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**HaShem's Calendar**

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**INTRODUCTION**

[HaShem's](hashem.html) calendar is the basis for the celebration of [Rosh Chodesh](chodesh.html) (the [new](new.html) [moon](chodesh.html)) and all of the [moedim](settimes.html) ([festivals](festivals.html)). This calendar is derived by astronomical observation and careful calculation. This ability to build a calendar is considered important and necessary, in the [oral law](law.html):

***Shabbath 75a ...*** *he who is able to calculate the* [*cycles*](cycles.html)*[[1]](#footnote-1) and planetary courses but does not,* [*one*](one.html) *may hold no conversation with him.[[2]](#footnote-2)*

As it exists today, the Biblical, or [Hebrew](hebrew.html), calendar is a lunar solar calendar that is based on calculation rather than observation. This calendar is the official calendar of Israel and is the liturgical calendar of the [Jewish](gen-jew.html) faith.

The dictionary defines a "calendar" as:

**cal en dar** (kal n d r) ***n.*** [[ME *calender* < L *kalendarium* , account book < *kalendae* , CALENDS]] **1** a system of determining the beginning, length, and divisions of a year and for arranging the year into days, weeks, and months **2** a table or chart that shows such an arrangement, usually for a single year **3** a list or schedule, as of pending court cases, bills [coming](coming.html) before a legislature, planned social [events](feasts.html), etc. ***adj.*** such as that appearing on certain popular, conventional calendars *[calendar* art, a *calendar* girl*]* ***vt.*** to enter in a calendar; specif., to schedule **ca len dri cal** (k len dri k l) or **ca len dric** (-drik ) ***adj.*** [[3]](#footnote-3)

In the encyclopedia we find the following enigmatic statement:

**"CALENDAR**. People have kept track of the days by the march of daylight and darkness and of the changing seasons in order to [know](daat.html) when to plant crops and to get ready for winter. Sometimes they kept the record by notching a stick or knotting a cord once every day. They also watched the changing positions of the [sun](hachama.html) and [stars](mazaroth.html), the changes of the [moon](chodesh.html), and the habits of plants and animals. The making of an exact calendar, however, has perplexed mankind for ages because the divisions of [time](time.html) by days, weeks, months, and years do not seem to fit together properly.[[4]](#footnote-4)"

The perplexity men have regarding the calendar is primarily due to a lack of attention to [HaShem](hashem.html)'s word and the [oral law](law.html). Anyone who has ever desired to observe [HaShem](hashem.html)'s [festivals](festivals.html), His [moedim](settimes.html), His [appointed times](settimes.html), has encountered [HaShem](hashem.html)'s calendar. The scriptures are replete with references to various calendar references. There are the "[Rosh Chodeshim](chodesh.html)", the [new](new.html) moons, the [Sabbath](sabbath.html), as well as the [festivals](festivals.html). In addition to particular days, [HaShem](hashem.html)'s calendar includes months and years. All of these are introduced in:

***Genesis 1:14-19*** *And God said, "Let there be* [*lights*](lights.html) *in the expanse of the sky to separate the day from the night, and let them serve as* [*signs*](signs.html) *to mark seasons and days and years, And let them be* [*lights*](lights.html) *in the expanse of the* [*sky*](file:///D:\Backup%20data\Word\Stars\heaven.html) *to give light on the earth." And it was so. God made* [*two*](two.html) *great* [*lights*](lights.html) *-- the greater light to govern the day and the lesser light to govern the night. He also made the* [*stars*](mazaroth.html)*. God set them in the expanse of the sky to give light on the earth, To govern the day and the night, and to separate light from darkness. And God saw that it was good. And there was evening, and there was morning--the* [*fourth*](four.html) *day.*

When [HaShem](hashem.html) introduces His calendar, He does so by creating the astronomical [bodies](body.html) which will mark off the various seasons, days, and years. [HaShem](hashem.html)'s calendar is completely defined by the [sun](hachama.html) and the [moon](chodesh.html). This is in stark contrast to the Gregorian calendar which does not tie it's days or months, to either the [sun](hachama.html) or the [moon](chodesh.html). In the Gregorian calendar, the days are arbitrarily set to start and end at midnight. This makes it impossible to determine when [one](one.html) day ends, and another day begins, by observation. You must rely on a man made timekeeping device. The Gregorian calendar creates the same problem with months. The Gregorian months are totally arbitrary and have no [connection](connection.html) with the [sun](hachama.html) or the [moon](chodesh.html). Without a "paper calendar" [one](one.html) can not tell where [one](one.html) month starts and another begins. The months have no intrinsic [connection](connection.html) to the [sun](hachama.html) or the [moon](chodesh.html), or any other astronomical [body](body.html).

The Gregorian calendar is a modified version of the Julian calendar. The only difference being the specification of leap years. The Julian calendar specifies that every year that is a multiple of 4 will be a leap year. This leads to a year that is 365.25 days long, but the current accepted value for the tropical year is 365.242199 days. To correct this error in the length of the year and to bring the vernal equinox back to March 21, Pope Gregory XIII issued a papal bull declaring that Thursday October 4, 1582 would be followed by Friday October 15, 1582 and that centennial years would only be a leap year if they were a multiple of 400. This shortened the year by 3 days per 400 years, giving a year of 365.2425 days.

The following chart gives some [insights](insights.html) into the Biblical / [Hebrew](hebrew.html) and the Gregorian calendars:

**Months of the Year -**

**Gregorian / Western Calendar**

**January 31 days**; from [Roman](file:///D:\Backup%20data\Word\Stars\edom.html) republican calendar month Januarius, named for Janus, god of beginnings and doorways.

**February 28 days** usually, 29 in leap year; from Roman republican calendar month Februarius, named for Februa, the feast of purification held on the 15th.

**March 31 days**; from Roman republican calendar month Martius, named for the god Mars.

**April 30 days**; from Roman republican calendar month Aprilis. The Romans considered the month sacred to the goddess Venus, and its [name](name.html) may derive from that of her Greek equivalent, Aphrodite.

**May 31 days**; from Roman republican calendar month Maius, probably named for the goddess Maia.

**June 30 days**; from Roman republican calendar month Junius, probably named for the goddess Juno.

**July 31 days**; from Roman republican calendar month Julius, named for Julius Caesar in 44 BC.

**August 31 days**; from Roman republican calendar month Augustus, named for the emperor Augustus in 8 BC.

**September 30 days**; [seventh](seven.html) month of early Roman republican calendar, from Latin septem, or [seven](seven.html).

**October 31 days**; [eighth](eight.html) month of early Roman republican calendar, from Latin octo, or [eight](eight.html).

**November 30 days**; [ninth](nine.html) month of early Roman republican calendar, from Latin nove, or [nine](nine.html).

**December 31 days**; tenth month of early Roman republican calendar, from Latin decem, or [ten](ten.html).

**Months of the Year -**

**Biblical /** [**Jewish**](gen-jew.html) **Calendar**

[**Tishri**](feasts.html) **(Ethanim) 30 days**; [Rosh Hashanah](teruah.html) and [Yom Kippur](kippur.html) fall during this month; regarded as [birth](birth.html) month of [Abraham](avraham.html), [Isaac](isaac.html), and [Jacob](israelja.html); [mazzaroth](file:///D:\Backup%20data\Word\Stars\mazaroth.html) is the scales, symbolizing the weighing of [one](one.html)'s deeds between [Rosh Hashanah](teruah.html), the [new](teruah.html) year and [Yom HaKippurim](file:///D:\Backup%20data\Word\Stars\kippur.html), the Day of [Atonement](kippur.html). The [tribe](tribes.html) associated with this month is Dan.

[**Heshvan**](feasts.html) **(Bul) 29 or 30 days**; [mazzaroth](file:///D:\Backup%20data\Word\Stars\mazaroth.html) is the scorpion. The [tribe](tribes.html) associated with this month is Naphtali.

[**Kislev**](feasts.html) **29 or 30 days**; [Chanukah](chanukah.html) begins on 25th day; mazzaroth is the bow. The [tribe](tribes.html) associated with this month is Gad.

**Tevet 29 days**; [fast of Tevet](file:///D:\Backup%20data\Word\Stars\tevet10.html) on 10th day; mazzaroth is the goat. The [tribe](tribes.html) associated with this month is Asher.

[**Shevat**](feasts.html) **30 days**; [new year for trees](teruah.html), or arbor day, on 15th day; mazzaroth is the water bearer. The [tribe](tribes.html) associated with this month is [Yoseph](joseph.html).

[**Adar**](feasts.html) **29 or 30 days**; [birth](birth.html) and death of Moses on 7th day; fast of [Esther](esther.html) on 13th day; [Purim](Purim.html) on 14th day; [mazzaroth](file:///D:\Backup%20data\Word\Stars\mazaroth.html) is the fish. The [tribe](tribes.html) associated with this month is [Benjamin](benyamin.html).

[**Nisan**](feasts.html) **(**[**Aviv**](feasts.html)**) 30 days**; [Passover](passover.html) begins on the 15th day; entire month regarded as a prolonged [festival](festival.html) and a blessed month in which to die; no public [mourning](mourning.html) is permitted; mazzaroth is the ram. The [tribe](tribes.html) associated with this month is Reuben.

[**Iyar**](feasts.html) **(Zif) 29 days**; Israeli Independence Day on 5th; no [marriages](file:///D:\Backup%20data\Word\Stars\wedding.html) may be celebrated by the Orthodox until after 17th day; mazzaroth is the bull. The [tribe](tribes.html) associated with this month is Shimon.

[**Sivan**](feasts.html) **30 days**; [Hag Shavuot](shavuot.html), the [Feast of Weeks](shavuot.html), starts on 6th day; mazzaroth is the twins. The [tribe](tribes.html) associated with this month is Levi.

[**Tammuz**](feasts.html) **29** days; [fast of Tammuz](feasts.html) on 17th day, commemorating the [first](one.html) breach in the walls of [Jerusalem](city.html) and the breaking of the tablets of the Torah; mazzaroth is the crab. The [tribe](tribes.html) associated with this month is Judah.

[**Av**](feasts.html) **30 days**; [fast of Av](feasts.html) on the 9th day; mazzaroth is the lion. The [tribe](tribes.html) associated with this month is Issachar.

[**Elul**](elul.html) **29 days**; month is devoted to penitence and [spiritual](physical.html) preparation for Day of Judgment; mazzaroth is the [virgin](virgin.html). The [tribe](tribes.html) associated with this month is Zebulon.

The names of the [Jewish](gen-jew.html) months are actually [Babylonian](bavel.html) and were brought back to Israel by Ezra and Nehemiah after the [Babylonian](bavel.html) [Exile](galuyot.html). Until the naming of the [Jewish](gen-jew.html) months, they were simply [known](daat.html) as the "[first](one.html) month", the "second month", and so on, starting their counting with the month of [Nisan](feasts.html) (when [Passover](passover.html) falls out) and NOT with Tishrei ([Rosh Hashana](teruah.html)h). So [Rosh Hashana](teruah.html)h actually happens in the [seventh](seven.html) month. We use these [Babylonian](bavel.html) names to remind us that we are not in Israel, as we should be. It is understood that [Messiah](mashiach.html) will cause the [ingathering](gather.html) of all Israel, to the [land of Israel](city.html), and he will restore the months to a [number](nchart.html), rather than the [Babylonian](bavel.html) names.

**BIBLICAL CALENDAR BACKGROUND[[5]](#footnote-5)**

The [Jewish](gen-jew.html) calendar, defined by God's method, is not like the Gregorian calendar. The Biblical calendar uses the [sun](hachama.html) and the [moon](chodesh.html) to define days, months, and years. This calendar does not start on an arbitrary date determined by some great personality like Caesar or [Yeshua](yeshua.html), but rather it starts at the [creation](bara.html) of the [world](worlds.html). This starting point has several obvious advantages:

**A.** The calendar does not need to be changed with the [coming](coming.html) of another man. This avoids a considerable amount of disruption.

**B.** The calendar starts at the "beginning" of the [world](worlds.html), which is the [first](one.html) [time](time.html) that there is any need or reference for a calendar.

**C.** All of man's beginnings, will coincide with [HaShem's](hashem.html) beginnings, and the astronomical beginnings.

**D.** The year contains a running total of the age of [creation](bara.html), preserved for [future](future.html) [generations](toldot.html).

The Biblical calendar shows that the [world](worlds.html) was created in what is 3762 BC on the Gregorian calendar (The Gregorian calendar will not be invented for thousands of years, though). The years, on the Biblical calendar, are designated "AM" for *anno mundi,* which is Latin for "year of the [world](worlds.html)". This system starts its count from the [creation](bara.html) of the [world](worlds.html). There is, therefore, no designation of BC or AD as there is in the Gregorian calendar.

The Biblical calendar is tied to both the lunar month and the solar year. The lunar [cycle](cycles.html) is used to derive months, and the lunar [cycle](cycles.html) is adjusted, via intercalation, to keep synchronized with the solar year. There are [two](two.html) beginnings to the [Jewish](gen-jew.html) calendar year, [Nisan](feasts.html) and Tishrei - reflecting the dual nature of the [Jewish](gen-jew.html) calendar - lunar and solar, respectively. [Nisan](feasts.html) is the month of the [Exodus](exodus.html) [from Egypt](thebirth.html) and Tishrei is the month of the [Creation](bara.html).

Because the solar year exceeds [twelve](twelve.html) lunar months by about [eleven](eleven.html) days, a 13th month of 30 days is intercalated, or inserted, [seven](seven.html) times in each 19-year [cycle](cycles.html). Other adjustments to the calendar are required periodically to make sure that the [festival](festival.html) of [Passover](passover.html) follows the [first](one.html) day of Spring.[[6]](#footnote-6)

The problem with strictly lunar calendars is that there are approximately 12.4 lunar months in every solar year, so a 12-month lunar calendar loses about 11 days every year and a 13-month lunar gains about 19 days every year. The months on such a calendar "drift" relative to the solar year. On a 12 month calendar, the month of [Nisan](feasts.html), which is supposed to occur in the Spring, occurs 11 days earlier each year, eventually occurring in the Winter, the Fall, the Summer, and then the Spring again. To compensate for this drift, an extra month was added, or intercalated: a second month of [Adar](feasts.html). The intercalated [Adar](feasts.html) II, is added [seven](seven.html) out of nineteen years. The month of [Nisan](feasts.html) would occur 11 days earlier for [two](two.html) or [three](three.html) years, and then would jump forward 29 or 30 days, balancing out the drift.

The Biblical year harmonizes the solar and lunar [cycle](cycles.html), using the 19-year [cycle](cycles.html) of Meton (c. 432 B.C.E.) Meton discovered that after nineteen years the years reckoned using the [sun](hachama.html) and the [moon](chodesh.html) get back into synch (almost.) It corrects so that certain dates should not fall on certain days for religious convenience. The [Jewish](gen-jew.html) year has [six](six.html) possible lengths: 353, 354, 355, 383, 384, 385 days, according to the day and [time](time.html) of the [new](teruah.html) year lunation, and position in the Metonic [cycle](cycles.html). [Time](time.html) figures from 6 p.m. the previous night. The lunation of year 1 is calculated to be on a Monday (our Sunday night) at 11:11:20 p.m. The [world](worlds.html) began with a hypothetical year 0, corresponding to 3762 B.C.E. Calculations for the calendar are figured in the ancient [Babylonian](bavel.html) unit of halaqim "parts" of the hour = 1/1080 hour.

According to [Jewish](gen-jew.html) tradition, the year 1 of the Biblical calendar was the [time](time.html) of tohu and bohu, "formless and void", referred to in Genesis 1:1. Nothing was yet created, and only a virtual clock started to tick on the [first](one.html) day of that year, heard, as it were, only by the Creator. On the [first](one.html) day of the week (Sunday) the [twenty](twenty.html)-[fourth](four.html) day of [Elul](elul.html), corresponding to August 22, 3760 AM. He said: Let there be light! And [creation](bara.html) began. It concluded by the following [Sabbath](sabbath.html) (Saturday) which was the [first](one.html) day of [Tishri](feasts.html), year 2.

***Devarim (Deuteronomy) 4:5-6*** *See, I have* [*taught*](teacher.html) *you decrees and* [*laws*](law.html) *as* [*Hashem*](hashem.html) *my God commanded me, so that you may follow them in the land you are entering to take possession of it. You shall guard and You shall do them, for this will show your wisdom and understanding to the* [*nations*](nations.html)*, who will hear about all these decrees and say, "Surely this great* [*nation*](nations.html) *is a wise and understanding people."*

"You shall guard and you shall do..." Rabbi Shmuel bar Nahman said in the [name](name.html) of Rebbe Yonatan, from where do we [know](daat.html) that it is a [mitzvah](cmds613.html) for each man to calculate the seasons and the months? It is written, "You shall guard and you shall do, for it is evidence, in the [eyes](body.html) of the [nations](nations.html), of the wisdom and understanding that has been given to you." What is the wisdom and understanding that Israel possesses "in the [eyes](body.html) of the [nations](nations.html)"? We must say that it refers to the calculation of the seasons and months. Concerning [one](one.html) who knows how to calculate and does not do so, the verse says, "They did not contemplate God's deeds, and they have not paid attention to the work of His [hands](fourteen.html)." (Yeshaya 5:12). The [midrash](orallaw.html) also gives us some [insight](insights.html) into the Biblical understanding of the calendar:

[***Midrash***](orallaw.html) ***Rabbah -*** [***Esther***](esther.html) ***IV:1*** *1. THEN THE KING SAID TO THE WISE MEN, WHO* [*KNEW*](daat.html) *THE TIMES (1, 13). Who were these? R. Simon said: These were the* [*tribe*](tribes.html) *of Issachar, as it says, And of the children of Issachar, men that had understanding of the* [*times*](file:///D:\Backup%20data\Word\Stars\time.html)*, to* [*know*](daat.html) *what Israel ought to do (I Chronicles XII, 32). R. Tanhuma said: This means, for fixing the calendar: R. Jose b. Kazrath said: For intercalation. (‘ To* [*know*](daat.html) *what Israel ought to do’:*

***Divrei Hayamim (I Chronicles) 12:23-38*** *These are the* [*numbers*](nchart.html) *of the men armed for battle who came to David at* [*Hebron*](city.html) *to turn Saul's kingdom over to him, as* [*HaShem*](hashem.html) *had said: Men of Judah, carrying shield and spear--6,800 armed for battle; Men of Simeon, warriors ready for battle--7,100; Men of Levi--4,600, Including Jehoiada, leader of the family of Aaron, with 3,700 men, And Zadok, a brave young warrior, with 22 officers from his family; Men of* [*Benjamin*](benyamin.html)*, Saul's kinsmen--3,000, most of whom had remained loyal to Saul's house until then; Men of Ephraim, brave warriors, famous in their own clans--20,800; Men of half the* [*tribe*](tribes.html) *of Manasseh, designated by* [*name*](name.html) *to come and make David king--18,000; Men of Issachar, who understood the times and* [*knew*](daat.html) *what Israel should do--200 chiefs, with all their relatives under their* [*command*](cmds613.html)*; Men of Zebulun, experienced soldiers prepared for battle with every* [*type*](types.html) *of weapon, to help David with undivided loyalty-- 50,000; Men of Naphtali--1,000 officers, together with 37,000 men carrying shields and spears; Men of Dan, ready for battle--28,600; Men of Asher, experienced soldiers prepared for battle--40,000; And from* [*east*](east.html) *of the* [*Jordan*](stages.html)*, men of Reuben, Gad and the half-*[*tribe*](tribes.html) *of Manasseh, armed with every* [*type*](types.html) *of weapon--120,000. All these were fighting men who volunteered to serve in the ranks. They came to* [*Hebron*](city.html) *fully determined to make David king over all Israel. All the rest of the Israelites were also of* [*one*](one.html) *mind to make David king.*

[***Midrash***](orallaw.html) ***Rabbah - Genesis VI:1*** *1. AND GOD SAID: LET THERE BE* [*LIGHTS*](lights.html) *(I, 14). R. Johanan began thus: Who appointest the* [*moon*](chodesh.html) *for seasons (Ps. CIV, 19). R. Johanan commented: The orb of the* [*sun*](hachama.html) *alone was created to give light. If so, why was the* [*moon*](chodesh.html) *created? ‘For seasons’: in order to sanctify* [*new*](new.html) *moons and years thereby.[[7]](#footnote-7) R. Shila of Kefar Temarta[[8]](#footnote-8) said in R. Johanan's* [*name*](name.html)*: Yet even so, The* [*sun*](hachama.html) *knoweth its* [*coming*](coming.html) *(ib.): from the* [*sun*](hachama.html)[*one*](one.html) *knows its* [*coming*](coming.html) *[sc. of the month], for we count the beginning of the month only from sunset. Justa Habra[[9]](#footnote-9) said in R. Berekiah's* [*name*](name.html)*: And they journeyed Irom* [*Rameses*](file:///D:\Backup%20data\Word\Stars\stages.html) *in the* [*first*](one.html) *month, on the* [*fifteenth day of the first month*](one.html)*, etc. (Num. XXXIII, 3): but if you count by the* [*moon*](chodesh.html)*, then so far there were only* [*thirteen*](thirteen.html) *sunsets?[[10]](#footnote-10) Hence it follows that we count not from the* [*moon*](chodesh.html) *but from sunset.*

[***Midrash***](orallaw.html) ***Rabbah - Genesis VI:3*** *3. R. Tanhum and R. Phinehas in R. Simon's* [*name*](name.html) *said: After calling them GREAT, He actually casts a slur [on* [*one*](one.html) *by writing] THE GREAT LIGHT... AND THE SMALL LIGHT (I, 16)! The reason is because it penetrated into its neighbour's territory.[[11]](#footnote-11) R. Phinehas said: In respect of all other sacrifices it is written, And* [*one*](one.html) *he-goat for a* [*sin-offering*](sin.html)*,[[12]](#footnote-12) whereas in respect of* [*New Moon*](new.html) *it is written, And* [*one*](one.html) *he-goat for a* [*sin*](sin.html)*-*[*offering*](korbanot) *for the Lord (Num. XXVIII,15): The Holy* [*One*](one.html)*, blessed be He, said: ‘It was I who caused it to enter its neighbor's domain.’[[13]](#footnote-13) Then if that [sc. the* [*moon*](chodesh.html)*] which entered with permission was thus disparaged by Holy Writ, think how much more* [*one*](one.html) *is deserving of this who enters without permission! R. Levi said in the* [*name*](name.html) *of R. Jose b. Lai: It is but natural that the great should count by the great, and the small by the small.* [*Esau*](edom.html)*[[14]](#footnote-14) counts [*[*time*](time.html)*] by the* [*sun*](hachama.html)*, which is large, and* [*Jacob*](israelja.html) *by the* [*moon*](chodesh.html)*, which is small. Said R. Nahman: That is a happy augury.* [*Esau*](edom.html) *counts by the* [*sun*](hachama.html)*, which is large: just as the* [*sun*](hachama.html) *rules by day but not by night, so does* [*Esau*](edom.html) *enjoy this* [*world*](worlds.html)*, but has nought in the* [*World*](futures.html) *to Come.* [*Jacob*](israelja.html) *counts by the* [*moon*](chodesh.html)*, which is small: just as the* [*moon*](chodesh.html) *rules by day and by night, so has* [*Jacob*](israelja.html) *a portion in this* [*world*](worlds.html) *and in the* [*World*](futures.html) *to Come. R. Nahman made another observation, thus: R. Nahman said: As long as the light of the greater luminary functions, the light of the smaller* [*one*](one.html) *is not noticeable, but when the light of the greater* [*one*](one.html) *sets, the light of the smaller* [*one*](one.html) *becomes noticeable; even so, as long as the light of* [*Esau*](edom.html) *prevails, the light of* [*Jacob*](israelja.html) *cannot be distinguished; but when the light of* [*Esau*](edom.html) *sets, that of* [*Jacob*](israelja.html) *shall be distinguished, as it is written, Arise, shine,... For, behold, darkness shall cover the earth, and gross darkness the peoples, but upon thee the Lord will arise, and His glory shall be seen upon thee (Isaiah 60:1).*

**HISTORY**

The [Jewish](gen-jew.html) calendar is primarily lunar, with each month beginning on the [new](new.html) [moon](chodesh.html), when the [first](one.html) sliver of [moon](chodesh.html) becomes visible, after the dark of the [moon](chodesh.html). In ancient times, the [new](new.html) months used to be determined by observation. When people observed the [new](new.html) [moon](chodesh.html), they would notify the Sanhedrin. When the Sanhedrin heard testimony from [two](two.html) independent, reliable eyewitnesses that the [new](new.html) [moon](chodesh.html) occurred on a certain date, they would declare the [Rosh Chodesh](chodesh.html) ([first](one.html) of the month) and send out messengers to tell people when the month began.

With the decline of the Sanhedrin, calendrical matters were decided by the Palestinian patriarchate (the official heads of the [Jewish](gen-jew.html) [community](community.html) under Roman rule). [Jewish](gen-jew.html) persecution under Constantius II (reigned 337-361) and advances in Astronomical science led to the gradual replacement of observation by calculation. According to Hai ben Sherira (died 1038)--the [head](body.html) of a leading Talmudic academy in Babylonia--Hillel II, a Palestinian patriarch, introduced a fixed a continuous calendar in 359 CE. A summary of the regulations governing the present calendar is provided by Maimonides, the great medieval philosopher and legalist, in his Code: Sanctification of the [New](new.html) [Moon](chodesh.html), chapters 6-10.[[15]](#footnote-15)

In the [fourth](four.html) century, Hillel II established a fixed calendar based on mathematical and astronomical calculations. This calendar, still in use, standardized the length of months and the addition of months over the course of a 19 year [cycle](cycles.html), so that the lunar calendar realigns with the solar years. [Adar](feasts.html) II is added in the 3rd, 6th, 8th, 11th, 14th, 17th and 19th years of the [cycle](cycles.html). The [new](teruah.html) year that began Thursday, October 2, 1997 AD ([Jewish](gen-jew.html) calendar year 5758 AM) was the [first](one.html) year of the [cycle](cycles.html).

The year [number](nchart.html) on the [Jewish](gen-jew.html) calendar represents the [number](nchart.html) of years since [creation](bara.html), as calculated by adding up the ages of people in the Bible back to the [time](time.html) of [creation](bara.html). However, it is important to note that this date is not necessarily supposed to represent a scientific fact. There is some evidence to suggest that the AM years need to have 240 / 241 years added, to coincide with actuality. It is this authors opinion that the AM years were adjusted to preclude the Messiahship of [Yeshua](yeshua.html). [Jews](gen-jew.html) do not generally use the words "A.D." and "B.C." to refer to the years on the Gregorian calendar. "A.D." means "the year of our L-rd," and most [Jews](gen-jew.html) do not believe [Yeshua](yeshua.html) is the L-rd. Instead, we use the abbreviations C.E. (Common or Christian Era) and B.C.E. (Before the Common Era).[[16]](#footnote-16)

Months of the [Jewish](gen-jew.html) Year

The "[first](one.html) month" of the [Jewish](gen-jew.html) calendar is the month of [Nisan](feasts.html), in the spring, when [Passover](passover.html) occurs. However, the [Jewish](gen-jew.html) [New](teruah.html) Year is in [Tishri](feasts.html), the [seventh](seven.html) month, and that is when the year [number](nchart.html) is increased. This concept of different starting points for a year is not as strange as it might seem at [first](one.html) glance. The American "[new](teruah.html) year" starts in January, but the [new](new.html) "school year" starts in September, and many businesses have "fiscal years" that start at various times of the year. Similarly, the [Jewish](gen-jew.html) calendar has different starting points for different purposes.

The Biblical / [Jewish](gen-jew.html) calendar has the following months:

|  |  |  |
| --- | --- | --- |
| **Month** | **Length** | **Gregorian**  **Equivalent** |
|  |  |  |
| [Nisan](feasts.html) | 30 days | March-April |
| [Iyar](feasts.html) | 29 days | April-May |
| [Sivan](feasts.html) | 30 days | May-June |
| [Tammuz](feasts.html) | 29 days | June-July |
| [Av](feasts.html) | 30 days | July-August |
| [Elul](elul.html) | 29 days | August-September |
| [Tishri](feasts.html) | 30 days | September-October |
| [Heshvan](feasts.html) | 29 or 30 days | October-November |
| [Kislev](feasts.html) | 30 or 29 days | November-December |
| Tevet | 29 days | December-January |
| [Shevat](feasts.html) | 30 days | January-February |
| [Adar](feasts.html) | 29 or 30 days | February-March |
| [Adar](feasts.html) II | 29 days | March-April |

In leap years, [Adar](feasts.html) has 30 days. In non-leap years, [Adar](feasts.html) has 29 days.

The length of [Heshvan](feasts.html) and [Kislev](feasts.html) are determined by complex calculations involving the [time](time.html) of day of the full [moon](chodesh.html) of the following year's [Tishri](feasts.html) and the day of the week that [Tishri](feasts.html) would occur in the following year.

Note that the [number](nchart.html) of days between [Nisan](feasts.html) and [Tishri](feasts.html) is always the same. Because of this, the [time](time.html) from the [first](one.html) major [festival](festival.html) ([Passover](passover.html) in [Nisan](feasts.html)) to the last major [festival](festival.html) ([Succoth](succoth.html) in [Tishri](feasts.html)) is always the same.

The [Hebrew](hebrew.html) calendar is a lunar calendar. Before I get into the calculation, let me try to explain lunar calendars. Each month goes from [new](new.html) [moon](chodesh.html) to [new](new.html) [moon](chodesh.html). Between moladot ([new](new.html) moons) is (according to [Hebrew](hebrew.html) calendar) 29 days, 12 hours (abbreviated h) and 793 (of 1080) halekim (parts abbreviated p). If [one](one.html) knows [one](one.html) [new](new.html) [moon](chodesh.html), they could find any other [new](new.html) [moon](chodesh.html) by adding or subtracting this interval. It also happens that every 19 solar years corresponds to exactly 235 lunar months. This means you can devise a 19 lunar year [cycle](cycles.html) made up of 12 years of 12 lunar months and 7 years of 13 lunar months that corresponds to an equivalent 19 solar years. The [Hebrew](hebrew.html) calendar has 13 month (leap) years in the 3rd, 6th, 8th, 11th, 14th, 17th and 19th years of this [cycle](cycles.html). In the [Hebrew](hebrew.html) calendar the leap month is done by adding a second [Adar](feasts.html) of 30 days.

Now if the [Hebrew](hebrew.html) calendar was based only on this, we could easily calculate [one](one.html) [Rosh Hashanah](teruah.html) to the next, and the months would alternate 29 and 30 days. Things would be easy, but this is not the case. [First](one.html) the extra 793 halokim ,parts, have to be balanced off. Also [Rosh Hashana](teruah.html)h must be moved to prevent certain calendar facts from happening (like [Yom HaKippurim](file:///D:\Backup%20data\Word\Stars\kippur.html), the Day of [Atonement](kippur.html), from landing on Friday or Sunday). These reasons mean a year can have 353, 354, 355 days in non-leap-years, and 383, 384 and 385 in leap-years. To balance this off, in short years (353 and 383 days) [Kislev](feasts.html) is shortened to 29 days and in long years (355 and 385 days) [Heshvan](feasts.html) is lengthened to 30 days. Now before things get really hopeless, there is a simple method here.

For any year, find the day of the molad of [Rosh Hashana](teruah.html)h and apply the rules to get the real [Rosh Hashana](teruah.html)h.

Do the same for the following year.

Find the [number](nchart.html) of days between to get the year length.

Use the table to find out the adjustments.

| **Year length** | **leap year** | [**Heshvan**](feasts.html) **length** | [**Kislev**](feasts.html) **length** |
| --- | --- | --- | --- |
| 353 | No | 29 | 29 |
| 354 | No | 29 | 30 |
| 355 | No | 30 | 30 |
| 383 | Yes | 29 | 29 |
| 384 | Yes | 29 | 30 |
| 385 | Yes | 30 | 30 |

The inter-calculation of the Gregorian and the [Hebrew](hebrew.html) date is not that complex. The trick is not to calculate [one](one.html) from the other, but to set some base date to calculate from. To [convert](aliens.html) [one](one.html) to the other you [first](one.html) calculate the [number](nchart.html) of days from the base date, and then calculate the other from that [number](nchart.html) of days.

In order for the [Jewish](gen-jew.html) calendar to operate accurately, [two](two.html) factors have to be taken into account. Firstly, the Torah [commands](cmds613.html): 'Shamor Et Chodesh Ha'[aviv](feasts.html)..' 'Observe the month of [Aviv](feasts.html)..':

***Devarim (Deuteronomy) 16:1*** *Observe the month of* [*Aviv*](feasts.html) *and celebrate the* [*Passover*](passover.html) *of* [*HaShem*](hashem.html) *your God, because in the month of* [*Abib*](feasts.html) *he brought you* [*out of Egypt*](thebirth.html) *by night.*

[Aviv](feasts.html), which is the [first](one.html) of the year, and today is called [Nisan](feasts.html), is the month in which the [festival](festival.html) of [Pesach](passover.html) ([Passover](passover.html)) occurs and since the word [Aviv](feasts.html) also means "Spring" we learn that [Pesach](passover.html) must always fall in the Spring. In order to achieve this, the position of the [sun](hachama.html) has to be [known](daat.html) in order to calculate the seasons. Secondly, the [Mitzvah](cmds613.html) 'Uverashei Chodsheichem Takrivu Ola..' 'On your [New](new.html) Moons you shall offer..etc':

***Bamidbar (***[***Numbers***](nchart.html)***) 28:11*** *"'On the* [*first*](one.html) *of every month, present to* [*HaShem*](hashem.html) *a* [*burnt offering*](korbanot) *of* [*two*](two.html) *young bulls,* [*one*](one.html) *ram and* [*seven*](seven.html)[*male*](male+female.html) *lambs a year old, all without defect.*

This shows that the months have to calculated according to the position of the [moon](chodesh.html). Hence we have a LUNAR SOLAR system, [one](one.html) that is determined by both the [sun](hachama.html) and the [moon](chodesh.html).

The Bible generally designates the months by [number](nchart.html), '[First](one.html) Month, [Fifth](five.html) Month, etc. However, there are [four](four.html) months actually named in the Bible, so it is probable that, originally, they all had designated names. The [four](four.html) we [know](daat.html) are:

|  |  |
| --- | --- |
| [Aviv](feasts.html) | The 1st month (Deuteronomy 16.1) |
| Ziv | The second month (1 Kings 6:1) |
| Bul | The 8th month (1 Kings 6:38) |
| Ethnaim | The 7th month (1 Kings 8:2) |

The [Palestinian Talmud](orallaw.html) states that the names of the months, as we [know](daat.html) them today, were adopted at the [time](time.html) of the [Babylonian](bavel.html) [exile](galuyot.html).

**THE** [**FOUR**](four.html)[**NEW**](teruah.html) **YEARS**

The [Mishna](orallaw.html), in Tractate [Rosh Hashana](teruah.html)h, discusses [four](four.html) '[New](teruah.html) Years.' They are:

1st [Tishri](feasts.html)

1st [Nisan](feasts.html)

1st [Elul](elul.html)

15th [Shevat](feasts.html).

1st Tishrei; The [new](teruah.html) year for years: Simply [the birth](thebirth.html)day of the [world](worlds.html).

1st [Nisan](feasts.html): The [New Year for Kings](teruah.html): Whenever a [new](new.html) king came to the throne, the beginning of his reign was dated from [Nisan](feasts.html) 1st, irrespective of when he really started to reign.

1st [Elul](elul.html); The [New](teruah.html) Year for Animals: The beginning of the tax year for tithing animals

15th [Shevat](feasts.html); The [New Year for Trees](teruah.html): The beginning of the tax year for tithing produce

**How the Months were determined**

In the Torah, The [first](one.html) day of the [new](new.html) month, [known](daat.html) as [Rosh Chodesh](chodesh.html) (the [New](new.html) [Moon](chodesh.html)), is placed on par with [festivals](festivals.html). The silver trumpets were blown in the [Temple](temple.html), [shofars](file:///D:\Backup%20data\Word\Stars\shofar.html) were blown throughout the land, and special Additional Sacrifices were offered. We can see from the Tanach how important this day was. From the book of Samuel, we see that they had a festive meal, from the book of Amos, we see that no business was done and from the book of Kings, we see that people went to visit the prophets, on this day.

The exact day of the [new](new.html) month was determined by observation of the [moon](chodesh.html) and by seeing when the [new](new.html) crescent actually appeared...

On the 30th of each month the members of the High Court, the Sanhedrin, assembled in a particular courtyard in [Jerusalem](city.html) (Beit Ya'azek) and waited to receive testimony from [two](two.html) reliable witnesses. If they came, then the [moon](chodesh.html) was sanctified. It was considered a very great [Mitzvah](cmds613.html) to come to [Jerusalem](city.html) to give evidence that you had seen the [first](one.html) crescent of the [moon](chodesh.html), and even [Shabbat](sabbath.html) could be desecrated in order to fulfill this obligation. If no-[one](one.html) came because the [moon](chodesh.html) wasn't visible, then the [new](new.html) month, [Rosh Chodesh](chodesh.html), was automatically declared to begin on the next day, i.e. the 31st day after the beginning of the last month. Beacons were kindled on the [Mount of Olives](east.html) and on designated mountains throughout the land, to inform everyone.

[***Rosh Hashana***](teruah.html)***h 23b*** *MISHNAH. THERE WAS A LARGE COURT IN* [*JERUSALEM*](city.html) *CALLED BETH YA'AZEK. THERE ALL THE WITNESSES USED TO ASSEMBLE AND THE BETH DIN USED TO EXAMINE THEM. THEY USED TO ENTERTAIN THEM LAVISHLY THERE[[17]](#footnote-17) SO THAT THEY SHOULD HAVE AN INDUCEMENT[[18]](#footnote-18) TO COME. ORIGINALLY THEY USED NOT TO LEAVE THE PLACE THE WHOLE DAY,[[19]](#footnote-19) BUT RABBAN GAMALIEL THE ELDER INTRODUCED A RULE THAT THEY COULD GO* [*TWO*](two.html) *THOUSAND CUBITS FROM IT IN ANY DIRECTION. THESE WERE NOT THE ONLY ONES [TO WHOM THIS CONCESSION WAS MADE]. A MIDWIFE WHO HAS COME [FROM A DISTANCE] TO HELP IN CHILDBIRTH OR* [*ONE*](one.html) *WHO COMES TO RESCUE FROM A* [*FIRE*](fire.html) *OR FROM BANDITS OR FROM A RIVER IN FLOOD OR FROM A BUILDING THAT HAS FALLEN IN — ALL THESE ARE ON THE SAME FOOTING AS THE RESIDENTS OF THE TOWN, AND MAY GO* [*TWO*](two.html) *THOUSAND CUBITS [ON* [*SABBATH*](sabbath.html)*] IN ANY DIRECTION.*

[*GEMARA*](orallaw.html)*. The question was raised: Do we read here Beth Ya'azek or Beth Ya'zek? Do we read Beth Ya'azek, regarding the* [*name*](name.html) *as an elegantia[[20]](#footnote-20) based on the Scriptural expressions, And he ringed it round and cleared it of stones?[[21]](#footnote-21) Or do we read Beth Ya'zek, taking the* [*name*](name.html) *to connote constraint,[[22]](#footnote-22) as it is written, being bound in chains?[[23]](#footnote-23) — Abaye said: Come and hear [a proof that it is the former]: THEY USED TO ENTERTAIN THEM LAVISHLY THERE SO THAT THEY SHOULD HAVE AN INDUCEMENT TO COME. [This is not conclusive], as perhaps they treated them in both ways.[[24]](#footnote-24)*

*MISHNAH. HOW DO THEY TEST THE WITNESSES? THE PAIR WHO ARRIVE* [*FIRST*](one.html) *ARE TESTED* [*FIRST*](one.html)*. THE SENIOR OF THEM IS BROUGHT IN AND THEY SAY TO HIM, TELL US HOW YOU SAW THE* [*MOON*](chodesh.html) *— IN FRONT OF THE* [*SUN*](hachama.html) *OR BEHIND THE* [*SUN*](hachama.html)*?[[25]](#footnote-25) TO THE NORTH OF IT OR THE SOUTH? HOW BIG WAS IT, AND IN WHICH DIRECTION WAS IT INCLINED?[[26]](#footnote-26) AND HOW BROAD WAS IT? IF HE SAYS [HE SAW IT] IN FRONT OF THE* [*SUN*](hachama.html)*, HIS EVIDENCE IS REJECTED.[[27]](#footnote-27) AFTER THAT THEY WOULD BRING IN THE SECOND AND TEST HIM. IF THEIR ACCOUNTS TALLIED, THEIR EVIDENCE WAS ACCEPTED, AND THE OTHER PAIRS WERE ONLY QUESTIONED BRIEFLY,[[28]](#footnote-28) NOT BECAUSE THEY WERE REQUIRED AT ALL, BUT SO THAT THEY SHOULD NOT BE DISAPPOINTED, [AND] SO THAT THEY SHOULD NOT BE DISSUADED FROM* [*COMING*](coming.html)*.[[29]](#footnote-29)*

[*GEMARA*](orallaw.html)*. ‘IN FRONT OF THE* [*SUN*](hachama.html)*’ is surely the same as ‘TO THE NORTH OF IT’, and ‘BEHIND THE* [*SUN*](hachama.html)*’ is surely the same as TO THE SOUTH OF IT’?[[30]](#footnote-30) — Abaye said: [It means], whether the concavity of the* [*moon*](chodesh.html) *is in front of the* [*sun*](hachama.html) *or behind the* [*sun*](hachama.html)*.[[31]](#footnote-31) If he says, in front of the* [*sun*](hachama.html)*, his evidence is rejected, since R. Johanan has said: What is meant by the verse, Dominion and* [*fear*](fear.html) *are with him, He makes peace in his high places?[[32]](#footnote-32) Never did the* [*sun*](hachama.html) *behold the concavity of the* [*new*](new.html)[*moon*](chodesh.html) *nor the concavity of the rainbow. It never sees the concavity of the* [*moon*](chodesh.html)*, so that she should not feel humiliated.[[33]](#footnote-33) It never sees the concavity of the rainbow so that the worshippers of the* [*sun*](hachama.html) *should not say, He is shooting arrows [at those who do not worship him].[[34]](#footnote-34)*

[***Rosh Hashana***](teruah.html)***h 24a*** *HOW HIGH WAS IT AND IN WHICH DIRECTION WAS IT INCLINED.* [*One*](one.html) *Tanna* [*taught*](teacher.html)*: [If he says], To the north, his evidence is accepted; [if he says], To the south, his evidence is rejected.[[35]](#footnote-35) But it has been* [*taught*](teacher.html) *to the opposite effect: ‘[If he says], To the south, his evidence is accepted; [if he says], To the north, his evidence is rejected’? — There is no contradiction;* [*one*](one.html) *statement speaks of the dry season,[[36]](#footnote-36) the other of the rainy season.[[37]](#footnote-37)*

*The Rabbis* [*taught*](teacher.html)*: If* [*one*](one.html)*[[38]](#footnote-38) says that it was* [*two*](two.html) *ox-loads high and the other* [*three*](three.html)*,[[39]](#footnote-39) their evidence is accepted. If* [*one*](one.html)*, however, says that it was* [*three*](three.html) *and the other* [*five*](five.html)*, their evidence is nullified, only each of them can be joined with another witness.[[40]](#footnote-40)*

*Our Rabbis* [*taught*](teacher.html)*: ‘[If they say], We saw it in water, we saw it in a mirror, we saw it through the clouds, they are not allowed to testify concerning it. [If they say], We saw half of it in water, half of it through the clouds, half of it in a mirror, they are not allowed to testify concerning it’. Since you disallow them [when they see] the whole, can there be any question [when they see] only half? — In fact the statement should run as follows: ‘[If they say they saw] half of it in water and half in the sky, half of it through the clouds and half in the sky, half of it in a mirror and half in the sky, they are not allowed to testify.’*

*Our Rabbis* [*taught*](teacher.html)*: [If they say], We saw it [once], but did not see it again, they are not allowed to testify concerning it. [Why so?] Are they to go on seeing it the whole* [*time*](time.html)*? — Abaye replied: What is meant is this. [If they say], We saw it by chance,[[41]](#footnote-41) but when we came to look for it deliberately[[42]](#footnote-42) we could not see it, they are not allowed to testify concerning it. What is the reason? Because I might say, they saw only a circular disc in the clouds.*

*MISHNAH. THE* [*HEAD*](body.html) *OF THE BETH DIN SAYS, SANCTIFIED’, AND ALL THE PEOPLE REPEAT AFTER HIM, SANCTIFIED, SANCTIFIED. WHETHER THE* [*NEW*](new.html)[*MOON*](chodesh.html) *IS SEEN AT ITS PROPER* [*TIME*](time.html)*[[43]](#footnote-43) OR NOT AT ITS PROPER* [*TIME*](time.html)*, IN EITHER CASE [THE* [*NEW*](new.html)[*MOON*](chodesh.html)*] IS SANCTIFIED.[[44]](#footnote-44) R. ELEAZAR B. ZADOK, HOWEVER, SAYS THAT IF IT IS NOT SEEN AS ITS PROPER* [*TIME*](time.html) *[THE* [*NEW*](new.html)[*MOON*](chodesh.html)*] IS NOT [FORMALLY] SANCTIFIED, BECAUSE* [*HEAVEN*](heaven.html) *HAS ALREADY SANCTIFIED IT.*

[*GEMARA*](orallaw.html)*. THE* [*HEAD*](body.html) *OF THE BETH DIN etc. What is the Scriptural warrant for this? — R. Hiyya b. Gamda said in the* [*name*](name.html) *of R. Jose b. Saul, who had it from Rabbi: The Scripture says, And Moses declared the* [*appointed*](settimes.html) *seasons of the Lord;[[45]](#footnote-45) from this we learn that the* [*head*](body.html) *of the Beth din says, ‘sanctified’.*

*AND ALL THE PEOPLE REPEAT AFTER HIM, ‘SANCTIFIED, SANCTIFIED’. Whence do we learn this? — R. Papa said: Scripture says, which ye shall proclaim [them].[[46]](#footnote-46) [For otham] read attem.[[47]](#footnote-47) R. Nahman b.* [*Isaac*](isaac.html) *said, [we learn it from here]: Even these [hem] are my* [*appointed*](settimes.html) *seasons;[[48]](#footnote-48) [which implies], they shall say, my seasons.[[49]](#footnote-49)*

*SANCTIFIED, SANCTIFIED: why twice? — Because it is written, holy convocations.[[50]](#footnote-50)*

*R. ELEAZAR B. ZADOK SAYS THAT IF IT IS NOT SEEN AT ITS PROPER* [*TIME*](time.html) *IT IS NOT SANCTIFIED. It has been* [*taught*](teacher.html)*: Polemo says: If seen at its* [*time*](time.html) *is is not sanctified,[[51]](#footnote-51) if seen out of its* [*time*](time.html) *it is sanctified. R. Eleazar b. Simeon says: in either case it is not sanctified, since it says, And ye shall sanctify the fiftieth year,[[52]](#footnote-52) which shows that you are to sanctify years, but are not to sanctify months.*

*Rab Judah said in the* [*name*](name.html) *of Samuel: The halachah is as laid down by R. Eleazar b. Zadok. Abaye said: We have also learnt to the same effect: ‘If the Beth din and all Israel saw it,[[53]](#footnote-53) and if the witnesses had been tested, but they had no* [*time*](time.html) *to say ‘sanctified’ before it grew dark, the month is prolonged’, which implies that it is prolonged[[54]](#footnote-54) but that [the* [*new*](new.html) *month] is not sanctified [later in the day]. [This is not conclusive, since] there was a special reason for mentioning the prolonging. You might think that since the Beth din and all Israel saw it [the* [*new*](new.html)[*moon*](chodesh.html)*] everyone* [*knew*](daat.html) *that it had appeared and therefore the month should not be prolonged. Therefore we are told [that this is not so].*

*MISHNAH. R. GAMALIEL USED TO HAVE A DIAGRAM OF PHASES OF THE* [*MOON*](chodesh.html) *ON A TABLET [HUNG] ON THE WALL OF HIS UPPER CHAMBER, AND HE USED TO SHOW THEM TO THE UNLEARNED AND SAY, DID IT LOOK LIKE THIS OR THIS?*

[*GEMARA*](orallaw.html)*. Is this allowed, seeing that it is written, Ye shall not make with me,[[55]](#footnote-55) which we interpret, ‘Ye shall not make the likeness of my attendants’? — Abaye replied: The Torah forbade only those attendants of which it is possible to make copies,[[56]](#footnote-56) as it has been* [*taught*](teacher.html)*: A man may not make a house in the form of the* [*Temple*](temple.html)*, or an exedra in the form of the* [*Temple*](temple.html) *hall,[[57]](#footnote-57) or a court corresponding to the* [*Temple*](temple.html) *court, or a table corresponding to the [sacred] table or a candlestick corresponding to the [sacred] candlestick, but he may make* [*one*](one.html) *with* [*five*](five.html) *or* [*six*](six.html) *or* [*eight*](eight.html) *lamps, but with* [*seven*](seven.html) *he should not make, even of other metals.[[58]](#footnote-58)*

During the period of the Sanhedrin, a committee of the Sanhedrin met to evaluate reports of sightings of the lunar crescent. If sightings were not possible, the [new](new.html) month was begun 30 days after the beginning of the previous month.

Much later, under the patriarchate of Rabbi Judah I, (163 - 193) the Samaritans, in order to create confusion, lit the bonfires at the wrong [time](time.html). Rabbi Judah abolished the bonfires and substituted messengers.

[Jews](gen-jew.html) living far off always celebrated the 30th day as [Rosh Chodesh](chodesh.html) and if the messengers didn't arrive in [time](time.html), or if they were informed that it was postponed to the 31st day, they celebrated that as well.

There was a special committee of the Sanhedrin which was charged with the responsibility of deciding whether it was necessary or not to intercalate that year. This committee was called the [Sod](sod.html) Haibbur, the calendar council, and they calculated the beginnings of the seasons (Tekufot) on the basis of information which had been handed down to them by tradition. They considered the matter regularly and reviewed the weather conditions to determine whether an extra month was going to be required to ensure that [Passover](passover.html) fell in the spring.

The [Talmud](orallaw.html) explains that they intercalated the year when the barley in the fields was not yet ripened, when the fruit on the trees was not yet properly grown, when the winter [rains](rains.html) had not yet stopped, when the roads for the [Passover](passover.html) pilgrims had not dried up and when the young pigeons had not yet become fledged.

[***Rosh HaShana***](teruah.html) ***7a*** *‘For leap years’. Do we reckon [a* [*New*](teruah.html) *Year] for leap years from* [*Nisan*](feasts.html)*?[[59]](#footnote-59) Has it not been* [*taught*](teacher.html)*: ‘A leap year is not decreed[[60]](#footnote-60) before* [*New*](teruah.html) *Year,[[61]](#footnote-61) and if such a decree is issued it is not effective. In cases of emergency,[[62]](#footnote-62) however, the decree may be issued immediately after* [*New*](teruah.html) *Year, and even so the intercalary month must be [the second]* [*Adar*](feasts.html)*’![[63]](#footnote-63) — R. Nahman b.* [*Isaac*](isaac.html) *replied: What is meant here by ‘leap years’? The closing of a leap year, as we have learnt: ‘They testified that the year may be declared a leap year throughout the whole of* [*Adar*](feasts.html)*, since others asserted that this could be done only until* [*Purim*](Purim.html)*.’[[64]](#footnote-64) What was the reason of those who held that this could be done only until* [*Purim*](Purim.html)*? — Since a Master has stated that ‘inquiries are made regarding the* [*laws*](law.html) *of* [*Passover*](passover.html) *for* [*thirty*](thirty.html) *days before* [*Passover*](passover.html)*,[[65]](#footnote-65) People might be led into neglecting the rules of* [*leaven*](chametz.html)*.[[66]](#footnote-66) What says the other to this? — He says that people* [*know*](daat.html) *that a leap year depends on calculation, and they say to themselves that the Rabbis have only now got the calculation right.[[67]](#footnote-67)*

Under the patriarch Hillel II (330 - 365) the rules to intercalate the year were published. The most important of which states; "Whenever it becomes apparent that winter will last until 16th [Nisan](feasts.html), make this a leap year without hesitation."

As had happened in the past the Romans decreed that the [Jews](gen-jew.html) were not to celebrate the [New](new.html) [Moon](chodesh.html) or announce it. So Hillel the Younger established a fixed calendar so the people would [know](daat.html) when to celebrate the [festivals](festivals.html).

In our times we go according to Hillel the Younger, the last representative of the national court (the Sanhedrin), who fixed the calendar for the times of the [Galut](galuyot.html), around A.M. 4119 (359 C.E), and in each [cycle](cycles.html) of nineteen years there are [seven](seven.html) such leap years of [thirteen](thirteen.html) months, always the [third](three.html), [sixth](six.html), [eighth](eight.html), eleventh, [fourteenth](fourteen.html), seventeenth, and nineteenth.

The [Babylonian](bavel.html) [exile](galuyot.html), in the [first](one.html) half of the [sixth](six.html) century B.C.E., greatly influenced the [Hebrew](hebrew.html) calendar. This is visible today in the names of the months.

A CLOCK WHICH IS OUT OF THIS [WORLD](worlds.html)[[68]](#footnote-68)

The Cesium and Rubidium atom clocks at the U.S. Naval Observatory [Time](time.html) Center are accurate to [one](one.html) second in 300,000 years. But [three](three.html) thousand years ago, Moses, had no such [time](time.html)-piece. However, somehow Moshe [knew](daat.html) the exact length of the lunar month - 29.53059 days - an accuracy which was literally out of this [world](worlds.html)! In the reference work Astronomy and Astrophysics[[69]](#footnote-69) the precise length of the lunar month is listed as 29.530589 days! How did Moses have a figure so accurate that it took science [three](three.html) thousand years to come to the same [number](nchart.html)? That [number](nchart.html) was given to Moses by [Hashem](hashem.html) and was passed down from Moses to Hillel the Younger, the last prince of the House of David. When Hillel the Younger sanctified all the [new](new.html) moons from his day until the final [redemption](redemption.html), he had to [know](daat.html) the exact length of the lunar month to within a fraction of a second, for even a small error would, over [millennia](millenium.html), amount to a visible error. This was in fact the case with the calendar of Julius Caesar, which by the year 1582 had wandered so far that Pope Gregory XIII erased 10 days from the calendar, with the result that the day after the 4th October 1582 was called the 16th October! There have been approximately 41,000 [new](new.html) moons since the [time](time.html) of Moses, but from Mount [Sinai](stages.html) onward, the [secret](sod.html) of the exact length of the lunar month has always been [known](daat.html) to the [Jewish](gen-jew.html) People, because Moshe Rabbeinu had a clock that was literally 'out of this [world](worlds.html)'...

In 358 C.E (4118 AM), Hillel the Younger (330-365 C.E), established a fixed calendar based on mathematical and astronomical calculations. This calendar, still in use, standardized the length of months and the addition of months over the course of a 19 year [cycle](cycles.html), so that the lunar calendar realigns with the solar years.

Up till the [time](time.html) of Hillel the Younger, the date of the [festivals](festivals.html), [Pesach](passover.html), [Shavuot](shavuot.html), [Succoth](succoth.html) and [Yom Teruah](teruah.html) ([Rosh Hashana](teruah.html)h - The Feast of Trumpets) were established via testimony based on the sighting of the [new](new.html) [moon](chodesh.html). The [new](new.html) month was declared in [Jerusalem](city.html), and it would take many days for the news to reach the furthest outposts of [Jewish](gen-jew.html) settlement. Those outlying [communities](community.html) would observe [two](two.html) days of [Pesach](passover.html) and [Succoth](succoth.html) etc., and thus they would be sure of observing the [festival](festival.html) on the correct day, no matter which day had been sanctified in [Jerusalem](city.html) as the [new](new.html) [moon](chodesh.html).

Until the era of the [two](two.html) great Talmudic sages Abaye and Rava, the months were still established by sighting. However, from their [time](time.html) onward, the date of the [New](new.html) [Moon](chodesh.html) was established by calculations alone. These computations were given to Moses at [Sinai](stages.html), and provided for the fixing of the beginning of each month throughout the possible span of [world](worlds.html) history. Thus all the lengths of all [future](future.html) months in [exile](galuyot.html) were now fixed.

The [Talmud](orallaw.html) gives us some [insight](insights.html) into this [new](new.html), fixed calendar:

***Beitzah 4b*** *R. Zera said: Logic supports R. Assi; for we are now well acquainted with the fixing of the* [*new*](new.html)[*moon*](chodesh.html) *and, nevertheless, we do observe* [*two*](two.html) *days.[[70]](#footnote-70) Abaye said: Logic supports Rab; for we have learnt: In early times they used to light bonfires,[[71]](#footnote-71) but on account of the mischief of the Samaritans[[72]](#footnote-72) the Rabbis ordained that messengers should go forth.[[73]](#footnote-73) Now if the [mischief of the] Samaritans ceased[[74]](#footnote-74) we would [all] observe only* [*one*](one.html) *day; and [even during the Samaritan mischief] wherever the messengers arrived[[75]](#footnote-75) they observed [only]* [*one*](one.html) *day.[[76]](#footnote-76) But now that we are well acquainted with the fixing of the* [*new*](new.html)[*moon*](chodesh.html)*,[[77]](#footnote-77) why do we observe* [*two*](two.html) *days? — Because they sent [word] from there [Palestine]:[[78]](#footnote-78) Give heed to the customs of your ancestors which have come down to you; for it might happen that the government might issue a decree[[79]](#footnote-79) and it will cause confusion [in ritual].*

***Pesachim 52a*** *R. Safra said to R. Abba:[[80]](#footnote-80) For instance I,[[81]](#footnote-81) who* [*know*](daat.html) *[the art] of fixing the* [*New*](new.html)[*Moon*](chodesh.html)*,[[82]](#footnote-82) in inhabited places I do not work,[[83]](#footnote-83) because it is a change [which would lead to] strife. [But] how is it in the wilderness? — Said he to him, Thus did R. Ammi say: In inhabited regions it is forbidden; in the desert it is permitted. R. Nathan b. Asia went from Rab's academy [in Sura][[84]](#footnote-84) to Pumbeditha on the second* [*Festival*](festival.html) *day of* [*Pentecost*](shavuot.html)*, [whereupon] R.* [*Joseph*](joseph.html) *put him under the ban. Said Abaye to him, Yet let the master punish him with lashes? — Said he to him, I have treated him more severely, for in the West [sc. Palestine] they take a vote for punishing a disciple with lashes, yet they do not take a vote on the ban.[[85]](#footnote-85) Others say, R.* [*Joseph*](joseph.html) *had him lashed. Said Abaye to him, Yet let the Master ban him, for Rab and Samuel both said: We impose the ban for [the violation of] the* [*two*](two.html)[*Festival*](festival.html) *days of the Diaspora? — Said he to him, That refers only to an ordinary person, but here it is a scholar, so I did what was better for him, for in the West they take a vote for punishing a disciple with lashes, yet they do not take a vote on the ban.*

[**TIME**](time.html)**[[86]](#footnote-86)**

Minutes and seconds do not correspond to any natural [cycle](cycles.html) as hours, days, months and years do. They are simply divisions of the day. We are used to saying that a day is a period of [twenty](twenty.html)-[four](four.html) hours, an hour sixty minutes, and a minute sixty seconds. Actually it is the other way around. The definition of an hour is [one](one.html) [twenty](twenty.html)-[fourth](four.html) of a day. We [know](daat.html) how long a day is from the rising and setting of the [sun](hachama.html). It is that [cycle](cycles.html) that defines a day. We divide that period into [twenty](twenty.html)-[four](four.html) equal parts and call each [one](one.html) an hour. These units - hours - are useful in referring to smaller periods of [time](time.html). Instead of saying, "I slept for [one](one.html) [third](three.html) of a day", we say, "I slept for [eight](eight.html) hours". Instead of saying, "I'll meet you here in [one](one.html) [twelfth](twelve.html) of a day", we say, "I'll meet you here in [two](two.html) hours". They are also useful in referring to different parts of the day. 2:00 PM, 5:00 PM, and 11:00 AM are more accurate than earlier afternoon, late afternoon, and late morning. In the next section we shall see how to use astronomy to determine the hour, day, month, and year.

In the same way we divide each hour into sixty equal parts and call them minutes. It is more convenient to say [ten](ten.html) minutes than [one](one.html) [sixth](six.html) of an hour. A minute is defined as [one sixtieth](one.html) of an hour, not the other way around. So it is clear that a minute is not defined as sixty seconds, rather that the definition of a second is [one](one.html) sixtieth of a minute.

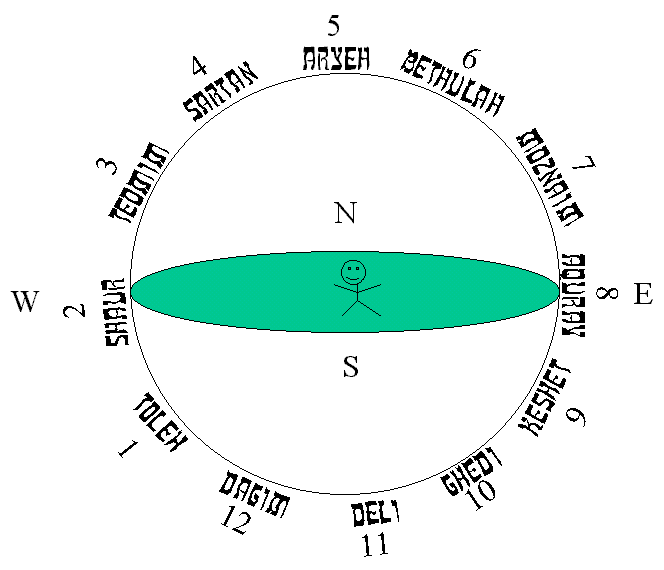
To sum up, the definition of a day is [one](one.html) complete [cycle](cycles.html) of setting, rising, and setting of the [sun](hachama.html). It is not defined by [time](time.html) on a clock or any other device. It is defined only by the [sun](hachama.html). The Torah [teaches](teacher.html) us this also in its reference to days in the verse quoted at the beginning of the chapter. Based on this unit, the day, we define several [new](new.html) units:

|  |  |  |
| --- | --- | --- |
| A | **week** | equals 7 days |
| An | **hour** | equals 1/24th of a day |
| A | **minute** | equals 1/60th of an hour |
| A | **second** | equals 1/60th of a minute |

**HOURS**

An hour is [one](one.html) [twenty](twenty.html)-[fourth](four.html) of a day. [Messiah](mashiach.html) alluded to this in:

***Yochanan (John) 11:9***[*Yeshua*](yeshua.html) *answered, "Are there not* [*twelve*](twelve.html) *hours of daylight? A man who walks by day will not stumble, for he sees by this* [*world*](worlds.html)*'s light.*



This figure shows how the [mazzaroth](file:///D:\Backup%20data\Word\Stars\mazaroth.html) would appear to a person watching the early evening sky at the beginning of [Nisan](feasts.html). Shaur (2) to Moznaim (7) are visible because they are above the horizon. Aqurav (8) to Toleh (1) are below the horizon so they cannot be seen. If he watches all night he will see them all rise except for Toleh, because it is hidden by the [sun](hachama.html). If he recognizes all the mazzaroth, he can also tell which [time](time.html) of the night it is. Since the [twelve](twelve.html) mazzaroth make a full circle around the Earth in [twenty](twenty.html)-[four](four.html) hours, a [new](new.html) Mazal rises every [two](two.html) hours. If Moznaim has just risen at 6:00 right after sunset, then when Aqurav rises it must be 8:00. When Keshet rises it is 10:00, Ghedi 12:00, Deli 2:00, Dagim 4:00, and when the [sun](hachama.html) rises at 6:00 he knows that behind it are the [stars](mazaroth.html) Toleh.[[87]](#footnote-87)

We say that a *mazal is oleh* - rising - even if it is in the daytime when we cannot actually see it, so we can [speak](mashal.html) of each of the [twelve](twelve.html) as rising for [two](two.html) hours each day. When the [sun](hachama.html) hides a certain mazal, we say that the [sun](hachama.html) is "in" that mazal. So in [Nisan](feasts.html) the [sun](hachama.html) is in Toleh, in [Iyar](feasts.html) it is in Shaur, etc. The next month that mazal rises in the morning just before the [sun](hachama.html). When we say that a *mazal* is rising in a certain month we are referring to that mazal that rises just before the [sun](hachama.html) after being hidden during the previous month. So, in [Nisan](feasts.html), Dagim is rising and in [Iyar](feasts.html), Toleh is rising.

Most folks [know](daat.html) that it is possible to tell the hour of the day with the aid of a [sun](hachama.html) dial. This device effectively plots the movement of the [sun](hachama.html) to tell [time](time.html).

Now that we [know](daat.html) about how to tell [time](time.html) during the evening hours and during the daylight hours, we can see how we can use [HaShem](hashem.html)'s astronomy to determine the hour of the day and night.

**DAYS**

[HaShem](hashem.html) marks His days from sunset to sunset. So, by merely observing the setting [sun](hachama.html), [one](one.html) can readily "observe" when [one](one.html) day ends and another begins. The scriptures demonstrate this in:

***Genesis 1:5*** *God called the light "day," and the darkness he called "night." And there was evening, and there was morning--the* [*first*](one.html) *day.*

***Genesis 1:8*** *God called the expanse "sky." And there was evening, and there was morning--the second day.*

***Genesis 1:13*** *And there was evening, and there was morning--the* [*third*](three.html) *day.*

***Genesis 1:19*** *And there was evening, and there was morning--the* [*fourth*](four.html) *day.*

***Genesis 1:23*** *And there was evening, and there was morning--the* [*fifth*](five.html) *day.*

***Genesis 1:31*** *God saw all that he had made, and it was very good. And there was evening, and there was morning--the* [*sixth*](six.html) *day.*

Notice that each day starts with the "evening", and ends with "morning". Thus, [HaShem](hashem.html)'s day is directly tied to the setting and the rising [sun](hachama.html).

The [Jewish](gen-jew.html) day begins at sunset. The status of the period between sunset (the disappearance of the [sun](hachama.html) behind the horizon) and nightfall (the emergence of [three](three.html) medium-sized [stars](mazaroth.html)) is doubtful. For some purposes, it is treated as part of the previous day, e.g. at the end of [Shabbat](sabbath.html), when the prohibition of creative activities (melacha) remains in force until nightfall.

Books, calendars, and computer programs for conversions between the [Jewish](gen-jew.html) and Gregorian (civil) calendars are based on the daylight portion of the [Jewish](gen-jew.html) day. For instance, if you [know](daat.html) that [one](one.html) of your ancestors was born on 26 [Nisan](feasts.html) 5580, you will find that this corresponds to 10 April 1820 - but the actual birthday may have been 9 April 1820, in the evening. This can be very confusing to the uninitiated.

By tradition, days of the week are designated by [number](nchart.html), with only the [seventh](seven.html) day, [Sabbath](sabbath.html), having a specific [name](name.html). Days are reckoned from sunset to sunset, so that day 1 begins at sunset on Saturday and ends at sunset on Sunday. The [Sabbath](sabbath.html) begins at sunset on Friday and ends at sunset on Saturday.

[Six](six.html) of [HaShem](hashem.html)'s days have no [name](name.html), but are called by a [number](nchart.html). The [seventh](seven.html) day is called by [number](nchart.html) and it is also called by [name](name.html). The [seventh](seven.html) day is also called the [Sabbath](sabbath.html). We see this in:

***Bereshit (Genesis) 8:13*** *By the* [*first*](one.html) *day of the* [*first*](one.html) *month of Noah's* [*six*](six.html) *hundred and* [*first*](one.html) *year, the water had dried up from the earth. Noah then removed the covering from the* [*ark*](ark.html) *and saw that the surface of the ground was dry.*

***Divrei Hayamim (II Chronicles) 3:2*** *He began building on the second day of the second month in the* [*fourth*](four.html) *year of his reign.*

***Ezra 6:15*** *The* [*temple*](temple.html) *was completed on the* [*third*](three.html) *day of the month* [*Adar*](feasts.html)*, in the* [*sixth*](six.html) *year of the reign of King Darius.*

***Zechariah 7:1*** *In the* [*fourth*](four.html) *year of King Darius, the word of the LORD came to Zechariah on the* [*fourth*](four.html) *day of the* [*ninth*](nine.html) *month, the month of* [*Kislev*](feasts.html)*.*

***Yehezechel (Ezekiel) 1:1*** *In the* [*thirtieth*](thirty.html) *year, in the* [*fourth*](four.html) *month on the* [*fifth*](five.html) *day, while I was among the* [*exiles*](galuyot.html) *by the Kebar River, the* [*heavens*](heaven.html) *were opened and I saw visions of God.*

***Shemot (***[***Exodus***](exodus.html)***) 16:5*** *On the* [*sixth*](six.html) *day they are to prepare what they bring in, and that is to be twice as much as they* [*gather*](gather.html) *on the other days."*

***Shemot (***[***Exodus***](exodus.html)***) 16:26***[*Six*](six.html) *days you are to* [*gather*](gather.html) *it, but on the* [*seventh*](seven.html) *day, the* [*Sabbath*](sabbath.html)*, there will not be any."*

With the exception of the [Shabbat](sabbath.html), the weekdays have no names. They are simply numbered:

|  |  |  |
| --- | --- | --- |
| 1 | yom rishon  ([first](one.html) day) | Sundown Saturday till  sundown Sunday. |
| 2 | yom [sheni](sheni.html)  (second day) | Sundown Sunday till  sundown Monday. |
| 3 | yom sh'lishi  ([third](three.html) day) | Sundown Monday till  sundown Tuesday. |
| 4 | yom revi'i  ([fourth](four.html) day) | Sundown Tuesday till  sundown Wednesday. |
| 5 | yom chamishi  ([fifth](five.html) day) | Sundown Wednesday till  sundown Thursday. |
| 6 | yom shishi  ([sixth](six.html) day) | Sundown Thursday till  sundown Friday. |

The week culminates in the [seventh](seven.html) day, the Holy [Shabbat](sabbath.html) ([Shabbat](sabbath.html) kodesh).

**WEEK**

The [seven](seven.html)-day week has no astronomical basis. It was designated by [HaShem](hashem.html) in the [creation](bara.html) account, of Genesis [one](one.html). By the 3rd century AD, the Roman Empire was operating on a week of the same length. The days were named after the then [known](daat.html) [seven](seven.html) planets: Saturn, Jupiter, Mars, the [sun](hachama.html) (not distinguished from a planet at the [time](time.html)), Venus, Mercury, and the [moon](chodesh.html) (also considered a planet). The names of days in Latin countries still point to these origins, as do Sunday, Monday, and Saturday in English. Tuesday, Wednesday, Thursday, and Friday, however, are named after the Scandinavian gods Tiw, Woden, Thor, and Frigga.[[88]](#footnote-88)

The week as a unit of [time](time.html) depends upon the observance of [Sabbath](sabbath.html), which is a specific [sign](signs.html) between [HaShem](hashem.html) and His people. Through the influence of the Bible and [Jewish](gen-jew.html) teachings, it has become widespread in the [world](worlds.html) today.[[89]](#footnote-89)

**MONTHS**

[HaShem](hashem.html) marks His months from [one](one.html) [new](new.html) [moon](chodesh.html) till the next [new](new.html) [moon](chodesh.html), which is [one](one.html) lunar [cycle](cycles.html). By observing the slim, silver crescent of the [new](new.html) [moon](chodesh.html), [one](one.html) can discern when [one](one.html) month ends, and the next month starts. The scriptures demonstrate this in:

***Bamidbar (***[***Numbers***](nchart.html)***) 28:14*** *With each bull there is to be a drink* [*offering*](korbanot) *of half a hin of wine; with the ram, a* [*third*](three.html) *of a hin; and with each lamb, a quarter of a hin. This is the monthly* [*burnt offering*](korbanot) *to be made at each* [*new*](new.html)[*moon*](chodesh.html) *during the year.*

***Yeshayahu (Isaiah) 66:22-23*** *"As the* [*new*](new.html)[*heavens*](heaven.html) *and the* [*new*](new.html) *earth that I make will endure before me," declares* [*HaShem*](hashem.html)*, "so will your* [*name*](name.html) *and descendants endure. From* [*one*](one.html)[*New*](new.html)[*Moon*](chodesh.html) *to another and from* [*one*](one.html)[*Sabbath*](sabbath.html) *to another, all mankind will come and bow down before me," says* [*HaShem*](hashem.html)*.*

Even [HaShem](hashem.html)'s word for "month" is connected to the [moon](chodesh.html). The [first](one.html) scriptural use of the word "month", is found in:

***Bereshit (Genesis) 7:11*** *In the* [*six*](six.html) *hundredth year of Noah's life, in the second month, the seventeenth day of the month, the same day were all the fountains of the great deep broken up, and the windows of* [*heaven*](heaven.html) *were opened.*

**Strong's concordance defines the word "month" as:**

2320 chodesh, kho'-desh; from 2318; the [new](new.html) [moon](chodesh.html); by impl. a month:-month (-ly), [new](new.html) [moon](chodesh.html).

------------------- Dictionary Trace -------------------

2318 chadash, khaw-dash'; a prim. root; to be [new](new.html); caus. to rebuild:-renew, repair.

**The dictionary defines a month as:**

The word month is derived from the Old English word for [moon](chodesh.html). A month was originally the [time](time.html) between [two](two.html) [new moons](new.html). Today astronomers refer to this period of [time](time.html) as a lunar month. Its average length is 29 days, 12 hours, 44 minutes, and 2.8 seconds. The [moon](chodesh.html) travels around the Earth in 27 days, 7 hours, 43 minutes, and 11.5 seconds. This is the sidereal month.[[90]](#footnote-90)

So, a month is defined by the [new](new.html) [moon](chodesh.html).

Now, we need to [know](daat.html) what specific month we are in. To do this, we need to [know](daat.html) that each [new](new.html) [moon](chodesh.html) is in front of a different set of [stars](mazaroth.html), or constellation. By knowing which [constellation](file:///D:\Backup%20data\Word\Stars\mazaroth.html) corresponds to which month, we can tell to which month a particular [new](new.html) [moon](chodesh.html) corresponds. For example, the [new](new.html) [moon](chodesh.html) for the [seventh](seven.html) month, the month of Tishrei, is in front of the constellation of Bethulah, the [virgin](virgin.html). The following chart details the relationship between the constellations and the [name](name.html), and [number](nchart.html), of the month:

|  |  |  |  |
| --- | --- | --- | --- |
| **Month** | **Month** | [**Hebrew**](hebrew.html) | **Greek** |
| [**Number**](nchart.html) | [**Name**](name.html) | [**Name**](name.html) | [**Name**](name.html) |
|  |  |  |  |
| 1 | [Nisan](feasts.html) | Dagim | Pisces |
| 2 | [Iyar](feasts.html) | Toleh | Aries |
| 3 | [Sivan](feasts.html) | Shaur | Taurus |
| 4 | [Tammuz](feasts.html) | Teomaim | Gemini |
| 5 | [Av](feasts.html) | Sartan | Cancer |
| 6 | [Elul](elul.html) | Aryeh | Leo |
| 7 | Tishrei | Bethulah | Virgo |
| 8 | Cheshvan | Meoznaim | Libra |
| 9 | [Kislev](feasts.html) | Aqurav | Scorpio |
| 10 | Tevet | Qashot | Sagitarius |
| 11 | [Shevat](feasts.html) | Ghedi | Capricorn |
| 12 | [Adar](feasts.html) | Deli | Aquarius |

The Biblical month is based on the lunar or synodic month, the [time](time.html) it takes for the [moon](chodesh.html) to circle the earth. Since the exact duration of [one](one.html) revolution is a little over 29.5 days, the length of the months normally alternates between 29 and 30 days. A month of 30 days is called [male](male+female.html) ('full'), [one](one.html) of 29 days chaser ('defective'). There are [two](two.html) months which are [male](male+female.html) in some years and chaser in others.

***Arachin 8b*** *MISHNAH. THERE ARE NEVER LESS THAN* [*FOUR*](four.html) *FULL MONTHS IN THE YEAR, NOR DID IT SEEM RIGHT TO HAVE MORE THAN* [*EIGHT*](eight.html)*.[[91]](#footnote-91) THE* [*TWO*](two.html) *LOAVES[[92]](#footnote-92) WERE CONSUMED NEVER EARLIER THAN THE SECOND, NOR LATER THAN THE* [*THIRD*](three.html) *DAY. THE SHEWBREAD[[93]](#footnote-93) WAS CONSUMED NEVER EARLIER THAN THE* [*NINTH*](nine.html) *NOR LATER THAN THE ELEVENTH DAY. AN INFANT MAY NEVER BE* [*CIRCUMCISED*](circumcz.html) *EARLIER THAN THE* [*EIGHTH*](eight.html) *NOR LATER THAN THE* [*TWELFTH*](twelve.html) *DAY.[[94]](#footnote-94)*

[*GEMARA*](orallaw.html)*. What does DID NOT SEEM RIGHT TO HAVE MORE THAN* [*EIGHT*](eight.html) *mean? — R. Huna said: It did not appear right to the Sages to make more than* [*eight*](eight.html) *months full. Wherefore is the difference with regard to* [*nine*](nine.html)*, that they would not [make full]? Because if they did not [stop at* [*eight*](eight.html)*] the* [*new*](new.html)[*moon*](chodesh.html)*[[95]](#footnote-95) would come* [*three*](three.html) *days too early! But now, too. It would come* [*two*](two.html) *days too early?[[96]](#footnote-96) — This is in accord with what R. Mesharsheya said: ‘It refers to a case where the preceding year was prolonged’,[[97]](#footnote-97) Here, too, the reference is to a year following a prolonged year, and the prolongation of a year is* [*one*](one.html) *month.[[98]](#footnote-98) But put* [*one*](one.html) *full month against* [*one*](one.html) *incomplete month, and there will be still* [*one*](one.html) *day left?[[99]](#footnote-99) — People do not pay too much attention to that.[[100]](#footnote-100)*

***Arachin 9a*** *‘Ulla said: [the meaning is,] It did not seem right to the Sages to make more than* [*eight*](eight.html) *defective months. He [the Tanna] states here a reason:[[101]](#footnote-101) What is the reason that it did not seem right to the Sages to have less than* [*four*](four.html) *full months? Because it did not seem right to them to have more than* [*eight*](eight.html) *defective months. Why not* [*nine*](nine.html)*? Because in that case the* [*new*](new.html)[*moon*](chodesh.html) *would be* [*coming*](coming.html)[*three*](three.html) *days too late?[[102]](#footnote-102) But now, too, it would be* [*coming*](coming.html)[*two*](two.html) *days too late? — That is to be explained in accord with R. Mesharsheya: ‘It refers to a case where the preceding year was prolonged’; here, too, the reference is to a year following a prolonged year.[[103]](#footnote-103) Deduct* [*one*](one.html) *defective month against* [*one*](one.html) *full month, and still there will be* [*one*](one.html) *day left?[[104]](#footnote-104) They [the people] will say: It [the* [*moon*](chodesh.html)*] has actually been seen, whilst we had paid no attention.[[105]](#footnote-105) In what principle do they differ?[[106]](#footnote-106) — In regard to the prolonged year. For it was* [*taught*](teacher.html)*: By how much is a year prolonged? By* [*thirty*](thirty.html) *days. R. Simeon b. Gamaliel said: By a month.2[[107]](#footnote-107)*

*An objection was raised: The* [*Feast of Weeks*](shavuot.html) *can fall only on the day of the waving,[[108]](#footnote-108) and the* [*New*](teruah.html) *Year can fall only on either the day of the waving or the day following the night of the last day of the full month [of* [*Nisan*](feasts.html)*].[[109]](#footnote-109) Now that will be right according to ‘Ulla if* [*eight*](eight.html) *defective months could be arranged, but not full ones; hence this may happen thus: if both are defective, it falls on the day of the waving; if* [*one*](one.html) *is full and the other defective, it falls on the day following the night of the last day of the full month.[[110]](#footnote-110) But according to R. Huna who says* [*one*](one.html) *does make [*[*eight*](eight.html)*] full months, it may happen that it falls on the day following the day after the night of the last day of the full month?[[111]](#footnote-111) — R. Huna will answer you: But is it indeed right. according to ‘Ulla? Only* [*eight*](eight.html) *[full] months are not made, but we do make* [*seven*](seven.html)*. Now can it not happen that we arrange them not in winter but in the summer, with the result that it would possibly fall upon the day following the day after the last day of the full month![[112]](#footnote-112) — Rather, this is in agreement with the ‘Others’, for it was* [*taught*](teacher.html)*: ‘Others’* [*taught*](teacher.html)*. Between* [*one*](one.html)[*Feast of Weeks*](shavuot.html) *and the other, and between* [*one*](one.html)[*New*](teruah.html) *Year and the other, there is an interval of no more than* [*four*](four.html) *days [of the week], or in the case of a prolonged year,* [*five*](five.html) *days.[[113]](#footnote-113) But, at all* [*events*](feasts.html)*, on the view of the ‘Others’, it could not fall on the day of the waving? — R. Mesharsheya said: The reference is to a prolonged year, and the prolongation of a year is by* [*thirty*](thirty.html) *days. Deduct* [*one*](one.html) *[full] month against the other [full* [*one*](one.html)*] and it will fall upon the day of the waving.[[114]](#footnote-114)*

*Said R. Adda b. Ahabah to Raba: Do ‘Others’ intend* [*teaching*](teacher.html) *us [how to count] the* [*number*](nchart.html)*?[[115]](#footnote-115) — This is what they convey to us: That it is not obligatory to proclaim a* [*new*](new.html)[*moon*](chodesh.html) *on the basis of having seen it.[[116]](#footnote-116) Rabina demurred: But there are days made of hours,[[117]](#footnote-117) and days of* [*thirty*](thirty.html) *years?[[118]](#footnote-118) — Since they do not occur every year, he does not count them. Samuel, too, agreed with the view of R. Huna, for Samuel said: The lunar year consists of no less than* [*three*](three.html) *hundred and fifty-*[*two*](two.html)*, nor of more than* [*three*](three.html) *hundred and fifty-*[*six*](six.html) *days. How is that? — If the* [*two*](two.html) *are full,[[119]](#footnote-119) there are [fifty]* [*six*](six.html)*; if the* [*two*](two.html) *are incomplete. [fifty]* [*two*](two.html)*; if* [*one*](one.html) *is complete and* [*one*](one.html) *incomplete, [fifty]* [*four*](four.html)*.*

The month begins with the appearance of the [new](new.html) [moon](chodesh.html). In the [time](time.html) of the [Temple](temple.html), the Sanhedrin (the highest court) sanctified the [new](new.html) month when [two](two.html) witnesses had actually sighted the [moon](chodesh.html). In the middle of the [fourth](four.html) century C.E., a fixed calendar was introduced.

In the Torah, the months are numbered; the [first](one.html) month, is the [one](one.html) in which the [Exodus](exodus.html) [from Egypt](thebirth.html) occurred (Yetziat Mitzrayim; cf. Shemot [[Exodus](exodus.html)] 12:2). Later, names of [Babylonian](bavel.html) origin were adopted:

The [first](one.html) day of each month, with the exception of [Rosh Hashanah](teruah.html), the [first](one.html) day of the [seventh](seven.html) month, is [Rosh Chodesh](chodesh.html), literally the '[head](body.html) of the month', and so is the [thirtieth](thirty.html) day of the preceding month, if there is [one](one.html). For example, if a gravestone inscription mentions the [first](one.html) day of [Rosh Chodesh](chodesh.html) [Elul](elul.html), the calendar date 30 [Av](feasts.html) is meant.

**YEARS**

Years are counted from the Year of [Creation](bara.html), or Anno Mundi, which corresponds to 3760 BCE, October 7 on the Gregorian calendar. Each year consists of [twelve](twelve.html) or [thirteen](thirteen.html) months, with months consisting of 29 or 30 days. An intercalated month is introduced in years 3, 6, 8, 11, 14, 17, and 19 in a nineteen-year [cycle](cycles.html) of 235 lunations. The initial year of the calendar, A.M. (Anno Mundi) 1, is year 1 of the nineteen-year [cycle](cycles.html).

A true year, as opposed to a calendar year, may be defined as the [time](time.html) the Earth takes to return to the same point on its orbit around the [sun](hachama.html). But there are several ways of defining the "same point." Another way of saying this is to define a year as the period of [one](one.html) complete [cycle](cycles.html) of the [sun](hachama.html) through the mazzaroth (the constellations on the ecliptic). The year ends when the [sun](hachama.html) returns to the spot on the circle of the [mazzaroth](file:///D:\Backup%20data\Word\Stars\mazaroth.html) that it stood when the year began. Astronomers therefore recognize different kinds of year.

The simplest reference point is [one](one.html) on the orbit in which the Earth aligns with the [sun](hachama.html) and a particular [star](mazaroth.html). Such a point is fixed: It remains the same century after century. The year measured between [two](two.html) successive crossings of such a point is called the sidereal year, from the Latin word *sidus,* meaning "[star](mazaroth.html)," or "planet." It is 365 days, 6 hours, 9 minutes, and 9.5 seconds long.

Another reference is a point on the orbit where the Earth's axis is perpendicular, or at a right angle, to a line from the [sun](hachama.html). This occurs twice a year, in the spring and fall. A year measured between successive crossings of [one](one.html) of these points is called the tropical year. Its duration is 365 days, 5 hours, 48 minutes, and 46 seconds. The seasons keep in step with the tropical year because both are based on the position of the Earth's axis. For that reason the calendar year is based on the tropical year.[[120]](#footnote-120)

An ordinary year consists of [twelve](twelve.html) months. When Cheshvan has 29 days and [Kislev](feasts.html) 30, it is "regular" (kesidra); if both have 30 days, it is "complete" (sh'lema) or "excessive", and if both have 29 days it is "defective" (chasera). Thus, an ordinary year can have 353, 354 or 353 days.

A lunar year of 354 days is about 11 days shorter than the solar year, i.e. [one](one.html) revolution of the earth around the [sun](hachama.html), which corresponds to the [cycle](cycles.html) of the seasons. If the [Jewish](gen-jew.html) calendar were based exclusively on the lunar year, [Pesach](passover.html) (15 [Nisan](feasts.html)) would fall in the spring in [one](one.html) year, in the winter a few years later, then in the autumn, then in the summer and - after about 33 years - in the spring again. But the Torah says that [Pesach](passover.html) must be celebrated in the spring (be-chodesh ha-[aviv](feasts.html), Shemot [[Exodus](exodus.html)] 13:4), and so the average length of the [Jewish](gen-jew.html) year must be adjusted to the solar year. This is achieved by adding an entire month about every [three](three.html) years: In each [cycle](cycles.html) of 19 years, the 3rd, 6th, 8th, 11th, 14th, 17th and 19th years are leap years, the others are common years. For example, 5755 AM was a leap year because it was the 17th year in the 303rd [cycle](cycles.html) of 19 years: 5755/19 = 302 + 17/19. (This is something that you can calculate online.)

The extra month in a leap year has 30 days so that the year lasts for 383, 384 or 385 days. It is added after the month of [Shevat](feasts.html) and is called [Adar](feasts.html) I, whereas the original [Adar](feasts.html) (of 29 days) becomes [Adar](feasts.html) II. [Purim](Purim.html), which is on 14 [Adar](feasts.html), is celebrated in [Adar](feasts.html) II in a leap year. Someone who was born in [Adar](feasts.html) of a common year will celebrate the anniversary in [Adar](feasts.html) II in leap years, but yahrzeit for someone who died in [Adar](feasts.html) of a common year is observed in [Adar](feasts.html) I in leap years.

The [new](teruah.html) year begins with [Rosh Hashana](teruah.html)h, the [first](one.html) of [Tishri](feasts.html) (although this is the [seventh](seven.html) month), in September or early October according to the Gregorian (civil) calendar. [Jewish](gen-jew.html) years are counted from the [Creation](bara.html) of the [world](worlds.html). To [convert](aliens.html) the [Jewish](gen-jew.html) year to the year of the Common Era (CE), subtract 3760 (or 3761 for the [first](one.html) months; in most years, 1 January falls in Tevet). For example, the major part of the [Jewish](gen-jew.html) year 5678 AM corresponded to 1918 AD; the beginning of 5678 AM was in 1917 AD. When the year is written with [Hebrew](hebrew.html) [letters](letters.html), the 5000 is usually omitted ("small count", abbreviated ). In that case, [one](one.html) can find the civil equivalent by adding 1240.

For instance, the numerical values of the [letters](letters.html) add up to 756, short for 5756 AM. That is the [Jewish](gen-jew.html) year which corresponds to 1996 (756 + 1240 = 1996); to be precise, it lasts from the evening of 24 September 1995 until the evening of 13 September 1996. (Such conversions can be calculated online with a form that even shows the [Hebrew](hebrew.html) [letters](letters.html).)

**HOLIDAYS**

All [Jewish](gen-jew.html) holidays, fast days, remembrance days etc. have a fixed date in the [Jewish](gen-jew.html) calendar. Some of them are shifted to a different day if they fall on or just before the [Shabbat](sabbath.html).

Major [festivals](festivals.html)

The Torah describes [two](two.html) [cycles](cycles.html) of [festivals](festivals.html) (cf. Vayikra [Leviticus] Chapter 23, Bamidbar [[Numbers](nchart.html)] Chapter 28-29): the [three](three.html) pilgrimage [festivals](festivals.html) ([Pesach](passover.html), [Shavuot](shavuot.html), [Succoth](succoth.html)) and the High Holidays ([Rosh Hashanah](teruah.html), [Yom HaKippurim](file:///D:\Backup%20data\Word\Stars\kippur.html)).

[**Rosh Hashana**](teruah.html)**h** ([New](teruah.html) Year) 1-2 [Tishri](feasts.html)

**Yom HaKippurim** (Day of [Atonement](kippur.html))

10 [Tishri](feasts.html)

[**Succoth**](succoth.html) ([Tabernacles](succoth.html)):

Diaspora: 15-16 [Tishri](feasts.html)

Israel: 15 [Tishri](feasts.html)

[**Succoth**](succoth.html): Chol Hamoed (Semi-Holidays)

Diaspora: 17-21 [Tishri](feasts.html)

Israel: 16-21 [Tishri](feasts.html)

[**Shemini Atzeret**](shemini.html) ([Eighth](eight.html) Day of Assembly)

22 [Tishri](feasts.html)

[**Simchat Torah**](simchat.html) (Rejoicing of the Torah)

Diaspora: 23 [Tishri](feasts.html)

Israel: 22 [Tishri](feasts.html)

[**Pesach**](passover.html) ([Passover](passover.html)):

Diaspora: 15-16 [Nisan](feasts.html)

Israel: 15 [Nisan](feasts.html)

[**Pesach**](passover.html)([Passover](passover.html)): Chol Hamoed

Diaspora: 17-20 [Nisan](feasts.html)

Israel: 16-20 [Nisan](feasts.html)

[**Pesach**](passover.html)([Passover](passover.html)): Last day

Diaspora: 21-22 [Nisan](feasts.html)

Israel: 21 [Nisan](feasts.html)

[**Shavuot**](shavuot.html) ([Festival](festival.html) of Weeks)

Diaspora: 6-7 [Sivan](feasts.html)

Israel: 6 [Sivan](feasts.html)

Minor [festivals](festivals.html)

[Two](two.html) [festivals](festivals.html) commemorating the miraculous [salvation](salvation.html) of the [Jewish](gen-jew.html) people were instituted after the beginning of the [Babylonian](bavel.html) [exile](galuyot.html): [Purim](Purim.html) has its basis in the biblical Book of [Esther](esther.html), [Chanukah](chanukah.html) in the apocryphal Books of the Maccabees and in the [gospel](mishna1.html) of John..

[**Chanukah**](chanukah.html) (Feast of Dedication)

If [Kislev](feasts.html) has 30 days: 25 [Kislev](feasts.html) - 2 Tevet

If [Kislev](feasts.html) has 29 days: 25 [Kislev](feasts.html) - 3 Tevet

[**Purim**](Purim.html) ([Festival](festival.html) of Lots)

14 [Adar](feasts.html)

In leap years: 14 [Adar](feasts.html) II

**Shushan** [**Purim**](Purim.html) (in [Jerusalem](city.html)):

15 [Adar](feasts.html)

In leap years: 15 [Adar](feasts.html) II

**Fast days**

In addition to [Yom Kippur](kippur.html) and Ta'anit [Esther](esther.html), [four](four.html) public fast days commemorating the destruction of the [first](one.html) [Temple](temple.html) were instituted in the era of the Prophets (cf. Zechariah 8:19). Since fasting is forbidden on the [Shabbat](sabbath.html) (with the exception of Yom HaKippurim), fast days that fall on [Shabbat](sabbath.html) are shifted.

**Tzom Gedalya** (assassination of the governor [Gedaliah](gedaliah.html)) 3 [Tishri](feasts.html)

If 3 [Tishri](feasts.html) falls on [Shabbat](sabbath.html), the fast is observed on Sunday (4 [Tishri](feasts.html))

**Asara b'Tevet** (beginning of the [Babylonian](bavel.html) siege of [Jerusalem](city.html)) [10 Tevet](file:///D:\Backup%20data\Word\Stars\tevet10.html)

**Ta'anit Ester** (Fast of [Esther](esther.html)) 13 [Adar](feasts.html)

In leap years: 13 [Adar](feasts.html) II

If 13 [Adar](feasts.html) falls on [Shabbat](sabbath.html), the fast is observed on Thursday (11 [Adar](feasts.html))

**Shiv'a Asar b'**[**Tammuz**](feasts.html) ([first](one.html) breach in the walls of [Jerusalem](city.html) during the [Babylonian](bavel.html) siege)

[17 Tammuz](feasts.html)

If 17 [Tammuz](feasts.html) falls on [Shabbat](sabbath.html), the fast is observed on Sunday (18 [Tammuz](feasts.html))

Tish'a b'[Av](feasts.html) (destruction of the [Temple](temple.html))

9 [Av](feasts.html)

If 9 [Av](feasts.html) falls on [Shabbat](sabbath.html), the fast is observed on Sunday (10 [Av](feasts.html))

Other special days

After the proclamation of the State of Israel, [new](new.html) minor [festivals](festivals.html) and memorial days were introduced; Tu bi-Shvat and Lag ba-[Omer](omer.html), which go back to Talmudic times, became particularly popular with children.

**Tu B’**[**Shevat**](tubshevt.html) ([New](teruah.html) Year of Trees)

15 [Shevat](feasts.html)

**Yom HaSho'ah** (Holocaust Memorial Day)

27 [Nisan](feasts.html)

**Yom HaZikkaron** (Memorial day for fallen Israeli soldiers)

**Eve of Yom ha-Atzma'ut**

**Yom ha-Atzma'ut** (Israel Independence Day)

5 [Iyar](feasts.html)

If 5 [Iyar](feasts.html) falls on Friday or [Shabbat](sabbath.html), the celebrations are held on Thursday (4 or 3 [Iyar](feasts.html)) so as to avoid a desecration of [Shabbat](sabbath.html)

[**Lag ba-Omer**](omer.html) (33rd day in the [Omer](omer.html) period)

18 [Iyar](feasts.html)

**Yom** [**Yerushalayim**](city.html) ([Jerusalem](city.html) Day)

28 [Iyar](feasts.html)

**TERMINOLOGY**

Terminology of the [Hebrew](hebrew.html) Calendar:

**Deficient** (haser) month: a month comprising 29 days.

**Full** ([male](male+female.html)) month: a month comprising 30 days.

**Ordinary** year: a year comprising 12 months, with a total of 353, 354, or 355 days.

**Leap** year: a year comprising 13 months, with a total of 383, 384, or 385 days.

**Complete** year (shelemah): a year in which the months of [Heshvan](feasts.html) and [Kislev](feasts.html) both contain 30 days.

**Deficient** year (haser): a year in which the months of [Heshvan](feasts.html) and [Kislev](feasts.html) both contain 29 days.

**Regular** year (kesidrah): a year in which [Heshvan](feasts.html) has 29 days and [Kislev](feasts.html) has 30 days.

**Halokim** (singular, halek): "parts" of an hour; there are 1080 halokim per hour.

**Molad** (plural, moladot): "[birth](birth.html)" of the [Moon](chodesh.html), taken to mean the [time](time.html) of conjunction for modern calendric purposes.

**Dechiyah** (plural, dechiyot): "postponement"; a rule delaying 1 [Tishri](feasts.html) until after the molad.

**Calculating the Biblical, or** [**Jewish**](gen-jew.html)**, Calendar:**

Being able to calculate the calendar is considered an important responsibility. We see this in:

***Shabbath 75a*** *A curtain which was attacked by a moth was torn [round the moth hole] and re-sewn... R. Zutra b. Tobiah said in Rab's* [*name*](name.html)*: He who pulls the thread of a seam[[121]](#footnote-121) on the* [*Sabbath*](sabbath.html) *is liable to a* [*sin*](sin.html)*-*[*offering*](korbanot)*; and he who learns a single thing from a Magian[[122]](#footnote-122) is worthy of death;[[123]](#footnote-123) and he who is able to calculate the* [*cycles*](cycles.html)*[[124]](#footnote-124) and planetary courses but does not,* [*one*](one.html) *may hold no conversation with him.[[125]](#footnote-125)*

Let's see what goes into calculating the calendar. The [first](one.html) thing that we need to do is to understand some astronomy, because the [Jewish](gen-jew.html) calendar, and therefore [HaShem](hashem.html)'s calendar, depends on the movement of the heavenly [bodies](body.html).

**ASTRONOMY[[126]](#footnote-126)**

The [sun](hachama.html) rises each morning in the [East](east.html) and sets each evening in the West. For a person [standing](mashal.html) on the Equator, it rises and sets at a 900 angle as in Figure 1. That is, straight up and down.

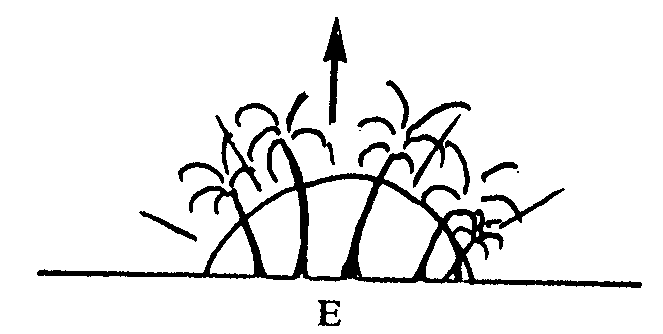
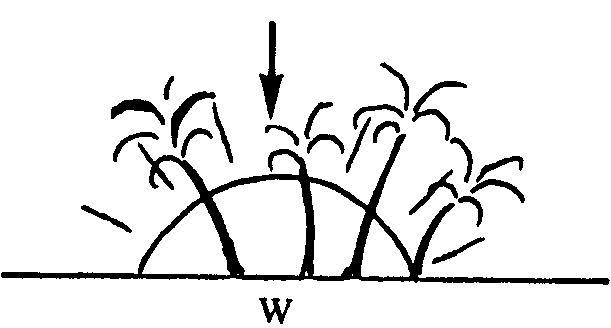


Figure 1

For a person in the Northern Hemisphere, which includes Eretz Yisrael, Europe, and North America, it rises at an angle toward the South as in Figure 2.

During the morning, as the [sun](hachama.html) becomes higher and higher, it also travels farther and farther toward the South. At noon, when the [sun](hachama.html) begins to go down, it turns toward the North. During the afternoon, as the [sun](hachama.html) gets lower, it continues toward the North, and it sets at an angle toward the North in the evening.

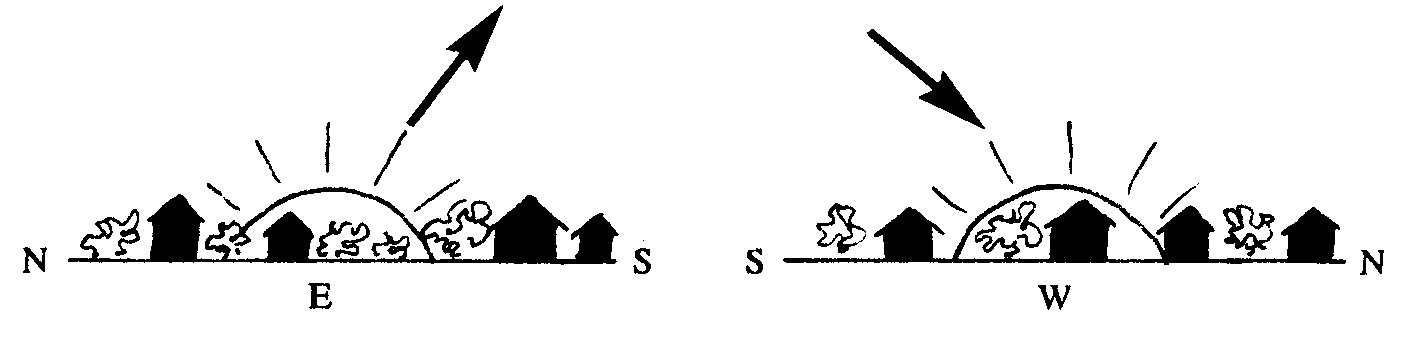


Figure 2

To understand this, picture the Earth as a ball spinning Eastward on an axis that runs through the North and South poles, as in Figure 3. For a person [standing](mashal.html) on the Earth, this makes the sky appear to be a giant sphere surrounding the Earth and spinning on the same axis, but in the opposite direction. (Figure 4).

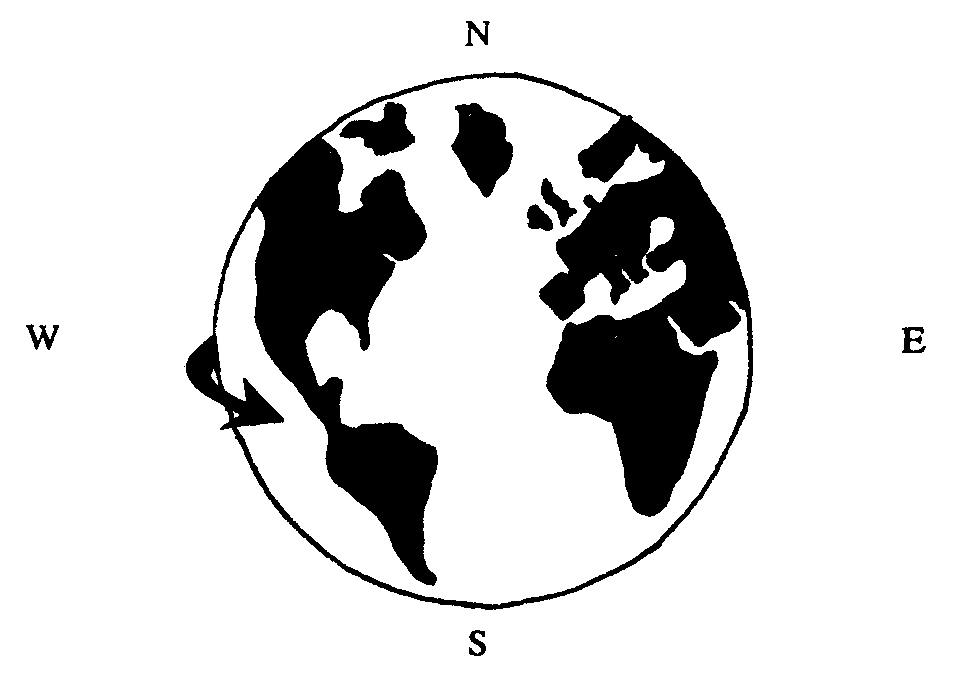


Figure 3

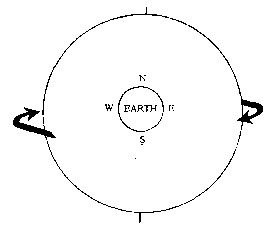


Figure 4

The [sun](hachama.html) and the [stars](mazaroth.html) appear to be attached to the sphere, d to spin along with it. At any moment, he can see only the half the sphere that is above him. The other half is hidden by the Earth on which he is [standing](mashal.html). The Earth appears to him not as a I but as a flat disc surrounded by the horizon. Beyond the horizon spins the great sphere that carries the [sun](hachama.html) and the [stars](mazaroth.html). (figure 5). The plane of this disc is tangent to the surface of the

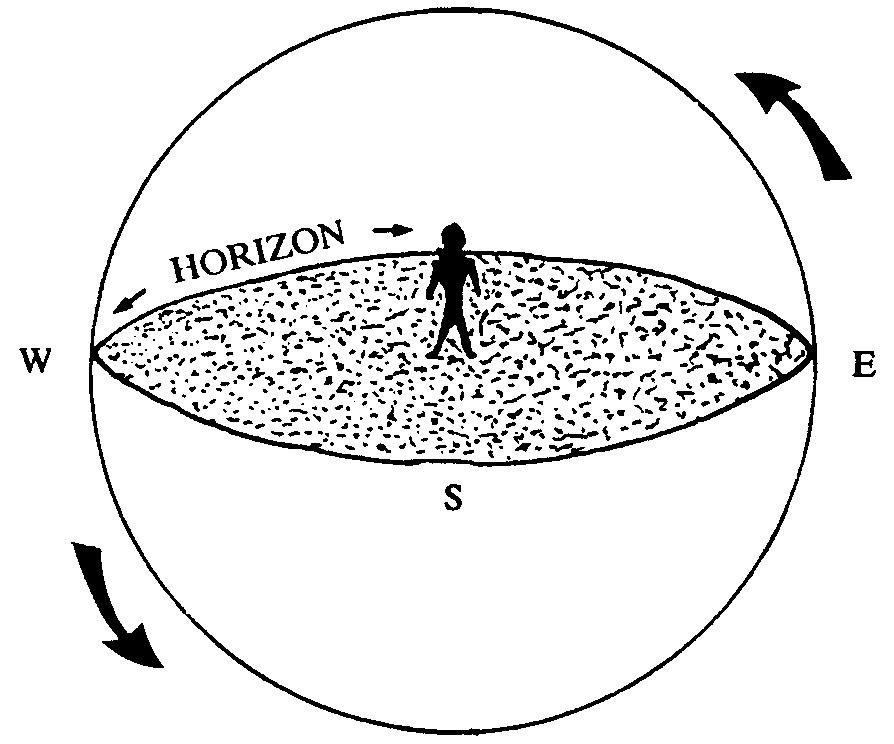


Figure 5

Earth. The direction that he calls "down" is really the direction toward the center of the Earth. What he calls "up" is really the direction away from the center of the Earth. So up and down are different for people [standing](mashal.html) at different spots on the Earth. (Figure 6).

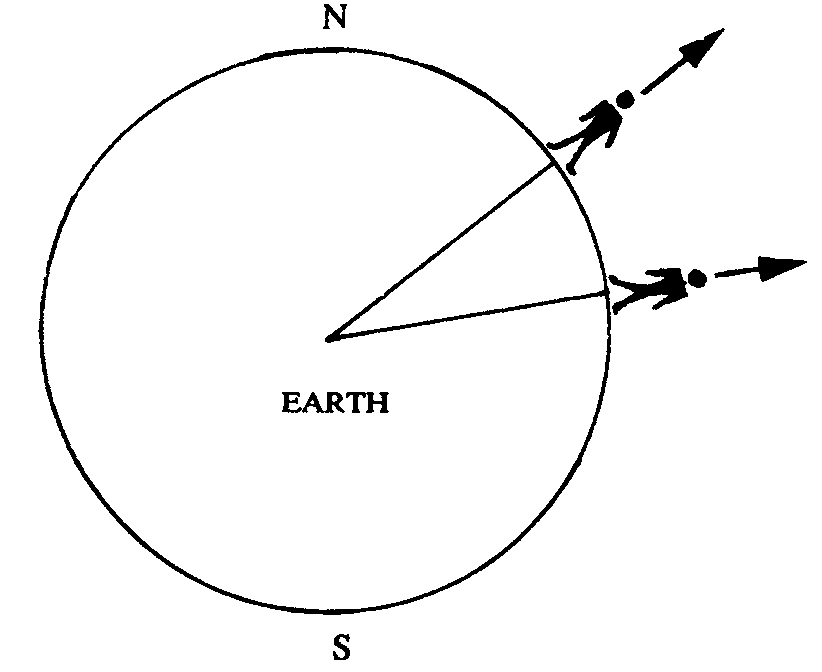


Figure 6

As we watch the sky during the night, the [stars](mazaroth.html) seem to move, most of them from [East](east.html) to West. But there is [one](one.html) [star](mazaroth.html) that appears not to move. It is called the North [Star](mazaroth.html), because it is directly above the North Pole of the Earth. Wherever you stand on the Earth, if you [face](body.html) the North [Star](mazaroth.html) you are facing North. The reason it does not move is that it is right on the axis around which the great sphere revolves. The [stars](mazaroth.html) close to the North [Star](mazaroth.html) appear to [travel](mashal.html) on small circles around it, and the farther a [star](mazaroth.html) is from the North [Star](mazaroth.html), the larger a circle it describes. Figure 7 shows the North [Star](mazaroth.html) and the paths of the [stars](mazaroth.html) around it. The [stars](mazaroth.html) that are close to the North [Star](mazaroth.html) never rise and set, because the circles on which they [travel](mashal.html) never cross the horizon, but the [stars](mazaroth.html) that are farther away rise in the [East](east.html), [travel](mashal.html) in a circle around the North [Star](mazaroth.html), and set in the West. If you could see the North [Star](mazaroth.html) during the daytime, you would see that the [sun](hachama.html) does the same thing. It rises in the [East](east.html), travels in a circle around the North [Star](mazaroth.html), and sets in the West.

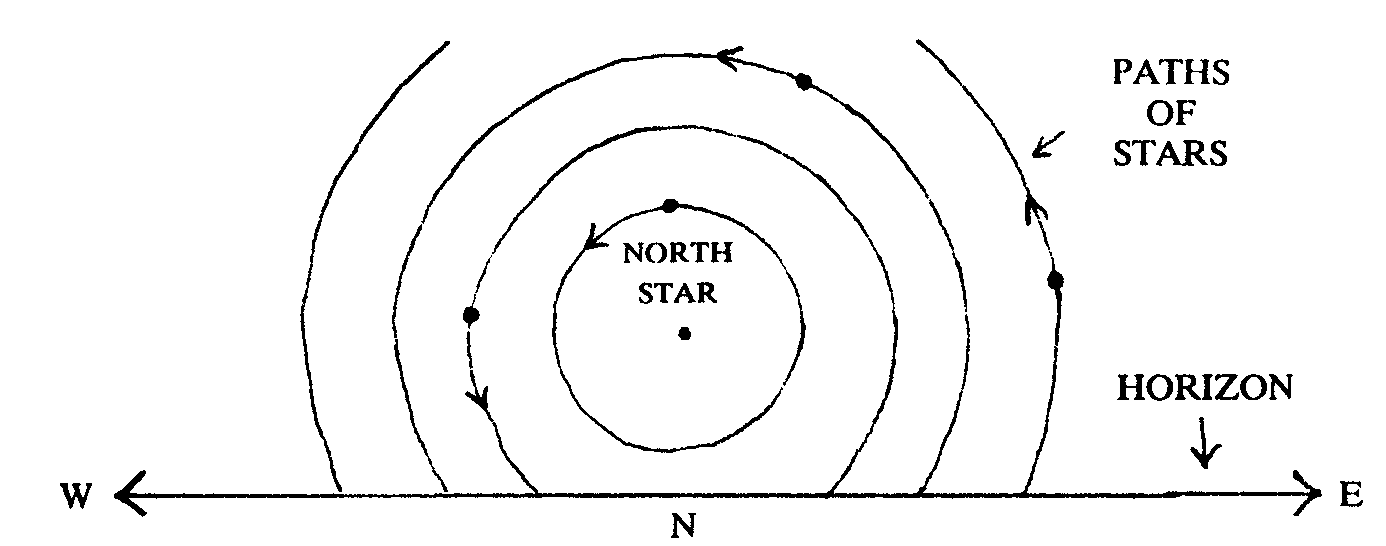


Figure 7

Figure 8 shows the sky as it appears from the Northern Hemisphere. You can see that the paths of all the [stars](mazaroth.html) are at an angle with the horizon whichtilts toward the South. [One](one.html) such line also represents the path of the [sun](hachama.html).

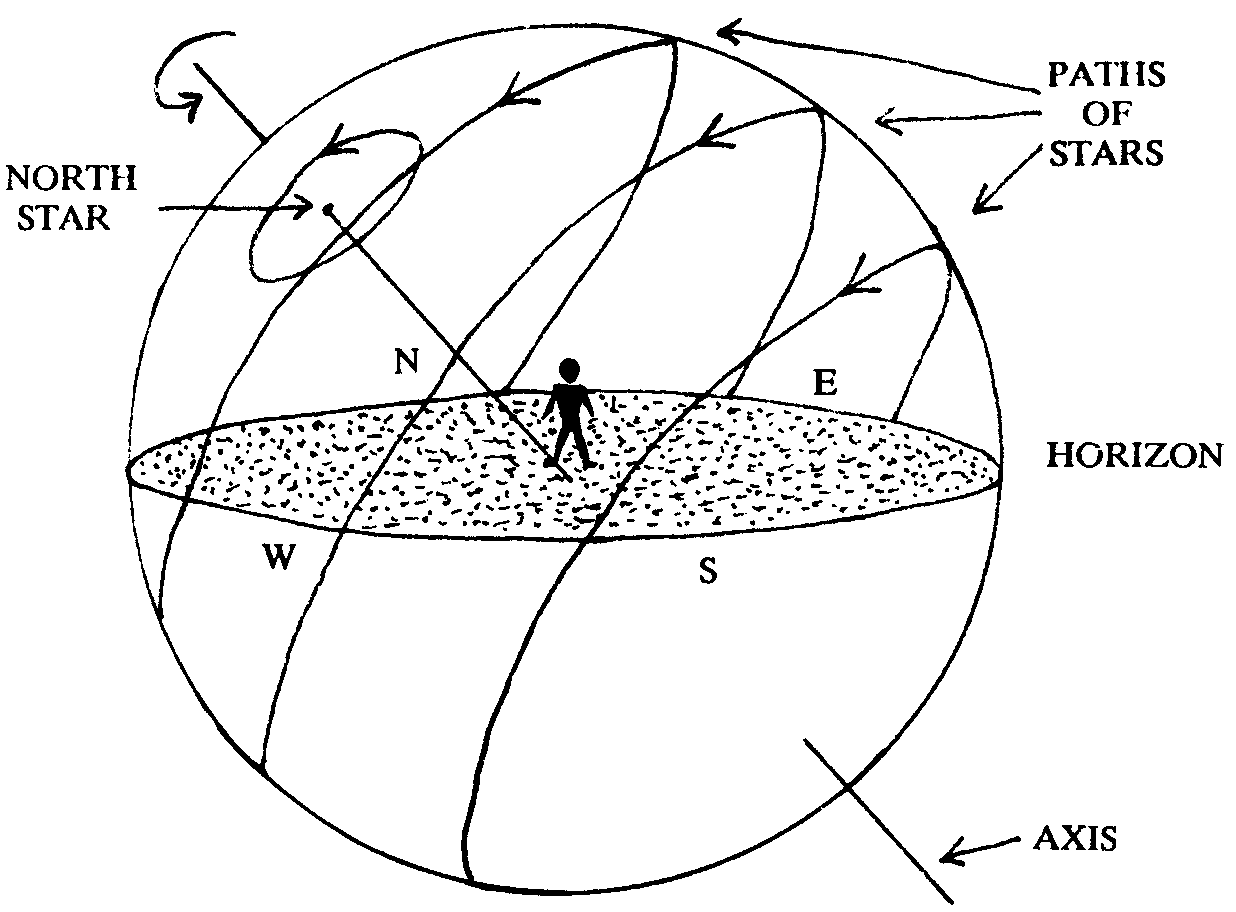


Figure 8

How close to the North [Star](mazaroth.html) a [star](mazaroth.html) must be for it never to set depends upon where on the Earth a person is [standing](mashal.html). Figure 9 shows what the sky looks like to a person [standing](mashal.html) on the equator looking [East](east.html). The North [Star](mazaroth.html) appears just on the horizon, directly to the North. All the other [stars](mazaroth.html) rise and set, and in fact they do so at 90' angles to the horizon. When he looks North, the North [Star](mazaroth.html) is on the horizon and the [stars](mazaroth.html) close to it appear to [travel](mashal.html) in semicircles. You can see why at the equator the [sun](hachama.html) also rises and sets at right angles to the horizon.

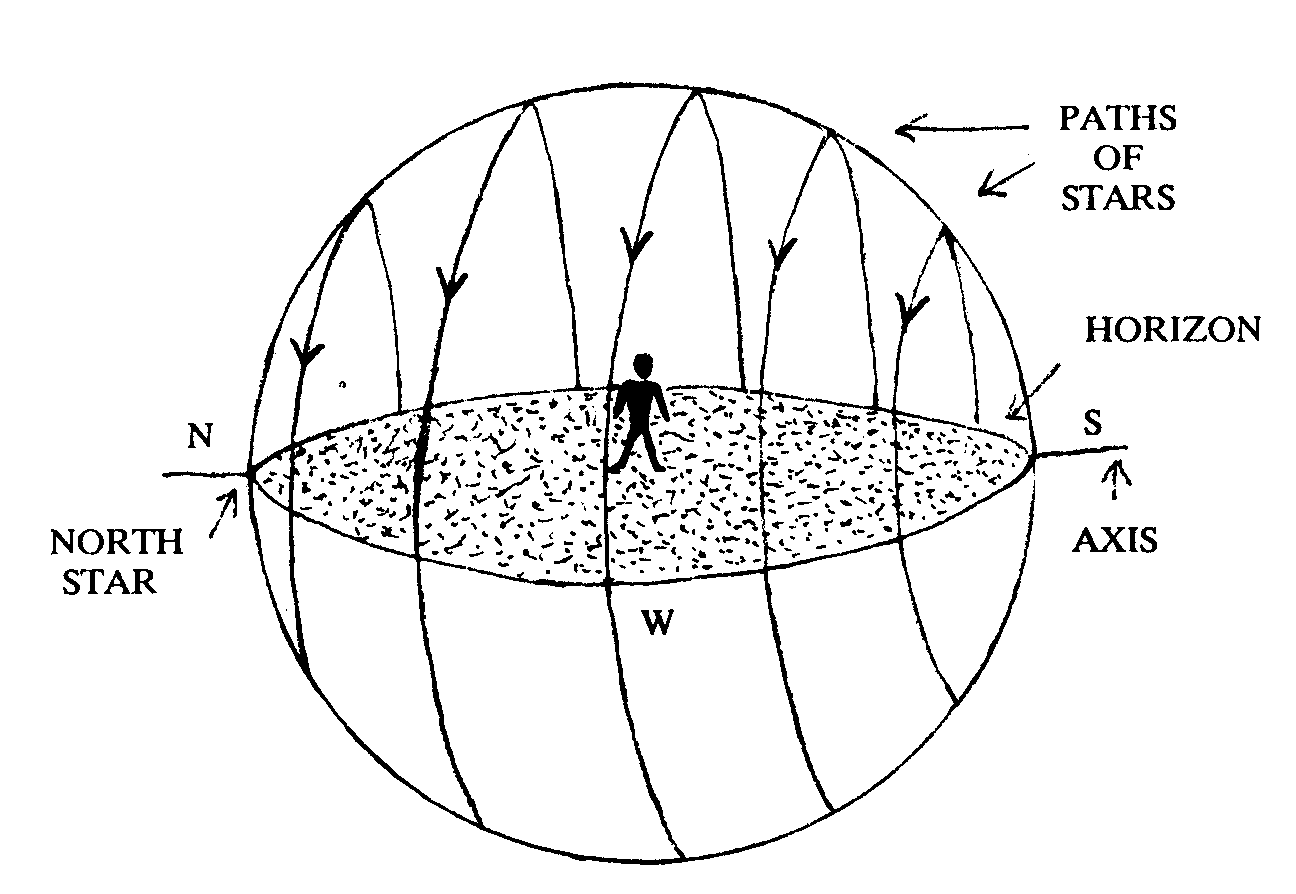


Figure 9

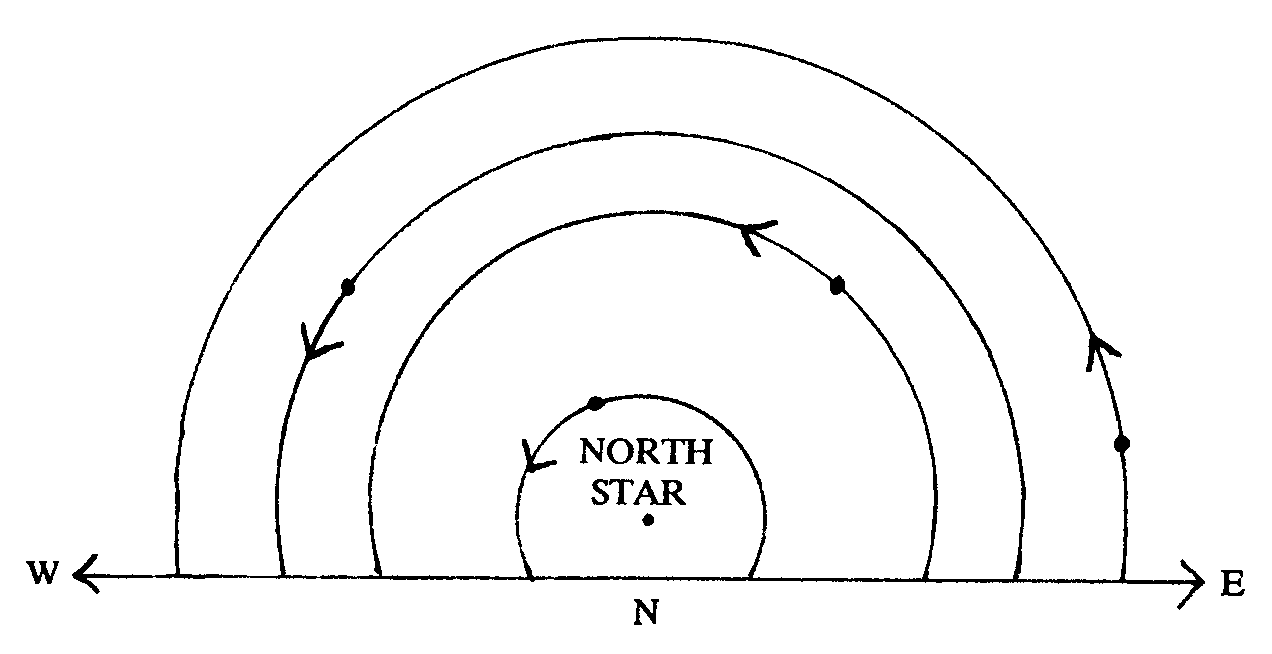


Figure 10

A person [standing](mashal.html) a little North of the equator sees the North [Star](mazaroth.html) a little above the horizon as in Figure 10, and only the [stars](mazaroth.html) very close to it do not rise and set. As he moves farther North, the North [Star](mazaroth.html) appears higher and higher in the sky and there are more and more [stars](mazaroth.html) that never set. Finally, at the North Pole, the North [Star](mazaroth.html) is directly overhead. No [stars](mazaroth.html) set. They all [travel](mashal.html) around the sky parallel to the horizon, each at its own constant height, in a clockwise direction as shown in Figure 11.

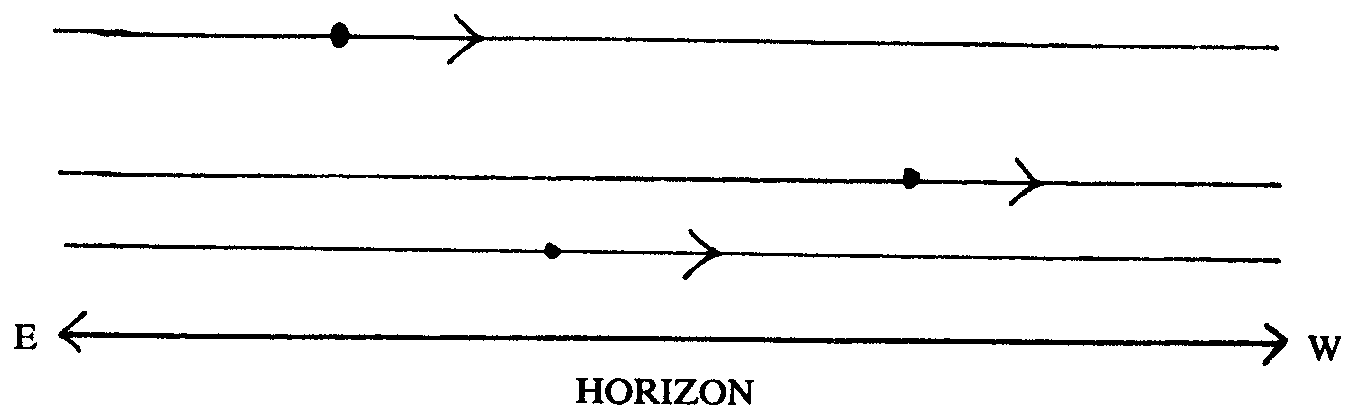


Figure 11

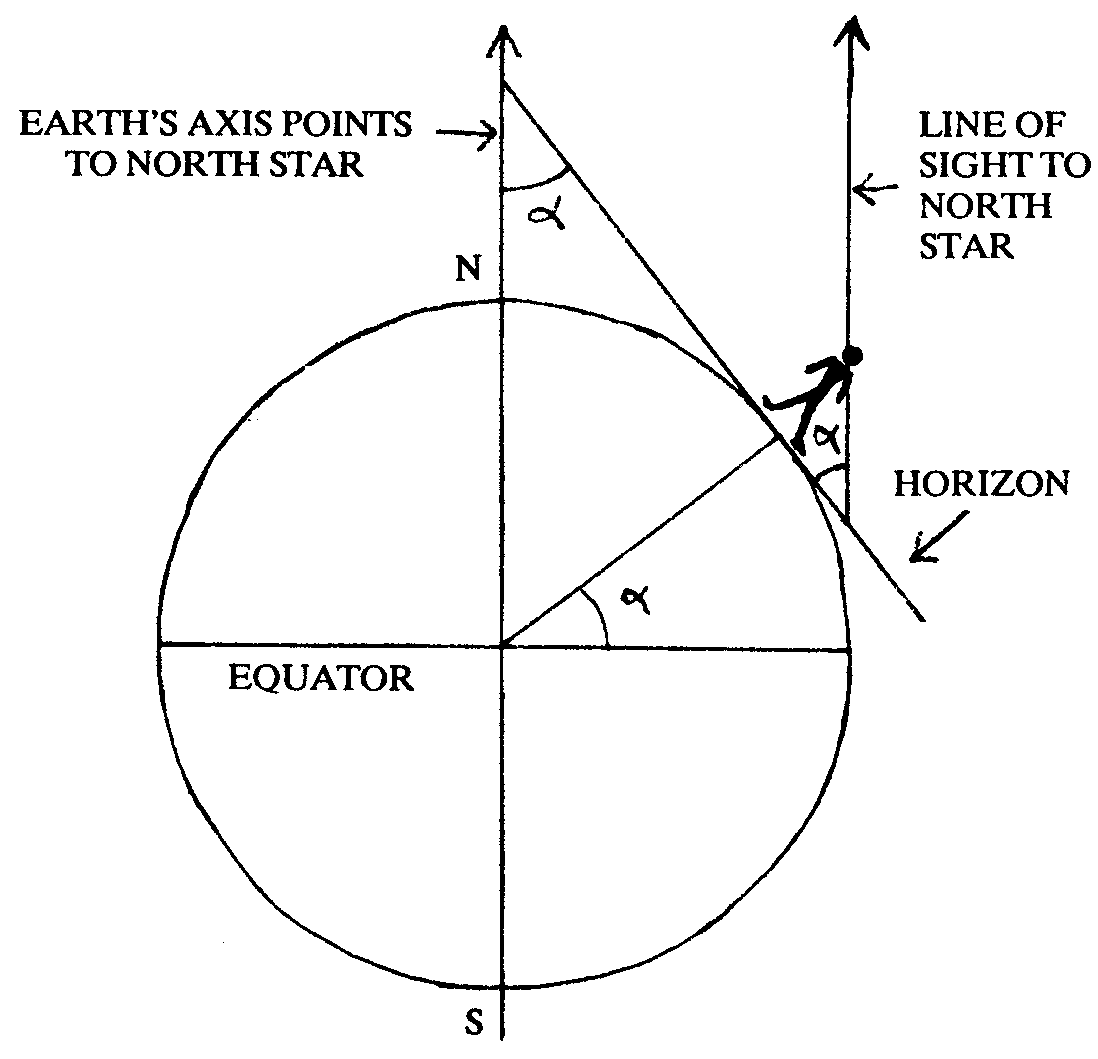


Figure 12

From Figure 12 you can see that the height of the North [Star](mazaroth.html) is equal to the latitude at which it is being observed. Remember that the [stars](mazaroth.html) are so far away that lines pointing to the North [Star](mazaroth.html) from all points on the Earth are parallel.

In the Southern Hemisphere the whole appearance of the sky is reversed. The North [Star](mazaroth.html) cannot be seen, and instead, the [stars](mazaroth.html) of the Southern part of the sky appear to rotate clockwise around a point opposite the South Pole. (Figure 13). The [sun](hachama.html) rises in the [East](east.html), but at an angle toward the North, and it sets in the West at an angle toward the South. (Figure 14).

We include this to round off our description of the sky, and for the sake of those readers who live in the Southern Hemisphere, such as South Africa and Australia. It is not important for understanding the calendar, since all discussions of the calendar in *Shas and Poskim* are from Eretz Yisrael, [Bavel](bavel.html), North Africa, Asia, and Europe, all of which are in the Northern Hemisphere.

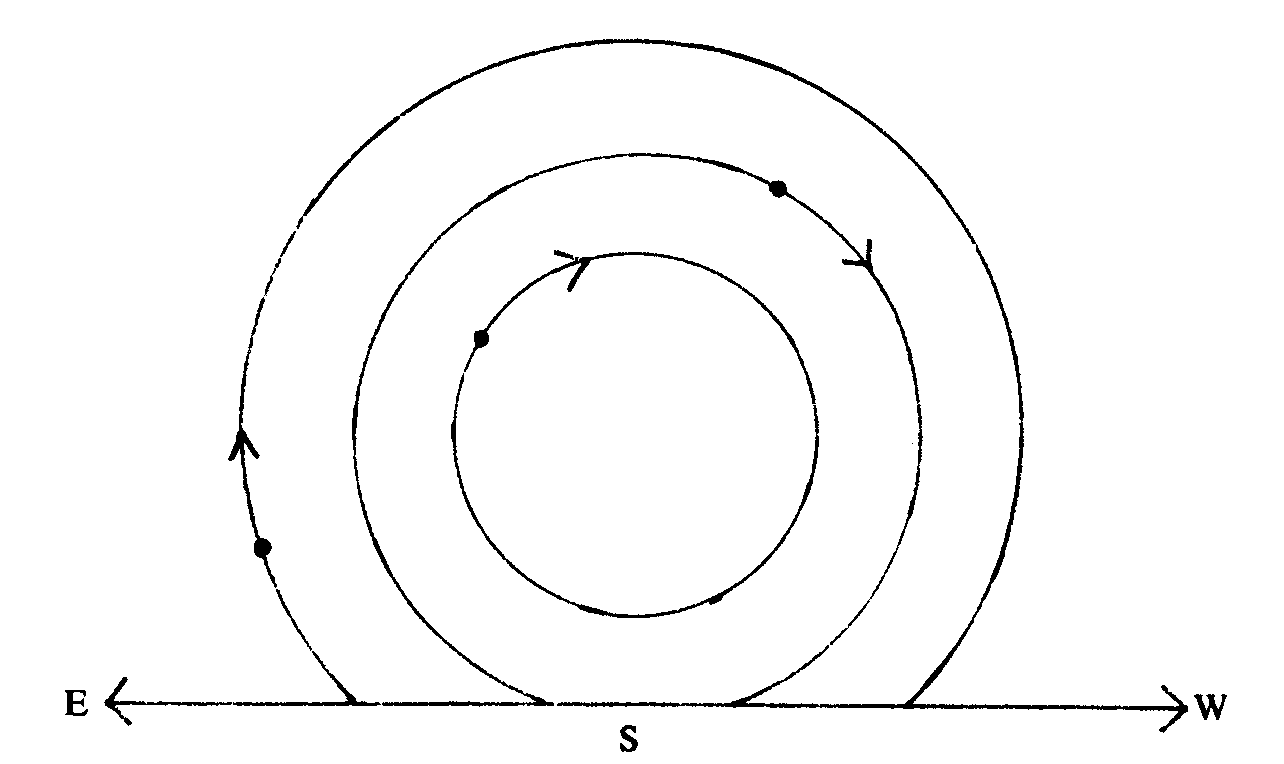


Figure 13

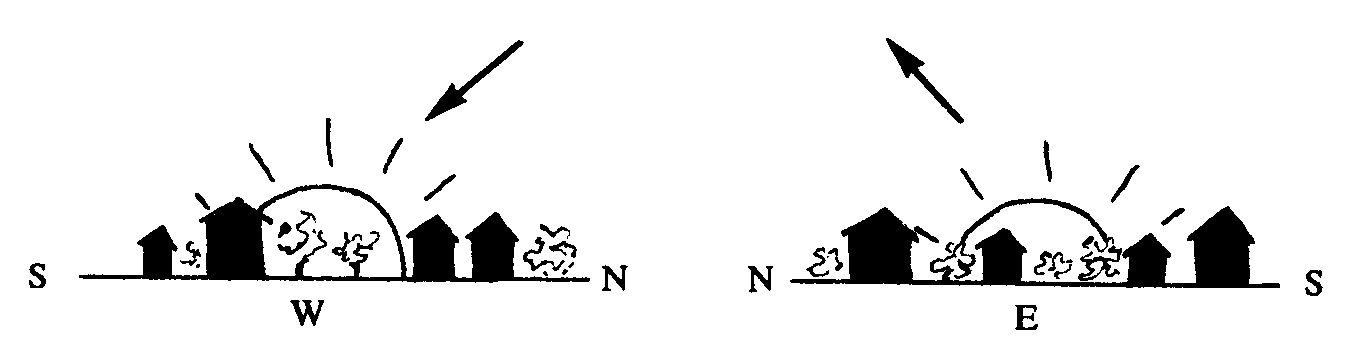


Figure 14

[**AUTHORITY**](authority.html)

Nowhere does the Torah tell us how to regulate the calendar, even though it is impossible to fulfill the Torah's [commands](cmds613.html), without regulating it. For example:

***Devarim (Deuteronomy) 16:1*** *Observe the month of* [*Abib*](feasts.html) *and celebrate the* [*Passover*](passover.html) *of* [*HaShem*](hashem.html) *your God, because in the month of* [*Abib*](feasts.html) *he brought you* [*out of Egypt*](thebirth.html) *by night.*

***Shemot (***[***Exodus***](exodus.html)***) 12:1-11***[*HaShem*](hashem.html) *said to Moses and Aaron in Egypt, "This month is to be for you the* [*first*](one.html) *month, the* [*first*](one.html) *month of your year. Tell the whole* [*community*](community.html) *of Israel that on the tenth day of this month each man is to take a lamb for his family,* [*one*](one.html) *for each* [*household*](househld.html)*. If any* [*household*](househld.html) *is too small for a whole lamb, they must share* [*one*](one.html) *with their nearest neighbor, having taken into account the* [*number*](nchart.html) *of people there are. You are to determine the amount of lamb needed in accordance with what each person will* [*eat*](eating.html)*. The animals you choose must be year-old males without defect, and you may take them from the sheep or the goats. Take care of them until the* [*fourteenth*](fourteen.html) *day of the month, when all the people of the* [*community*](community.html) *of Israel must slaughter them at twilight. Then they are to take some of the* [*blood*](body.html) *and put it on the sides and tops of the doorframes of the houses where they* [*eat*](eating.html) *the lambs. That same night they are to* [*eat*](eating.html) *the meat roasted over the* [*fire*](fire.html)*, along with bitter herbs, and bread made without* [*yeast*](chametz.html)*. Do not* [*eat*](eating.html) *the meat raw or cooked in water, but roast it over the* [*fire*](fire.html)*--*[*head*](body.html)*,* [*legs*](body.html) *and inner parts. Do not leave any of it till morning; if some is left till morning, you must burn it. This is how you are to* [*eat*](eating.html) *it: with your cloak tucked into your belt, your sandals on your* [*feet*](heel.html) *and your* [*staff*](staff.html) *in your* [*hand*](fourteen.html)*.* [*Eat*](eating.html) *it in haste; it is* [*HaShem*](hashem.html)*'s* [*Passover*](passover.html)*.*

[Abib](feasts.html) is defined by Strong's as:

24 'abiyb, aw-beeb'; from an unused root (mean. to be tender); green, i.e. a young ear of grain; hence the [name](name.html) of the month [Abib](feasts.html) or [Nisan](feasts.html):-[Abib](feasts.html), ear, green [ears](body.html) of corn.

With the above scripture, and definition, in mind, let me state the problem:

[Passover](passover.html) must occur in the springtime when the barley is in the green ear stage. [Passover](passover.html) must occur in the [first](one.html) month ([moon](chodesh.html)) of the year. A lunar year is approximately 354 days long: 12 months of 29 or 30 days long. This leaves us about 11 days short of a solar year. If we do not account for those 11 days, in less than [ten](ten.html) years, [Passover](passover.html) will no longer occur in the spring when the barley is in the green ear stage. Therefore, someone must regulate the year to ensure that [Passover](passover.html) falls in the springtime. [Passover](passover.html) is not the only [festival](festival.html) that has calendar requirements. At Hag [Shavuot](shavuot.html) (the [Feast of Weeks](shavuot.html)), the [new](new.html) wheat must be ready to wave before [HaShem](hashem.html). At [Hag HaSuccoth](file:///D:\Backup%20data\Word\Stars\succoth.html) (the [Feast of Tabernacles](succoth.html)), the major part of the harvest must be in the barn. From these Torah requirements, we see that the lunar calendar must be regulated

The way the Sanhedrin decided to synchronize the lunar and the solar year, is through intercalation, the adding of an additional month, at regular intervals.

The Bible does not provide us the complete means for calculating a calendar. There are no calculations provided in the Scriptures. The Bible clearly indicates that there were the components of a calendar in existence almost from the beginning: hours, days, months, seasons, and years are all mentioned. These are the essential elements of any calendar.

The Sanhedrin, the highest court of Israel, received its [authority](authority.html) as a mandate of [HaShem](hashem.html):

***Devarim (Deuteronomy) 17:8-13*** *If there arise a matter too hard for thee in judgment, between* [*blood*](body.html) *and* [*blood*](body.html)*, between plea and plea, and between stroke and stroke, being matters of controversy within thy gates: then shalt thou arise, and get thee up into the place which* [*HaShem*](hashem.html) *thy G-d shall choose; And thou shalt come unto the* [*priests*](priests.html) *the Levites, and unto the judge that shall be in those days, and inquire; and they shall shew thee the sentence of judgment: And thou shalt do according to the sentence, which they of that place which* [*HaShem*](hashem.html) *shall choose shall shew thee; and thou shalt observe to do according to all that they inform thee: According to the sentence of the* [*law*](law.html) *which they shall* [*teach*](teacher.html) *thee, and according to the judgment which they shall tell thee, thou shalt do: thou shalt not decline from the sentence which they shall shew thee, to the right* [*hand*](mashal.html)*, nor to the left. And the man that will do presumptuously, and will not hearken unto the* [*priest*](priests.html) *that standeth to minister there before* [*HaShem*](hashem.html) *thy G-d, or unto the judge, even that man shall die: and thou shalt put away the evil from Israel. And all the people shall hear, and* [*fear*](fear.html)*, and do no more presumptuously.*

Based upon the above passage, a court was developed that determined judgements of religious and legal disputes and controversies. During the [time](time.html) of [Yeshua](yeshua.html), the highest court of Israel was called the Sanhedrin. This court consisted of 71 judges who met within the Chamber of the Hewn Stone in the [Temple](temple.html). It was overseen by a president who bore the title "Nasi." The Sanhedrin was the only court that had the [authority](authority.html) to declare the [New](new.html) Month's beginning.

This court on earth, authorized by [HaShem](hashem.html), is modeled after a heavenly court. The heavenly court is overseen by the Father Himself as told by the prophet Daniel.

***Daniel 7:9-10*** *I beheld till the thrones were cast down, and the Ancient of days did sit, whose garment was white as snow, and the* [*hair*](hair.html) *of his* [*head*](body.html) *like the pure wool: his throne was like the fiery flame, and his wheels as burning* [*fire*](fire.html)*. A fiery stream issued and came forth from before him: thousand thousands ministered unto him, and* [*ten*](ten.html) *thousand times* [*ten*](ten.html) *thousand stood before him: the judgment was set, and the books were opened.*

[***Midrash***](orallaw.html) ***Rabbah -*** [***Exodus***](exodus.html) ***XV:30*** *30. Another interpretation of THIS MONTH SHALL BE UNTO YOU. God was like a king who possessed treasure-houses filled with gold and silver, precious stones and pearls, and who had* [*one*](one.html) *son. As long as the son was small his father guarded them all, but when the son grew up and reached manhood, his father said to him: ‘As long as thou wert small, I guarded them all; but now that thou hast reached manhood, I* [*hand*](fourteen.html) *over everything to thee.’ So did God guard everything, as it says: And let them be for* [*signs*](signs.html)*, and for seasons (Gen. I, 14); but as soon as Israel arose, He entrusted them with all of these, for it says: THIS MONTH SHALL BE UNTO YOU.[[127]](#footnote-127)*

The [Talmud](orallaw.html) rules that work is permitted on [Rosh Chodesh](chodesh.html), but describes a tradition that women abstain from work on the day [compare also Pirke de Rabbi Eliezer, chapter 45]

[***Rosh Hashana***](teruah.html)***h 23a*** *Our Rabbis* [*taught*](teacher.html) *‘Beacon fires are lit only for the* [*new*](new.html)[*moon*](chodesh.html) *which has been seen at its proper* [*time*](time.html)*,[[128]](#footnote-128) [to announce that] it has been sanctified. When are they lit? On the night following its announcement.[[129]](#footnote-129) This means to say that we light beacons for defective months but not for full months. What is the reason? — R. Zera said: It is a precaution on account of a defective month which ends on Friday. [In that case] when do we light? On the termination of* [*Sabbath*](sabbath.html)*; and if you were to insist that we should light up also for full months, this might give rise to confusion, since people would say: This month may be defective, and the reason why beacons were not lit yesterday is because it was impossible,[[130]](#footnote-130) or perhaps it is full and they are lighting up at the proper* [*time*](time.html)*. But why should we not light up whether for a full month or a defective month, and when* [*New*](new.html)[*Moon*](chodesh.html) *is on Friday not light up at all, so that since we do not light at the termination of* [*Sabbath*](sabbath.html)*, in spite of the fact that we usually light for a full month, people will* [*know*](daat.html) *that it is defective? — This nevertheless may lead to errors, since people will say, This month is full, and the reason why they have not lit up is because they have been prevented.[[131]](#footnote-131) But why not light up for the full months and not at all for the defective months? — Abaye replied: So as not to deprive the public of* [*two*](two.html) *working days.[[132]](#footnote-132)*

[Rosh Chodesh](chodesh.html) was celebrated only [eleven](eleven.html) times a year. In Tishrei, [Yom Teruah](teruah.html) coincides with [Rosh Chodesh](chodesh.html); to this day, the [new](new.html) [moon](chodesh.html) of Tishrei is not proclaimed in advance in the [synagogue](synagog.html); [Yom Teruah](teruah.html) rather than [Rosh Chodesh](chodesh.html) is dominant liturgically.

It was an established rule that no year should consist of less than [four](four.html) nor more than [eight](eight.html) FULL months.

***Sanhedrin 10b*** *THE INTERCALATION[[133]](#footnote-133) OF THE MONTH BY* [*THREE*](three.html)*. [The Tanna of the Mishnah] mentions neither the ‘calculation’[[134]](#footnote-134) nor the ‘sanctification’[[135]](#footnote-135), but the INTERCALATION of the month. [Why then the need of* [*three*](three.html) *for this?] Suppose it is not sanctified [on the* [*thirtieth*](thirty.html) *day] it will then be automatically intercalated! — Abaye therefore said: Read then, THE SANCTIFICATION OF THE MONTH. It is also* [*taught*](teacher.html) *to the same effect: The sanctification of the month and the intercalation of the year is to be determined by* [*three*](three.html)*. So R. Meir holds. But, asked Raba, does not the Mishnah say, the INTERCALATION? — Hence, said Raba, the Mishnah means that the sanctification made on INTERCALATION, that is on the intercalary day,[[136]](#footnote-136) is determined by* [*three*](three.html)*; but on the day after it there is to be no sanctification. And this represents the opinion of R. Eliezer b. Zadok, as it has been* [*taught*](teacher.html)*: R. Eliezer b. Zadok says: If the* [*new*](new.html)[*moon*](chodesh.html) *has not been visible in* [*time*](time.html)*, there is no need for the Sanctification next day, as it has already been sanctified in* [*Heaven*](heaven.html)*.[[137]](#footnote-137)*

The Hatzi (partial) Hallel, the *yaaleh v'yavo* [*prayer*](prayer.html), and the mussaf (extra) service are done.

In second [Temple](temple.html) times, a ceremony "blessing the [moon](chodesh.html)" (Birkat haLevanah), sometimes called "sanctification of the [moon](chodesh.html)" (Kiddush Levanah), was developed. Recited from the [third](three.html) evening of the reappearance of the [moon](chodesh.html) (when the [moon](chodesh.html) is clearly visible) up until the [fifteenth](fifteen.html) day of the month (as long as the [moon](chodesh.html) is waxing), the [prayer](prayer.html) quickly became associated with the messianic hope.

"Originally, the [New](new.html) [Moon](chodesh.html) was not fixed by astronomical calculations, but was solemnly proclaimed after witnesses had testified to the reappearance of the crescent of the [moon](chodesh.html). On the 30th of each month, the members of the High Court assembled in a courtyard in [Jerusalem](city.html), named Beit Ya'azek, where they waited to receive the testimony of [two](two.html) reliable witnesses; they then sanctified the [New](new.html) [Moon](chodesh.html). If the [moon](chodesh.html)'s crescent was not seen on the 30th day, the [New](new.html) [Moon](chodesh.html) was automatically celebrated on the 31st day."[[138]](#footnote-138)

In addition to the witnesses, the molad for the [new](new.html) [moon](chodesh.html) is also calculated by the Beit Din (Court) that has had their ordination conferred on them in a direct line from Moses. **The Beit Din is the only** [**body**](body.html) **that is authorized by** [**halacha**](walking.html) **to sanctify the** [**new**](new.html)[**moon**](chodesh.html)**.**

If I could calculate the conjunction, and if it were up to me, I might simply declare that the day of the conjunction was the day of the [new](new.html) [moon](chodesh.html), no adjustments, no confusion. My problem is that I have no [authority](authority.html) for [one](one.html) system over the other. The rules are easy to write - the problem is, who writes the rules?

Naturally, we would expect to turn to the Bible to see what the [law](law.html) told Israel to do. The problem is that the [law](law.html) didn't tell them. While there are plenty of indirect calendar references in the [law](law.html), instructions about the calendar itself are almost nonexistent. In fact the only explicit instruction about the calendar is:

***Shemot (***[***Exodus***](exodus.html)***) 12:2*** *"This month shall be unto you the beginning of months: it shall be the* [*first*](one.html) *month of the year to you."*

It may be hard to believe, but everything else we [know](daat.html) about the calendar we [know](daat.html) from the oral [law](law.html). For example, how can you tell from the text just quoted which month was the [first](one.html) month? What [time](time.html) of year was it? The [oral law](law.html) tells us it was in the spring, but the only help we get from the Bible is the [name](name.html) of the month:

***Shemot (***[***Exodus***](exodus.html)***) 13:3-4****"And Moses said unto the people, Remember this day, in which ye came out* [*from Egypt*](thebirth.html)*, out of the house of bondage; for by strength of* [*hand*](fourteen.html)[*HaShem*](hashem.html) *brought you out from this place; there shall no* [*leavened*](chametz.html) *bread be* [*eaten*](eating.html)*. This day came yet out in the month* [*Abib*](feasts.html)*".*

And so we [know](daat.html) the [Hebrew](hebrew.html) [name](name.html) of the month [Abib](feasts.html). And we [know](daat.html) that [Abib](feasts.html) means, "green [ears](body.html)." From other scriptures we learn that the green [ears](body.html) in question were barley, so we infer that the month [Abib](feasts.html) is the month when there are green [ears](body.html) of barley in the [field](field.html).

All this is very clever of us, but it is curious that something so important was left to the oral [law](law.html) instead of being written in the Torah. Instructions for sacrifices are laid out in excruciating detail. Why were the instructions for the calendar not done the same way? Naming a month after green [ears](body.html) of barley is better than nothing, but it leaves a lot of unanswered questions. What if the [ears](body.html) are not green until the last day of the month ? How would you have [known](daat.html) to make that month [Abib](feasts.html)? Okay, we can decide that the month following the onset of green [ears](body.html) is [Abib](feasts.html). But what if the [ears](body.html) turn green on the second day of the [new](new.html) [moon](chodesh.html)? Will they still be green the following month? If not, how could it be the month of green [ears](body.html)'? The [ears](body.html) will often be green in [two](two.html) consecutive months. Which is [Abib](feasts.html)?

The Torah does not explain and we seem to be left with the oral [law](law.html) to tell us how to do it. This decision is critical, because the month of [Abib](feasts.html) is the beginning of the religious year.

The leap years were reasonably predictable. If they had just added a 13th month, they could be sure they would not have to for the next [two](two.html) years. Early on they noticed a 19-year [cycle](cycles.html) in which the leap years occurred on a repeating basis. Reason suggests that they rarely had to fall back on observation to announce a leap year. Observation could confirm, but it came too late to predict. If they could not predict, how could pilgrims [know](daat.html) when to leave home to arrive in [time](time.html) for the [festival](festival.html) season. The determination of the calendar had serious practical considerations as well as religious implications.

Where did they find all this in the [law](law.html)? They didn't. In fact, they found nothing at all about calendar adjustments, leap years, 13th months, conjunctions or [new](new.html) crescents. The children of Israel found in the [law](law.html) a presumption of a calendar and the sanctification of certain days in that calendar. We [know](daat.html) that [HaShem](hashem.html) had to revealed it to them, or else they would have been rebuked for doing it their own way. What we have is the calendar rules, in the oral [law](law.html), which they have preserved for us along with the sacred Scriptures.

Paul may have been talking about this sort of thing when he [spoke](mashal.html) of the "oracles" of [HaShem](hashem.html). In writing about the [Jews](gen-jew.html) and their relationship with [HaShem](hashem.html), he asked,

***Romans 3:1-2*** *"What advantage then hath the* [*Jew*](gen-jew.html)*? or what profit is there of* [*circumcision*](circumcz.html)*? Much every way: chiefly, because that unto them were committed the oracles of God".*

The word for "oracles" is the Greek:

3051 logion, log'-ee-on; neut. of 3052; an utterance (of God):-oracle.

--------------------- Dictionary Trace ----------------

3052 logios, log'-ee-os; from 3056; fluent, i.e. an orator:-eloquent.

logion which means, literally, "sayings." The [Jews](gen-jew.html) retained an oral [law](law.html) besides the written [laws](law.html) we find in the Torah and the oral [law](law.html) included a calendar system into which [HaShem](hashem.html) placed all the holy days of the sacred year.

**Postponement** [Authority](authority.html)

The modern [Hebrew](hebrew.html) calendar is sometimes challenged because the "[new](new.html) [moon](chodesh.html)" may be postponed [one](one.html) or [two](two.html) days based on a complex set of rules. Actually, these rules are applied only once in the year - on the [first](one.html) day of the [seventh](seven.html) month - the Feast of Trumpets. This particular [new](new.html) [moon](chodesh.html) (the beginning of the civil year) is determined and then all the others are established by it. Since a [cycle](cycles.html) of the [moon](chodesh.html) is about 29 1/2 days (plus 44 minutes), the [first](one.html) [seven](seven.html) months of the religious year (in which all the Holy days occur) simply alternate between 29 and 30 days. The extra 44 minutes created an extra day at predictable intervals, and that is handled by having [two](two.html) consecutive 30 day months from [time](time.html) to [time](time.html). In order to keep confusion to a minimum, those months are always in the second half of the year.

The objections to the [Jewish](gen-jew.html) custom come in [two](two.html) forms: [one](one.html) argues that any postponement from the conjunction is wrong and the other argues that only the observed [new](new.html) crescent can start a month. ***But we recall at this point that the Bible does not define a*** [***new***](new.html)[***moon***](chodesh.html) ***either way***. If it did, I suppose there would be no argument.

In calculating the [new](new.html) [moon](chodesh.html) of the [Feast of Trumpets](file:///D:\Backup%20data\Word\Stars\teruah.html), the pivotal point of the [Jewish](gen-jew.html) year, the rules proclaim the [new](new.html) [moon](chodesh.html) on the day of the conjunction with some exceptions. For example, if the conjunction occurs after noon, the official [new](new.html) [moon](chodesh.html) is "postponed" to the following day. In fact, the [first](one.html) [new](new.html) crescent will almost certainly be observed the following day.

This rule generally satisfies those who want the month to begin with the observed [new](new.html) crescent. But there is another rule they find more troubling. When the conjunction occurs on a Sunday, Wednesday or Friday, the official [new](new.html) [moon](chodesh.html) (and the Feast of Trumpets) is postponed to the following day for religious reasons. The religious requirements are that the Day of [Atonement](kippur.html) ([Yom Kippur](kippur.html)) must not fall on the day before or after a [Sabbath](sabbath.html), and the day before the Last Great Day of the autumn feast cannot fall on a [Sabbath](sabbath.html). (There are other postponements required because of mathematical [consequences](conseq.html) of the [first](one.html) [two](two.html).)

But can "religious requirements" take precedence over the [law](law.html)? In some cases, yes. When the Pharisees challenged [Yeshua](yeshua.html) and His disciples over [Sabbath](sabbath.html) observance, He asked them, "Have ye not read in the [law](law.html), how that on the [Sabbath](sabbath.html) days the [priests](priests.html) in the [temple](temple.html) profane the [Sabbath](sabbath.html) and are blameless? (Matthew 12:5). In other words, the [priest](priests.html) had to carry on the work of the sacrificial system even on the [Sabbath](sabbath.html) day. This created a conflict between the sacrificial [law](law.html) (which required sacrifices every day) and the [Sabbath](sabbath.html) (which required that no work be done).

We would normally assume that when [laws](law.html) come into conflict the lesser [laws](law.html) would give way to the greater. There can be no greater [law](law.html) than the [Ten](ten.html) [Commandments](cmds613.html) and yet the sacrificial [law](law.html) superseded even the [Sabbath](sabbath.html). The priesthood had special responsibilities on the holy days and the [new](new.html) moons, so it would not be surprising if they should take those duties into account when working out their calendar rules - especially when the [law](law.html) gave them no specific instructions to the contrary. They had a modest requirement to make a morning and evening [sacrifice](korbanot.html) (each [one](one.html) lamb) every day of the year. In addition, each [Sabbath](sabbath.html) day they sacrificed [two](two.html) more lambs with meal, oil and drink offerings ([Numbers](nchart.html) 28:9). All this work increased dramatically on the day of the [new](new.html) [moon](chodesh.html). On the [first](one.html) of every month, they were required to [sacrifice](korbanot.html) [ten](ten.html) animals, [two](two.html) young bullocks, [one](one.html) ram and [seven](seven.html) lambs, plus the other offerings ([Numbers](nchart.html) 28: 11). It is easy to see the importance of predictability when there is this much work to be done.

Each of the [annual](annual.html) Holy days also had special offerings. On the [Day of Atonement](kippur.html), for example, the prescribed [offering](korbanot) was [one](one.html) bullock, [one](one.html) ram, [seven](seven.html) lambs, plus any prescribed meal, oil and drink [offering](korbanot) and a special goat for a [sin](sin.html) [offering](korbanot). Since the Day of [Atonement](kippur.html) is a fast day, it should not be surprising if steps were taken to avoid it falling before or after a [Sabbath](sabbath.html) day. [One](one.html) can, of course, argue to the contrary but **there is no Biblical** [**authority**](authority.html) **that prevents the rules of the calendar from being written this way**. We don't [know](daat.html) with any precision when the rules for postponements came to be. They seem to have coalesced in their present form in the 10th century, but the principles underlying them are much older. There is evidence dating from much earlier that the authorities "adjusted" their observations to avoid having [Yom Kippur](kippur.html) fall just before or just after a [Sabbath](sabbath.html). It was no great trick. They just changed the observation point.[[139]](#footnote-139)

**A Holy Day**

What does it take to make a day holy? When Moses encountered the burning bush, [HaShem](hashem.html) told him to take off his shoes for the ground he stood on was holy. The ground was not holy of itself; it was holy because [HaShem](hashem.html) was there. The [Tabernacle](mikdash.html) was not holy until [HaShem](hashem.html) entered it and filled it with His presence. The spot where the [Temple](temple.html) was built was only a threshing floor until Solomon built the [Temple](temple.html) on the spot and [HaShem](hashem.html) entered it.

Both the [Tabernacle](mikdash.html) and the [Temple](temple.html) were built by human [hands](fourteen.html). True, [HaShem](hashem.html) gave them specifications, but it was left to them to build. We [know](daat.html) that [HaShem](hashem.html) inspired the craftsmen, but we still have to guess what certain parts of it looked like. As long as the [Temple](temple.html) was a building built by craftsmen, it was on]y a building. It was when [HaShem](hashem.html) entered it that it became holy.

In the same way, the rules of the calendar were written by men. The days of the year were not holy until selected by [HaShem](hashem.html). They are, in a sense, made holy by His presence. He told [Israel](file:///D:\Backup%20data\Word\Stars\gen-jew.html) what days in their calendar He would be present - what days He would meet with them (the old expression "[tabernacle](mikdash.html) of the congregation" actually means "tent of meeting").

Did [HaShem](hashem.html) give specifications for the calendar like He gave specifications for the [temple](temple.html)? We [know](daat.html) that He must have! We [know](daat.html) that the Israelites got more from [HaShem](hashem.html) than the book we call the Bible. The writer of the book of [Hebrews](bereans.html) opens his account by telling us that [HaShem](hashem.html) [spoke](mashal.html) to the [fathers](fathers.html) in [time](time.html) past at "sundry times and in divers manners." The Tanach, the Old Testament, contains much, but not all of that communication. The leaders of [HaShem](hashem.html)'s people commonly consulted [HaShem](hashem.html) about questions and judgements and they got answers that are sometimes recorded for us, and sometimes not.

We don't [know](daat.html) whether Israel's calendar was appropriated by other ancient peoples, but there is sufficient evidence to suggest that [HaShem](hashem.html)'s calendar was widely copied.

We also [know](daat.html) that [HaShem](hashem.html) established an administration to go with the [law](law.html). It may come as a surprise to learn that the [law](law.html) did not answer all questions pertaining to human relationships, not even of man's relationship with [HaShem](hashem.html). When Moses complained to [HaShem](hashem.html) about the burden of leading the people of Israel, [HaShem](hashem.html) gave him a solution:

***Bamidbar (***[***Numbers***](nchart.html)***) 11:16-24*** *"And* [*HaShem*](hashem.html) *said unto Moses,* [*Gather*](gather.html) *unto me* [*seventy*](seventy.html) *men of the elders of Israel, whom thou knowest to be the elders of the people, and officers over them; and bring them unto the* [*tabernacle*](mikdash.html) *of the congregation, that they may stand there with thee. And I will come down and talk with thee there: and I will take of the spirit which is upon thee, and will put it upon them and they shall bear the burden of the people with thee, that thou bear it not thyself alone... And* [*HaShem*](hashem.html) *came down in a* [*cloud*](important.html)*, and spake unto him, and took of the spirit that was upon him, and gave it unto the* [*seventy*](seventy.html) *elders: and it came to pass, that, when the spirit rested upon them, they prophesied, and did not cease".*

This is the origin of the "[seventy](seventy.html) elders" of Israel - the basis of the later Sanhedrin - charged with the responsibility of administering the [law](law.html) of [HaShem](hashem.html). We don't [know](daat.html) what they did about the calendar, but we do [know](daat.html) that the rules and observations of the calendar were, in the days of [Yeshua](yeshua.html)'s ministry, in the [hands](fourteen.html) of the Sanhedrin. We also [know](daat.html) that in spite of all the issues where [Yeshua](yeshua.html) contended with the [Jewish](gen-jew.html) leadership, He never argued with them about the calendar, or their [authority](authority.html).

It is important for us to understand that, from the beginning, there was an authoritative judiciary in Israel charged with the responsibility of deciding points of [law](law.html) for the people. This system is described in:

***Devarim (Deuteronomy) 17:8-13*** *If cases come before your courts that are too difficult for you to judge--whether bloodshed, lawsuits or assaults--take them to the place* [*HaShem*](hashem.html) *your God will choose. Go to the* [*priests*](priests.html)*, who are Levites, and to the judge who is in office at that* [*time*](time.html)*. Inquire of them and they will give you the verdict. You must act according to the decisions they give you at the place* [*HaShem*](hashem.html) *will choose. Be careful to do everything they direct you to do. Act according to the* [*law*](law.html) *they* [*teach*](teacher.html) *you and the decisions they give you. Do not turn aside from what they tell you, to the right or to the left. The man who shows contempt for the judge or for the* [*priest*](priests.html) *who stands ministering there to* [*HaShem*](hashem.html) *your God must be put to death. You must purge the evil from Israel. All the people will hear and be afraid, and will not be contemptuous again.*

When [one](one.html) of these courts rendered a decision, it was as binding as any [law](law.html) given by [HaShem](hashem.html) Himself - even to the extent of exacting the death penalty. What they bound on earth, was bound in [heaven](heaven.html).

**The** [Authority](authority.html) **of Moses' Seat**

This is why [Yeshua](yeshua.html) told His people:

***Matityahu (Matthew) 23:1-3*** *"The scribes and the Pharisees sit in Moses' seat: All therefore whatsoever they bid you observe, that observe and do; but do not ye after their works: for they say, and do not".*

In spite of their hypocrisy, they did have [authority](authority.html) from [HaShem](hashem.html). The calendar is a good example of that [authority](authority.html).

From ancient times, the Sanhedrin had the [authority](authority.html) to make the rules and observations that sanctified the [Hebrew](hebrew.html) calendar. [Yeshua](yeshua.html) and the apostles accepted their [authority](authority.html) in this area. While there is ample evidence that the early Christians kept the Holy days, there is no hint in the Nazarean Codicil (the so called [New](new.html) Testament) that they ever attempted to sanctify a calendar apart from the [Jewish](gen-jew.html) calendar.

**Perhaps the most important thing to remember when** [**one**](one.html) **considers abandoning the published** [**Hebrew**](hebrew.html) **calendar is that we have no Biblical** [**authority**](authority.html) **for any other system**.

**\* \* \***

**TEKUFAH** literally ‘[cycle](cycles.html)’, or ‘season’, is the length of [time](time.html) from where the [sun](hachama.html) is now, to where the [sun](hachama.html) is back in the same place a year from now.. The [Jewish](gen-jew.html) Calendar, while being lunar, takes cognizance of the solar system to which it is adjusted at the end of every [cycle](cycles.html) of nineteen years. For ritual purposes the [four](four.html) Tekufoth seasons, are calculated according to the solar system, each being equal to [one](one.html) [fourth](four.html) of 365 days, viz. 91 days, 71/2 hours.

|  |  |
| --- | --- |
| **Tekufah of** [**Nisan**](feasts.html)  (Vernal equinox) | March 21 |
|  |  |
| **Tekufah of** [**Tammuz**](feasts.html)  (Summer Solstice) | June 21 |
|  |  |
| **Tekufah of** [**Tishri**](feasts.html)  (Autumnal equinox) | Sept. 23 |
|  |  |
| **Tekufah of Tevet**  (Winter Solstice) | Dec. 22 |

Should the Tekufah of [Tammuz](feasts.html) extend till after the [Succoth](succoth.html) [Festival](festival.html), or the Tekufah of Tevet till the sixteenth of [Nisan](feasts.html), the year would be intercalated, so that the [festivals](festivals.html) might fall in their due seasons, viz., [Passover](passover.html) in Spring, [Succoth](succoth.html) in Autumn.

Strong's defines "tekufah" as:

8622 tequwphah, tek-oo-faw'; or tequphah, tek-oo-faw'; from 5362; a revolution, i.e. (of the [sun](hachama.html)) course, (of [time](time.html)) lapse:-circuit, come about, end.

"Tekufah" appears in the Scriptures [four](four.html) times:

***Divrei Hayamim (II Chronicles) 24:23*** *At the turn [tekufah] of the year, the army of Aram marched against Joash; it invaded Judah and* [*Jerusalem*](city.html) *and killed all the leaders of the people. They sent all the plunder to their king in Damascus.*

***Shemot (***[***Exodus***](exodus.html)***) 34:22*** *"Celebrate the* [*Feast of Weeks*](shavuot.html) *with the firstfruits of the wheat harvest, and the Feast of* [*Ingathering*](gather.html) *at the turn [tekufah] of the year."*

***Tehillim (***[***Psalms***](psalms1.html)***) 19:4-6*** *Their voice goes out into all the earth, their words to the ends of the* [*world*](worlds.html)*. In the* [*heavens*](heaven.html) *he has pitched a tent for the* [*sun*](hachama.html)*, Which is like a bridegroom* [*coming*](coming.html) *forth from his pavilion, like a champion rejoicing to run his course. It rises at* [*one*](one.html) *end of the* [*heavens*](heaven.html) *and makes its circuit* [tekufah] *to the other; nothing is hidden from its heat.*

***Shmuel (I Samuel) 1:20*** *So in the course* [tekufah] *of* [*time*](time.html) *Hannah conceived and gave* [*birth*](birth.html) *to a son. She named him Samuel, saying, "Because I asked* [*HaShem*](hashem.html) *for him."*

**INTERCALATION**

Years are counted from the Era of [Creation](bara.html), or Era Mundi, which corresponds to -3760 October 7 on the Julian proleptic (The anachronistic representation of something as existing before its proper or historical [time](time.html)) calendar. Each year consists of [twelve](twelve.html) or [thirteen](thirteen.html) months, with months consisting of 29 or 30 days. An intercalary month is introduced in years 3, 6, 8, 11, 14, 17, and 19 in a nineteen-year [cycle](cycles.html) of 235 lunations. The initial year of the calendar, A.M. (Anno Mundi) 1, is year 1 of the nineteen-year [cycle](cycles.html).

The calendar for a given year is established by determining the day of the week of [Tishri](feasts.html) 1 ([first](one.html) day of [Rosh Hashanah](teruah.html) or [New](teruah.html) Year's Day) and the [number](nchart.html) of days in the year. Years are classified according to the [number](nchart.html) of days in the year.

Classification of Years in the [Hebrew](hebrew.html) Calendar

**Deficient Regular Complete**

Ordinary year 353 354 355

Leap year 383 384 385

COMMON LEAP

YEAR YEAR

1 [Tishri](feasts.html) 30 30 30 30 30 30

2 [Heshvan](feasts.html) 29 29 30 29 29 30

3 [Kislev](feasts.html) 29 30 30 29 30 30

4 Tevet 29 29 29 29 29 29

5 [Shevat](feasts.html) 30 30 30 30 30 30

6 [Adar](feasts.html) I 29 29 29 30 30 30

7 [Adar](feasts.html) II -- -- -- 29 29 29

8 [Nisan](feasts.html) 30 30 30 30 30 30

9 [Iyar](feasts.html) 29 29 29 29 29 29

10 [Sivan](feasts.html) 30 30 30 30 30 30

11 [Tammuz](feasts.html) 29 29 29 29 29 29

12 [Av](feasts.html) 30 30 30 30 30 30

13 [Elul](elul.html) 29 29 29 29 29 29

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353 354 355 383 384 385

***Sanhedrin 11b*** *Our Rabbis* [*taught*](teacher.html)*: A year may be intercalated on* [*three*](three.html) *grounds: on account of the premature state of the corn-crops;[[140]](#footnote-140) or that of the fruit-trees;[[141]](#footnote-141) or on account of the lateness of the Tekufah[[142]](#footnote-142) Any* [*two*](two.html) *of these reasons can* [*justify*](justification.html) *intercalation, but not* [*one*](one.html) *alone. All, however, are glad when the state of the spring-crop is* [*one*](one.html) *of them.[[143]](#footnote-143) Rabban Simeon b. Gamaliel says: On account of [the lateness of] the Tekufah. The Schoolmen inquired: Did he mean to say that ‘on account of the [lateness of the] Tekufah’ [being* [*one*](one.html) *of the* [*two*](two.html) *reasons], they rejoiced,[[144]](#footnote-144) or that the lateness of the Tekufah alone was adequate reason for intercalating the year? — The question remains undecided.*

*Our Rabbis* [*taught*](teacher.html)*: [The grain and fruit of the following]* [*three*](three.html) *regions [are taken as the standard] for deciding upon the declaration of a leap-year: Judea,[[145]](#footnote-145) Trans-Jordania,[[146]](#footnote-146) and Galilee.[[147]](#footnote-147) The requirements of* [*two*](two.html) *of these regions might determine the intercalation, but not those of a single* [*one*](one.html)*. All, however, were glad when* [*one*](one.html) *of the* [*two*](two.html) *was Judea, because the barley for the* [*Omer*](omer.html)*[[148]](#footnote-148) was obtained [by preference] in Judea.[[149]](#footnote-149)*

*Our Rabbis* [*taught*](teacher.html)*: The intercalation of a year can be effected [by the Beth din] only in Judea; but if for some reason [it had been decided upon by the Beth din] in Galilee, the decision holds good. Hanania of Oni, however, testified: ‘If the intercalation was decided upon in Galilee, it is not valid.’ R. Judah the son of R. Simeon b. Pazi asked: What is the reason for the view of Hanania of Oni? — Scripture states, Unto His habitation shall ye seek and thither thou shalt come:[[150]](#footnote-150) whatever search[[151]](#footnote-151) you have to make shall be only in the habitation of the Lord.[[152]](#footnote-152)*

*Our Rabbis* [*taught*](teacher.html)*: A leap-year is to be declared only by day, and if it has been declared by night, the declaration is invalid. The sanctification of a month is to be performed by day, and if it has been performed by night it is not valid. R. Abba says: What passage [proves this]? — Blow the* [*horn*](shofar.html) *at the* [*new*](new.html)[*moon*](chodesh.html)*, at the covering[[153]](#footnote-153) of the* [*moon*](chodesh.html) *our feast-day.[[154]](#footnote-154) Now on which feast is the* [*moon*](chodesh.html) *covered? — We must say on the* [*New*](teruah.html) *Year.[[155]](#footnote-155) And it is thereupon written, For this is a statute for Israel, a judgment[[156]](#footnote-156) of the God of* [*Jacob*](israelja.html)*: Just as judgment is executed by day,[[157]](#footnote-157) so also must the sanctification of the month take place by day.*

[Talmudic](file:///D:\Backup%20data\Word\Stars\orallaw.html) sources tell us that the calendar committee did not rely solely on calculation but on observation as well. They added a 13th month "when the barley in the [field](field.html) had not yet ripened, when the fruit on the trees had not grown properly, when the winter [rains](rains.html) had not stopped, when the roads for [Passover](passover.html) pilgrims had not dried up and when the young pigeons had not become fledged".[[158]](#footnote-158)

[**ROSH CHODESH**](chodesh.html) **- The** [**New**](new.html)[**Moon**](chodesh.html)

In principle the beginning of each month is determined by a tabular [New](new.html) [Moon](chodesh.html) (molad) that is based on an adopted mean value of the lunation [cycle](cycles.html). To ensure that religious [festivals](festivals.html) occur in appropriate seasons, months are intercalated according to the Metonic [cycle](cycles.html), in which 235 lunations occur in nineteen years.

***Menachoth 64a*** *I would say that he is in agreement with the Sages.[[159]](#footnote-159) And, on the other* [*hand*](fourteen.html)*, perhaps R. Ishmael the son of R. Johanan b. Beroka only said so there, since the requirements for the Most — High have been fulfilled,[[160]](#footnote-160) so that there is no further need to profane the* [*Sabbath*](sabbath.html)*; but here, since the requirements for the Most High have not yet been fulfilled,[[161]](#footnote-161) so that there is a need to profane the* [*Sabbath*](sabbath.html)*, I would say that he is in agreement with the Sages![[162]](#footnote-162) — Said Rabbah, R. Ishmael and R. Hanina the Vice-*[*High Priest*](priests.html) *both hold the same view. For we have learnt: R. HANINA THE VICE-*[*HIGH PRIEST*](priests.html) *SAYS, ON THE* [*SABBATH*](sabbath.html) *IT WAS REAPED BY* [*ONE*](one.html) *MAN WITH* [*ONE*](one.html) *SICKLE INTO* [*ONE*](one.html) *BASKET, AND ON A WEEKDAY IT WAS REAPED BY* [*THREE*](three.html) *MEN INTO* [*THREE*](three.html) *BASKETS AND WITH* [*THREE*](three.html) *SICKLES. BUT THE SAGES SAY, WHETHER ON THE* [*SABBATH*](sabbath.html) *OR ON A WEEKDAY IT WAS REAPED BY* [*THREE*](three.html) *MEN INTO* [*THREE*](three.html) *BASKETS AND WITH* [*THREE*](three.html) *SICKLES. Now did not R. Hanina the Vice-*[*High Priest*](priests.html) *say there that where it is possible [to manage with* [*one*](one.html)*] we must not trouble [more to work on the* [*Sabbath*](sabbath.html)*]? Here, too, since it is possible [to manage with less] we must not trouble [to do more on the* [*Sabbath*](sabbath.html)*]. Whence [do you* [*know*](daat.html) *this]? Perhaps R. Ishmael only said so here, since there is no opportunity for making the matter public,[[163]](#footnote-163) but there, since there is an opportunity for making the matter public,[[164]](#footnote-164) I would say that he is in agreement with the Rabbis.[[165]](#footnote-165) And, on the other* [*hand*](fourteen.html)*, perhaps R. Hanina the Vice-*[*High Priest*](priests.html) *only said so there, for after all, whether* [*one*](one.html) *man or* [*three*](three.html) *are employed, the service to the Most High is performed according to its prescribed rites, but here, since the service to the Most High is not performed according to its prescribed rites,[[166]](#footnote-166) I would say that he is in agreement with the Sages![[167]](#footnote-167) — Rather. said R. Ashi, R. Ishmael and R. Jose both hold the same view. For we have learnt: Whether [the* [*new*](new.html)[*moon*](chodesh.html)*] was clearly visible or not, they may profane the* [*Sabbath*](sabbath.html) *because of it.[[168]](#footnote-168) But R. Jose says. If it was clearly visible they may not profane the* [*Sabbath*](sabbath.html) *because of it.[[169]](#footnote-169) Now did not R. Jose say there that wherever it is possible [to manage without them] we do not trouble [them to profane the* [*Sabbath*](sabbath.html)*]? Here, too, since it is possible [to manage with less] we must not trouble [to do more on the* [*Sabbath*](sabbath.html)*]. Whence [do you* [*know*](daat.html) *this]? Perhaps R. Ishmael only said so here, since the reason ‘it will result that you will prevent them from* [*coming*](coming.html) *in the* [*future*](future.html)*’ does not apply, but there, since the reason ‘it will result that you will prevent them from* [*coming*](coming.html) *in the* [*future*](future.html)*[[170]](#footnote-170) applies, I would say that he is in agreement with the Rabbis.[[171]](#footnote-171) And, on the other* [*hand*](fourteen.html)*, perhaps R. Jose only said so there, since the matter in question is no service to the Most High,[[172]](#footnote-172) and moreover the* [*Sabbath*](sabbath.html) *has not been overridden [by another service], but here, since it is a service to the Most High.[[173]](#footnote-173) and the* [*Sabbath*](sabbath.html) *has already been overridden [by other acts of work].[[174]](#footnote-174) I would say that he is in agreement with the Rabbis.*

**Full vs. Defective months**

A full month (lit., ‘a prolonged [one](one.html)’) is [one](one.html) of [thirty](thirty.html) days, a defective [one](one.html) is [one](one.html) of [twenty](twenty.html)-[nine](nine.html) days. The average year has [six](six.html) months of [thirty](thirty.html) days each, and [six](six.html) of [twenty](twenty.html)-[nine](nine.html) days each. For there are about [twenty](twenty.html)-[nine](nine.html) and [one](one.html) half days between [one](one.html) [new](new.html) [moon](chodesh.html) and the other, whence a month of [thirty](thirty.html) days, to restore the balance, must be followed by [one](one.html) of [twenty](twenty.html)-[nine](nine.html) days. However, there are more then [twenty](twenty.html)-[nine](nine.html) and [one](one.html) half days between [one](one.html) [new](new.html) [moon](chodesh.html) and the other, approximately [twenty](twenty.html)-[nine](nine.html) days, [twelve](twelve.html) hours and [forty](forty.html) minutes; furthermore, there are other causes influencing the fixing of the calendar, as the result of which the arrangement of [six](six.html) full and defective months undergoes certain variations, so that [one](one.html) year might have a larger [number](nchart.html) of full, the other more than the half of defective months. In the [time](time.html) of the [Mishna](orallaw.html) the Sanhedrin decreed the beginning of the [new](new.html) months on the basis of the testimony of witnesses who had actually seen the [new](new.html) [moon](chodesh.html). But even then conditions would arise (such as non-visibility of the [new](new.html) [moon](chodesh.html), due to cloudy weather) when the Sanhedrin would be guided by its own astronomical calculations. For such a decree the principle was adopted that no year may have more than [eight](eight.html), nor less than [four](four.html) full months.

**CALCULATING THE CALENDAR**

To construct the calendar for a year, you must [first](one.html) find the length of the year by determining the [first](one.html) day of the year ([Tishri](feasts.html) 1, or [Rosh Hashana](teruah.html)h) and the [first](one.html) day of the following year. This selects [one](one.html) of the [six](six.html) possible month length configurations listed above.

Finding the [first](one.html) day of the year is the most difficult part. Finding the date and [time](time.html) of the [new](new.html) [moon](chodesh.html) (or molad) is the [first](one.html) step. For this purpose, the lunar [cycle](cycles.html) is assumed to be 29 days 12 hours and 793 halokim. A halokim is 1/1080th of an hour or 3 1/3 seconds. (This assumed value is only about 1/2 second less than the value used by modern astronomers -- not bad for a [number](nchart.html) that was determined so long ago.) The [first](one.html) molad of year 1 occurred on Sunday at 11:11:20 P.M. This would actually be Monday, because the Biblical day is considered to begin at sunset.

Since sunset varies, the day is assumed to begin at 6:00 P.M. for calendar calculation purposes. So, the [first](one.html) molad was 5 hours 204 halokim after the start of [Tishri](feasts.html) 1, 0001 (which was Monday September 7, 3761 BC. by the Gregorian calendar). All subsequent molads can be calculated from this starting point by adding the length of a lunar [cycle](cycles.html).

Once the molad that starts a year is determined the actual start of the year ([Tishri](feasts.html) 1) can be determined. [Tishri](feasts.html) 1 will be the day of the molad unless it is delayed by [one](one.html) of the following [four](four.html) rules (called dechiyot). Each rule can delay the start of the year by [one](one.html) day, and since the Molad Zaken rule can combine with [one](one.html) of the other rules, it can be delayed as much as [two](two.html) days.

**\* \* \***

Conventions: For purposes of calculating the [Hebrew](hebrew.html) calendar the following conventions are to be noted.[[175]](#footnote-175)

The current [Hebrew](hebrew.html) calendar rules are ASSUMED as fixed for all [time](time.html) periods both Past and [future](future.html). The current Gregorian calendar rules are ASSUMED as fixed for all [time](time.html) periods both Past and [future](future.html). All *Gregorian* years will be suffixed with the lower case "g".

Hence, 5757 AM is the year that spans both 1996g and 1997g.

For purposes of convenience, a Gregorian year 0g is assumed to have existed between -1g and 1g. 0g spans 3760 AM and 3761 AM. -1g spans 3759 AM and 3760 AM. 1g spans 3761 AM and 3761 AM. In this convention 0g is a Gregorian leap year.

All [Hebrew](hebrew.html) days begin at exactly 18:00 hours which corresponds to hour 0 of the [Hebrew](hebrew.html) calendar's day. So learn to recognize that in all subsequent calculations hour 0 is actually 18:00 or 6 PM.

The rabbis also divided the hours into 1080 halokim (parts), thus making each part 3 and 1/3 seconds and each minute 18 parts. All calculations are done in days, hours and parts.

The week days are numbered as follows

1 = Sunday

2 = Monday

3 = Tuesday

4 = Wednesday

5 = Thursday

6 = Friday

7 = Saturday

The MOLAD Period

The [time](time.html) of [birth](birth.html) of the [new](new.html) [moon](chodesh.html), i.e., the MOLAD, is determined by the period of the MOLAD. This period was determined to be 29 days, 12 hours, and 793 parts. The molad is an arithmetical result of the calendar computations which very accurately tracks the [time](time.html) of any mean lunar conjunction to within 1 day in 14,000 years.

The 19 Year [Cycle](cycles.html)

The ancient Greek astronomer Meton (c. 4th cent. BCE.) observed that 235 lunation periods brought back the solar year into very close synchronization with the lunar years.

Thus, our scholars created a calendar [cycle](cycles.html) of 19 years consisting of 12 years of 12 lunar months each and 7 years of 13 lunar months each for a total of 235 lunar months.

** (GUCHADZaT)**

The Leap Year Distribution

Our scholars eventually declared years 3 (), 6 (), 8 (), 11 (), 14 (), 17 (zh), and 19 () of the 19 year [cycle](cycles.html) to be leap years of 13 months each.

That distribution is easily remembered by the mnemonic  (GUCHADZaT) which stands for the [Hebrew](hebrew.html) [letters](letters.html) gimel-vov-het aleph-daled-zayyen-tet.

A given [Hebrew](hebrew.html) year is a leap year whenever its value divided by 19 leaves a remainder that is either 0, 3, 6, 8, 11, 14, or 17.

For example, the year 5757 AM (1996g/1997g) is a leap year because after division by 19 the remainder is 0. That by the way also makes it the last year of the 303rd 19 year [cycle](cycles.html).

In a [Hebrew](hebrew.html) leap year a 30 day month is added to the year. This month is today [known](daat.html) as the month of [Adar](feasts.html) I and is inserted immediately after the [Hebrew](hebrew.html) month of [Shevat](feasts.html). In our times, the insertion tends to take place in the February/March period of the Gregorian calendar year.

**Molad shel Tohu** - **** (BaHaRaD)

The  (BaHaRaD) is the acronym given to the [time](time.html) of the Molad shel Tohu (the [birth](thebirth.html) while formless). That took place on the 1st day of Tishrei of the [first](one.html) year of [creation](bara.html), 1 AM.

That molad took place on Sunday (The [Hebrew](hebrew.html) days begin at 0 hours = 6 PM. Hence 5 hours on Monday is actually 11 PM on the civilian Sunday.), September 6, -3760 AM corresponding to the second day of the week (bet - b), 5 hours (hey - v), and 204 halokim (parts) (resh-daled) -s''r. We use this moment as the starting point of the [Hebrew](hebrew.html) calendar, and we calculate every [future](future.html) molad from this point.

**The** [**Time**](time.html) **of Any Molad of Tishrei**

For any given [Hebrew](hebrew.html) year, AM, you [first](one.html) count the [number](nchart.html) of months that have elapsed since the [first](one.html) of Tishrei of [Hebrew](hebrew.html) year 1.

To calculate any molad of Tishrei:

the integer of (235 \* AM - 234) / 19

You then multiply the mean lunation [time](time.html) of 29 days; 12 hours; 793 parts by the integer result for the total [number](nchart.html) of months.

To that [time](time.html) is added the value of  (BaHaRad), and the result provides you with the [time](time.html) of the molad of Tishrei for any [Hebrew](hebrew.html) year.

That value when reduced to days; hours (max of 23); halokim (parts - max of 1079) will give you the [time](time.html) of the molad for target year AM. The total [number](nchart.html) of days is then divided by 7 and the remainder is the day of the week.

[Hebrew](hebrew.html) Year (AM) Lengths

The above rules lead to AM years which can have either: 354, 355, 383, or 384 days.

[Hebrew](hebrew.html) Month Lengths

The [Hebrew](hebrew.html) months basically alternate between 30 and 29 days beginning with the month of [Nisan](feasts.html) as follows:

[Nisan](feasts.html) 30

[Iyar](feasts.html) 29

[Sivan](feasts.html) 30

[Tammuz](feasts.html) 29

[Av](feasts.html) 30

[Elul](elul.html) 29

Tishrei 30

[Heshvan](feasts.html) 29

[Kislev](feasts.html) 30

Tevet 29

[Shevat](feasts.html) 30

([Adar](feasts.html) II 30)

[Adar](feasts.html) 29

For leap years the 30 day month of [Adar](feasts.html) II is added immediately after [Shevat](feasts.html). It is this particular placement of the leap month which forces the use of the Molad Zaken rule. Calendar arithmetic can show that if the leap month is placed prior to the month of [Kislev](feasts.html), then the Molad Zaken postponement rule is not required.

It is now necessary to compute the length of the year. Normally this is done by finding the [Rosh Hashana](teruah.html)h date of the next year and differencing.

When the difference is 355 or 385 days, [Heshvan](feasts.html) gets a day to become 30 days. When the difference is 353 or 383 days, [Kislev](feasts.html) loses a day to become 29 days.

And there you have it... except that no [one](one.html) can tell you over which spot on Earth the Molad shel Tohu took place at BaHaRaD.

An Example

The [time](time.html) of the MOLAD for Tishrei 5758 AM is

2,102,728 days; 4 hours; 129 parts.

Dividing the days by 7 leaves a remainder of 5, which means that the MOLAD of Tishrei 5758 AM occurs on a Thursday. The postponement rules do not apply for this timing of the molad and so [Rosh Hashana](teruah.html)h 5758 AM will begin on Thursday.

The [time](time.html) of the MOLAD for Tishrei 5759 AM is

2,103,082 days; 12 hours; 1005 parts.

Dividing the days by 7 leaves a remainder of 2, which means that the MOLAD of Tishrei 5759 AM occurs on a Monday. The postponement rules do not apply for this timing of the molad and so [Rosh Hashana](teruah.html)h 5759H will begin on Monday.

Taking the days to 5758 AM away from the days to 5759 AM leaves 354.

This means that the length of year 5758 AM is 354 days. And from this information it is now possible to layout, not only all of the calendar details for 5758H, but also all of the religious details that are calendar dependent, such as the occurrences of the Holidays, the Torah portions for any given day, the set of [psalms](psalms1.html) to be read each day, and so on.

The Tekufot of Reb Shmuel are prescribed in accordance to a completely different set of astronomical parameters, and so require additional arithmetic in order to be mapped onto the [Hebrew](hebrew.html) calendar. This arithmetic, among other things, governs the addition or omission of certain liturgical phrases in such [prayers](prayer.html) as the [Amidah](amida.html).

[Hebrew](hebrew.html) to Gregorian Date Conversion

The Constant [Annual](annual.html) Period

The [annual](annual.html) calendar period which begins on the [first](one.html) day of the 29 day month of [Adar](feasts.html) and ends with the 29th day of [Heshvan](feasts.html) forms a constant period of 265 days. It is within that period that may be found all of the biblically ordained [festivals](festivals.html) such as [Pesach](passover.html), [Shavuot](shavuot.html), [Rosh Hashana](teruah.html)h, [Yom Kippur](kippur.html), [Succoth](succoth.html), and [Shemini Atzeret](shemini.html).

The period of [time](time.html) beginning with the [first](one.html) day of [Pesach](passover.html) on [Nisan](feasts.html) 15th up to and including [Shemini Atzeret](shemini.html) which occurs on Tishrei 22nd is exactly 185 days long.

The period of [time](time.html) from the traditional [first](one.html) day of the vernal equinox which is normally March 21st up to and including the traditional day of the autumnal equinox, usually September 21st, is also exactly 185 days long.

It would be interesting to [know](daat.html) whether or not these [two](two.html) periods of [time](time.html) are the same length merely by coincidence.

It is to be noted that the starting day of the constant [annual](annual.html) calendar period is fixed by the [first](one.html) day of Tishrei for the immediately following [Hebrew](hebrew.html) year and not from the day of [Rosh Hashana](teruah.html)h for the current [Hebrew](hebrew.html) year.

The Keviyot - Species of the [Hebrew](hebrew.html) Year

The years of the [Hebrew](hebrew.html) calendar can be laid out in exactly 14 different ways. This is due to the calendar arithmetic.

Each [one](one.html) of these layouts is described uniquely by the week day for [Rosh Hashana](teruah.html)h of that particular year and by that particular year's length. Each of these layouts is [known](daat.html) as a "keviyah" or species.

If a year length is 353 or 383 days the year is called "**haser**", ie, "deficient", because a day is taken away from the month of [Kislev](feasts.html). This keviyah is denoted by the [Hebrew](hebrew.html) [letter](letters.html) ****.

If a year length is 354 or 384 days the year is called "**kesidrah**", ie, "regular", because none of its months are changed. This keviyah is denoted by the [Hebrew](hebrew.html) [letter](letters.html) ****.

If a year length is 355 or 385 days the year is called "**shalem**", ie, "abundant", because a day is added to the month of [Heshvan](feasts.html). This keviyah is denoted by the [Hebrew](hebrew.html) [letter](letters.html) ****.

A [third](three.html) [Hebrew](hebrew.html) [letter](letters.html) is sometimes added to the [first](one.html) [two](two.html) which represents the day of the week for the [first](one.html) day of [Pesach](passover.html) in that year.

The 14 Keviyot

The 14 possible calendar layouts are derived from the fact that if [Hebrew](hebrew.html) years begin on

Mondays then they can have only either 353, 355, 383, or 385 days Tuesdays then they can have only either 354, or 384 days Thursdays then they can have only either 354, 355, 383, or 385 days Saturdays then they can have only either 353, 355, 383, or 385 days.

The Keviyot

Year [Type](types.html) Sequences

The calendar arithmetic develops the following pair-wise sequence of [Hebrew](hebrew.html) (AM) years.

By definition, a leap year cannot immediately follow any other leap year. Regular years can not follow regular years, and neither can deficient years follow deficient years. But abundant years can be followed by abundant years. Regular leap years are always followed by abundant years of 355 days.

The [Hebrew](hebrew.html) Calendar Repetition [Cycle](cycles.html)

The 19 year [cycle](cycles.html) does not cause the [Hebrew](hebrew.html) calendar to repeat itself every 19 [Hebrew](hebrew.html) years. For [one](one.html) thing, no specific demands are made as to what the length of the years ought to be for the 1st, 2nd, 3rd, etc... years other than whether or not these require the additional leap month. Moreover all periods of 19 [Hebrew](hebrew.html) years can be either 6938, 6939, 6940, 6941, or 6942 days each. Since none of these values are exact multiples of 7 it follows that no [two](two.html) consecutive periods of 19 years can begin on the same day of the week. Hence, the [Hebrew](hebrew.html) calendar clearly does not repeat itself after every 19 years.

At [one](one.html) [time](time.html) some authorities suggested that the calendar would repeat itself after every 13 [cycles](cycles.html) of 19 years, that is once every 247 years. However, simple arithmetic shows that the 247 year [cycle](cycles.html) is short by 905 parts (about 50 minutes) in order to be a full repetition. The true calendar repetition [cycle](cycles.html) actually requires 689,472 [Hebrew](hebrew.html) years, which is 36,288 [cycles](cycles.html) of 19 years.

The Accuracy of the [Hebrew](hebrew.html) Calendar

The accuracy of the [Hebrew](hebrew.html) calendar is fixed by the value of the mean lunation period coupled to the 19 year [cycle](cycles.html) of 235 lunar months. That leads to an average [Hebrew](hebrew.html) year length of 365.2468 days.

The mean tropical solar year is about 365.2422 days. Hence, the average [Hebrew](hebrew.html) year is slower than the average solar year by about [one](one.html) day in every 216 years. That means that today, we celebrate the holidays, on average about 8 days later than did our ancestors in 359g at the [time](time.html) that the fixed calendar rules were published.

The Accuracy of the Gregorian Calendar

The actual repeatable [cycle](cycles.html) of the Gregorian calendar is 400 Gregorian years. Hence, the average Gregorian year is 365.2425 days long. That means that the Gregorian calendar is slower than the mean tropical solar year by about 3 days in every 10,000 years. So it too, if left unchecked will cause its dates to [travel](mashal.html) the seasons.

The Relative Rate of the [Hebrew](hebrew.html) Calendar

The above mean values indicate that the average [Hebrew](hebrew.html) year is slower than the average Gregorian year by about 1 day in every 231 years.

In modern terms it simply means that [Rosh Hashanah](teruah.html) cannot occur any earlier than September 5, which last happened in 1899g and will next happen in 2013g. It also means that [Rosh Hashana](teruah.html)h cannot occur any later than October 5, which last happened in 1967g and will next occur in 2043g.

After the year 2089g, [Rosh Hashana](teruah.html)h will not be able to occur any earlier than September 6.

When [Rosh Hashana](teruah.html)h advances to a [new](new.html) day in the Gregorian calendar, it always does so in the 9th year of the 19 year [cycle](cycles.html).

The Most Popular [Rosh Hashana](teruah.html)h Start

An old [Jewish](gen-jew.html) tradition suggests that Tuesday is a good day because it was twice blessed at [Creation](bara.html). (See Genesis 1:9-13). Hence, it should follow that Tuesday would be the most popular day on which to start [Rosh Hashana](teruah.html)h. Amazingly, it ranks a very poor 4th place among the 4 permissible start days of the week.

Moreover, [Yom HaKippurim](file:///D:\Backup%20data\Word\Stars\kippur.html) can never occur on a Tuesday! But all is not lost. Even though [Jewish](gen-jew.html) tradition suggests that [Passover](passover.html) took place on a Thursday, it is Tuesday that is the most popular start day for [Passover](passover.html)!

**\* \* \***

Table "A"

Terminology of the [Hebrew](hebrew.html) Calendar

**Deficient (haser) month**: a month comprising 29 days.

**Full (**[**male**](male+female.html)**) month**: a month comprising 30 days.

**Ordinary year**: a year comprising 12 months, with a total of 353, 354, or 355 days.

**Leap year**: a year comprising 13 months, with a total of 383, 384, or 385 days.

**Complete year (shelemah)**: a year in which the months of [Heshvan](feasts.html) and [Kislev](feasts.html) both contain 30 days.

**Deficient year (haser)**: a year in which the months of [Heshvan](feasts.html) and [Kislev](feasts.html) both contain 29 days.

**Regular year (kesidrah)**: a year in which [Heshvan](feasts.html) has 29 days and [Kislev](feasts.html) has 30 days.

**Halokim(singular, halek)**: "parts" of an hour; there are 1080 halokim per hour.

**Molad (plural, moladot)**: "[birth](birth.html)" of the [Moon](chodesh.html), taken to mean the [time](time.html) of conjunction for modern calendric purposes.

**Dechiyah(plural = dechiyot)**: "postponement"; a rule delaying 1 [Tishri](feasts.html) until after the molad.

The months of [Heshvan](feasts.html) and [Kislev](feasts.html) vary in length to satisfy requirements for the length of the year (see Table "B"). In leap years, the 29-day month [Adar](feasts.html) is designated [Adar](feasts.html) II, and is preceded by the 30-day intercalary month [Adar](feasts.html) I.

Table "B": Classification of Years in the [Hebrew](hebrew.html)

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Calendar** | | |
|  | Deficient | Regular | Complete |
| Ordinary year | 353 | 354 | 355 |
| Leap year | 383 | 384 | 385 |

For calendrical calculations, the day begins at 6 P.M., which is designated 0 hours. Hours are divided into 1080 halokim; thus [one](one.html) chalek is 3 1/3 seconds. (Terminology is explained in Table "A".) Calendrical calculations are referred to the meridian of [Jerusalem](city.html) -- 2 hours 21 minutes [east](east.html) of Greenwich.

Rules for constructing the [Hebrew](hebrew.html) calendar are given in the sections that follow. Cohen (1981), Resnikoff (1943), and Spier (1952) provide reliable guides to the rules of calculation.

**THE** [**FOUR**](four.html) **DECHIYOT[[176]](#footnote-176)**

(Postponement Rules)

The date for [Rosh Hashana](teruah.html)h may be postponed by up to [two](two.html) days depending on the [time](time.html) calculated for the MOLAD.

In addition to the leap year [cycle](cycles.html), the length of each year is slightly adjusted to meet a [number](nchart.html) of constraints called dechiyot. These small adjustments are made by selecting the length of the [two](two.html) months of Cheshvan and [Kislev](feasts.html) to be 29 or 30 days. There are [four](four.html) possible combinations, but only [three](three.html) are actually used:

|  |  |  |  |
| --- | --- | --- | --- |
| **Year Kind** | **Cheshvan** | [**Kislev**](feasts.html) | **length of**  **regular year** |
| Chasera "incomplete" | 29 days | 29 days | 353 |
| Kesidra  "in order" | 29 days | 30 days | 354 |
| ---- | 30 days | 29 days | ---- |
| Shleima "complete" | 30 days | 30 days | 355 |

The [four](four.html) constraints (Dechiyot) that determine the exact year length have to do with the exact timing of the holidays in relation to the phase of the [moon](chodesh.html) and with relations to the day of the week.

The 4 special rules, each of which is called a Dechiyah (or postponement), and each of which serve a particular religious, or arithmetic purpose, are as follows:

**Dechiya 1**

Molad Zaken

The [name](name.html) for this rule is often translated as the "old [moon](chodesh.html)" or "obsolete [moon](chodesh.html)" rule. If the Molad of Tishrei occurs at 18 hours (i.e., noon) or later of a permissible day then the [first](one.html) day of [Rosh Hashana](teruah.html)h is postponed to the next allowable day. In other words, if the [Tishri](feasts.html) molad occurs at or after 18 hours (i.e., noon), then [Tishri](feasts.html) 1 is postponed [one](one.html) day. If this causes [Tishri](feasts.html) 1 to fall on day 1, 4, or 6, then [Tishri](feasts.html) 1 is postponed an additional day to satisfy dechiyah ** -**ADU.

The [moon](chodesh.html) goes in orbit around the Earth. Every month, there is [one](one.html) instance in which the [moon](chodesh.html) is exactly between the Earth and the [sun](hachama.html) and the Earth faces the dark side of the [moon](chodesh.html). This instance is called Molad ("[birth](birth.html)" of a [new](new.html) [moon](chodesh.html)) and it marks the beginning of a [new](new.html) month. The Molad of the [first](one.html) month of the year, Tishrei, marks the [Jewish](gen-jew.html) [New](teruah.html) Year or [Rosh Hashana](teruah.html)h.

Since the Earth is facing the dark side of the [moon](chodesh.html), the [moon](chodesh.html) becomes visible later that day or the next day.

In a year when the Molad of Tishrei occurs after 12:00 noon, [Rosh Hashana](teruah.html)h is postponed until the next day because the [moon](chodesh.html) would not become visible until the next day. This is done by adding [one](one.html) day to the previous year. This rule can postpone [Rosh Hashana](teruah.html)h by up to 2 days.

Some noteworthy scholars have suggested that this rule will guarantee the visibility of the [new](new.html) [moon](chodesh.html) on the [first](one.html) day of [Rosh Hashana](teruah.html)h.

However, simple calendar arithmetic very strongly suggests that the molad zaken rule is no more than an arithmetical device which ensures that the calculated [time](time.html) of any molad does not exceed the [first](one.html) day of any [Hebrew](hebrew.html) month.

This dechiyah is an artifact of the ancient practice of beginning each month with the sighting of the lunar crescent. It is assumed that if the molad (i.e., the mean conjunction) occurs after noon, the lunar crescent cannot be sighted until after 6 P.M., which will then be on the following day.

[***Rosh HaShana***](teruah.html) ***20b*** *Samuel said: I am quite able to make a calendar[[177]](#footnote-177) for the whole of the Diaspora. Said Abba the father of R. Simlai to Samuel: Does the Master* [*know*](daat.html) *[the meaning] of this remark which occurs in [the Baraitha* [*known*](daat.html) *as] the* [*secret*](sod.html) *of the Calendar?[[178]](#footnote-178) ‘If the* [*new*](new.html)[*moon*](chodesh.html) *is born before midday or after midday’? — He replied: I do not. He then said to him: Since the Master does not* [*know*](daat.html) *this, there must also be other things which the Master does not* [*know*](daat.html)*. When R. Zera went up [to Palestine], he sent back word to them [in* [*Babylon*](bavel.html)*]: It is necessary that there should be [on* [*New*](new.html)[*Moon*](chodesh.html)*] a night and a day of the* [*new*](new.html)[*moon*](chodesh.html)*.[[179]](#footnote-179) This is what Abba the father of R. Simlai meant: ‘We calculate [according to] the* [*new*](new.html)[*moon*](chodesh.html)*'s* [*birth*](birth.html)*. If it is born before midday, then certainly it will have been seen shortly before sunset. If it was not born before midday, certainly it will not have been seen shortly before sunset’. What is the practical value of this remark? — R. Ashi said: To [help us in] confuting the witnesses.[[180]](#footnote-180)*

*R. Zera said in the* [*name*](name.html) *of R. Nahman: The* [*moon*](chodesh.html) *is invisible for* [*twenty*](twenty.html)*-*[*four*](four.html) *hours [round about* [*new*](new.html)[*moon*](chodesh.html)*]. For us [in* [*Babylon*](bavel.html)*]* [*six*](six.html) *of these belong to the old* [*moon*](chodesh.html) *and* [*eighteen*](eighteen.html) *to the* [*new*](new.html)*;[[181]](#footnote-181) for them [in Palestine]* [*six*](six.html) *to the* [*new*](new.html) *and* [*eighteen*](eighteen.html) *to the old.[[182]](#footnote-182) What is the practical value of this remark? — R. Ashi said: To confute the witnesses****.***

**Dechiyah 2**

**-**ADU Sunday, Wednesday, Friday

The [name](name.html)  (ADU) is an acronym formed from the [Hebrew](hebrew.html) [letters](letters.html) alef (=1 for Sunday) daled (=4 for Wednesday) vuv (=6 for Friday).

If the Molad of Tishrei falls on Sunday, Wednesday or Friday, [Rosh Hashana](teruah.html)h is postponed by [one](one.html) day to Monday, Thursday or Saturday, respectively.

The reason is that if [Rosh Hashana](teruah.html)h is on Wednesday or Friday, then [Yom Kippur](kippur.html) would occur on Friday or Sunday. That would make [Yom Kippur](kippur.html) adjacent to [Shabbat](sabbath.html) and there would be [two](two.html) consecutive days in which it is forbidden to do any kind of work including the preparation of [food](food.html).

If [Rosh Hashanah](teruah.html) is on Sunday, [Hoshana Rabba](hoshana.html)h would fall on Saturday and that would prevent the custom of 7 Hakafot.

This dechiyah increases the possible year lengths from 4 to 8. These Lengths may be either 353, 354, 355, 356, 382, 383, 384, or 385 days.

**Dechiyah 3 - (GaTaRaD)**

Molad of Regular Year on Tuesday

If the [Tishri](feasts.html) molad of an ordinary year (i.e., of [twelve](twelve.html) months) falls on day 3 at or after 9 hours, 204 halokim, then [Tishri](feasts.html) 1 ([Rosh Hashana](teruah.html)h) is postponed [two](two.html) days to day 5, thereby satisfying dechiyah  -ADU.

This dechiyah prevents an ordinary year from exceeding 355 days. If the [Tishri](feasts.html) molad of an ordinary year occurs on Tuesday at or after 3:11:20 A.M., the next [Tishri](feasts.html) molad will occur at or after noon on Saturday. According to dechiyah molad zaken), [Tishri](feasts.html) 1 of the next year must be postponed to Sunday, which by dechiyah ust -ADU occasions a further postponement to Monday. This results in an ordinary year of 356 days. Postponing [Tishri](feasts.html) 1 from Tuesday to Thursday produces a year of 354 days.

If the Molad of Tishrei of a regular year with 12 months occurs on Tuesday morning, [Rosh Hashana](teruah.html)h would occur on Tuesday. However, this would cause a problem with [Rosh Hashana](teruah.html)h of the following year.

To see why, remember that the length of a regular year can be 353, 354 or 355 days. If [Rosh Hashana](teruah.html)h occurs on Tuesday, we can determine the day of [Rosh Hashana](teruah.html)h of the following year by adding (days-in-year modulu 7) days to Tuesday ([number](nchart.html) modulu 7 is the remainder resulting from dividing the [number](nchart.html) by 7).

|  |  |  |  |
| --- | --- | --- | --- |
| **Year Kind** | **Days in Year** | **Modulu 7** | **Next** [**Rosh Hashana**](teruah.html)**h** |
| Chasera "incomplete" | 353 | 3 | Tuesday + 3 = Friday |
| Kesidra  "in order" | 354 | 4 | Tuesday + 4 = Saturday |
| Shleima "complete" | 355 | 5 | Tuesday + 5 = Sunday |

We can see from this table that if this year has 353 or 355 days, the next [Rosh Hashana](teruah.html)h falls on Friday or Sunday, which contradicts constraint [number](nchart.html) 2.

Therefore this year must have 354 days and the next [Rosh Hashana](teruah.html)h will fall on Saturday. However, the accurate length of a lunar month is 29 days, 12 hours, 44 minutes and 3 1/3 seconds. The accurate length of a lunar year (12 lunar months) is therefore 354 days, 8 hours, 48 minutes and 40 seconds. This means that if the Molad of this year occurs on Tuesday 6 AM, the Molad of the following year will occur on Saturday 2:48:40 PM, and [Rosh Hashana](teruah.html)h will have to be postponed to Sunday according to constraint [number](nchart.html) 1 and then postponed again to Monday according to constraint [number](nchart.html) 2. In order to do that, this year will have to be 356 days long, which is not possible.

The conclusion of the above logic is constraint [number](nchart.html) 3 which states That if a Molad of a regular year occurs after Tuesday 3:22 AM, [Rosh Hashana](teruah.html)h is postponed to Thursday.

 (GaTaRaD) eliminates all 356 day [Hebrew](hebrew.html) years. It is not found in the [Talmud](orallaw.html).

**Dechiyah 4**

 - BaTU TaKaFot

Molad of Leap Year on Thursday

If a Molad of a leap year occurs after Thursday 12:00 noon, the next [Rosh Hashana](teruah.html)h is postponed from Monday to Tuesday.

If the [first](one.html) molad following a leap year falls on day 2 at or after 15 hours, 589 halokim, then [Tishri](feasts.html) 1 is postponed [one](one.html) day to day 3.

This dechiyah prevents a leap year from falling short of 383 days. If the [Tishri](feasts.html) molad following a leap year is on Monday, at or after 9:32:43 1/3 A.M., the previous [Tishri](feasts.html) molad ([thirteen](thirteen.html) months earlier) occurred on Tuesday at or after noon. Therefore, by dechiyot s'ryd (GaTaRaD) and Molad Zaken, [Tishri](feasts.html) 1 beginning the leap year was postponed to Thursday. To prevent a leap year of 382 days, This dechiyah postpones by [one](one.html) day the beginning of the ordinary year.

**ARBAAH SHAARIM[[183]](#footnote-183)** (The [Four](four.html) Gates - for the [four](four.html) dechiyot)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Day of** [**Rosh Hashana**](teruah.html)**h** | **Monday c** | | **Tuesday d** | **Thursday v** | | [**Shabbat**](sabbath.html) **z** | |
| **Length of Year** | j | a | f | (j) f | a | j | a |
| **Day of** [**Passover**](passover.html) | (v) d | (z) v | (z) v | (t) z | (d) t | (d) t | (v) z |
| **Leap Year 3,6,8,11,14,**  **17,19** | [Shabbat](sabbath.html)  12:00 Noon  j''h 'z  1 & 2 | Sunday  2:00 PM 491 ch.  T''m, 'f 't | Monday  12:00 Noon  j''h 'c  1 | Tuesday  12:00 Noon  j''h 'd  1 & 2 | Wednesday  5:00 AM  695 ch.  V''mr, t''h 's | Thursday  12:00 Noon  j''h 'v  1 & 2 | Friday  2:00 PM  491 ch.  T''m, 'f 'u  5 |
| **Regular Year before a Leap Year 2,5,10,13,16** | '' | Sunday  3:00 AM  204 ch.  S''r 'y 't  5 | '' | Tuesday  3:00 AM  204 ch.  s''r 'y 'd  3 | Thursday  3:00 AM  204 ch.  s''r 'y 'v  5 | '' | Friday  3:00 AM  204 ch.  s''r 'y 'u  5 |
| **Regular Year Between** [**two**](two.html) **Leap Years 7,18** | '' | '' | Monday  9:00 AM  589 ch.  y''pe, u''y 'c  4 | '' | '' | '' | '' |
| **Regular Year after a Leap Year 1,4,9,12,15** | '' | '' | '' | '' | '' | '' | Friday  6:00 PM  408 ch.  j'', 'u  6 |

**Notes:**

1. **Molad Zoken** (an old [birth](birth.html)) - The molad ([birth](birth.html) of the [moon](chodesh.html)) falls after noon, so [Rosh Hashana](teruah.html)h must be pushed off to the next day or later.

2. **ts''u** (ADU or [first](one.html) day of the week [t, the [third](three.html) day of the week [s], or the [sixth](six.html) day of the week [u])- [Rosh Hashana](teruah.html)h cannot fall on Sunday, Wednesday, or Friday, so it must be pushed off to the next day

3. **ds''ryd** (GaTRaD - d stands for [third](three.html) day of the week, y for [nine](nine.html) hours, and s''r for 204 halokim) - [Rosh Hashana](teruah.html)h is pushed off from Tuesday to Thursday so that the next [Rosh Hashana](teruah.html)h can fall on Monday.

4. **y''pe, u''yc** (BeTU TaKPaT - c stands for the second day of the week, u''y for the [fifteenth](fifteen.html) hour, and y''xe, for 589 halokim) - [Rosh Hashana](teruah.html)h is pushed off from Monday to Tuesday because the previous year must have 383 days, the minimum length for a leap year.

**The following affect the length of the year only, not the day of** [**Rosh Hashana**](teruah.html)**h:**

5. Next year's molad ([birth](birth.html) of the [moon](chodesh.html)) will be molad Zoken (an old [birth](birth.html)), so the year must be a day longer, but since that would put [Rosh Hashana](teruah.html)h of the next year on [one](one.html) of the impossible days, it is [two](two.html) days longer instead.

6. Next year's molad ([birth](birth.html) of the [moon](chodesh.html)) will be GaTRaD, so the year must be [two](two.html) days longer to push next year's [Rosh Hashana](teruah.html)h from Tuesday to Thursday.

You can verify notes 5 and 6 by adding 5 days, 21 hours, and 589 halokim for a leap year of 4 days, 8 hours, and 876 halokim for a regular year to the times on the chart to get the molad of the following Tishrei.

Determining [Tishri](feasts.html) 1

The calendar year begins with the [first](one.html) day of [Rosh Hashana](teruah.html)h ([Tishri](feasts.html) 1). This is determined by the day of the [Tishri](feasts.html) molad and the [four](four.html) rules of postponements (dechiyot). The dechiyot can postpone [Tishri](feasts.html) 1 until [one](one.html) or [two](two.html) days following the molad. Tabular [new](new.html) moons (maladot) are reckoned from the [Tishri](feasts.html) molad of the year A.M. 1, which occurred on day 2 at 5 hours, 204 halokim (i.e., 11:11:20 P.M. on Sunday, -3760 October 6, Julian proleptic calendar). The adopted value of the mean lunation is 29 days, 12 hours, 793 halokim (29.530594 days). To avoid rounding and truncation errors, calculation should be done in halokim rather than decimals of a day, since the adopted lunation constant is expressed exactly in halokim.

Lunation Constants for Determining [Tishri](feasts.html) 1

**Lunations Weeks-Days-Hours-Halokim**

1 = 4-1-12-0793

12 = 50-4-08-0876

13 = 54-5-21-0589

235 = 991-2-16-0595

Lunation constants required in calculations are shown in the above table. By subtracting off the weeks, these constants give the shift in weekdays that occurs after each [cycle](cycles.html).

Determining the Length of the Year

An ordinary year consists of 50 weeks plus 3, 4, or 5 days. The [number](nchart.html) of excess days identifies the year as being deficient, regular, or complete, respectively. A leap year consists of 54 weeks plus 5, 6, or 7 days, which again are designated deficient, regular, or complete, respectively. The length of a year can therefore be determined by comparing the weekday of [Tishri](feasts.html) 1 with that of the next [Tishri](feasts.html) 1.

[First](one.html) consider an ordinary year. The weekday shift after [twelve](twelve.html) lunations is 04-08-876. For example if a [Tishri](feasts.html) molad of an ordinary year occurs on day 2 at 0 hours 0 halokim (6 P.M. on Monday), the next [Tishri](feasts.html) molad will occur on day 6 at 8 hours 876 halokim. The [first](one.html) [Tishri](feasts.html) molad does not require application of the dechiyot, so [Tishri](feasts.html) 1 occurs on day 2. Because dechiyah **ust -**ADU, the following [Tishri](feasts.html) 1 is delayed by [one](one.html) day to day 7, [five](five.html) weekdays after the previous [Tishri](feasts.html) 1. Since this characterizes a complete year, the months of [Heshvan](feasts.html) and [Kislev](feasts.html) both contain 30 days.

The weekday shift after [thirteen](thirteen.html) lunations is 05-21-589. If the [Tishri](feasts.html) molad of a leap year occurred on day 4 at 20 hours 500 halokim, the next [Tishri](feasts.html) molad will occur on day 3 at 18 hours 9 halokim. Because of dechiyah Molad Zaken, [Tishri](feasts.html) 1 of the leap year is postponed [two](two.html) days to day 6. Because of dechiyot s'ryd (GaTaRaD), [Tishri](feasts.html) 1 of the following year is postponed [two](two.html) days to day 5. This [six](six.html)-day difference characterizes a regular year, so that [Heshvan](feasts.html) has 29 days and [Kislev](feasts.html) has 30 days.

**\* \* \***

The Gregorian (or Julian) calendar is based on the [cycle](cycles.html) of the Earth around the [sun](hachama.html). The length of this [cycle](cycles.html), the solar year, is very close to 365 1/4 days.

The [Hebrew](hebrew.html) calendar on the other [hand](fourteen.html) is based on the [cycle](cycles.html) of the [moon](chodesh.html) around the Earth. The length of this [cycle](cycles.html), the lunar month, is about 29 1/2 days. [Twelve](twelve.html) lunar months make therefore about 354 days, which is 11 1/4 days shorter than the solar year.

In biblical times, the arrival of the [new](new.html) month was determined by watching the phase of the [moon](chodesh.html). However in modern times a fixed calendar is used in which the length of the months alternates between 29 and 30 days. Here are the names of the months in the [Hebrew](hebrew.html) calendar:

1. [Nisan](feasts.html) 30 days

2. [Iyar](feasts.html) 29 days

3. [Sivan](feasts.html) 30 days

4. [Tammuz](feasts.html) 29 days

5. [Av](feasts.html) 30 days

6. [Elul](elul.html) 29 days

7. Tishrei 30 days

8. Cheshvan 29/30 days

9. [Kislev](feasts.html) 29/30 days

10. Tevet 29 days

11. [Shevat](feasts.html) 30 days

12. [Adar](feasts.html) 29 days

The difference of 11 1/4 days between 12 lunar months and [one](one.html) solar year accumulates in [three](three.html) years to more than a month. If no adjustments are made, a summer month like [Av](feasts.html) or [Elul](elul.html) could shift to the winter.

Because the Biblical holidays are closely related to the seasons (for example, the Torah [commands](cmds613.html) to celebrate [Pesach](passover.html) ([Passover](passover.html)) in the spring), an adjustment to the calendar must be made every few years. Every [two](two.html) or [three](three.html) years [one](one.html) extra month is added to a year. Such a year is called a leap year and it has [two](two.html) months of [Adar](feasts.html). Here are the months in a leap year:

1. [Nisan](feasts.html) 30 days

2. [Iyar](feasts.html) 29 days

3. [Sivan](feasts.html) 30 days

4. [Tammuz](feasts.html) 29 days

5. [Av](feasts.html) 30 days

6. [Elul](elul.html) 29 days

7. Tishrei 30 days

8. Cheshvan 29/30 days

9. [Kislev](feasts.html) 29/30 days

10. Tevet 29 days

11. [Shevat](feasts.html) 30 days

12. [Adar](feasts.html) I 30 days

13. [Adar](feasts.html) II 29 days

Holidays that occur in the month of [Adar](feasts.html) (such as [Purim](Purim.html)) are celebrated in [Adar](feasts.html) 2 in a leap year. The same rule is applied to birthdays, anniversaries and other personal [events](feasts.html). The following 19 year [cycle](cycles.html) determines when a year is a leap year:

1. Regular.

2. Regular.

3. Leap.

4. Regular.

5. Regular.

6. Leap.

7. Regular.

8. Leap.

9. Regular.

10. Regular.

11. Leap.

12. Regular.

13. Regular.

14. Leap.

15. Regular.

16. Regular.

17. Leap.

18. Regular.

19. Leap.

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[**New**](new.html)[**Moon**](chodesh.html) **Calculations**

**According to the** [**Oral Torah**](orallaw.html)

**1.** The beginning of the lunar month occurs at the moment of conjunction between the [sun](hachama.html) and the [moon](chodesh.html); i.e. at the moment when the position of the [moon](chodesh.html) is exactly between the earth and the [sun](hachama.html). At this point, termed as the *molad*, or "[birth](birth.html)", the [moon](chodesh.html) is not visible from the earth. At least [six](six.html) hours must pass before a very small portion of the [moon](chodesh.html) will reappear. The day on which this occurs is regarded as the [first](one.html) day of the [new](new.html) month. (Rashi)

[***Rosh Hashana***](teruah.html)***h 20b*** *— The latter statement would be seen to be false,[[184]](#footnote-184) the former statement is not seen to be false.[[185]](#footnote-185)*

*Samuel said: I am quite able to make a calendar[[186]](#footnote-186) for the whole of the Diaspora. Said Abba the father of R. Simlai to Samuel: Does the Master* [*know*](daat.html) *[the meaning] of this remark which occurs in [the Baraitha* [*known*](daat.html) *as] the* [*secret*](sod.html) *of the Calendar?[[187]](#footnote-187) ‘If the* [*new*](new.html)[*moon*](chodesh.html) *is born before midday or after midday’? — He replied: I do not. He then said to him: Since the Master does not* [*know*](daat.html) *this, there must also be other things which the Master does not* [*know*](daat.html)*. When R. Zera went up [to Palestine], he sent back word to them [in* [*Babylon*](bavel.html)*]: It is necessary that there should be [on* [*New*](new.html)[*Moon*](chodesh.html)*] a night and a day of the* [*new*](new.html)[*moon*](chodesh.html)*.[[188]](#footnote-188) This is what Abba the father of R. Simlai meant: ‘We calculate [according to] the* [*new*](new.html)[*moon*](chodesh.html)*'s* [*birth*](birth.html)*. If it is born before midday, then certainly it will have been seen shortly before sunset. If it was not born before midday, certainly it will not have been seen shortly before sunset’. What is the practical value of this remark? — R. Ashi said: To [help us in] confuting the witnesses.[[189]](#footnote-189)*

*R. Zera said in the* [*name*](name.html) *of R. Nahman: The* [*moon*](chodesh.html) *is invisible for* [*twenty*](twenty.html)*-*[*four*](four.html) *hours [round about* [*new*](new.html)[*moon*](chodesh.html)*]. For us [in* [*Babylon*](bavel.html)*]* [*six*](six.html) *of these belong to the old* [*moon*](chodesh.html) *and* [*eighteen*](eighteen.html) *to the* [*new*](new.html)*;[[190]](#footnote-190) for them [in Palestine]* [*six*](six.html) *to the* [*new*](new.html) *and* [*eighteen*](eighteen.html) *to the old.[[191]](#footnote-191) What is the practical value of this remark? — R. Ashi said: To confute the witnesses.*

*The Master has just said: It is necessary that there should be [on* [*New*](new.html)[*Moon*](chodesh.html)*] a night and a day of the* [*new*](new.html)[*moon*](chodesh.html)*. Whence is this rule derived? — R. Johanan said: [From the text]. From evening to evening;[[192]](#footnote-192) Resh Lakish said: [From the text], Until the* [*twenty*](twenty.html)*-*[*first*](one.html) *day of the month in the evening.[[193]](#footnote-193) What practical difference is there between them? — Abaye said: The difference between them is only* [*one*](one.html) *of exegesis.[[194]](#footnote-194) Raba said: They differ in regard to [the hours up to] midnight.[[195]](#footnote-195)*

**2.** The [moon](chodesh.html) resembles a cosmic clock which orbits the earth on the average of 29 days, 12 hours plus 793 parts of an hour (29.53059 days). This figure allows for computing in advance all [new](new.html) moons and their respective holidays.

**3.** In order to calculate the appearance of any [new](new.html) [moon](chodesh.html) in advance (especially Tishrei and [Nisan](feasts.html)) it is necessary to [know](daat.html) in addition to the rate of the [moon](chodesh.html)'s orbit, the exact moment at which the cosmic clock went into operation.

***Bereshit (Genesis) 1:14-15*** *And God said, "Let there be* [*lights*](lights.html) *in the expanse of the sky to separate the day from the night, and let them serve as* [*signs*](signs.html) *to mark seasons and days and years, And let them be* [*lights*](lights.html) *in the expanse of the sky to give light on the earth." And it was so.*

**A.** According to the position of Rebbi Eliezer (Pirkei D'Rebbi Eliezer chapter 8, Pesikta Rabati 46, [Midrash](orallaw.html) Vayikra Raba Parashat Emor chapter 29a) when [Adam](adam.html) was created on the [sixth](six.html) day of [creation](bara.html), that day was the [first](one.html) of Tishrei, [New](teruah.html) Year's day. Days 1,2,3,4, and 5 of [Creation](bara.html) took place successively on the 25, 26, 27, 28, and 29th of the month of [Elul](elul.html) of the previous hypothetical year. This entire hypothetical year preceding the [first](one.html) [New](teruah.html) Year's day is called Shanat Tohu or Primordial Year.

[New](teruah.html) Year's Day, Tishrei 1, is called Yom Harat Olam, the [birth](thebirth.html)-day of the [world](worlds.html) referring not to the [world](worlds.html) which was created on the 25th of [Elul](elul.html) but to [Adam](adam.html) for whom the [world](worlds.html) was created. (Rashi's commentary to Mahtzor Vitri.)

**B.** According to the Oral Tradition (Tosfot on [Rosh Hashana](teruah.html)h 8a, Rabbi Ovadiah ben David on Rambam *Sanctification* of the month 6:8) the [first](one.html) [New](new.html) [Moon](chodesh.html) occurred exactly at the end of the second hour of the [sixth](six.html) morning (12 + 2 hours from [sun](hachama.html) set at the end of the [fifth](five.html) day of [Creation](bara.html)) when [Adam](adam.html) was created. This [first](one.html) [New](new.html) [Moon](chodesh.html) is called 6/14 (14 full hours into the [sixth](six.html) day) and is coded in [Hebrew](hebrew.html) as V/YD. (Vav equals 6, Yod-Dalet equals 14). The Oral Tradition therefore reveals that the verse "they shall be as [signs](signs.html)..." places the [first](one.html) actual [New](new.html) [Moon](chodesh.html), not on the [fourth](four.html) day when the luminaries were suspended, but on the [sixth](six.html) day of [Creation](bara.html), when [Adam](adam.html), for whose use they were made, was created.

**5.** Now we [know](daat.html) not only the mean-length of the lunar month but the exact moment when the "cosmic clock" went into operation (V/YD). We may now ascertain the appearance of any [New](new.html) [Moon](chodesh.html) is advance by calculating the [number](nchart.html) of months that have passed since the [first](one.html) [New](new.html) [Moon](chodesh.html) (V/YD) and multiplying by 29.53059. (For a discussion of "simple" (12 months) and "plenary" or "pregnant" years (13 months) which would have to be taken into consideration for such a calculation see Rambam *Sanctification 6:10-13*.

**6**. However, it is critical to bear in mind that the hypothetical year (Shanat Tohu) that preceded the [first](one.html) actual [New](new.html) [Moon](chodesh.html) V/YD consisted of only [five](five.html) days ([Elul](elul.html) 25, 26, 27, 28, and 29) and that the present [Jewish](gen-jew.html) calendar takes the beginning of Shanat Tohu as its starting point in order not to omit these 5 days! Our calculations therefore must make up for the approximately 11 months 24.5 days which are missing if we would start at V/YD.

**7**. In order to prevent unnecessary complications of this sort and enable us to calculate in whole years, the sages employed a method which is scientifically accepted today as well, of calculating backwards or extrapolation.

**8**. Calculating backwards: By means of extrapolation we can calculate the [first](one.html) hypothetical [New](new.html) [Moon](chodesh.html) which would have occurred if the [World](worlds.html) ([time](time.html)) had been created at the beginning of the year instead of at its end. By simply calculating backwards 12 lunar month [cycles](cycles.html) of 29 days 12 hours 793 parts from V/YD we arrive at Molad Tohu, the Primordial [New](new.html) [Moon](chodesh.html).

**9**. It is understood that this extrapolation is built in such a way that from the Molad Tohu a period of exactly 12 months would bring us forward to the [first](one.html) actual [New](new.html) [Moon](chodesh.html) V/YD.

**10.** The advantage of employing the concept of Molad Tohu (Primordial [New](new.html) [Moon](chodesh.html)) as the starting point for the [Jewish](gen-jew.html) calendar, allows us to work in whole years in the ascertaining of any [New](new.html) [Moon](chodesh.html) we wish to [know](daat.html). (The missing 11 months 29.5 days of the [first](one.html) hypothetical year are automatically included).

**11.** The calculation: When we subtract 12 times 29 days 793 parts from the 14th hour of the [sixth](six.html) day (V/YD) we obtain the Primordial [New](new.html) [Moon](chodesh.html): 2 days 5 hours 204 parts (or 5 hours and 204 parts of an hour into the second day of the [first](one.html) week of the previous hypothetical year). In [Hebrew](hebrew.html) this [number](nchart.html) is coded B/H/RD, 2d 5h 204p. (Beit equals 2, hey equals 5, Resh-dalet equals 204).

[Creation](bara.html) of the [World](worlds.html)

|

1 2 3 4 5 6 7

| | | | | | |

|-------------------------------------------------------------------[Shabbat](sabbath.html)

|

[Shabbat](sabbath.html) 25th [Elul](elul.html) of Primordial Year |

|

Primordial [New](new.html) [Moon](chodesh.html)

B/H/RD [First](one.html) [New](new.html) [Moon](chodesh.html) V/YD

|------------------------ 12 months ---------------------| [New](teruah.html) Years Day

Tishrei of 2nd Year.

A. V/YD minus 12(29d 12h 793p) =

B. 6d 14h minus 354d 8h 876p) =

C. 6d 14h minus (50 weeks\* + 4d 8h 876p)=

D. 6d 13h 1080p) =

---------------------

2d 8h 876p) = B/H/RD

\* Note: Since we are only interested in the day, hour and parts of an hour, we may conveniently drop whole weeks from the calculation.

**A.** Maimonides [Laws](law.html) of Sanctifying the [Moon](chodesh.html) 6:8 The very [first](one.html) conjunction with which you begin, however, is the conjunction of the [first](one.html) year of [Creation](bara.html), which occurred in the [fifth](five.html) hour and [two](two.html) hundred and [fourth](four.html) part of an hour of the night of Monday - in numerals: 2d 5h 204p; and this is the starting point of the calculations.

**B.** Rabbi Ovadia ben David - Commentary on Maimonides ibid. "2d 5h 204p ( B/H/RD ); and this is the starting point of the calculation"...

[Know](daat.html) that [Adam](adam.html), the [first](one.html) man, was created at the end of the second hour (beginning of the [third](three.html) hour) of the morning of the [sixth](six.html) Day of [Creation](bara.html), for the Sages have [taught](teacher.html): At the beginning of the [first](one.html) hour... Now, since [five](five.html) full days plus 14 hours of the [sixth](six.html) day (5 days, 12 hours of night, 2 hours of day) had passed before [Adam](adam.html)'s formation, we needed to [know](daat.html) (and this is why Rambam refers to this in this [Halacha](walking.html)) retroactively the [New](teruah.html) Year's Day (Tishrei of the primordial year) from which all the previous hypothetical months began. That [New](teruah.html) Year's Day is B/H/RD.

**12**. From the previous discussion it follows that V/YD and B/H/RD are both [known](daat.html), it is clearly possible to calculate the length of the lunar month (29d 12h 793p or 29.53059) without any difficulty!

**13**. The [Hebrew](hebrew.html) code-word B/H/RD which is connected to the [Creation](bara.html) of the [World](worlds.html) (primordial [New](teruah.html) Year) is intrinsically related to the sacred 42 [letter](letters.html) [name](name.html) of [HaShem](hashem.html).

Bachya (13th century AD) used an ELS with spacing 42 that started with the [first](one.html) [letter](letters.html) of Genesis - D then went to the 42nd [letter](letters.html) following that D - R then went to the 42nd [letter](letters.html) following that R - H then went to the 42nd [letter](letters.html) following that H - B to produce the sequence DRHB, which he showed to produce the 29.530594 day synodic Lunar month. Bachya did not claim to have discovered the Torah-coding of the [Jewish](gen-jew.html) Lunar month, but gave credit to Nechunya (1st century AD).

**C**. [**Mishna**](orallaw.html) **Hagiga 11b**. The (subject of) forbidden relations may not be expounded in the presence of [three](three.html), nor the work of [creation](bara.html) in the presence of [two](two.html), nor (the work of) the chariot in the presence of [one](one.html), unless he is a sage and understands of his own [knowledge](knowledge.html). Whosoever speculates upon [four](four.html) things, a pity for him! He is as though he had not come into the [world](worlds.html), (to wit), what is above, what is beneath, what before, what after. And whosoever takes no thought for the honor of his Maker, it were a mercy,

if he had not come into the [world](worlds.html).

**D**. **Tosfot** "The work of [Creation](bara.html) may not be expounded..." Rabeinu Tam explained that this refers to the 42 [letter](letters.html) [Name](name.html), which is coded in the [first](one.html) verse of the Torah and the verse following it.

**E. Kiddushin 71a** Rab Judah said in Rab's [name](name.html): The [forty-two](fortytwo.html) lettered [Name](name.html)[[196]](#footnote-196) is entrusted only to him who is pious,[[197]](#footnote-197) meek, middle-aged,[[198]](#footnote-198) free from bad temper, sober,[[199]](#footnote-199) and not insistent on his rights. And he who knows it, is heedful thereof,[[200]](#footnote-200) and observes it in [purity](purity.html), is beloved above and popular below, feared by man,[[201]](#footnote-201) and inherits [two](two.html) [worlds](worlds.html), this [world](worlds.html) and the [future](future.html) [world](worlds.html).[[202]](#footnote-202)

**\* \* \***

The following section was from Jeff Stewart:

1080 halekim = 1hr = 1080prt

(1080prt/hr x 1hr/3600sec) = .3prt/sec = 1sec = .3prt

1 sec / .3prt = x sec / 1prt => x sec = (1sec / .3prt) x ( 1prt ) => x sec= 3.333sec 1prt = 3.333sec

The hour is divided into 1080 parts, which are called “halekim”.

( 1dy x 24hr/dy ) = 24hr/dy (24hr/dy x 1080prt/hr ) = 25,920prt/dy 1dy = 25,920prt

( 24hr/dy x 60min/hr ) = 1440 min/dy ( .3prt/sec x 60sec/min ) = 18prt/min 1min = 18prt

( 1440min/dy x 60sec/min ) = 86,400sec/dy

1prt = 3.333sec

1sec = .3prt

1min = 18prt

1hr = 1080prt

1dy = 25,920prt

V/YD - B/H/RD [First](one.html) [New](new.html) [Moon](chodesh.html) - Year Before 1st [New](new.html) [Moon](chodesh.html)

\_\_\_\_\_\_\_\_\_\_\_\_\_ = 29dy 12hr 793prt \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

12months 12months

29dy 12hr 793prt = 29.53059 days (Will prove later) This is the mean length of the lunar month. This figure allows for calculating all [future](future.html) [New](new.html) Moons and their respective holidays.

In order to calculate the appearance of any [New](new.html) [Moon](chodesh.html) in advance (especially Tishrei and [Nisan](feasts.html)) it is necessary to [know](daat.html) in addition to the rate of the [moon](chodesh.html)’s orbit, the exact moment at which the cosmic clock went into operation. The clock went into operation on V/YD the 6th day 14th hour. We may now ascertain the appearance of any [New](new.html) [Moon](chodesh.html) in advance by calculating the [number](nchart.html) of months that have passed from the [first](one.html) [New](new.html) [Moon](chodesh.html) (V/YD) and multiplying by 29.53059.

Man was created on the 14th hour of the 6th day according to oral tradition. We [know](daat.html) from Torah that man was created on the 6th day. The [sixth](six.html) day would have started after the sunset of the [fifth](five.html) day (it was dark then). Tradition holds that man was created after sunrise on the 6th day. (6:30pm - 8:30am Sept. 15th)

**Su Mo Even** [**Number**](nchart.html) **of Weeks (50) (350days) (0-0) Sat Su M T W T F Sa**

|---|---|----------------------------------------------------------------------------------------|---|---|---|---|---|---|---|

0 🡨---------------------------------------50weeks------------------------------------🡪 0

|---|---|----------------------------------------------------------------------------------------|------------------|

0 B/H/RD 12months (0 -0) [World](worlds.html) Created V/YD

Molad[[203]](#footnote-203) Tohu Shonat Tohu - Primordial Year 0 day 6th day 14hr

Tishrei 1 [Elul](elul.html) 25 (hypothetical) Tishrei 1

Primordial [New](new.html) [Moon](chodesh.html)[[204]](#footnote-204) Yom Harat Olam

2dy 5hr 204prt (B-day of the [World](worlds.html))

Monday Night (~11:30pm) Friday Morning (~8:30am)

Assuming Tishrei Sunset is around 6:30pm

[First](one.html) [New](new.html) [Moon](chodesh.html) = Tishrei 1 (Mid-September [Rosh Hashana](teruah.html)h)

Man Created on V/YD according to oral tradition. B/H/RD is taken from Genesis 1. Count every 42nd [letter](letters.html) from the [first](one.html) [letter](letters.html) in Bereshit and you will come up with B/H/RD. The [number](nchart.html) 42 is related to the sacred [name](name.html) of [HaShem](hashem.html).

**B/H/RD**

B = Monday Second Day (Bet = 2)

H = 5hrs (Hey = 5)

RD = 204prts ( Resh = 200, Dalet = 4)

B/H/RD = 2nd day 5th hour 204th part of the hour

The Molad is the exact beginning of the [New](new.html) [Moon](chodesh.html), it is when the [Moon](chodesh.html) is exactly between the Earth and the [Sun](hachama.html). [Six](six.html) hours must pass before the [New](new.html) [Moon](chodesh.html) is visible to people on Earth. When the [moon](chodesh.html) is visible, this is the [first](one.html) day of the [New](new.html) [Moon](chodesh.html).

Remember that the accepted [New](teruah.html) Year is [Nisan](feasts.html) (for [creation](bara.html)?)

The verse Genesis 1:14-15 ( … and they shall be for [signs](signs.html), and for [appointed](settimes.html) seasons, and for days, and years.” ) takes place on the 6th day, when man was created and can now see the [signs](signs.html).

By watching the [moon](chodesh.html) every month, we can tell that there are about 29.5 days in a month.

Man was created on Friday morning (at the exact [time](time.html) of the [New](new.html) [Moon](chodesh.html)) and the Primordial [New](new.html) [Moon](chodesh.html) was on Monday ( a hypothetical year before). That means that if the [number](nchart.html) of days that are in a lunar month are ABOUT 29.5 then there would be ABOUT 354 days in the lunar year. Monday Evening to Monday Evening ( 50wk x 7dy/wk) = 350 days.

Mon - Mon 11:30pm = 50wks. Add 4days and 12hrs Tu=351 Wed=352 Th=353 Fri=354th day. Remember that actually only 5 full days had passed and 14 hrs, but we used the codified 6/14 in the equation. This gives an illusion of an extra day when figuring out the day of the week.

Now sometimes this 50 wk [number](nchart.html) is dropped in the calculation in order to simplify things and round out to the exact minute.

The actual calculation is [(V/YD - B/H/RD) + 50wks] / 12months

[First](one.html) real [New](new.html) [Moon](chodesh.html) was on V/YD (during the day?) hypothetical [new](new.html) [moon](chodesh.html) was on B/H/RD

[(V/YD - B/H/RD) +50wk] / 12mo = X X = 29.53059dy/mo Calculating this [number](nchart.html)

V/YD = 6dy 14hr

B/H/RD = 2dy 5hr 204prt

50wk = 350dy

Minus ( - ) means “the difference”

[(6dy 14hr 0prt - 2dy 5hr 204prt) + 350dy] / 12mo => 6dy 13hr 1080prt - 2dy 5hr 204prt =>

(4dy 8hr 876prt - 350dy) / 12mo

4dy/12mo = 1/3 dy/mo OR .33333 dy/mo

8hr/12mo = 2/3 hr/mo OR .66666 hr/mo => [convert](aliens.html) to parts => (.66666hr/mo x 1080prt/hr )=720prt/mo

876prt/12mo = 73prt/mo OR 73prt/mo

350dy/12mo = 29 1/6 dy/mo OR 29.16666 dy/mo

(29.16666dy + .33333dy + .66666hr + 73prt)/mo => 29.5dy + 720prt + 73 prt => 29dy 12hr 793prt / mo

(793prt/ x dy) = 25,920prt/dy => x dy = 793prt / (25,920prt/dy) = .03059dy

(finding out how much of a day 793 parts is) (.5dy = 12hr)

29.5dy + .03059dy = 29.53059dy (is the mean length of [one](one.html) lunar month)

**\* \* \***

**NOAH'S CALENDAR**

The Torah tells us that Noah settled in Israel after the great Flood and we [know](daat.html) that he brought a calendar with him. The years of Noah's calendar were reckoned from his [birth](birth.html):

***Bereshit (Genesis) 7:11*** *"In the* [*six*](six.html) *hundredth year of Noah's life, in the second month, the seventeenth day of the month, the same day were all the fountains of the great deep broken up, and the windows of* [*heaven*](heaven.html) *were opened".*

There are several calendar references in the account of the Flood, including a [seventh](seven.html) month, a tenth month, and the [first](one.html) and second months of Noah's 601st year. There is [one](one.html) curious footnote - a period of [five](five.html) months is numbered at 150 days. It seems that Noah used 30 day months. A true lunar month would have alternated between 29 and 30 days; leading to a [five](five.html) month period of either:

29 30

30 29

29 30

30 29

29 30

\_\_\_ \_\_\_

147 148

Even if we took into account the months of Cheshvan and [Kislev](feasts.html) which can both have 30 days, we would have 149 days. With the current calendar, 150 days would be unachievable. Since Noah and his family were the only ones alive, they obviously did their own sightings, from the [ark](ark.html). Here is evidence to suggest that the lunar orbit was different in Noah's day.

**QUESTIONS**

**QUESTION**: Do all [Jews](gen-jew.html) use the popular [Jewish](gen-jew.html) calendar?

**ANSWER**: No. The Karaite [Jews](gen-jew.html), though an integral part of the [Jewish](gen-jew.html) [nation](nations.html), do not use the popular [Jewish](gen-jew.html) calendar because of the human traditions listed above and other reasons besides.[[205]](#footnote-205)

"Why do the Rabbanites differ from us (Karaites) in regard to the dates of their holy days? In ancient times, all Israel sanctified the [new](new.html) [moon](chodesh.html) according to actual observance, by eye-witnesses. The Karaites use Genesis 1:14 and [Psalm](psalms1.html) 104:19 to support their claims; that in the year 801 C.E., the Rabbanites abandoned this so called "scriptural" custom and introduced a calendar reform, which included the following innovations:

A. [PASSOVER](passover.html) ([Pesach](passover.html)) can never fall on Monday, Wednesday or Friday: and it must coincide with the day of the 9th of [Av](feasts.html) of that year.

B. [SHAVUOT](shavuot.html) can never fall on a Tuesday, Thursday, or Friday and it must coincide with the second day of [Passover](passover.html)...

C. [ROSH HASHANA](teruah.html)H (Feast of Trumpets) can never fall on a Sunday, Wednesday or Friday, and must coincide with the [third](three.html) day of [Passover](passover.html) ...

D. YOM HAKIPPURIM can never fall on Sunday, Tuesday or Friday, and must coincide with the [fifth](five.html) day of [Passover](passover.html).

E. [PURIM](Purim.html) can never fall on the [Sabbath](sabbath.html) (Saturday), Monday, or Wednesday and must coincide with the [sixth](six.html) day of [Passover](passover.html).

The Karaite's say that the rabbinic "rules" have no basis in the scripture, and are inventions of the Rabbis. In contrast the Karaites continue to base their calendar on the actual observance of the [new](new.html) [Moon](chodesh.html). Therefore the holy days fall on different days."

So, lets examine the scripture, cited by the Karaites, to see if there is scriptural support for their visual sightings. Let's start with Genesis 1:14-15:

***Bereshit (Genesis) 1:14-5*** *And God said, "Let there be* [*lights*](lights.html) *in the expanse of the sky to separate the day from the night, and let them serve as* [*signs*](signs.html) *to mark seasons and days and years, And let them be* [*lights*](lights.html) *in the expanse of the sky to give light on the earth." And it was so.*

I do not see any mention of witnesses or the need to actually sight the [new](new.html) [moon](chodesh.html) in the above passage. Let's see if there is any mention in the [Psalm](psalms1.html) passage:

***Tehillim (***[***Psalm***](psalms1.html)***) 104:19*** *The* [*moon*](chodesh.html) *marks off the seasons, and the* [*sun*](hachama.html) *knows when to go down.*

Again, I do not see any mention of witnesses or the need to actually sight the [new](new.html) [moon](chodesh.html) in the above passage.

The scripture seems to agree that the Karaites are doing what seems "right in their own [eyes](body.html)". This was overwhelmingly condemned by the scriptures:

***Shoftim (Judges) 21:25*** *In those days Israel had no king; everyone did as he saw fit.*

***Devarim (Deuteronomy) 12:8-9*** *You are not to do as we do here today, everyone as he sees fit, Since you have not yet reached the resting place and the* [*inheritance*](inherit.html)[*HaShem*](hashem.html) *your God is giving you.*

***Tehillim (***[***Psalm***](psalms1.html)***) 12:4*** *Who have said, With our* [*tongue*](spirit.html) *will we prevail; our lips [are] our own: who [is] lord over us?*

In conclusion, there is no support for the Karaite's contention that the majority of [Jews](gen-jew.html) are using the wrong dates. The matter of "sighting" the [new](new.html) [moon](chodesh.html) was a matter of oral [law](law.html) before the Karaite's, and the current manner of sanctifying the [new](new.html) [moon](chodesh.html) is also from that same oral [law](law.html).

**\* \* \***

**For further** [**study**](study.html)**:**

"Understanding the [Jewish](gen-jew.html) Calendar", by Nathan Bushwick, Moznaim Publishing 1989

"The B'nai Yissasschar: A Thematic Translation and commentary" in "[Worlds](worlds.html) of [Jewish](gen-jew.html) [Prayer](prayer.html): A Festschrift in Honor of Rabbi Zalman M. Schacter-Shalomi, ed. Shoshana Harris Wiener and Jonathan [Omer](omer.html)-Man, Hillel Goelman, Jason Aronson Inc 1994

"Foundation of Astronomy", [Michael](angels.html) A. [Seeds](flower.html), Wadsworth Publishing Company - Belmont WA.

**SEASONAL IMPLICATIONS**

Lauren Schiff <Laurenrs@aol.com wrote:

My Artscroll Siddur says to add the words `tal u'matar' [[prayer](prayer.html) for rain] starting the evening of December 4th. Later I saw in the Book of our Heritage that it says December 5th. Which date is correct?

The Book of our Heritage is correct.

In Talmudic times, the rainy season in [Babylon](bavel.html) started 60 days after the autumn `tekufa' -- i.e., the halachic equinox. That's the [time](time.html) of year when the [Jews](gen-jew.html) in [Babylon](bavel.html) started to [pray](prayer.html) for rain. The Sages fixed this date for all Diaspora [Jews](gen-jew.html).

Whereas all [Jewish](gen-jew.html) holidays are based on the [moon](chodesh.html) and don't correlate to the civil calendar, the `tekufa' is based on the [sun](hachama.html). That's why it's the only yearly [Jewish](gen-jew.html) occurrence associated with the civil calendar.

The Talmudic sage Shmuel approximated the year to be 365 and 1/4 days long. The `tekufa' is based on this figure. The Roman calendar established by Emperor Julius Caesar is based on the exact same figure -- 365 1/4 days. For a thousand years, everything was rosy.

But in 1582 Pope Gregory XIII changed the calendar to what is now [known](daat.html) As the Gregorian calendar, which is the [one](one.html) currently in use. According to this calendar, every [fourth](four.html) year is a leap year except those century years which cannot be divided by 400. For example, the year 1600 was a leap year, but the years 1700, 1800 and 1900 were not. The year 2000 is a leap

year.

So the year 1900, which was a leap year according to the Julian calendar, was not a leap year according to the Gregorian. Therefore, the calculations made in the 1800s are no longer valid.

Most current English [prayer](prayer.html) books today are based on reprinting [prayer](prayer.html) books from the 1800s; hence, the mistake. Therefore, the words `V'tein tal u'matar L'vracha' -- 'Give dew and rain for blessing' -- should have been added this year on the [fifth](five.html) of December, and not on the [fourth](four.html).

Sources:

o Tractate Ta'anit 10a

o Shulchan Aruch Orach Chaim 117:1

o Iggrot Moshe Orach Chaim 4:17 that the `tekufa'

is according to Shmuel

o Rabbi Yedidya Menat, author of Luach Kir

[\* In Volume II, Danny Koffman wrote: In Chapter 3, [Mishna](orallaw.html) 2 in Berakhot it says "(We) ask for the [rains](rains.html) in The Blessing of the Seasons...". Kehati says in his commentary: (the insertion), 'and give dew and rain', is added from the 7th of [Mar] Cheshvan until the Mincha service of the day before [Pesach](passover.html). This is the custom in all of [Eretz Israel](city.html). Elsewhere it is recited on the sixtieth day after the "tekufah of Tishrei" (i.e. the autumnal equinox). ]

Now that we don't have Babylonia as the seat of the diaspora, many feel That the proper [time](time.html) would be in coordination with Israel's [time](time.html) slot. The Rosh raises this question and even suggests that the custom should prevail to be on the [seventh](seven.html) of MARCHESHVAN. The Rema and the other rishonim do not concur and we are forced to start reciting, "v'[ten](ten.html)" at the [time](time.html) of the rest of the diaspora.

Additionally, there is a solar blessing, Birkhat [Hachama](hachama.html), once every 28 years which celebrates the [sun](hachama.html) being in its original position as the [time](time.html) of [creation](bara.html).

I wonder if anyone can suggest a solution to a seasonal problem my son-in-[law](law.html), [Adam](adam.html), and I found while learning [Mishna](orallaw.html) the other day. In Chapter 3, [Mishna](orallaw.html) 2 in Berakhot it says "(We) ask for the [rains](rains.html) in the Blessing of the Seasons...". Kehati says in his commentary: (the insertion), 'and give dew and rain', is added from the 7th of Marheshvan until the Mincha service of the day before [Pesach](passover.html). This is the custom in all of [Eretz Israel](city.html). Elsewhere it is recited on the sixtieth day after the "tekufah of Tishrei" (i.e. the autumnal equinox). Our query is, why the reliance on the solar calendar outside Israel? I can't think of another situation where it is used - though [Adam](adam.html) thinks there is a solar blessing every 24 years.

The designated period during which we recite the bracha of veten tal umatar (and give dew and rain) corresponds to the rainy periods in [Bavel](bavel.html) (Babylonia), where most of the [Jews](gen-jew.html) lived at the [time](time.html) the [prayers](prayer.html) were developed. The [Gemara](orallaw.html) Ta'anit 10a explains that this period begins on the sixtieth day of the autumn season. (It makes sense for the date to be based on the solar calendar since seasons are solar based). It should be noted, that this declaration applies to Eretz Yisrael as well. However, a provision was made for Eretz Yisrael because it was assumed that Israel needed more water. Thus, they decided that the Israeli inhabitants should start saying this bracha on the [seventh](seven.html) of Cheshvan . In other words, originally, the solar calendar was relied upon in both Israel and outside of Israel; the [law](law.html) was just changed a bit.

**\* \* \***

**Dates of the** [**Passover**](passover.html)

**near the** [**time**](time.html) **of** [**Yeshua**](yeshua.html) **Crucifixion**

**Year Biblical Rabbinical**

**C.E. Calculation Calculation**

28 Wednesday, 28 April Monday, 26 April

29 Monday, 18 April [Sabbath](sabbath.html), 16 April

30 Friday, 7 April Wednesday, 5 April

31 Wednesday, 25 April Wednesday, 25 April

32 Monday, 14 April Monday, 14 April

33 [Sabbath](sabbath.html), 1 May Friday, 3 April

34 Thursday, 22 April Wednesday, 21 April

**\* \* \***

Astronomical Accuracy or a Grab for Power?

The [Jewish](gen-jew.html) Controversy about Calendar Postponements

[**Saadia's controversy with Ben Meir about** [**Hebrew**](hebrew.html) **calendar postponements in 921 C.E. mirrors modern arguments in which a power struggle is disguised as a concern about calendar computation for** [**new**](new.html) **moons, months, years, Holy days and Feasts involving lunar-solar approximation. Remember: "The Calendar was made for man, not man for the Calendar!"**]

*From "Saadia Gaon: His Life and Works" by Henry Malter, Philadelphia: The* [*Jewish*](gen-jew.html) *Publication Society of America. 1921. Chapter IV. Saadia's Controversy with Ben Meir. pp. 70-88*

"I should prefer to escape discussion of a subject that ranks as [one](one.html) of the obscurest and most complicated in [Jewish](gen-jew.html) literature. Besides, the origin and history of the [Jewish](gen-jew.html) calendar does not readily lend itself to a popular presentation. Our purpose here will be served best by a brief summary of principles, avoiding as far as possible the details of computation.

It is generally accepted that the [Jewish](gen-jew.html) [festivals](festivals.html) were, in Biblical times, fixed by observation of both the [sun](hachama.html) and the [moon](chodesh.html). Gradually, certain astronomical rules were also brought into requisition, primarily as a test, corroborating or refuting the testimony of observation. Such rules are mentioned for the [first](one.html) [time](time.html) in the Book of Enoch, in the Book of Jubilees, in the Mishnah, and later in the [two](two.html) Talmudim [[Babylonian](bavel.html) and [Jerusalem](city.html)]. It has been authoritatively proved that in spite of a more advanced [knowledge](knowledge.html) of astronomy the practice of fixing the [new](new.html) [moon](chodesh.html) and the [festivals](festivals.html) by observation was in force as late as the latter part of the [fifth](five.html) century. The right to announce the [new](new.html) [moon](chodesh.html) after receiving and testing the witnesses who had observed its appearance was the prerogative of the Palestinian Patriarchs, and the repeated attempts of the authorities in Babylonia to arrogate this right unto themselves were promptly frustrated by interdicts from Palestine. With the beginning of the [fourth](four.html) century, however, Palestine, owing to the terrible persecutions suffered at the [hands](fourteen.html) of the Romans, gradually ceased to be the [spiritual](physical.html) center of Jewry. Babylonia, where better conditions prevailed under the Persian rule, took its place, and the religious right to fix the calendar likewise passed over to the heads of its flourishing academies, though not without protests from Palestine. In Babylonia also, the practice of observation was continued until the [time](time.html) of the last Amoraim, although a practical system of reckoning had been [known](daat.html) to scholars for more than a century. It was only after the close of the [Babylonian](bavel.html) [Talmud](orallaw.html), in the [sixth](six.html) or perhaps later, in the [seventh](seven.html) century, that the observation of the [moon](chodesh.html) was entirely given up, and a complete and final system of calendation introduced. This was adopted by all the [Jews](gen-jew.html) of the Diaspora, and has been accepted as binding down to the present day.

The real originators of this calendar as well as the circumstances under which it was enforced are lost in the general obscurity of the history of the Oriental [Jews](gen-jew.html) during the [first](one.html) [two](two.html) centuries after the completion of the [Talmud](orallaw.html).

According to a [Babylonian](bavel.html) [[Jewish](gen-jew.html)] tradition of Gaonic times, it was Hillel II (in the IVth Century C.E.) who fixed the [Jewish](gen-jew.html) calendar and established its rules. However, these rules of Hillel II were only [one](one.html) phase in the history of the [Jewish](gen-jew.html) calendar, which was not completed before the [sixth](six.html)-[seventh](seven.html) century. (Hayyim Schauss (1938) The [Jewish](gen-jew.html) [Festivals](festivals.html), Cincinnati: Union of American [Hebrew](hebrew.html) Congregations, n.121, p.299)

It is certain, however, that the whole system of calendation, although promulgated in Babylonia, originated in Palestine. There are indications that the Palestinian [Jews](gen-jew.html) felt sore at [heart](body.html) that they had to bow to the [Babylonian](bavel.html) authorities, whom they must have considered as usurpers of their inherited rights, and from [time](time.html) to [time](time.html) they must have tried to re-establish their lost [authority](authority.html), but in vain.

With the beginning of the tenth century the situation was again changed. The once flourishing [Babylonian](bavel.html) academies of Sura and Pumbedita, especially the former, owing to general conditions and to the lack of strong leaders, began to show a marked decline, so that the Sura academy was on the point of closing its doors, and the sister-academy in Pumbedita was greatly reduced in strength by a bitter struggle between its leading scholars and a pugnacious exilarch. At this juncture a man of marked ability arose in Palestine, who, recognizing the propitious moment, sought to take advantage of the situation in order to restore its former prerogatives to his country.[[206]](#footnote-206) This man was [Aaron ?] Ben Meir, a Palestinian by [birth](birth.html) and the [head](body.html) of a school in his native land. He claimed to be a descendant of the Patriarchs of the house of Hillel, mentioning particularly R. Gamliel and R. Judah Hanasi as his progenitors. With genuine scholarly attainments and considerable facility in writing he combined strong will and determined character; all of which gained for him great influence even outside of Palestine.

In order to bring out Ben Meir's point of view it is necessary to explain some of the elementary rules of the [Jewish](gen-jew.html) calendar: The [Jewish](gen-jew.html) lunar year consists of [twelve](twelve.html) alternating months, of 29 or 30 days, respectively. Such a year, counting 354 days, is called normal or *regular*. For certain reasons, to be explained presently, the year is sometimes made to count only 353 days, in which case it is designated as *deficient*; or a day is added, making 355, and then it is called *full*. To make a year full or deficient, the months of *Heshwan* and *Kislew* (approximately November and December) were selected for the necessary addition or subtraction. In a regular year *Heshwan* always counts 29 and *Kislew* 30 days (=59); in a full year a day is added to *Heshwan* ( =60), and in a deficient year a day is subtracted from *Kislew* ( = 58). Whether a year is to be declared regular, full, or deficient depends upon [four](four.html) rules, called "Postponements," or the " [Four](four.html) Gates".[[207]](#footnote-207) These must be observed in the [appointment](appointm.html) of every [Jewish](gen-jew.html) [New](teruah.html) Year's day ([first](one.html) of [*Tishri*](feasts.html), approximately September). We shall here mention only the [two](two.html) rules necessary for the understanding of Ben Meir's attempted reform.

The [first](one.html) of these rules is that [New](teruah.html) Year's day should never be [appointed](settimes.html) on either a Sunday, or Wednesday, or Friday. Sunday is considered unfit, because with [*Rosh Hashana*](teruah.html)*h* falling thereon, the [seventh](seven.html) day of the [Feast of Tabernacles](succoth.html) (*Hosha'na Rabbah*) on which the ceremony of "beating the willow-twigs" is an important part of the service, would fall on the [Sabbath](sabbath.html), and the observance of the ceremony could not be permitted. Wednesday and Friday are likewise inadmissible, because the Day of [Atonement](kippur.html) would then, to the great inconvenience of the people, fall on either Friday or Sunday immediately before or after the [Sabbath](sabbath.html). If, therefore, the [new](new.html) [moon](chodesh.html) of the month of [*Tishri*](feasts.html) was observed in the night preceding [one](one.html) of these [three](three.html) days (Sunday, Wednesday, Friday), [New](new.html)-Year was proclaimed on the day following; a custom still in force now that calculation has been substituted for observation, the calendar having been fixed in agreement with this rule of Talmudic origin [tractate [*Rosh Hashana*](teruah.html)*h* 20a].

The second rule is that in order to proclaim a [New](new.html)-Year's Day it is necessary that the [new](new.html) [moon](chodesh.html) be seen *before noon* of this day. If the [new](new.html) [moon](chodesh.html) is not observed until exact noon, or later, no matter on what day of the week, the [New](teruah.html) Year has to be postponed to the following day. If that happens to be [one](one.html) of the [three](three.html) days declared inadmissible for [*Rosh Hashana*](teruah.html)*h*, the [festival](festival.html) is of course postponed for [two](two.html) days. The supposed reason for this rule is that it takes fully [six](six.html) hours from the moment the [new](new.html) [moon](chodesh.html) is caught sight of from some place of vantage until it becomes again visible. Now if the conjunction (*Molad*), that is the meeting of the [moon](chodesh.html) and the [sun](hachama.html) in the same degree of the zodiac, takes place at 12 (noon) sharp, or still later, there is no chance for the [moon](chodesh.html) to become visible until sunset ([six](six.html) o'clock), when the [Jewish](gen-jew.html) astronomical day is considered over. In strictness, this rule (which is also Talmudic, [tractate [*Rosh Hashana*](teruah.html)*h* 20b]), has pertinence only to a system depending on observation; but, as stated before, the rules of calendric calculation were made to agree with the original rules of practice though the reasons given may have lost their value.

It will be readily understood from the above that whenever [New](teruah.html) Year is postponed, the year is made shorter, being reduced to 353 days and thus turned into a deficient year. The month of [*Tishri*](feasts.html), however, is not made to suffer by this reduction. As stated before, the [two](two.html) days are taken off from the next following months, [*Heshvan*](feasts.html) and [*Kislev*](feasts.html) which are made to count only [twenty](twenty.html)-[nine](nine.html) days each. To use the technical term, they are both made *deficient*. It may be added to complete our survey that to bring the solar year and the lunar year into coincidence in a certain [cycle](cycles.html) (19 years), an intercalary month is inserted into the [Jewish](gen-jew.html) year at necessary periods, making a *leap* year of 383 to 385 days.

When observation was replaced by calculation, the calendar did not, indeed, have to be fixed by the authorities from year to year. Anybody familiar with the rules on which it was based could determine many years ahead on what day of the week [New](teruah.html) Year or any other [festival](festival.html) would fall in a given year. In fact it was most essential to [know](daat.html), in order to arrange the calendar for any year, on what day [*Rosh Hashana*](teruah.html)*h* would fall [two](two.html) years later.

In the year 4681 of the [Jewish](gen-jew.html) era (=921 common era) it was anticipated that in the year 4684 (September, 923) the rule of [two](two.html) days' postponement, described above, would come into operation. Calculation showed that if observation had been still in practice, the [new](new.html) [moon](chodesh.html) of [*Tishri*](feasts.html) could not be observed till about [thirteen](thirteen.html) or [fourteen](fourteen.html) minutes after meridian on the [Sabbath](sabbath.html). Consequently the accepted rules required, observation or no observation, that [New](teruah.html) Year be postponed to Monday. Now, it must be borne in mind that there is a difference of [four](four.html), occasionally of [five](five.html), or even of [six](six.html) days (leaving fractions out of consideration) between [two](two.html) successive years. That is to say, the [festivals](festivals.html) of a given year fall from [four](four.html) to [six](six.html) days *later in the week* than those of the preceding year. This is due to the fact that fifty weeks of the regular common year and fifty-[four](four.html) weeks of the regular leap year contain, the [first](one.html) only 350, and the second 378 days, while a complete year of [twelve](twelve.html) regular months counting alternately [twenty](twenty.html)-[nine](nine.html) and [thirty](thirty.html) days, contains 354 days, and [thirteen](thirteen.html) such months make a year of 384 days. If therefore in 923, the year under consideration, [New](teruah.html) Year was to fall on Monday, [*Rosh Hashana*](teruah.html)*h* of the previous year (922) must take place [four](four.html) days earlier, i.e., on Thursday. Again, in 922 [New](teruah.html) Year had to be approximately [six](six.html) days later than in 921, because the year 921 happened to be a leap [intercalary] year. This would bring [New](teruah.html) Year of 921 on Friday; but as Friday had been declared unfit, Thursday had to be substituted. To sum up: the accepted order of the calendar in those [three](three.html) years was as follows: In 4682 (921/22) [New](teruah.html) Year on Thursday, the Year full (385 days, because it was leap year, 355 + 30), that is [*Heshvan*](feasts.html) and [*Kislev*](feasts.html) containing each [thirty](thirty.html) days, and [Passover](passover.html) (which is also to be mentioned for reasons that will become obvious later), falling on a Tuesday. In 4683 (922/23) [New](teruah.html) Year on Thursday, the year regular (354 days), [*Heshvan*](feasts.html) and [*Kislev*](feasts.html) counting together 59 days (29+30), and [Passover](passover.html) on [Sabbath](sabbath.html).

In 4684 (923/24) [New](teruah.html) Year Monday (Postponement), the year deficient (353 days), [*Heshvan*](feasts.html) and [*Kislev*](feasts.html) counting together fifty-[eight](eight.html) days (29+29), and [Passover](passover.html) on Tuesday.

We may now return to Ben Meir, but for a full understanding of his position it is necessary to mention [one](one.html) more point, namely that in the system of the [Jewish](gen-jew.html) calendar the hour is divided not into 3600 seconds but into 1080 *chalokim* (parts).

As a learned man, the [head](body.html) of an academy, Ben Meir was naturally well informed on the question of the [Jewish](gen-jew.html) calendar. The [four](four.html) principal rules of calendation had been [known](daat.html) for centuries, and in the main he recognized them as binding. All that he apparently asked, when he began the controversy, was a modification of the rule which required that to proclaim any day as [*Rosh Chodesh*](chodesh.html) [[first](one.html) of a month] the [new](new.html) [moon](chodesh.html) must be discovered (or, in times of reckoning, be due to appear) *before* noon. Following either another computation or a definite Palestinian tradition, he added 642 "parts" (about [thirty](thirty.html)-[five](five.html) minutes) to the [time](time.html) limit, so that if, for instance, the [new](new.html) [moon](chodesh.html) of [*Tishri*](feasts.html) was due to appear on the [Sabbath](sabbath.html) at noon or within the 642 *chalokim after noon*, no postponement should take place. The [Sabbath](sabbath.html) would thus be declared [*Rosh Hashana*](teruah.html)*h*, while according to the accepted calendar the [festival](festival.html) had to be postponed until Monday ([Sabbath](sabbath.html) being ineligible on account of the belated appearance of the [new](new.html) [moon](chodesh.html), and Sunday on account of rule I).

This being precisely what was due to happen in [*Tishri*](feasts.html) of the year 4684 (September 923), Ben Meir, believing the [time](time.html) favorable for the long-sought overthrow of the [Babylonian](bavel.html) [authority](authority.html) came out in the summer of 4681 (921) with the declaration that [*Heshvan*](feasts.html) and [*Kislev*](feasts.html) of the ensuing year (4682=November and December 921) should both be made deficient. Now the year 4682 could be declared deficient only when the year 4684 was to be declared full; that is, if [*Rosh Hashana*](teruah.html)*h* of the last named year was not to be postponed on account of a belated [new](new.html) [moon](chodesh.html), but was to take place on the [Sabbath](sabbath.html) of the [new](new.html) [moon](chodesh.html)'s appearance. In fact it was the anticipated postponement of the [New](teruah.html) Year of 4684 which Ben Meir attacked. He contended that inasmuch as in that year the [new](new.html) [moon](chodesh.html) was due only 237 chalokim (about [fourteen](fourteen.html) minutes) after midday and thus much in advance of the allowed 642 parts, it was not to be considered as late, and hence no postponement could be admissible.

Ben Meir's order for the [three](three.html) years was accordingly:  
4682: [New](teruah.html) Year Thursday, deficient, [Passover](passover.html) Sunday;

4683: [New](teruah.html) Year Tuesday, regular, [Passover](passover.html) Thursday;

4684: [New](teruah.html) Year Saturday, full, [Passover](passover.html) Tuesday.

Such, and apparently so technical if not trivial, was the actual issue between Ben Meir and [Babylon](bavel.html).

The question forces itself upon us: What was Ben Meir's reason for the addition of 642 parts to the given [time](time.html) limit? It is hardly credible that a learned and pious man, as Ben Meir undoubtedly was, should have undertaken to change essentially [one](one.html) of the most sacred religious institutions of the [Jewish](gen-jew.html) people, [one](one.html) upon which depended the celebration of the [festivals](festivals.html) in their proper season, unless there were strong reasons to [justify](justification.html) his action.[[208]](#footnote-208) Moreover, it would have been the most injudicious step for a leader to take, as he could foresee that no conscientious [Jew](gen-jew.html) would follow him, unless the religious expediency of his procedure was proved. As a matter of fact, many [Jewish](gen-jew.html) [communities](community.html) in Palestine and outside[[209]](#footnote-209) accepted Ben Meir's view, and soon after were ready to celebrate, or actually did celebrate, the [Passover](passover.html) of the year 4682 on Sunday instead of Tuesday.

Various views have been advanced in explanation of the matter; among them that the accepted calendar being based on the [time](time.html) in the [city](city.html) of [Babylon](bavel.html), where noon is approximately 56 minutes earlier than in [Jerusalem](city.html), Ben Meir, claiming [Jerusalem](city.html) as the right basis, added 642 parts (35 minutes) *partly* to offset the difference. Against this it has been properly pointed out that the fixing of the calendar was originally the prerogative of Palestine, and it is therefore inconceivable that it should have been based on [Babylonian](bavel.html) [time](time.html). Nor is there any proof that later [Babylonian](bavel.html) authorities assumed to transfer the basis from [Jerusalem](city.html) to [Babylon](bavel.html). Besides, if this was the reason for the addition, Ben Meir would certainly not have failed to mention it. Finally, the addition of precisely 642 parts (35 minutes instead of 56) would after all be an arbitrary and futile act.

Another, more acceptable explanation is that Ben Meir's real purpose was to reduce the [number](nchart.html) of postponements provided for in the accepted calendar. These postponements were, in his opinion, frequently the cause of celebrating the [festivals](festivals.html) at a [time](time.html) other than that prescribed in the Torah. Most of them resulted from the rule concerning the belated [new](new.html) [moon](chodesh.html), and when this operated in [connection](connection.html) with another rule, it might readily necessitate a postponement for [two](two.html) days. Finding that a slight extension of the [time](time.html) set for the appearance of the [moon](chodesh.html) around mid-day would greatly reduce the [number](nchart.html) of such postponements, he considered it a religious duty to issue a proclamation to this effect. The claim that the rule opposed by him was based on the [authority](authority.html) of the [Talmud](orallaw.html) did not appeal to Ben Meir, as the passage in question is rather obscure and allows of differing interpretations.

Plausible as this explanation seems to be, it is still difficult to see why he should have selected exactly the [number](nchart.html) of 642 for his addition, and the suggestion has therefore been made that in this respect Ben Meir relied on a definite Palestinian tradition. Various passages in the controversial [letters](letters.html) dealing with the subject seem to support this view. It is quite possible that others before Ben Meir had attempted to rectify the calendar by the same addition of 642 parts, but that the literary records, if there were such, have not been preserved.

At this point the subject of the calendar may be dismissed, and we may revert to the discussion of the course of [events](feasts.html) connected therewith, which led to the defeat of Ben Meir and ultimately to the rise of Saadia to the Gaonate.

Ben Meir's intention to make [*Heshvan*](feasts.html) and [*Kislev*](feasts.html) of the year 4682 deficient and to have the [Passover](passover.html) of the same year celebrated [two](two.html) days earlier than that fixed by the [Babylonian](bavel.html) authorities (Sunday instead of Tuesday) became [known](daat.html) in the summer of the year 4681 (921). In what way he had manifested this intention cannot be ascertained from the available material. At that [time](time.html) it seems he had not yet issued an official proclamation. The rumor reached Saadia in Aleppo. He at once addressed several [letters](letters.html) to Ben Meir, demonstrating to him the correctness of the established calendar and warning him against the change advocated. This is reported by Saadia himself in the [two](two.html) [letters](letters.html) which he addressed during the subsequent winter to his pupils in Egypt. He further informs us, in the same [letters](letters.html), that in Bagdad, whither he had gone from Aleppo, he learned that his repeated warnings had had no effect on Ben Meir, who had meantime issued his official proclamation, much to the perturbation of the [Babylonian](bavel.html) Geonim. The date of Ben Meir's proclamation is not given by Saadia. In all probability it was issued on *Hosha'na Rabbah* (the [seventh](seven.html) day of the [Feast of Tabernacles](succoth.html)) in the year 4682 (autumn, 921), on which day, as is [known](daat.html) from other sources, it was customary among the Palestinian [Jews](gen-jew.html) of that period to assemble annually on the [Mount of Olives](east.html) ([east](east.html) of [Jerusalem](city.html)) for [prayer](prayer.html) and solemn processions around the mount (*Hakkafot*). The occasion was used for the discussion of the various religious communal [needs](needs.html) of the people, and decisions as to [future](future.html) actions were adopted.

As soon as the news of this proclamation reached [Babylon](bavel.html) the Exilarch David ben Zakkai, in conjunction with the Geonim of both academies and probably also Saadia, addressed an official [letter](letters.html) to Ben Meir setting forth in urgent words the validity of the established calendar and warning him against the contemplated change. At the same [time](time.html) the Geonim sent out circular [letters](letters.html) to the various [Jewish](gen-jew.html) [communities](community.html), advising them to abide by the old order, and not to heed the innovations proposed.

It was about this period that Saadia wrote to his Egyptian pupils. The [first](one.html) half of his [letter](letters.html) was given above (pp. 55 f.); the second reads as follows:

"[Know](daat.html) that when I was yet in Aleppo, some pupils came from Ba'al al Gad [a town at the [foot](heel.html) of the Lebanon mountains] and brought the news that Ben Meir intends to proclaim [*Heshvan*](feasts.html) and [*Kislev*](feasts.html) deficient. I did not believe it, but as a precaution I wrote to him in the summer [not to do so]. The Exilarch, the heads of the academies, all the *'Allufim* [senior scholars], teachers and scholars, likewise agreed to proclaim [*Heshvan*](feasts.html) and [*Kislev*](feasts.html) full, and that [Passover](passover.html) be celebrated on Thursday. In conjunction with their [letters](letters.html) I too wrote to most of the great cities, in order to fulfill my duty. Persist ye also in this matter and close up this breach, and do not rebel against the [command](cmds613.html) of God. None of the people dare to profane the [festivals](festivals.html) of God willfully, to [eat](eating.html) [leavened](chametz.html) bread on [Passover](passover.html), and [eat](eating.html), drink, and work on the Day of [Atonement](kippur.html). May it be the will [of the Lord] that there be no stumbling-block and no pitfall in your place or in any other place in Israel. [Pray](prayer.html), answer this [letter](letters.html) and tell me all your affairs and your well-being. May your our peace grow and increase forever!"

Here we have Saadia's own testimony as to the part he took in the struggle, and the rank to which he had attained among the [Babylonian](bavel.html) authorities at this period. Not only did they invite his co-operation in signing their official [letters](letters.html) in order to confer special weight upon their ordinances, but Saadia issued such [letters](letters.html) on his own account to the largest congregations in and outside of [Babylon](bavel.html) - a proof of the great fame and popularity he must have enjoyed in Jewry in general.

Meanwhile Ben Meir, far from heeding the interdicts of Babylonia, repeated his [attack](attacks.html) by sending his son to [Jerusalem](city.html), to proclaim there, for the second [time](time.html), the proposed changes of the calendar. To the charges of the Geonim and of Saadia he replied in a disrespectful and aggressive tone, denying their [authority](authority.html) in matters of the calendar, which, he claimed, should be left, as in former times, in the [hands](fourteen.html) of Palestinian scholars. In a lengthy [letter](letters.html) to his adherents in Babylonia, in which he sets forth with much detail the reasons for his reforms, he pours out his whole wrath on Saadia in particular, denouncing him and "his arrogant followers" in scathing terms. This is also significant of the role Saadia evidently played in the affair. In the meantime the feast of [Passover](passover.html) was approaching. The congregations were bewildered by [commands](cmds613.html) and countermands. Some prepared to celebrate the [festival](festival.html) on the date set by Ben Meir, others stood up for the accepted calendar. A serious rupture was imminent in the ranks of Jewry, not dissimilar to that brought about previously by the Karaites. Saadia again addressed a [letter](letters.html) to his pupils in Egypt, and probably also to various [communities](community.html) elsewhere imploring them to remain steadfast and to abide by the regulations of the Geonim. To his credit it must be remarked that in this [letter](letters.html) there is not a single harsh word against Ben Meir, the originator of all the trouble.

The repeated notes of warning did not bring about the desired result. Most of the Palestinian and some of the [Babylonian](bavel.html) [communities](community.html) actually celebrated that [Passover](passover.html), and consequently the other [festivals](festivals.html), [two](two.html) days earlier than the official date. The schism must have assumed alarming proportions. Even a non-[Jewish](gen-jew.html) historian of the following century considered it important enough to include it in his account of historical [events](feasts.html). Twice more, so far as our records give us information, the [Babylonian](bavel.html) representatives of Judaism expostulated with Ben Meir. This happened in the ensuing summer. Again [letters](letters.html) of warning and exhortation were sent to the "divided house of Israel," but to no effect. "The [two](two.html) parties indulged in mutual recriminations and excommunications, and even went so far as to charge [one](one.html) another with fraud and deception."[[210]](#footnote-210) How long the quarrel lasted, and by what means it was brought to an end, cannot be learned from the scanty material that was discovered in the Genizah [storage room under an old Cairo [synagogue](synagog.html)]. From the report of the Syrian historian and from Karaitic sources we [know](daat.html) only that at the beginning of the year 4683 the quarrel was still in progress. [*Rosh Hashana*](teruah.html)*h* of that year was observed by the [two](two.html) opposing parties on different days in accordance with their divergent views.

We [know](daat.html), however, that Ben Meir and his supporters ultimately met with crushing defeat, and as may be plainly seen from Ben Meir's epistles, he attributed his downfall particularly to the activity of Saadia. Ben Meir's judgment was doubtless right on this point. Neither the Geonim who presided over the [two](two.html) academies, nor any of the scholars among their followers had either the intellectual capacity or the complete [command](cmds613.html) over the people to parry the determined onslaught of Ben Meir, whose influence reached far beyond the boundaries of his own country and whose contention was not without [merit](merit.html). In fact, it was partly because of the weakened [standing](mashal.html) of the Gaonate that Ben Meir could venture to assert his [authority](authority.html) above that of Babylonia. But Saadia's fiery genius, his profound learning, and above all his superior literary skill proved more than a match for his opponent and finally brought about Ben Meir's overthrow.

It is characteristic of the situation, that, as Saadia himself tells us, the [Babylonian](bavel.html) authorities, having failed in all their efforts against the disturber, had thought of calling the government to their assistance. For some reason not stated they gave up the plan and decided upon issuing a memorial-volume (*Sefer ha-Zikkaron*)[of which only fragments remain], in which all the misdeeds of Ben Meir from the beginning of the controversy to its end, his errors in calculation, the proceedings of the Gaonate against him, and particularly the reasons for their continued upholding of the accepted calendar, were to be minutely recorded. The volume was to be spread broadcast among all the [Jews](gen-jew.html) of the Diaspora with the special injunction, that it be read annually in public on the twentieth of *'*[*Elul*](elul.html), before the approach of the high Holy Days, and thus serve as a warning against possible upheavals of a similar nature in all [future](future.html) [generations](toldot.html). It was again Saadia who was charged with the composition of this important document. He wrote the book in the summer of 4682 (922) while the struggle was at its height. It was read publicly, as provided, in the month of *'*[*Elul*](elul.html) of the same year. Its effect on the [communities](community.html) was very great, apparently putting an end to the agitation, which had lasted for nearly [two](two.html) years. At all [events](feasts.html), nothing more is heard of Ben Meir during the following years, though his main intention was to change the date of [*Rosh Hashana*](teruah.html)*h* of the year 4684 (923).

How important a part Saadia had in the regulation of the present calendar can be seen also from the fact that eminent authorities of later centuries [Tosafist [Jacob](israelja.html) Tam] describe him as the father and founder of the science of the calendar. Most, if not all, of his work in this [field](field.html) was done in [connection](connection.html) with the controversy with Ben Meir or his polemics with the Karaites. Its contemporary importance may be judged from the fact that it paved the way to Saadia's election to the Gaonate; but the lasting moment of Saadia for the [Jewish](gen-jew.html) [world](worlds.html) and his influence on the development of medieval [Jewish](gen-jew.html) literature have a better basis than his discomfiture of Ben Meir. Considering the acrimony - almost ferocity - with which the quarrel over the calendar was carried on by both controversialists,[[211]](#footnote-211) especially in the last [stages](stages.html) of the argument, [one](one.html) cannot but designate it as a deplorable episode.

**Notes:** (omitted notes only contain references to sources) Omitted notes refer the reader chiefly to:

1. H.J. Bornstein. Sefer ha-Jobel. Warsaw. 1904.
2. A. Epstein. Ha-Goren, V, 120ff.
3. F. K. Ginzel. Handbuch der mathematischen und technischen Chronologie, II. Leipzig 1911.
4. S. Poznanski. [Jewish](gen-jew.html) Quarterly Review, X, 158.
5. S. Poznanski, REJ., LXVII (19I4), 291.
6. S. Schechter, Saadyana. Cambridge. 1903.

**\* \* \***

**BOOKS**

Arthur Spier, *The Comprehensive* [*Hebrew*](hebrew.html) *Calendar*, 3rd ed., Spring Valley, NY / [Jerusalem](city.html): Feldheim 1986 [brief guide to the [Jewish](gen-jew.html) calendar and conversion tables for 5660-5860 / 1900-2100 with [Shabbat](sabbath.html) readings]

R' Nathan Bushwick, *Understanding the* [*Jewish*](gen-jew.html) *Calendar*, [New](new.html) York / [Jerusalem](city.html): Moznaim 1989 [easy to follow, with many examples, tables and diagrams; some references to halachic sources]

R. M. Feldman, *Rabbinical Mathematics and Astronomy*, 4th ed., [New](new.html) York: Sepher-Hermon 1991 [1st ed. 1931; more technical, analyzes astronomical calculations in the [Talmud](orallaw.html) and in Maimonides' Kiddush ha-chodesh]

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1. Sc. of the seasons. [↑](#footnote-ref-1)
2. The science of astronomy was necessary for the fixing of the calendar, upon which Jewish Festivals depended. In early times this was done by observation, but gradually calculation took its place. Hence Rab's indignation at one who fails to employ such knowledge. [↑](#footnote-ref-2)
3. Excerpted from *Compton’s Interactive Encyclopedia*. Copyright © 1994, 1995 Compton’s NewMedia, Inc. [↑](#footnote-ref-3)
4. Excerpted from *Compton’s Interactive Encyclopedia*. Copyright © 1994, 1995 Compton’s NewMedia, Inc. [↑](#footnote-ref-4)
5. Acknowledgment is made to the classic work Qiddush Hahodesh by Rabbenu Moshe ben Maimon, and to A Guide to the Solar-Lunar Calendar by B. Elihu Rothblatt. [↑](#footnote-ref-5)
6. Excerpted from *Compton’s Interactive Encyclopedia*. Copyright © 1994, 1995 Compton’s NewMedia, Inc. [↑](#footnote-ref-6)
7. The Jewish year is lunar, and the actual fixing of the months and the years depends on the moon, though a month is intercalated in leap years in order to harmonize the lunar with the solar years. [↑](#footnote-ref-7)
8. The townlet of Temarta in Judea; Hul. 62a. [↑](#footnote-ref-8)
9. Justa is an abbreviation of Justus or Justinus; Habra ( trcj ) may either be part of the name or mean a haber, an associate, one of a body who were particularly scrupulous in their observance of the [laws](file:///D:\Backup%20data\Word\Stars\law.html) of tithes and purity [↑](#footnote-ref-9)
10. This is based on the tradition that the Nisan (the first month of the Jewish year) in which the Exodus took place fell on a Thursday, while the actual New Moon occurred after midday on the preceding Wednesday; it is further assumed that when this happens the moon is not visible until the second evening following, i.e. the evening of Friday. Hence if we counted time solely from when the New Moon is visible, then by the Thursday on which they left, a fortnight after, there would only have been thirteen sunsets. Since, however, it is called the fifteenth of the month, we see that the month was calculated from the first sunset after the New Moon [↑](#footnote-ref-10)
11. The moon is sometimes seen by day too, and thus encroaches, as it were, upon the domain of the sun. [↑](#footnote-ref-11)
12. Num. XXVIII, 22; XXIX, 5, 11, passim. [↑](#footnote-ref-12)
13. Therefore I need a sin-offering; cf. Hul. 60b. [↑](#footnote-ref-13)
14. I.e. Rome. [↑](#footnote-ref-14)
15. The Encyclopedia Brittanica [↑](#footnote-ref-15)
16. Acknowledgment is made to the classic work *Qiddush Hahodesh* by Rabbenu Moshe ben Maimon, and to *A Guide to the Solar-Lunar Calendar* by B. Elihu Rothblatt. [↑](#footnote-ref-16)
17. Literally., ‘they made for them large banquets’. [↑](#footnote-ref-17)
18. Literally., ‘become accustomed to come’. [↑](#footnote-ref-18)
19. If they came on Sabbath, as they had already exceeded the limit of two thousand cubits. [↑](#footnote-ref-19)
20. Lit., ‘an elevated’ or ‘refined expression’, i.e., not belonging to the language of everyday life. [↑](#footnote-ref-20)
21. Isaiah V, 2. E.V. ‘and he dug it and cleared it’. The Hebrew is uvezghu which the Talmud connects with the Aramaic tezg ‘a ring’, so that Beth Ya'azek would refer to the stone wall round the court. [↑](#footnote-ref-21)
22. In allusion to the fact that they were (originally) confined to the courtyard the whole of the day. But cf. Tosaf. s.v. ut [↑](#footnote-ref-22)
23. Jeremiah 11:1. The Hebrew word is ohehztc . [↑](#footnote-ref-23)
24. I.e., both kindly and rigorously. [↑](#footnote-ref-24)
25. The meaning of this is discussed in the Gemara. [↑](#footnote-ref-25)
26. I.e., in which direction were the horns turning. [↑](#footnote-ref-26)
27. Literally, ‘he has not said anything’. [↑](#footnote-ref-27)
28. Literally, ‘with heads of subjects’. [↑](#footnote-ref-28)
29. Literally., ‘so that they should (still) be accustomed to come’. [↑](#footnote-ref-29)
30. The new moon can be seen only about sunset, close to the sun, when the sun is travelling towards the north. We should therefore naturally take ‘in front of the sun’ to mean ‘to the north of the sun’, and ‘behind the sun’ to mean ‘to the south of the sun’. [↑](#footnote-ref-30)
31. I.e., whether the rim of the moon visible from the earth is concave or convex in relation to the sun. By ‘in front of’ Abaye understands ‘turned towards’, and by ‘behind’, ‘turned away from’. [↑](#footnote-ref-31)
32. Job XXV, 2. [↑](#footnote-ref-32)
33. And in this way God keeps the peace between the sun and the moon. [↑](#footnote-ref-33)
34. The rainbow in this case having the appearance of a bow bent by the sun against the earth. [↑](#footnote-ref-34)
35. Reading this sentence in its present context, we must suppose it to mean, ‘if he says, (it was inclined) to the north’ etc. This is very difficult to understand, and it is much more natural to suppose that the words to be supplied are ‘that he saw it’, and that this sentence is to be connected with the words in the Mishnah TO THE NORTH OF IT OR TO THE SOUTH. So apparently it is taken by Rashi. V. Maharsha, ad loc. [↑](#footnote-ref-35)
36. Literally, ‘the days of the sun’: the summer months. [↑](#footnote-ref-36)
37. The new moon always appears due west. Hence in the summer months when the sun sets in the north-west it is south of the sun, and similarly in the winter months north of the sun. [↑](#footnote-ref-37)
38. Apparently this means here, one of a pair of witnesses. [↑](#footnote-ref-38)
39. If the preceding paragraph related to the inclination of the moon, it obviously should have followed this paragraph, which is another reason for transferring the last Mishnah heading to the beginning of this paragraph. V. n. 1. [↑](#footnote-ref-39)
40. Who gives the same version as he does. [↑](#footnote-ref-40)
41. Lit., ‘of ourselves’. [↑](#footnote-ref-41)
42. I.e., with the object of testifying. [↑](#footnote-ref-42)
43. I.e., on the thirtieth day. [↑](#footnote-ref-43)
44. On the thirtieth or the thirty-first day, as the case may be. [↑](#footnote-ref-44)
45. Leviticus 23:44. [↑](#footnote-ref-45)
46. Ibid. 4. Heb. o,ut [↑](#footnote-ref-46)
47. Literally, ‘you’, implying that the public should join in the proclamation. [↑](#footnote-ref-47)
48. Ibid. 2. [↑](#footnote-ref-48)
49. The word ov ‘they’, being superfluous. [↑](#footnote-ref-49)
50. Ibid. The Hebrew word is htren , ‘callings’ or ‘proclaimings’, the plural implying at least two. [↑](#footnote-ref-50)
51. Since there is no need to impress its sanctity on the public. [↑](#footnote-ref-51)
52. Leviticus 25:10. [↑](#footnote-ref-52)
53. On the thirtieth day. [↑](#footnote-ref-53)
54. I.e., New Moon is not declared till the thirty-first day. [↑](#footnote-ref-54)
55. Ex. XX, 20. [↑](#footnote-ref-55)
56. Lit., ‘like them’. Out of the same or other materials. [↑](#footnote-ref-56)
57. Ulam, the hall leading to the interior of the Temple, v. Mid. IV, 7. All exedra had only three sides, but since the fourth side of the Temple hall had a very wide entrance it is not counted. V. Tosaf. a.l. [↑](#footnote-ref-57)
58. Since a candlestick of other metal besides gold would have been permissible in the Temple. V. Men. 28. [↑](#footnote-ref-58)
59. I.e., can the Beth din even in Nisan declare that the year just begun is to be a leap year? [↑](#footnote-ref-59)
60. In the time of the Second Temple the calendar was not fixed, but the Beth din declared any year a leap year (i.e., inserted an intercalary month) according as they judged necessary, subject to certain rules. [↑](#footnote-ref-60)
61. Because if this were done, by the time Adar came round people might forget. [↑](#footnote-ref-61)
62. E.g., if they were afraid that they might be prevented from issuing the decree later. [↑](#footnote-ref-62)
63. V. Sanhedrin, Soncino ed. p. 55 notes. (15) R. Joshua and R. Pappias. Sanhedrin 87a Ed. VII, 7. [↑](#footnote-ref-63)
64. And once Purim had passed, the next month had to be Nisan of the next year and not the second Adar of the present year. [↑](#footnote-ref-64)
65. I.e., the emissaries of the Beth din instructed the public on the matter during this time. [↑](#footnote-ref-65)
66. If in the interval Passover was postponed for a month, they would not observe the new date of the Passover. [↑](#footnote-ref-66)
67. Literally, ‘this calculation had not been completed by the Rabbis till now’. [↑](#footnote-ref-67)
68. This section is excerpted from "Seasons of the Moon" [↑](#footnote-ref-68)
69. Loudolt Bornstein Group vol. a Sec 2.2.4 Spriugr, Berlin 1965 [↑](#footnote-ref-69)
70. Presumably because the Rabbis have so enacted for us to keep the two days as one continuous day of holiness and it is their ordinances that we observe. [↑](#footnote-ref-70)
71. They indicated the new moon outside Jerusalem by means of fire signals whether the day just elapsed was the 30th of the past month or the 1st of the coming month. [↑](#footnote-ref-71)
72. In lighting beacons at other times to confuse the Jews. For the term Cuthim v. J.E. vol. IV, p. 398. [↑](#footnote-ref-72)
73. V. R.H. 22b (Soncino ed. p. 96, n. 7). [↑](#footnote-ref-73)
74. And we reverted to the lighting of fire-signals. [↑](#footnote-ref-74)
75. The distance covered by the traveling messengers was relative, dependent on what day in the month a festival fell, so that sometimes they would cover more territory than at others. [↑](#footnote-ref-75)
76. Evidently the observance of two days was not an enactment for all time. [↑](#footnote-ref-76)
77. The calendar was fixed about the beginning of the fourth century. [This has been ascribed to Hillel II, v. Graetz IV, pp. 316-318.] [↑](#footnote-ref-77)
78. To the Jews in the Diaspora. Cf. Sanh. 17b. [probably this refers to the message sent by R. Jose (J. ‘Er. III) a contemporary of Hillel II, urging the people of the Diaspora not to depart from the ancestral customs despite the calendar which have been introduced by the Patriarch, v. Graetz IV, p. 456.] [↑](#footnote-ref-78)
79. To destroy all the sacred writings and prevent the study of the Law and thus all knowledge of fixing the calendar would be lost. [↑](#footnote-ref-79)
80. Var. lec. Raba. [↑](#footnote-ref-80)
81. [So Tosaf. and MS. M., cur. edd. ‘we’.] [↑](#footnote-ref-81)
82. By Biblical law Festivals are holy on the first and the seventh days only (Pentecost one day altogether). But owing to uncertainty in early time about the exact day of New Moon, i.e., when the month began, it became a binding practice in the Diaspora to observe two days instead of one, and this remained binding even when New Moon was ascertained by mathematical calculation, which obviated all doubt. [↑](#footnote-ref-82)
83. On the second day of Festivals. [I.e., when I happen to be in Babylon, v. infra p. 52a.] [↑](#footnote-ref-83)
84. [Var. lec. ‘Biram’ on the West bank of the Euphrates. v. Asheri and MS.M. In Biram, which was the home of R. Nathan b. Asia, only a one day Festival was observed, v. R.H., Sonc. ed. p. 100, n. 2 and Obermeyer, p. 99]. [↑](#footnote-ref-84)
85. As the ban would damage his prestige more than corporal punishment. This proves that the ban is a severer punishment. [↑](#footnote-ref-85)
86. Understanding the Jewish Calendar, by Rabbi Nathan Bushwick [↑](#footnote-ref-86)
87. Rashi, Rosh Hashanah llb and Baba Mezia 106b; Oruch 'Kima" [↑](#footnote-ref-87)
88. Excerpted from *Compton’s Interactive Encyclopedia*. Copyright © 1994, 1995 Compton’s New Media, Inc. [↑](#footnote-ref-88)
89. Understanding the Jewish Calendar, by Rabbi Nathan Bushwick [↑](#footnote-ref-89)
90. Excerpted from *Compton’s Interactive Encyclopedia*. Copyright © 1994, 1995 Compton’s NewMedia, Inc. [↑](#footnote-ref-90)
91. A full month (lit., ‘a prolonged one’) is one of thirty days, a defective one is one of twenty-nine days. The average year has six months of thirty days each, and six of twenty-nine days each. For there are about twenty-nine and one half days between one new moon and the other, whence a month of thirty days, to restore the balance, must be followed by one of twenty-nine days. However, there are more then twenty-nine and one half days between one new moon and the other, approximately twenty-nine days, twelve hours and forty minutes; furthermore, there are other causes influencing the fixing of the calendar, as the result of which the arrangement of six full and defective months undergoes certain variations, so that one year might have a larger number of full, the other more than the half of defective months. In the time of the Mishnah the Sanhedrin decreed the beginning of the new months on the basis of the testimony of witnesses who had actually seen the new moon. But even then conditions would arise (such as non-visibility of the new moon, due to cloudy weather) when the Sanhedrin would be guided by its own astronomical calculations. For such a decree the principle was adopted that no year may have more than eight, nor less than four full months. [↑](#footnote-ref-91)
92. Of the Feast of Weeks, v. Leviticus XXIII, 27. Since they could not be eaten before the lambs of the sacrifice had been offered up, they were not as profane food, for which alone permission to bake or cook was given on the Holy Day on which all manner of work is prohibited. And as not immediately ready for human food, and hence not under the category of permitted labor, these breads had to be baked on the day before the Feast of Weeks, or, if the latter fell on a Sabbath, on the Friday preceding it. i.e., on the third day. Ex. XII, 16: Save that which every man must eat, that alone may be done by you, excludes that which is not immediately available for human use. [↑](#footnote-ref-92)
93. Placed every Sabbath on the Table in the Sanctuary and consumed by the priests on the following Sabbath, they had to be baked on the preceding Friday (not earlier, since they were to be fresh). If a Holy Day fell on Friday, they were baked on Thursday. If the two days of the New Year fell on Thursday and Friday (the only Holy Day which could, even in the time of the Sanhedrin, last for two days. v. Men. 100b), the shew bread would be baked on Wednesday to be eaten on the following Sabbath, on the eleventh day, its baking overriding neither the Sabbath, nor a Holy Day. [↑](#footnote-ref-93)
94. The circumcision performed on the eighth day overrides both Sabbath and Holy Day. Here, however, we deal with a boy born Friday eve at twilight. Hence his birthday is doubtful: it may be either Friday or Saturday. the twilight may be considered as belonging either to the day past or to the following one. The Sabbath following may therefore be the eighth or the ninth day after the birth and the circumcision must be postponed (for a doubtfully eighth day circumcision does not override the Sabbath) to the following, the tenth day. If the following day be a Holy Day, the circumcision could not take place before the eleventh day. If the two days of New Year fall on Sunday, the circumcision is postponed to the twelfth day. V. Shab. 137b. [↑](#footnote-ref-94)
95. The new moon, coming say on Wednesday, with New Year starting only on the Sabbath. This discrepancy would cause popular murmuring against the ‘arbitrariness of the Sages’. [↑](#footnote-ref-95)
96. But the arrangement of eight months, too, would leave a difference of two days, hence what is the value of limiting it to eight full months? Normally six full months plus six defective ones would take care of the situation. [↑](#footnote-ref-96)
97. I.e., a year of thirteen months. [↑](#footnote-ref-97)
98. Which may be either full or defective, and having made the intercalation of the preceding year defective, we have regained one day. which is counter-balanced by one day of the eight full months this year. [↑](#footnote-ref-98)
99. Yet, even with one month full, and one month of last year incomplete. we gain only one day, so that one day still intervenes between the new moon of Tishri and the fixation of the New Year; so that popular clamour against the Sanhedrin's margin would be aroused still. [↑](#footnote-ref-99)
100. A one day's margin would not be considered abuse of the Sanhedrin's function. [↑](#footnote-ref-100)
101. And ‘for what reason’, he says. [↑](#footnote-ref-101)
102. ‘Ulla's interpretation of the Mishnah: No less than four full months, but not more either, because ‘it did not seem right to the Sages to have more than eight defective months’, so that the New Moon should not appear three days after the New Year. [↑](#footnote-ref-102)
103. And the prolonged month was made full, the consideration being the reverse of the former. [↑](#footnote-ref-103)
104. Cf. n. 3 mutatis mutandis. [↑](#footnote-ref-104)
105. The people assume in this case that the Sanhedrin had good reason, the basis of which, the actual seeing of the new moon, had escaped themselves. [↑](#footnote-ref-105)
106. R. Huna and ‘Ulla. R. Huna accepts R. Simeon b. Gamaliel's view and ‘Ulla that of the first Tanna. [↑](#footnote-ref-106)
107. A month of twenty-nine days. The margin is the point of difference. [↑](#footnote-ref-107)
108. The second day of Passover (v. Lev. XXIII, 10-12) i.e., on the same day of the week as the second day of Passover. The fifty days are counted from the sixteenth of Nisan to the first of Shabuoth. Hence the fiftieth day must fall upon the same week-day as the first, the day of the waving. [↑](#footnote-ref-108)
109. Or iburo, the night of its being made a full month, because upon the night depends its completeness, for if the new moon is proclaimed for the thirty-first day, that fact renders the month just passed full (one of thirty days). [↑](#footnote-ref-109)
110. [Normally the twelve months of the year beginning with Tishri are full and defective in rotation. Where there is a departure from this order, the only months affected are Kislev in the winter and Sivan in the summer, which months are made defective instead of being normally full. Now if both these months are made defective, giving eight defective months for the year, there is an interval between the 30th of Nisan and the first of Tishri of eight days of the week, i.e., the first of Tishri falls on the same day of the week as the 31st of Nisan; and since the 30th of Nisan falls on the same day as the day of waving, which is exactly fifteen days before, the New Year will also fall on the day of waving. Should, on the other hand, only one of these two months be made defective — namely Kislev, whilst Sivan is full, there would be nine days of the week difference between the 30th of Nisan and the first of Tishri, so that New Year will fall on the 31st day. i.e., the day following the night of the last day of the full month of Nisan.] [↑](#footnote-ref-110)
111. [On the view of R. Huna that we make eight full months, the two months Heshvan (in winter) and Iyar (in summer) normally defective are made full, with the result that one extra day of the week is added as interval between the 30th day of Nisan and the first Tishri making New Year to fall two week-days after the 30th of Nisan.] [↑](#footnote-ref-111)
112. [By making the extra full month in the summer, there would be added an extra day of the week as in p. 51, n. 6 with the same result.] [↑](#footnote-ref-112)
113. The statement that the New Year must fall either on the day of the week on which the waving day falls or upon the day following the night after the last day of the full month is in accord with the teaching of ‘Others’, who hold that all months are full and defective in strict rotation, making a total of 354 which is four days over fifty weeks, leaving four days of the week as interval between one New Year and the other in a normal year and five in a prolonged year. [↑](#footnote-ref-113)
114. [Having added in winter an extra full month, Nisan is made defective, with the result that we have four defective months during the summer, making New Year fall on the day of the waving. v. p. 51, n. 5.] [↑](#footnote-ref-114)
115. From the fact that all months follow each other in regular order, it follows that there are four days’ difference between the New Years. [↑](#footnote-ref-115)
116. Even without having actually seen the new moon the new month may be proclaimed by the proper authorities. [↑](#footnote-ref-116)
117. Granted that ‘Others’ go by the order of the new moons, yet it happens that in a simple (not prolonged) year, five days may intervene between one Passover and the other. For the forty minutes above twenty-nine days and twelve hours, between one moon and the other, make in one year an additional eight hours, in three years an additional day. [↑](#footnote-ref-117)
118. And even when that is accounted for, there remain minutes, which added to one another amount in every thirty years to one complete day. The exact duration is: twenty-nine days, twelve 793/1080 hours, which time fragments combined add one day in every three, and one additional one every thirty years. [↑](#footnote-ref-118)
119. Of the defective ones (i.e., Cheshvan and Iyar) they add two days, i,e., three hundred and fifty-six days altogether; if two of the full ones (i.e., Kislev and Sivan) are made defective, there are two days less than usual, and the year has but three hundred and fifty-two days. [↑](#footnote-ref-119)
120. Excerpted from Compton’s Interactive Encyclopedia. Copyright © 1994, 1995 Compton’s NewMedia, Inc. [↑](#footnote-ref-120)
121. If the seam gapes, and he pulls the thread to draw the pieces together. This constitutes sewing. [↑](#footnote-ref-121)
122. One of the priest craft of Ancient Persia. [↑](#footnote-ref-122)
123. This is an idiom expressing strong abhorrence, cf. similar expressions in Sanhedrin 58b and 59a. The Magi were hostile to Jews, and caused them much suffering in various ways; cf. Sanhedrin, Soncino ed., p. 504, n. 6 and 98a: Yeb. 63b; Git. 17a. This evoked the present remark. [↑](#footnote-ref-123)
124. Sc. of the seasons. [↑](#footnote-ref-124)
125. The science of astronomy was necessary for the fixing of the calendar, upon which Jewish Festivals depended. In early times this was done by observation, but gradually calculation took its place. Hence Rab's indignation at one who fails to employ such knowledge. [↑](#footnote-ref-125)
126. Understanding the Jewish Calendar, by Rabbi Nathan Bushwick [↑](#footnote-ref-126)
127. The fixing of the new moons (i.e. the months, and consequently the ‘seasons’-the festivals) now rests with you. [↑](#footnote-ref-127)
128. I.e., on the thirtieth day of the outgoing month. [↑](#footnote-ref-128)
129. ruchg ouh , ‘the day of the prolongation’. V. supra, p. 81, n. 1. [↑](#footnote-ref-129)
130. On account of Sabbath. [↑](#footnote-ref-130)
131. Through having drunk too much on Sabbath, and become intoxicated (Rashi). [↑](#footnote-ref-131)
132. It was customary to abstain from work on New Moon (v. Tosaf. s.v. ouan ). In this case the thirtieth day would always he kept as New Moon from doubt, and if the actual day fixed was the thirty-first, there would be two days New Moon. [↑](#footnote-ref-132)
133. The commencement of the month was dated from the time when the earliest visible appearance of the new moon was reported to the Sanhedrin. If this happened on the 30th day of the current month, that month was considered to have ended on the preceding 29th day, and was called deficient. But if no announcement was made on the 30th day, that day was reckoned to the current month, which was then called full, and the ensuing day was considered the first of the next month. [↑](#footnote-ref-133)
134. The ‘calculation’ as to which and how many months were to be intercalated. It was an established rule that no year should consist of less than four nor more than eight full months. [↑](#footnote-ref-134)
135. The proclamation by formal ‘sanctification’ of the new moon on the thirtieth day. [↑](#footnote-ref-135)
136. The thirtieth day. [↑](#footnote-ref-136)
137. I.e., it is patent to all that the next day is the new moon, as no month exceeds 30 days. [↑](#footnote-ref-137)
138. From the Jewish Encyclopedia [↑](#footnote-ref-138)
139. See the Encyclopedia Judaica, article, "Calendar". [↑](#footnote-ref-139)
140. This species must be ripe in the mouth of Nisan which is known in the Bible as the Abib (Ex. XIII,44) the month of ears (of corn), in reference to the ripeness of the corn in that month. [↑](#footnote-ref-140)
141. Which should, as a rule, ripen close before ‘Azereth (Pentecost), the time when the Pilgrims bring the first fruits to Jerusalem (Num. XXVIII, 26). If it happens that the fruit is unripe, the year may be intercalated so as to prevent a special journey. [↑](#footnote-ref-141)
142. Literally, ‘cycle’, ‘season’. [↑](#footnote-ref-142)
143. Because if the corn-crop is already ripe and the intercalation prompted by other reasons, the prohibition of new produce till after the Omer Offering (v. p. 50, n. 4) according to Leviticus 23:14, would be unduly prolonged for another month. [↑](#footnote-ref-143)
144. Because if the Tekufah was in order, and the intercalation had been effected for other reasons, the pilgrims would be subject to wintry weather when returning from Jerusalem after the Succoth Festival. [↑](#footnote-ref-144)
145. South of Palestine. [↑](#footnote-ref-145)
146. East of Palestine. [↑](#footnote-ref-146)
147. Northern Palestine. [↑](#footnote-ref-147)
148. A measure of barley (1/10th of an ephah) taken from tender ears, was brought on the 16th day of Nisan to the Temple as a heave-offering. v. Leviticus 23:10-11. [↑](#footnote-ref-148)
149. For two reasons, firstly, because the grain taken for the Omer offering had to be tender, and this could only be so if it was cut from a field in the proximity of Jerusalem, for if it were brought from a far-off distance, the stalks would become hardened in transit, by the wind. Secondly, according to the Talmudic rule, that one must not forego the occasion of performing a commandment (cf. Yoma 33a), the ripe corn in the vicinity of Jerusalem offered the earliest opportunity of fulfilling the precept (v. Men. 64b). If the grain in Judea, however, gave no cause for intercalation, it would be overripe at the time of the Omer, and so unfit for the purpose. [↑](#footnote-ref-149)
150. Deuteronomy XII, 5. [↑](#footnote-ref-150)
151. I.e., religious inquiry, or investigation. [↑](#footnote-ref-151)
152. I.e., Jerusalem the Capital of Judea, which the Lord (Heb. Makom, lit., ‘the Place’, v. Glos.) has selected as habitation unto Himself. [↑](#footnote-ref-152)
153. vxf (E.V. ‘full moon’) is taken from txf ‘to cover’. [↑](#footnote-ref-153)
154. Ps. LXXXI, 4. [↑](#footnote-ref-154)
155. Which alone of all festivals is fixed for the 1st of the month. [↑](#footnote-ref-155)
156. E.V. ‘ordinance’. [↑](#footnote-ref-156)
157. V. infra 32a: ‘Money cases are to be tried by day’. [↑](#footnote-ref-157)
158. Arthur Spier, *The Comprehensive Hebrew Calendar*, p. 1 [↑](#footnote-ref-158)
159. That the whole must be flayed. [↑](#footnote-ref-159)
160. By the removal and offering of the sacrificial portions. [↑](#footnote-ref-160)
161. For it is more commendable to derive the tenth from a larger quantity, thereby obtaining the choicest. [↑](#footnote-ref-161)
162. That in regard to the ‘Omer there is no distinction between the Sabbath and a weekday. But the Sages are satisfied that the choicest is obtainable even out of three se'ahs. [↑](#footnote-ref-162)
163. For whether the ‘Omer is obtained out of five or three se'ahs the people will learn nothing of importance thereby. [↑](#footnote-ref-163)
164. The employment of more persons in the service of the ‘Omer obviously gives the matter greater publicity and impresses immediately the mind of the people with the Rabbinic standpoint that the ‘Omer must be offered on the second day of the Passover irrespective of the day of the week, thus creating stronger opposition to the Sadducees who held that the ‘Omer must always be offered on a Sunday; v. infra 65a. [↑](#footnote-ref-164)
165. That although one person would be sufficient three are to be employed to create greater publicity. [↑](#footnote-ref-165)
166. For according to R. Ishmael the ‘Omer must be taken out of five se'ahs and not three in order to obtain the choicest flour. [↑](#footnote-ref-166)
167. V. supra n.1. [↑](#footnote-ref-167)
168. Any who saw the new moon may transgress the Sabbath limits to go and give evidence before the court of the appearance of the new moon. As the calendar was not fixed the evidence of witnesses was a matter of the greatest importance for the determination of the dates of the Festivals. [↑](#footnote-ref-168)
169. As it is most probable that the members of the court themselves had also seen the appearance of the new moon, so that it would be unnecessary for any to profane the Sabbath for this purpose; R.H. 21b. [↑](#footnote-ref-169)
170. For even when the new moon was not clearly visible to all, those who did see it might refrain from going to give their evidence believing that they were not justified in profaning the Sabbath on its account as others too might have seen the appearance of the new moon like themselves. [↑](#footnote-ref-170)
171. That whatever the circumstances people should be encouraged to go and give their evidence. [↑](#footnote-ref-171)
172. For it is no offering, neither is it an important need of the community since the new moon was seen clearly everywhere. [↑](#footnote-ref-172)
173. To offer the choicest of five se'ahs. [↑](#footnote-ref-173)
174. Viz., the reaping, winnowing, etc. of the three se'ahs. [↑](#footnote-ref-174)
175. This section is excerpted and modified *from Hebrew Calendar Science and Myths*, by Remy Landau [↑](#footnote-ref-175)
176. Reference: Understanding the Jewish Calendar by Rabbi Nathan Bushwick. Moznaim Publishing Corporation, 1989. [↑](#footnote-ref-176)
177. Heb. rucg lit., ‘taking across’: the word used for the prolonging of the year and the month. [↑](#footnote-ref-177)
178. This was a Baraitha made up of enigmatic sentences like the one which follows. [↑](#footnote-ref-178)
179. I.e., that there should be no appearance of the old moon in this period, viz., after the closing of the twenty-ninth day; otherwise New Moon cannot be proclaimed on the thirtieth. [↑](#footnote-ref-179)
180. Because if the conjunction is calculated to have been after midday and they claim to have seen the new moon before nightfall, they are not telling the truth. [↑](#footnote-ref-180)
181. Which would imply that in Babylon the new moon is not visible till eighteen hours after its birth (Rashi). [↑](#footnote-ref-181)
182. Which would imply that in Palestine the new moon is visible six hours after its birth (Rashi). [↑](#footnote-ref-182)
183. This table is based upon the one found in Machlokes Rav Saadia Gaon Uven Meir, by C.Y. Borenstein [↑](#footnote-ref-183)
184. Because other people might have seen the new moon. [↑](#footnote-ref-184)
185. Because it could not be proved that they had not seen it (Rashi). R. Hananel: Provided they had seen a semblance of the new moon]. [↑](#footnote-ref-185)
186. Heb. rucg lit., ‘taking across’: the word used for the prolonging of the year and the month. [↑](#footnote-ref-186)
187. This was a Baraitha made up of enigmatic sentences like the one which follows. [↑](#footnote-ref-187)
188. I.e., that there should be no appearance of the old moon in this period, viz., after the closing of the twenty-ninth day; otherwise New Moon cannot be proclaimed on the thirtieth. [↑](#footnote-ref-188)
189. Because if the conjunction is calculated to have been after midday and they claim to have seen the new moon before nightfall, they are not telling the truth. [↑](#footnote-ref-189)
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191. Which would imply that in Palestine the new moon is visible six hours after its birth (Rashi). [↑](#footnote-ref-191)
192. Lev. XXIII, 32, in connection with fasting on the Day of Atonement. This shows that the day follows the night in reference to the festivals. [↑](#footnote-ref-192)
193. Ex. XII, 18, in connection with eating unleavened bread on Passover. This shows that the festivals end at even. [↑](#footnote-ref-193)
194. Lit., ‘the interpretation of exegeses’. [↑](#footnote-ref-194)
195. According to R. Johanan,the ‘night’ referred to is on the same footing as the night of the Day of Atonement which commences at nightfall. But according to Resh Lakish, it is on a par with the first night of Passover, which, in relation to the Paschal lamb, was a continuation of the afternoon before. Hence Resh Lakish holds that even if the old moon was seen in the early part of the evening, the next day may still be declared New Moon. [↑](#footnote-ref-195)
196. Maim. in ‘Moreh’ I, 62, conjectures that these multiliteral Names, of which no trace is found, were perhaps composed of several other divine names; also that not only the names were communicated, but their real meanings too. [On these names v. further Blau L. Das altjudische Zauberwesen pp. 137ff and Bacher. JE XI 264.] [↑](#footnote-ref-196)
197. [ gubm denotes simply a modest man careful to carry out his religious obligations, a pious man, and not a member of a particular sect — an Essene. v. Buchler Types, pp. 59ff.] [↑](#footnote-ref-197)
198. Lit., ‘stands in the middle of his days’. [↑](#footnote-ref-198)
199. Lit., ‘he does not get angry, does not get drunk’. [↑](#footnote-ref-199)
200. Not to use it lightly. [↑](#footnote-ref-200)
201. Lit., ‘his fear lies upon mankind.’ [↑](#footnote-ref-201)
202. In general the name of God was regarded more than a mere designation, but represented His nature or character and His relation to His people. It thus came to partake of His essence, His glory and power. This probably explains the mystic awe with which its pronunciation was surrounded, on the one hand, and the powers attributed to the right manipulation thereof on the other. Cf. Sanh. 91a: ‘He who pronounces the Divine Name according to its letters loses his portion in the world to come; also 65b and 67b on the human powers of creation by means of the Sefer Yezirah, which Rashi a.l. explains was effected by combinations of the Divine Name. [On this subject v. Marmorstein The Old Rabbinic Doctrine of God, I, p. 17.] [↑](#footnote-ref-202)
203. **Molad** means “birth”. [↑](#footnote-ref-203)
204. **Primordial** means Beginning or happening first in a sequence. [↑](#footnote-ref-204)
205. Calendar booklet published by the Universal Karaite Religious Council in Israel. [↑](#footnote-ref-205)
206. Epstein presents the matter as if Ben Meir's motives in starting the conflict were purely scientific, that he tried to rectify what he considered erroneous in the established calendar. This view can be accepted only with great reservation. For whatever the merits of Ben Meir's calculation may have been, there is no doubt that his personal ambition and perhaps still more, his desire to reassert the authority of the Holy Land, played, consciously or unconsciously, a very important part in his contention. More than once in his letters he emphatically denies to the Babylonians the right to fix the calendar, which, he constantly reiterates, is the exclusive prerogative of his country; comp, below, note 3 [↑](#footnote-ref-206)
207. The Four Rules, for which see Ginzel, II, 9I f., are found together in a writing called "The Four Gates", because it treats of the four days of the week (Monday, Tuesday, Thursday, and Saturday), on which alone *Rosh ha-Shanah* is allowed to fall, the days forming thus, as it were, the gates through which we enter into the respective new year. The original work, of which the Four Gates formed a part, is lost. Nor can it be ascertained when and where or by whom it was composed. From the Ben Meir controversy we can see that as early as the beginning of the tenth century its authority was generally recognized. A certain Jose Al-Nahrawani probably a contemporary of Saadia, versified that part of the work which dealt with the Four Rules, and his versification also bears the same name. Steinschneider discovered the work of Jose in a MS. at the Bodleian library, written in 1203, and published it in the periodical Kerem Chemed IX (1856), 41. A. Epstein re-edited the same with copious notes in the REJ., XLII (1901), 204-210. At the same time a commentary on Genesis and Exodus by Menahem b. Solomon (12th century) was published by S. Buber (Berlin, 1901), wherein a different recension, of Palestinian origin, is found in connection with the verse Exod., 12, 2 (vol. II, 90-92). [↑](#footnote-ref-207)
208. Ben Meir guards himself against the reproach that his desire to re-establish the authority of the Holy Land was the only reason for his reforms, by pointing out to his opponents the correctness of his calculation; comp. note 1. [↑](#footnote-ref-208)
209. As may he seen from a letter of Saadia to three Rabbis in Egypt, published by Hirschfeld, JQR., XVI, 290-297, the Egyptian Communities too, or at least some of them, during the time of the quarrel celebrated the festivals according to the computation of Ben Meir. [↑](#footnote-ref-209)
210. Poznanski JQR., X, 154, based on the testimony of the Karaite Sahl b. Mazliah. [↑](#footnote-ref-210)
211. Ben Meir's letters abound in personal denunciations and abuses of Saadia, which reveal the extreme bitterness of the writer. Not satisfied with the attacks on the character of his opponent, Ben Meir tried to defame also Saadia's family, asserting, as he says, "on good authority " that the latter's father was a Muezzin in the service of the Muhammedans, defiled himself by eating abominations, until he was driven out of Egypt and died in Jaffa. Saadia retaliates by adorning Ben Meir with the epithets "the obscurantist," and "the accursed one," both in satiric allusion to the name "Meir". Ben Meir's sons he terms "calves". [↑](#footnote-ref-211)