of the cave, to this very day.” Where this has “sunset”, the margin of the NASB (Reference edition) states that this is literally “the time of the going of the sun”. In this literal statement in the margin, the Hebrew verb *bo* (Strong's number 935) is translated “going”

and the Hebrew word *shemesh* (Strong's number 8121) is translated “sun”. There is never a Hebrew word for “down” in any of the 31 contexts of the Hebrew for “goes sun” for an alleged “sunset” in the Bible. These contexts are Gen 15:12, 17; 28:11; Ex 17:12; 22:26; Lev 22:7; Deut 11:30; 16:6; 23:11; 24:13, 15; Josh 1:4; 8:29; 10:13, 27; 23:4; Judg 19:14; II Sam 2:24; 3:35; I Ki 22:36; II Chr 18:34; Ps 51:1; 104:19; 113:3; Eccl 1:5; Isa 60:20; Jer 15:9; Amos 8:9; Micah 3:6; Zech 8:7; Mal 1:11. None of these contexts provides clear visual evidence of what “goes sun” means, but there are significant clues. If we see “sunset” in a translation, we should simply recognize that it is “goes sun”, though the verb tense may vary.

In an Aramaic portion of the Old Testament we find in Dan 6:14 (NKJV), “And the king, when he heard these words, was greatly displeased with himself, and set his heart on Daniel to deliver him; and he labored till the going down of the sun to deliver him.” The translation “going down” is from the Aramaic word *mehal* (Strong's number 4606), which only occurs in this place in Scripture. On page 166 of Wood 1973 at this verse it states, “literally, ‘going in of the sun’”. Since this Aramaic word only occurs one time and it’s in the context of Babylon with no specific indication of its precise meaning, little can be said of this.

There is biblical evidence that “goes sun” is a loose time interval rather than a precise brief time. Deut 16:6 states, “... but at the place where YHWH your Almighty chooses to establish His name, you shall sacrifice the Passover in the evening at sun-goes, at the time that you came out of Egypt.” If we can determine the time interval for sacrificing the Passover, that should tell us something about the time of “goes sun”. From Jer 6:4 above, we have already seen that “in the evening” can include some time before sunset.

(J) Sunrise is Opposite to Sunset

Notice the contrast between sunrise and sunset in Ps 50:1, “The Mighty One, the Almighty, YHWH, has spoken, and summoned the earth from the rising of the sun to its setting.” In Ps 113:3 we read, “From the rising of the sun to its setting the name of YHWH is to be praised”. In Eccl 1:5 we read (NASB), “Also the sun rises and the sun sets; and hastening to its place it rises there again.” This contrast of opposites is also seen in Zech 8:7; Mal 1:11. If we can explain the biblical sunrise, that should help us explain the biblical sunset.

In Ps 104:21-22 we read, “The young lions roar after their prey, and seek their food from the Almighty. When the sun rises they gather together and lie down in their dens.” Mr. Chris McBride spent several years living in the wild, studying the habits of lions about 350 miles northeast of Johannesburg, South Africa. On page 152 of McBride 1977 we find, “From the observations I've made, it appears that temperature plays a tremendously important part in influencing lions’ behavior patterns. I have taken the breathing rates of these lions under all sorts of conditions and found that it can vary from 120 times a

minute in the heat of the day to about 12 times a minute in the cool of the evening. My belief is that they are mainly nocturnal hunters because it's easier for them to be active when it's cooler. They'll hunt in daylight on the Machaton when it rains, or on an overcast windy day, so it looks as if there's a purely physical explanation behind it." In relation to Ps 104:21-22 this shows that "when the sun rises" they become inactive because the temperature becomes warm. But when does the temperature become warm? On page 232 of Batton we find: "Minimum temperatures are usually experienced 30 min to an hour after sunrise." This indicates that biblical sunrise is not the moment when the sun begins to come up over the horizon, but it includes a significant time later when it begins to get warm.

In Nahum 3:17 we read (NKJV), "Your commanders are like swarming locusts, and your generals are like great grasshoppers, which camp on the hedges in a cold day; when the sun rises they flee away, and the place where they are is not known." Locusts and grasshoppers have similar habits. On page 6 of Dallinger 1981 we read, "Grasshoppers are usually quiet at night and active during the day. As with all insects, their bodies must be warm in order for them to be active. During the coolness of night they climb onto plants and rest quietly without moving. When the first rays of sunshine reach them in the morning, they begin to stir. After warming up, they start eating." Page 207 of Milne 1980 states, "Once a locust swarm is airborne, the only thing capable of stopping it is a change of weather. The pests fly on if their food reserves permit, as long as the temperature of day remains between 77 degrees and 104 degrees F., or above 81 degrees at night." Thus the biblical description of grasshoppers and locusts at sunrise cannot fit the time when the circle of the sun begins to come up over the horizon because at the latter time the temperature is still approaching its coolest time. This indicates that biblical sunrise includes a significant time after sunrise when it begins to get warm.

In Ex 22:2-3 we read (NKJV), "If the thief is found breaking in, and he is struck so that he dies, there shall be no guilt for his bloodshed. If the sun has risen on him, there shall be guilt for his bloodshed. He should make full restitution; if he has nothing, then he shall be sold for his theft." Here we see the difference between killing a thief before the sun has risen compared to afterward. Before visibility it is not considered murder because one cannot see the nature of the enemy, but after visibility it is murder. Thus, sunrise is associated with visibility, which occurs before the circle of the sun begins to show on the horizon.

The application of the meaning of biblical sunrise to the meaning of biblical sunset is that both are significant time intervals and both occupy a portion of daytime. Biblical sunrise occupies the first portion of daytime, and biblical sunset occupies the last portion of daytime. As indicated above, daytime is when the stars are not visible.

In Deut 24:15 we read, "Each day you shall give him his wages, and not let the sun go

[down] on it, for he is poor and has set his heart on it; lest he cry out against you to YHWH, and it be sin to you." Here the word "down" is not based upon any specific Hebrew word that means "down". This verse indicates that daytime ends at the end of "the going of the sun" (already shown not to be identified with the circle of the sun going below the horizon).

In II Sam 3:35 we read, "And when all the people came to persuade David to eat food while it was still day, David took an oath saying, 'The Almighty do so to me, and more also, if I taste bread or anything else till the sun goes [down].'" Here the word "down" is not based upon any specific Hebrew word that means "down". This verse indicates that daytime ends at the end of "the going of the sun" (already shown not to be identified with the circle of the sun going below the horizon).

(K) Between the Two Evenings

The Hebrew expression *ben ha arbayim* means "between the two evenings"; *ben* means "between", *ha* means "the", and *arbayim* is the dual plural form of "evening", meaning "two evenings". Whenever we encounter this expression, we will consistently translate it "between the two evenings". This occurs eleven times in the Bible: Ex 12:6; 16:12; 29:39, 41; 30:8; Lev 23:5; Num 9:3, 5, 11; 28:4, 8. In Ex 12:6 we read (m-NKJV), "Now you shall keep it until the fourteenth day of the same month. Then the whole assembly of the congregation of Israel shall kill it between the two evenings." In Lev 23:5 we read, "On the fourteenth of the first month between the two evenings is YHWH's Passover." If someone should conjecture that "between the two evenings" means any time between the evening on one certain day and the evening on the following day, this could be refuted by going to Deut 16:6 where the time for sacrificing the Passover is when "goes sun", and certainly this latter expression does not mean a 24-hour day.

In Num 28:3-4 we read, "And you shall say to them, 'This is the offering made by fire which you shall offer to YHWH: two male lambs in their first year without blemish, each day, as a regular burnt offering. The one lamb you shall offer in the morning, the other lamb you shall offer between the two evenings." (Ex 29:38-39 is similar.) This sacrifice between the two evenings is called the evening sacrifice in Ezra 9:4-5 as follows, "Then everyone who trembled at the words of the Almighty of Israel assembled to me, because of the transgression of those who had been carried away captive, and I sat astonished until the evening sacrifice. At the evening sacrifice I arose from my fasting; and having torn my garment and my robe, I fell on my knees and spread out my hands to YHWH my Almighty." This evening sacrifice is also mentioned in II Ki 16:15; Ps 141:2; Dan 9:21. It is also mentioned without the word "evening" explicitly stated, but nevertheless understood, in I Ki 18:29, 36. In reading I Ki 18:29-45 it should become obvious that from the time of the first mention of the evening sacrifice until darkness is indicated due to heavy clouds in I Ki 18:45, some hours of daylight must

have passed. Thus “between the two evenings” as the time of the evening sacrifice must occupy some hours in the afternoon before the night begins.

Hence the Passover sacrifice must occur during some hours in the afternoon before the night begins, and Deut 16:6 shows this to be called “goes sun” or “sunset” in common translations.

(L) Conclusion concerning the Sabbath Day and a Numbered Day of the Month

The biblical evidence that a daytime ends when the stars become visible is based upon Jer 31:35; Ps 136:7-9; Gen 1:16; Neh 4:16, 21-22 (see section H). This evidence along with the evidence of sunrise (from Ps 104:21-22 and Nahum 3:17, discussed in section 10) leads to the conclusion that “the going of the sun” spans a few hours, but it ends with the appearance of the stars. In English usage, the time of “sunset” is brief and precise, but in the Bible the phrase “the going of the sun” lasts some hours and ends when the stars appear. Deut 16:6 says that the sacrifice of the Passover animal occurs during the “going of the sun”. Deut 16:6 also mentions “in the evening”, which is not precise, so Deut 16:6 clarifies this by adding “at the going of the sun”. The phrase “in the evening” can vary from sometime in the afternoon until sometime in the night; the Bible does not state the exact beginning and ending time of “in the evening”.

The expression “between the two evenings” indicates that there are two evenings. Ex 12:18 and Lev 23:32 showed that the Sabbath and a numbered day of the month begin at evening and end at evening (see section 6), but we need to discuss which evening. From Jer 6:4 and I Ki 18 we have seen that one evening begins before sunset. From Job 7:4 and Ps 30:5 we have seen that evening lasts into night. Within the evening there is a transition from daytime to night when the stars become visible.

The biblical word for evening is ambiguous, so the only solution to determining the “evening” that begins a day is a process of logically eliminating all but one rational choice. Several verses above showed that a biblical 24-hour day is either a daytime followed by a night, or a night followed by a daytime. Only the latter choice allows evening to begin and end a 24-hour biblical day, so only this choice is viable to show the boundaries of a day. This is also the only plausible choice to be the start of the second evening, so that Lev 23:32 means the Sabbath is to be kept from the second evening to the second evening. Deut 24:15 and II Sam 3:35 add weight to this. The conclusion is that the Sabbath and a numbered day of the month begin and end at the beginning of night when the stars come out, and that this is also the start of the second evening.

(M) Context of Ex 16:23 with Explanation

The manna was available for gathering only on six mornings because:

Ex 16:8 “... in the morning bread to the full...”

Ex 16:12 “... in the morning you shall be filled with bread...”

Ex 16:13-14 “... in the morning the dew lay all around the camp. And when the layer of dew lifted, there on the surface of the wilderness was a fine flaky substance, fine as frost on the ground.”

Ex 16:19 “... let no one leave any of it till morning.”

Ex 16:21 “So they gathered it every morning...”

On the Sabbath the Israelites were not to go out to gather the manna “in the morning” as they did on the other six mornings. The emphasis is on “morning” because that is the only time of the day that the new manna was first available for gathering.

Note the literal wording in Ex 16:23 “... Morrow [Hebrew *machar*] is a solemn rest of holy Sabbath ... lay up for yourselves all that remains, to be kept until the morning.” Note the contrast between Ex 16:19 above and Ex 16:23 especially at the end concerning leaving the previous mornings’ manna “until the morning”. Ex 16:23 is *not* saying that the Sabbath *begins* in the morning (which does relate to *machar* = morrow), but it refers to the fact that on the Sabbath in the morning, which would otherwise be the normal time for gathering manna, they were not to go and gather it, but instead (contrary to the other six mornings) they were to leave it over and keep it until the morning. When understood in the context relating to activity that takes place in the morning, Ex 16:23 does not say that the Sabbath begins in the morning (*machar* = morrow). In His wisdom, our Father provided the manna at the most convenient time of the day for gathering, cooking, and then eating, all within the same daylight. In this way the work of gathering would occur in the early morning when it was still cool.

(N) The Gift of Leftovers after a Sacrifice is for the Priesthood

Lev 7:28-38 shows that when an animal was to be sacrificed, certain leftovers were to be a gift to the priesthood for their consumption. For different categories the timing is given in Lev 7:15-18. These timings in context do not relate to the Sabbath or a numbered day of the month. In contexts where the Sabbath or a numbered day of the month is not involved and the 24-hour day is indicated, sometimes the Hebrew word *yom* (= day) refers to a night followed by a daytime, and sometimes it refers to a daytime followed by a night.

[20] Appendix B: 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 Dan 12:7

Appointed Sign - 1 Occurrence

Judg 20:38

Bird Migration - 1 Occurrence

Jer 8:7

General Season - 1 Occurrence

Hos 2:9

[21] Appendix C: Egyptian Astronomical Science before Alexander

Today a child learns to distinguish between 25, 205, and 2005 through the base ten position of the zeros. When performing the operations of addition, subtraction, multiplication, and division without a calculator, the vertical alignment of the digits into neat columns of units' digits, tens' digits, hundreds' digits, etc., makes the general procedure for these basic operations seem exceptionally simple. In today's society we take this simplicity for granted. But archaeological remains of calculations by different ancient civilizations reveals that very few ancient cultures had a concept of a base value (such as 10) in which the same symbol (such as 2) in a different position would have a different value (such as 2, 20, 200, etc,). The written biblical examples of numbers in the Hebrew language show no knowledge of a base ten positional number system with a symbol for zero to define the position and hence the value. Without this positional base concept using a zero, general long division becomes very cumbersome and time-consuming. For example, if the reader attempts to use the symbolism of the Roman number system (with "L" for 50, "XL" for 40, "C" for 100, "M" for 500, etc.), and then attempts to do general long division in this system, it will be a significant chore. Although ancient societies had a concept of a fraction and they knew how to divide by 10 (obtaining a tithe) because the language used words that were multiples of 10, this certainly does not imply that they had a simple general method for long division that could be done quickly. Dividing by 5 was twice a tithe, so that was easy. Dividing by 20 was half a tithe, so that was easy. But these are special examples rather than a general method for long division that would work for all numbers, especially including whole numbers with a fraction. Try dividing the Roman equivalent of 237892.21 by the Roman equivalent of 542.37 using only the Roman number system and see how far you get without our modern symbolism for numbers with a zero. Without a positional base number system using a zero, the method for general long division that elementary school children are taught today would not even exist because that very method depends on position and a base such as base 10.

The reference RMP (= Rhind mathematical papyrus) is an explanatory book concerning ancient Egyptian mathematics published by the British Museum. It provides a detailed

analysis of a papyrus from ancient Egypt that gives examples of how to solve a wide variety of mathematical problems. Page 16 of van der Waerden 1961 dates this papyrus after 1800 BCE, which is after the time of the building of the great pyramids at Giza. Page 12 of RMP states, “The hieroglyphic script had distinct signs for units, tens, hundreds, etc., the numbers of each being indicated by repetition of the sign. There was no sign for zero and no positional notation, so that the representation of large numbers became extremely cumbersome.” Page 5 of Gillings 1972 states that the ancient Egyptian method for writing the number 1967 required 23 characters while the method for writing 20,000 required only two characters. This ancient Egyptian method for the representation of numbers does not enable the simple methods of general long division used by modern elementary school children or the equivalent simple methods used by the ancient Babylonians who had a positional numbering system with base 60. Pages 16-18 of RMP give examples of how long division was performed by the Egyptians, and page 19 of van der Waerden 1961 explains the Egyptian methods for long division in a slightly different way. The methods are laborious and cumbersome by today's standards, and if there were a need for many general long division computations, it would be discouraging to have to use the methods of the ancient Egyptians. Mathematical astronomy would require extensive use of general methods of long division where the divisor may be a whole number plus a fraction.

Page 36 of van der Waerden 1961 raises the question of whether the ancient Egyptians had more advanced mathematical methods than those that have survived until today. By the word “ancient”, he means before the time of Alexander the Great, after which the city of Alexandria was founded (upon a tiny town) and the Greek astronomers emigrated to Alexandria where they later used the mathematical methods of the Babylonians, but dressed in the Greek language rather than the Akkadian language of the Babylonian pagan priests. He gives two reasons against this. One reason is that there are both elementary mathematical Egyptian texts and advanced texts, and the general character of the mathematics remains the same in both kinds of texts. The second reason is that eventually the Greeks had access to ancient Egyptian mathematical and geometrical methods. The Egyptians successfully used the geometrical methods in a practical way for building purposes, and the Greeks did use geometrical methods of their own as well as ancient Egyptian methods. If the Egyptians had developed good methods for doing arithmetic, we would also find some trace of this among the many Greek writings in mathematics. But the later Greeks (c. 150 BCE onward) only show use of the Babylonian methods in arithmetic. The ancient Egyptians did *not* use the positional base 60 number system of the Babylonians or the Babylonian multiplication tables up to 60 times 60.

Pages 353-356 of Ruggles 2005 discusses the pyramids of Giza, which are the most impressive pyramids of Egypt. Ruggles makes it clear that we do not know the methods

by which these massive monuments were constructed. In modern times several writers have made guesses concerning how this may have been done. The largest pyramid required over two million blocks, each weighing about 15 tons, and it is not known how the blocks were transported to such a height. They must have had an excellent knowledge of applied levers and pulleys, but even this supposition does not explain how they could have done it. Our lack of knowing how this marvelous feat of construction occurred is not evidence that it required advanced methods of mathematics that differs significantly from the examples we already possess. The mathematics needed for building construction is different from the mathematics that is needed for mathematical astronomy.

On p. 8 of Imhausen 2016 concerning Eqyptian mathematics, we find, “Fundamental in this respect is to realize that algebraic equations, an extremely powerful mathematical tool, did not exist in ancient Egypt.”

On pages 128-129 of Clagett 1995, he wrote the following:

“It should be clear from my summary account that the ancient Egyptian documents do not employ any kinematic models, whether treated geometrically or arithmetically. However they did use tabulated lists of star risings and transits (as is revealed clearly in Documents III.11, III.12, and III.14), all tied to their efforts to measure time by means of the apparent motions of celestial bodies.”

“On more than one occasion in this chapter, I have remarked on the absence in early Egyptian astronomy of the use of degrees, minutes, and seconds to quantify angles or arcs, though slopes were copiously used in the construction of buildings, water clocks and shadow clocks, such slopes were measured by linear ratios.”

Otto Neugebauer (1899-1990) is unquestionably considered to be the greatest historian of ancient mathematical astronomy in the 20th century. He studied the ancient Egyptian language as well as the ancient Assyrian language known as Akkadian (pp. 289-290 of Swerdlow 1993), and his pioneering studies were based on his own readings of the original texts. Neugebauer first studied how to read Egyptian hieroglyphics so that he could study ancient Egyptian mathematics from the original documents. Before he began his studies on ancient Egyptian and Babylonian astronomy, he made a detailed study of their mathematics. His doctoral dissertation was on ancient Egyptian mathematics, primarily based on the Rhind Papyrus from ancient Egypt.

After repeated efforts Neugebauer convinced Richard Anthony Parker, the most acclaimed expert on ancient Egyptian science and calendation, to leave the University of Chicago and join him as a professor at Brown University in 1949. Neugebauer and Parker published three volumes of ancient Egyptian astronomical texts from before the time of Alexander the Great (Neugebauer and Parker 1960-1969). These many texts

from ancient Egypt show that we have an understanding of their ancient knowledge of astronomy. These texts show no indication of the abilities later achieved by the Babylonians and Greeks in predictive astronomy, as Clagett pointed out.

On page 559 of HAMA 1975, Neugebauer wrote, “Egypt has no place in a work on the history of mathematical astronomy. Nevertheless I devote a separate ‘Book’ on this subject [10 pages] in order to draw the reader's attention to its insignificance which cannot be too strongly emphasized in comparison with the Babylonian and the Greek contribution to the development of scientific astronomy.”

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.

Ronald Wells 1996 wrote a chapter titled “Astronomy in Egypt”, which concerns the time before Alexander the Great and his command to build the most modern city of ancient civilization, Alexandria. On page 40 of this chapter, Wells provides the following summary: “Historians of science concede only two items of [astronomical] scientific significance bequeathed to us by the ancient Egyptians: the civil calendar of 365 days used by astronomers even as late as Copernicus in the Middle Ages, and the division of the day and night into 12 hours each. These fundamental contributions may seem meager to many; engineering of the pyramids and surviving temples notwithstanding.” Page 7 of this book edited by Walker states, “Ronald A. Wells was a Fulbright scholar in Egypt at the University of Cairo and at Helwan Observatory in 1983-4, and again at the Institute of Archaeology, Egyptology Division, University of Hamburg, in 1987-8.”

Otto Neugebauer wrote (1945) on page 11, “It will be clear from this discussion that the level reached by Babylonian mathematics was decisive for the development of such methods [for the numerical study of astronomy]. The determination of characteristic constants (e.g., period, amplitude, and phase in periodic motions) not only requires highly developed methods of computation but inevitably leads to the problem of solving systems of equations corresponding to the outside conditions imposed upon the problem by the observational data. In other words, without a good stock of mathematical tools, devices of the type which we find everywhere in the Babylonian lunar and planetary

theory could not be designed. Egyptian mathematics would have rendered hopeless any attempt to solve problems of the type needed constantly in Babylonian astronomy." On page 8 he wrote, "It is a serious mistake to try to invest Egyptian mathematical or astronomical documents with the false glory of scientific achievements or to assume a still unknown science, secret or lost, not found in the extant texts."

Neugebauer 1969 wrote on p. 78, "The handling of fractions always remained a special art in Egyptian arithmetic. Though experience teaches one very soon to operate quite rapidly within this framework, one will readily agree that the methods exclude any extensive astronomical computations comparable to the enormous numerical work which one finds incorporated in Greek and late Babylonian astronomy. No wonder that Egyptian astronomy played no role whatsoever in the development of this field."

From the many ancient texts of the Egyptians we conclude that they did not apply mathematics to astronomy before the time of Alexander the Great. After that time, the city of Alexandria flourished and the leading Greek mathematicians and astronomers settled in that city of Egypt, so that it became the world's leading center of Greek astronomy. But this was not part of ancient Egyptian culture; instead, it was the transplanting of Greek science and culture into Egypt by foreigners due to the newly constructed city of Alexandria with its modern marble streets and its grand marble museum that housed the greatest ancient library and some lecture halls. This famed museum became the best ancient equivalent to a modern university.

The attention devoted to ancient Egypt serves the purpose of showing that ancient Israel could not have obtained knowledge of mathematical astronomy from Egypt because Egypt did not possess knowledge of mathematical astronomy.

On pp. 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 p. 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*." The use of these Egyptian numerals in Israel during the monarchy before the Babylonian exile shows the lack of a positional numbering system with a zero, and hence the lack of general methods of long division that would be needed for mathematical astronomy.

The Babylonians were not able to approximate the time of the conjunction of the moon (between the earth and sun) until c. 360 BCE.

[22] Appendix D: Guidance for understanding Rarely used Hebrew Words

The purpose of this chapter is to give the reader guidance in understanding the methods that modern scholars use to determine the original meaning of a certain Hebrew (or Aramaic) word that is used only rarely and whose meaning may be disputed.

The Bible preserved by the Jews as inspired is called the Tanak which is the Hebrew and Aramaic Scriptures. Unless we can know the ancient meanings of all the words and expressions in the Tanak, our understanding of the Bible will have limitations. Let us consider how the Hebrew language came to be the primary language of the Tanak.

About 1900 BCE Abraham left Ur of the Chaldeans to go to the land of Canaan (Gen 11:31; 15:7). This area was about 450 miles northeast of Jerusalem. We find in Rendsburg 1996 on page 116 "… Abraham's Ur should be identified with modern Urfa in southern Turkey (near Harran), which not only accords with local Jewish and Muslim tradition, but truly is 'beyond the River,' to use the biblical expression [Josh 24:2]." Maps in most Bibles do not show Ur near Harran where it ought to be. Ur is in a region for which Akkadian was the ancient Semitic language. Abraham, Lot, and their servants with their families (perhaps 1,000 people – see Gen 14:14) brought this primary language of the Middle East with them, but Isaac, Jacob, and his sons' families lived in Canaan where they were a tiny minority in the midst of the Canaanites who did not speak Akkadian. In order to converse with their more numerous neighbors, these descendants of the original group with Abraham had to learn the local language of the Canaanites, and over time it should be expected that their use of Akkadian gradually died out because it was impractical in that environment. Roughly 500 years after Abraham's time, Joshua led the Israelites back into the land of Canaan after their captivity in Egypt. It is not known how much of the language of Canaan they retained during their generations in Egypt, but once they entered the Promised Land, their continuing contact with the native peoples led to further merging of the language of the Israelites with that of the Canaanites. In the review by Galia Hatav 1996, on page 131 we read, "Saenz-Badillos provides a full survey of the history of the Hebrew language, tracing its origins in the Canaanite period, through a span of 3,000 years, including its modern use in Israel." Saenz-Badillos 1993 wrote, on page 53, "From the moment of its appearance in a documented written form, Hebrew offers, as we saw in the previous chapter, clear evidence that it belongs to the Canaanite group of languages, with certain peculiarities of its own."

On page 12 of the book by Gordon 1967 there is a discussion about the ancient city of

Ugarit on the eastern coast of the Mediterranean Sea a little to the north of ancient Israel. This was the capital of the small Ugaritic Kingdom, which flourished from about 1400 to 1200 BCE during the time period of the Judges in Israel. This page states, "Ugarit itself was located near the northwest corner of what we may call Canaan, the land that nurtured a number of linguistically related groups including the Phoenicians and the Hebrews."

The discovery of the first texts in the Ugaritic language in 1929 is described on page 14 of the book by Mark Smith 2001. On page 15 he mentions that in 1930 a few scholars had assigned certain shaped letters in these texts to equivalent letters in ancient Hebrew. These letter assignments were made based upon the initial assumption that the Ugaritic language was very similar to ancient Hebrew. Once these letter assignments were made, the Ugaritic language was easily understood by scholars who knew Hebrew.

While there are some differences in grammar between Ugaritic and ancient Hebrew, these Semitic languages are very closely related in vocabulary. In 1930 a significant library of Ugaritic texts was discovered in the Ugaritic Kingdom. The northern boundary of the ancient Canaanites is unknown, so that leading scholars of Ugaritic studies at the end of the twentieth century are no longer willing to state that the Canaanites spoke the language that is called Ugaritic, but it was surely very close to it, as was biblical Hebrew.

On p. 38 of Schneidewind 2013, he wrote, "The extensive archives at Ugarit have yielded more than fifteen hundred texts in the Ugaritic language using alphabetic cuneiform, and a significant number of the texts are cultural texts that were copied and preserved through royal sponsorship."

On page 1 of the Ugaritic grammar book by Sivan 2001, he wrote, "At the present time, these clay tablets represent the only substantial second millennium B. C. E. source wholly written in the language of the inhabitants of the greater Syria-Israel region." On pages 2-3 he wrote that a few scholars hold the view that Ugaritic is a Canaanite dialect, but others maintain that it is an independent language quite distinct from Canaanite. On page 4 Sivan wrote, "Ever since the discovery of the Ugaritic writings many studies have been written concerning the expressions of style and of form that are common to Ugaritic and Biblical Hebrew literature both in larger literary units and isolated refrains." Later, on the same page we note, "The profound connection between the two literatures serves to elucidate many difficult passages in the Bible on [the] one hand and points to a common stylistic stock on the other."

On p. 41 of Schneidewind 2013, he wrote, "The fact that the order of the [Ugaritic language] letters is similar [to Hebrew] indicates some relationship between scribal training at Ugarit and the early Hebrew scribes."

On pages 224-225 of the book by Mark Smith 2001, he wrote, “In retrospect, the Ugaritic texts have fulfilled their promise for biblical studies. No other corpus from Syria to Mesopotamia, no roughly contemporary corpus such as the Mari texts, the El-Amarna letters, or the Emar texts (though these still hold considerable promise!), or even later texts such as the Dead Sea Scrolls, have made the same impact on the understanding of Israel's languages and culture.”

Certain words found in biblical Hebrew have a meaning that is not clearly determined from the biblical contexts. Some of these words have a cognate in the Ugaritic language or in another Semitic language. The word cognate means a word that sounds almost the same in the other language, is spelled almost the same using equivalent letters, is used in similar contexts, and which seems to have a common linguistic ancestry. Additional contexts of the cognate in the other Semitic language often provide clarifications or more precise meanings of some Hebrew words. **The primary caution to using a Semitic cognate’s meaning for a biblical Hebrew word is to be careful that the context is similar.**

In his discussion of older Hebrew lexicons compared to newer ones, on page 201, O'Conner 2002 wrote, “The most important change between them [both the first edition of the Koehler-Baumgartner Hebrew lexicon in 1953 and Zorell's Hebrew lexicon of 1954] and Buhl [his revision of Gesenius' Hebrew lexicon in 1915] was the discovery of Ugaritic [in 1929]: this is well represented [in some Hebrew word meanings] in Koehler-Baumgartner [1953] and almost not at all in Zorell.” **This German lexicon from 1953 has been translated into English with revisions into the bibliographic reference HALOT 2001.**

If grammatical care and most especially contextual matching is ***not*** followed, then the use of allegedly cognate words to transfer meanings can lead to wild speculations, and some irresponsible scholars have thereby given a foul taste to the use of Ugaritic in biblical studies; see pages 159-166 of the book by Mark Smith 2001 who especially points to the abuses of Mitchell Dahood in damaging the reputation of the use of Semitic cognates. Michael O'Conner 2002 comments on this negativity as follows on page 203, “It may be that the [irresponsible] excesses of G. R. Driver and Mitchell Dahood are to be blamed for the negative view often taken nowadays of comparative [Semitic] argumentation, but the neglect of such argumentation has had a deleterious effect.” In other words, abuses of the use of Semitic cognates has led some scholars to want to abandon its use altogether, and this abandonment has been harmful, especially if grammatical care and good contextual matching is achieved.

Another ancient nation on the eastern coast of the Mediterranean Sea and north of Israel is Phoenicia whose language is called Phoenician. As mentioned above in the quotation from the book by Cyrus Gordon 1967, Phoenician was also similar to ancient Hebrew.

On pages 58 and 60 of the book by Lipinski 1997, he wrote, “Phoenician is the Canaanite form of speech used in the first millennium B.C. in the coastal cities of Byblos, Sidon, Tyre, in the neighboring towns, and in the various settlements and colonies established in Anatolia [western Asia Minor], along the Mediterranean shores, and on the Atlantic coast of Spain and of Morocco.”

The language of the Phoenician colonies is called the Punic language, which is also very similar to Hebrew. Later, Aramaic became the language of the Mesopotamian region, but Aramaic was originally an eastern Mesopotamian Semitic language that also has many affinities to Hebrew. Syriac is a later offshoot of Aramaic. The common ancient Semitic languages that are closest to biblical Hebrew in order of closeness are the group of Ugaritic, Phoenician, and Punic, followed by Aramaic, Syraic, and Akkadian. Arabic is another language that is less close to biblical Hebrew.

The Israelites began their use of Hebrew in the land of Canaan where they derived their language. It was directly north of this area that Ugaritic and Phoenician were spoken. The deities of the Canaanites as mentioned in the Bible, namely Baal and Dagon, are also discussed in Ugaritic along with pagan practices associated with those deities, so the religion of the Ugaritic Kingdom and the religion of the Canaanites must have been very similar to each other, but not similar to the religion of Israel. Cognate words in these languages that are embedded in similar contexts and are not used in an idiomatic expression should have virtually the same meanings. The descendants of Abraham in the Promised Land after the exodus from Egypt adopted the vocabulary of this region in their language.

Some recent commentaries and some recent translations give Semitic cognates significance in determining the meaning of seldom used Hebrew words in the Tanak, especially when the context is similar. Another factor in Hebrew meanings is how the Hebrew word under discussion was translated in the Septuagint (c. 270-c. 100 BCE), Aquila (c. 130), the Syriac Peshitta (c. 400), and Jerome (c. 400). However, scholars who study the Septuagint have the opinion that its translators knew Greek much better than they knew Hebrew, so less weight is given to the Septuagint.

Comments concerning whether etymology is useful are now addressed. The supposed first or early use of a word is its etymology. On page 148 of his linguistic discussion, Cotterell 1997 wrote, “The myth of point meaning. The first is *the myth of point meaning* - the supposition that even if a word has a range of possible meanings attested in the dictionary, there lies behind them all a single ‘basic’ meaning.” Then on page 149 he wrote, “The etymological fallacy. The myth of point meaning is closely related to *the etymological fallacy*. Words represent dynamic phenomena, their possible range of associated referents constantly changing, and changing unpredictably.” On page 150 he wrote, “Thus, the meaning of a word will not be revealed by consideration of its

etymology but by a consideration of all possible meanings of that word known to have been available at the time the word was used (thus avoiding the diachronic fallacy [the meaning may change over time]), and of the text, context, and context within which it appears. Even then it is necessary to be aware that an individual source may make use of any available symbol in any arbitrary manner provided only that the meaning would be reasonably transparent *to the intended receivers*." Later on this page the author continues, "The fact is that the etymology of a word *may* help to suggest a possible meaning in a particular text. But it is the context that is determinative and not the etymology." Even comparative Semitic cognates are useless if the contexts of the cognates are not the same.

The KJV was published in England in 1611 at a time after that nation had rejected the authority of the Roman Catholic Church and replaced it with its national church, the Anglican Church. However, there was some religious tolerance in England, especially for the Jews. Gesenius wrote his famous Hebrew lexicon in the early nineteenth century, and he often used the meanings of ancient Arabic, Aramaic, and Syriac words to explain some Hebrew words. Thus Gesenius employed Semitic cognates to help understand biblical Hebrew, yet he did so in a responsible manner of matching the context. For some biblical Hebrew words that were difficult to easily determine, Gesenius later wrote a Hebrew lexicon that has never been translated into English, with amplified reasoning to justify his meanings. This later lexicon is *Thesaurus* 1835. After his death newer archaeological discoveries written in ancient Akkadian, Ugaritic, Phoenician, and Punic have been made, and thus many useful papers, lexicons, and commentaries have been written since the middle of the twentieth century that help explain certain Hebrew words and phrases. This is called the use of comparative Semitic languages applied to biblical Hebrew.

The Tanak was written over a period of hundreds of years in an ancient culture. The reader who wishes to study the Scriptures in solitary confinement with nothing but an English translation of the Bible will be disappointed because some of the Hebrew words are only now being capable of comprehension in its original context through archaeology with comparative Semitic languages, and the earliest translations. There is no single source to acquire that will provide all data that one needs to fully understand the latest attainable knowledge about ancient Hebrew. Strong's concordance is outdated in the scholarship of its lexicons, which were prepared by volunteer students. Many of its etymologies are conjectural and misleading. Etymology itself, even if correct, is often not a reasonable guide to discover the meaning of a Hebrew word. In general, etymology, especially when it is often a guess, is not a good method to use to arrive at the meaning of a Hebrew word that is not easily attained from its biblical contexts.

When journal articles discuss the meaning of a Hebrew word, they never refer to the Hebrew lexicon at the back of Strong's concordance because its lack of authority and

care is well recognized in scholarly circles. The claims in Strong's concordance that word *xxxx* was etymologically derived from word *yyyy* is generally mere conjecture and should not be repeated. The lexicons at the back of Strong's concordance are not authoritative and are only useful for words that are not controversial. But the word numbers in Strong's concordance are a very useful method for identifying the words for English speaking people for whom this is being written. Most Hebrew words do have stems, which are from two to four letters within the word.

When a rarely used Hebrew word occurs in a Hebrew lexicon, that lexicon should present some justification (or scholarly reference) for the meaning that its author(s) favor. BDB 1907 is a major upgrade of the lexicon by Wilhelm Gesenius. It is a valuable lexicon because it is very thorough in breaking down the uses of each Hebrew word into categories with a separate meaning for each category. It was written before many discoveries were dug up of ancient Semitic language specimens, so that it is partially outdated. Two recent lexicons that use information from cognate words are HALOT 2001 and NIDOTTE 1997. These lexicons present some justification for its meanings when the word is rare.

The most important conclusion to this chapter is the meaning and importance of cognate words in ancient Semitic languages, especially Ugaritic, Phoenician, and Punic for the meaning of rarely used Hebrew words whose meaning is not clear from the biblical context.

When the meaning of a rarely used Hebrew word is in question, the following is the preferred order of preference to determine its meaning.

(1) The use of Semitic cognates with care to have similar contexts.

(2) Ancient translations such as the Septuagint, Aquila, the Syriac Peshitta, and Jerome.

(3) Lexicons that provide justification for its conclusion. Along with this are journal articles and commentaries.

[23] Appendix E: Semitic Cognate Words for Month and the Full Moon

Appendix D should be read before this chapter.

Both of the Hebrew words that mean month, namely *yerach* and *chodesh*, also occur in the Ugaritic language, thus they are cognates in the two languages, 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 period of the biblical Judges), 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 the present writer's translation from the 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*.

[24] Appendix F: Discussion of Ps 81:3 and the Full Moon

Appendix D should be read before this chapter.

The primary focus of this appendix is the meaning of *keseh* [3677] in Ps 81:3. First ancient cognate examples will be shown. Then early translations of Ps 81:3 will be given. Then lexicons that show evidence will be presented. Then some miscellaneous matters are discussed.

Looking under the English word "moon" on page 819 in NASB-CONC, we note that in three places (Job 26:9; Ps 81:3; Prov 7:20) the NASB has the translation "full moon" for *keseh*, to which it assigns Strong's number 3677. Among these three places that show a context of astronomy (or time that relates to astronomy), there is no clear context that definitely shows its meaning to be "full moon". In Job 26:9 the majority of translations favor the figurative meaning "throne" instead of "full moon".

Ps 81:3, "Blow, at [the] new-moon [2320 *chodesh*] [the] shofar, at [the] full-moon [3677 *keseh*] on [the] day of our feast [2282 *chag*]."

(A) Ancient Cognate examples with *keseh*

The earliest known sources that relate to *keseh* are from ancient Semitic languages that involve three texts, one in Ugaritic, one in Akkadian, and one in Phoenician.

The Ugaritic text that relates to *keseh* is labeled RS 24.271 and dates to the period of the Judges in Israel. It is transliterated on page 584 of Virolleaud 1968. On each line of the text there appears one pair of names of deities with the word that means "and" separating the names. Line 6 is shown as "*yrh w ksa*", omitting almost all vowels as is common to writing in ancient Hebrew, Ugaritic, and Phoenician. The word *yrh* (the "h" has an extra mark to indicate the sound of approximately "k") is an obvious cognate to the Hebrew *yerach*, meaning "moon", and this is not controversial among Ugaritic scholars. We note that line 4 has "*dgn w bl*", which obviously means "Dagon and Baal" (mentioned on page 98 of John Gray 1978). During the period of the Judges, Dagon is mentioned in I Sam 5:2-7 and Baal is mentioned in Judg 6:25-32. There is not a lot of contextual clarity for *ksa*, yet it is associated with the moon here. This shows a

simultaneous written and astronomical context that indicates a good cognate to Ps 81:3. The names of deities are nouns and represent nouns. This would be some distinctive appearance of the moon, with prime candidates being either the new crescent or the full moon. It does not make good sense to think this means “covering” as in the absence of all light when the moon is covered from view. No ancient society is known to consider the absence of light from the moon as a deity. Taken as it is without any prejudice from other contexts, it would most naturally mean the new crescent or the full moon.

The single Akkadian context that relates to *keseh* is less clearly dated. Akkadian was slowly being phased out and Aramaic was replacing it in many areas of society, but not in the area of pagan temples, from about 900 BCE onward. Akkadian was spoken in Assyria and Babylon and nearby regions. There was bilingualism and word transfer. From Zimmern 1910 and especially p. 63 of Zimmern 1917, the Akkadian word *kuseu* means “headdress” of the moon god at the time of the full moon. Here the association of the time of the full moon is relevant, but the word itself means “headdress”, which is round. The contextual closeness of this association to *keseh* is somewhat subjective because a headdress by itself is not astronomical, yet there is a link through the time of the full moon.

The Phoenician text that relates to *keseh* has two methods to designate this text, one is “Larnaka 2:12” and the other is “KAI 43:12”. This writing was discovered in 1893 on the Mediterranean island of Cyprus where the ancient Phoenicians had established a colony. From the facts in the text, page 245 in Van den Branden dates this writing to 272 BCE. This whole context is printed in the equivalent modern Hebrew characters on page 57 and translated on page 58 in Honeyman 1940. The word *chodesh* occurs several times where it is translated month. The right edge of the writing is partly crumbled off so that the start of line 12 is missing. With added vowel sounds including the added three consonants that scholars believe were originally present in brackets, the key phrase is “*[b-chode]shim v b-kesehim*”. The plural noun ending *im* is there twice. Honeyman's translation of this phrase on page 58 is “on [the] new moons and on [the] full moons”, referring to times of animal sacrifice. The whole text is prose rather than poetry, and there are no examples of repetitions of phrases that mean the same thing in approximate synonyms. With the presence of the word for “and”, this indicates that *chodesh* does not mean *keseh*, and both refer to distinctive times of the lunar cycle for animal sacrifice. Phoenician contexts show that *chodesh* means either “month” or “new moon”. Thus the implied natural choice for *keseh* here is “full moon”. This is good evidence that the Phoenician word *keseh* is cognate to the Hebrew word *keseh*, and the meaning is “full moon”. The nature of the context is a very good match because both Ps 81:3 and Larnaka 2:12 have *chodesh* and *keseh.*

(B) Ancient translations of Ps 81:3

The vagueness of the Septuagint in both Ps 81:3 and Prov 7:20 show that its translators were guessing about the meaning of *keseh*.

The Aramaic Targums (Jewish paraphrases of the Tanak into Aramaic) are not distinctly dated and were likely written c. 200-500, which is too uncertain to make any useful claims. An Aramaic Targum (page 89 of E. Nestle 1879) gives the paraphrase of the second prepositional phrase that translates to “in [the] covered new moon”. In the Rabbinic writing Leviticus Rabbah 29:6, on page 373 of the translation edited by H. Freedman and Maurice Simon 1977, we find, “when it is concealed”. Unfortunately the date of the composition of Leviticus Rabbah is not known, but it probably comes from at least the early middle ages. There are three examples for Ps 81:3 from the *Babylonian Talmud* (Soncino translation) whose original language date from c. 500-600, and this is quite late. The problem with accepting meanings from the *Babylonian Talmud* and other rabbinic writings is that its reasoning for the meaning of any biblical text does not involve Hebrew grammar, cognate languages, secular contexts with the key Hebrew word in focus, or older translation sources. Rabbinic opinions without reasoning must be rejected.

Aquila translated the Tanak into Greek c. 130 (note page 36 of Louis Ginzberg 1902), and this was quite literal in a word for word sense. This was about 60 years after the Temple was destroyed when Hebrew was still spoken in limited areas of greater Palestine. Aquila's early life was in a solely Greek speaking environment, but he later moved to Palestine where he studied Hebrew. In his translation from Hebrew, he was aided by leading Jewish scholars of his time (note F. C. Burkitt and Louis Ginzberg 1902). Only small portions of Aquila's translation have survived. On page 182 of Reider and Turner the Greek word *panseleenos* is given as Aquila's translation of *keseh* in Ps 81:3 and Prov 7:20. This Greek word appears on page 1299 of Liddell and Scott where the meaning is “full moon” or “time of full moon”. This Greek word also appears on page 1053 of Hatch and Redpath where Aquila's version is cited as the source in these two places. The full Greek text of Aquila's version of Ps 81:3 appears on page 232 of F. Field where the symbol for the translation by Aquila as well as the symbol for the later translation by Symmachus (c. 180) appear, showing that both translations agree. Aquila's Greek phrase including *panseleenos* is shown in Prov 7:20 on page 324 of F. Field. In summary, Aquila's translation from c. 130 made with the help of the leading rabbinic scholars (according to tradition, and before the Mishnah) shows that *keseh* means “full moon”. Symmachus agrees.

The Syriac language is an offshoot of first century Aramaic, and is thus a Semitic language with significant affinity to Hebrew. The Syriac translation from the Tanak was made c. 150-200 according to estimates made by Michael Weitzman 1998, p. 258. The Peshitta text of Ps 81:3 written in Syriac script (listed as verse 4 in both the Hebrew text as well as the Syriac text) appears on page 126 of William E Barnes 1904. On the

second line of verse 4 the word at the right that is written in Syriac script is transliterated *vbks* (hence meaning “and in [the] *kesa”*) if one examines the chart of English, Hebrew, and Syriac letter equivalents given on page 10 of William Jennings 1926. Thus the translators from the Hebrew into the Syriac from c. 150-200 used the Syriac word *kesa* for the Hebrew *keseh*. The same Syriac script for *kesa* in Ps 81:3 found on page 126 of William E Barnes 1904 also appears on page 220 of the Syriac dictionary by J. Payne Smith 1903. There Smith gives the meaning of the Syriac word “time of full moon, the fifteenth day of the month”.

When Jerome first translated the Psalms from the Septuagint into Latin c. 383 and again c. 387 (p. 11 of Charles Callan 1949), he used the same vagueness as the Septuagint in Ps 81:3. Later, c. 392 (p. 233 of Charles Cooper 1950), Jerome translated the Psalms from Hebrew to Latin.

Page 103 of J. M. Harden 1922 shows that his Latin translation of the Hebrew prepositional phrase *b-keseh* is *in medio mense*, which means “in the middle of the month”, and this is the time of the full moon. Jerome did have access to Aquila's translation of the Tanak into Greek (page 36 of F. C. Burkitt 1902), so that Jerome's translation of Ps 81:3 could have been partially influenced by Aquila. However, Jerome's primary goal was to produce his own translation based upon the knowledge of Hebrew that was imparted to him by various Jewish scholars. Jerome's judgment was against the belief that *keseh* means “at the covered time” despite the fact that in his time there was rabbinic tradition that favored the meaning “at the covered time”.

In summary, the translations of Aquila, Symmachus, the Syriac Peshitta, and Jerome use “full moon” or “middle of the month” for *keseh*. Rabbinic literature uses “at the covered time” for *keseh*.

(C) Hebrew Lexicons that give Evidence

On p. 490 BDB 1907 gives the meaning of *keseh* (3677) as “full moon”. It uses the Akkadian language cognate as evidence.

On p. 487 HALOT 2001 gives the meaning of *keseh* (3677) as “full moon”. It uses several Semitic cognates as evidence with references that supply further documentation. HALOT gives the reference from Zimmern 1910, but the reference from page 63 of Zimmern 1917 is also relevant. HALOT states that the Akkadian word *kuseu* means “headdress” of the moon god at the time of the full moon.

On p. 671 vol. 2 NIDOTTE 1997 gives the meaning of *keseh* (3677) as “full moon”. It uses the cognates from Phoenician and Ugaritic as evidence. It refers the reader to two major reference works for further study.

The next and last lexicon to be cited is the one that Gesenius (1786-1842) wrote in Latin

whose second edition is dated 1835. He wrote this *after* he completed his complete Hebrew lexicon. He called this *Thesaurus*. He wrote this to provide expanded discussions of only selective Hebrew words whose meaning was not obvious from the context.

On pages 698-699 of vol. 1 of *Thesaurus* we find *keseh*. This is written very compactly with abbreviations. Here is this writer's expanded translation from Gesenius' Latin text (yet omitting some Syriac script with its citations):

Isa Bar Ali, who wrote a Syriac lexicon before 900 CE, shows the Syriac word *ksh* to mean 'full moon' based upon clear contexts, e. g., 'the full moon on the night of the fourteenth'. In the Syriac Peshitta, the Syriac word *kesa* is used in I Ki 12:32 to refer to the fifteenth day of the month and in II Chr 7:10 to refer to the twenty-third day of the month, indicating that a variation from the middle of the month onward for eight days qualifies for *kesa* in Syriac. Barhebraeus and Ephraim Syrus also use the Syriac *kesa* to refer to the whole time of the full moon. In *Acta Martyrum* (a Syriac version of *Acts of the Martyrs*, c. 250 CE), 1:175, *kesa* is used opposite the new moon. Aquila's translation into Greek and Jerome's translation into Latin, both from the Hebrew, also give the meaning of *keseh* to refer to "full moon". At the time of the full moon, the moon is fully ***covered*** with light! Thus *keseh* in Ps 81:3 and Prov 7:20 means "full moon".

It is worthwhile to note that all four lexicons put heavy emphasis of the use of ancient cognate words to show its proper meaning.

(D) Can the verb *kasah* (3680 to cover) be acting similar to an English gerund making it a Noun in Ps 81:3?

Ps 81:3 contains the double word *b-keseh,* which is the Hebrew preposition *bh* prefixed to the Hebrew word *keseh*. This preposition most typically means "in", "at", or "on".

Can the Hebrew word *keseh* in Ps 81:3 be the Hebrew verb *kasah*, which is Strong's number 3680? This verb means "to cover" or "to hide". The Hebrew words, *keseh* in Ps 81:3 and one form of the verb *kasah* sometimes look the same if the vowels are discarded.

The verb *kasah* (3680) occurs 152 times in the Tanak. It is found on pages 491-492 of BDB and on pages 607-608 of Wigram. Among the 152 occurrences, the word *keseh* in Ps 81:3 looks like the Hebrew verb *kasah* in 15 places in the Tanak (Ex 10:5; Lev 16:13; Num 9:15; 22:5; Job 15:27; 23:17; 36:30, 32; 78:53; Prov 12:16, 23; Isa 29:10; Ezek 18:16; Hab 3:3; Mal 2:16). None of these 15 places have a prepositional prefix such as *bh* found in *b-keseh*, and in fact there is a grammatical reason why there could not be such a preposition prefixed to this form of the verb *kasah* (3680). The grammatical form of all Hebrew verbs are stated in AKOT,

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." This is saying that the "infinitive construct" form of a verb may have a prepositional prefix, but no other verb form may have a prepositional prefix. Having looked up and given specific attention to all of the 15 places where the verb *kasah* looks like *keseh* in AKOT, it can be asserted that none of them are called the infinitive construct. Furthermore, there are 14 places among the 152 where the verb form is indeed identified as the infinitive construct (Ex 28:42; Num 4:15; I Ki 7:18, 41, 42; II Chr 4:12, 13; Ps 104:9; Ezek 24:7, 8; 38:9, 16; Hos 2:9; Mal 2:13). All except two of these 14 places do have a prepositional prefix. All of these 14 places have the same pronunciation and Hebrew consonants, and this is different from *keseh*. The transliteration is *ksoht*. Therefore, the double word form *b-keseh* has a grammatical limitation (infinitive construct) if *keseh* is to be a verb, and the verb *kasah* does not conform to this limitation. Thus *keseh* in Ps 81:3 is not Strong's number 3680 and *keseh* is a noun, not a verb. Hence evidence from the Hebrew text of the Tanak shows that *keseh* does not mean the verb "to cover", Strong's number 3680.

All 152 occurrences of *kasah* are also found in PARSE_1 and PARSE_2 which also verifies the corroboration of the use of the infinitive construct. Pp. 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. Thus BDB corroborates the grammar book by Harper. Thus *keseh* in Ps 81:3 cannot be the verb *kasah* (3680).

(E) Can the Full Moon be the New-Moon in Ps 81:3?

In Appendix E it was shown the full moon occurs about the 14th and 15th days of the biblical Month, so the full moon cannot be the new-moon (which is the first day of the month). The only evidence put forth that the full moon is the new-moon is based upon the grammar of Ps 81:3.

Here is a literal translation of Ps 81:3 that preserves the Hebrew word order and uses the translation "full-moon" for *keseh* .

Ps 81:3 "Blow in [the] new-moon the shofar, in [the] full-moon on [the] day of our feast."

Without adding the word "and" after the word shofar, it does give the impression that the full moon defines the new moon. This verse has two prepositional phrases: "in [the] new-moon" and "in [the] full moon" using the same preposition to begin each phrase.

Next, 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 word "and" to the translation in order to give the correct sense to the reader. In poetry, normally expected words may need to be supplied in translation. 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. Hence this theory is merely a guess on the basis of grammar, and is defeated by the examples given above.

(F) The origin of the Mistranslation of *keseh* in the KJV

Ps 81:3 [KJV], "Blow up the trumpet in the new moon, in the time appointed, on our solemn feast day.

There is a clear explanation for the KJV's translation of the Hebrew prepositional phrase *b-keseh* as "in the time appointed". Within Orthodox Judaism the most respected Jewish commentator on the Tanak as well as the Talmud is Rashi (1040-1105). His commentary on Ps 81:3 is found on page 383 of Gruber 1998 where Gruber translates, "AT THE *kesse*, the day appointed, prepared and fixed for it. In the same vein 'He will come home at the kesse' (Prov. 7:20) [i. e.], at the appointed time which has been fixed." In the previous quote the part in parentheses and square brackets are from Gruber. The concept of "preparing and fixing an appointed time" means "to determine and specify beforehand an appointed time". Thus Rashi's interpretation differs from the plain meaning of the *Babylonian Talmud*. Tanach-Stone translates the phrase in Ps 81:3[4] as "at the time appointed", thus following Rashi rather than the plain meaning of the

Babylonian Talmud. Since Tanach-Stone is a translation by a team of Orthodox rabbis, it shows that sometimes Orthodox rabbis will side with Rashi rather than the Talmud. Gruber points out in footnote 9 on page 385 that Rashi gives credit for his interpretation to another source.

Pages 394-395 of Franz Delitzsch 1952 explains the reasoning behind Rashi's interpretation, along with other Jewish scholars who later agreed with him, where Delitzsch wrote, "... a time fixed by computation (from [Hebrew] *kasah* = [Hebrew] *kasas*, [Latin] *computare*)". This writer added the square brackets for clarity. The Hebrew word *kasas* is explained here by the Latin word *computare*, which means "to compute". When you compute an appointed time, you determine and specify beforehand an appointed time through a computation. This excessively brief explanation by Delitzsch is saying that Rashi favored the view that the Hebrew word now in the Tanak was originally the Hebrew word *kasas.* Thus Rashi is asserting that the last letter in this word got copied incorrectly and all subsequent surviving copies duplicated this error. Rashi favors the meaning of the different Hebrew word *kasas* that he supposes was the original word. Rashi used this technique of textual criticism frequently in his corrections to the Talmud. During the time of Rashi, Orthodox Jews were opposed by the Karaites in the determination of the calendar. The Orthodox scholar Rashi favored the modern calculated calendar, and he chose an explanation of Ps 81:3 that implied a computation to fix the day. Rashi was apparently motivated to favor an explanation that supported a calculated calendar.

Few people would imagine that the KJV in Ps 81:3 would favor a translation that was based upon Rashi's textual criticism of the Hebrew text.

[25] Appendix G: Isaiah 47:13, the Zodiac, and the meaning of *chodesh*

Isa 47:13 is a most interesting verse of Scripture because it teaches much about the Hebrew word *chodesh* and it condemns the Babylonian astrologers, as will be shown in this chapter. Soon a literal translation of Isa 47:13 will be presented, and one goal of this chapter is to explain why this translation is appropriate and accurate.

Appendix D should be read before this chapter.

First, some remarks should be made concerning the context. Isa 1:1 mentions that Isaiah's recorded visions were during the reigns of the Judean kings Uzziah, Jotham, Ahaz, and Hezekiah. This approximates the period of Isaiah's visions as from c. 760 to c. 700 BCE. The Neo-Assyrian period is from c. 1000 to 612 BCE, at the end of which Babylon captured the Assyrian capital of Nineveh (see page xxiv of Rochberg 2004). Hence Isaiah lived during the time of dominance by the Assyrian empire. Isa 8:4; 10:5-6 is a prophecy that Assyria will soon conquer some of its neighbors. Isa 30:31-33 is a

prophecy that Assyria will be defeated. Babylon was south of Assyria, and the Babylonian empire eventually occupied more than the extent of the Assyrian empire. Isa 39:5-7 is a prophecy that the House of Judah will be defeated by Babylon. This implies that Babylon would first defeat Assyria, which fully transpired in 612 BCE. During Isaiah's lifetime, although the Assyrian empire was politically dominant, the Babylonian empire also existed to its south. Isa 47:1, 11 is a prophecy that eventually Babylon would be defeated, and Isa 47:13 is a taunt directed at Babylon. The "you" at the start of verse 13 is 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.)." Recall the above remark that Isaiah's visions were from c. 760 to c. 700 BCE. 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."

The Jewish biblical scholar Ibn Ezra (1089-1164) wrote a commentary on the book of Isaiah, in which he wrote that the two Hebrew words together, *hovrev shamayim* [1895, 8064], mean "astrologers" (see page 216 of Ibn Ezra). This viewpoint made its way into the KJV, so that the KJV does not show the word "heavens", which is the literal meaning of *shamayim*.

The Hebrew word *havar* [1895] only occurs in this one place in the Tanak. From this Hebrew context alone, without any outside knowledge, there is insufficient information to determine the meaning of *havar* [1895]. Jerome was taught Hebrew by Jewish scholars, and he translated this from Hebrew into Latin c. 395. Long after his death the Roman Catholic Church accepted Jerome's translation from Hebrew to Latin (except for the Psalms) as the Vulgate, its official text of the translation of the Tanak. In the bibliography, on page 180 of the Vulgate Isaiah at Isa 47:13, we see the Latin words *augures caeli*, which means "seers of the heaven". In Brenton for the Septuagint at Isa

47:13, the text shows the Greek *astrologoi tou ouranou*, which is translated "astrologers of the heaven". Generally, it is recognized that Jerome's knowledge of Hebrew was significantly better than the Septuagint translation into Greek from the Hebrew, although the Septuagint presents its own special problems because the Hebrew text from which the Septuagint was translated (this text is labeled the *Vorlage*) no longer exists. If we assume that the *Vorlage* was very close to the Septuagint that has survived, then there are many deletions and additions between the *Vorlage* and the Masoretic Text of the Tanak. The conclusions are that the *Vorlage* does not exist, and the Septuagint is not generally reliable for the purpose of determining the proper translation of the Hebrew Masoretic Text into English. With appropriate careful reasoning, there are some situations where the Septuagint can help resolve some apparently ambiguous meanings of some Hebrew words. Nevertheless, Jerome and the Septuagint agree in this instance, and these are the earliest known sources that provide a meaning of the Hebrew *havar* [1895].

Page 211 of BDB discusses *havar* (1895), and the word "astrologers" never appears in this entry, although a partially related idea is presented. BDB gives the meaning of *havar* to "divide" as a verb, but concerning this meaning BDB comments "so most [commentators], but dub. [= dubious, doubtful]". BDB quotes one source that proposes the translation "they that divide the heavens", but BDB gives no alternative. The fuller explanation given by BDB is "the distinguishing of signs of the zodiac, or other astrological division of the sky". The RSV gives the translation "those who divide the heavens", thus agreeing with this approach to the translation. BDB explains that the origin of the conjectural meaning "divide" is the similar sounding word in the Arabic language, *habara*, which means to "cut into large pieces, cut up".

A translation from German to English from page 184 of the short article by Josua Blau has this to say about the use of the Arabic word *habara* as the explanation of the Hebrew *havar* (1895): "However, the Arabic *habara* is based upon the explanation 'cut'; indeed the subject of *habra* appears to be a 'piece of meat' and its meaning is 'meat in (large) cut pieces'; thus one can surely not accept this explanation of [the Hebrew] *havar*." Here Blau is emphasizing the need to have a similar context in order to reliably claim that a word from one Semitic language is a cognate to a word from another Semitic language. The context is different, so he fully rejects the explanation "to cut". Thus Blau rejects the basis behind the RSV translation "those who divide the heavens".

The theory of using this Arabic word as a suggested cognate to the Hebrew word *havar* (1895) does, at least momentarily, appear to be supported by the idea of the zodiac in the explanation of BDB. In order to determine whether the zodiac lends support to using this Arabic cognate theory (to divide the heavens), it is necessary to understand the origin of the zodiac and its meaning. This needs to be compared to the time at which Isaiah prophesied (c. 760 – c. 700 BCE).

On page 31 of the book by Koch-Westenholz the term *zodiac* is defined. Her definition uses the word ***ecliptic***, which is the apparent path of the sun in the sky during a complete year as observed from the earth. Constellations (recognized star groups) appear in the sky at or close to the ecliptic. Her definition of the ***zodiac*** is: "The ecliptic is divided into twelve equal parts, [called] the signs of the zodiac. The zodiacal *signs* are a mathematical construction and do no longer correspond to the portion of the sky occupied by the zodiacal *constellations* whose name they bear. The zodiacal signs are: Aries, Taurus, Gemini, Cancer, Leo, Virgo, Libra, Scorpio, Sagittarius, Capricorn, Aquarius, and Pisces." These signs are used in horoscopes.

Concerning the origin of the zodiac, which refers to the division of the year into 12 equal parts, each originally containing one designated constellation, but no longer tied to the current location of that constellation, here is a comment by John Britton, a specialist in ancient mathematical astronomy, especially Babylonian astronomy. On page 244 Britton 1999 wrote, "Obviously the [Babylonian System A] theory [of lunar anomaly] was invented earlier, but it [this mathematical theory of astronomy] seems unlikely to have materially predated the zodiac, which seems to have appeared between -463 and -453. On balance, if we assign its [this theory of lunar anomaly's] invention to -440 +/- 15 years, we should not be too far off."

Here Britton estimates the origin of the zodiac as 12 equally divided signs of the year between 464 and 454 BCE. On page x of Rochberg 1998, we note the following concerning the origin of horoscopes: "The appearance of horoscopes in Babylonia at the end of the fifth century B.C. [= c. 400 BCE] marks the point when the situation of the heavens at the time of a [person's] birth came to be regarded as significant for the future of an individual." On pages 20 and 25 Rochberg gives the year 410 BCE as the earliest known text of a horoscope. Horoscopes are based on the zodiac. Hence we see that the zodiac or horoscopes cannot be associated with any statement of Isaiah, showing a difference of 250 years. Thus the comment by BDB is out of place in its alleged association of dividing the heavens with the Hebrew word *havar* [1895]. Of course BDB was written before the date of the origin of the zodiac became known by historians of ancient astronomy. Thus BDB is out of date in this area. The origin of both the zodiac and horoscopes is ancient Babylon.

In an email sent by professor Lester Ness to the group HASTRO-L on June 17, 2004 he translated from the French on page 53 of the book by Auguste Bouche-Leclercq as follows, "However, it has been proven beyond doubt that the Egyptian zodiacs are all from the Roman period and freely imitate the Greek zodiac. At one blow, all the extravagant suppositions based upon their [the Egyptian's] supposed antiquity are destroyed." This was written to combat the erroneous claims that the zodiac originated in ancient Egypt. The Greeks copied the zodiac from the Babylonians and added some of their own ideas.

Ullendorff 1962 suggested another meaning of the Hebrew word *havar* [1895] on pages 339-340 of his paper. He favored the two Hebrew words together, *hovrev shamayim* (1895, 8064), to mean "worshippers of the heavens". He claimed that the Ugaritic word *thbr* (to worship) is cognate to the Hebrew word *havar.* However, the Ugaritic context has nothing to do with signs or bodies in the heavens, so that there is no contextual link between the Ugaritic word and the Hebrew word. Besides, the writers who discuss ancient Babylonian astrology do not suggest that these astrologers worshipped the heavenly bodies. They made prognostications based upon what might be seen that was associated with the phenomena in the heavens. Deut 4:19, which emphasizes worship, is not specifically associated with ancient Babylon.

The evidence of the greater historical context of Isaiah as well as the context within Isa 47:13 along with the translation of word *havar* (1895) in the Greek Septuagint, in the Latin Vulgate from the Hebrew by Jerome, and by Abraham Ibn Ezra all agree that its meaning should be the plural noun *astrologers*, yet the literal grammatical form of *havar* is that of a verb in the plural form. There is no good case for a different meaning based upon the context. Without the contextual evidence from historical astronomy and astrology that became available c. 2000, this might still be debatable. Today's knowledge of ancient Babylonian history makes it clear that *havar* should mean "astrologers".

On page 302 of BDB Isa 47:13 is specifically written under meaning 1c for the Hebrew word *chozeh* (2372), and this verse has this verb in its plural form immediately preceding "at [the] stars". BDB states of this context "as stargazers, in astrology".

Below the middle of column 1 on page 395 of BDB, Isa 47:13 is specifically written under the Hebrew word *yada* (3045), and it occurs in a plural verb form. Here BDB translates from *yada* to the end of the verse as follows, "who declare, at the new moons, of (the things) which are to come". Here BDB translates *yada* "who declare", but the context indicates that their declarations are predictions or prognostications.

In painstakingly crawling through Isa 47:13, at last we arrive at the primary Hebrew word that provides the reason for exploring this verse in its context in detail. That is the Hebrew word *chodesh* (2320). Here it 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. As already stated above, 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) Near the beginning of this chapter quotations from Rochberg and from Swerdlow were given to show that 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 prior quotation by Swerdlow is almost a summary of Hunger's book.

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

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."

The NRSV reaches an accurate literal sense of the whole verse. Isa 47:13 [NRSV], "You are wearied with your many consultations; let those who study the heavens stand up and save you, those who gaze at the stars and at each new moon predict what shall befall you."

Isa 47:13 shows that the Babylonian practice of predicting the future of nations and the future of kings by what is seen in the heavens is sinful.

An example of the type of prognostication that was made by Babylonian priests is found on page 140 of Hunger 1992, catalogued as RMA 30, "If at the moon's appearance its right horn becomes long, its left horn short: the king will conquer a land not his own." On the same page RMA 37 has, "If at the moon's appearance in intercalary Adar ([13th month] XII/2) its horns are pointed and (the moon) is red: the ruler will become strong and subdue the land." More normal appearances also provided predictions.

Babylon had a pagan priesthood, which did not use two silver trumpets to announce the start of a month. The Babylonian priesthood spread into Assyria so that the border between Babylon and Assyria was somewhat artificial to their priesthood. Before Babylon conquered Assyria's capital city, Nineveh, in 612 BCE, this priesthood performed their nightly observations of the heavens and made their first forays at mathematical astronomy. The kings of Assyria recognized the supposed powers of this priesthood and received letters from this priesthood. One letter that is labeled number 303 (also labeled Harper 894) on page 208 in the book by Pfeiffer 1935, was sent from an authoritative priest to the king of Assyria that contains the following: "On the 30th I saw the moon, it was in a high position for the 30th day; presently it will be as high as it stands on the 2nd day. If agreeable to the king my lord, let the king wait (for a report) from the city of Ashshur. The king my lord may then determine (for us) the (first) day (of the month)." The context of this letter mentions the phrase "saw the moon" as a contrast to not seeing the moon, so that this must refer to the first sighting of the crescent by the observer. Since this mentions that the moon was seen about as high in the sky as for a second day old moon, the author suggests that the king wait for a report from another location where perhaps the moon might have been seen one day earlier. The sighting was near the end of the 30th day of the month.

Here is a similar example from page 75 of Hunger 1992, where the completion of a damaged word in square brackets is by Hunger. It is catalogued as RMA 76: "We watched on the 29th day; the clouds were den[se], we did not see the moon. We watched on the 30th day; we saw the moon, but it was (already) very high. The (weather) of the 29th day has to do with it. What is it that the king my lord says?" Here the author suggests that if the weather had been clear one day earlier, it would likely have been seen. He wants the king to decide which of the two days should start the month.

In both examples the Assyrian king was to officially declare the first day of the month on the basis of the information provided. These examples and others like them make it clear that the sighting of the new crescent began the first day of the month in Assyria and Babylon.

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.

From roughly the time of Ezra's return to Jerusalem in 457 BCE, the Jews in Babylon adopted the Babylonian month names in their own calendar. This would only make sense if their months began the same way as indicated in Isa 47:13, and if their month numbers were also almost always the same at that time in history. **Since *chodesh* here is used for the Babylonian new-moon (the day beginning with the sighting of the new crescent), it should have the same meaning as the biblical new-moon.**

[26] Notes on Biblical Chronology

(A) Caution on King's Reigns

Some writers have attempted to determine historical dates of some biblical events, and then, on the basis of those dates, attempted to draw conclusions on the biblical calendar. At first this appears to be a worthy goal, but the problem one soon sees is how to determine historical biblical dates with confidence. The problem of accurate historical biblical dates was addressed by John H. Hays and is quoted next. This source by Hayes has footnotes with references that explore conflicting viewpoints by different scholars on this subject.

On p. 92 of Hays 2001 we note, "Attempts to determine the chronology of Israelite and Judean kings encounter enormous problems and difficulties. Debate has occurred, for example, over when the calendar year and thus the regnal year began: whether in the spring or fall; whether both kingdoms began the year at the same time or at different times, and whether the same systems were employed in both kingdoms throughout their history. The fact that the Hebrew Bible contains no statements about a new year's day or when a new year began has greatly contributed to uncertainty."

The book on biblical chronology by Galil 1996 does the reader a favor because in its

voluminous footnotes, it supplies many references that show opinions of other scholars that disagree with Galil the author. Galil does not claim that his opinions on chronology must be correct and that opposing opinions are incorrect.

The main purpose of this chapter is to point out that the attempt to prove something about the biblical calendar on the basis of establishing specific dates in biblical history cannot be trusted because biblical chronology does not have a firm provable exact foundation. However, a few observations are now made with an interesting example.

(B) Evidence for a Fall to Fall Civil Year

Ex 23:16 states "Feast of the Ingathering at the end of the year", and here there is the Hebrew preposition *bh* before the word "end". Here in Ex 23:16 we note that despite the fact that the first month is a half-year earlier, this festival in the seventh month is called the end of the year. Thus a biblical year has two ends, one before the first month and the other at the Feast of Tabernacles. This indicates that perhaps there are two kinds of years, one religious, and the other civil. Utilizing the statement of the first month, the religious year is spring-to-spring (Ex 12:1-2), and perhaps there is a civil year running from fall-to-fall (Ex 23:16), although the word "civil" is not used in Scripture.

Concerning the Jubilee Year and the count of years leading up to it, Lev 25:8-10 states, "You are to count off seven Sabbaths of years for yourself, seven times seven years, so that you have the time of the seven Sabbaths of years, namely, forty-nine years. (9) You shall then sound a ram's horn abroad on the tenth day of the seventh month; on the day of atonement you shall sound a horn all through your land. (10) You shall thus consecrate the fiftieth year and proclaim a release through the land to all its inhabitants. It shall be a jubilee for you, and each of you shall return to his own property, and each of you shall return to his own family."

This shows a count of years from fall-to-fall with the Jubilee Year beginning in the fall, although the word fall does not appear. Note that the Scripture itself does not have the expression Jubilee Year, although the blowing of the ram's horn to proclaim the fiftieth year at this time does occur Thus both Ex 23:16 and Lev 25:8-10 show that there is a type of year that is from fall-to-fall.

Neh 1:1 mentions Chislev in the 20th year of King Artaxerxes. In Neh 2:1 it mentions Nisan in the 20th year of King Artaxerxes. Chislev is the ninth month and Nisan is the first month. If the regnal year for a king began with Nisan 1, then Neh 2:1 would state the 21st year instead of the 20th year. This implies that a regnal year does not begin with the first month, but instead in the fall, most likely at the Feast of Tabernacles according to Ex 23:16.

These biblical considerations indicate a possible civil year from fall-to-fall in Judah.

However there is a religious year from Nisan to Nisan based upon the numbering of months, Ex 12:1-2, and Leviticus 23. Nevertheless, secular history does show that the Babylonian and Persian regnal years were from Nisan 1 to Nisan 1. The Babylonian and Persian practice for counting regnal years was apparently not adopted by the Jews according to Neh 1:1 and 2:1. Since this was not adopted by the Jews under Babylonian and Persian influence, it is unlikely that the Jewish practice would have been different before the Babylonian exile, but we do not know for certain. The most rational thinking is that in II Ki 24:12 where it states, "So the king of Babylon took him [Jehoiachin of Judah] captive in the eighth year of his reign", that from the biblical perspective it was a fall-to-fall regnal year.

A chart on the last page by A. Malamat 1956 shows regnal years in Judah beginning in Tishri, the seventh month. P. 183 of Thiele 1983 shows a chart with regnal years from Judah beginning in Tishri and regnal years from Babylon beginning in Nisan.

Hence there is a disagreement between the camp of both Malamat and Thiele on one side and the camp of Galil (and others) on the other side. With the Tishri to Tishri regnal year proposal in Judah, both Babylon and Judah would have Nisan 1 in 597 BCE be on Julian April 13, after the vernal equinox. Galil would disagree with this because he does not accept the regal year in Judah from fall-to-fall. Thus we have an example of scholarly disagreement on the calendar based upon disagreement on chronology.

On p. 27 of Wiseman 1956, it states that Nebuchadrezzar ascended the throne on 6/7 September of 605. Hence very shortly after this the first regnal year of Nebuchadnezzar would start in Judah based upon a fall-fall reckoning of regnal years. This would agree with II Ki 24:12 using the eighth year. Hence there is no problem here with a fall-to-fall regnal year in Judah. This agrees with Ex 23:16; Lev 25:8-10; Neh 1:1; 2:1..

(C) Daniel's 70 Weeks Prophecy

Many efforts have made to determine the starting time and the ending time of the prophecy given to Daniel in Dan 9:24-27, commonly called Daniel's 70 weeks prophecy.

Most commentators accept the "year for a day" concept in this whole prophecy, so that (since a week has seven days) 70 weeks is interpreted to mean 70 x 7 years = 490 years. The 69 weeks is interpreted to mean 69 x 7 years = 483 years. The seventieth week = 7 years. Thus the total time in verse 24 is 490 years and the total time in verse 25 is 483 years.

One important key in verse 25 is that **the 483 years begins with [the authoritative-] word to restore and to build/rebuild Jerusalem**. Now the important question before us is the year in which the 483 years begins.

Dan 9:24. "Seventy [7657] weeks [7620] [of years] are divided concerning your people

and concerning your holy city, to accomplish the transgression, and to put an end to sin, and to atone for iniquity, and to bring in everlasting righteousness, and to certify the vision and Prophet [5030], and to anoint [the] holy of holies.

Dan 9:25, So know and understand from the going forth of [the authoritative-] word to restore and to build/rebuild Jerusalem until Messiah, [the] Prince, [there shall be] seven [7651] weeks [7620] [of years] and 62 weeks [7620] [of years]. It shall be built again with squares and moat but in a troubled time.

Dan 9:26, And after the 62 weeks [of years] [the] Messiah shall be cut off and shall-have-nothing. [First Time Gap here] And [the] people of [the] prince who-is-to-come shall destroy the city [Jerusalem] and the sanctuary [Temple, 70 CE]. And its end [will occur] with a flood. And until [the] end war and destructions [8074] are decreed.

Dan 9:27, [Second Time Gap here] And he [the prince] shall-make-strong a covenant with many for one week [of years], and in-the-midst of [the] week he shall-cause-to-cease sacrifice and offering. And upon [the] termination [3671] of detested-things [8251] [shall-come-the] desolator [8074] until [5704] [the] determined [2782] destruction [3617] is-poured-out upon [the] desolator [8074].”

(D) Comments on Dan 9:26-27

Dan 9:26 indicates that the crucifixion (= “the Messiah shall be cut off”) would occur at the end of the 483 years. The last week in Dan 9:27 is all future relating to the end time. The last week of seven years is divided into two halves, each 3 ½ years. At the end of the first 3 ½ years animal sacrifices in Jerusalem will be forced to cease by the power of the prince, also called the desolator. Mat 24:15-21 relates to this cessation of sacrifices as well as what follows during the second 3 ½ years, which includes the Great Tribulation, also called the Day of YHWH.

(E) Beginning of the 483 Years

On p. 22 of Steinmann 2010 we find the following dates for Persian emperors to 359 BCE.

Cyrus	538-530 BCE
Cambyses	529-522 BCE
Darius I	521-486 BCE
Xerxes	485-465 BCE
Artaxerxes I	464-424 BCE
Darius II	423-405 BCE

Artaxerxes II 404-359 BCE

On p. 18 of McDowell 1979 there is a list of the following four suggestions by various commentators for authoritative decrees found in the Tanak that may be proposed for the year that begins the 483 years.

(1) The decree of Cyrus, 539 BCE (Ezra 1:1-4).

(2) The decree of Darius I, 519-518 BCE (Ezra 5:3-7).

(3) The decree of Artaxerxes I to Ezra, 457 BCE (Ezra 7:11-16).

(4) The decree of Artaxerxes I to Nehemiah, 444 BCE (Neh 2:1-8).

Some commentators have made claims that in (3) or (4) above Artaxerxes I should be Artaxerxes II. This point will be discussed last.

Only the last suggestion above (444 BCE for the start of the 483 years) fits the requirement of a decree "**to restore and to build/rebuild Jerusalem**".

(F) Ending of the 483 Years

Normal years of 12 or 13 months makes the end of the 483 years extend beyond a satisfying result, which is during the years 26 to 36 when Pilate was governor of Judea, Samaria, and Idumea. Thus the question becomes how long should the length of a year be to arrive at the ending year of the 483 years? This is one problem that gives a result that may be different from expectations according to some readers.

There is an idealizd year of exactly 360 days = 12 months of 30 days per month where 3 ½ years = 42 months from Rev 11:2-3; 12:6, 14. This is expounded on pp. 18-19 of McDowell 1979 where he quotes from Joseph D. Wilson, author of *Did Daniel write Daniel?* (New York: Charles C. Cook, not dated).

A tropical year is 365.2422 days which is 5.2422 days more than the idealize year of 360 days. The total number of days that are lost in 483 years is 483 x 5.2422 days = 2,531.9826 days. Dividing this by the length of a year of 365.2422 days = 6.932 years, which certainly rounds to 7 years. Hence 7 years are subtracted from the 483 years when using idealized years of 360 days. Since 483 – 7 = 476 years the latter value is used with this suggestion of J. D. Wilson. The year 33 is the result because 444+33-1 = 476. The subtraction of 1 is because there is no year 0. Year 33 would cause a Friday crucifixion, which many people favor, but many oppose. You cannot please everyone.

The above is not presented as an absolute conclusion. Maybe the decree from which to start the 70 weeks prophecy is not in Scripture and begins before 444 BCE.

(G) Artaxerxes I is Correct for Nehemiah, item (4) above

Chapter 13 discussed the Jewish mercenary force under Persian authority during the fifth century BCE on the island of Elephantine in the Nile River next to the city of Syene in southern Egypt, about 500 miles south of the Mediterranean Sea. Chapter 13 discussed the Passover Letter found buried and written on papyrus on that island.

The present interest concerning the chronology of Ezra and Nehemiah owes much to two other dated letters found buried on Elephantine c. 1900. These letters have been given the designation A4.7 Cowley 30 and A4.8 Cowley 31. These two letters are translated with commentary on pp. 139-144 and pp. 145-147 of Porten 1996. These are duplicate copies of the original letter that was sent to Bagavahya governor of Judah, as stated within them. The Jews on Elephantine had built a temple for worship, and they had priests serving in this temple. These two letters discuss the anti-Jewish destruction of their temple three years earlier in 410 BCE, in the month of Tammuz, year 14 of Darius [II].

There are some gaps in both of these letters, but no gaps were in the same place in both letters so that the original is reconstructable by examining both letters. A translation of the combined two letters to form the original is given on pp. 40-42 of Modrzejewski 1995. These letters are dated November 25 (= Marcheshvan 20, the eighth month) of year 17 of King Darius [II] (= 407 BCE). The senders of the letter are identified as Jedaniah and his colleagues the priests who are in Elephantine the Fortress.

In the midst of this letter it states "... we sent a letter to our lord and to **Jehohanan the High Priest** and his colleagues the priests **who are in Jerusalem** …."

Near the end of this letter it states "Moreover, all these things in a letter we sent to Delaiah and Shelemiah, sons of **Sanballat governor of Samaria**."

For chronology, the key points in this letter are that during the years 410-407 BCE Jehohanan was the high priest in Jerusalem and Sanballat was the governor of Samaria. Also, the indication is that Sanballat was old because the letter was sent to Sanballat's sons. These facts must be matched up with data from Ezra and Nehemiah.

VanderKam 2004 provides a detailed study of the high priests in Jerusalem during the Persian period and beyond using both biblical and other sources. P. 491 shows VanderKam's chronological list of the high priests. These are listed below. Ezra never mentions "high priest". Nehemiah only mentions "high priest" in Neh 3:1, 20; 13:28, always with Eliashib. Compare VanderKam's list below with the following few verses.

Neh 12:22, "The Levites in [the] days through the reign of Darius [II 423-405] the Persian that were recorded [to be] the heads of [their] fathers' [houses], even the priests [are] Eliashib, Joiada, and Johanan, and Jaddua."

Note that the latter four are listed in VanderKam's list of high priests.

Neh 12:10, “And Jeshua was [the] father of Joiakim, and Joiakim was [the] father of Elishib, and Elishib [was the father of] Joiada

Neh 12:11, and Joida was [the] father of Jonathan [= Johanan], and Jonathan was [the] father of Jaddua.”

Notice that the last five in this hereditary sequence are all listed in VanderKam’s list of high priests. In Neh 12:22 the spelling is Johanan, but in Neh 12:11 the spelling is Jonathan. Note that Ezra 10:6 mentions “Jehohanan the [grand]son of Eliashib” because *son* in Hebrew can mean *descendant*. Here is VanderKam’s list.

Joiakim

Eliashib mentioned nine times in Nehemiah and four times in Ezra 10

Joiada

Johanan = Jonathan, mentioned in the Elephantine letter dated 407 BCE (with 410 BCE)

Jaddua

Since the Elephantine letter mentions Jonathan the high priest in 410 BCE and his grandfather Eliashib was a contemporary of Nehemuah (see Neh 3:1, 20, 21 in context), from the above list of Persian emperors the king mentioned in Neh 2:1 must be Artaxerxes I, not Artaxerxes II.

Now for corroboration involving the two sons of Sanballat (the governor of Samaria) mentioned in the Elephantine letter.

Neh 13:28, “And one of [the] sons of Jehoiada [the] son of Eliashib the high priest, was the son-in-law of Sanballat the Horonite. Therefore I chased him from me.”

This is saying that a grandson of Eliashib married a daughter of Sanballat the Horonite. There is historical evidence of a later Sanballat, but this would be too late to fit the date in the Elephantine letter. Neh 2:10 mentions Sanballat the Horonite and Neh 6:1 mentions Sanballat as an enemy of Nehemiah, and thus Nehemiah’s contemporary.

(H) Artaxerxes I is Correct for Ezra, item (3) above

Neh 8:9 and 12:36 show that Ezra and Nehemiah were contemporaries. Artaxerxes II began his reign in 404 BCE. His seventh year appears to be too late for Ezra to be contemporary with Nehemiah.

The following five associations are less convincing.

Neh 3:10 and Ezra 8:2 mention Hattush.

Neh 3:17 and Ezra 8:19 mention Hashabiah.

Neh 3:4 and Ezra 8:16 mention Meshullam.

Neh 3:11 and Ezra 10:31 mention Malchijah.

Neh 3:4 and Ezra 8:33 mention Meremoth.

Ezra 10:6, “Then Ezra withdrew from before [the] house of the Almighty and went to [the] chamber of Jehohanan [the grand]son of Eliashib neither eating bread nor drinking water for he was mourning over [the] faithlessness of the exiles.”

This verse could have the context in which Ezra was aged and Jehohanan was a young priest with Eliashib a contemporary of Nehemiah. In the Elephantine letter in 410 BCE Jehohanan the high priest could have been aged. Thus Ezra 10:6 can make sense with Ezra entering Jerusalem before Nehemiah.

The evidence overall is that the Artaxerxes with Ezra’s mission was Artaxerxes I.

(D) The Age of Christ when His ministry began

Luke 3:23 has been used by some individuals to help determine the chronology of the life of Christ. The claim is sometimes made that this means close to His thirtieth birthday.

Luke 3:23, “And Yeshua Himself was beginning to be about [2094 *osei*] 30 years [old], „„„”

Wolter 2016 comments concerning the Greek word *osei* on p. 178, “… the relativizing with numbers is typically Lukan (cf. 9.14, 28; 22.59; 23.44; Acts 1.15; 2.41; 4.4; 10.3; see also …)….” He suggests that it means “in the best age”.

Plummer 1922 comments on p.102, “’About thirty’ may be anything from twenty-eight to thirty-two, - to give no wider margin.”

(E) The Year of the Death of Herod the Great

The year of Herod’s death affects the attempts to determine the chronology of the life of Christ. Most commentaries place the death of Herod in the year 4 BCE on the basis of a lunar eclipse mentioned by Josephus in Ant 17.6.4 = 17.167, although there is nothing additional that is explicit provided by Josephus. Some commentators have argued in favor of a different year in which there was a lunar eclipse. Grabbe 2020 has the year 4 BCE directly in the subtitle of his book so his position on the matter is obvious. Grabbe discusses the year of Herod’s death on pp. 29-31 and discusses the question of other eclipses that have been proposed, and he supplies references for some opposing views.

Grabbe discusses the wording of Josephus relating to surrounding events and indicates that some commentators have made unprovable assumptions from Josephus that greatly weakens their reasoning. Grabbe mentions other factors from history that strengthens the

case in favor of 4 BCE. On p. 31 Grabbe concludes, “In sum, in spite of some recent doubts, the length of Herod’s reign from known dates and the reigns of his successors all point to 4 BCE as the date of Herod’s death.”

The next chapter deals with chronology as it relates to rabbinic literature.

[27] Problems with Rabbinic Literature

(A) Introduction

It is the goal of this chapter to give the reader some sense of the historical shortcomings of the rabbinic literature without duplicating some of the details that are in RL.pdf found in BiblicalCalenar.org..

The first of the rabbinic writings is the Mishnah, edited by Judah ha-nasi (Judah the Prince (or Patriarch)) c. 200-220, although it contains some chronological information from the Sedar Olam and some brief quotations from the Megillat Taanit, both of which were published earlier. The Mishnah is divided into sections, each of which is called a tractate.

The Mishnah contains a vast number of laws that are additions to the law of Moses as written in the Pentateuch. The question arises as to whether these laws were followed in the days of Moses, or even in the first century before the Second Temple was destroyed in 70. The Mishnah also contains alleged historical information and explanations of items in the Pentateuch. Some of this is discussed in RL.pdf. For the present chapter, especially in the context of the calendar and agriculture, the following section is especially relevant. The goal is to attain completeness in evidence.

(B) The Meaning of Sheaf in the Wave Sheaf Offering from the Mishnah

The passage on the wave sheaf offering in Lev 23:10-16 contains the word sheaf [6016 *omer*] in Lev 23:10, 11, 12, 15. This Hebrew word occurs in the following ten other places: Ex 16:16, 18, 22, 32, 33, 36; Deut 24:19; Ruth 2:7, 15; Job 24:10. From Ex 16:36 we see that it is a dry measure of volume, but Ruth 2:7, 15 provide an alternate meaning, namely a sheaf of stalks with expected ears (of grain). We are faced with the problem of resolving the ambiguity between the two meanings of *omer*.

Before examining the context of Ruth 2:7, 15 in some detail, the method of reasoning to resolve the ambiguity of the meaning of *omer* in the context of Lev 23 is now undertaken. Except for the period of the Babylonian exile and some period of laxity due to a lack of zeal, the Aaronic priesthood existed and performed their ceremonies every year in Jerusalem until the Second Temple was destroyed in 70. This ceremony of the wave sheaf offering was witnessed by all people who attended the Festival of Unleavened Bread. This ceremony continued to be performed every year, and with the

existence of only one priesthood, their practice should not have changed through the centuries. People went to Jerusalem from great distances to be at this festival and thus see this ceremony, including Jews from Alexandria, Egypt, which was only about 200 miles away. Specialists in the Septuagint, the Greek translation of the Hebrew text, recognize that its translators had a better command of the Greek language than of the Hebrew, and that the translation for the Pentateuch was undoubtedly made in Alexandria. Some of the Jews in Alexandria, possibly even some of the translators themselves, could surely explain what happened during the wave sheaf ceremony, so that the Greek translation could be accurate in its description. The translation of the Pentateuch of the Septuagint was made c. 280 BCE. The Greek language does not have the ambiguity of the Hebrew language for the two meanings of the word *omer*.

The Greek text uses one word, *gomer*, for the dry measure of the manna in Ex 16, and a different word, *dragma*, as the translation for *omer* in Deut 24:19; Ruth 2:7, 15 and the wave sheaf offering. This resolves the ambiguity of the meaning of *omer* in the context of Lev 23 from its use in the Septuagint. All the uses of *dragma* in the Septuagint are listed on p. 348 of Hatch and Redpath. If there existed any historical hint that the nature of the *omer* (either the dry measure or a group of stalks) was a controversial issue at that time, then this would not resolve the question. But there is no such hint from before the destruction of the Temple, nor does rabbinic literature hint that there was a debate over this.

Moreover, in Gen 37:7 where the Hebrew word for sheaves is *aluma* (Strong's number 485), its Greek translation in the Septuagint is also *dragma*. The Septuagint translation by Brenton for Gen 37:7 is: “I thought ye were binding sheaves [= *dragma*] in the middle of the field, and my sheaf [= *dragma*] stood up and was erected, and your sheaves [= *dragma*] turned round, and did obeisance to my sheaf [= *dragma*].” (Plural forms of *dragma* are used where the translation is plural.) **Thus a bundle of tied stalks is called a sheaf (*dragma* in Greek).** Hence this would be its meaning where *dragma* is used for *omer* in the wave sheaf offering in the Septuagint.

Ruth 2:7, “And she said, 'Please let me glean and gather among the sheaves [= *omer*] after the reapers.'” (This has the plural of *omer.*) Gleaning is gathering the grains still having their husks. The reapers swing the sickles that cut the stalks.

Ruth 2:15, “And she rose to glean. Then Boaz commanded his young men saying, 'Let her glean even among the sheaves [= *omer*] and do not rebuke her.'” (This has the plural of *omer*.)

Ruth 2:17, “So she gleaned in the field until the evening and beat out what she had gleaned, and it was about an ephah of barley.” The beating was necessary to separate the husks from the grains.

On p. 73 of H. L. Ginsberg 1982, he translates *omer* in Lev 23 as “armful”, judging

the quantity that might be tied into a bundle.

The Syriac Peshitta uses the word *kf*, meaning “bundle” or “sheaf” to translate the word *omer* from Lev 23. This Syriac word is found on p. 222 column 1 of Payne Smith 1903 and the Syriac text is from Peshitta 1991. This is the Syriac equivalent of the Greek *dragma*. In Ex 16 where the Hebrew has *omer* for the dry measure volume, the Syriac text from Peshitta 1977 transliterates *omer* into Syriac characters.

When Jerome translated the Hebrew Bible into Latin c. 400, which became known as the Vulgate (except for the Psalms), he translated the Hebrew word *omer* in Ex 16 as *gomer*, merely a transliteration. But he translated *omer* in Lev 23 into the Latin *manipulus* or *manipulos* (according to both Weber 1975 and DRC_1 2010). This means “bundle, sheaf, truss” from p. 1074 of Glare. The Knox translation of the Vulgate has “gomer” in Ex 16 and “sheaf” in Lev 23. The very careful translation in DRC_1 has “sheaves of ears” in Lev 23:10 and “gomor” in Ex 16.

The Aramaic Targums (various versions) use the same transliteration of *omer* in both Ex 16 and Lev 23, thus carrying the ambiguity of the Hebrew into the Aramaic. The Aramaic word has the same two meanings as the Hebrew.

Thus the Septuagint, the Peshitta, and Jerome all agree that in Lev 23 the *omer* is a bundle or armful of stalks. Nothing is said about any stage of growth of the ears in the stalks here in Lev 23.

On p. 506 of Danby's translation of the Mishnah in Menahoth 10:4, talking about the wave sheaf ceremony and specifically the ears of barley (after they were separated from the husks), we find, “They put it in a grist-mill and took therefrom a Tenth [of an Ephah of flour] which was sifted through thirteen sieves.” Danby added the explanation in square brackets, “a Tenth [of an Ephah of flour]”. Ex 16:36 states, “Now an *omer* is one-tenth of an ephah.” Danby is showing the common rabbinic understanding that the Mishnah accepts the viewpoint that in Lev 23:10-16 the Hebrew word *omer* means the dry measure quantity instead of a tied bundle of stalks. This contradicts the understanding given above using the Greek word *dragma* from the Septuagint, which was translated long before the Temple was destroyed, although we have no surviving copies of Exodus in the Septuagint from the first century or before.

On the other hand, if we examine further in this part of the Mishnah, we notice that the Mishnah does not claim that this is always what happened in practice!! On p. 507 of Danby at Menahoth 10:9 we find, “The rule of the *Omer* is that it shall be brought from standing corn; but if this cannot be found it may be brought from the sheaves. The rule is that it shall be brought from fresh grain; but if this cannot be found it may be brought from dried grain.”

For the first sentence immediately above, the meaning is: “The rule of the *Omer* is that it shall be brought to the priest from standing corn [growing next to him at that moment]; but if this cannot be found it may be brought from the sheaves [previously cut from elsewhere].”

For the second sentence immediately above from the Mishnah, the meaning is: “The rule [of the Omer] is that it shall be brought from fresh grain [the new crop]; but if this cannot be found it may be brought from dried grain [last year’s crop].” The amazing thing about this statement is that it shows that the author(s) of the Mishnah did not believe that the state of the barley was an absolute requirement to determine the first month, because this allows last year’s crop to be used for the ceremony as described for the volumetric measure meaning of *omer* as quoted from Menahoth 10:4 earlier above.

Because of the Mishnah's false concept that the *omer* for the wave sheaf offering is a dry volumetric measure of grain, it took the position that sometimes when the day of this offering arrived, if this *omer* could not be obtained from currently growing grain, then last year's crop was acceptable for the *omer*.

On p. 206 of vol. 1 of Field 1875, it is preserved that when Aquila translated Lev 23 into Greek c. 130, he used the Greek transliteration *gomer* where the Hebrew has *omer.* Aquila did not use the Greek word *dragma*. Aquila’s translation was given approval in rabbinic literature, and this hints that his training in Hebrew was by some leading rabbis of his time. Aquila gave the same meaning as the Mishnah for *omer*.

Leviticus 23 does not say that the wave sheaf offering was used for any purpose other than this specific ceremony of being lifted up for the person’s acceptance, but the Mishnah as seen above did give added use for the *omer* in the overall ceremony. Leviticus 23 does **not** use the technical Hebrew word *bikurim* [1061 firstfruits] applied to this ceremony for this *omer*.

In the intertestamental book of Judith, at Judith 8:3 the context where *dragma* occurs shows it to mean a bundle of stalks (pp. 110-111 of Enslin 1972).

The meaning “bundle of stalks” says nothing about the state of the ripening of the ears on those stalks or even that there are ears of grain on those stalks.

Other than the action of the lifting of the sheaf, Leviticus 23 does not mention anything that is required to be done with the sheaves that were brought on that day.

The Leviticus translation and commentary in the series of the Jewish Publication Society by Baruch A. Levine 1989 gives the meaning from the Septuagint as correct in contrast to the meaning from the Mishnah, pp. 157, 210.

Concerning the Mishnah in tractate Menahoth, the above shows that while 10:4 seems to imply that ripe barley was required for the wave sheaf offering, 10:9 shows that the

wave sheaf offering could be carried out without ripe barley.

The goal of the rabbinic literature is to present to its readers the law of Moses as it was practiced before the Second Temple was destroyed in 70, which is also supposed to show its original meaning when it was given by Mosses. This is shown to be violated in its meaning of *omer* in Leviticus 23.

(C) Chronology in Rabbinic Literature

In the published debates on chronology, scholars almost never use rabbinic literature to attempt to prove their point because they recognize its weakness for history. Concerning the lack of historical reliability of rabbinic literature, see the document named RL.pdf on the website BiblicalCalendar.org. Rabbinic literature begins with the Mishnah c. 200-220 CE. The time period from 70 to 220 is called the Tannaitic period, and the rabbinic sages from that time interval are called Tannaim. Later rabbinic writings refer to later rabbinic sages (after 220 CE) as Amorim in the Amoraic period.

Some of this literature involves its chronology that is contradicted by history that has been scientifically verified by ancient eclipse records. This shows that rabbinic chronology cannot be trusted. Even Orthodox Jews today recognize that ancient chronology as taught in the rabbinic literature is faulty as documented in RL.pdf. Orthodox Jews in general have the utmost respect for the rabbinic literature and treat it as virtually inspired, although in recent modern times the image of this body of literature from c. 200 to c. 600 among Orthodox Jews has been somewhat tarnished because they have admitted some of its faults.

(D) The Oral Law

One significant hallmark of rabbinic literature is the concept called, in English, “Oral Law”. A particularly informative statement about this is the following from Fraade 2011 p. 370, “Our earliest midrashic [= rabbinic commentary] collections (mid- to late third century C.E.) express the idea that the originary revelation [to Moses] of Torah at Mount Sinai already comprised two parts, consigned to two distinct channels of communication: Written and Oral. Although the designation of *torah she-bikhtav* (Torah that is by writing) and *torah she-be’al peh* (Torah that is by mouth) have not yet [in those writings c. 250] become standard, other designations – especially the more performative distinction between *miqra* (that which is read / recited) and *mishnah* (that which is taught / repeated) – denote much the same idea.”

Here Fraade is saying that the word *miqra* is symbolic for the Written Law and the word *mishnah* is symbolic for the Oral Law.

The concept that is called “Oral Law” is more accurately and literally expressed above by Fraade in translation from the Hebrew as “Torah that is by mouth”. Since that

expression is too lengthy and awkward, scholars simplify this to Oral Law. Fraade dates this first commentary that indirectly indicates the Oral Law from c. 250.

Many readers who are new to rabbinic literature may think that the Oral Law is only the added laws in rabbinic writings that are not written in the Pentateuch (the written law of Moses). This is a misconception; it is not true. The key element that is missing in this idea is the ***reason given*** for the ***belief and justification*** that these added laws are indeed inspired and true. The reason given is stated in two versions of the rabbinic document called The Fathers According to Rabbi Nathan as well as in one tractate of the Mishnah called Avot. The word Avot means Fathers, the first word in the long title stated above. The document is often abbreviated ARN (acronym for Avot Rabbi Nathan), but it is also abbreviated Avot, the name of the tractate. Sometimes Avot is spelled Abot. The contents of both versions of ARN as well as the tractate Avot are very similar and all of them contain the ***reason given*** for the ***belief and justification*** that these added laws are indeed inspired and true. All three of these are approximately dated c. 250 CE. Since the Mishnah is dated c. 200-220, the explanation of dating the tractate Avot to c. 250 is that Avot was a later addition that was included in the Mishnah.

In the translation of the Mishnah by Herbert Danby 1933, at the beginning of the tractate Avot (which Danby spells Aboth), on p. 446, the very first sentence states, “Moses received the Law from Sinai and committed it to Joshua, and Joshua to the elders, and the elders to the Prophets, and the Prophets committed it to the men of the Great Synagogue.”

Danby has a footnote at the word Law near the beginning of this. The footnote days “Oral Law”. It is rather strange that the reader could not know without an explanation in a footnote that this “Law” is truly meant to have the meaning Oral Law here!!

That beginning sentence has the word “committed” twice. This is intended to imply “committed to memory”. In other words it was not to be written down, but instead taught orally and memorized, and handed down orally without change from generation to generation. Avot continues to show that it was committed orally down to the time of the Mishnah, when permission was finally given to write it down instead of having it memorized through oral transmission and oral teaching.

Now let us focus on whether this concept of Oral Law makes sense.

In Deut 29:21; 30:10; Josh 8:31 we find the expression “written in the Book of the Law”. Once it is written, assuming the writing is preserved, it does not have to be “committed [to memory]” as the above translation has it!

The following Scriptures show the responsibility of the priesthood to teach the law to the people, so that the priesthood would have to know all the details of the law for their teaching.

Lev 10:8, “And YHWH spoke to Aaron saying,”

Lev 10:9, “you shall not drink wine or strong drink, you nor your sons with you when you go into [the] tent of meeting so that you shall not die; [it shall be] an everlasting statute for your generations”

Lev 10:10, “so that you may distinguish between the holy and between the common, and between the unclean and between the clean,”

Lev 10:11, “so that you [= the Aaronic priesthood] may teach [the] children of Israel all the statutes which YHWH has spoken to them by [the] hand of Moses.”

Mal 2:7, “For [the] lips of a priest should keep knowledge, and [people] should seek [the] law from his mouth, for he [is the] messenger of YHWH of hosts.”

The above sentence form Danby that begins Avot omits any reference to the priesthood and its responsibility in teaching all of the law of Moses. This shows a bias against the priesthood and its lawful responsibility in Lev 10:11.

That beginning sentence mentions the “Great Synagogue” at the end. According to rabbinic literature this is a reference to a type of the body that is later called the Sanhedrin in Jerusalem in the New Testament, and which is supposedly referred to in Ezra 10:12, 14. The problem with this interpretation is that the Hebrew word *kahal* (Strong’s number 6951) used there for “assembly” is also used in Ezra 10:1; Neh 8:2, 17 where the context shows that it means the entire group of returned exiles. For this word BDB p. 874 under meaning 2b states “restored community in Jerus[alem]”, and it lists Ezra 10:1, 12, 14; Neh 8:2, 17 under this category of meaning. Thus rabbinic literature distorts the meaning in its context and invents the meaning “Great Synagogue”. A reasonable supposition for doing this is to bestow decision-making responsibility upon non-Levites for government in Jerusalem.

This means that according to rabbinic literature the Oral Law was just as valid and inspired as the written law because it was given to Moses on Mt. Sinai. That is the justification for the validity of the Oral Law that contained all the additions to the law in rabbinic literature.

Josh 8:35 [NKJV], “There was not a word of all that Moses had commanded which Joshua did not read before all the assembly of Israel, with the women, the little ones, and the strangers who were living among them.”

This shows the fallacy of the Oral Law as a justification or apologia of the added law in rabbinic literature.

This statement of the Oral Law is first found in Avot (in the Mishnah and in the two versions of ARN) c. 250.

Speaking of the beginning of *Avot* in the Mishnah, on p. 189 Swartz wrote, “This passage is a key argument in the validation of rabbinic authority. By arguing that rabbinic law and culture are the product of a continuous process by which one generation of disciples received their instruction from their teachers going back to Sinai, *Avot* links the authority of the current generation of rabbis with the original act of revelation. In addition, the agency of each group or individual named [in the chain of succession] is bound up with the source of revelation by the use of those very quotations. This myth has implications not only for rabbinic theology but for how the rabbis sought to function as leaders within Jewish society as well.”

(E) Words were put into the Mouth of Sages who did not say what was alleged

We have seen above that the first time the concept of the Oral Law is mentioned by description is from Avot c. 250. While it is true that the New Testament, Josephus, and Philo of Alexandria mention Jewish tradition or tradition of the elders, they never claim that this goes back to the time of Moses on Mt. Sinai, The idea of the revelation at Sinai for the Oral Law is new in Avot.

Cana Werman 2006 wrote the following on p. 181, “Admittedly, no Second Temple period source explicitly links the halakhic [= legal interpretation] system developed by the Pharisees with the Revelation at Sinai.”

On p. 182 Werman translated from the rabbinic document Sifre on Deuteronomy 351 as follows, “’And your Torah [sing.] to Israel’ (Deut 33:10) – this teaches that two *Torot* [here Torah is plural] were given to Israel, one oral and the other written. Agnitus the General once asked Rabban Gamaliel to tell him how many Torot were given to Israel. He replied: Two, one written and the other oral.”

(Here the present author added “[here Torah is plural] “.)

Of course Rabban Gamaliel died long before the Mishnah was written, so he was not aware of the Oral Law during his lifetime. Here we find a pretending that the Oral Law was known long before the concept was put forth. Thus, in rabbinic literature words may be placed in someone’s mouth that were never spoken.

David Kraemer, professor of Jewish and Rabbinic History at the Jewish Theological Seminary of America wrote the following in 1999 on p.201, “In the following pages, I will describe the obstacles that would have to be overcome before we could be sure that a Rabbinic record contains historically reliable evidence. I will conclude that these obstacles are effectively insurmountable and that most sorts of political, social, or religious histories cannot be constructed on the basis of Rabbinic testimony.”

Kraemer 1999 discusses archaeological remains that sometimes can be shown to

contradict rabbinic literature. He writes on p. 206, “But it is precisely the contradictions that render this whole direction problematic. When the picture suggested by the material record contradicts the picture of the Rabbinic literary record – as is not infrequently the case – then it is the Rabbinic record we must call into question. In such circumstances, the rabbis may be speaking for a small elite, or they may be speaking theoretically, but they are surely not preserving history. From such examples we learn to doubt the Rabbinic evidence.

Kraemer 1999 discusses the problem of inconsistency or perplexity within Rabbinic literature. Before the next quotation, it should be stated that the word “Bavli” is a shorthand way of referring to the Babylonian Talmud and Yerushalmi is a shorthand way of referring to the Jerusalem Talmud. The Bavli was published roughly 150 years after the Yerushalmi.

From p, 209 of Kraemer 1999 we note, “In my analysis of traditions attributed to Yohanan [ben Zakkai] in Bavli tractate Shabbat, I found that only thirty-eight of one hundred-thirteen have any parallel in the Yerushalmi [which came earlier]. Of those thirty-eight, nine give the same opinion in the name of a different authority and three give different rulings. Only twenty-six are closely parallel - less than.a quarter of the sample. Three-quarters of the sample, in other words, admit to no verification whatsoever. If this sample is representative, a large majority of attributed Rabbinic teachings may not be used for purposes of writing history.”

The conclusion of this, as many other rabbinic scholars have also stated with different illustrations, is that when rabbinic literature says that some sage said something, there is no way to know whether he really did say it because often that sane statement is attributed to someone else. This makes it virtually impossible to write a true history of the teachings of any one sage.

(F) Some Supposed History is Falsified in Rabbinic Literature

Richard Kalman is professor of Talmud and Rabbinics at the Jewish Theological Seminary. For his book from 2007 he examined the historical context of the time of the Babylonian Talmud including archaeology, the geographical context, the political context, what others wrote about that region who were not within the rabbinic movement, etc. His goal was to attempt to correlate what was written in that Talmud with the total context that was knowable. He was able to reach some seemingly worthwhile conclusions about that Talmud and its editors. This effort was not easy and required going far beyond the bounds of that Talmud itself. He did show that it was possible to gleam some useful history about the time that this Talmud was written. This effort would not have been fruitful without a detailed examination of the total context in order to know how to evaluate what could make sense. Kalman could not take what was written at face value without deep analysis. A few passages from this book stand out

with regard to our present subject.

From p. 12 of Kalman 2007, “To utilize the Talmud as a historical source, however, it is not enough to divide a story or a discussion into its component parts. For, as I will have occasion to observe elsewhere in this book, a tradition can be early but still a fiction, or Palestinian but still be worthless as evidence regarding Palestinian Jewish history. To use a tradition as historical evidence, it is also necessary to know who composed and transmitted it, what its intended message and its intended audience were, and, occasionally, what it looked like before it reached the rabbi’s hands.”

Study of the above quotation shows that the task of attempting to discover valid history from a rabbinic text is very complex and hazardous without special expertise. One cannot simply accept what one reads at face value for historical purposes.

From p. 59 of Kalman 2007, “In addition I argued that subtle distinctions need to be drawn between early and later, Palestinian and Babylonian, and briefer and lengthier narratives, to determine whether some aggadot tend to be more accurate than others or to distort reality in particular ways but not in others. Editors and/or storytellers in Babylonia were particularly willing to emend earlier sources to reflect realities and/or attitudes in third- to seventh-century Babylonia,”

From Stemberger 1999, p.170, “If we were to take Rabbinic sources at face-value, already a century before the destruction of the [second] Temple [70 CE], the predecessors of the rabbis, led by the family of Hillel [he is reputed to be the father of the Gamaliel in Acts 5], were the dominant force in the Sanhedrin and powerful enough to tell even the high priests how they had to conduct the cult. After 70, they would have been the sole leaders of the Jewish people in Palestine.”

Here Stemberger assumes the reader knows enough of the New Testament and Josephus to realize that until 70, the Pharisees did not have the power to control the priesthood at the Temple. No source outside the rabbinic literature mentions Hillel. Josephus is somewhat contradictory because he does not specify dates. Josephus wrote Antiquities in 93, and when he wrote that the Pharisees controlled the priests, that was no doubt after 70, not before.

(G) The Problem of Great Inconsistency when a Story is retold in Several Places

Isaiah Gafni is a professor of Jewish history and rabbinic studies at the Hebrew University of Jerusalem. He first entered that institution c. 1965. In Gafni 2010 p. 43 he introduced the subject of this chapter by writing, “And so I called it [= the subtitle of this the chapter] ‘The Tale of the Text,’ referring of course to the rabbinic text. Here too a dual message is implied. Do I mean ‘the tale’ or story of modern rabbinic textual

studies, or do I wish to focus on 'the tale that the text supplies,' that is: what do rabbinic texts tell us about the rabbinic period, and in general about Jewish history in Late Antiquity? Hopefully I will provide some thoughts on both of these questions."

Gafni begins this chapter by surveying the history of the thinking of Jewish scholars on this subject over the recent couple of hundred years. As scholars began to compare stories retold in different parts of rabbinic literature, it was noticed that there were significant differences that were not capable of being harmonized in the sense that the four Gospels can be harmonized. This led to two schools of thought on how to explain this.

One school postulated that even as early as when the story originated, there were already different versions of the story, so that one document preferred one version of the story, and another document preferred another version. This was an attempt to rescue the literature from claims of outright fake history. This view was favored by those who did not want to admit genuine problems with rabbinic literature.

Then Gafni focuses on the other school. He wrote on p, 56, "Not so the other school, which posits a far more creative editorial intervention, maintaining that traditions [retold in the tales] were constantly undergoing repackaging, aimed at improving their language, rendering them more comprehensible to later audiences or those living in an environment removed from the original, or – and this is crucial – with the aim of channeling the tradition to meet or support the opinions of the later transmitters [= writers of the later literature]. Parallel sources in the Talmud, this school maintains, were reformulated to meet these needs, and are not the result of some ancient plurality of original versions."

On p. 58 Gafni wrote, "Obviously I agree that stories frequently tell much more about the storytellers than about the heroes of the tale, and in that sense – while there might be a tale [that is true to genuine history] in the text, it is likely to be far different than the one we had originally been taught."

On p. 60 Gafni wrote, "My point in all this is that we will have to mine the rabbinic corpus for a different type of history. We may be hard-pressed to talk about specific events, but we most certainly can note attitudinal changes and developments, and these must be contextualized into the political, social and cultural contexts surrounding the rabbinic world."

When we see the tactful language of Gafni, we note that he politely avoids the outright statement that the writers of rabbinic literature invented items that are not historical, yet he obviously implies this.

(H) Orthodox Jewish Historian Louis H. Feldman

For several decades Louis H. Feldman has been a professor of Jewish history at Yeshiva University in New York City. This university primarily attracts Orthodox Jews. Orthodox Jews generally attempt to order their behavior in life according to the precepts of the Oral Law. Feldman is an Orthodox Jew who has devoted a significant portion of his research to publishing papers and writing books on Josephus. It may be argued that his penetrating knowledge on Josephus exceeds all others in this field. Some of his writings on subjects other than Josephus sometimes show a bias toward viewing matters favorable towards Orthodox Judaism, which is an expected natural consequence of his beliefs. In Feldman 1999 he contributes a chapter titled “Rabbinic Sources for Historical Study”. Almost two-thirds of this chapter compares the account of historical events discussed in Josephus that are also discussed in rabbinic literature. Feldman is very much aware of the fact that the nature of the volume in which he contributes this chapter concerns the question of the historical validity of rabbinic literature.

When Feldman wrote about Josephus in his many writings in the past, he pointed out the many biases of Josephus and his misrepresentations of the Bible despite the claim by Josephus that he was presenting the full account of the sacred writings without adding or deleting anything. The audience (expected readership) of Josephus was the Roman nobles who were educated in Greek literature (not Latin, the common language of Rome), and he knew these nobles would not make the effort to determine how truthful he was. In this chapter by Feldman, he briefly reviews the problems with accepting what Josephus wrote at face-value. Feldman also mentions a few other ancient sources of reported events or biographies and gives reasons to suspect bias and lack of truth from these authors. He is illustrating that the task of the historian is always to look at ancient documents with a critical eye because human authors are subject to bias and distortion. Thus Feldman is indirectly implying by way of analogy that the authors of rabbinic literature were capable of the same problems in their accounts.

However, Feldman makes no attempt to defend the rabbinic literature from criticism against such matters as the revelation of the Oral Law to Moses at Sinai, the gross distortion of political leadership in Judea before the destruction of the Temple in 70, the contradictory attributions of what sage actually stated some legal opinion, and the contradictory portrayal of stories in various rabbinic documents. On p. 216 Feldman openly admits that rabbinic chronology is grossly in error.

Feldman also states that because Josephus often modifies the truth for various reasons, when there is a difference in the reporting of an event in Josephus compared to rabbinic literature, we cannot say which of the two accounts is historically correct. He claims that there is likely some historical value when rabbinic accounts add more details than Josephus.

Notice the last three words in the following quote from Feldman 1999 on p. 218, “In

precisely such a situation, where the contemporary sources seem to be biased, that we may find the rabbinic sources of some value, if read carefully."

From Feldman 1999 on p. 229, "Admittedly, though the first work in the canon of Jewish writings, namely the Bible, is, to a great degree, a history, the Rabbinic writings are not history books, and there is not a single Rabbinic work, with the exception of *Seder Olam* that may be classed as a history."

At the beginning of this chapter by Feldman, he makes the admission that some prominent historians refrain from using anything from rabbinic literature in writing their history. He wrote that he received a personal letter dated December 20, 1995 from the noted historian Fergus Millar (a professor from Oxford). The content of this letter that Feldman chose to quote is: "I suppose that the truth is that I became more and more skeptical as to whether *any* use can be made of Rabbinic sources for the period before the fall of the Temple. I would certainly rule out absolutely any use of either the Jerusalem or the Babylonian Talmud, given the length of time which had elapsed and the profoundly changed circumstances under which both were written…. So, although there is a vast bibliography, in my present view it is pretty well all systematically misleading. One must start from the genuine contemporary documents (and of course contemporary literary texts, like Josephus)."

[28] Appendix J: Time Nisan 1 began from 499 BCE onward

(A) Early Investigations of the Babylonian Calendar

The clay tablets containing the eclipse records were written in the Akkadian language. This difficult language, which contained about 500 characters and was not phonetic, was first deciphered with a growing knowledge of its vocabulary by several scholars during the years 1840 to 1870. During the decade leading up to 1900 a small team of German scholars trained in Akkadian, mathematics, and astronomy worked out the details of the available eclipse records and the Babylonian calendar. Thus preliminary results became available c. 1900 and this knowledge was soon spread to Jewish scholars who recognized its implications for the ancient Jewish calendar from the Babylonian month names found in Scripture. The eclipse results were in conflict with the principles of the modern calculated Jewish calendar as well as with rabbinic literature relating to the calendar.

One excellent summary from 1906 that appeared in *The Jewish Encyclopedia* is from McCurdy 1906. On p.57 he wrote the following: "ABIB ('Ears of Grain'): Name of the first month of the Hebrew year (Ex xii. 2; compare xiii. 4), corresponding to the Babylonian and postexilian Hebrew Nisan. According to the Babylonian system, which probably prevailed in Palestine, it began in ordinary years in the last third of March, but in [approximately] every third or intercalary year a month later (see CALENDAR)."

This brief article mentions the last third of March, which begins on March 20 or 21. It shows the understanding that Nisan begins from the vernal equinox according to the Babylonian calendar. This was known several years earlier in Europe from the eclipse records, but here it is revealed in English in a major Jewish encyclopedia.

On p. 122 of Poznanski 1911 we find , “As already indicated, the Jewish year is a composite arrangement. Its months are lunar but from time to time an extra month is intercalated in order to affect an adjustment with the solar year. This was done even before the establishment of the continuous [fixed or calculated] calendar. It was regarded as a matter of special importance that the month of Nisan should not begin before its *tequfa* (beginning of spring), and a second Adar was intercalated as required; but at this time nothing was as yet known of a regular and periodic intercalation, recurring according to definite rules [mathematics and postponements].”

Here Poznanski mentions “beginning of spring” which is the vernal equinox. He thus states here, that the month of Nisan should not begin before the vernal equinox. How does Poznanski come to this conclusion? He begins this lengthy article on p. 117 discussing the exile of the Jews to Babylon, the adoption of the Babylonian month names into the Jewish calendar, and various ancient documents in which these names are found. Hence he is taking it as an axiom in the mind of the reader that what is known from the eclipse records concerning the Babylonian Nisan applies to the Jewish calendar in principle.

The Passover Letter from the year 419/418 BCE discussed in chapter 13 corroborates the conclusion from these encyclopedias from 1906 and 1911. The conclusion is that the first month of the biblical calendar should not begin before the vernal equinox.

(B) The 19-year Cycle

Since the Babylonian calendar used the lunar month as a fundamental unit of time, the Babylonian astronomers had an interest in knowing a mathematical relationship between the time length of a month compared to the time length of a tropical year, despite the fact that a tropical year was not their calendar year of 12 or 13 months. In their search for such a relationship, they finally arrived at the 19-year cycle. None of the ancient records from the Babylonians discuss their discovery or use of the 19-year cycle. It appears that they were secretive in writing down their theories and methods. They relied on personal one-on-one oral teaching for advanced knowledge. They had multitudes of written observational records with little discussion. What we know today comes from reverse engineering from their eclipse records and other observational records. We have no surviving records of their own verbal explanation of their calendar.

On pp. 226-227 of Astola 2020 we note, “Although many spheres of Babylonian society, including the administration, trade, crafts, and the military, were open to deportees, the temple cult was not. Rigid rules of access characterized Babylonian temples, and the

sacrificial cult was run by a relatively small number of Babylonian families in each city. There was a strict hierarchy among these families as well, and only the so-called temple enterers' (*erib biti*) were allowed to access the innermost parts of the temple. No Judeans or other deportees made their way into the closed priestly circles and participated in the temple cult."

On p. 571 of Robson 2011we find, "Another inhibiting factor in the dissemination of the written word [of scholarly texts] was the injunction that the scholars themselves put on sharing specialist knowledge."

This shows the secrecy of the scholars to letting outsiders have access to their knowledge. On the other hand, some kings paid money to build libraries of texts. Yet these were written in Akkadian, which limited their audience, and not many people had access to these libraries. Detailed methods of mathematics and astronomy were not written down and required oral education.

The Babylonian astronomers were also astrologers and did their work from within the temples. From this we surmise that it is very doubtful that the Jews learned some secretive aspects of Babylonian astronomy and the calendar, although there is firm evidence that perhaps c. 160 BCE Babylonians shared their mathematical and astronomical knowledge with the Greek astronomers Hipparchus and Hepsicles. We lack knowledge of what caused this sharing, but it was probably not voluntary. Very few Greeks understood the mathematical astronomy learned by Hipparchus and Hepsicles because it took much time to learn and it had no practical value except for earning money through astrology. The practice of astrology did not require mathematics.

The origin of the Babylonian discovery of the 19-year cycle is discussed in Britton 2002. On pages 29-30 and 75 of Britton 2002, he concludes that on one clay tablet c. 562 BCE a less accurate period relation was used, and a change to the value for the 19-year cycle was used on another tablet from c. 530 BCE. Thus the available evidence from a few cuneiform clay tablets from ancient Babylon indicate that c. 550 BCE the Babylonian astronomers first recognized that 235 lunar months equals 19 tropical years.

The 19-year cycle is not perfectly accurate because 19 years = 19 x 365.2422 days = 6939.6018 days and 235 months = 235 x 29.53058 days = 6939.6863 days. Hence a luni-solar calendar that uses 235 lunar months in 19 years is 6939.6863 days minus 6939.6018 days = 0.0845 days too long each 19 years. In order to determine the number of years it would take for such a calendar to advance into the future by one full day, compute (1 day / 0.0845 days) x 19 years = 224.85 years. Hence this 19-year luni-solar calendar advances into the future by one day each 225 years. It is expected that eventually the Babylonians realized that their 19-year cycle was not fully accurate, but they never discussed this in surviving writings and they did not modify their calendar.

The gradual gain toward the future of one day each 225 years in the 19-year cycle is

called the phase shift. The year that the 19-year cycle was first used in the Babylonian calendar will soon be discussed.

(C) The book by Parker and Dubberstein (P & D 1956)

Applying modern mathematical astronomy to the eclipse records along with knowing the Babylonian king lists enabled a reconstruction of the Babylonian calendar's dates. All this calendric data is printed in P & D 1956. This shows the conversion of the start of all of the Babylonian months into Julian dates from 747 BCE to 75 CE. Modern personal computers with accurate astronomy software enables analysis of the calendric data from P & D.

On p. 211 footnote 9 of Willy Hartner 1978 (specialist in ancient mathematical astronomy) we find, "Each one of the 31 [19-year] cycles [from 522 BCE to 68 CE] down to S.E. [Selucid Era beginning in 312 BCE] 379 = A.D. 68, begins with the [vernal] equinox (with a difference of 2 days [in phase shift of the 19-year cycle] at the most in the latest times) and no year starts *before* the [vernal] equinox except for -499 [= 500 BCE], which due to an erroneous intercalation started on March 23, four days before the vernal equinox."

In the above quotation if we remove the extraneous words, it reduces to the following: "Each 19-year cycle … begins with the vernal equinox (with a two day maximum drift toward the future) and no year starts *before* the [vernal] equinox except for 500 BCE, which started on March 23, four days before the vernal equinox."

This reduces to the statement that from 499 BCE onward (until the Babylonian calendar ceased), the first day of Nisan did not begin before the vernal equinox.

Although P & D 1956 shows an exception to this in the year 384 (p. 34), this alleged exception should be corrected because it is now regarded to be a faulty examination of a cuneiform text; see pp. 14 and 16 in Aaboe and others 1991.

John M. Steele, a noted specialist of ancient Babylonian mathematical astronomy, summarizes what is stated above. On p. 456 of Steele 2011 we find, "A luni-solar calendar was in use in Babylonia in which months could either have 29 or 30 days and years comprised of 12 or 13 months. Intercalation of the 13th month in certain years was governed by a 19-year cycle (the Metonic cycle) from about 500 BC onwards but greater randomness in intercalation took place before that date."

(D) The Earliest Five Years of Nisan 1 between 499 BCE and 400 BCE

It has been established that the 19-year cycle for the Babylonian calendar began its use in 499 BCE according to Willy Hartner 1978 and John M. Steele 2011, although many other scholars have discussed the 19-year cycle as the regulator of the Babylonian calendar in its later period including P & D 1956.

It was discussed above that in each 225 years, the 19-year cycle gradually shifts one day later away from the vernal equinox. Hartner mentioned this as a worst case phase shift of two days in the last use of the Babylonian calendar in the year 75. Since the shift is away from the vernal equinox, the first 100 years - that is from 499 BCE to 400 BCE - shows the closest relation to the vernal equinox.

This writer used P & D along with software to make a chart of those 100 years and then picked out the earliest years for Nisan 1. This is in the chart below. All dates are according to the Julian calendar. For each Julian date given, the Babylonian day began on the evening that came before the Julian date (the latter is based upon a midnight-to-midnight day). Determination of the vernal equinox for these 100 years was made using the computer program BRESIM. This program is noted for its accuracy into ancient times for the vernal equinox, but not for the position of the moon.

The underlying data that was used by P & D 1956 was examined by Fatoohi and others in a paper from 1999. The conclusion on page 52 is that only 209 out of about 8670 new moons in this book are provably based upon actual sighting by the Babylonians. All the other new moons in this book are calculated based upon the methods of the German astronomer Karl Schoch (see p. 57 of Fatoohi and others). None of the 100 months that began Nisan are among these nearly 200 actual sightings of the new crescent from Babylon. One day errors (one day too soon) in P & D may be due to: (1) Any borderline case in Schoch's curve at the end of the 29th day where the true result is different (this might be true about 4 percent of the time); and (2) Poor weather that caused an otherwise visible crescent at the end of the 29th day to not be seen.

In the chart the number of hours from the astronomical new moon (= the conjunction) to sunset is computed, and this is used to check the reliability of the date in P & D.

Near the spring season of the year (for Nisan 1) the benchmark for comparison (from conjunction time to sighting the new crescent) is the time interval between 16 and 24 hours. For the five earliest years (among the 100 years) shown in the chart, it happens that this rule alone is sufficient to determine the first day of visibility of the new crescent, *provided the weather was clear*.

In the chart below the time is based on Greenwich, England as given in the program BRESIM. Conversion to the time zone of Babylon could be accomplished by adding three hours. The earliest years for Nisan 1 seen in this chart are 484, 465, 446, 427, and 408. It should be no surprise that these years are 19 years apart because the 19-year cycle is extremely close to being exact as the Babylonians apparently believed when they discovered this c. 550 BCE, though it took about another half century before they decided to apply this to the calendar anchored to the vernal equinox to begin the year.

There are three times in the 100 years when the day **prior to** the vernal equinox was a

new moon day. All three times this new moon day began an intercalary month called the second Adar, the 13th month. These dates are March 25, 454 BCE, March 25, 435 BCE, and March 25, 416 BCE. Note that these years are 19 years apart.

The column headed “Astronomical New Moon” has data that comes from the reference Goldstine (its computation is based on the time zone from Babylon), but three hours were subtracted to convert from the time zone of Nineveh to Greenwich time. The column headed “Sunset” has data that comes from the computer program “LoadStar Professional”; this verifies the dates for Nisan 1 according to Schoch’s curve for the years below as given in P & D. The ancient city of Nineveh is located where Mosul, Iraq is today, and its coordinates are longitude 43 degrees east, latitude 36 degrees 9 minutes north. In the chart below the time stated is 24-hour military time.

The five earliest years for Nisan 1 Between 499 BCE and 400 BCE

Vernal Equinox BCE	Astro-nomical New Moon	Sunset in Nineveh (Green-wich time)	Hours from conjunc-tion to sunset	Expected New Moon (basis is hours)	P & D Prior New Moon	Number of days in the prior month
3-26-484 15:27	3-24-484 02:02	3-24 15:18	13:16	3-26	2-24	30
3-26-465 06:07	3-23-465 14:55	3-24 15:18	24:23	3-25	2-25 leap yr	29
3-26-446 20:30	3-24-446 11:35	3-25 15:19	24:44	3-26	2-25	29
3-26-427 10:56	3-24-427 12:09	3-25 15:19	27:10	3-26	2-25	29
3-26-408 01:34	3-24-408 11:07	3-25 15:19	28:12	3-26	2-25	29

In the above table the expected new moon always agrees with the computed date from Schoch’s curve as given in P &D. In all cases except 465 BCE the expected new moon is the date of the vernal equinox. In 465 BCE it is possible that bad weather did not allow the new crescent to be seen, so that the old month had 30 days instead of 29 days, and the actual Nisan 1 was March 26 instead of March 25. Three hours would have to be

added to attain the time zone of Nineveh. In all of these cases the following rule would work out correctly. Find the date of the noontime which is closest to the time of the vernal equinox. That date is counted as the date of the vernal equinox.

As Hartner 1978 pointed out (see above), the year 500 BCE had Nisan 1 before the vernal equinox and that is the reason the focus was from 499 BCE onward when Nisan 1 was not allowed to be before the vernal equinox.

Based on the above chart, to find the vernal equinox in the Babylonian calendar during this century, find the date containing the noontime that is closest to the time of the vernal equinox. That date is counted as the date of the vernal equinox. This is the same as the straight liine definition discussed above.

This provides the details showing that the first day of the first month of the Babylonian calendar *during this century* **followed the pattern that the new crescent of Nisan was the one that fell on or soonest after the day of the vernal equinox.**

Due to the slight inaccuracy of the 19-year cycle, beginning about the year 370 BCE there might, in rare years, be a one day shift away from the vernal equinox (toward the future). There is no historical record that either the Babylonians or the Jews commented on this.

[29] Appendix K: What are the Inspired Writings, called the Scriptures?

(A) The Masoretic Text and its Comparison to Other Hebrew Texts

John 10:35 “the Scripture cannot be broken.” This was spoken to the Jews in Jerusalem and it refers to the Bible that the Jews used in the early first century in Jerusalem.

The Bible of the Jews, written in Hebrew with parts of two of its books written in the Aramaic language will simply be called the Hebrew Bible or the Tanak. Shortly after the year 650 CE the Jewish approved trained copyists of the Hebrew Bible known as the Masoretes added vowel marks and marginal notes to the Hebrew Bible, and the result is known as the Masoretic Text (MT). For simplicity, when the MT has its vowel marks and marginal notes removed, the result will still be called the MT (or the Tanak).

The various copies of parts of the Hebrew Bible that are found among the Dead Sea Scrolls do ***not*** represent the MT for the following reason. The Hebrew language spoken by some of the Jews in and near the first century had grammatical changes, especially to the endings of the verbs when this version of Hebrew is compared to the more ancient grammar of the MT (Abegg 1998). The approved trained copyists of the MT did not attempt to bring the exact spellings of the ancient Hebrew words into the contemporary usage of the first century. Keeping the ancient spellings exactly the same in the MT is a distinction of the faithfulness of the copying regardless of the modifications in speaking Hebrew in the first century (Van der Woude 1992; Kutscher 1982 p. 93).

This faithfulness in exact copying in the MT was made evident in the early 1960's when Israeli archaeologists explored ancient Masada and the caves of the Judean desert. They excavated in these two areas and discovered parts of several books of the Tanak. Josephus reported that when the Jewish forces took over Masada from the Romans, they came from Jerusalem. Parts of the their Hebrew Bibles were found from before the year 66. These texts were letter for letter the MT without any changes due to contemporary usage of Hebrew. The inspired text was kept exactly the same. The caves from the Judean desert show the MT as well.

On p, 41 of Tov 2012 he wrote, "The fact that we can pre-date [by about 1000 years before the Leningrad Codex of c. 1000 CE] the text of MT is very important, but not revolutionary as scholars have assumed for a long time that MT must have been in use in the last centuries B.C.E. and the first centuries C.E. since the biblical text quoted in rabbinic literature is identical to MT."

On p, 42 of Tov 2012 he wrote, "All the texts that were found at sites in the Judean Desert other than Qumran [site of the Dead Sea Scrolls] display complete identity with the medieval tradition of MT."

The Dead Sea Scrolls have other changes to their Hebrew Bibles besides the contemporary grammar. These are not faithful copies. The marks of a faithful copy are exactness to the original in the copy.

Some Jews translated the Pentateuch of the Tanak into Greek c. 270 BCE, and this Greek translation became known as the Septuagint. The Hebrew text from which the Septuagint was translated is called the Vorlage, which no longer exists. It is certainly possible that certain statements in the Septuagint Pentateuch were never in the Vorlage because of deliberate biased distortions by the translators! This issue will be addressed next through one example.

The NETS translation at Lev 24:16 states, "Whoever names the name of the Lord – by death let him be put to death; let the whole congregation of Israel stone him with stones. Whether a guest or a native. When he names the name let him die."

Notice that the above translation justifies the belief of Jews from before the time of the translation that it was a sin to pronounce the four letter name YHWH, despite that fact that Abraham, Isaac, and Jacob as well as the prophets of the Hebrew Bible spoke the name. A literal translation from the MT: Lev 24;16, "Moreover, he who blasphemes the name of YHWH shall be put to death; all the congregation shall stone him. As the resident-alien as the native-born, when he blasphemes the Name, shall be put to death."

In other words, the Septuagint substituted the act of pronouncing the name for the Hebrew word blaspheme. The Jewish tradition that forbade pronouncing the name was thus justified by the translation. Thus the Septuagint cannot be trusted as a

source to modify the Tanak.

(B) The Contents of the Tanak

Luke 24:44, "And He said to them, These [are] the words which I spoke to you, yet being with you, that must be fulfilled, all the things having been written in the Law of Moses, and the Prophets, and the Psalms, concerning Me."

The Jews have sectioned their Bible into three divisions called: (1) The Torah (= Law of Moses = Pentateuch); (2) The Prophets; and (3) The Writings. In the above quote from Luke, the Psalms is the first and largest part of the Writings, and it (the Psalms) is used as a keyword that represents all of the Writings.

In other words, Luke 24:44 shows that the inspired writings of the Jews are the three divisions of their Bible represented by the three letters that are the Hebrew equivalents of TNK, from which the word Tanak is composed.

Acts 17:2, "And according to Paul's custom, he went in to them and reasoned with them from the Scriptures on three Sabbaths …."

This shows that the Scriptures that Paul used were accepted as authoritative by the Jews to which he spoke here and elsewhere. The contents of these Scriptures were not a controversy, so they must have had the same Books that were referred to in Luke 24:44.

Rom 3:1, "What then [is] the superiority of the Jew? Or what [is] the profit of circumcision [symbol of Jewish identity]?

Rom 3:2, Much in every way. For first, indeed, that they were entrusted with the Oracles of the Almighty."

In Rom 3:2 the expression "Oracles of the Almighty" is an alternate way of referring to the Scriptures as accepted by Jews generally at the time of Paul. This was before the New Testament was written. As shown in Luke 24:44, this was the Tanak. Certainly there were other intertestamental writings of the Jews such as I and II Maccabees. There are also the writings of the Jews Philo of Alexandria and Josephus. While these writings may have some historical value, they do not rise to the level of inspired writings because they were not accepted as part of Scripture by Jews generally in the early first century.

There are other sectarian writings found among the Dead Sea Scrolls, such as The Temple Scroll, The Book of Jubilees, and the Book of Enoch. These books were not accepted as part of Scripture by Jews generally in the early first century, so that these books should also be rejected as part of Scripture according to Rom 3:1-2 and Luke 24:44.

The conclusion is that when studying the biblical calendar, our inspired authority is the Tanak. We should not look to the intertestamental writings (Apocrypha), the

Septuagint (as a correction to the Tanak), or sectarian writings among the Dead Sea Scrolls.

As we shall see from the Tanak, the moon has an important place in the biblical calendar. Both the Book of Jubilees and the Book of Enoch found among the Dead Sea Scrolls reject the moon as having any role in the biblical calendar. This document does not discuss anything from the Book of Jubilees or the Book of Enoch.

(C) The Context of the Tanak

The Tanak was written in an environment over hundreds of years. There are some examples where archaeological digs (part of the ancient environment) have yielded primary sources of historical information that help to clarify some words and other parts of the Tanak. The reader may read Appendix D to see an important example of this. Ancient eclipse records will also be discussed to see how ancient clay tablets now in the British Museum (and some in other museums) help us to date certain biblical events through modern computer verification of the eclipse records. In addition to these matters, archaeological digs have enabled us to verify the Persian king to which Queen Esther was married in the Book of Esther, and they have enabled us to verify that the Persian king Artaxerxes mentioned in the books of Ezra and Nehemiah is Artaxerxes I and not Artaxerxes II. Thus primary source ancient artifacts are seen to be useful to help clarify some obscure parts of the Tanak. This fulfills a paraphrase of Dan 12:4, which states that in the time of the end, many shall run to and fro and knowledge shall increase. Through knowledge of archaeology, our knowledge of the Tanak has increased.

[30] Appendix L: The Meaning of *ma-ohr* in Gen 1:14-16

The goal of this appendix is to explain the meaning of the Hebrew word *ma-ohr* having Strong's number 3974.

When the first Hebrew letter of *ma-ohr* is removed, this Hebrew word becomes changed to *ohr,* which is Strong's number 216 when used as a noun meaning **light;** however, when *ohr* is used as as a verb it is assigned Strong's number 215 and its literal meaning is **to give light**.

Most translations pretend that the Hebrew word is 216 in the five places in Gen 1:14-16 instead of 3974, so that the typical translation is **light**. But the literal meaning of 3974 is **light-bearer,** according to p. 22, column 2 of BDB 1907. According to p. 539 of the lexicon HALOT 2001, all except three (Ps 90:8; Prov 15:30; Ezek 32:8) of the occurrences of *ma-ohr* are listed under its meaning **luminous body** (which is essentially the same as **light-bearer**).

On line 6 of p. 829 of volume 2 of the lexicon NIDOTTE 1997, editor VanGemeren explicitly gives the translation **light-bearer** for *ma-ohr*.

On page 326 of the article on “ohr” authored by Martin J. Selman 1997, he wrote, “The sun, moon, and stars are the most prominent of the light-bearers. The sun, however, was no more than the greater light-bearer, for the moon as the lesser light-bearer and the stars also provide light (Gen 1:14-18; Ps 136:7-9). A distinction is usually made between light and the sun.” When this quotation is compared to Gen 1:16 it becomes clear that Selman is using the translation “light-bearer” for the Hebrew word *ma-ohr*. On p. 328 of this article by Selman, he wrote, “The nom. [= noun] *ma’o*r is used for light-bearers, primarily the sun, the moon, and the tabernacle lampstand.”

P. 22 of BDB shows all 19 places where this word occurs, and p. 658 of Wigram’s concordance also shows these 19 places.

There are only 19 places in the Tanak where *ma-ohr* (3974) is used, but the total number of places where the word *ohr* for 215 (verb) plus 216 (noun) occurs exceeds 200 times. This shows that the use of *ma-ohr* is quite unusual and deliberate. Thus we should pay close attention to its five uses in Gen 1:14-18.

[31] Appendix M: Philo of Alexandria and the Vernal Equinox

Philo of Alexandria (c. 20 BCE – c. 50 BCE) lived within a wealthy Jewish family that enabled the best education that one may desire. He was well educated in the Greek tradition of Alexandria, the leading city of scientific achievement in that era, although active Babylonian astronomy did not fade away until the year 75 CE. Philo wrote extensively about biblical matters and philosophy from a Jewish viewpoint, yet he injected some Greek philosophy as though it was part of Judaism. Philo represented mainstream Judaism in Alexandria. His Bible was the Greek Septuagint, and he did not know Hebrew according to today's scholars.

In Gen 1:14 where the Hebrew text has the plural of *moed*, which is typically translated seasons, or festivals, or appointed times, the Septuagint has the Greek word *kairos* (Strong's number 2540). The various versions of the Jewish Aramaic paraphrased translations of the Bible known as the Aramaic Targums all interpret *moed* to include the meaning “festivals”. The Jewish commentaries of the middle ages also agree with this understanding of *moed*. In Leviticus 23 the Hebrew *moed* occurs six times: Lev 23:2, 2, 4, 4, 37, 44. The association of *moed* with festivals is clear from its use in Leviticus 23 as well as in Ps 104:19 and elsewhere. In the Tanak, the use of *moed* is only associated with the festivals when restricted to contexts that involve cycles of the heavenly lights. In contrast to this, *kairos* occurs in Lev 23:4, but nowhere else in the Septuagint of Leviticus 23. In Greek, *kairos* is a very general word for time, and it is not noted for being associated with the festivals or any other regular repetitive time. Thus one would not particularly expect Philo to interpret *kairos* as festivals, and indeed Philo does not interpret it that way. However, he does use the word *kairos* in discussing this portion of Gen 1:14, indicating that in his version of the Septuagint Gen 1:14 is similar to the

Septuagint that is commonly available to us.

Philo discusses Gen 1:14-16 on pp. 34-47 of Philo_1 (*On the Creation* 45-61). On pp. 44-45 (paragraph 59) Philo wrote, "By 'appointed times' [*kairos*] Moses understood the four seasons of the year, and surely with good reason."

It is a little humorous that he puts this interpretation in Moses' mind as if to say this is what Moses knew it to mean rather than this is Philo's interpretation. Since the four seasons are bounded by the equinoxes and the solstices, he certainly believes that Gen 1:14 includes these astronomical events. On pp. 46-47 (paragraph 60) Philo continues, "The heavenly bodies were created also to furnish measures of time: for it is by regular revolutions of sun, moon, and the other bodies that days, and months, and years were constituted." Since the calendar is based on these units and he declares these units to be based on measures of time of the heavenly bodies, he leaves no place for the barley to be the determining factor for the first month. The reader might be curious about why Philo wrote here "and the other bodies". While we know that the Greek astronomer Hipparchus proved that the stars drift very slowly from the equinoxes, and he discovered this about 100 years before Philo was born, this knowledge had not been popularized and accepted, so that Philo does not know this. Thus Philo implies the thought that the cycle of the appearance of stars agrees with the sun's signs of the equinoxes and solstices that make the seasons. If Philo had been familiar with the Hebrew text of Gen 1:14, he would ***not*** have made the association of the Greek *kairos* with the Hebrew *moed*, and then would have linked this to the festivals using the contexts of *moed* in Leviticus 23. Instead of linking *kairos* to the festivals, he links it to the four seasons, indicating the equinoxes and solstices.

Philo wrote on p. 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.*** Again Philo leaves no place for the use of barley in calendric determinations. If, on an annual basis, the Jews in Alexandria had to wait for a report on the state of the barley from the priests in Judaea in order to know when to leave for a journey to keep the feast of unleavened bread at the Temple in Jerusalem, Philo would not neglect such an important annual event in its role to determine the time of the first month. In this matter Philo's Bible (the Septuagint) has no distortion that would give Philo a reason to have a prejudice against the use of barley, but he surely knows nothing of the role of barley in the early first century to determine the first month.

Having examined Gen 1:14 in Philo's writings, the next step is to consider his comments on Ex 12:2. In order to properly evaluate this, the reader should know that the

Alexandrian astronomers accepted the zodiac from the Babylonians who invented it. The zodiac divided the year into 12 equal parts called the signs of the zodiac and they gave each sign a name that was associated with a constellation of stars in the sky at the time of its invention in the middle of the fifth century BCE. The Greeks named the first sign of the zodiac *krino* which means the **ram**. The Latin word for ram is **Aries**. In most sources the first sign of the zodiac is called Aries. The Greek astronomers in Alexandria began Aries with the vernal equinox, but the Babylonians began Aries at a different day with respect to the vernal equinox. (The science writer Pliny the Elder who wrote in Latin for the Romans, began the sign of Aries when the Babylonians began it, thus differing with the Greeks in Alexandria. When Josephus wrote his works for the Roman nobles, he used Pliny the Elder for his understanding of the beginning of Aries. Thus Philo of Alexandria differed with Josephus on the meaning of Aries.)

Philo was well educated, but not in the area of mathematical astronomy. The zodiac was popular in areas where Greek culture had spread. It should be accepted that people in Alexandria would understand that the first day of Aries was the day of the vernal equinox as taught by the astronomers in Alexandria, which was unlike most of the Roman empire in the first century where the eighth day of Aries was taken as the day of the vernal equinox (in agreement with the Babylonians).

Philo discusses Ex 12:2 on pp. 2-5 of Philo_QE (Exodus, Book 1.1). On p. 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 p. 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."**

Elsewhere Philo made it clear that the Jewish month begins with the sighting of the new crescent. The reader is therefore expected to know that he is speaking about a lunar calendar in Scripture.

We note that on p. 391 of Alan E. Samuel 1988, **"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."

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.

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