

Can We Rely On The Hebrew Calendar?

Those familiar with the history of the Hebrew calendar do not find it surprising that most of the calendar controversies raging today have roots in ancient times. History repeats itself. The following paragraph is a collection of statements gleaned from the writings of modern calendar dissidents.

We cannot rely on calendars devised by man. The present Hebrew calendar is not what was revealed from God. It is the product of long historical development. The oracles of God did not include the calendar. The current Jewish calendar differs from the calendar God gave to Moses. It is in disharmony with the biblical principle that the Mosaic calendar is lunar-solar in nature. No authoritative writing exists that reveals a provision to allow a change in intercalary sequence. It is purely an assumption that God authorized the Hebrew calendar. The Pharisees and the rabbis have taken authority to themselves that God reserves for Himself in the oracles of God. The oracles of God are not a declaration by some Jewish courts nor do they include the Hebrew calendar. It is the calendar that is written in the oracles of God, the words of God, that constitutes the true calendar. Most people have not taken the time to prove what is in their Bibles. In it they would not find Hebrew calendar calculations, the postponements, and the crescent of the new moon. No one can observe an annual holy day or any day other than the true holy day. The Jewish calendar is in gross error. The fixed calendar used by the Jews today is part of the oral law Jesus condemned. It is the same calendar today as was used in the tenth century.

Historically, various groups, considered to be heretical, repudiated mainstream Judaism and veered away from the accepted calendar (Encyclopedia Britannica, New Edition, s.v. "Judaism"). The Essenes moved to the vicinity of the Dead Sea after a calendar dispute with the priests at Jerusalem. According to the evidence, the Essenes promoted a calendar other than the accepted one. The Dead Sea Scrolls made them known in our times and it is now understood that they stressed "times, seasons, and the calendar." In their desire to be perfect, they wanted to walk "perfectly in all things that are revealed according to their appointed seasons." As a result they refused to advance times or lag any seasons. They viewed the rest of Israel as people in error while considering themselves the people of the covenant who were faithful to the divine laws of God. By means of the calendar, festivals, and fasts, they separated from the rest of Israel. In the book of Jubilees, one of their preserved works, they criticized the harm that had come to them for using a different calendar. They repudiated the lunar calendar because it was based on observation, and as a result the year commenced "ten days too soon" annually (Handbook of Biblical Chronology, by Jack Finegan, 45, 47-48, 55). The truth is, it would have taken only five years to see the discordant nature of their calendar, especially in the gap between the start of the seasons and their particular solstices and equinoxes (The Jewish People in the First Century, Vol. II, edited by S. Safrai and M. Stern, 842-843).

The book of Jubilees upheld the solar calendar against the lunar calendar. Moses was supposed to have been told by a divine messenger: "Now you command the Israelites to keep the years in this number-364 days. Then the year will be complete and it will not disturb its time from its days or from its festivals because everything will happen in harmony with their testimony. They will neither omit a day nor disturb a festival." The angel then predicted: "There will be people who carefully observe the moon with lunar observations because it is corrupt [with respect to] the seasons and is early from year to year by ten days." The book of Jubilees continues to contend that by use of the lunar calendar the sacred days are profaned and the profane days are sanctified. This calendar disagreement occurred because the Essenes

Bethel Church of God

Can We Rely On The Hebrew Calendar?

firmly maintained that the solar calendar was the one that was divinely revealed. Yet, the fact is that unless the lunar calendar is intercalated (days added to make up for the shortage), the agricultural seasons will occur at the wrong time of the year. The Essenes accused the Jewish community of rejecting the solar calendar in order to follow “the feasts of the Gentiles after their error and ignorance. For there will be those who will assuredly make observations of the moon-now it disturbs the seasons and comes in from year to year ten days too soon” (Safrai and Stern, 839).

While this dispute between the priests and the Essenes is the first one to be recorded, it was not the last. From AD 140-163, an enormous quarrel broke out during the patriarchate of Simon III. It involved the feast days and leap years. It was only by much diplomacy that a permanent division was avoided between the Babylonian and Palestinian Jews (The New Standard Jewish Encyclopedia, s.v. “Calendar, History of”). After the Jewish revolt of AD 132-135, an attempt was made to intercalate the Hebrew calendar by one Rabbi Hananiah, who had fled to Babylon. Control of the calendar was ultimate political control because of its tremendous influence on Jewish life; intercalation determined the days on which holy days were observed. During the period of the Second Temple (515 BC-AD 70), this power was more than likely in the hands of the high priest. But after the destruction of the Temple in AD 70 and the ensuing breakdown of central authority, the rabbis assumed this prerogative. Rabbi Hananiah attempted to take control by asserting that the Babylonian Jews had the right to intercalate the calendar. This was way too early. Not until the tenth century AD did Babylon assume the leadership role over the Jewish community at large, a responsibility that gradually shifted to Jewish communities in North Africa and Europe (Christianity and Rabbinic Judaism, edited by Hershel Shanks, 197). The Jewish community in Babylon became important because it was the largest in the world, outside both the Greek and Roman spheres of influence. Hellenism had little effect there (ibid, 262).

Various sects in the East challenged the Jewish calendar during the seventh and eighth centuries AD. The founder of Karaism, Anan b. David, rejected computation as a legitimate method and reinstated lunar observation. At a later time-period Karaites allowed for calculation when the weather did not permit observation, even though they regarded it with disfavor. In the fourteenth century the Karaites accepted the nineteen-year time-cycle in regions far from Palestine. But eventually the scattered Karaites in various countries became confused and began to observe the festivals on different days. As a result they were forced to rely on calendar calculations, constructing astronomical tables. Their practice today is to do essentially what the rabbis did, to determine the new moon between its conjunction and sunset. In practical reality, the dating of festivals may vary one or two days (Encyclopedia of Religion and Ethics, by James Hastings, s.v. “Calendar”).

In AD 921 the last great argument over the calendar occurred. It was the result of an attempt by Aaron ben Meir to establish the holy land as the location for fixing the new moons and festivals by means of calculation. The Babylonian authorities would have none of it, and as a result a schism between the Babylonian and Palestinian Jews took place. The dispute occurred because Aaron ben Meir demonstrated that the Passover in AD 922 should be held two days earlier than the regular calendar authorized (Studies in Medieval Jewish History and Literature, ed. by Isadore Twersky, 43-44). The Babylonian authorities prevailed and the calendar was never challenged again. What it demonstrated is that the present Jewish calendar originated in Babylon during the period of the Gaons-the religious leaders who dominated academia as heads of various Babylonian academies (Ency. of Religion and Ethics, s.v. “Calendar”). One of the Gaons asserted that the existing calendar system was of great antiquity and the new moons and festivals had always been established by calculation. His view was that the observation of the moon had not been put to use until the third century BC, its purpose to demonstrate the accuracy of calculation, this, in order to refute dissenters. His view was that calculation and observation had always agreed. His arguments were soundly repudiated by both Karaites and Talmudists on the basis of Talmudic records (ibid). As the central authority of the Jewish community shifted, the accepted view was that many of the functions of Judaism had been directly or indirectly passed on to later generations. The preservation and

Bethel Church of God

Can We Rely On The Hebrew Calendar?

continuation of the calendar was certainly included (Twersky, 50). What should be called to the reader's attention is that practically every dissenting movement within Judaism has been involved in the attempt to manipulate the calendar in one way or another (Intercalation and the Hebrew Calendar, by J.B. Segal, 260). The reason: A calendar is primarily a religious institution (The Calendar of the Book of Jubilees, Its Origin and Its Character, by Julian Morgenstern, 67).

Problems with the Solar System

There probably would not be as many disagreements over the calendar if there were not problems with the solar system. From the ancient past the computation of time was based on the revolution of the moon around the Earth and the seeming movement of the sun in the ecliptic. There is a major problem though. The two circuits are not apparently synchronized. A look at calendar history in the Near East demonstrates the attempt to reconcile the lunar and solar circuits (The New Catholic Encyclopedia, Vol. II, s.v. "Calendars of the Ancient Near East"). As the Earth moves in its orbit around the sun, there is a combination of at least six different elementary motions involved (Astronomy Made Simple, by Meir Degani, 144). The Earth moves around the sun at 18½ miles per second or 60,000 miles per hour. The moon travels around the Earth at the speed of one-half mile per second and since it is a satellite, it also moves at the rate of 60,000 miles per hour in relationship to the sun. During the time of the new moon, when the moon is located between the sun and the Earth, it is strongly pulled and its movement speeds up, but when it is on the far side of the Earth during the full moon the pull is less and its movement slower. Its orbit around the Earth is not circular; rather it is oblong or elliptical. Its path is wavy and its speed varies from 19 miles per second to 18 miles per second as it appears to move in and out of the Earth's orbit alternately (New Guide to the Moon, by Patrick Moore, 50, 47, 159).

Kepler recognized that the velocity of a planet around the sun depends on its distance from the sun; the closer it is the faster it moves. This is also true with the moon. At its far point (apogee), it moves slowest; at its near point (perigee), it moves the fastest. The truth of the matter is: The movements of the sun and moon do not neatly coincide with the calendar systems of any human civilization (Religious Holidays and Calendars, by Aidan Kelly, Peter Dresser, and Linda M. Ross, 6). Maimonides, the Jewish scholar of the twelfth century AD, said "You will realize how devious and sinuous are the movements of the moon in its orbit" (Sanctification of the New Moon, by Moses Maimon, 72). Of the sun, Earth, and moon, it is the moon that is the most irksome. As it rotates, its orbit constantly changes shape making its motion very complicated. It sways back and forth and its fluctuation is so great that for days it may rise about the same time (Clockwork Man, by Lawrence Wright, 20). The three astronomical features that establish the year, month, and day are independent and incompatible. They do not mesh, and in spite of the fact that ingenious calendars have been invented a fully accurate solution to the problem of reconciling days, months, and years is insoluble (Time, by Samuel Goudsmit and Robert Claiborne, 64). Not even the seven-day week coincides well with the solar and lunar years (Ency. Britannica, New Ed., s.v. "Judaism"). There is an assumption that the four phases of the moon each month brought about the four weeks of seven and 3/8 days each. The fact is, it is only occasionally that the beginning of the week and month coincide. The reality is that the week and month are two different time systems. They must be laid on top of each other to work at all and even then both the day and week are independent of the moon (The Origin of the Week and the Oldest West Asiatic Calendar, by Hildegard and Julius Lewy, 1-2).

Some calendar systems have attempted to ignore the seasons, which are determined by the sun, by using the moon alone to determine the year. This was the system chosen by the Muslims. Another method is to add a month occasionally (intercalation) to make the systems mesh as closely as possible. This is what was done by the Hebrews. Another method yet is to ignore the moon and go by the solar year only. This was done by the Egyptians. The problem with the Muslim calendar is that after twelve lunar months the Muslim calendar falls behind the solar year by eleven days. On the other hand, the Hebrew method of intercalation produces a minor gap only. It never allows the calendar to lag more than twenty-two days

Bethel Church of God

Can We Rely On The Hebrew Calendar?

behind the sun or to advance more than eight days ahead. When the lunar calendar is not intercalated, the seasons wander through the year. In a purely solar calendar, the phases of the moon wander through the month (The Clock We Live On, by Isaac Asimov, 111-112). The major problem with the Muslim calendar is the annual pilgrimage to Mecca. Bare-headedness and wearing only two articles of clothing are required, no doubt intended for the season when the weather was neither too hot in the day nor too cold at night. But the Muslim calendar wanders through both the coldest and hottest months which leads to great suffering on the part of the pilgrims. For example, in 1953 the temperature variation was from 116 to 127 degrees, and on one day it went to 142 degrees, killing 4,411 people (Of Time and the Calendar, by Elisabeth Achelis, 95). Among the Hebrews, from the seventh century BC on, methods were developed to determine in advance whether a year should be intercalated. So, even in ancient times it was known that the failure to intercalate would mean a month would pass through the entire cycle of seasons in just 32½ years (The Anchor Bible Dictionary, Vol. I, s.v. "Calendar").

Did God Create This Solar System?

Most geologists agree the evidence is overwhelming that there was a major catastrophe affecting the Earth at some time in the past. The sea and land masses have shifted locations all over the globe since the time of man. Thousands of living species have left fossil remains in the rocks. In addition, a drastic change in the climate worldwide occurred. The Eden-like world we read of in the Bible was suddenly transformed by a catastrophe into the modern world of today. At one time the climate in the Arctic was semi-tropical, and a generally uniform climate prevailed over the entire Earth. This is seen by animal and vegetable relics found in strata everywhere. It is only in recently modern times that the Earth has been divided into tropical, temperate, and arctic zones. The fossil record found throughout the Earth attests to an older state of our present Earth. The world catastrophe clearly attests to and corresponds with the Deluge spoken of in the book of Genesis (Evolutionary Geology and the New Catastrophism, by George MacReady Price, 332-333, 274, 324, 258, 264-265, 262, 331, 340).

With respect to the calendar, the book of Genesis implies a 360-day year at the time of the Flood (Dict. of the Bible, by James Hastings, s.v. "Time"). Comparing Genesis 7:11, 24 with Genesis 8:4 we see months of thirty days—a five-month period with 150 days. Checking Deuteronomy 34:8 with Numbers 20:29 we see a thirty-day month during the time of Moses—at about 1500 BC. According to Immanuel Velikovsky in his work, *Worlds in Collision*, we find the following information: The old Babylonian year consisted of 360 days—twelve months of thirty days each. Scholars knew this even before the cuneiform script was understood. The Assyrian year contained 360 days; a decade was made up of 3,600 days. Assyrian documents reveal a thirty-day month from new moon to new moon. Anciently, the Persian year also had 360 days of twelve months containing thirty days each. The Egyptian year was 360 days in length. Later, it was changed to 365 days. The Book of Sothis states the added five days were introduced at a later time. The Eber Papyrus lists a year of twelve months with thirty days each. During the Eighteenth Dynasty the new moon festival was observed at periods of thirty days. After the fall of the Middle Kingdom, the Hyksos introduced a solar year of 360 days according to a gloss on a manuscript of Timaeus. The Mayan year originally consisted of 360 days, but five days were later added, as well as another day every fourth year. In South America, in ancient times, the year consisted of 360 days with twelve months. The same was true in China—360 days with twelve months. When five days were added to the Chinese year they included another one-quarter day. Plutarch wrote that when Rome was first founded during the time of Romulus, the Roman year was 360 days. Various Latin authors record the month as being thirty days in length. What this means is that there is ample historical evidence to demonstrate that before the introduction of a 365¼-day year the length of the year was 360 days. The ancient texts of India during the Veda period state the year was 360 days in comments found throughout the Brahmanas. Nowhere is intercalation mentioned. Nor is an extra five or six days associated with a solar year. The Hindu year was made up of twelve months of thirty days each. With their astronomical skills it is astonishing why the Brahmins failed to realize that 360 days was 5¼ days short. All the historical computations found in Hindu

Bethel Church of God

Can We Rely On The Hebrew Calendar?

history used a 360-day year with months of thirty days each. What is quite apparent is that throughout the world we find a calendar of 360 days that was later changed at about the seventh century BC when five days were added to the year (Velikovsky, 124, 331-341). Did God change the seasons as Daniel stated? (Dan. 2:21).

About the seventh or eighth centuries BC five additional days were added to the length of the year. From about this time the Hindu year, for example, was lengthened to 365 $\frac{1}{4}$ days even though the original length of the year was still used. From the fifteenth century down to the eighth century BC, the length of the year was consistently the same due to the orbit of the Earth and revolutions of the moon. It was the same thirty-day month, and the length of the year itself did not vary more than a few hours. What happened to change this? Some sort of catastrophe occurred that altered both the orbit and axis of the Earth and moon as well as the length of the year. Repeated disturbances changed the orbit of the Earth from 360 days to 365 and $\frac{1}{4}$ days in length and the length of the month from thirty days to 29 $\frac{1}{2}$ days (Velikovsky, 338, 332, 342).

What is required to bring about the kind of changes that took place in the eighth century BC? For one thing the axis of the Earth must be altered from the perpendicular into a tilt. This would affect the seasons. The 23 $\frac{1}{2}$ degree tilt of the axis is now responsible for the seasons-spring following winter and fall following summer because the axis is tilted either toward or away from the sun. A perpendicular axis prevents seasonal changes, which appears to be the case from the opening chapters of Genesis. Fossil remains prove that at one time the climate was the same worldwide. Should there be another change in the axis the seasons would be more intense and their order would be altered. The orbits of both the Earth and moon must be modified in order to change the times. According to Velikovsky, there is a vast amount of information available from peoples all over the globe to demonstrate what took place in the eighth century BC. During a century of disturbances, which involved two catastrophes, the moon receded into an orbit of 29 $\frac{1}{4}$ days as an average and has remained so ever since. Also, the Earth orbit was changed so that 5 $\frac{1}{4}$ days were added. Written traditions by many of the ancient peoples recount the disorder of the seasons and connect it directly with the motion of the planets (Velikovsky, 345, 120-121).

Does the Bible substantiate this historical record?

The Bible is plain enough in Genesis, chapters one and two. We read, "And the earth was without form, and void. . ." (Gen. 1:2). Actually, it became without form and void; it was not originally created that way. "For thus saith the Lord that created the heavens; God himself that formed the earth and made it; he hath established it, he created it not a waste, he formed it to be inhabited: I am the Lord; and there is none else" (Isa. 45:18). Satan rebelled against God at some distant time in the past (Isa. 14). A catastrophe was the result. Astronomers see this in much of our solar system. Many scholars feel the 23 $\frac{1}{2}$ degree tilt of the Earth took place at this time. The beginning chapters of the book of Genesis imply an original perfect creation. The rotation of the Earth due to the wobble which is now present is responsible for the precession of the equinoxes. As a result many problems have faced mankind. The disturbances of the seasons have ravaged the Earth with many disasters. The calendar itself is affected by the precession of the equinoxes which alters the timing of the equinoxes. The moon tells us when a month begins; the sun tells us when a year begins. But, the tilt of the Earth and the wobble in the rotation do not evidence perfection, contrary to what Genesis, chapter one, implies was the case.

Does God have the power to alter the motion of the heavenly bodies? Take a look at Joshua 10:12-13.

Then spake Joshua to the Lord in the day when the Lord delivered up the Amorites before the children of Israel, and he said in the sight of Israel, Sun, stand thou still upon Gibeon; and thou, Moon, in the valley of Ajalon. And the sun stood still, and the moon stayed, until the people had avenged themselves upon their enemies. Is not this written in the book of Jasher? So the sun stood still in the midst of heaven, and hasted

Bethel Church of God

Can We Rely On The Hebrew Calendar?

not to go down about a whole day (Josh. 10:12-13).

There is the view that this could easily occur if the Earth tilted on its axis sufficiently to allow the northern hemisphere to remain light for the period spoken of in the book of Joshua. Notice this statement in Judges 5:20. "They fought from heaven; the stars in their courses fought against Sisera" (Judg. 5:20). Also, this statement in 2 Kings 20.

And Hezekiah said unto Isaiah, What shall be the sign that the Lord will heal me, and that I shall go up into the house of the Lord the third day? And Isaiah said, This sign shalt thou have of the Lord, that the Lord will do the thing that he hath spoken: shall the shadow go forward ten degrees, or go back ten degrees? And Hezekiah answered, It is a light thing for the shadow to go down ten degrees: nay, but let the shadow return backward ten degrees. And Isaiah the prophet cried unto the Lord: and he brought the shadow ten degrees backward, by which it had gone down in the dial of Ahaz (2 Kings 20:8-11).

The New Testament relates a miraculous event that took place at the time of the crucifixion of Christ. There was a dark period over the land from noon until 3:00 pm, as well as an earthquake (Matt. 27:45; 28:2). The belief that this was a solar eclipse is false because this was during the Passover season and the moon is full, that is, on the opposite side of the Earth from the sun. A solar eclipse cannot occur at this time. The texts in this paragraph and the paragraph above show the Bible record of the past. What about the future?

Behold, the day of the Lord cometh, cruel both with wrath and fierce anger, to lay the land desolate: and he shall destroy the sinners thereof out of it. For the stars of heaven and the constellations thereof shall not give their light: the sun shall be darkened in his going forth, and the moon shall not cause her light to shine. And I will punish the world for their evil, and the wicked for their iniquity; and I will cause the arrogancy of the proud to cease, and will lay low the haughtiness of the terrible. I will make a man more precious than fine gold; even a man than the golden wedge of Ophir. Therefore I will shake the heavens, and the earth shall remove out of her place, in the wrath of the Lord of hosts, and in the day of his fierce anger (Isa. 13:9-13).

"And I will shew wonders in the heavens and in the earth, blood, and fire, and pillars of smoke. The sun shall be turned into darkness, and the moon into blood, before the great and the terrible day of the Lord come" (Joel 2:30-31). "And there shall be signs in the sun, and in the moon, and in the stars; and upon the earth distress of nations, with perplexity; the sea and the waves roaring; Men's hearts failing them for fear, and for looking after those things which are coming on the earth: for the powers of heaven shall be shaken" (Luke 21:25-26).

Rabbinical writings, as well as the Talmud, relate the gigantic disturbances that took place during the Exodus. Velikovsky writes that due to the changes in the motion of the Earth and moon, the calendar could not be calculated. Long observations and a clear view of the sun and moon are required for accurate conclusions. This was why God revealed the calendar to Moses. Conditions were such at the time it was impossible to accurately analyze. See Exodus 12:2. The heavenly bodies were unsettled at this time according to rabbinical writings. The calendar had to be readjusted because the four quarters of the Earth had been displaced. Astronomically, the values of the day and year were different from what they had been previously. The Papyrus Anastasi IV relates the months were reversed, the hours "disordered" (Velikovsky, 122-123). While this description by Velikovsky may appear to be far-fetched, in the light of the great astronomical discord of the heavenly bodies related in the Scriptures, it may not be as far out as one may imagine.

What took place in the middle of the eighth century BC, is that the calendar previously accurate became unusable. Lunar and solar movements changed repeatedly from 747 to 687 BC, and calendar adjustments

Bethel Church of God

Can We Rely On The Hebrew Calendar?

had to be made, Velikovsky tells us. Adjustments were soon outdated and had to be readjusted. Clay tables found at the royal library in Nineveh record astronomical observations made prior to the time our present system was established. One tablet places the vernal equinox as the sixth of Nisan, and another places it at the fifteenth. This difference cannot be explained by modern scholars. These Assyrian astronomers were very accurate and precise in their work and would not have erred by a period of nine days. The astronomical tablets at Nineveh reveal three systems of planets. Single planets were closely observed and tracked in three dissimilar schedules. The movements of the moon itself were found to have two different systems. The last one to be observed corresponds to our present solar order. In one of the systems observed, the solstitial and equinoctial locations on the ecliptic are found six degrees too far to the east. Tablet 272 records that the distances from one new moon to another on the Chaldean ecliptic average three degrees, fourteen minutes too great. Thus, during a lunar month the moon traveled farther in relationship to the fixed stars than the present order shows. The astronomical tables at Nineveh reveal that the world order repeatedly changed during a single century. Included in these tables is the fact that the apparent path of the sun, as it traversed the heavens, led Babylonian astronomers to differentiate three orbits for the sun (Velikovsky, 349-350).

Velikovsky is not the only one who contends that the original new year in the Bible fell on the tenth day of the seventh month, the same day as the Day of Atonement. See Leviticus 25:9. It was later transferred to the first of Tishri-the first day of the seventh month. If this is true, on the Jewish calendar as well as the Babylonian calendar, there is an equinoctial displacement of nine days. When scholars examine the Assyrian astronomical records, they regard them as enigmatic mistakes. Yet, what needs to be asked is how could these astronomers who were responsible for the earlier records be so careless as to uphold a 360-day year, an error that in only six years would lead to a whole month's divergence? Certainly these astronomers of the royal observatories would not have announced to the king wrong dates when anyone can observe when the moon is new. Furthermore, their records on the clay tablets required mathematical calculation. What should be obvious is that during the reign of Assurbanipal, the movements of the planets, the precession of the equinoxes, and recurring return of the eclipses had been recorded and recalculated. As changes in the heavens took place, new tablets were placed in the royal archives along with the older records (Velikovsky, 350).

The Greek philosopher Thales is credited with discovering how many days were in a year. From his time (640-546 BC) the Greeks knew the year consisted of 365 days. Since he was born in the seventh century BC, is it possible he learned the new length of the year? It was about this time that the year was firmly fixed at its present length. A contemporary of Thales was Solon. He is credited with discovering that the length of the lunar month was less than thirty days. Yet, for the purpose of computation, as well as respect for the earlier length, the 360-day year was maintained for some period of time (Velikovsky, 338). If the year was 365 days then as it is now, it is odd that the discovery of the 365-day year should have occurred as late as the seventh century BC. There were many more much older kingdoms which certainly would have discovered this earlier. Why would the calculation of the length of a year, which is a reasonably simple matter to understand be discovered by Thales, while the calculation of the eclipses, which is quite difficult to forecast, had been discovered centuries before? The same conclusion can be reached regarding Solon's discovery of the length of the lunar month because we can see that an adjustment of a new calendar system was taking place! (Velikovsky, 356-357). In Peru, the king issued orders that astronomical observations be made. The result was a calendar change in the length of the year from 360 days to 365 $\frac{1}{4}$. The same was true with the Toltecs. Their history records how the sages and astrologers were gathered together in order to recalculate the length of the year which had been recognized as inaccurate. The Talmud relates how King Hezekiah made a calendar change. He is said to have intercalated the calendar in order to delay the Passover. While this conclusion may be erroneous, it is recognized that the Passover was held the second month for ritual reasons. See 2 Chronicles 30. Whatever changes became fixed at that time is not known, but it is apparent calendar computation had become difficult (Velikovsky, 352). Even the Romans made corrections in their calendar near the end of

Bethel Church of God

Can We Rely On The Hebrew Calendar?

the eighth or beginning of the seventh century BC. Numa, the second king of Rome and a contemporary of King Hezekiah, made corrections in the inequality of the calendar which required further corrections later (ibid, 356).

Aside from the heavenly bodies, there are indications that the Earth has reversed its magnetic field many times. Also, the axis of rotation has changed-the location of its geographical pole altered due to the rolling motion of the Earth. The last time this occurred was during the eighth century BC. Both the Etruscans and Greeks made records of this on clay. Experimentors have recently concluded that the magnetic field was reversed in Italy and Greece in the eighth century BC, and that the magnetic field in the tenth century BC was little different than it is today. What can be concluded from this is that a disruption occurred in the Earth's magnetic field during the eighth century BC so that a complete reversal took place. During this same time-period there were great cosmic upheavals (Earth in Upheaval, by Immanuel Velikovsky, 145-147).

What can be seen in all this is that in the years following 687 BC there were calendar reforms taking place all over the Earth. The calendar was in a state of chaos between 747-687 BC, the length of both the month and the year constantly changing. We have our present calendar today because the new order has not been altered (Velikovsky, 358-359). So, the question that needs to be answered is: How did the solar system get the way it is today? God is not the author of confusion (1 Cor. 14:33). When God recreated the heavens and the Earth, as we read in the beginning chapters of the book of Genesis, He saw that it was very good (Gen. 1:31). Man rebelled against his Creator and brought about the Flood (Gen. 6:5). Man, as a whole, has continued in this rebellion ever since. The solar system directly affects man. Today, the solar system does not mesh; it is impossible to reconcile; its problems are insoluble. The Bible gives ample evidence that God alters the solar system for specific purposes. We have already seen a number of examples including what took place during the Exodus. God is in control of the entire universe. He does what He pleases with the heavens. Is there any biblical evidence of a dramatic event that might cast light on the eighth century BC? Yes, indeed! It is recorded in Amos 1:1 and Zechariah 14:5. It was the great earthquake that occurred during the reign of Uzziah. Uzziah reigned from 809-757 BC. What took place in the solar system and the Earth to cause this upheaval? We do not know for sure, but we do know the historical record all over the Earth attests to dramatic events in the heavens which profoundly affected the calendar. Today the calendar must be adjusted from time to time in order to function in a reasonably accurate manner at all.

Moses' Calendar

Much ado has been made by calendar dissidents who insist we must go back to the calendar God gave to Moses. The problem is there is so little information given in the Bible about the calendar God gave Moses that it is impossible to know the exact details. The fact is: Those who insist we go back to the calendar God gave Moses can say only that it is the calendar they think God gave to Moses. No one knows for sure. Not only is the change in the length of the solar year and lunar month not mentioned in the Bible, neither is observation of the lunar crescent or intercalation. In spite of this, calendar dissidents insist we abandon all these innovations and return to observation of the lunar crescent as the only legitimate method of determining the length of the month. Notice what some of the authorities say about this notion. Safrai and Stern tell us on page 834 that there is very little information available regarding the calendar of the ancient Hebrews. In fact, they add, there is a contrast between the poverty of sources and the abundance and wealth of theories. The Zondervan Pictorial Bible Dictionary, article "Calendar," states that comparatively little is known of the calendar of the early Israelites from the patriarchs to the Exile. The Encyclopedia Britannica, New Edition, article "Judaism" relates that the origin of the Jewish calendar can no longer be accurately traced. The Universal Jewish Encyclopedia, article "Calendar," elaborates somewhat by saying comparatively little is known about the calendar of the early Israelites from the time of the patriarchs to the end of the period of the First Temple.

Bethel Church of God

Can We Rely On The Hebrew Calendar?

Twelve lunar months add up to only 354 days. As a result a method had to be found to add eleven days to complete the solar year, but how this was done is not indicated. It is possible an extra month was added every two or three years as is done today. Jewish tradition says that Hezekiah made such an intercalation. At a later time some of the names of the months were dropped and ordinal numbers substituted. Nothing further is known until near the end of the period of the Second Temple. Many of the technical aspects of the Hebrew calendar remain a mystery. What is known is that both the lunar and solar cycles were reconciled in order to make the Passover occur at a specific time. It would have been impossible to do this unless the solar cycle had been taken into consideration (Religious Holidays and Calendars, 10).

The fact is: There is no information given in the Old Testament which instructs us how to determine the beginning of the month. There were times when it was impossible to observe the new moon and more than likely the month was set from thirty days to thirty days (Astronomy in the Old Testament, by G. Schiaparelli, 103). One learns nothing about the methods used to determine the beginning of the month, according to The Anchor Bible Dictionary. It goes on to say that later Judaism assigned the first day of the seventh month as the beginning of the year, although Nisan also continued to be the beginning of the year (Anchor Bible Dict., Vol. 1, s.v. "Calendars"). Informed Bible students are aware of the difference between the civil and sacred year. The difficulties regarding the length of the Hebrew year and the mode by which it was calculated are considerable because of the lack of data. No reliance can be placed on verbal arguments to prove the exact length of the month in historical times. Data is insufficient to form any decided opinion on the length of the solar month (McClintock and Strong, s.v. "Month"). There are no details available how the month of Nisan was determined and the Hebrew calendar with its strictly lunar base did not observe the equinox with any precision (Empires of Time, by Anthony F. Aveni, 115).

Furthermore, there is no real evidence that during the period prior to the Exile the beginning of the month was determined by sighting the moon. There is no proof that observation of the new moon or intercalation are attributable to other cultures (Safrai and Stern, 838). No methods of intercalation are mentioned in the Bible. Since the Bible is a public record, there are no secrets from which the public is excluded. On the other hand, the calendar was in the hands of the priests whose secrets were carefully guarded. The methods of intercalation were handed down from father to son, little known to any but a few. This secrecy was important because of the calendar's importance in the regulation of religious life (Segal, 259-260). According to Schiaparelli, there isn't even an allusion to an intercalary year in the Bible, even though the Jews attribute this to Hezekiah. Yet, in order to keep the calendar in line with the solar system it is necessary to add a thirteenth month from time to time. If this is not done the beginning of the year will be displaced and will gradually recede around the whole circle of seasons (Schiaparelli, 124). The paucity of direct information from the Bible itself is a main reason much is not known. It is possible neighboring countries tried to solve the calendar problem in the same manner as the Hebrews (Segal, 250-251). Not until the second century AD was information made available that revealed how to determine the beginning of the month (Universal Jewish Ency., s.v. "Calendar"). We can certainly assume the ancient Israelites used some sort of calendar, but Bible sources do not give us a clue. No part of the Bible itself gives us a full calendar. We can only glean information here and there. It is only after the period of the Exile that data is available, though the heretical Book of Enoch, third century BC, contains a complete calendar (Anchor Bible Dict., s.v. "Calendars"). Scriptures written just before, during, and after the Exile provide dates and calendrical hints but give no systematic statement about the nature of the calendars used in Judah (ibid). The use of the word *yerah*, which is derived from "moon," indicates that the Israelite calendar was luni-solar, though we have no details of the methods of luni-solar harmonization and intercalation (Safrai and Stern, 835).

Comparison of Ancient Calendar Systems

In the Genesis account of Creation, we find God set up four units of time for mankind. They are the day,

Bethel Church of God

Can We Rely On The Hebrew Calendar?

week, month, and year. The heavenly bodies were set up to mark time. One of the earliest civilizations-the Sumerian-had a thirty-day calendar (Goudsmit and Claiborne, 59). The Babylonians inherited the Sumerian civilization (Schiaparelli, 21). A lunar calendar was in use in Babylon, as was the case in most of Mesopotamia, which is often referred to as "the classical country of the strictly lunar calendar" (Finegan, 32-33). From the beginning of recorded history Babylonia had a luni-solar calendar. These were widespread and used predominantly by the peoples of the Middle East. We find that even in Egypt a lunar calendar survived side by side with a civil calendar (Segal, 252-253). While many of the details of the Babylonian calendar have been lost, what is known is that intercalation, months divided into seven-day periods, and days with twenty-four hours, were used. By 380 BC the difference between the solar and lunar year lead to intercalation, and a nineteen-year time-cycle was introduced which intercalated the third, sixth, eighth, eleventh, seventeenth, and nineteenth years (Religious Holidays and Calendars, 8). It is not known whether or not the months were determined by observation in the Babylonian calendar. It is known that the Assyrians adopted this system of intercalation. The Babylonians eventually developed a sound astronomy and from the knowledge of earlier observations the new moon could be accurately determined, though observation was still employed (Asimov, 65-66). As early as the eighth century BC the intercalation of seven additional months to a nineteen-year time-cycle would closely match the time needed to stabilize the calendar. By the fourth century BC, these fixed years were firmly established. This achievement is regarded as phenomenal because the difference between 235 lunar months and 19 solar years amounts to only 2 hours, 4 minutes, and 25.22 seconds. In effect the Babylonian system came close to meshing the lunar and solar years (Finegan, 30-31). The Babylonians were one of the earliest peoples to address and reasonably handle the problem of the discordant solar system. Keep in mind, Finegan's figures differ somewhat from those given by other sources. His dates, however, correspond with those given by Velikovsky regarding the upheaval in the heavens. Overall, it took the rest of the world, in general, much longer to come to a workable solution.

The lunar calendar can be made to agree with the tropic year-the length of time the Earth travels around the sun. This is done by observing the sun, that is, by measuring the length of the day, or by watching the movements of the fixed stars. The Israelites employed both methods (Segal, 254). When it came to determining the beginning of the month, the Egyptians used the invisible crescent at the beginning of the month. The Jews, however, used the Babylonian method (ibid). The Egyptian custom is employed today by the use of the conjunction of the moon as the marker. In origin, the Egyptian calendar was lunar (The Calendars of Ancient Egypt, by Richard Parker, 53). But eventually the Egyptians adopted a solar calendar which became the standard civil calendar. Later again, another lunar calendar was put to use which was essentially in harmony with the solar calendar. Egypt actually had three calendars with three calendar years which were in effect the length of Egyptian history (Finegan, 24). The Greeks, Macedonians, Syrians, Babylonians, and Arabs all had similar lunar calendars. Throughout the Near East and Mediterranean area the lunar month was the one in use. Only the Egyptians and later Romans did not abide by this system, ignoring the desultory irregular time in favor of fixed times, such as a thirty-day month and a 365-day year (The Anchor Bible Dict., s.v. "Calendars").

What has been often overlooked is the influence Phoenician culture had with the calendar of Israel. The truth is: The Phoenician calendar corresponds with the oldest Jewish calendar. Phoenician inscriptions make this plain (Schiaparelli, 20, 105-106). At a later time the intercalary system of Assyria was adopted by the Israelites and made official (Segal, 256). Both the Hebrews and Moslems used the Babylonian system (Goudsmit and Claiborne, 66). Around 500 BC the Metonic cycle was discovered. It was named after Meton, a Greek, and defined the phase relationship between the lunar and solar cycles (ibid). The length of days was used to determine the solstices and made possible the ability to compute the length of the year with fair approximation. What was really vital in Palestine and the Middle East was the equinoxes (Segal, 263). See again here that the various methods employed to harmonize the calendar did not take place until after the eighth century BC. Velikovsky presents a serious question when he asks why it took so long to solve the various astronomical problems if the solar system had never been thrown into disorder.

Bethel Church of God

Can We Rely On The Hebrew Calendar?

What we see by the above is that the Hebrew calendar was no more unusual than any of the other calendars in use in the Middle East at that time. It was essentially the same as the Babylonian, Assyrian, Arabic, etc., calendars, the same calendar used by most of mankind. Like all calendars, it was derived from the reality of the heavens, the revolution of the Earth around the sun and the moon around the Earth. What made it different was the requirement to keep the holy days-which were commanded on specific days of the year. This requirement was not found in other calendars.

Other Calendars-the Pentecontad

Calendar dissidents who insist we follow "the calendar God gave to Moses" cannot go back for historical support more than the period of the latter part of the Second Temple and the third and fourth centuries AD. This is at least a thousand years between the historical evidence and the time of Moses. Furthermore, there is evidence the Israelites used at least three and possibly four different calendars during this period (The Calendar of the Book of Jubilees, Its Origin and Character, by Julian Morgenstern, Vol. 5, 35). They used differing systems of months one after another and sometimes more than one at the same time (Schiaparelli, 104). There is a custom today found among the peasants in Palestine of using a yearly calendar of "seven fifties" which involves a sequence of fifty days. It is believed this custom was derived from the Pentecontad calendar. This calendar was found in Assyria, Babylonia, as well as in ancient Israel. It was built around seven periods of seven weeks with a feast day added at the end of each period. The year ran 350 days with an added fifteen-day period. Some doubt this calendar was officially used, but historically conquered nations usually accepted the calendars of the conquerors. Old Assyrian business documents reveal a fifty-day period (Lewy, 47), and this calendar was not restricted to Assyria. The Babylonians of this time-period practiced the same thing. When they came into the Fertile Crescent, the Amorites introduced a calendar with the same features (ibid). It consisted of seven complete pentecontads with days added between two of the periods in order to complete a full year. The Babylonians used a Pentecontad calendar of 366 days-seven pentecontads and an added sixteen-day intercalation. At a later time the Assyrians discontinued this Pentecontad calendar for the luni-solar one (ibid, 49, 71).

According to Elizabeth Achelis, a dramatic change took effect in the calendar during the Mosaic period. Pentecontads of fifty days with seven weeks of forty-nine days were devised followed by a fiftieth day "special to the Lord." This calendar was in use for many centuries. Much later, during the Babylonian captivity, this calendar was discarded and an unvarying seventh-day Sabbath was introduced with the Babylonian luni-solar calendar as its foundation (Achelis, 87). It is unlikely Ms. Achelis is correct regarding the time periods spoken of above. There is no indication that Israel departed from God in any fashion during the days of Moses and Joshua. When the Pentecontad calendar was introduced into Israel it had to be at a much later date. Also, the introduction of a luni-solar calendar after or during the Babylonian captivity constituted a reform and a return to a luni-solar calendar that goes back at least to the time of Moses.

The Lewys inform us that the Pentecontad calendar was intercalated during two periods during the year. The Jews suppressed the fiftieth day of each Pentecontad so that the weekly Sabbath would not be interrupted. Some believe the Hebrews used this calendar when they left Egypt. When the First Temple was destroyed this calendar was in use. When the Second Temple was built, the luni-solar calendar was readily accepted as part of the reformation. As a result the Pentecontad calendar was forgotten (Lewy, 84, 88, 106, 118, 124, 126, 143). For those who may wish to examine the Lewy's book, the following should be called to the reader's attention: They are incorrect on the dates regarding the Exodus, and there is no evidence the Pentecontad calendar was in use during the days of Joshua. Also, while it is possible the Israelites used a Pentecontad calendar before they left Egypt, God gave Moses a calendar (Ex. 12:2) which was the official calendar for many years to come.

Facts About the Hebrew Calendar

Just like a number of other calendars, the Jewish calendar, as it now exists, is the result of long historical development (Universal Jewish Ency., s.v. "Calendar"). The idea of Elizabeth Achelis that the Israelites added the concept of the Sabbath to the Canaanite solar calendar at an early date cannot be demonstrated historically (Achelis, 86-87). The truth is, God gave the Sabbath to Israel forty years before they entered the holy land. While there may have been recurrent irregularities in setting the date for the new moon, the entire length of the lunar year remained intact (Segal, 272). As far as the new moon festival was concerned, this was not a Mosaic innovation. It was already being observed by various peoples, and Moses simply regulated it. There is no indication of its origin and "on your new moons ye shall offer" presupposes its existence (McClintock and Strong, s.v. "New Moon").

Calendar dissidents are quick to inform us that God's calendar is delineated in the Bible. Furthermore, they insist God did not give the Jews the authorization to establish the calendar and put their name on it. Additionally, the Bible has enough information to determine the calendar and there is no Bible authority for rules of any kind. Accordingly, the calendar God gave to Moses was based on human observation. Therefore, the sun and moon are the only methods to be used for determining the calendar. We have already seen there is a paucity of information regarding the technicalities of the calendar. Much of what is stated above is simply guesswork. Some attribute the origin of the calendar to the sons of Issachar, as is pointed out in 1 Chronicles 12:32 (Universal Jewish Ency., s.v. "Calendar"). Supposedly, the calendar evolved first from the empirical stage, then observation of the rising and setting of the heliacal star, and finally to computation of average monthly conjunctions and tropic years (Segal, 280-281). Historically, it is not possible to fix a time when these evolutionary processes took place. The reason: There is little historical evidence on which to base a conclusion. Some believe intercalation in a nineteen-year time-cycle could have been employed in the early days of the kings of Israel and Judah. What is known is that by the fifth and sixth centuries BC the determination of dates could be accurately forecast, and it has been suggested that computation was used at this time. One fact is certain, the Jews had this ability by the second century BC and this was in use before the destruction of the Temple (ibid, 281-284). Finegan points out that at least from the time of Solomon the calendar in Israel was solar (Finegan). If this is true, it points out the fact that for long periods of time Israel was apostate. One of Ezra's goals was to restore the calendar which had been used by Joshua. The present Hebrew calendar is a direct heir of Babylonia just as the present Gregorian calendar is a direct heir of Egypt (Achelis, 88). The Hebrew calendar was basically the same calendar used throughout the Middle East. As has been pointed out, what made it different was the command to keep the annual holy days. The fact that the Passover was to occur in the spring presupposes a solar calendar that was found in other countries (The Encyclopedia of Religion, by Mircea Eliade, Vol. 8, 42).

Semitic peoples in the Middle East all used the same names of the month as the Hebrews. The four listed in the Bible are regarded as Canaanite month names. Of the four-Abib, Ziv, Ethanim, and Bul-two fell in the spring and two in the fall. These correspond to the equinoxes (Finegan, 34-36). The spring and fall festivals were associated with the tropic year, and consequently intercalation was implied in the calendar long before the Exile (Segal, 256-257). Following the building of the Temple, the Canaanite names were discarded in favor of ordinal numbers. After the return from the Babylonian captivity, Babylonian names were used (Schiaparelli, 104). After the defeat of the Egyptians by Babylon, the Jews came under the sway of the Babylonians. As a result the Babylonian calendar became the official calendar in Palestine. The Jews added a second month-Adar-in years of intercalation, but the result was the same as the Babylonian calendar (Religious Holidays and Calendars, 10). Following the Babylonian captivity, there were a number of permanent as well as significant changes to the Hebrew calendar (New Catholic Ency., Vol. 2, s.v. "Calendars of the Ancient Near East"). So, the truth is the Jewish calendar resulted from a lengthy series of modifications and adjustments (Achelis, 84-85). The seasons are the basis of the Hebrew calendar, and their regular cycling is the foundation of an effective and orderly calendar. The seasons are

Bethel Church of God

Can We Rely On The Hebrew Calendar?

the foundation of time (Lev. 23:4). The Passover must occur in the spring, and the Feast of Tabernacles must occur in the fall (The Comprehensive Hebrew Calendar, by Arthur Spier, 1). A calendar found in Gezer, which dates back to ancient times, reveals that the year began in the fall and contained twelve months (Finegan, 34). The law regarding the Sabbatical year refers to a year that could only begin in the fall (Schiaparelli, 120).

Intercalation utilized different systems from time to time before a permanent system was established (Ency. of Religion and Ethics, s.v. "Calendar"). As intercalation is employed, calendar dates on the Gregorian calendar change. What took place is that after the Exile and before the continuous calendar was adopted, the Jewish authorities used both observation and intercalation up through the period of the Second Temple and until three hundred years later—as long as there was an independent Sanhedrin (Spier, 2). Special members of the Sanhedrin regulated and balanced the solar and lunar years. The seasons were set on the basis of handed-down tradition. A number of factors were considered, including astronomical facts, religious requirements, and the condition of the country (ibid, 1). The Jewish tradition is that after biblical times the major courts were made up of authorized and ordained judges whose chain of authority went back to Joshua. This authority continued during Tannaitic times and into the Talmudic period, and was vested in the Patriarchate (Twersky, 41). As Rome became more despotic, the Jews were forced to find a method to determine the new moons and feasts without the use of eyewitnesses. From about this time the sequence of months from Adar to Tishri was laid out (ibid). No doubt computation was employed to accomplish this, but this had been done for generations in conjunction with observation, so it was no problem to resort to calculation.

In AD 351-352 Roman persecution began and the Jews revolted. They were soon crushed. Many Jewish towns were destroyed and decrees issued against the local authorities and against Judaism. The privileges of the head of the Sanhedrin and the freedoms of the Sanhedrin itself were curtailed. A serious condition existed by the deterioration of the Sanhedrin center in Galilee. Hillel II agreed to limit the functions of the head of the Sanhedrin, as well as the Sanhedrin itself, with respect to proclaiming the new moon, setting festival dates, and employing intercalation. He then published details which informed all Jews of the methods of the calendar. From that time on the Sanhedrin in Judea ceased to function or to maintain calendar experts. Hillel II is given the credit for the present fixed calendar, but in reality it is the result of centuries of development. The aim had been to perfect the system of a fixed calendar (Ency. Judaica, s.v. "Hillel").

With the ascent of Christianity, Christian rulers prohibited the Jewish leadership from proclaiming intercalary years or from informing the Diaspora. Constantius, following the tyranny of Hadrian, prohibited holding meetings and determining intercalations. The fixing of the annual calendar became impossible. The Diaspora was completely dependent upon the Sanhedrin for the calendar, and fixing the calendar dates and notification had become impossible (Jewish Ency., s.v. "Hillel II"). The Jewish leadership then abandoned the official notification of the months and years and went to a fixed calendar in a permanent form. So, from AD 359 the calendar has been stabilized (Universal Jewish Ency., s.v. "Calendar"). This move was of inestimable value to the Jews then living and for future generations. Hillel II made the calendar available to all Jews, but the cost was high. The ties were cut from the mother country and from the Patriarchate (Jewish Ency., s.v. "Hillel II").

No one knows when the Hebrew calendar in use today reached its final form. All the evidence points to the seventh and eighth centuries AD (Ency. of Religion and Ethics, s.v. "Calendar"). With the adoption of a fixed calendar, Jews were now able to determine the new moon without observation. During the time of Hillel II intercalation had become extremely accurate, and the Jewish calendar is regarded as the most brilliant achievement of its kind (A Book of Jewish Concepts, by Philip Birnbaum, 309). Hillel's calendar is not, in detail, the calendar extant today. While the dates and length of the festivals, as well as the length of the months, were solidly established, the postponement rules were not yet fully developed (Segal, 307).

Bethel Church of God

Can We Rely On The Hebrew Calendar?

The argument by calendar dissidents that the Hebrew calendar was not official until long after the Bible was canonized, and that the methodology used to copy the Hebrew Scriptures has no relevancy to the calendar, falls flat when it is realized they readily accept the fact that Catholic bishops established the New Testament canon at the end of the fourth century AD—a long time after the inspired autographs were written. Furthermore, calendar dissidents have no reservations accepting the Old Testament which was not formalized until around AD 900. The fact is that neither the Bible nor the calendar were finalized until long after the beginning of the AD period.

What About Observation and Computation?

Much argumentation has taken place over the meaning of the word *hodesh*, which is translated “month” and means “brightly polished like a sword.” Calendar dissidents insist each new month should be determined by the visible appearance of the new crescent moon in Palestine. They feel there is an uncertainty about the state of the moon if nothing is seen because the start of the lunar month varies. But, even calendar dissidents are in disagreement. Those who hold to the observation of the visible crescent are labeled as idolaters because the moon crescent is often used as an idol. Other dissidents say the only legitimate new moon is when it is at the conjunction, that is, when the sun’s light strikes the face of the moon at an angle that makes it invisible from the Earth. Historically, the lunar cycle was regarded as the moment the crescent of the moon could be seen, following a period of invisibility. The lunar month varies in length, from slightly over 29 days but never less than 29, and never more than 30 days (The Anchor Bible Dict., s.v. “Calendars”). The synodic month is the time between two consecutive new moons, the average length is 29 days, 12 hours, and 44 minutes (Astronomy Made Simple, by Meir H. Degani, 158). As the moon circles the Earth there is a moment when it is located exactly between the Earth and the sun, a time when the Earth faces the dark side of the moon. This is the conjunction. For about a day before and a day after this moment the moon is invisible. The moment the moon is exactly between the Earth and the sun is called the *molad*, and is regarded as the official beginning and end of a moon cycle. After two days of invisibility, the crescent could be seen and from this day 29 days were counted. If the new crescent appeared on the night of the 30th, the 30th day would be the first day of the new month. If it did not appear on the night of the 30th, the 30th day would belong to the old month and the 31st day would be the first day of the new month (Maimonides, 3).

The determination of whether a month would have 29 or 30 days was solved by Babylonian mathematical astronomy during the period of the Seleucids (The Anchor Bible Dict., s.v. “Calendars”). This visible thin crescent is referred to as the “new moon,” but this is incorrect as the true new moon occurs at the conjunction when it is invisible (New Guide to the Moon, by Patrick Moore, 45). The practice in the Old Testament was to announce the new moon in the months the feasts fell (The New Schaff-Herzog Ency., s.v. “Synagogue”). As far as the Talmudists are concerned, what they say is what applied to the practice of their time. Later, the beginning of the month was accomplished according to strict rule. The rule required not only the appearance of the moon but the official pronouncement as well (McClintock and Strong, s.v. “Month”). Whether or not the new moon was observed at the proper time, the authorities could proclaim it as hallowed. If it did not appear at the proper time, it didn’t need to be proclaimed as hallowed since “Heaven had already hallowed it” (The Mishna, Rosh ha-Shanna, 2. 7. 0.). What legally began a new month was the declaration made in unison by the court which stated, “it is hallowed” (Maimonides, 9). Once the day of the new moon was fixed, it could not be retracted even if it were proven that the witnesses lied (Segal, 260). If the court sanctified the new moon inadvertently, or by mistake or duress, the proclamation was still valid and the people were required to keep the festival in accordance with the day which had been sanctified. Even if the judges had made a mistake their decision was binding (Maimonides, 10).

Only after the witnesses observed the new moon and completed their affirmation, and the formal declaration made, was the day just past considered the beginning of the month. The 30th day of each

Bethel Church of God

Can We Rely On The Hebrew Calendar?

month was, therefore, of doubtful status because just before sundown the court might proclaim that it was the first day of the month (Safrai and Stern, 847). Since records show that during the closing years of the Second Temple observation was the method of fixing the new moon, it was not known beforehand whether the month was 29 or 30 days (Ency. of Religion and Ethics, s.v. "Calendar"). Actually, observation had become a mere formality by this time since the authorities must certainly have been aware of the new moon in advance. When the moon could not be seen because of clouds, the month began on the morning following the 30th day (McClintock and Strong, s.v. "New Moon"). The truth is, because of the weather it was often impossible to observe the new moon (Jewish Ency., s.v. "Calendar, History of").

Among the scattered Jews, the holy days were observed for two days because it became obvious that the exact hour of the observation of the new moon for the month of Tishri could not always be known. For example, if clouds prevailed no witnesses could attest to its appearance. In order to be sure to observe Rosh Hashana (Feast of Trumpets) the observance was extended to two days (The Jewish Book of Why?, by Alfred J. Kolatch, 227). It was the uncertainty of the court at the last moment sanctifying either the 30th or the day following that led to this custom. The reasoning was that both days were considered "one long day." Also, post-Talmudic reasoning was that a two-day observance outside the holy land would compensate for the lack of sanctity (Eliade, 42).

The question that needs to be addressed is: If observation were the only method for determining the new moon, how could it be ascertained if weather conditions prevented its observance? What should be obvious is that observation alone was not the method of determining the new moon. Establishing the proper day for the new moon depended upon a number of factors. The truth is, its sanctification was a rather loose affair, often requiring last minute decisions, and the Diaspora could not even know on many occasions when it would be declared. This condition could not lend itself to order. Not to know until the last minute when the month begins and to be unsure of the dates for the holy days is confusing. Maimonides states that the court did use mathematical methods and that if it were likely the new moon could be observed they waited in court, the whole of the 30th day if necessary, for the witnesses to appear. Maimonides said it was obligatory for the court to use calculation even if the moon might be visible, or to examine witnesses, or to proclaim the new moon, or to send out messengers (Maimonides, 5). Even when observation was the basis for sanctifying the new moon, the court used calculation and with great precision determined the conjunction for the purpose of ascertaining whether the moon would be visible on the night of the 30th (ibid, 27).

For many years it was impossible to publish a Jewish calendar because the length of the month could not be determined until the 30th day. Also, the length of the year was not generally set until the month of Adar-the 12th month. Many Jewish people today believe that since God knew there would not always be a Sanhedrin, He gave methods by which the calendar could be calculated without observation (Understanding the Jewish Calendar, by Rabbi Nathan Bushwick, 52). What calendar dissidents refuse to admit is that observation had serious defects. During certain periods of the year the weather made it impossible to observe the new moon in time to set the beginning of the month. There may have been witnesses who imagined they saw the new moon when it had not yet appeared. There could be false testimony. It was absolutely necessary for the authorities to study astronomy and methods of calculation to be able to check up on the witnesses. Eventually calculation was the only real method of setting the new moon, and witnesses became a mere formality (Universal Jewish Ency., s.v. "Calendar"). In spite of this, observation of the new moon continued long after the appearance of the new moon could be predicted (Religious Holidays and Calendars, 5).

The whole court procedure could be questionable at times. For example, if the court had been sitting the entire 30th day and no witnesses had arrived and the old month declared to be full (having 30 days), then four or five days later witnesses arrived from some distance informing them they had seen the moon at the proper time, the court would try to intimidate them, confuse them with various questions, badger them with

Bethel Church of God

Can We Rely On The Hebrew Calendar?

inquiries, or examine the testimony in great detail. The motive of the court was to avoid having to sanction the new moon retroactively since the month had already been declared full. If it could not be avoided the court would then be forced to sanctify the 30th day and readjust the count (Maimonides, 14-15).

Regarding the solar year, the calendar by its very nature begins on a fixed day and returns to this day annually. In our solar year there are four points of time that can be put to use in the calendar. These are the two solstices and the two equinoxes. These events give us a point of time. We cannot rely on the appearance of a barley crop in Palestine or the ingathering of fruit to delineate time. These vary from year to year and from locality to locality. As Segal points out the principle consideration for the harvest festivals had to do with the equinox (Segal, 256, 264). The Passover, for example, occurs at a point of time in the tropic year when the weather conditions are favorable for a pilgrimage (ibid, 286). But, if the barley crop was not ripe enough, even though the court had determined by calculation that the spring equinox would occur on the 16th of Nisan, the court would intercalate so that the Wavesheaf offering on the 16th of Nisan could take place. Thus, intercalation was done for the purpose of the Wavesheaf offering rather than for the spring equinox (Maimonides, 16-17). And there were other reasons for intercalation. If roads were in bad shape, if bridges were out, river crossings dangerous so that people could not travel, the year was intercalated in order to give time to repair the bridges. If the Passover ovens had been destroyed by rain, in order to make time to repair them, the year was intercalated. If the kids and lambs had not yet been born or were too young, or pigeon squabs unfledged, intercalation was a consideration (ibid, 17-18).

The first visibility of the moon from month to month depended upon a number of factors. These were the angular distance of the moon from the sun at the moment of observation, the height of the moon above the horizon, the distance of the moon from the Earth, and how clear the atmosphere was (Schiaparelli, 92). In reality, a month cannot be 29½ days in length. It can be either 29 or 30 because a month cannot contain a half-day. So, when the statement is made that a month averages 29½ days in length what is meant is that a 29-day month and a 30-day month are averaged out. If the new moon is not seen on the 29th, the 30th will become the beginning of the new month. The fact is, observation could never had been a satisfactory method of regulating the calendar. Because of weather conditions, visibility of the new moon could have been impossible for months at a time. Because of this the court felt it was empowered by Mosaic tradition to employ calculation to declare a 30-day month to be followed by a 29-day month or to declare two months of 30 days or two months of 29 days, but never to allow the year to include less than four or more than eight full months (Maimonides, Intro., xxviii). What if the court declared two defective months (29 days) when they were full (30 days)? What if they declared two full months when they were defective? The month could be two days off. The holy days for that month, if any, could be off. How reliable, then, was observation? This should inform us that there was not a strict rule of observation in these times. The answer was calculation. As McClintock and Strong point out in their article, "Month," why else could David say, ". . . Behold, tomorrow is the new moon . . ." when it had not yet been seen? (1 Sam. 20:5). Much later, witnesses were required in order to declare the new moon, but only then if their observations did not contradict the astronomical prediction (Ency. Judaica, s.v. "Calendar"). The argument that 1 Samuel 20:5 proves the new moon could not be at the conjunction when the moon was invisible, and that the two successive festival days following indicate the inability to predict, falls flat. The answer could just as well be that the Israelites used methods other than observation. Or, that the year at that time was 360 days with twelve months of 30 days. Birnbaum tells us that during the time of the Temple both calculation and observation were employed to determine the new moon (Birnbaum, 308).

Calendar dissidents tell us observation was the method used to determine the new moon during the time of Christ. The implication is that we should do the same thing. But, calculation was well established by that time, both before and after. Had calculation been wrong, Jesus certainly would have taken issue with it, yet we find Him keeping the feasts the same time the Jews did. Also, calendar dissidents say Jesus taught His disciples to disobey certain laws found in the tradition of the elders, including, of course, the methods used to determine the calendar. If there were any historical evidence to support this argument, it

Bethel Church of God

Can We Rely On The Hebrew Calendar?

might be valid. But, no one knows for sure what calendar God gave to Moses. Also, there is sufficient evidence that the solar system has been radically altered since the time of Moses, and the year and month are not even the same. Calendar dissidents tell us that the Talmud is not in agreement with many of the features in the present Jewish calendar—such things as postponement rules, fixed numbers of days and months, etc. The Talmud is a collection of rules and arguments leading up to the adoption of the rules. Therefore, it presents both sides of the arguments on the issue at hand. In reality, then, the Talmud presents two opposing tendencies. Chaim Borstein gathered many references of calendar calculation in the Talmud, and it is certain the Jews in Palestine used calculation as a means of ascertaining the new moon. We should not be surprised at this. It was the perfectly normal thing to do as the Jews were surrounded by peoples who used calculations for centuries. What calendar dissidents have failed to do is to examine the two opposing tendencies in the Talmud separately. Jewish officials fixed the calendar by means of calculation, but the general public used observation (Segal, 284-285).

Regarding the idea that the Jews used the state of the barley crop as the method of intercalation, Segal tells us this was based on a comment by Rabbi Gamaliel in the first century. Supposedly, the officials examined the barley crop in early spring. If it appeared to be late in ripening, the year was intercalated. Contrary to what Maimonides wrote (see p. 28), Segal says this view cannot be accepted. He gives the following reasons: It is highly improbable a priest could look at a green barley head and forecast when it would ripen and then relate this to the moon and decide if the year should be intercalated. Secondly, the country has such a variable climate that grain there does not ripen uniformly. The variation is as much as six weeks. Segal goes on to say that while it is true the state of the barley crop was considered, this should not be confused with the method. The stars were directly connected to the calendar because the stellar year is the same length as the tropic year. It is Segal's view that the Hebrews used the heliacal rising and setting of certain fixed stars for the purpose of intercalation (Segal, 265-268). Perhaps so, but when the Israelites were scattered around the world, they certainly would not attempt to use the ripening of the barley crop to determine whether or not to intercalate. The fact that the Jews declared the year preceding the Sabbatical year as intercalary is proof that calculation was utilized rather than observation of the crops which would ripen three months later (*ibid*, 302, fn). The Sabbatical year was never intercalated because the year would have been extended to thirteen months. The same was true with the year following. The reason: Little of the produce remained and intercalation would delay the use of new produce which was permissible to use after the Wave Sheaf ceremony. In addition, the year was never intercalated in times of famine (*ibid*, 302).

It is argued whether or not there is a Bible example of intercalation. Some say yes, some say no. What is interesting, however, is Jeroboam's feast in the eighth month. It is believed that this achievement was accomplished by means of intercalation, as it is unlikely he would have challenged the Bible command directly. It can be inferred from the circumstances that the Israelites were already familiar with the deferment of religious festivals for the length of a month. Some scholars believe Jeroboam convinced the people the year was intercalary. That year he intercalated, but the Jews in Judea did not. They kept the Feast of Tabernacles at the correct biblical time. Jeroboam's method may have been convincing, as the Israelites stayed at home during the seventh month (Segal, 257-259). The reader should keep in mind, however, that Jeroboam's reign took place one hundred years before the eighth century BC. If there had not been any other alterations in the solar system, there would have been no need to intercalate. The year would have been 360 days with 12 months of 30 days each.

What was the calendar in use in Jesus' time? It is believed that before the destruction of the Temple, the Jews were able to compute the equinoxes and the solstices, and as a result were able to know in advance when the festivals would occur (Segal, 301). This, no doubt, was the calendar in use during the time of Christ. The Jews in Babylonia were instrumental in establishing calculation as a basis for the calendar. They understood the principles of motion regarding the sun and the moon as well as the nineteen-year time-cycles. The intercalary years in the Jewish nineteen-year time-cycle were not the same as in the

Bethel Church of God

Can We Rely On The Hebrew Calendar?

Metonic cycle. In the third to fifth centuries AD there was more and more use of calculations and various regulations for the calendar (Ency. of Religion and Ethics, s.v. "Calendar"). Certainly, when the Sanhedrin ceased to exist, calculation came into play exclusively (Maimonides, 22), and the use of witnesses, as noted, became a mere formality (Jewish Ency., s.v. "Calendar, History of"). The fact is, the competence of the Jewish authorities occurred much earlier than is generally realized, as is seen by the Jewish colony at Elephantine in Egypt. We can assume the Jews in Palestine were at least as familiar (Segal, 288-289). It is believed the main reason the rabbis continued to make observations of the moon was so that the public could be convinced that the authorities were not acting in an arbitrary manner but were, in fact, following the seasonal requirements. One of the reasons Hillel II published the calendar was that scattered communities were observing the moon for themselves and setting calendar dates. Much strife arose over this because the beginning of the month varied from community to community. This was a destructive practice and something had to be done. So, the calendar rules were published, and this decision is what helped preserve the Jewish faith. Jews all over the world now keep the festivals at the same time (Religious Holidays and Calendars, 11). The conjunction of the moon is now regarded as the new moon, not two or three days later when it becomes visible to the eye. As far as observation is concerned, there is not one single text in the Bible that commands anyone to use the visible new moon as the beginning of the month. When the Jews were scattered around the world, a central authority could no longer effectively proclaim the month. A systematic calendar was sorely needed.

Value of the Postponement Rules

One of the reasons calendar dissidents oppose the Hebrew calendar is because of the rules which postpone the beginning of the year. The beginning of the year-the molad of Tishri-is the marker for determining the annual holy days. Calendar dissidents tell us it is a serious offense to tamper with the calendar. They say we do not find such rules in the Bible. But, the truth is: Neither do we find any rules to proclaim a month by observation. While calendar dissidents do not regard the Hebrew calendar as a part of the oracles of God, they fail to explain why it is such a crime to tamper with something that is not an oracle from God. The truth is, the first day of the month may or may not coincide with the new moon. There was much flexibility allowed in setting the date for the beginning of the month. The moon often could not be observed, and the month was determined arbitrarily. The operation of the calendar, as a whole, was a rather loose affair even when observation was employed. The length of the year can vary from 353 to 385 days depending on whether or not it is embolismic (intercalated). The first day of the month can fall on any day of the week, varying from year to year. The same is true with the holy days. The days of the week upon which they fall vary from year to year despite the fixed date of the festival on the calendar (Ency. Britannica, New Ed., s.v. "Judaism").

The major problem with the solar system is that it does not mesh. There have been upheavals in the solar system, as well as on the Earth. It is for all intents and purposes impossible to harmonize the calendar without adjustments. Earlier calendar rules did not include some of those that came about later. At one time every holy day could fall on any day of the week. For example, the Day of Atonement could fall on a Friday or a Sunday. The molad of Tishri could fall on a Sunday. These days of the week were excluded by later calendar rules. The postponement rules are based on calculations that consider the mean or average motion of the heavenly bodies. To illustrate, if the conjunction occurs on Tuesday night, the beginning of the month is postponed until Thursday. Frequently, the new moon is not visible even on a Thursday or Friday night (Maimonides, 33). This comment by Maimonides may seem strange, but keep in mind it is possible for the moon to rise in the same place several nights in a row. With respect to the molad of Tishri, the rule is that the conjunction at the beginning of the seventh month must take place before noon. If not, the beginning is postponed until the following day. The reason is that if the conjunction is later than noon, the new moon at sunset cannot be seen anywhere on the Earth. If the conjunction occurs before noon, the new moon can be seen somewhere on the Earth, even if not in Palestine (Bushwick, 80).

Bethel Church of God

Can We Rely On The Hebrew Calendar?

According to calendar dissidents, the Pharisees required food preparation for two days if the Day of Atonement fell on a Friday. Their view is that if a burden is required under such circumstances, so be it. Logically speaking, the reason the Day of Atonement was not permitted to fall on a Friday, Sunday, or Tuesday is that to do so makes it impossible to coordinate the holy days and the weekly Sabbath. Since the first feast day mentioned in Leviticus 23 is the weekly Sabbath (v. 3), should the Sabbath be excluded from consideration since it is commanded to be kept holy? If the Day of Atonement fell on either a Friday or a Sunday, it would be impossible to properly prepare for either the Sabbath or the Sunday fast. The reason the Day of Atonement is not allowed to fall on a Tuesday is to keep the last day of the Feast of Tabernacles from falling on the weekly Sabbath. There would be no preparation time for the Last Great Day. Another consideration for postponing the Day of Atonement if it occurs on Friday or Sunday is that no burial of the dead is permitted on the Sabbath. There would be at least two days, therefore, before a burial could take place. The Feast of Trumpets is not permitted to occur on a Wednesday, Friday, or Sunday. This rule, like the others, was to prohibit the holy days from interfering with the Sabbath, and vice versa. If the Feast of Trumpets falls on a Wednesday, the Day of Atonement would fall on a Friday, allowing no preparation time for the weekly Sabbath. If the Feast of Trumpets occurred on a Friday, the Day of Atonement would fall on a Sunday prohibiting any time to prepare for the Day of Atonement. If the Feast of Trumpets fell on a Sunday, the last day of the Feast of Tabernacles would fall on the weekly Sabbath. If the last day of the Feast of Tabernacles occurred on the weekly Sabbath the first day of the Feast would fall on a Sunday. There would be no preparation day for this high day, since it immediately followed the weekly Sabbath.

What we see in the postponement rules is a principle. These rules express a reverence for both the weekly Sabbath and the annual holy days. To allow interference of the holy days with the weekly Sabbath, and vice versa, would display a disrespect for God's instruction regarding either the weekly Sabbath or the annual holy days. Both must be respected. The fact is, the seven-day weekly cycle does not coincide with any known calendar system past or present. All calendar systems require adjustments in order to avoid the conflict between the weekly Sabbath and the holy days. For many years the Church of God observed the holy days according to the Hebrew calendar. It was greatly blessed for doing so. To turn from that calendar leads to division, squabbling, and confusion, which is what has happened to many calendar dissidents. The Jewish priesthood maintained the calendar following the Babylonian captivity. The Jews have observed these days for centuries. Aside from them, some Sabbath-keeping groups in our times have kept these days. At some future date it will be necessary for a calendar adjustment in order to again mesh with the solar system. In the meantime, let us keep in mind the calendar that Jesus observed was the Jewish calendar. Since He is the One who created this universe and allows it to function as it does today, we would do well to follow His example.