

THE
STAR
OF
BETHLEHEM

· Messiah's Star ·

Grady Dearman

~ 1 ~

PREFACE

“The materialism and the atheism of this age conceive of nature’s laws without a lawgiver; of a creature without a creator; and stop with the effect, without rising to the cause, which alone affords a rational explanation of the effect. It is at this point we touch upon the deepest form of rationalism, and upon the gulf which separates it from supernaturalism. It is the opposition to the supernatural and the miraculous. It denies God in nature, and, in its ultimate consequence, it denies the existence of God. Deism and atheism have no place for a miracle; but belief in the existence of an Almighty Maker of all things visible and invisible, as the ultimate and all sufficient cause of all phenomena in nature, implies the possibility of miracle at any time; not, indeed, as a violation of its own laws, but as a manifestation of his lawgiving and creative power over and above (not against) the regular order of events. The reality of the miracle, in any particular case, then, becomes a matter of historical investigation. It cannot be disposed of by a simple denial from a basic philosophical prejudice; but must be fairly examined, and, if sufficiently supported by external evidence, it must be admitted.”

Philip Schaff
(paraphrased)

The astronomical events DID occur, and are stated to a high degree of accuracy. The dating of the Lord's birth in 2BC, is suggested by celestial data, and by scriptures. There is not a consensus among historians (never has been) as to the exact year of the Nativity. So...if you don't concur with the date I've derived, no one will crack you across the knuckles. But, please weigh carefully the data presented.

Embedded in astroLOGICAL lore (a superstitious blend of the absurd with fact) are the beginnings of astroNOMY. The named constellations of the zodiac and many star names were carried into modern astronomy...but not the pantheistic “mumbo-jumbo” to which the heathen have always clung. Indications of truth shine forth in the ancient constellations and stars, for God, who created them, gave them names. Darkened minds afterwards scrawled heathen “graffiti” across the record of the heavens.

There IS a peculiar order to the movements of events in the heavens and earth. The prophecies of earthly happenings, told beforehand in the heavens, are to be applied ONLY to the Lord Jesus Christ.

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INTRODUCTION

No life has created as much inquiry as has that of Jesus of Nazareth. Volumes have been written; so many dates have been proposed, that it is thought no sure dates can be found; but, computers and accurate ephemerides allow precise positions to be set for Sun, Moon, planets, and certain comets in that far distant time.

We know, from history, that certain events fell on dates of the calendar then in use, that the Jews used movements of Sun and Moon to set their calendar; and that eclipses were placed into the records, which now are used to verify chronology.

The explicit nature of the scriptures, which prophesied the coming of the Messiah, in many instances, were more concerned with His suffering and service, than the date of His arrival. And this is as it should be. More important is the fact that He fulfilled all scripture; that He ransomed and redeemed the transgressors of God's Holy Law with His own blood, then died that they might not.

He was the first-born from the dead. God raised Him up from among the dead, and welcomed Him as the Victor over death and the grave. Thus, He began to build His 'assembly' over which death should not reign... “the gates of hell shall not prevail against it.”

When He ascended into Heaven, He sent the Holy Spirit into the midst of the Church upon the earth, to be a Comforter and Sanctifier, Guide and Preserver to His Bride. The Holy Spirit is today still with the Church, and shall be until the return of the Son.

Therefore, the accomplished death, burial, resurrection and ascension of Jesus of Nazareth: The LORD JESUS CHRIST, stands as the beginning of deliverance to the Church. He came not to be ministered to; rather, He came to minister to the heirs of salvation.

Thus, we see that what He did, attains the ascendancy above the exact time at which it was done, But, we must not assume that the date was not predetermined or of no consequence.

On several occasions, Jesus said His time was not yet come. Later He set His face toward Jerusalem to suffer the hours of false accusers and His death on the cross. The ending of His earthly ministry must also be set as precisely.

And we see that it was so. The prophecy delivered by Daniel the prophet, was complete and clear: at the end of sixty-nine weeks of years (483 years), Messiah would come. Then, within another week of years He would finish the work. The prophecy of the “SEVENTY WEEKS” of years began with the going forth of a decree to restore and rebuild Jerusalem in troublous times, which time was after the Jewish return from Babylon.

Luke, companion of Paul, wrote the Gospel of Luke and Acts. In Luke 3, he gives names and times which for conciseness are adequate for finding when He commenced His ministry: the late summer and early fall of 28AD. The Baptist authenticated Him, and as John 10:3 says, “To him the porter openeth:...”

Going back 29 or 30 years, to about 2 BC or 3 BC: there was a quiet feeling that the prophecy given by Daniel the prophet was about to be realized. The Holy Ghost had revealed to the old Israelite, Simeon, that before he died, he should see the Lord's Christ. Simeon knew the prophecy: before the Messiah could be accredited to Israel, He must be 25 to 30 years old. That would have thrown the birth back to Simeon's day. Now we can understand a bit more why Simeon and Anna rejoiced at the sight of the Babe. See Numbers 8:24-25. Also, Numbers 4:1-4.

Strange sights had been seen in the heavens. There was the bright comet of the late summer and early fall about 10 years ago; then five years ago the three conjunctions of Saturn and Jupiter in the Jewish constellation: the Fishes. Only a year ago there was an unexpected conjunction of Jupiter and Venus. And just three months ago a second conjunction of Jupiter and Venus were one light, burning brighter than men had ever seen them... and both conjunctions in the Lion, symbolic of Judah.

About six weeks ago, there was noised abroad a report of an angelic appearance to some local shepherds in the field there at Bethlehem; and they had hastened to the inn and found a babe whom the angels said was the Messiah.

Simeon and Anna were there in the Temple when the Child was brought in for His appearance before God. The scripture says that Simeon came into the Temple in the Spirit...and probably also Anna. All of this was done after the forty day period of separation for Mary, probably the day after.

The wise men were nearing the end of their journey, because a week later, they were before King Herod; asking for the new born King of the Jews. In fact, the planets Jupiter and Venus were again in conjunction that very day in Virgo: Virgin. In the night hours of that day, they paid homage to the child in the house at Bethlehem. At this time Jesus probably was about seven weeks old.

The sky and its seasonally changing face 2000 years ago was a familiar panorama to most people. Shepherds watching flocks by night knew the forms of the constellations and their lines of sparkling stars as few today know them. Setting times for prominent stars were known closely enough to tell time by. As seasons advanced, the everchanging sky evoked correspondingly seasonal behavior in the inhabitants of the land.

The stars never varied from their places; there was such an immutability to them that succeeding generations could see no change in their positions or in their skeins of light.

Yet, there were some 'stars' which sailed along through the constellations with erratic motions. These were the planets, and were closely watched. When a bright wanderer lingered in or near a particular constellation or star, it attracted more attention than usual; two or more planets 'merging' together, precipitated intense interest.

Solar eclipses were an extreme rarity; when one occurred it must have prompted considerable conjecture...even pandemonium perhaps. Eclipses of the moon, however, were seen frequently, and were more easily predicted by ancient astrologers. On the occasion of the Feast of Passover, a full moon always shined. And occasionally, a full moon at Passover was eclipsed.

Comets were always watched with awe and foreboding. Fear of the unknown shadowed early men when an unusually bright comet hung in the sky for a long period. The historian Josephus, in his writings, said a (Star) hung like a sword over Jerusalem, in 66 AD, prior to the final Roman desolation of 70 AD. It is easy, then, to picture the 'restlessness' engendered by comet Halley when it appeared in the skies above Israel in 12 BC.

We have looked at many records left by more capable writers and have carefully considered their conclusions together with parallel histories by others. In most historical accounts we met with honest

admissions of uncertainty. The birth of Jesus was placed from 7BC to 2BC. Most opinions said, 2BC to 4BC.

Considering the scant resources, the lack of rock-hard data and the superstitions of earlier times, it is remarkable that past chronologers came as close as they did. We stand in awe.

In the waning days of this twentieth century, fast computer programs and reams of data, by God's grace, have permitted us to see what prior generations were not able to see.

God moved worlds among stars at the birth of His Son!

...and...

Men hand out cigars at the births of their sons...

THE HEAVENS DECLARE

“And God said, Let there be lights in the firmament of the heaven to divide the day from the night; and let them be for signs and for seasons, and for days, and years:” Gen.1:14.

“The heavens declare the glory of God; and the firmament sheweth his handiwork. Day unto day uttereth speech, and night unto night sheweth knowledge.” Psa. 19:1-2.

“In the beginning was the Word, and the Word was with God, and the Word was God. The same was in the beginning with God.

All things were made by him; and without him was not anything made that was made.” Jn.1:1-3.

God has no difficulty moving the “stars”, as perceived from the account given of the birth of the Messiah. He also moved the wise men by the sight of a “Star” in the East to come and worship. Throughout the Bible, scriptures refer to the stars and other heavenly bodies, and depict the ordered movement of the Sun, Moon and planets as expressive of God's couribel. The nearer heavenly bodies (Sun, Moon, planets, comets etc.) from time to time move into remarkable patterns. And none was more remarkable than the patterns leading up to the birth of Jesus of Nazareth.

To what extent do the heavens declare His glory? Scripture says He made the lights for many purposes: “for signs and for seasons”, and that they should declare His glory. The Son is the Glory of The Father. Consequently, it should not come as a surprise to see that the Sun, Moon, planets and comets obey His will.

The sweep of Halley's comet in late summer and fall of 12BC was the first of five natural events which ended at the birth of the Lord ten years later in 2BC.

Five years after Halley's comet had vanished, there was the triple conjunction of Jupiter and Saturn in 7BC in Pisces.

Then four years later a conjunction of Jupiter and Venus in Cancer, about 7 degrees west of Regulus, first star in Leo.

And a year later, June 2BC, Jupiter and Venus were again so near each other, 6 degrees east of Regulus, that the singular brilliance was later called the STAR OF BETHLEHEM.

Seventy days after that, the birth of Jesus was marked by a rare six-fold conjunction of the planets on August 26, 2BC.

Five celestial events, each naturally occurring, comprised the supernatural announcement of the birth of Christ:

1: THE GREAT COMET (HALLEY'S) of 12BC

Every +-75 years this comet swings past the Earth in its orbit of the Sun. It raced by in

164BC, in 87BC and again in 66AD and 141AD. (See Chapter 3)

2: THE RARE TRIPLE CONJUNCTION of JUPITER and SATURN
- in Pisces (fishes) in 7BC. The 2 colossal planets did not meet again in triple conjunction until 332AD in Libra/Virgo. Since 7 BC, Jupiter and Saturn have not met again in triple conjunction in Pisces. (See Chapter 3)

3: THE CLOSE CONJUNCTION of JUPITER and VENUS in LEO
Aug.12, 3BC. Jupiter and Venus are brightest of the planets. As the conjunction occurred it was watched by the Magi, for they later told King Herod when the star" first was seen. (See Chapter 5)

4: THE RARE CONJUNCTION OF JUPITER and VENUS In LEO
June 17, 2BC. The conjunction was so close, that it may have been an occultation-the disk of Venus might have eclipsed Jupiter. So moving was the sight, the "star" later was called the STAR OF BETHLEHEM. This second of two meetings of the planets indicated that the prophecy, referring to Regulus (lawgiver) and to the Lion of Judah, was now to be fulfilled. (See Chapter 5)

5: THE DATE OF CHRIST'S BIRTH
A MASSING OF PLANETS: MERCURY, VENUS, MARS, JUPITER - in a six-way conjunction, Aug. 25-26, 2BC, (Elul 23, 3759). Also, the Sun and Moon were near them in Leo and Virgo. The line-up might have been seen had it not been hidden in the Sun's glare. Today, it is possible to reconstruct the event by use of accurate data and computers. (See Chapter 6; Append. G, H. I.)

HALLEY'S COMET

Suddenly...it was there, in 12BC...bright: at magnitude 0.9 in the northern sky. It drifted from GEMINI into URSA MAJOR, BOOTES, SERPENS CAPUT and faded in OPHIUCHUS. Halley was seen from the last of Aug.12BC until the 3rd week of Oct.12BC. It shone first as Jewish Year 3749 ended, and it illuminated the first six weeks of the year 3750, then, it faded.

It had been seen 75 years earlier in 87BC; and would appear again early in 66AD (3826), as it traveled through CAPRICORN, SAGITTARIUS, SCORPIUS, LIBRA, and VIRGO; falling from view in LEO. It would shine from the last of February until the midst of April, 66AD (3826) ... about as bright as in 12BC.

The great comet shined and faded away about 10 years before Messiah's birth. Jewish hopes, apparently dead under burdens of oppression, breathed as the Spirit moved. There existed a widespread expectancy of Messiah and salvation, and the comet may have awakened the Jews to coming events. And, because it glowed only 8 years after the rebuilding of the Temple began, it accentuated the growing hope.

The comet's return in the Spring of 66 AD foretold the near doom of Israel. It passed into CAPRICORN (goat); SAGITTARIUS (archer); SCORPIUS (scorpion); LIBRA (scales); and, next into VIRGO (virgin), finally disappearing into LEO (lion).

The comet of 66AD suspended "as a sword over Jerusalem" was not seen as a warning; and, the advance and enigmatic retreat of Cestius Gallus, Prefect of Syria, and an army, angered and puzzled the Jews. But, Jewish believers saw it as fulfillment of the Lord's prophecy of Matthew 24:16...and fled for refuge to Pella and the mountains to escape Jerusalem's destruction.

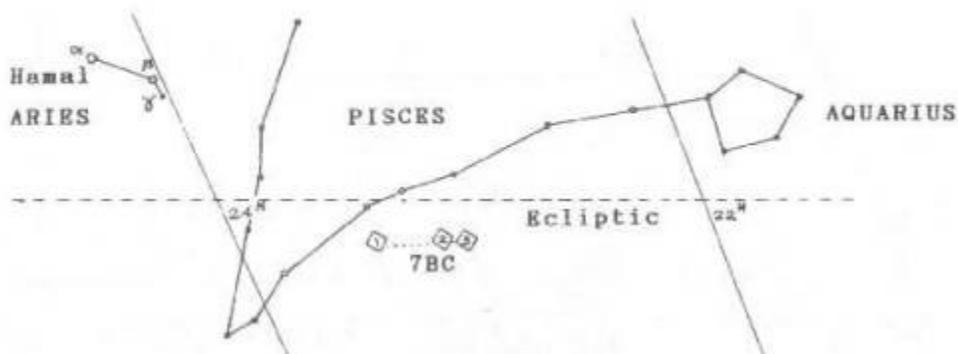
The city was invested by 30,000 men commanded by Titus, the Roman, at Passover in 70 AD, even as a suicidal frenzy within the walls of Jerusalem consumed the nation.

The Jewish historian, Josephus, witnessed and recorded that tribulation of Israel in "Wars of the Jews". The warfare of Jew against Jew was so cruel within the walls of Jerusalem that even the hardened Roman soldiary were horrified.

Bitter irony lay in the burning of their Temple the 9th Ab, (Aug 5, 70 AD); the very day the Babylonians had burned it to the ground some 600 years before. Jerusalem was razed and the survivors (97,000) were sold as slaves.

Man has always found comets fascinating. Although science has stripped away many of their mysteries, we will still make an effort to see them. If we today do this in knowledge, why should we wonder that earlier men feared and revered them?

TRIPLE CONJUNCTION—JUPITER & SATURN



TRIPLE CONJUNCTION OF JUPITER AND SATURN IN THE YEAR 7 BC

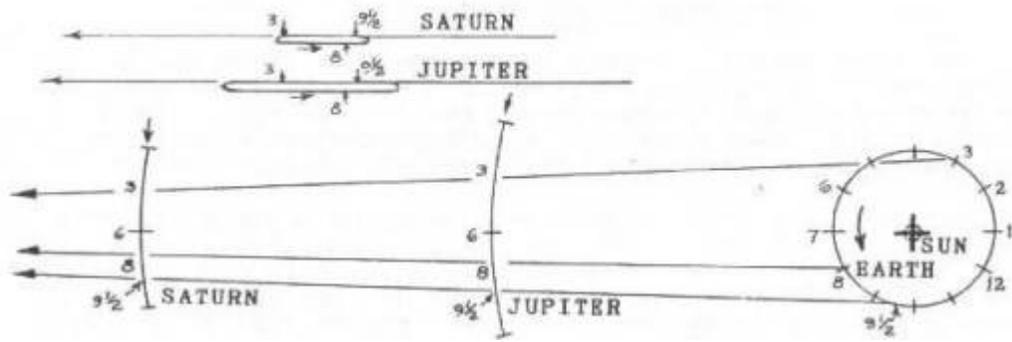
Epoch 0.0

There were 3 conjunctions of Jupiter and Saturn in 7BC in Pisces, the fishes, spanning TWO Jewish years:

1st ... Iyyar 28, 3754. (May 29, 7BC) at 0800 UT (GMT)
Ecliptic Long. 350.93 Deg. Jup. Lat. -1.34 Degrees
Sat. Lat. -2.33 Degrees

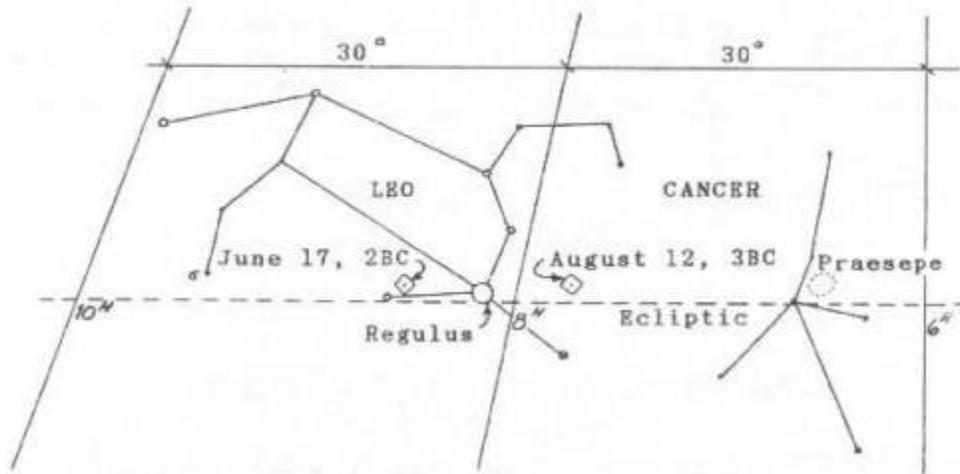
2nd ... Tishri 6, 3755. (Oct. 1, 7BC) at 0740 UT (GMT)
Ecliptic Long. 347.41 Deg. Jup. Lat. -1.75 Degrees
Sat. Lat. -2.73 Degrees

3rd ... Kislev 12, 3755. (Dec. 5, 7BC) at 1250 UT (GMT)
Ecliptic Long. 345.56 Deg. Jup. Lat. -1.45 Degrees
Sat. Lat. -2.51 Degrees



The earth's place and movement in its orbit causes a shift (backwards) in the positions of Jupiter and Saturn. Then, as the relative positions and motions of the 3 planets change, a direct movement of the two largest planets is re-established. The typical drawing above shows how a “loop” is produced by orbital movement of the earth around more than 1/2 its orbit.

TWO CONJUNCTIONS-VENUS & JUPITER



TWO CONJUNCTIONS OF VENUS & JUPITER

Epoch 0.0

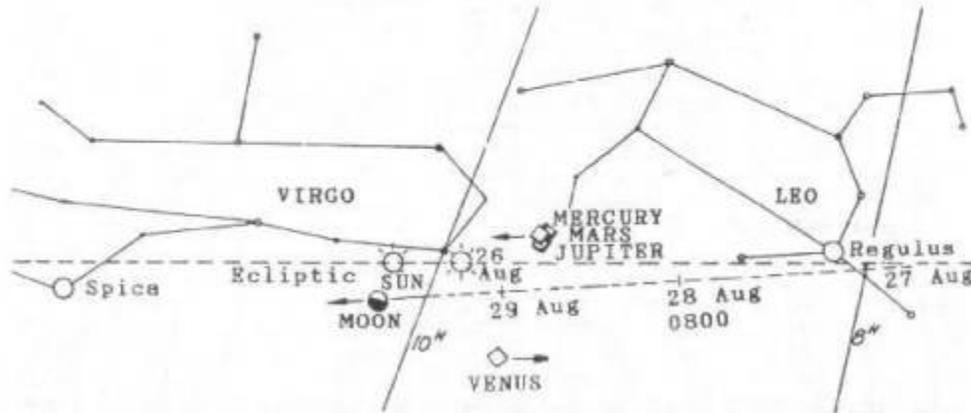
FIRST CONJUNCTION:	-2 (3BD) August 12	+0525	Universal Time
	Ecliptic Longitude:	+115.55	Degrees
	Lat. Venus:	0.70	"
	Lat. Jupiter:	0.63	"
	(CLOSE) - Separation:	0.01	"
SECOND CONJUNCTION:	-1 (2BC) June 17	+1754	Universal Time
(STAR OF BETHLEHEM)	Ecliptic Longitude:	+128.07	Degrees
	Lat. Venus:	1.03	"
	Lat. Jupiter:	1.04	"
	(EXTREMELY CLOSE)-Separation:	0.01	"

The astronomical coordinates for the Star of Bethlehem are given for verification by anyone with a computer and software program (Commercially available) for \$100 to \$200. In fact, all the data given in this book is reproducible with software astronomical programs which cover the period discussed.

Actually, the Star of Bethlehem occurred seventy (70) days before the birth of the Lord Jesus. It was widely visible and anticipated for several days as the two planets approached an amazingly close conjunction; so close did the two approach to each other that an extremely rare eclipse of Jupiter by

Venus may very well have taken place!

Then, 118-120 days later, as the Wise Men moved toward the city of David, the star which they had seen in the East, went before until it came and stood over the place where the young child was. Either local or celestial: it makes no difference, it was from God.



THE DATE OF CHRIST'S BIRTH

SIX FOLD CONJUNCTION OF PLANETS ELUL 23, 3759

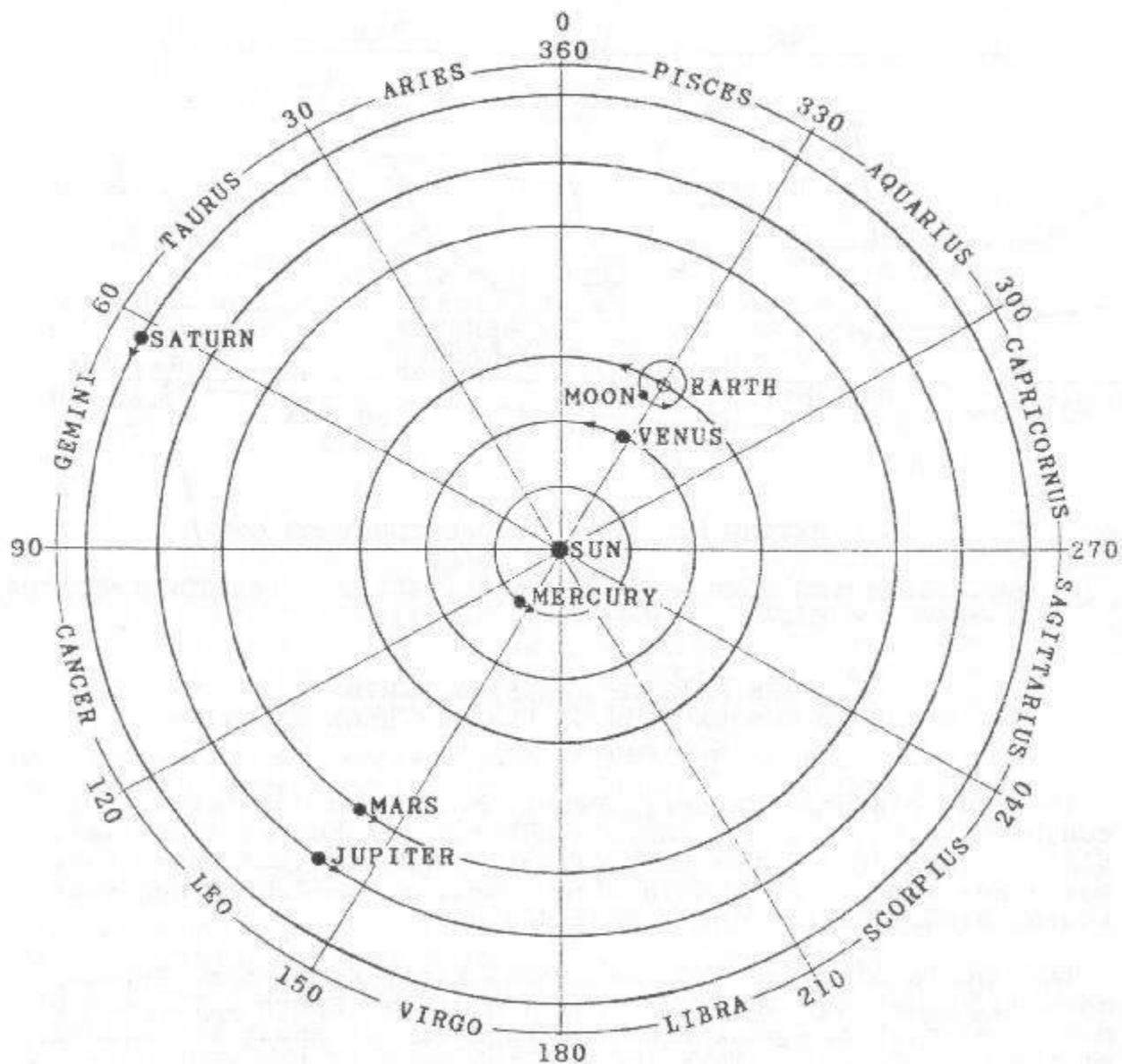
(See Appendix H and I)

The four planets Mercury, Venus, Mars, and Jupiter were in conjunction Aug. 25-26, 2BC. In ONE day (24 hours) there were SIX conjunctions of the four planets, and within 3 days there was a new moon. - AND 3 days after that, a new Jewish new year began: 3760.. Tishri One.. Rosh Hashana.

The Moon's place at 3:00 am, local time, Bethlehem, Tuesday morning August 26, 2BC, was 104.74 degrees (Epoch 0.0); which put it east of the star cluster Praesepe, at about the middle of the sign Cancer. This locates the Moon in the sign Cancer the night the Lord Jesus Christ was born. Cancer is the sign Crab, or "secure fold".

The Sun's position, 3:00 am, local time, Bethlehem, Tuesday morning, August 26, 2BC was 149.51 degrees (Epoch 0.0); which placed it in Leo, near Virgo, the virgin. Therefore...Earth, Sun, Mercury, Venus, Mars, and Jupiter, were in a lineup that deviated +/- 3.7 degrees from a straight line in Leo the lion and Virgo the virgin. Here was a line 577,000,000 miles long (928,000,000 km.), which was straight to 93 %, as viewed from above the plane of the solar system.

SIX FOLD CONJUNCTION



Mercury, Venus, Mars, and Jupiter were in six conjunctions on 25-26 of Aug. (Elul 23, 3759) in Leo; but, the Sun's glow hid them all. New Moon was the 29th Aug. (Elul 27) at Jerusalem; and at sunset Sept. 1, the New Year 3760 began. Sun and Moon, Mercury, Venus, Mars, and Jupiter were in Leo and lined up to within 8-13 degrees with Earth from 26-29 August. Saturn was in Gemini at a right angle to the lineup of Sun, Moon, Earth, Mercury, Venus, Mars, and Jupiter.

BIRTH OF JOHN THE BAPTIST

THE 8th COURSE OF PRIESTS (ABIA)

When the Temple was about to be erected.. David, by Divine permission, divided the posterity of Eleazar and Ithamar into 24 courses: 16 of the house of Eleazar, and 8 of the house of Ithamar; each course was to serve a week in turn: and in this state, they appear to have remained all the time of the first Temple. Upon the return from Babylon, however, only four were found. These 4 were expanded into 24 courses...each of which was to serve a week at a time, from Sabbath to Sabbath; twice yearly, in sequence. Beginning with the “first” Sabbath after Passover and the “first” Sabbath following Tabernacles. And, the balance of time was served conjointly by all at Passover, Pentecost, and Tabernacles. (ANTIQUITIES OF THE JEWS, William Brown; 1823 ed. p.252) (paraphrased)

Zacharias was a priest of the 8th course: Abia (Abijah) and even though he was far advanced in years, as was his wife, he continued to help, in his course, in the Temple services. As told in Luke, he finished his service at Noon on Saturday and went home. Tradition says he dwelled at Am Karim (En Karem), which was 2 or 3 miles west of Jerusalem, in the hill country of Judea. In 3BC, Passover began at sundown March 31; making it “fall” on April 1. That date, April 1, was on Monday; the next Sabbath was April 6. Thus, the courses were to serve in the following order in the year 3BC (3758):

- 1st. - April 6 --- April 13
- 2nd. - April 13 --- " 20
- 3rd. - April 20 --- " 27
- 4th. - April 27 --- May 4
- 5th. - May 4 --- " 11
- 6th. - May 11 --- " 18
- 7th. - May 18 --- " 25
- 8th. - May 25 --- June 1

Zacharias ended his services at noon that Sabbath Saturday, June 1, 3BC; and by Monday June 3, 3BC the prophecy the angel Gabriel gave to Zacharias was to be fulfilled.

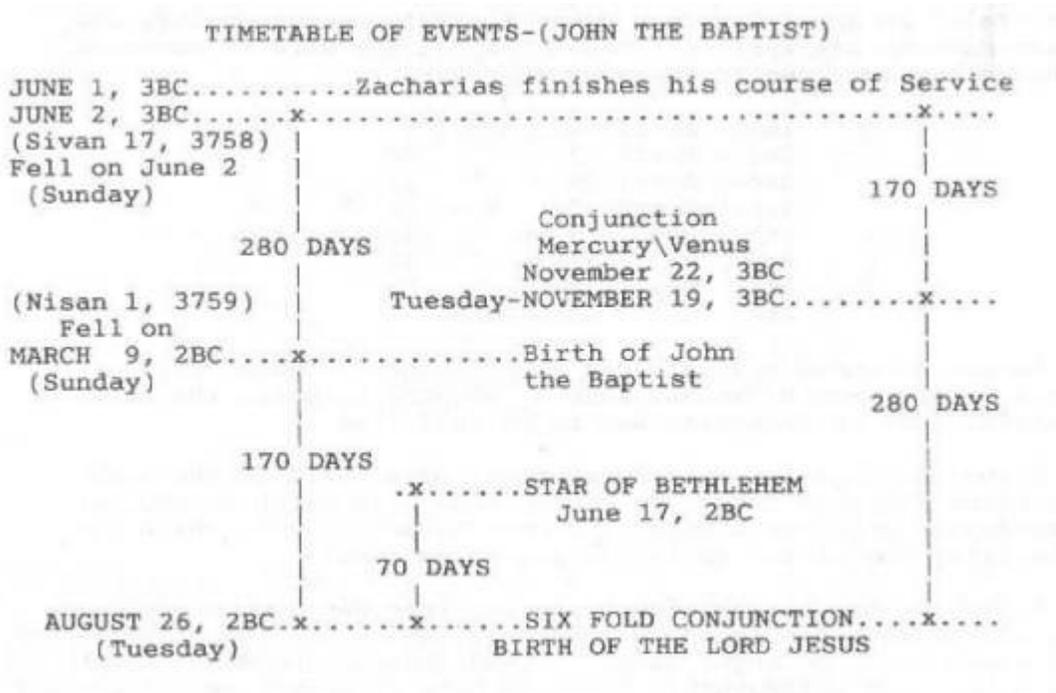
Allow 280 days for full development of a child in the womb. Counting 280 days from June 2, 3BC ends with March 9, 2BC, as the day of John the Baptist's birth: Nisan 1, 3759, which was the first day of the RELIGIOUS year. AMAZING!

Elizabeth hid herself for 5 months; then was seen publicly. In Elizabeth's 6th month, an angel called on the virgin Mary, at Nazareth. The angel said, “. . .and this is the sixth month with her,..." (Elizabeth). Since no date is given, we believe that Gabriel spoke to Mary as if it were in the middle of the month: 15 days from the first, and 15 days to the last of the month. We believe Elizabeth had been with child for 5 and 1/2 months x 30 days, or 165 days. And, also the Bible says Mary arose in those DAYS and went into the hill country with haste to see her cousin Elizabeth. Therefore, add 5 more days, for a total of 170 days. If the dates are true, John the Baptist was born 170 days before Christ: almost 6 months. Adding 170 days to March 9, 2BC carries us to August 26, 2BC, precisely 70 days from the STAR of BETHLEHEM, and the unfolding of the sixfold conjunction of planets. AMAZING!

The Lord Jesus probably was born on Elul 23, 3759. Seven days later year 3760 began:Tishri 1, 3760 Rosh Hashana. And then, since Jewish custom counted the birth date, as the first day, He may have been circumcised Tishri 1, 3760, (Tuesday Sept.2, 2BC) which was the 8th day. Elul 23 spans from

sunset Monday August 25 until sunset Tuesday August 26, 2BC. It is probable Messiah was born Tuesday morning August 26, 2BC.

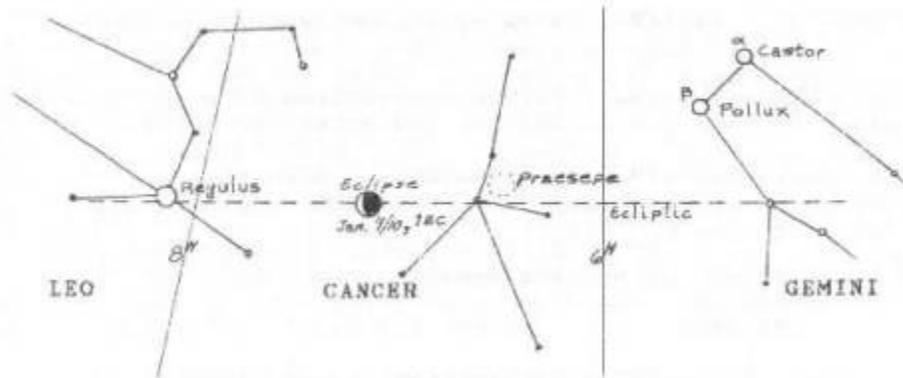
Note: On Nov.22, 3BC (Kislev 12, 3759), the conjunction of the planets Mercury and Venus was near the Sun in Sagittarius 277 days before the Nativity. Three days earlier was November 19, 3BC, (Kislev 9, 3759), Tuesday; exactly 280 days prior to the birth of the Lord. FROM JUNE 2, 3BC UNTIL NOVEMBER 19, 3BC WAS EXACTLY 170 DAYS. AMAZING!



DEATH OF HEROD

DEATH OF HEROD

13



THE TOTAL LUNAR ECLIPSE OF JANUARY 9/10, 1 BC

THE TOTAL LUNAR ECLIPSE OF JANUARY 9/10, 1 BC

This eclipse is probably the one to which Josephus referred (Antiquities Book XVII, Ch. VI, Par.4.). There are numbers of reasons why this eclipse (which was after the birth of Christ and before the death of Herod the Great) must have been that of January 9/10, 1 BC.

Passover 1BC (3760) fell on Wednesday April 9. The eclipse of January 9/10 is the only eclipse which allowed enough time (90 days) from eclipse to Passover, for the events listed by Josephus to have occurred. The eclipse of March 13, 4 BC is believed by some scholars to have been that to which Josephus referred, but, in 4 BC, the Day of Passover fell on Wednesday April 11; which allowed only 28 days for all, the activities enumerated by Josephus. And, the eclipse was not total: a poor partial. It began two hours after midnight and probably was viewed by only a small number of people.

The eclipse of March 23, 5 BC took place only hours after Passover ended; and it was also too early to have marked the end of the 34 year reign of Herod. The eclipse on the evening of September 15, 5 BC was fine and well placed; but, it was a late summer eclipse, and had other flaws which prevented it from being the eclipse of Josephus. All 4 lunar eclipses of 3 BC were partial and not visible at Jerusalem. There were 2 partial eclipses in 2 BC, which could not have been seen in Palestine. Herod reigned for 34 years after his capture of Jerusalem in 36 BC, 27 years to the day after Pompey captured the city in 63 BC. If Herod died just after the Eclipse of January 9/10, 1 BC, the chronology fits perfectly.

TIMETABLE OF EVENTS (From 12BC to 1BC) THE NATIVITY

August – October	12BC	Halley's comet appeared
May 29	Oct. 1	Dec. 5
	7BC	Triple conjunction of planets Jupiter and Saturn in Pisces
August 12	3BC	Conjunction of planets Jupiter and Venus in Leo
March 9	2BC	Birth of John the Baptist A Sabbatical year
	100 days	
June 17	2BC	Conjunction of the planets JUPITER and VENUS in LEO... The STAR OF BETHLEHEM
	70 days	
August 25-26	2BC	Sixfold conjunction BIRTH OF THE CHRIST Shepherd's visit at the INN
	7 days	
September 1-2		Rosh Hashana (circumcision)
		September 16-22 TABERNACLES Joseph required to attend
	35 days	
October 6-7	2BC	Visit to Temple at Jerusalem 5 Shekel redemption was paid 2 doves for Mary's cleansing

	The Magi consult King Herod
<u>A local STAR leads Magi to HOUSE: localized STAR OF BETHLEHEM</u>	
(12th - 13th Oct. 2BC)	Magi visit in the HOUSE
	Magi warned-return another way
	Joseph warned-flees to Egypt
	Slaughter to the children
January	Total Lunar Eclipse at Jerusalem
9/10, 1BC	
January	Death of King Herod
24-28, 1BC	
Spring, 1BC	Return from Egypt to Nazareth

THE BIRTH OF THE LORD JESUS CHRIST

(A Synopsis)

The heavens declare the glory of God. The birth of the Son of God, from a virgin of Israel was predicted by the prophet: Isaiah 7:14. The LXX gives “parthenos”, virgin, which is the same word in the Greek of Matthew 1:23; which the translators of the KJV rendered “virgin”. In Hebrew the word is “almah”. The latest Jewish Bible gives: “almah” as, the young woman Isa.7:14 is: “ha-almah”, a maiden; and “bethulah” (Gen.24:16) is: a virgin. Although, almah means “maiden”, it also denotes sexual purity, and is translated “virgin” in Gen. 24:43, KJV.

“Mazzaroth”, the twelve signs, is found in Job 38:31,32 and tells us that at that early date there was a knowledge of the twelve constellations of the zodiac.

But where is the beginning of the circle of the Zodiac? At first glance we see the circle has neither beginning nor end. We could begin at any of the twelve signs, but that yields us twelve beginnings and endings, and... interpretations! Surely, there must be a point at which we can confidently begin..., and logically end.

It is the practice today to begin the Zodiac with Aries the Ram. This became habit because the beginning of the year for the ancient world coincided with the Vernal Equinox, which at the time of the Maccabees (160 BC) was in Aries, but now, the beginning of the year has been shifted from March to January.

Ignoring the story of Oedipus and the Sphinx, the riddle of the Sphinx really is not riddle at all, but the answer to the question of WHERE to begin in our journey along the Zodiac.

The form of the SPHINX has the head of a woman and the body of a lion. In the oldest known depictions of the Zodiac, the Sphinx is seen between the signs for the virgin and the lion, which tells us that we are to enter the circle at that point. Thus, we are to begin with Virgo and end with Leo. Christ was born of the virgin, and rises triumphantly with measured step to His revelation as the Lion of the tribe of Judah.

Is it only coincidence that the planets were moving in such strange motions nearly 2000 years ago?: a great comet; and an awesome triple conjunction of the two greatest planets; and a double conjunction of the two brightest planets, and THEN the six-fold conjunction of four planets, in ONE day... and all of these marvels occurred in the decade before His birth.

And is it coincidence that the virgin birth was brilliantly celebrated in the heavens of high sunlight at the exact point of the Zodiac shown by the Sphinx? Clearly, the time of the beginning and end was there for all to perceive.

To most observers of the day, a comet is a minor event. To a few, however, it is a preliminary to impending catastrophe. Others see it as an uplifting testimony to God's power. Some in science look upon it as a puzzle to be resolved. And some don't even look. But, a generally casual view of comets does not obtain for most of recorded history. Visible comets were seen as anything but welcome: fears, forebodings, panics, all were common. The hairy visitor incited primitive dread, with the visit being noted and tremblingly correlated with earthly events. There oftentimes WAS a war, or a plague, or a birth, or death which followed the comet. Early man believed he had good reason to be wary at the sight of a comet.

Halley's comet glowed softly in the skies of 12 BC. Today, the comet's return at that time is cited as

outstanding. The Jews, especially, were fascinated by the skies, and scripture applies celestial terms to Hebrew affairs. And the Gentiles, those who read the prophecies, also followed its pathway with an esoteric interest. As the rare visitor moved majestically across the Northern sky, it was watched minutely for any hint as to its meaning for that time and for that place.

The Jews, who viewed the great comet of 12 BC, were a nation which had seen at first hand the deliverances into and out of grave troubles at the hands of God. They may not have known WHY it was sent, but they knew WHO sent it. The Mesopotamian astrologers...perhaps, because they were at a distance, might have anticipated the celestial trceries which were beginning to be unveiled; but, none among them could have foreseen the approaching marvels.

Triple conjunctions of Jupiter and Saturn are infrequent... in fact, that of 7 BC (in Pisces) has not been repeated. The position of the three conjunctions in Pisces (fishes) was not an accident, for the sign has been considered as bearing upon the fortunes/misfortunes of the Jews. The 1st (of the three) conjunctions was in 3754; but, the 2nd and 3rd were after the beginning of the year 3755. By placing the first conjunction in a previous year and the second and third together in a new year, God directed to the New Covenant. The old covenant had revealed the Father, as God of the Hebrews. The New Covenant sees the Son as the Redeemer, and the Spirit as Sanctifier of the general Assembly of the Firstborn.

The conjunction of giant Jupiter and bright Venus on August 12, 3 BC was perceived by the Chaldeans, and perhaps by other viewers, as “the word” to watch the nation of the Jews in the immediate future. The conjunction so near Regulus, brightest star in Leo the lion, alerted the prudent to await the advent of the “Regulator”, the “Lawgiver”, the “Star” who soon would arise from Jacob; the “Sceptre” who was to spring from Israel as the Lion of Judah. Just 10 months and 5 days later, there was an exquisite conjunction of the planets in Leo; closer to Regulus. An exquisite conjunction, because the two merged so closely into one burning unity, that the eyes alone could not separate them. From Mesopotamia it was viewed, after sunset, low in the west hanging above Palestine.

A full Moon was rising in the East as the shimmering point of light hung briefly over the gathering darkness in the West...then...it was gone.

That conjunction, June 17, 2BC, of Jupiter/Venus, persuaded the Wise Men that a new King was to be born to the Jews. This “star” was brilliantly demonstrative of wisdom higher than of man, and was called the STAR of BETHLEHEM.

The STAR of BETHLEHEM, June 17, 2BC, moved the Wise Men to come to Palestine. Several days may have been spent preparing for the journey, for there were many miles to be covered. They were important men, leaders in knowledge in their nation. To be free to travel is proof of approved status. And they would present precious gifts.

And 70 days later, Aug.26, 2 BC, a 6-fold conjunction moved to its peak: three conjunctions in 6 minutes, as the angel of the Lord revealed His birth to shepherds, who came with haste and found their King, wrapped in swaddling clothes lying in a manger, (The ONLY sign given to the shepherds).

About the 12th of October (A third conjunction of Venus and Jupiter took place the 13th of October 2BC. See Appendix J), the Wise Men entered Jerusalem. The king, paranoid and cunning, questioned them...and when he knew that they sought the newborn King of the Jews, he became anxious. Secrets were difficult to keep then...as today, and the Wise Men's purpose became generally known. Herod not only was troubled, but all Jerusalem with him.

In haste, Herod called all the chief priests and scribes of the people together, and demanded of them

where Christ should be born. “And they said unto him, in Bethlehem of Judea: for thus it is written of the prophet,

And thou Bethlehem, the land of Juda,
art not least among the princes of Juda:
for out of thee shall come a Governor,
that shall rule my people Israel.” Mt.2:6 (Micah 5:2)

The king, privily, called for the Wise Men, and enquired of them diligently (exactly) what time the star appeared. Herod then, sent them to Bethlehem, and with pretended piety begged them to search for the child, and when they had found him, to let him know so that he, also, could pay homage. The Wise Men “heard” the king, and departed.

It was dark as they began the short (5 miles) trip south to Bethlehem. Lo! a miracle. The “star” seen in the East arose and went before, till it stood over the HOUSE where the young Child was. The two planets, Venus & Jupiter, had moved away, as had constellation Leo...from the locale of the conjunction 3-1/2 months earlier. But, here was a “star” which went with them and pointed to the HOUSE where the Child was. That they were seeing a miracle was obvious, for the truth according to the scripture is that they were WISE men. And it also says,

“When they saw the star,
they rejoiced with
exceeding great joy.” Mt. 2:10

“And when they were come into the house, they saw the young child with Mary his mother, and fell down, and worshipped him: and when they had opened their treasures, they presented unto him gifts; gold, and frankincense, and myrrh. And being warned of God in a dream that they should not return to Herod, they departed into their own country another way.” Mt. 2:11, 12

We must realize that the two accounts of the birth of Jesus in Matthew and Luke are there as complements. The Gospels are written in Greek; therefore, we look to them to determine the proper meaning. Luke used the word “brephos” (infant), which is rendered “babe” in the KJV. That newborn BABE was visited by shepherds who found their new King, the BABE, “wrapped” in swaddling clothes lying in a manger in the INN: “katalumati”, “lodging place”. Probably, Jesus was born early August 26, 2BC Elul 23, 3759, in the midst of a six-fold conjunction of four planets.

But Matthew, says “paidion” (child); translated as “child”. When the Wise men saw the CHILD He was in the HOUSE: “oikian”. Almost 49 days had passed since the visit by the shepherds at the INN; for when the Wise Men visited, they were received in in the HOUSE by the CHILD.

He was circumcised the 8th day, and at Jerusalem two silver trumpets announced a new year.. .and the Feast of Trumpets. A day or two after 40 days cleansing, Mary was presented to the priest at the Temple in Jerusalem. The Child, too, as a male was examined by a priest who also verified the 5 shekel price of redemption paid by His “parents” (Nu.18:15-16 (He was at least 40 days old at this time.)). Then two small birds were sacrificed. As they waited there, they were approached by an old man, Simeon, who took the CHILD into his arms, blessed God and them, and spoke prophetically. At that moment, Anna, a prophetess, came in, gave thanks to the Lord, and spoke of Him and redemption. Immediately thereafter, the family probably returned to Bethlehem about when the Wise men were nearing the end of their journey. They had not yet seen the newborn King, and Herod did not know of the CHILD; Joseph had not fled with the CHILD and Mary into Egypt. Luke 2:39: “And when they had performed all things according to the law of the Lord, they returned into Galilee, to their own city

Nazareth.”...which they did, but not directly, for Matthew gives more light: after their gifts to the CHILD in the HOUSE at Bethlehem, the Wise Men returned to their land another way. A warning dream told Joseph to: “...Arise, and take the young child and his mother, and flee into Egypt, and be there until I bring thee word: for Herod will seek the young child to destroy him. When he arose, he took the young child and his mother by night and departed into Egypt: And was there until the death of Herod:...” Mt. 2:11-23. At the death of Herod, Joseph came to Nazareth.

REVIEW OF EVENTS: When the “taxing” was decreed by Caesar, Joseph and Mary, pregnant, were at Nazareth. Before them lay 80 miles of country road to Bethlehem, where Joseph was to be enrolled. Mary's pregnancy may have slowed them...and Joseph, a just man, might not have urged her. Her state and Joseph's concern were bound with other factors which might have placed them among the last to arrive Bethlehem: most enrollees might not have come as far, nor have been slowed by pregnancy.

The Babe was wrapped and placed in a manger. But, after the birth of the BABE, they obviously moved into a house, because when the Wise Men came, Matthew says: “And when they were come into the house, they saw the young child with Mary his mother...” Matthew 2:11.

Travel from Mesopotamia to Judaea may have taken as long as 4 months (Ezra 7:9), depending on the point of departure, the size of the caravan, the route, and method of travel. Because they were important men, a large party probably traveled with them to protect from the dangers of the journey. The Wise Men obviously visited after the 40 days of cleansing for Mary.

The warning dreams for them and for Joseph came immediately after their royal visit. The wise men returned home by another way, thus avoiding Herod: and Joseph fled to Egypt with Mary and the Child. Herod awaited the return of the wise men, and when they did not reappear, he loosed his sword on Bethlehem. All of the children two years old and under were slaughtered. Herod had found out when the “star” FIRST made its appearance (on August 12, 3BC) from the wise men; also, the date of its LAST appearance (June 17, 2BC) which had occurred only months before. Having found the time range to be 15 months, he next extended it to include all children 2 years and under. Herod was fiendishly thorough, he did not confine his wrath only to Bethlehem, but flung his sword onto the neighboring towns and countryside. The Greek article, “tous”, masculine, (Mt. 2:16) points to the male children. He was so murderous that Emperor Augustus reportedly had said (when told that Herod had killed his own sons), “It is better to be Herod's hog, than his son.”

The family of Joseph found security in Egypt. The Wise Men returned home another way. And King Herod, his life draining away, hoped that any new-born “King of the Jews” had been put to death (with many other children). The Jewish year of 3760 began after a line-up of planets, Sun, Moon and Earth pointed to the Lion of Judah, born of a virgin. Herod did not see it and could not know: The Desire of Israel had come. Messiah's reign began on Tishri 1, just as all the Kings of Judah prior to him had counted theirs, (Accession method).

The Fall and Winter of late 2 BC brought to Herod little in relief from his multiplying physical problems. He was almost 70 years old, consumed by morbid fears, and literally rotting away. In December of 2 BC, two Rabbis stirred up a rebellion which Herod crushed: the patriots were killed, and the Rabbis were burned the night of January 9/10, 1 BC...a lunar eclipse illuminated the horror of that night. Herod died a few weeks later, about the 24th-28th of January, 1 BC.

Shortly after this, in Egypt, Joseph was told in a dream to go into the land of Israel with the Child and His mother, for they were dead which sought the young Child's life.

Passover, in 1 BC, fell on April 9. Joseph was required to attend then (or “little Passover” on Iyar 14) But, Archelaus, son of the late King Herod, ruled in Jerusalem. Joseph might have been at that

Passover, or at the second Passover a month later, but we cannot say if Mary and the Child were with him. The memory of the recent trek from Egypt, and the butchery by Herod's minions at Bethlehem, may have been enough warning to Joseph.

The death of Herod five months after the birth of Christ is an additional factor for believing that Joseph, his wife, and the CHILD returned at once to Bethlehem following her rite of purification. At THAT time, Herod had not seen the Wise Men and they had not seen the new-born King. Joseph came into the Temple with Mary and the CHILD before Herod (or he) knew of a threat. Had Herod known, he would have attempted to kill Him then. And had Joseph suspected hazard, he would not have put the CHILD or Mary in danger.

The Feast of Tabernacles, September 16-22 2BC (3760), began about 2 weeks after the circumcision of Jesus. Joseph HAD to attend. Three weeks later he and Mary presented Jesus to the priest...and the Wise Men visited about a week after that.

**YEAR by YEAR
PLANETARY CONJUNCTIONS
NEW AND FULL MOONS
SUN'S POSITION
8BC - 1BC**

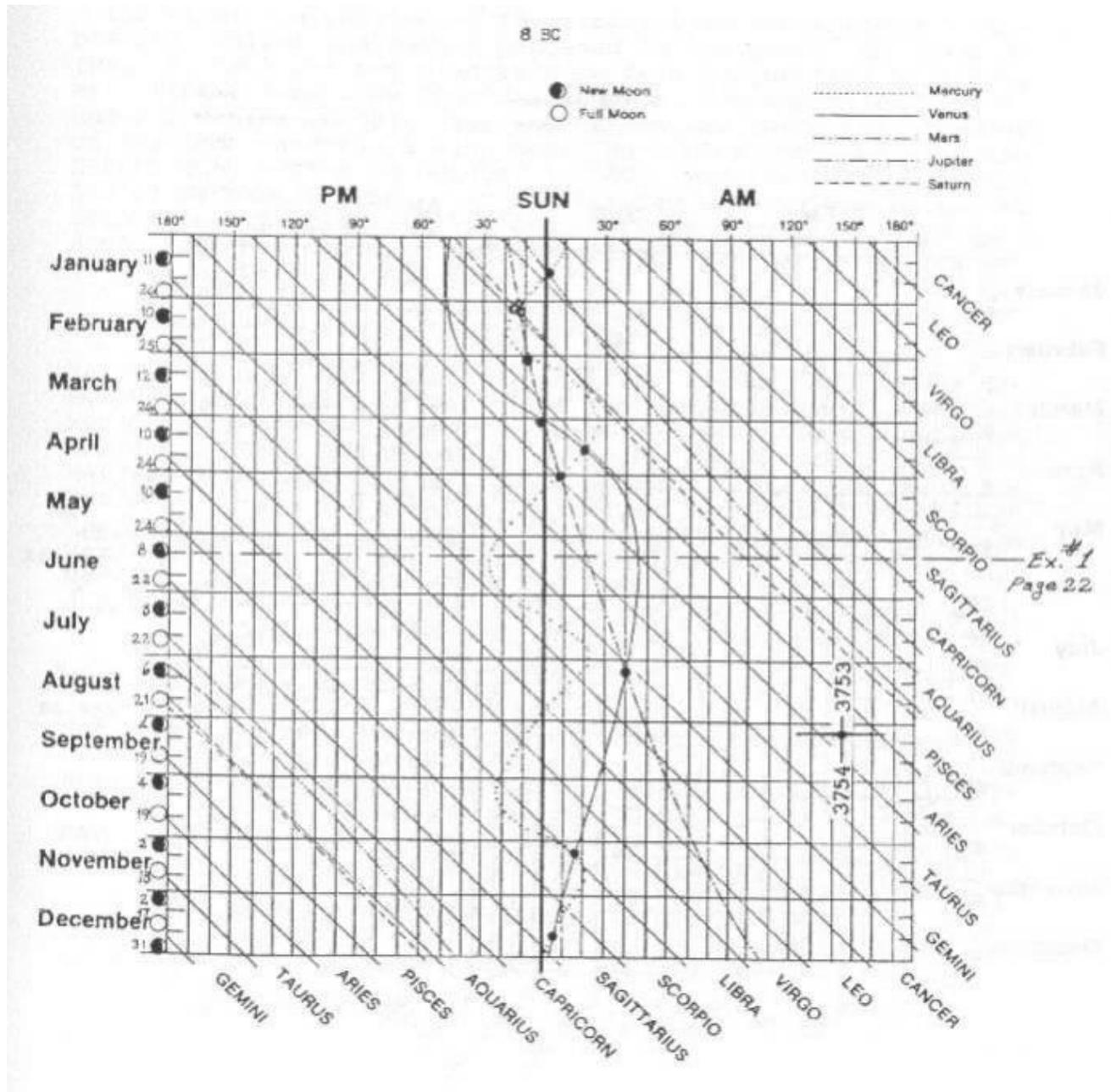
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**SYNOPSIS
YEAR by YEAR
ASTRONOMICAL ACTIVITIES**

**JEWISH YEARS
3754 - 3760**

Dates of Full-Moon & New-Moon are shown on the left side of schematic in each year. However, the constellation showing the Moon's situation is valid ONLY at FULL-MOON. The constellation which is true for New-Moon is nearly always as shown for the SUN in the center of the page.

HOW TO READ THE SCHEMATICS SHOWING THE SUN, MOON AND PLANETARY POSITIONS.



Example 1. June 8, 8BC: Jewish year 3753

The Sun was in the constellation Gemini.

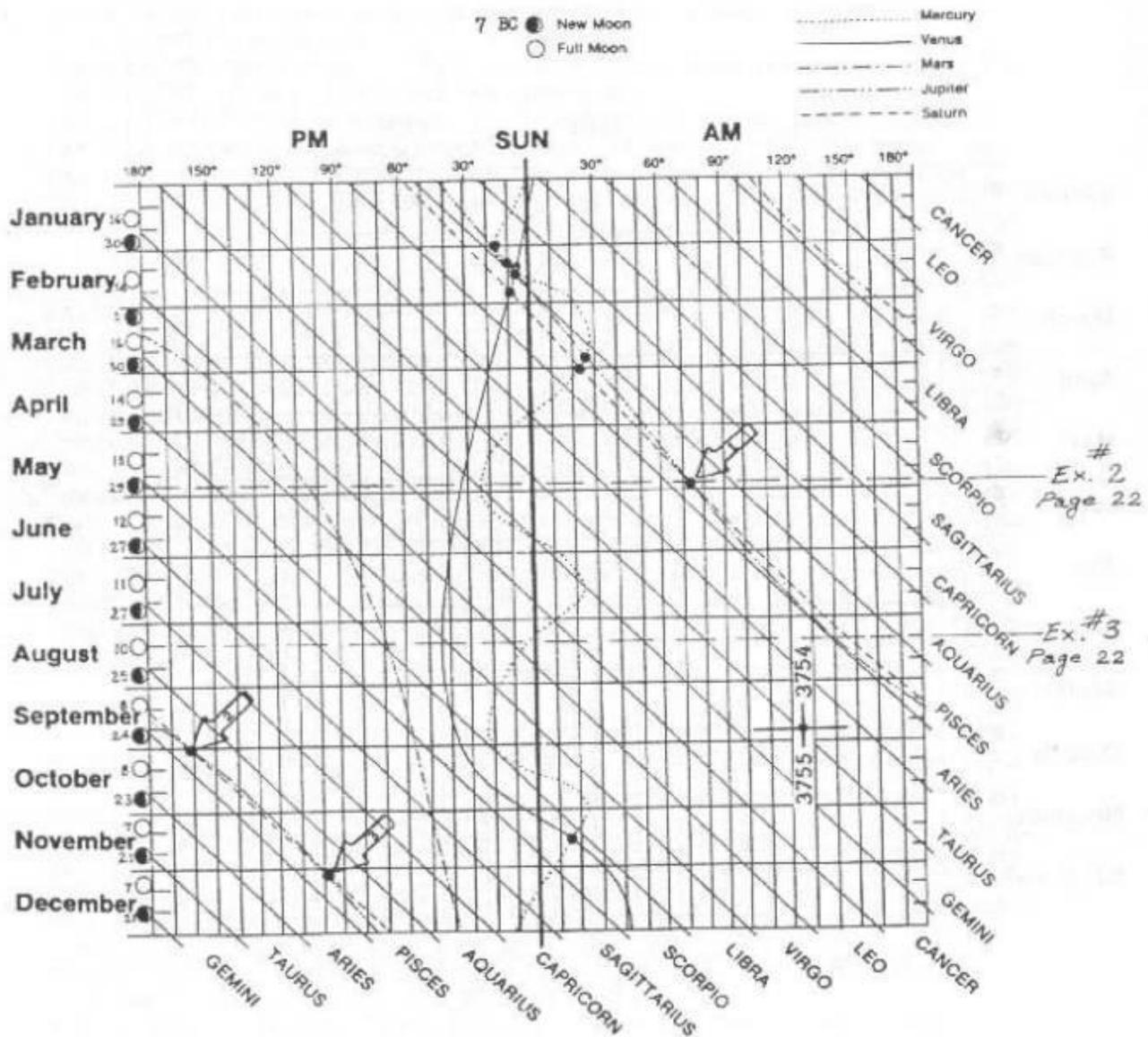
The New Moon was near the Sun in the constellation Gemini.

The planet Mercury was low in the west after sunset in the constellation Cancer.

The planet Mars was in the constellation Taurus and rose in the Sun's glare just before sunrise.

The planet Venus was high in the East as the "morning star" at the border of the constellations Aries and Taurus. The ringed planet Saturn was in the constellation Pisces. The giant planet Jupiter as in the

constellation Aquarius.



Example 2. May 29, 7BC: Jewish year 3754

The Sun was in the constellation Gemini.

The New Moon was near the Sun in the constellation Gemini.

The planet Mercury was low in the West after sunset at the border of the constellations Gemini and Cancer.

The planet Mars was in the constellation Virgo and high overhead at sunset.

The planet Venus set in the West over 2 hours after sunset in the constellation Cancer.

The ringed planet Saturn and giant planet Jupiter were in conjunction (near one another) in the constellation Pisces. This conjunction was the 1st of 3 which comprised the famous “Triple Conjunction.”

Example 3. August 10, 7BC: Jewish year 3754 (above example)

The Sun was in the constellation Leo.

The full Moon rose in the East in the constellation Aquarius.

The planet Mercury was invisible in the setting Sun's glare in the constellation Leo.

The planet Mars was in the constellation Libra and high in the West at sunset.

The planet Venus was in the constellation Libra and high in the West at sunset.

The planets Jupiter and Saturn were near each other in the constellation Pisces and moving toward the 2nd conjunction (On Oct 1, 7BC) of 3 conjunctions; (The 3rd on Dec 5, 7BC).

THE YEAR 3754-(8BC-7BC)

The FIRST conjunction of the rare triple conjunction of the planets Jupiter and Saturn happened in the year. On Iyyar 28 (May 29, 7BC) the two planets came to a conjunction in Pisces at ecliptic longitude 350.93 degrees.. and separated by just under a degree (0.98). The separation was twice the diameter of the moon, and was a wide pair; but, when combined with the SECOND conjunction on October 1 (7BC), and the THIRD upon the 5th of December, (7BC), it constituted a marvelous celestial occurrence. The 2nd and 3rd conjunctions occurred Jewish year 3755. From beginning to end, there were 190 days spanning the triple conjunction in 7 BC.

There were ten planetary conjunctions in 3754:

Mer/Ven	11- 8-	8BC	(Kislev 3)	Libra	(wide conj),	near sun
Mer/Ven	12-22-	8BC	(Tebeth 18)	Sagit	(wide conj),	near sun
Mer/Jup	1-28-	7BC	(Shebat 26)	Aquar	(wide conj)	near sun
Mer/Jup	2-10-	7BC	(Adar 9)	Aquar	(wide conj),	near sun
Mer/Ven	2-12-	7BC	(Adar 11)	Aquar	(wide conj),	near sun
Ven/Jup	2-13-	7BC	(Adar 12)	Aquar	(wide conj),	near sun
Ven/Sat	2-23-	7BC	(Adar 22)	Pisces	(wide conj),	near sun
Mer/Jup	3-26-	7BC	(We-Adar 24)	Pisces	(wide conj).	
Mer/Sat	3-30-	7BC	(We-Adar 39)	Pisces	(wide conj).	
Jup/Sat	5-29-	7BC	(Iyyar 28)	Pisces	(wide conj-0.98 deg.)	

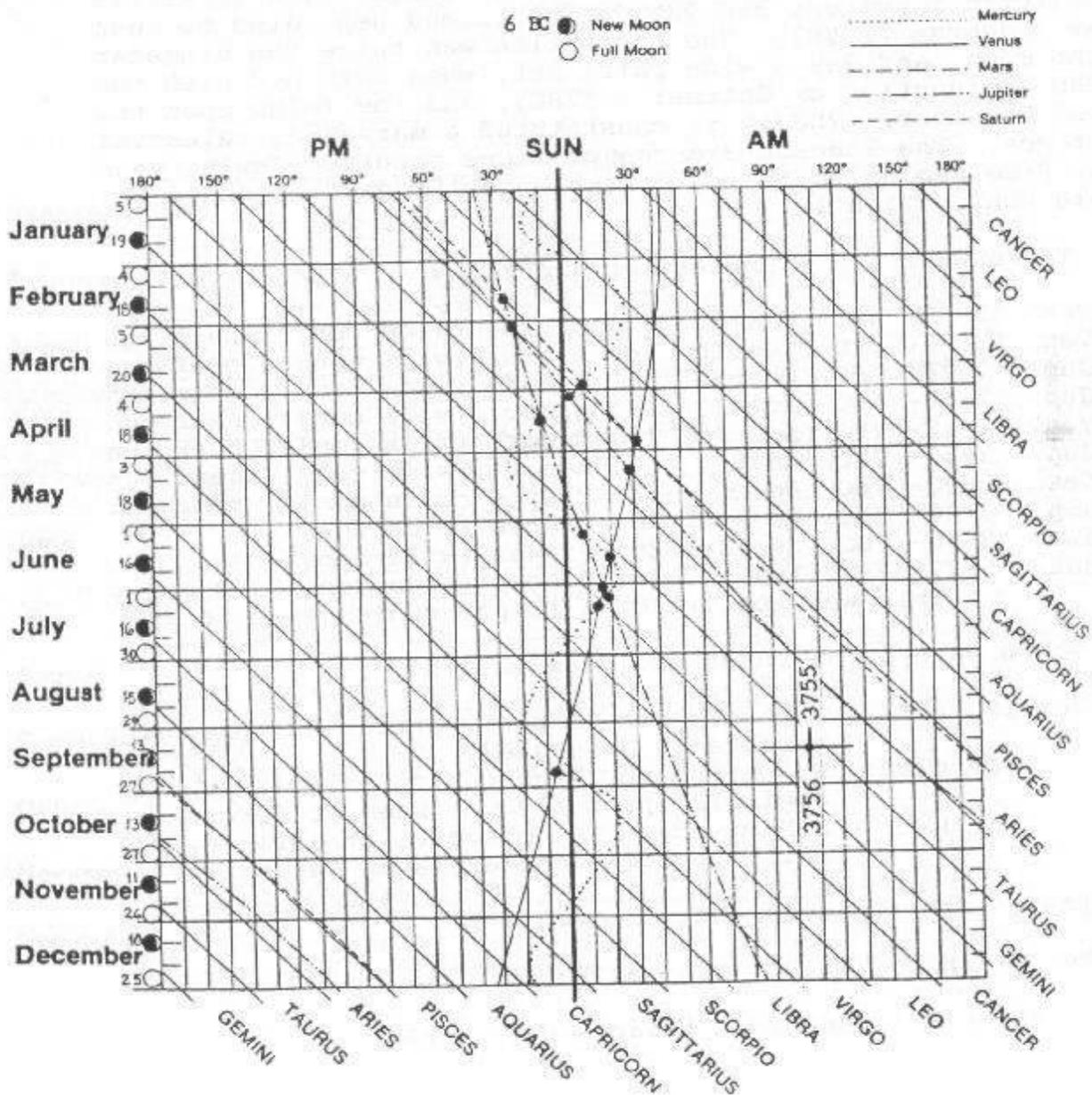
This was the 1st of a triple conjunction in 7BC.

There were three lunar eclipses in 3754:

November	18, (8BC),	W. Hemisphere, A poor partial eclipse, not visible at Jerusalem.
April	14, (7BC),	W. Hemisphere, A poor partial eclipse, its beginning probably not seen at Jerusalem.
May	13, (7BC),	E. Hemisphere, A poor partial eclipse, may not have been noticeable at Jerusalem.

There were two solar eclipses in 3754:

November	14, (8BC),	Total, central Pacific ocean.
April	29, (7BC),	Annular, Asian Arctic ocean.



THE YEAR 3755 - (7BC - 6BC)

Shortly after its beginning, this year witnessed the second and third conjunctions of Jupiter and Saturn; a tripe event, which began May 29, continued on October 5, and was completed at the third conjunction on December 5, 7BC. The rare action actually bridged two different Jewish years: the 1st junction of the two planets developed in Iyyar 28 (May 29, 7BC), which was the latter part of the year 3754; while meetings number 2 and number 3 took place in the first part of the year 3755.

There were fifteen planetary conjunctions in 3755:

Jup/Sat 10- 1- 7BC (Tishri 6) Pisces (wide conj-0.97 Deg.)

This was the 2nd of a triple conjunction in 7BC.

Jup/Sat	12- 5-	7BC	(Kislev 12)	Pisces	(wide conj-1.05 Deg.)
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This was the 3rd of a triple conjunction in 7BC.

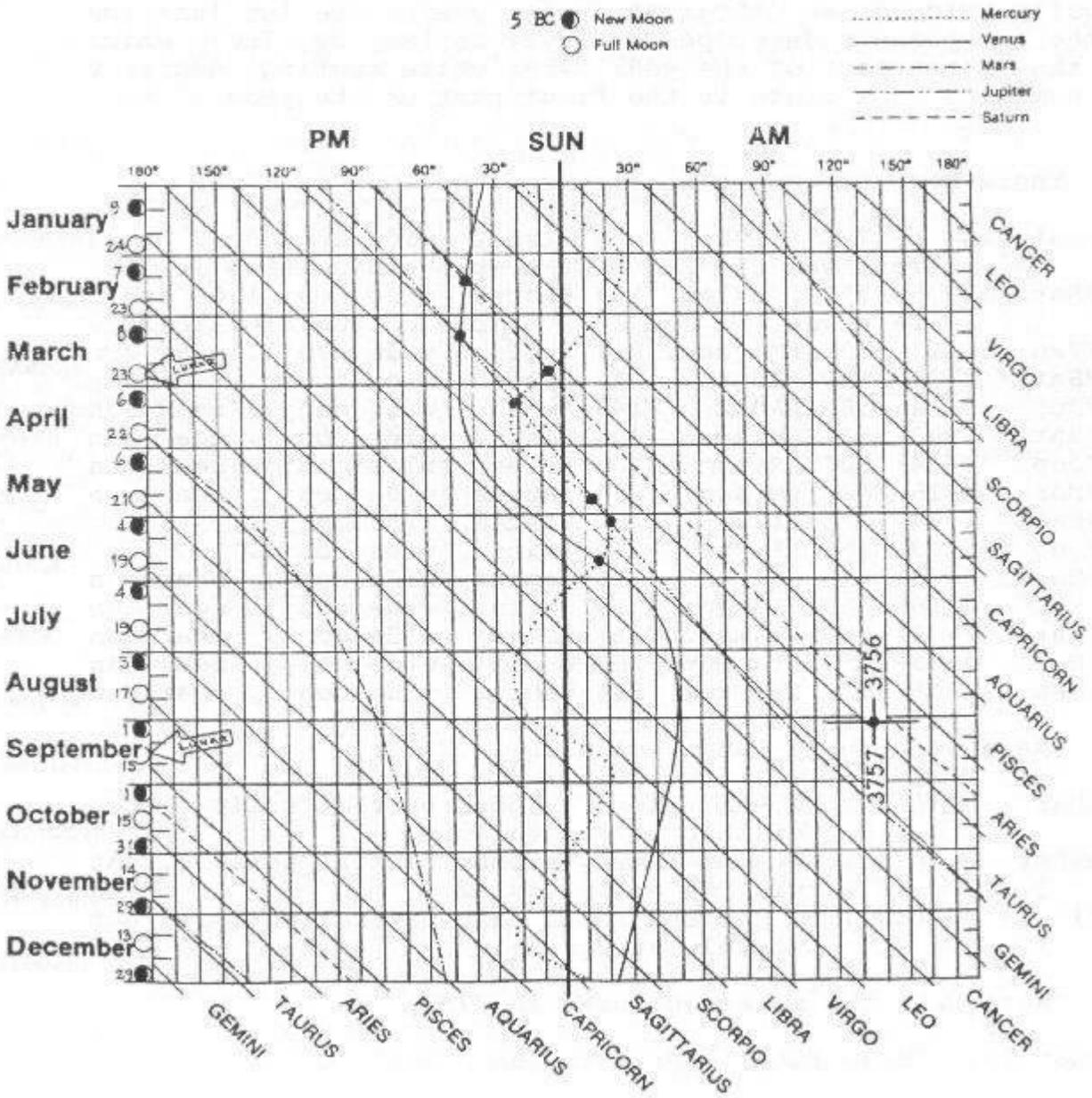
Mer/Ven	11-15-	7BC	(Marhes. 21)	Scorp.	(wide conj),	near sun
Mar/Sat	2-20-	6BC	(Adar 1)	Pisces	(wide conj).	
Mar/Jup	3- 4-	6BC	(Adar 14)	Aries	(wide conj),	near sun
Mer/Sat	3-30-	6BC	(Nisan 10)	Pisces	(wide conj),	near sun
Mer/Jup	4- 4-	6BC	(Nisan 16)	Aries	(wide conj),	near sun
Mer/Mar	4-15-	6BC	(Nisan 26)	Taurus	(wide conj),	near sun
Ven/Sat	4-25-	6BC	(Iyyar 5)	Pisces	(wide conj).	
Ven/Jup	5- 8-	6BC	(Iyyar 19)	Aries	(wide conj).	
Mer/Mar	6- 8-	6BC	(Sivan 21)	Gemini	(wide conj),	near sun
Mer/Ven	6-18-	6BC	(Tammuz 1)	Gemini	(wide conj),	near sun
Ven/Mar	7- 2-	6BC	(Tammuz 15)	Gemini	(wide conj),	near sun
Mer/Mar	7- 6-	6BC	(Tammuz 20)	Gemini	(wide conj),	near sun
Mer/Ven	7-11-	6BC	(Tammuz 24)	Cancer	(wide conj),	near sun

There were three lunar eclipses in 3755:

October	8,	(7BC),	W. Hemisphere, a poor partial eclipse, not visible at Jerusalem.
November	7,	(7BC),	W. Hemisphere, a poor partial eclipse, not visible at Jerusalem.
April	4,	(6BC),	W. Hemisphere, a fair partial eclipse, not visible at Jerusalem.

There were two solar eclipses in 3755:

October	23,	(7BC),	Total, north Indian ocean.
April	18,	(6BC),	Annular, north Atlantic ocean.



THE YEAR 3756 - (6BC - 5BC)

An uneventful year, except for a total lunar eclipse in the early evening hours of March 23, 5BC, in Libra; and the three Degrees, and too near the sun to be seen.

There were eight planetary conjunctions in 3756:

Mer/Ven	9-24-	6BC	(Tishri 11)	Libra	(wide conj),	near sun
Ven/Sat	2-13-	5BC	(Adar 5)	Aries	(wide conj).	
Ven/Jup	3- 8-	5BC	(Adar 29)	Taurus	(wide conj).	
Mer/Sat	3-26-	5BC	(Nisan 17)	Aries	(wide conj),	near sun
Mer/Jup	4-10-	5BC	(Iyyar 2)	Taurus	(wide conj),	near sun

Mer/Jup	5-22-	5BC	(Sivan 15)	Taurus	(wide conj),	near sun
Mer/Jup	6- 4-	5BC	(Sivan 28)	Taurus	(wide conj).	
Mer/Ven	6-20-	5BC	(Tammuz 14)	Gemini	(wide conj),	near sun

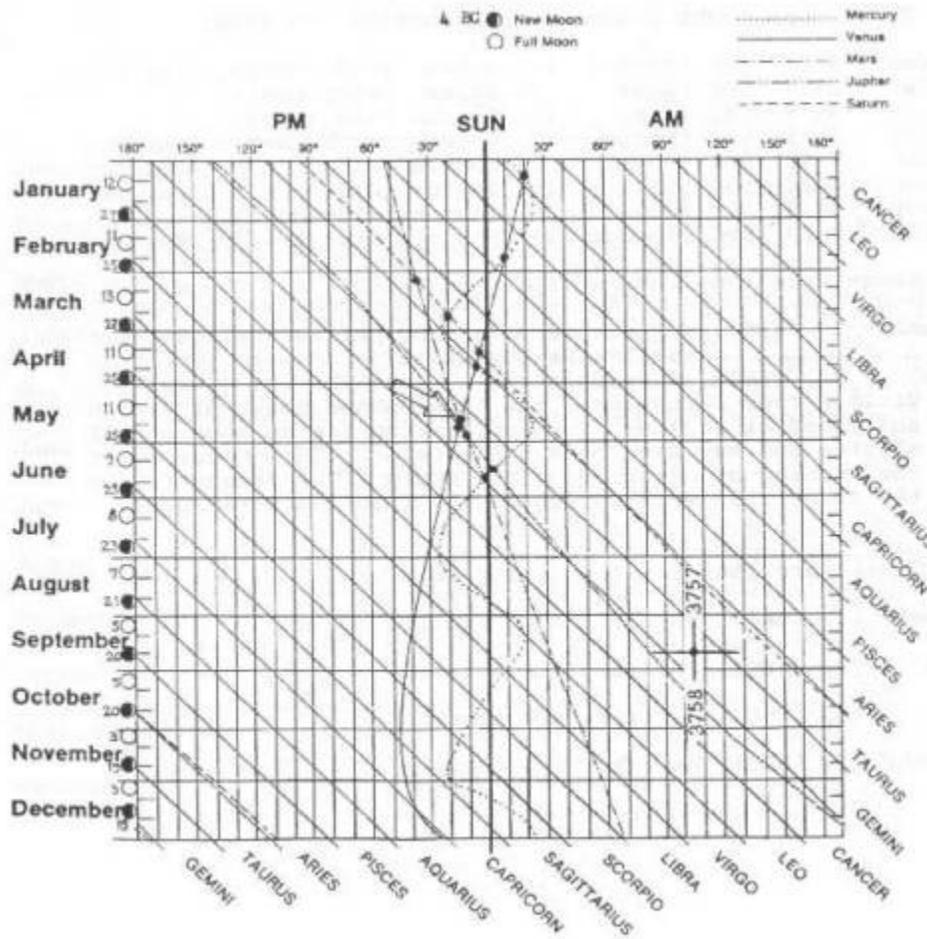
There were two lunar eclipses in 3756:

September	27	(6BC),	W. Hemisphere, a fair partial eclipse, not visible at Jerusalem.
March	23,	(5BC),	E. Hemisphere, Long.272-Lat.0 degrees.

Visible from Jerusalem, the total phase began at 7:49 pm and ended at 9:31pm. Totality lasted for an hour and 42 minutes and may have been spectacular. This occurred on the evening of Nisan 15, a few hours AFTER Passover as the Israelites were eating their 'late' Passover meal.

There were four solar eclipses in 3756:

October	13,	(6BC),	S.W. Pacific ocean.
March	8,	(5BC),	Partial, The Antarctic
April	6,	(5BC),	Partial, The Arctic
September	1,	(5BC),	Partial, The Arctic



THE YEAR 3757 - (5BC - 4BC)

Another quiet year, except for a well placed eclipse of the Moon on September 15, 5BC (Tishri 14) in Pisces; and a rather close conjunction of Venus/Mars (Iyyar 22) in Gemini, (May 18, 4BC), but which was too near the Sun to be seen.

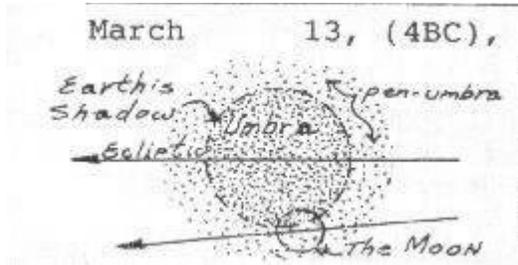
There were eleven planetary conjunctions in 3757:

Mer/Ven	1- 7-	4BC	(Shebat 10)	Sagit.	(wide conj).	
Mer/Ven	2-23-	4BC	(Adar 26)	Aquar.	(wide conj),	near sun
Mar/Sat	3- 7-	4BC	(We-Adar 9)	Aries	(wide conj).	
Mer/Sat	3-24-	4BC	(We-Adar 27)	Aries	(wide conj),	near sun
Ven/Sat	4-12-	4BC	(Nisan 16)	Aries	(wide conj),	near sun
Mer/Ven	4-20-	4BC	(Nisan 24)	Taurus	(wide conj),	near sun
Ven/Mar	5-18-	4BC<	(Iyyar 22)	Gemini*	(Close),	near sun
Ven/Jup	5-24-	4BC	(Iyyar 27)	Gemini	(wide conj),	near sun
Mar/Jup	5-31-	4BC	(Sivan 5)	Gemini	(wide conj),	near sun
Mer/Jup	6-15-	4BC	(Sivan 21)	Gemini	(wide conj),	near sun

Mer/Mar 6-20- 4BC (Sivan 25) Gemini (wide conj), near sun
 *Ven/mar conjunction 5-18-4BC separation: 0.133 degrees

There were luna eclipses in 3757:

September 15, (5BC), Total, Long. 303 deg. - Lat. -4 deg. The event was viewable at Jerusalem. Total phase began 9:41pm; was not ended until 11:19pm, local time.
 March 13, (4BC), A poor partial eclipse, Long. 6 deg. Lat. 3 deg.

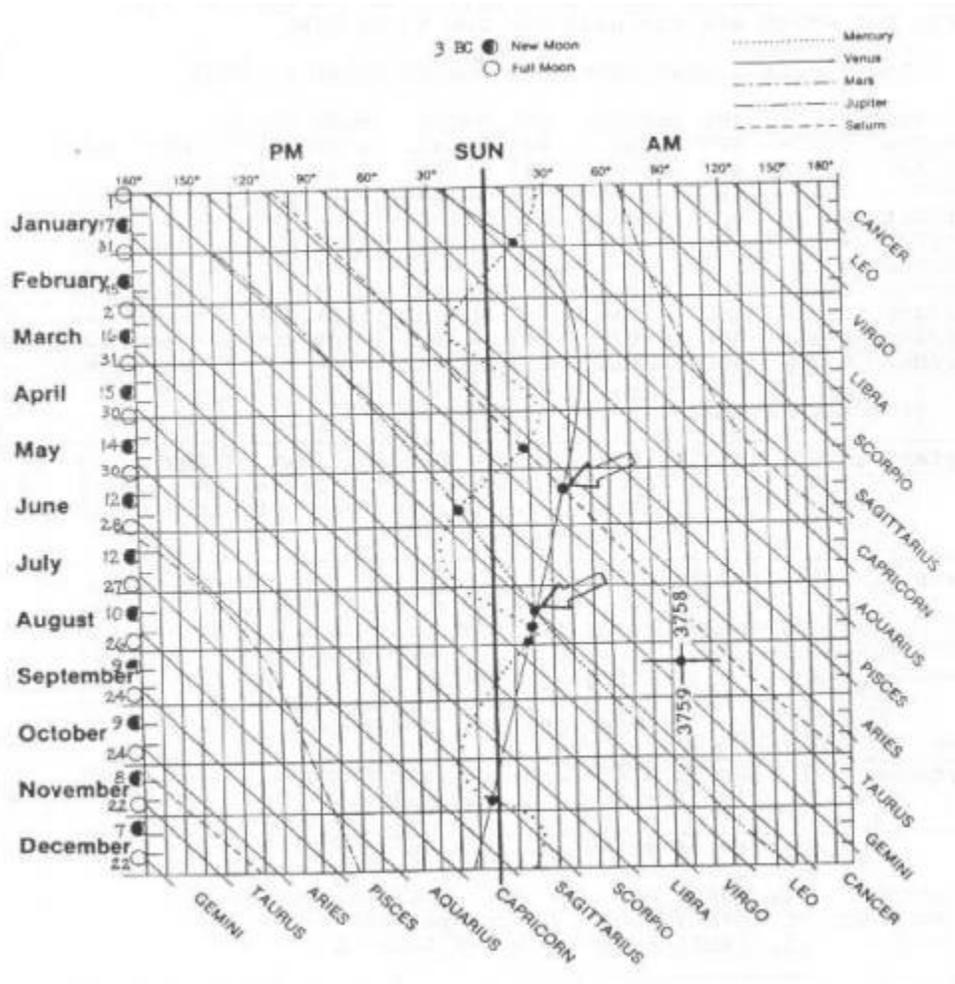


It could have been seen at Jerusalem, but just barely. It started at 1:50 in the early morning of Mar. 14 and was ended by 4:08 am. This eclipse has been cited by some as being the one referred to by Josephus.

September 5, (4BC), W. Hemisphere, fair partial eclipse, not visible at Jerusalem.

There were three solar eclipses in 3757:

October 1, (5BC) Partial, south Atlantic ocean
 February 25, (4BC) Total, South America
 August 21, (4BC) Annular, North America



THE YEAR 3758 - (4BC - 3BC)

A close conjunction (0.13 degrees) ... Venus and Saturn took place, 35 degrees from Sun; in Taurus, on June 12, 3BC ... (Sivan 27, 3758). This pair may have been viewed in the east before sunrise June 13, 3BC; although conjunction took place the previous afternoon. After the conjunction, Venus drifted nearer to the Sun, and reached conjunction with Jupiter almost exactly two months later.

On Aug. 12, 3BC (Ab 29, 3758), there was a close conjunction (0.07 degrees) of Venus & Jupiter 21 degrees from the Sun in the early morning sky. The close approach was 7 degrees west of Regulus, which, by itself, was spectacular; but in June of the next year, there was another conjunction of those planets just a few degrees east of the star Regulus (Alpha Leo).

There were seven planetary conjunctions in 3758:

Mer/Ven	1-28-	3BC	(Shebat 10)	Capri.	(wide conj),	near sun
Mer/Sat	5-19-	3BC	(Sivan 4)	Taurus	(wide conj),	near sun
Ven/Sat	6-12-	3BC	(Sivan 27)	Taurus	(close).	
Mer/Jup	6-20-	3BC	(Tammuz 6)	Cancer	(wide conj),	near sun
Ven/Jup	8-12-	3BC	(Ab 29)	Cancer	(close).	

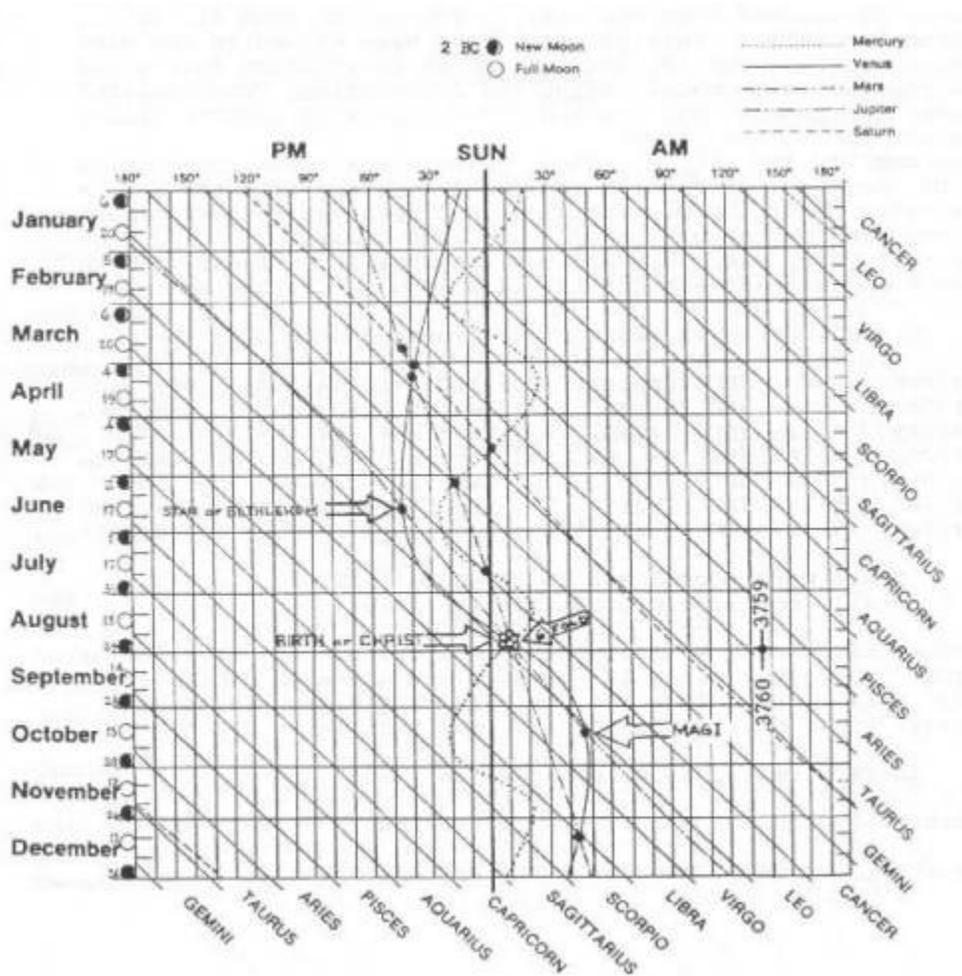
Mer/Ven	8-23-	3BC	(Elul 11)	Leo	(wide conj),	near sun
Mer/Ven	9- 1-	3BC	(Elul 19)	Leo	(wide conj),	near sun

There were four lunar eclipses in 3758:
 (all four were poor partial eclipses)

January	31,	(3BC),	W. Hemisphere, not visible at Jerusalem
March	2,	(3BC),	Long. 12, Lat. 7 Visible at Jerusalem
July	27,	(3Bc),	Long. 279, Lat. -21 ... Visible at Jerusalem
August	26,	(3BC),	W. Hemisphere, not visible at Jerusalem

There were two solar eclipses in 3758:

February	15,	(3BC),	Total, Central Africa
August	10,	(3BC),	Annular, S.E. Pacific ocean



**THE DATE OF CHRIST'S BIRTH
THE YEAR 3759 - (3BC - 2BC)**

STAR OF BETHLEHEM!: the conjunction of Venus/Jupiter, June 17, 2BC (Tammuz 13) was CLOSE: (0.01 deg). To the naked eye they shined as a much-brigher-than-usual star 6 degrees east of Regulus, the first star in Leo the lion. There had been a close conjunction (0.07 deg.) of those two 7 degrees west of Regulus on August 12, 3BC, 10 months before.

ALSO, there was a SIX-FOLD conjunction (all in one day!) of four planets (hidden in the glow of the Sun) on August 25-26, 2BC (Elul 23, 3759); in Leo the Lion. Five planets: Mercury, Venus, Earth, Mars, and Jupiter were in a lineup. Three days later, Sun & Moon came to a New moon in Virgo. Seven bodies of teh Solar system were in a linup which projected six of them against Leo and Virgo within 13 degrees of sky.)

There were fourteen planetary conjunctions in 3759:

Mer/Ven	11-22	3BC	(Kislev 12)	Sagit.	(wide conj),	near sun
Mar/Sat	3-27-	2BC	(Nisan 19)	Taurus	(wide conj).	
Ven/Sat	4- 3-	2BC	(Nisan 26)	Taurus	(wide conj).	
Ven/Mar	4-10-	2BC	(Iyyar 3)	Taurus	(wide conj).	
Mer/Sat	5-17-	2BC	(Sivan 11)	Taurus	(wide conj),	near sun
Mer/Mar	6- 5-	2BC	(Sivan 30)	Cancer	(wide conj),	near sun
Ven/Jup	6-17-	2BC	(Tammuz 13)	Leo	(close).	
Mer/Mar	7-20-	2BC	(Ab 17)	Cancer	(wide conj),	near sun
Ven/Jup	8-25-	2BC	(Elul 23)	Leo	(wide conj),	near sun
Mer/Mar	8-26-	2BC	(Elul 23)	Leo	(wide conj),	near sun
Mer/Ven	8-26-	2BC	(Elul 23)	Leo	(wide conj),	near sun
Ven/Mar	8-26-	2BC	(Elul 23)	Leo	(wide conj),	near sun
Mar/Jup	8-26-	2BC	(Elul 23)	Leo *	(close),	near sun
Mer/Jup	8-26-	2BC	(Elul 23)	Leo	(wide conj),	near sun

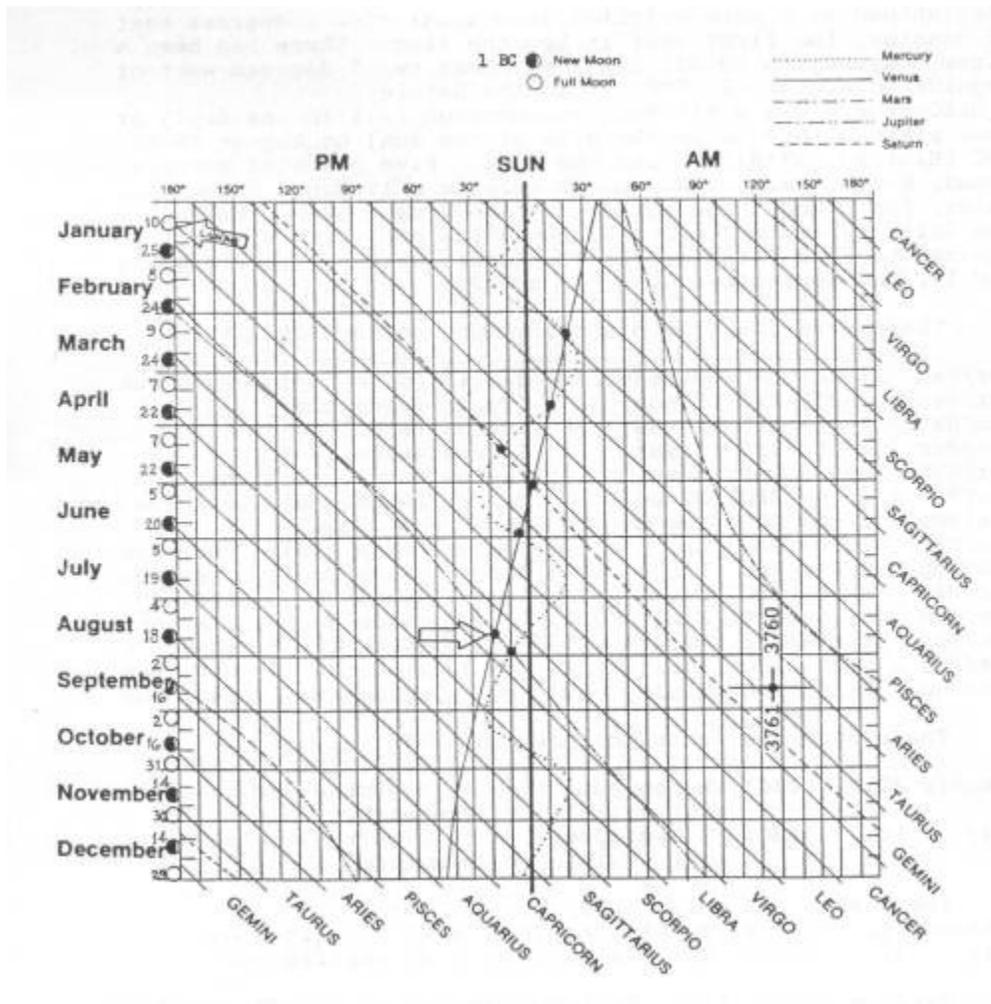
* Mar/Jup conjunction 8-26-2BC separation: 0.09 degrees

There were two lunar eclipses in 3759:

January	20, (2BC),	W. Hemisphere, a fair partial eclipse, not visible at Jerusalem.
July	17, (2BC),	W. Hemisphere, a fair parital eclipse, not visible at Jerusalem.

There were two solar eclipses in 3759:

February	5, (2BC),	Total * Annular, N.W. Pacific ocean
July	31, (2BC),	Total & Annular, S.W. Pacific ocean



THE YEAR 3760 - (2BC - 1BC)

On the night of January 9/10, 1BC, (Shebat 13) a remarkable total lunar eclipse occurred at Jerusalem just after midnight in the sign Cancer. Totality began at 12:38 AM on the tenth, and was over in an hour and 38 minutes. Many believe this to be the eclipse written by Josephus as having taken place just before the death of Herod. This eclipse was the first of six which occurred during the life of “the Son of Man”. The last (the only one during His ministry) was on June 14, 29 AD.

Only one close (0.10 degrees) conjunction happened in this year: Venus/Jupiter in Virgo, August 21, 1BC, (Ab 30); within 3 degrees of the star Spica, but too near the Sun to be seen.

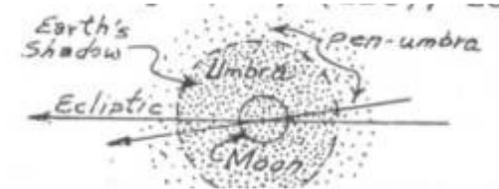
There were nine planetary conjunctions in 3760:

Ven/Jup	10-13-	2BC	(Marhes. 12)	Virgo	(wide conj).	
Ven/Mar	12- 8-	2BC	(Tebeth 10)	Scorp.	(wide conj).	
Mer/Ven	3-13-	1BC	(We-Adar 17)	Aquar.	(wide conj).	
Mer/Ven	4-19-	1BC	(Nisan 24)	Aries	(wide conj),	near sun
Mer/Sat	5-13	1BC	(Iyyar 19)	Gemini	(wide conj),	near sun
Ven/Sat	6- 2-	1BC	(Sivan 9)	Gemini	(wide conj),	near sun

Mer/Ven	6-30-	1BC	(Tammuz 8)	Cancer	(wide conj),	near sun
Ven/Jup	8-21-	1BC	(Ab 30)	Virgo	(close),	near sun
Mer/Jup	8-31-	1BC	(Elul 24)	Virgo	(wide conj),	near sun

There were two lunar eclipses in 3760:

January 9/10, (1BC), Long. 343, Latt. 22.



A fine total eclipse visible at Jerusalem. Totality lasted 1 hour & 38 minutes and was central at Jerusalem at 1:27 am, January 10, 1BC. This is the one that occurred shortly before Herod's death.

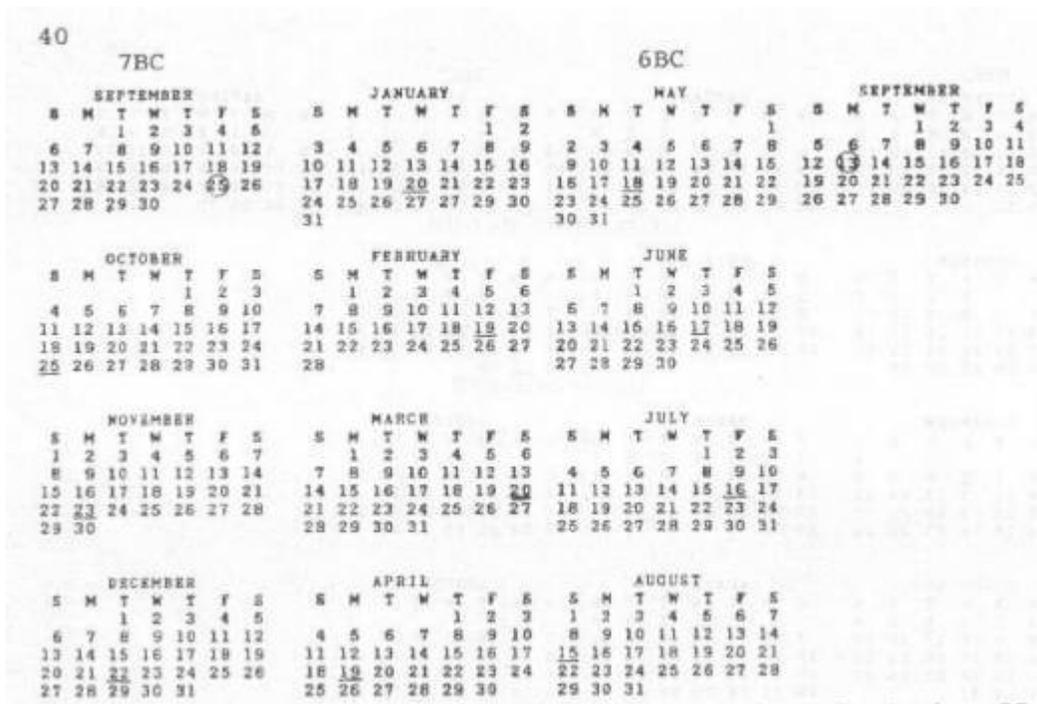
July 5, (1BC), W. Hemisphere, excellent total eclipse, not visible at Jerusalem.

There were three solar eclipses in 3760:

December	26,	(2BC),	partial, Antarctic
June	20,	(1BC),	partial, Arctic
July	19,	(1BC),	partial, Antarctic

Shebat	Jan	2	Fri	30	7BC
Adar	Feb	1	Sun	29	
We-Adar	Mar	2	Mon	30	* intercalary month
Nisan	Apr	1	Wed	30	
Iyyar	May	1	Fri	29	
Sivan	May	30	Sat	30	
Tammuz	Jun	29	Mon	29	
Ab	Jul	28	Tue	30	
Elul	Aug	27	Thu	29	383 days

Passover begins at sunset Tuesday April 14, 7BC. The Vernal Equinox occurs at Jerusalem 7:44 AM, Mar 23, 7BC.



The Jewish civil year 3755 begins at sunset on September 25 (included) 7 BC and contains 353 days. The year ends at sunset September 13, 6 BC. The year 3755 is the 12th year of the 198th Metonic cycle.

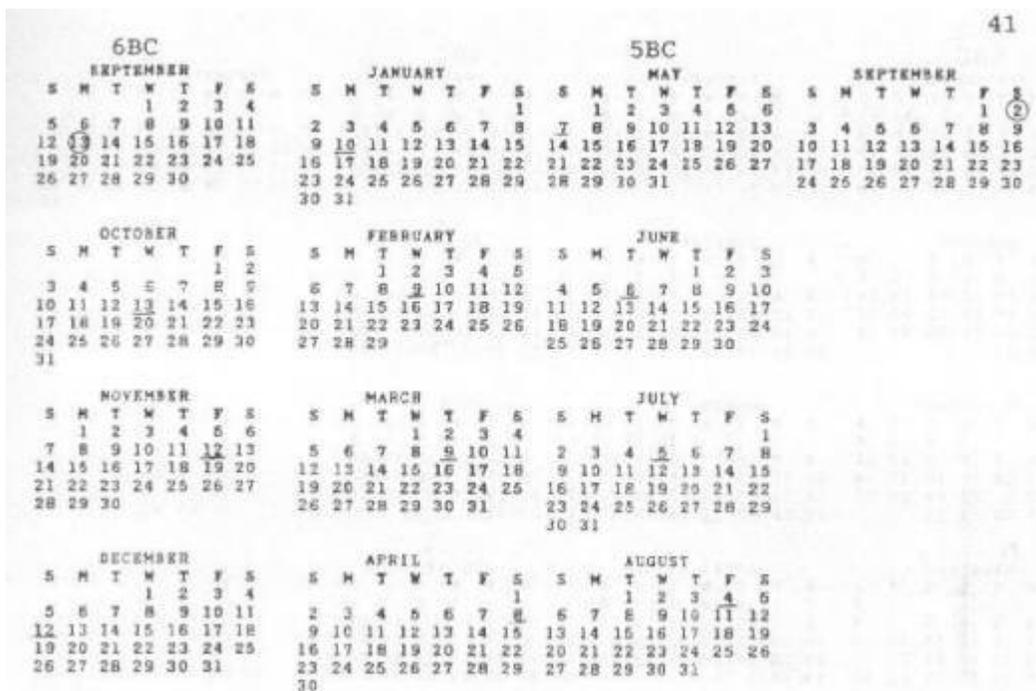
Western style dates are reckoned by the Julian calendar from midnight to midnight. The Jewish day begins at sunset, when the evening portion of the Jewish day begins; the “evening” preceding the “morning”, Genesis 1:5.

The calendar for 3755:

Tishri Sep 25 Fri 30 days

Marheshvan	Oct	25	Sun	29	(29 or 30 days)
Kislev	Nov	23	Mon	29	(")
Tebeth	Dec	22	Tue	29	7BC
Shebat	Jan	20	Wed	30	6BC
Adar	Feb	19	Fri	29	
We-Adar				NA	* intercalary month
Nisan	Mar	20	Sat	30	
Iyyar	Apr	19	Mon	29	
Sivan	May	18	Tue	30	
Tammuz	Jun	17	Thu	29	
Ab	Jul	16	Fri	30	
Elul	Aug	15	Sun	29	353 days

Passover begins at sunset Friday April 2, 6 BC. The Vernal Equinox occurs at Jerusalem 1:22 PM, Mar 23, 6 BC.



The Jewish civil year 3756 begins at sunset on September 13 (included) 6 BC and contains 355 days. The year ends at sunset September 2, 5 BC. The year 3756 is the 13th year of the 198th Metonic cycle.

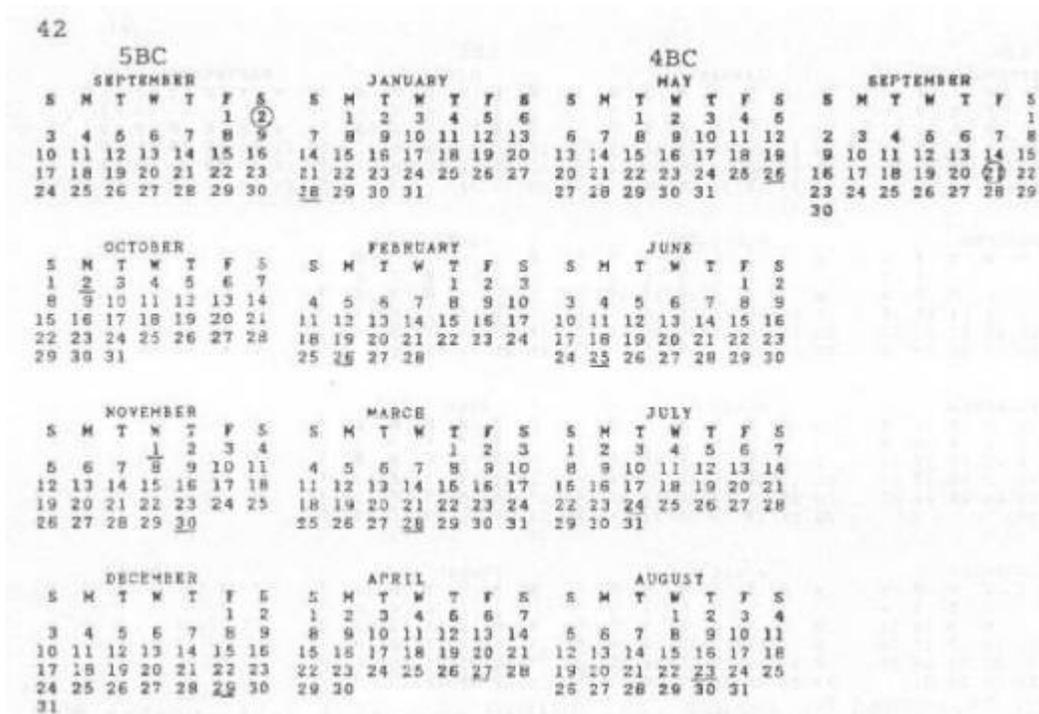
Western style dates are reckoned by the Julian calendar from midnight to midnight. The Jewish day begins at sunset, when the evening portion of the Jewish day begins; the “evening” preceding the

“morning”, Genesis 1:5.

The calendar for 3756:

Tishri	Sep	13	Mon	30	days
Marheshvan	Oct	13	Wed	30	(29 or 30 days)
Kislev	Nov	12	Fri	30	(")
Tebeth	Dec	12	Sun	29	6BC
Shebat	Jan	10	Mon	30	5BC
Adar	Feb	9	Wed	29	
We-Adar				NA	* intercalary month
Nisan	Mar	9	Thu	30	
Iyyar	Apr	8	Sat	29	
Sivan	May	7	Sun	30	
Tammuz	Jun	6	Tue	29	
Ab	Jul	5	Wed	30	
Elul	Aug	4	Fri	29	355 days

Passover begins at sunset Wednesday March 22, 5 BC. The Vernal Equinox occurs at Jerusalem 7:13 PM, Mar. 22, 5 BC.



The Jewish civil year 3757 begins at sunset on September 2 (included) 5 BC and contains 384 days. The year ends at sunset September 21, 4 BC. The year 3757 is the 14th year of the 198th Metonic cycle.

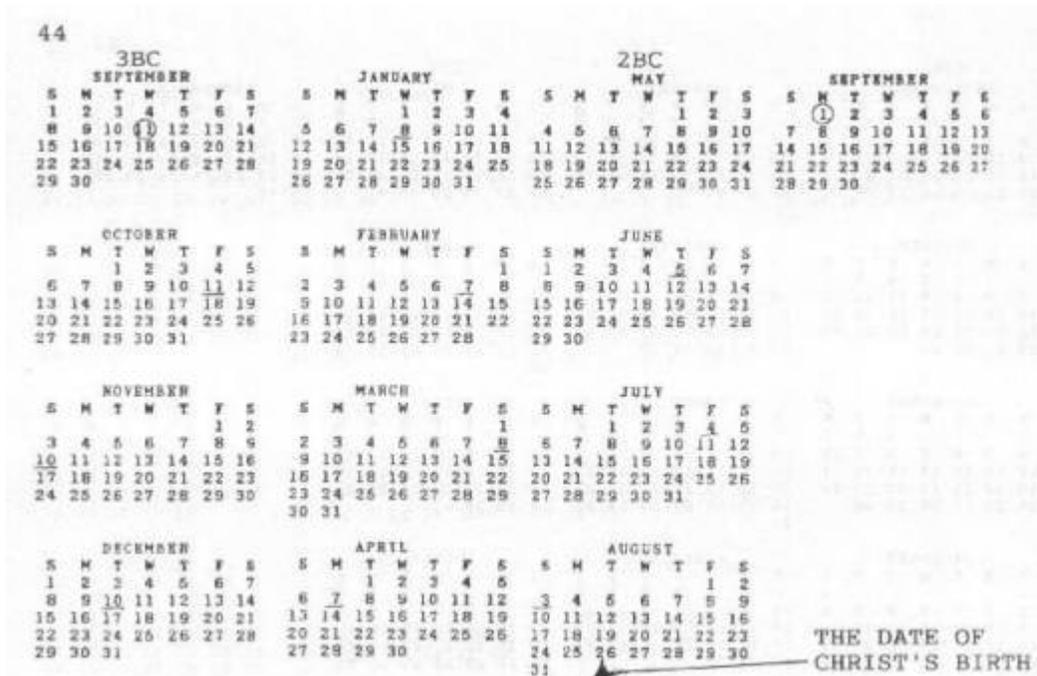
Western style dates are reckoned by the Julian calendar from midnight to midnight. The Jewish day begins at sunset, when the evening portion of the Jewish day begins; the “evening” preceding the “morning”, Genesis 1:5.

The calendar for 3757:

Tishri	Sep	2	Sat	30	days
Marheshvan	Oct	2	Mon	30	(29 or 30 days)
Kislev	Nov	1	Wed	29	(")
Tebeth	Nov	30	Thu	29	
Shebat	Dec	29	Fri	30	5BC
Adar	Jam	28	Sun	29	4BC
We-Adar	Feb	26	Mon	30	* intercalary month
Nisan	Mar	28	Wed	30	
Iyyar	Apr	27	Fri	29	
Sivan	May	26	Sat	30	
Tammuz	Jun	25	Mon	29	
Ab	Jul	24	Tue	30	
Elul	Aug	23	Thu	29	384 days

Passover begins at sunset Tuesday April 10, 4 BC. The Vernal Equinox occurs at Jerusalem 1:04 AM, Mar 23, 4 BC.

Passover begins at sunset Sunday March 31, 3 BC. The Vernal Equinox occurs at Jerusalem 6:47 AM, Mar. 23, 3 BC.



The Jewish civil year 3759 begins at sunset on September 11 (included) 3 BC and contains 355 days. The year ends at sunset September 1, 2 BC. The year 3755 is the 16th year of the 198th Metonic cycle.

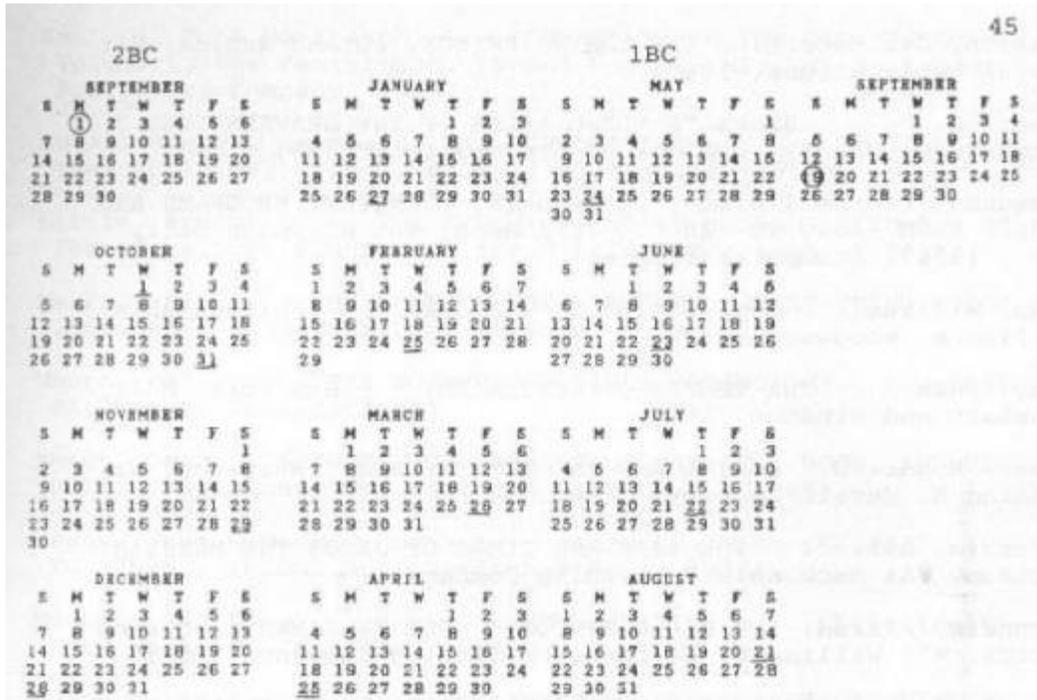
Western style dates are reckoned by the Julian calendar from midnight to midnight. The Jewish day begins at sunset, when the evening portion of the Jewish day begins; the “evening” preceding the “morning”, Genesis 1:5.

The calendar for 3759:

Tishri	Sep	11	Wed	30	days
Marheshvan	Oct	11	Fri	30	(29 or 30 days)
Kislev	Nov	10	Sun	30	(")
Tebeth	Dec	10	Tue	29	3BC
Shebat	Jan	8	Wed	30	2BC
Adar	Feb	7	Fri	29	
We-Adar				NA	* intercalary month
Nisan	Mar	8	Sat	30	
Iyyar	Apr	7	Mon	29	
Sivan	May	6	Tue	30	
Tammuz	Jun	5	Thu	29	

Ab Jul 4 Fri 30
 Elul Aug 3 Sun 29 355 days

Passover begins at sunset Friday March 21, 2 BC. The Vernal Equinox occurs at Jerusalem 12:37 PM, Mar. 23, 2 BC.



The Jewish civil year 3760 begins at sunset on September 1 (included) 2 BC and contains 384 days. The year ends at sunset September 19, 1 BC. The year 3755 is the 16th year of the 198th Metonic cycle.

Western style dates are reckoned by the Julian calendar from midnight to midnight. The Jewish day begins at sunset, when the evening portion of the Jewish day begins; the “evening” preceding the “morning”, Genesis 1:5.

The calendar for 3760:

Tishri	Sep	1	Mon	30	days	
Marheshvan	Oct	1	Wed	30		(29 or 30 days)
Kislev	Oct	31	Fri	29		(")
Tebeth	Nov	29	Sat	29		
Shebat	Dec	28	Sun	30	2BC	
Adar	Jan	27	Tue	29		1BC
We-Adar	Feb	25	Wed	30		* intercalary month
Nisan	Mar	26	Fri	30		

Iyyar	Apr	25	Sun	29	
Sivan	May	24	Mon	30	
Tammuz	Jun	23	Wed	29	
Ab	Jul	22	Thu	30	
Elul	Aug	21	Sat	29	384 days

Passover begins at sunset Tuesday April 8, 1 BC. The Vernal Equinox occurs at Jerusalem 6:17 PM, Mar. 22, 1 BC.

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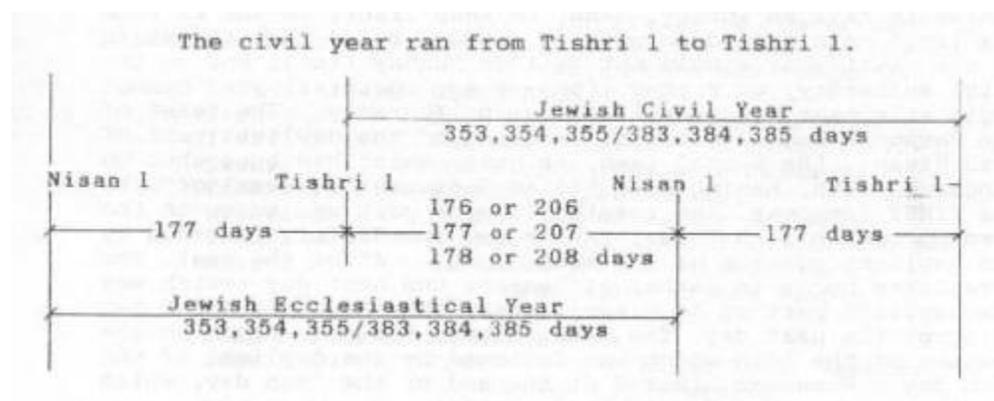
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APPENDICES:

THE JEWISH YEAR

Appendix A

The Jewish year is lunar-solar and consists of either 12 or 13 months; the choice of 12 or 13 months being based upon the Metonic cycle. The Hebrews may not have known the details of the cycle found by Meton, but they put it to a practical use. The Metonic cycle is a 19 year period which, at the beginning and ending, sees the sun and moon again almost in phase. The Jews added, from time to time, another 30 day month, We-Adar, to the ordinary 12 months of the year. When finer tuning was needed, a day was added or taken from Marheshvan or Kislev to deliver sun and moon again into phase. The embolismic month, We-adar, was eased into the calendar every 2 or 3 years, i.e. 3rd, 6th, 8th, 11th, 14th, 17th, and 19th years. And, months Marheshvan and Kislev were granted either 29 or 30 days each. Thus, the Jewish year was reckoned to have six lengths: 353, 354 or 355 days; and 383, 384 or 385 days, the longer 3 years were embolismic (intercalary) years; the shorter: ordinary.



The religious year ran Nisan 1 to Nisan 1.. while the civil year ran from Tishri 1 to Tishri 1; the religious year having begun six months earlier. The Vernal Equinox, in the Spring, determined Nisan 1, and consequently, also pre-fixed the date of Tishri 1. Nisan 1 was determined by the new moon nearest, before or after, the Vernal equinox. However, Vernal equinox must occur on or before the 16th Nisan. Passover, of course, is 14 Nisan. From the-morrow-after-the-Sabbath (Passover) to Pentecost reckon fifty days. The Law ever makes reference to Days of Holy Convocation as being Sabbaths. Usually, Nisan 1 was set back a day or two so that Tishri 1--Rosh Hashana, and other certain feasts should not occur on a "forbidden" day of the week. A fixed rule was that from Nisan 1 (date included) until Tishri 1 (date not included) there would fall 177 days. Between Passover and 1 Tishri, 163 days must fall. And, from Pentecost, (date included) until Tishri 1 (date not included) was always 113 days.

Additionally, fixed rules determined exactly the day of the week on which an ordered feast was to fall. Should the feast "fall"; e.g. (Passover) on 14 Nisan: it would begin at sunset the prior day: the 13th, but would "fall" on the 14th, i.e., the daylight or last portion of the 14th day. The civil year could not begin (fall) on the 1st, 4th, or the 6th day of the week, that is, on the daylight share of the day. However, it could begin shortly after sunset, following the daylight part of these forbidden days. If a feast is said to "fall" on the second day of the week, it means that it is to be observed on the daylight division of the 2nd day (Monday). The holy day of Atonement (Tishri 10) cannot "fall" on a Friday or Sunday, but, Tishri 10 may begin after sundown on Friday... and "fall" on the daylight portion of Saturday. But, it cannot begin at sundown on Saturday because the daylight half would then fall on Sunday, a banned

day. And, Tishri 21, 7th of Tabernacles, cannot “fall” on a Saturday; which means that it cannot begin at sundown Friday. But, it can begin at sundown on Saturday, making it fall on Sunday. And, to keep Tishri 10 and 21 from “falling” on a forbidden weekday, it was ruled that the start of the civil year should not fall on Sunday (1st); nor on the (4th) Wednesday; or Friday (6th); i.e., the civil year cannot begin at sunset Saturday, Tuesday, or Thursday. The feast of the Passover began just after sundown of the daylight part of 13th Nisan. . . the Pascal lamb, or goat, which had been shut up since the 10th, having been killed “between the evenings”. At the FIRST Passover, the roasted lamb or goat was eaten on the evening of the 14th Nisan; (which was immediately preceded by the daylight portion of the 13th Nisan). After the meal, the Israelite began to gather at Rameses the next day (which was the daylight part of 14 Nisan); then, they began to march out of Egypt the next day, the 15th. Thus, Passover began on the evening of the 14th which was followed by the daylight of the 14th day. Passover started at the end of the 13th day, which was at sunset. See Ex. 12:6, “...until...”.

It seems that the ordination of "night" before “day” is not natural. Yet, if one were to examine the 6 days of creation, it is God's doing. Chaos precedes order. The blackest night surrenders to the rising sun. The sheep were lost., then the Shepherd found them.

The starting of the month at New Moon was, and is, of great practical importance to the Hebrews; because the first day of each month was observed as New Moon's day, and certain feasts were associated with certain days of a particular Month.

The earliest viewing of the New Moon for centuries was made by direct observation; and authoritatively fixed by a special commission of the Sanhedrim; and the intelligence, then, made known to Jews at large: first, by signal fires, and later, by special runners. Today, and for many centuries, this primary way of setting the beginnings of months, has been replaced by systematic calculation of the month. The Jewish calendar now is structured on the matrix of 29 days, 12 hours, 44 minutes, and 3.333 seconds.

The Jewish months: (Spelling varies even among the Hebrews)

Nisan	30 days
Iyar	29 days
Sivan	30 days
Tammuz	29 days
Ab	30 days
Elul	29 days
Tishri	30 days
Marheshvan	29/30 days \ A “complete” year
Kislev	29/30 days / is one in which
Tebeth	29 days both months are
Shebat	30 days "full"
Adar	29 days
We-adar	30 days
“Full” Months-30 days	A “normal” year is one in which Marheshvan is “full” and Kislev is “defective”.

“Defective”
Months-29 days

A “defective” year is one in which both are “defective”.

JEWISH OBSERVANCES

Tishri 1	Rosh Hashana (New Year) Trumpets
Tishri 3	Fast of Gedaliah (II Kings 25:22-25)
Tishri 10	Yom Kippur (Day of Atonement)
Tishri 15-21	SUKKOTH (TABERNACLES)
Tishri 22	Eighth day of solemn assembly
Tishri 23	Simhath Torah (Rejoicing of the Law)
	Hanukkah (Feast of Dedication)
Kislev 25	Dedication of the Temple Feast of Lights
Tebeth 2 or 3	Hanukkah ends
Tebeth 10	Fast(II Kings 25:1, Zech. 8:19) Seige of Jerusalem
Shebat 15	New Year for trees
Adar 13	Fast of Esther These fall in
Adar 14	Purim We-adar in an Embolismic year
Nisan 14	PESACH (PASSOVER) Gr. - "Pascha" Feast of Unleavened Bread
Nisan 15-21	(A Holy convocation is held on the 15th and 21st days.)
Iyar 5	Israel Independence Day
Iyar 14	Second (little) Passover
Sivan 6	PENTECOST (Feast of Weeks) Shabuoth
Tammuz 17	Fast (Jerusalem taken II Kings 25:3 and Zech. 8:19)
Ab 9	Fast (Destruction of the Temple II Kings 25:8, Zech. 8:19)

Participation in the various rites was discretionary for an individual Israelite, except for three Feasts, at which every male Israelite was commanded to “appear before the Lord”; the 3 were: PASSOVER & (Unleavened bread), PENTECOST (Weeks), and TABERNACLES.

THE METONIC CYCLE

Appendix B

Named after the Grecian astrologer: Meton, c. 432 B.C., who first found the relationship. A period of 19 solar years has 6,939 days, 14.5 hours; and 235 lunations is 6,939 days, 16 + hours. Therefore, Meton's rule varies about 2 hours from the truth. And, since 19 Julian years make 6,939 days, 18 hours, the relation fails by about 1.5 hours when the Julian year is taken into consideration. The above figures are approximate.

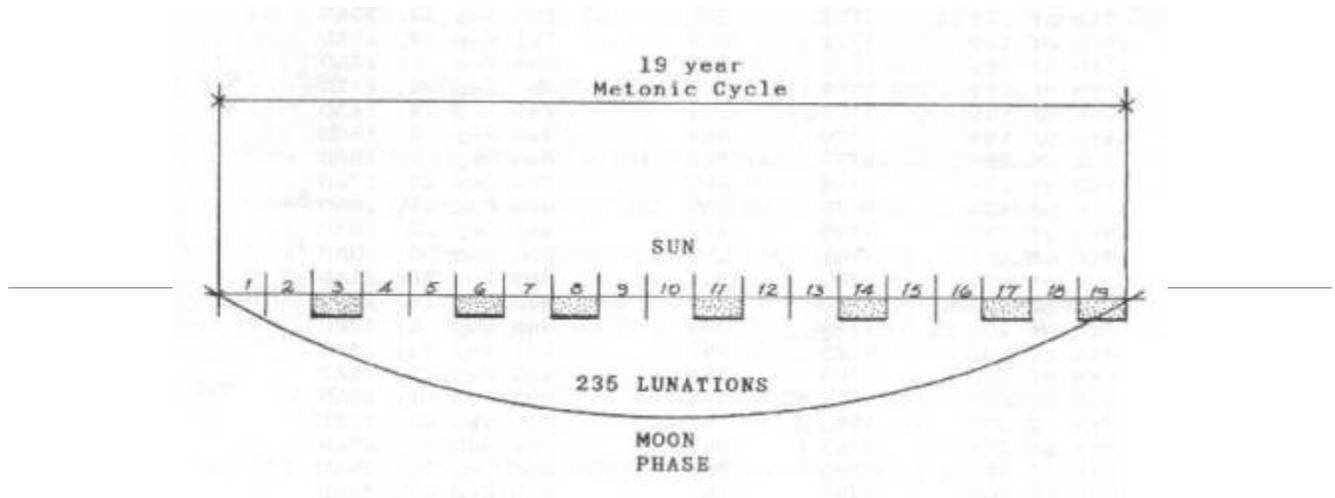
From the epoch of Moses, the synodical months in the Jewish calendar were calculated, as in the Babylonian, from New Moon to New Moon. This action is proved by the well known passage in Ex.12:2. The Jewish years were solar-lunar. In the early Biblical statements no indication is found of any intercalary month. Still, it might be safely assumed that the difference of ten or eleven hours separating the twelve synodical months from the tropical year was shaved down by the insertion of an embolismic month; and, in the cuneiform Sumerian texts, close mention is made of the intercalation as far back as the fifth millennium B.C. It is thought likely that the equivalence of 19 tropical years and 235 synodical months was commonly known in ancient times: but, a working intercalary calendar was not introduced before Grecian influence asserted itself, i.e. not before about 367 B.C. More precisely, the Metonic cycle is a period of 19 solar years after which the new moons will again happen on the same days of the year. In 19 solar years there are 235 lunations, a number which, when divided by 19, yields twelve lunations for the year, with 7 as the remainder, to be distributed within the period. Meton's cycle, therefore, was built up from 12 years containing 12 months each, and 7 years containing 13 months each; and these latter 7 formed the 3rd, 6th, 8th, 11th, 14th, 17th, & 19th years of the cycle. When later it was determined that an accurate time for lunation is a little more than 29.5 days, it was necessary to abandon the alternating succession of full and incomplete months, and; in order to preserve a more accurate fit between the civil month and the lunation, Meton remade the cycle into 125 full months of 30 days, and 110 deficient months of 29 days each; and the number of days in the period was therefore 6940. In order to distribute the deficient months within the period in the most equable manner, the complete period may be considered as made up of 235 complete months, 30 days each, i.e. 7050 days; from which 110 days are to be deducted. This yields one day to be suppressed in 64; so that if we suppose the months to contain 30 days each, and then, omit every 64th day in reckoning from the beginning of the period, the months in which the omission takes place will, of course, be the deficient months.

The number of days in the period being known, it is easy to ascertain its accuracy both with respect to the solar and the lunar motions. The precise length of nineteen solar years is $19 \times 365.242198 = 6939.6018$ days: 6939 days, 14 hours, 26.537 minutes; hence the cycle, which is exactly 6940 days, exceeds 19 revolutions of the sun by about 9 hours, 33.46 minutes. On the other hand, the exact time of a synodic revolution of the moon is 29.530588 days; 235 lunations, therefore, contain $235 \times 29.530588 = 6939.68818$ days: 6939 days 16 hours 31 minutes, so that the period exceeds 235 lunations by only 7.48 hours.

The Jewish calendar at the time of Herod's Temple is not as well known. However, there is no reason to consider that the Hebrews were less sophisticated pertaining to certain aspects of day-to-day astronomy

than the Chaldeans, to the northeast, or the Egyptians, to the southwest.

To the contrary, regulation of feast dates was the duty of the Sanhedrim. The times of New Moons and the exact times of the Vernal equinox established the beginning of the religious and civil year and the year's length. There was considerable emphasis placed on the credibility of the witnesses who first viewed the New Moon each month. Exact times were established as finely as possible. When the Sanhedrim was satisfied, the year, or month or feast date was set. As experience mounted, adjustments were made when it became apparent that errors had occurred. This was especially so when long periods of cloudy weather prevented sightings of the sun and moon.



JEWISH YEARS AND METONIC CYCLE SYNCHRONIZED

Julian years 9BC-35AD (ALL DATES ARE AT SUNSET)

Metonic Cycle	Jewish Year	Length Days	Jewish Civil Year Tishri 1 BEGINS
Year of Cycle			
10th of 198	3753	354	Wed Sep 18, 9BC
11th of 198	3754	383	Sun Sep 7, 8BC
12th of 198	3755	353	Fri Sep 25, 7BC
13th of 198	3756	355	Mon Sep 13, 6BC
14th of 198	3757	384	Sat Sep 2, 5BC
15th of 198	3758	355	Fri Sep 21, 4BC
16th of 198	3759	355	Wed Sep 11, 3BC
17th of 198	3760	384	Mon Sep 1, 2BC
18th of 198	3761	353	Sun Sep 19, 1BC
19th of 198	3762	385	Wed Sep 7, 1AD
1st of 199	3763	353	Wed Sep 27, 2AD
2nd of 199	3764	354	Sat Sep 15, 3AD
3rd of 199	3765	385	Wed Sep 3, 4AD
4th of 199	3766	354	Wed Sep 23, 5AD
5th of 199	3767	355	Sun Sep 12, 6AD
6th of 199	3768	383	Fri Sep 2, 7AD
7th of 199	3769	355	Wed Sep 19, 8AD
8th of 199	3770	384	Mon Sep 9, 9AD
9th of 199	3771	355	Sun Sep 28, 10AD
10th of 199	3772	353	Fri Sep 18, 11AD
11th of 199	3773	384	Mon Sep 5, 12AD
12th of 199	3774	355	Sun Sep 24, 13AD
13th of 199	3775	355	Fri Sep 14, 14AD
14th of 199	3776	383	Wed Sep 4, 15AD
15th of 199	3777	354	Mon Sep 21, 16AD
16th of 199	3778	355	Fri Sep 10, 17AD
17th of 199	3779	385	Wed Aug 31, 18AD
18th of 199	3780	354	Wed Sep 20, 19AD
19th of 199	3781	385	Sun Sep 8, 20AD
1st of 200	3782	353	sun Sep 28, 21AD
2nd of 200	3783	354	Wed Sep 16, 22AD
3rd of 200	3784	383	Sun Sep 5, 23AD

4th of 200	3785	355	Fri Sep 22, 24AD
5th of 200	3786	354	Wed Sep 12, 25AD
6th of 200	3787	385	Sun Sep 1, 26AD
7th of 200	3788	355	Sun Sep 21, 27AD
8th of 200	3789	383	Fri Sep 10, 28AD
9th of 200	3790	354	Wed Sep 28, 29AD
10th of 200	3791	355	Sun Sep 17, 30AD
11th of 200	3792	383	Fri Sep 7, 30AD
12th of 200	3793	354	Wed Sep 24, 32AD
13th of 200	3794	355	Sun Sep 13, 33Ad
14th of 200	3795	385	Fri Sep 3, 34AD

The year 3795 ends at sunset on Friday Sep. 23, 35AD

THE HEBREW, ROMAN AND JULIAN CALENDARS SYNCHRONIZED

FOR THE PERIOD 7BC THROUGH 35AD

Appendix D

There are five opinions as to the correct year in which the city of Rome was founded. The Encyclopedia Britannica states “about 750 BC” which date is an approximation. The best date may be that given by the Roman “Fasti Capitolini”, which list was compiled by the Emperor Augustus, and gives 752 BC as the correct year for the founding. The festival of Palilia began on April 21 and is taken as the proper epoch of the founding: April 21, 752 BC. The year 2BC would be the 750th anniversary of the founding of Rome, AUC; and, consequently the rationale for issuing the decree of registration for taxation.

SEP 7	SEP 25	SEP 13	SEP 2	SEP 21	SEP 11	SEP 1	SEP 19
-3754--	-3755--	-3756--	-3757--	-3758--	-3759--	-3760--	
--7BC-- --6BC-- --5BC-- --4BC-- --3BC-- --2BC-- --1BC--							
--746-- --747-- --748-- --749-- --750-- --751-- --752--							
AUC AUC AUC AUC AUC AUC AUC							
APR 21	APR 21	APR 21	APR 21	APR 21	APR 21	APR 21	APR 21
SEP 19	SEP 7	SEP 27	SEP 15	SEP 3	SEP 23	SEP 12	SEP 2
-3761--	-3762--	-3763--	-3764--	-3765--	-3766--	-3767--	
--1AD-- --2AD-- --3AD-- --4AD-- --5AD-- --6AD-- --7AD--							
--753-- --754-- --755-- --756-- --757-- --758-- --759--							
AUC AUC AUC AUC AUC AUC AUC							
APR 21	APR 21	APR 21	APR 21	APR 21	APR 21	APR 21	APR 21
SEP 2	SEP 19	SEP 9	SEP 28	SEP 18	SEP 5	SEP 24	SEP 14
-3768--	-3769--	-3770--	-3771--	-3772--	-3773--	-3774--	
--8AD-- --9AD-- --10AD-- --11AD-- --12AD-- --13AD-- --14AD--							
--760-- --761-- --762-- --763-- --764-- --765-- --766--							
AUC AUC AUC AUC AUC AUC AUC							
APR 21	APR 21	APR 21	APR 21	APR 21	APR 21	APR 21	APR 21

CALENDARS SYNCHRONIZED

(App. D)

SEP 14	SEP 4	SEP 21	SEP 10	AUG 31	SEP 20	SEP 8	SEP 28
-3775--	-3776--	-3777--	-3778--	-3779--	-3780--	-3781--	
--15AD- --16AD- --17AD- --18AD- --19AD- --20AD- --21AD-							
--767-- --768-- --769-- --770-- --771-- --772-- --773--							
AUC AUC AUC AUC AUC AUC AUC AUC							
APR 21	APR 21	APR 21	APR 21	APR 21	APR 21	APR 21	APR 21
SEP 28	SEP 16	SEP 5	SEP 22	SEP 12	SEP 1	SEP 21	SEP 10
-3782--	-3783--	-3784--	-3785--	-3786--	-3787--	-3788--	
--22AD- --23AD- --24AD- --25AD- --26AD- --27AD- --28AD-							
--774-- --775-- --776-- --777-- --778-- --779-- --780--							
AUC AUC AUC AUC AUC AUC AUC AUC							
APR 21	APR 21	APR 21	APR 21	APR 21	APR 21	APR 21	APR 21
SEP 10	SEP 28	SEP 17	SEP 7	SEP 24	SEP 13	SEP 3	SEP 23
-3789--	-3790--	-3791--	-3792--	-3793--	-3794--	-3795--	
--29AD- --30AD- --31AD- --32AD- --33AD- --34AD- --35AD-							
--781-- --782-- --783-- --784-- --785-- --786-- --787--							
AUC AUC AUC AUC AUC AUC AUC AUC							
APR 21	APR 21	APR 21	APR 21	APR 21	APR 21	APR 21	APR 21

Please note that the beginning and end of the Jewish Year is at sunset of the particular date called out. For example: The year 3790 begins on September 28, 29 AD at sunset; and ends at sunset of September 17, 30 AD. Also, notice that the Roman year AUC 782 has its beginning at midnight April 20/21, 30 AD; and it ends at midnight April 20/21, 31 AD.

TRIPLE CONJUNCTIONS OF THE PLANETS JUPITER & SATURN

From 2000 BC until 2000 AD

Appendix E

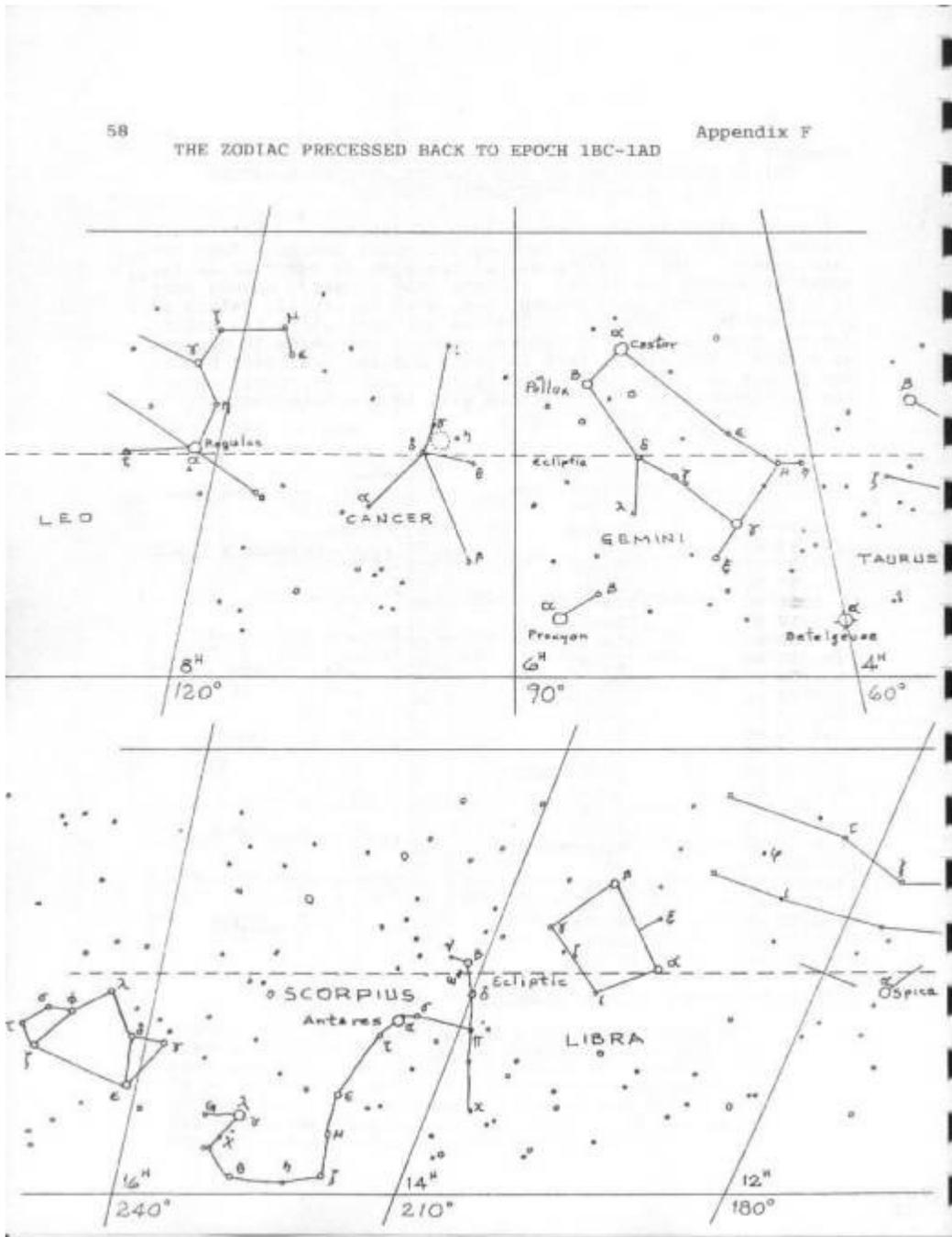
A total of 24 triple conjunctions of Jupiter and Saturn are listed for the 4000 years from 2000BC until 2000AD. They are rare events. These events are as close as 40 years or as far apart as almost 380 years. Jupiter (the largest) shines some 10 times brighter than Saturn; yet, even by itself, Saturn is prominent as it advances 12 degrees per year along its orbit. Jupiter travels about 30 degrees yearly, and gains 18 degrees each year. Therefore, each 20 years Jupiter overtakes Saturn and passes it. The Earth's position in its own circle around the Sun determines whether there will be a single conjunction or, less often, a triple event.

-----DATE-----	ZODIACAL CONSTELLATION	AVERAGED SEPARATION	-----REMARKS-----
1834 BC	PISCES	0.65 DEGREE	
1794/93 BC	LEO	0.05....."	..EXTREMELY CLOSE
1536/35 BC	TAURUS	1.25	"
1496/95 BC	VIRGO	0.89	"
1376 BC	LIBRA	1.07	"
1119/18 BC	CANCER	0.61	"
980 BC	PISCES	0.68	"
861/60 BC	PISCES	0.97	"
821/20 BC	LEO	0.42	"
563/62 BC	TAURUS	1.22	"
523/22 BC	LIBRA	1.12	"
146/45 BC	CANCER	0.20....."CLOSE
7 BC	PISCES	1.00	"
332/33 AD	LIBRA/VIRGO	1.16	"
411/12 AD	TAURUS	1.03	"
452 AD	LIBRA	1.23	"
709/10 AD	CANCER	0.20....."CLOSE
967/68 AD	ARIES/PISCES	1.20	"
1007/08 AD	LEO	0.80	"
1305/06 AD	LIBRA	1.25	"
1425 AD *	LIBRA	1.21	"
1682/83 AD	CANCER	0.24....."CLOSE
1940/41 AD	ARIES	1.24	"
1980/81 AD	VIRGO	1.07	"
2238/39 AD (Next)	GEMINI/TAURUS	0.74	"

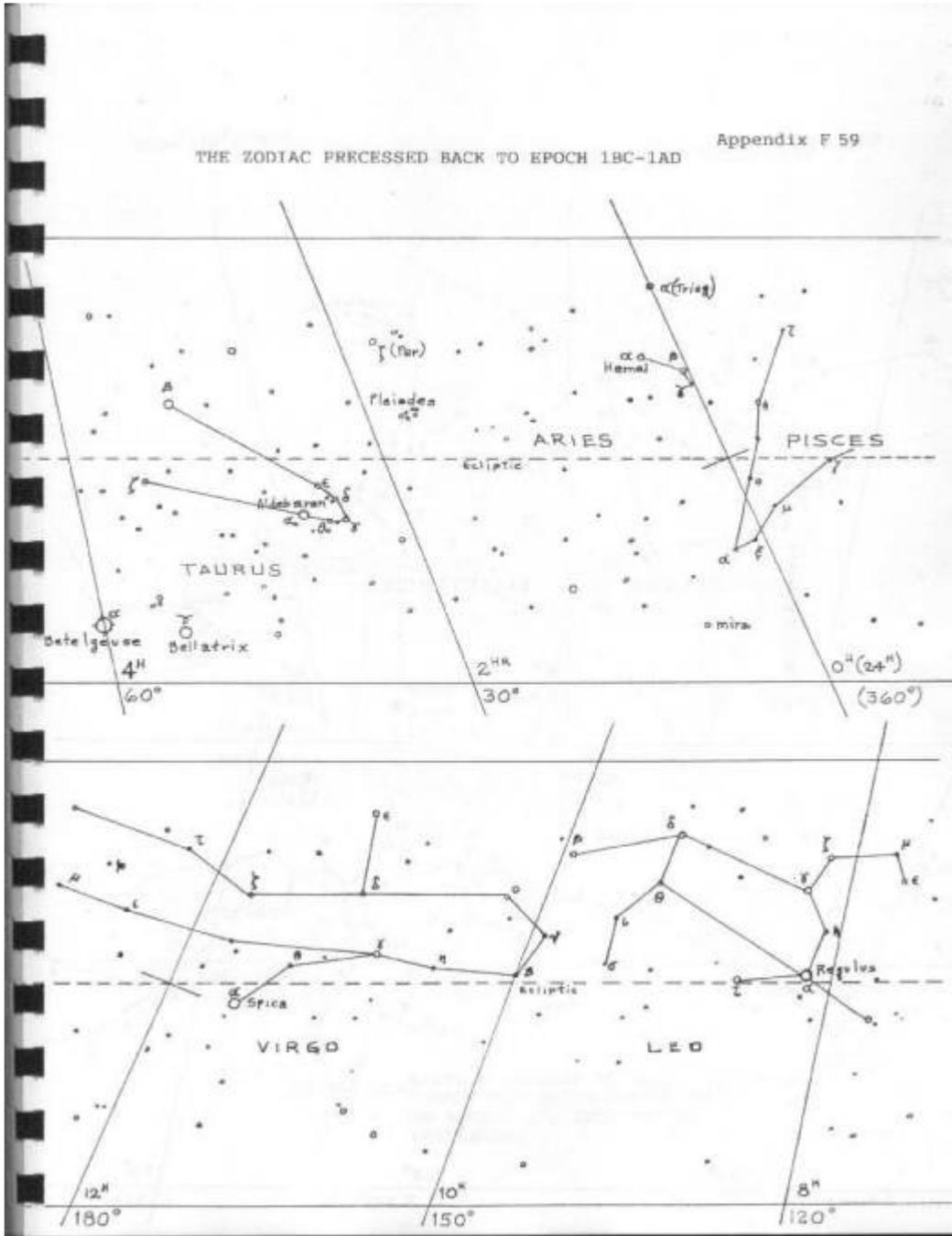
* Technically not a conjunction,
but it appeared to be one.

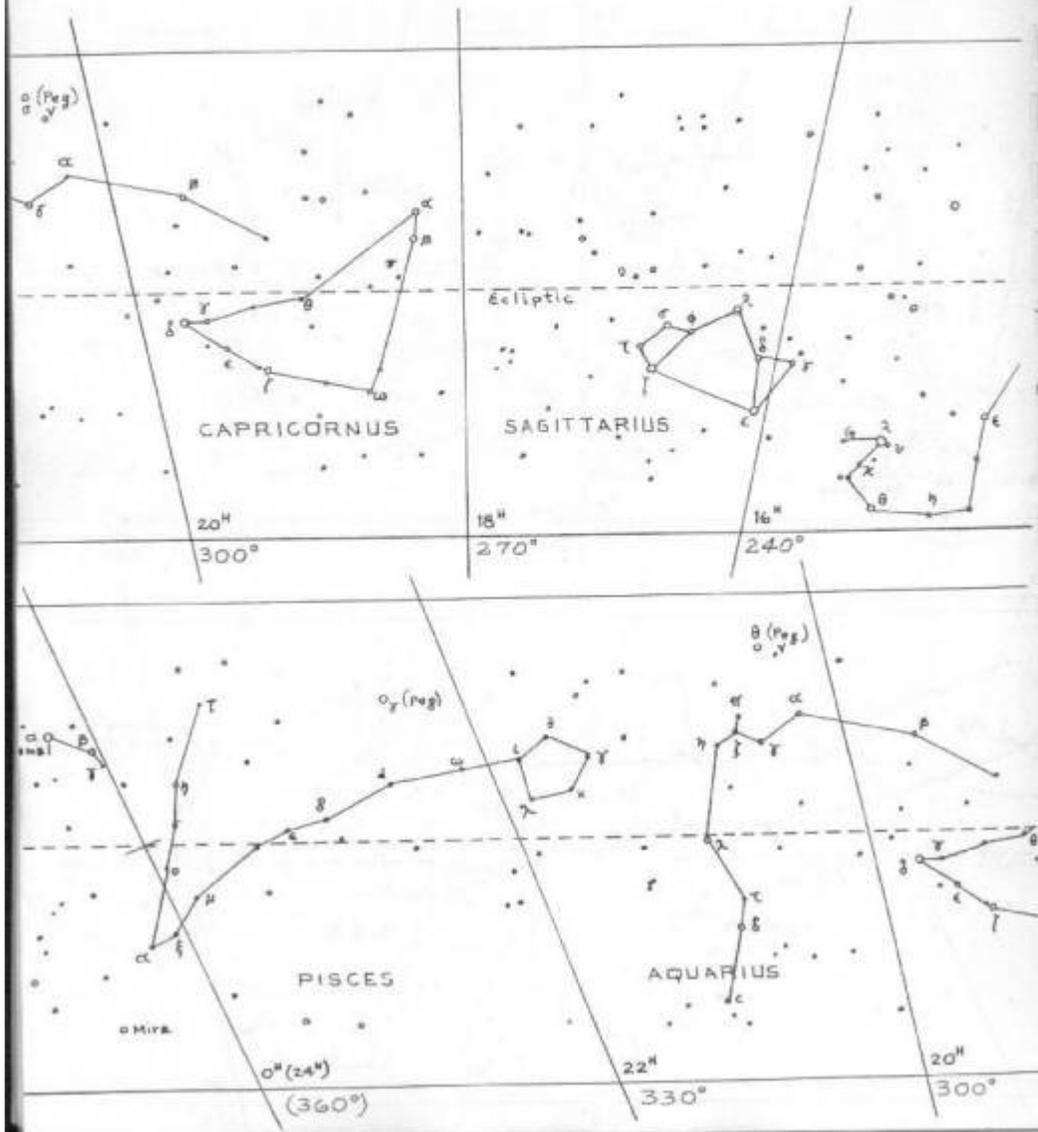
THE ZODIAC PRECESSED BACK TO EPOCH 1BC-1AD

Appendix F

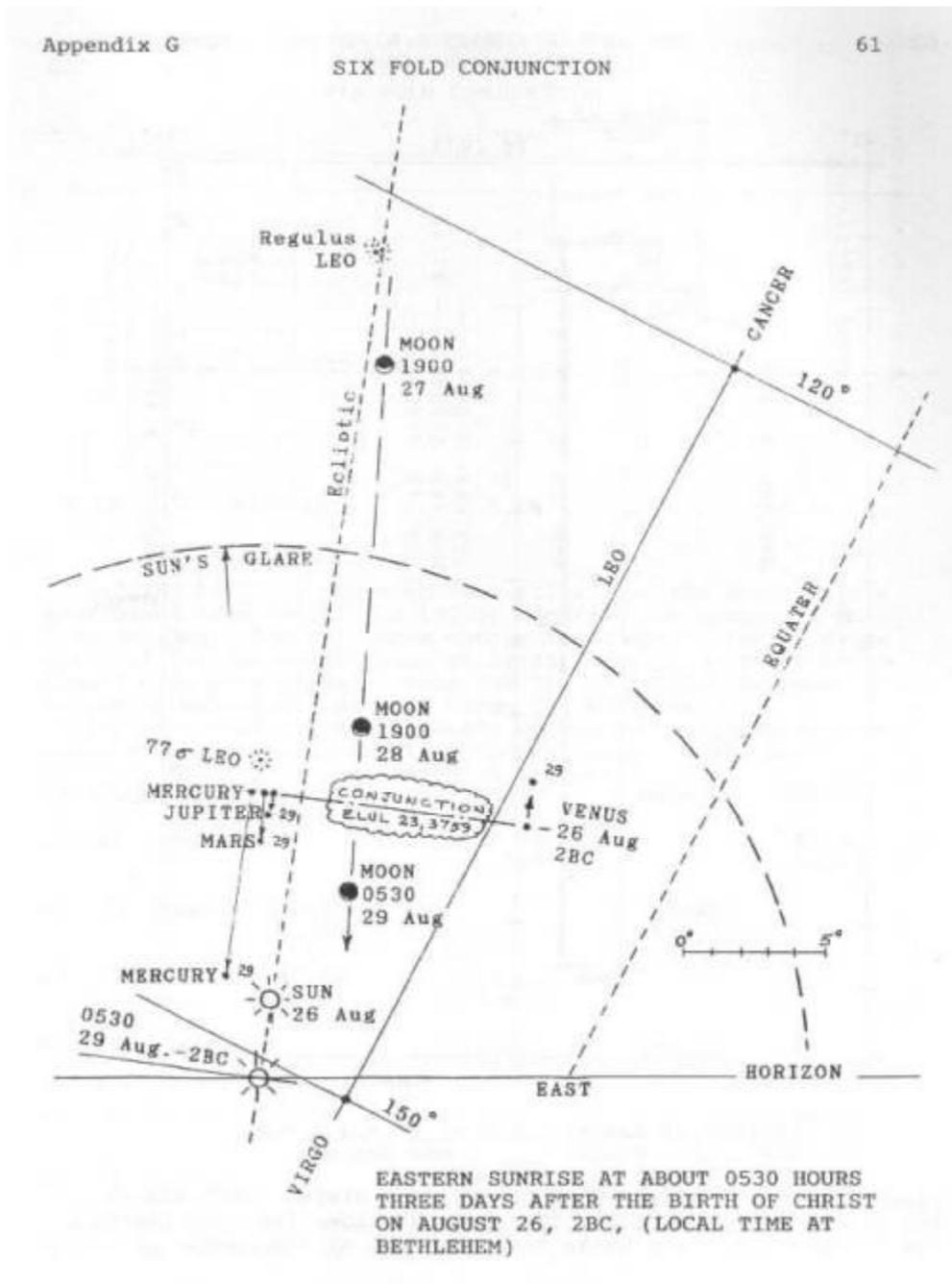


THE ZODIAC PROCESSED BACK TO EPOCH 1BC-1AD



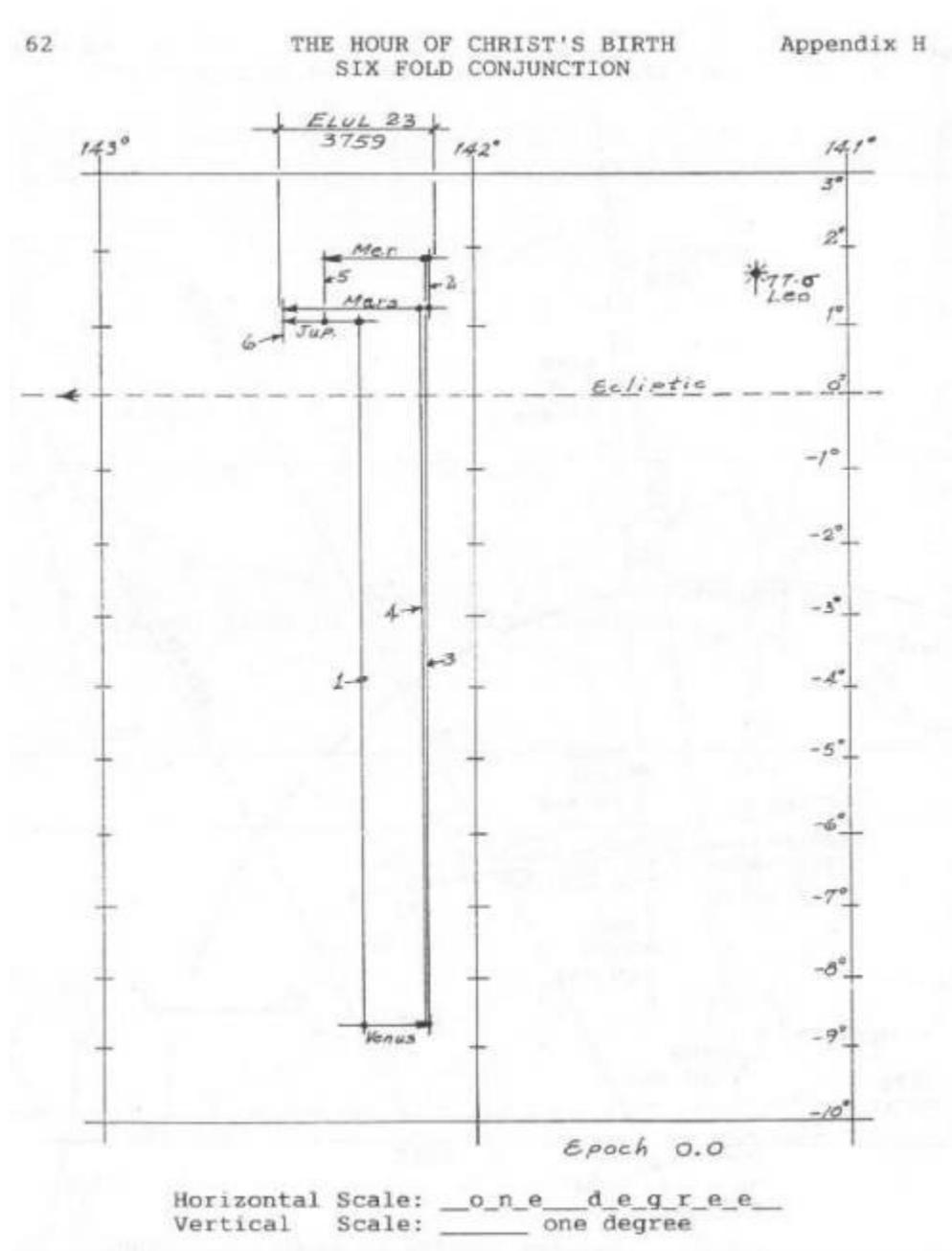


SIX FOLD CONJUNCTION



THE HOUR OF CHRIST'S BIRTH SIX FOLD CONJUNCTION

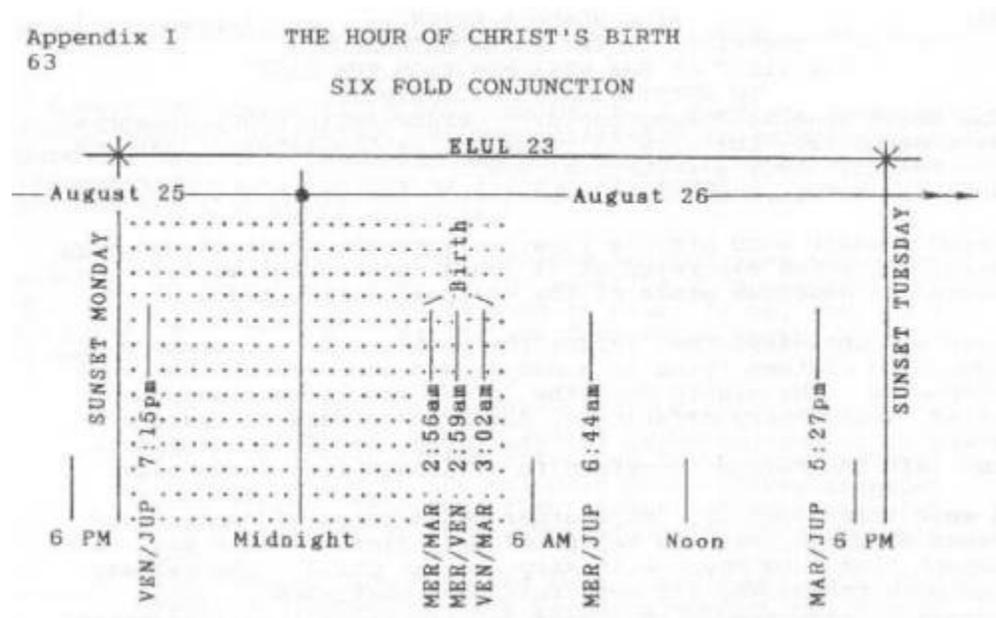
Appendix H



PLACE OF PLANETS AT THE HOUR OF CHRIST'S BIRTH. SEE APPENDIX I FOR ORDER OF CONJUNCTIONS. The star, 77 sigma Leo, is placed for orientation, and marks the rear foot of the Lion.

THE HOUR OF CHRIST'S BIRTH SIX FOLD CONJUNCTION

Appendix I



A "TIME LINE" is shown above. All six of the conjunctions took place from 142.11 to 142.50 degrees ... a spread of only 0.39 degrees. And the three conjunctions which bracketed the start of the 4th watch, (see Mt. 14:25, 'sea'), on the 26th of August were even closer: from 142.11 to 142.12 degrees ... a spread of only 0.01 degrees along the Ecliptic.

The places of the four planets at the six conjunctions are given below: (Local time at Bethlehem ... Aug. 25-26, 2BC). (See Appendix D and E)

No.	Date	Time	MERCURY	VENUS	MARS	JUPITER
#1	25	7:15pm		Long. 142.30 Lat. (-8.68)		142.30 (1.04)
#2	26	2:56am	142.11 (1.83)		142.11 (1.13)	
#3	26	2:59am	142.12 (1.83)	142.12 (-8.67)		
#4	26	3:02am		142.12 (-8.67)	142.12 (1.13)	
#5	26	6:44am	142.41 (1.83)			142.41 (1.04)
#6	26	5:27pm			142.50 (1.13)	142.50 (1.04)

Elul 23, 3759 ran from sunset on Monday, Aug. 25, 2BC until sunset on Tuesday, Aug. 26, 2BC

KING HEROD'S REIGN THE VISIT OF THE LOCAL SHEPHERDS THE VISIT OF THE WISE MEN FROM THE EAST TO EGYPT...OR TO NAZARETH ?

Appendix J

The Roman general Pompey captured Jerusalem in 63BC. Josephus says Herod took the city 27 years to the day later. That was the Fall of 36BC, a sabbatical year.

Josephus Antiq., Book XIV, Chapter XVI, Paragraph 2 & 4.

Herod's death soon after a lunar eclipse the night of January 9-10, 1BC ended his reign of 34 years and several months. The historian Josephus wrote of the eclipse: Antiq. XVII, VI, 4.

Luke's Gospel says the "infant" (brephos-Greek) was wrapped in swaddling clothes lying in a manger and was seen by the local shepherds. The eighth day, the Infant was circumcised/named. After 40 days Mary offered two doves for cleansing, paid five shekels: redemption price for the Child, saw Simeon and Anna, and left the Temple to return to Bethlehem five miles away.

A week later, Oct. 13, 2BC, another conjunction of Jupiter and Venus occurred, the wise men paid homage, left another way; as Joseph fled into Egypt with Mary and the Child. The pathway for both groups was lit by a full moon that night!

FIRST, AN INFANT... THEN THE CHILD...

The new-born Babe (Brephos, Greek) was circumcised the eighth day to identify with the covenant of Abraham and was named by Joseph as the angel instructed. At the Temple the redemption price of 5 shekels was paid so as to identify Him with all of His redeemed people. Now 6 weeks old, He was not an un-named, uncircumcised Babe, but rather...a redeemed Child in Israel, hence, Matthew's proper use of "paidion" -Greek, child.

INTERREGNUM (?)

"And when they had performed all things according to the law of the Lord, they returned into Galilee, to their own city Nazareth." Luke 2:39

This verse has been quoted as authority to delay the visit of the wise men by more than a year to Bethlehem. Yet, Matthew, says, "Now when Jesus was born in Bethlehem of Judea in the days of Herod the king, behold there came wise men from the East to Jerusalem," Matthew 2:1

The wise men visited WHEN He was born.. .NOT, more than a year later. WHEN does not necessarily mean the "day" of His birth but, in the "days" immediately following. The context of His birth was "bounded" by the appearing of the Star of Bethlehem June 17, 2BC, and the second conjunction of

Jupiter and Venus the morning of October 13, 2BC. . .119 days in all.

The Scriptures make no mention of a second trip to Bethlehem. What purpose could such a trip serve? The “gap” theory might have been conjectured when there was less hard data available in the past than now...as such, it is excusable. Matthew 2 and Luke 2 are complementary, not contradictory.

Miscellaneous discussion\methods.

Appendix K

Commercial computerized software has broadened its field of involvement in astronomy. Anyone interested in astronomy can purchase many excellent programs designed to present accurate representations of the sky as far back as 4000BC.. .and as far as 6000 years into the future.

The planet coordinates, conjunctions and eclipses which are provided in this small book can be verified. The conclusions which you reach may not be the same as mine; if so, feel free to differ but, before rejecting the data, be certain; this is a complex subject.

The harmonized Julian/Hebrew calendars were prepared in conformity to the following rules:

1. The Vernal Equinox was estimated by interpolation of the Sun's place on the ecliptic from figures prepared by Dr.Bryant Tuckerman; then, exactly from a computer program written by Pierre Bretagnon and by Jean-Louis Simon.
2. The times of New Moon are from lists compiled by Dr. Herman H. Goldstine. The New Moon nearest the Vernal Equinox (14 days before or after) was selected.
3. Julian calendars for each year in the covered period were set-up with regard for leap years and the day of the week on which a month date fell.
4. Nisan 1 was then set one,two or three days after the New Moon; remembering that the Moon could not be seen until +- 20 hours after true New Moon; and being sure THAT:
 - a. Tishri 1 must not fall on a forbidden weekday;
 - b. There are 177 days from Nisan 1 to Tishri 1. (Including Nisan 1 and excluding Tishri 1)

Adherence to the above assures that the embolismic month of “We-Adar” will fall naturally into place in the 19 year epact of Sun and Moon, i.e.. .the 3, 6, 8, 11, 14, 17, & 19th years. Note: we know of no records which will give the precise dates for the Jewish calendar tied-in to the Julian; but by finding times of New Moon and Vernal Equinox, we can be confident the dates are in step.

Planetary conjunctions were found using figures prepared by Dr.Bryant Tuckerman, and refined with the computer program of Pierre Bretagnon and Jean-Louis Simon:

From Tuckerman's tables, positions were taken at 5 or 10 day intervals. Positions of the conjunctions were approximated by a simple equation:

* $\text{position} + \text{daily rate} = \text{position} + - \text{daily rate}.$

Although the equation is linear, and the actual trace is the arc of an ellipse, this will suffice to give a close enough figure (+- a day) for utilization of the computer program for a more exact readout. Where the superior planets are retrograding, the first estimate from Tuckerman's tables may vary a day or so.

TRIPLE CONJUNCTIONS of Jupiter/Saturn were unveiled by iteration using Bretagnon and Simons' program; and which (according to them) always is precise to better than 0.01

Degree for the positions of the Sun and the planets covered by the program. Precession of the equinoxes was computed: (J. Laskar-1985), from 2000.0 to 0.0:
27.817 degrees.

Data for Solar and Lunar eclipses is from:

CANON OF SOLAR ECLIPSES -2003 to +2526 by Hermann Mucke & Jean Meeus

CANON OF LUNAR ECLIPSES -2002 to +2526 by Jean Meeus & Hermann Mucke

NOTE: ET-UT= +158 minutes.. Celestial data are based on an Ephemeris Time (ET) of 365.25 days, adjusted to a tropical year of 365.24219879 days.

A calendar for each Jewish year referred to in this book is shown. Each page displays 2 Julian calendars: e.g. 3BC & 2BC. The Jewish calendar began: 3760 years and 3 months before the modern era (A.D.); specifically: October 7, 3761 B.C.E. That B.C.E. means "Before the Common Era". Or, beginning with the creation, A.M. "anno mundi" or "year of the world".

Remember: the Jewish year never matches our modern calendar which runs from January to January; about a third of it is in one year and two thirds is in the next; the Jewish civil year runs from September to September in our calendar year.

Today, we follow the Gregorian calendar (since 1582), which is the same as the Julian, except for February, which adds an extra day in century years which are evenly divisible by 400, e.g.: 1600 and 2000 have 366 days each; but 1700, 1800 & 1900 are not evenly divisible, and therefore have 365 days each.

One can see that a September date is circled on each of the calendars. The circled date is Tishri 1: (Rosh HoShana), the beginning of the civil year. And, the first day of each month is underlined.

Pages are provided which are entitled "THE YEAR...". These pages are a synopsis of yearly astronomical activities. They list every planetary conjunction and every eclipse of the Sun and Moon. Each planetary conjunction has been recorded as to how closely each planet approached the other. The measure is in degrees. CONJUNCTION occurred if 2 planets arrived at the same ecliptic longitude; that is, when they were in a roughly north/south alignment. At that moment they were close or far apart. If they were within 1/4 degree, it is marked:(close). If they were apart over 1/4 degree, it is marked: (wide conj). An aid to visualize separation is to remember the diameter of the Sun or Moon is around 1/2 a degree. The conjunction that was within 20 degrees of the Sun is shown: "near Sun" to show that the conjunction could NOT have been seen. If it were 20 degrees (or more) distant from the Sun, there is no note, for it could have been seen.

Other pages have the simple heading, e.g. "6 BC". The page displays the movements of the 5 visible planets with relation to each other and to the Sun and the Moon; and is a SCHEMATIC depiction of movement over one Julian year. The left half of the page is labelled PM and the right half AM. The schematic rendering accurately depicts planetary movements rehearsed in the written description for each year.

Lunar eclipses occur when the Earth is between the Moon and Sun, i.e. the Moon must be at Full. But, because the pathway of the Moon is inclined five degrees to the ecliptic there is not a lunar eclipse every month. The inclined pathway of the Moon carries it above or below the Earth's shadow most of the time; but, frequently, the satellite collides with the shadow of the Earth. A midpoint collision is a

total eclipse, and a sideswipe is a partial eclipse. The shadow cast by the Earth (at the Moon) is almost 3 times larger (in diameter) than the Moon...which makes a partial lunar eclipse several times more likely than a total eclipse. Rare midpoint eclipses are much darker (generally) than partial eclipses and really are TOTAL eclipses of the Moon.

Solar eclipses are rarities, any place, and many people may never see one. Sun and Moon seem the same size, but actually the Sun's diameter is over 400 times greater than that of the Moon; yet, because the Sun is only 390 times farther away, it appears somewhat larger than the Moon. And as a result, many solar eclipses are Annular, i.e. a light ring, the surface of the Sun is revealed around the Moon. But, frequently, due to the elliptical orbits of the Earth and Moon, the Moon appears at other times to be as large as the Sun...and at such a time there may be a total solar eclipse...but, only along a narrow path over an arc of the Earth's surface. Persons who are not inside the pathway of totality will see a partial eclipse.

Also, the five degree inclination of the Moon's orbit to the ecliptic; and, the 23.45 degree inclination of the Equator to the ecliptic contribute to the distribution of solar eclipses all over the Earth.

GLOSSARY

Ab: The 11th month normally; 12th in an embolismic year.

Abia (Abijah): The 8th of 24 courses of serving priests which David instituted to assist twice yearly at Temple worship.

Accession year method: Although a king may attain the throne at any time in the year, the dating of events in his reign begins ONLY with the advent of a new calendar year.

Adar: The 6th Hebrew month.

A.D.: Anno Domini (L.)-The year of the Lord.

A.M.: Anno Mundi (L.)-The year of the world.

A.U.C.: Ab Urbe Condita, from the city's founding, (Rome).

Al Gubi: Star in Libra, "heaped up high".

Annular Eclipse: (See Eclipse).

Aries: The first zodiacal sign, the ram or adult male sheep.

Astrology: Ancient semi-scientific lore of the heavens.

Astronomy: Modern, empirical study of the universe.

Aquarius: The eleventh zodiacal sign, the Water bearer.

Auriga: Non-zodiacal constellation, the Charioteer.

B.C.E.: Before the Common Era, before January 1, 1AD.

Bear, the great: Ursa Major, circum-polar constellation.

Between-the-Evenings: Jewish term for time period from the evening sacrifice (3:00 pm) until dark. Anciently, it was stringently applied from sunset until dark. Later, it was applied more liberally from about 12:30 pm until dark.

Bootes: Non-zodiacal constellation. The coming one.. The ploughman, the great shepherd and the Harvester of souls.

Bull, (Taurus): The second zodiacal sign-Heb."Reem" "wild ox".

Calendar:

Gregorian: corrected Julian calendar, from 1582 AD, the calendar of the modern world.

Jewish: dated from 3760 years & 3 months before the common era; it harmonized years & lunar cycles.

Julian: dated from 45BC by Julius Caesar. It became the Gregorian calendar with minor changes.

Roman: dated from 753 BC. Used as the calendar when Rome ruled the world.

Calendar, harmonized: When any two or more calendars are paralleled through a common date.

Cancer: The fourth zodiacal constellation, the Crab.

Canis Major: The big dog, a constellation which contains the brightest star of the heavens: Sirius, the dog star.

Canis Minor: The little dog...constellation near Canis Major, contains the first magnitude star Procyon.

Capricorn: The tenth zodiacal constellation, the Goat.

Cassiopeia: Non-zodiacal constellation, enthroned woman.

Castor: One of two first magnitude stars in Gemini.

Cetus: Non-zodiacal constellation, the sea monster.

Civil year: Yearly calendar offset 6 months from the calendar of religious events of the Jews;

generally used for dating civil or governmental events. It started with Tishri, the seventh month of the ecclesiastical year.

Cleansing, ceremonial: The Hebrew mother that gave birth to a male was unclean for 7 days; and 33 more were served until she was purified. The times for the mother of a maid were twice as long. Leviticus 12.

CE.: Common Era, same as A.D., except it avoids "Dominus".

Conjunction: When two or more planets appear together at the same longitude. A close conjunction of two bright planets is rare. The rarity is increased when more planets are in the gathering.

Chronology: A system of time measurements re Biblical events. There are 3 principal ones; Long, Short, and Rabbinical.

Comet: A small (a few miles across) body composed of ices and dust particles, which sublimates as a luminous train when it nears the Sun during its only or periodic visit.

Cross, southern: Non-zodiacal constellation, Crux.

Crown, northern: Non-zodiacal constellation, Corona Borealis.

Day, Hebrew: Begins just after sunset, runs till next sunset.

Decan: Each of the 12 zodiacal constellations has 3 auxiliary constellations to enhance the central meaning of that sign.

Degree: Astronomical sizes and relationships are expressed in degrees or fractions of degrees. There are 360 degrees in a full circuit of the sky. The Sun or Moon has an angular size of about 1/2 a degree.

Eclipse:

Solar: Total; the Moon completely "blacks" the Sun.

Annular; the Moon's disk is smaller than the Sun's ... a ring of light is seen.

Partial; the Moon's disk partially hides the disk of the Sun.

Lunar: Total; the Moon passes through the center of the Earth's shadow.

Partial; the Moon passes through the fringes of the Earth's shadow.

Ecliptic: The path which the Sun traces out in a year against the background of fixed stars.

Elul: The 12th month normally; 13th in an Embolismic year. Embolismic year: One of 7 years in the 19 year Metonic cycle, in which a 13th month of 30 days is added to bring the Sun and Moon into phase every 19 years.

Epect: The 19 years of the Metonic cycle.

Ephemerides: Tables listing coordinates of celestial bodies.

Ephemeris Time: Computation using 365.25 days to the year.

Epoch: Point in time chosen arbitrarily to mark a reference.

Equator, celestial: The equator projected against the sky.

Eridanus: Non-zodiacal constellation, the mystic river.

Fall, (verb): Certain feasts could not "fall" on the daylight portion of certain week days, even though the beginning of the feast could begin at sunset of a forbidden day.

Firmament: expanse of the heavens, the sky.

Forbidden weekday: The Hebrews would not permit certain feast days to "fall" on some weekdays, i.e. the daylight part.

Galaxy: An aggregation of about 100 billion stars, plus gases and nebulae revolving around a common center and measuring from 1000 to 300,000 light years in diameter.

Gathering, (of planets): When several planets are seen massed together within a circle of roughly 3 to

4 degrees.

G.M.T.: Greenwich Mean Time.. .same as Universal Time, UT.

Gemini: The third zodiacal constellation, the Twins.

Halley's comet: An 18th century English astronomer pointed to the comet of 1682 AD as periodic (about 76 years) for whom it was named upon its return in 1759. It has been tracked through its appearances as far back as 240 BC.

High sabbath: Generally a feast day whether it fell on a week day or on the weekly sabbath.

Holy convocation: A Holy convening of the Hebrews was to take place the 1st & 7th days of the Feast of Unleavened Bread.

Intercalary year: see Embolismic year.

Iyyar: The 8th month normally; 9th in an embolismic year.

Josephus: Jewish general and historian of the 1st century.

Julian Year: After Julius Caesar, who caused it to be devised in 45 BC. It calls for the inclusion of an additional day every 4th year. It is the basis for our modern calendar.

Jupiter: The largest planet of the solar system.

Kepler, Johannes: Great German astronomer of 17th century.

Kislev: The 3rd month of the Jewish Calendar.

KJV: King James Version, Bible, English translation 1611 AD.

Latitude, ecliptic: Measured in degrees (up to 90 degrees) N or S of the Ecliptic or; degrees N or S of the Equator in the Right Ascension & Declination coordinate system.

Lawgiver: Regulus, the main star in the zodiacal sign Leo.

Leap Year: Every fourth year, generally, with an extra day.

Leo: The 5th zodiacal sign, the Lion.

Lepus: Non-zodiacal constellation, serpent. (hare-erroneously)

Libra: The 7th zodiacal sign, the Scales (of Justice).

Little Passover: Observed on Iyyar 14, 30 days after Passover on Nisan 14; for those men who did not attend at Passover.

Local time: Actual star time at any place on Earth.

Magi: Heb. "chartum-mim" sacred scribes, originally Medes who practised observations of the stars. "wise men", Mt.2:1.

Marheshvan: ... or Heshvan, the 2nd Hebrew month.

Mars: Fourth planet from the Sun, (Myth.) god of war.

Mercury: The planet nearest the Sun, Messenger of the gods.

Meridian: At any instant the unseen line running N & S, which bisects the overhead sky into East and West portions.

Metonic cycle: (See Exnbolismic year).

Morning watch: In Bible days, last nightly watch, began 3 am.

Morrow-after-the-Sabbath: The day following Passover. It was the 15th of Nisan, and also, the first day of the Feast of Unleavened Bread. Too, it was the beginning day of the 50 days which ended with Pentecost falling on Sivan 6.

Nisan: Normally the 7th month; 8th in an embolismic year. It is the first month of the ecclesiastical year.

New Year: Rosh Hashana, began the civil year on Tishri 1. It was the start of the 1st civil or the 7th religious month.

Occultation: The intervening of one celestial body between an observer and another celestial body, an eclipse.

Omer: Dry weight, about 5 to 6 bushels of barley harvested on the evening of Nisan 15, threshed and

ground into flour in a hand mill. After daylight of the 15th about a gallon of the flour was given to the priest who put frankincense and oil on it, waved it before the Lord, placed a handful onto the altar, and reserved the balance for himself.

Ophiuchus: Non-zodiacal constellation, Serpent bearer.

Origen: Early church leader and writer, c. 200 AD.

Orion: Non-zodiacal constellation, the great hunter.

Parthenogenesis: (Biol.) Reproduction without conjunction of any gametes of the opposite sex.

Passover: The commemorative annual feast on Nisan 14 at which the Hebrews eat roasted lamb with bitter herbs, unleavened bread, and wine to celebrate their deliverance by God from Egyptian bondage.

Pentecost: Second of the great Feasts: the 6th day of Sivan.

Perseus: Non-zodiacal constellation, slayer of Medusa.

Pisces: The twelfth zodiacal constellation, the Fishes.

Pollux: One of the pair of 1st magnitude stars in Gemini.

Praesepe: Large, open star cluster in Cancer, a multitude.

Precession: Every Spring the Sun crosses the Equator a little west of where it crossed the year before. Eventually, the Sun will make the full circle, but takes 25,884 years.

Procyon: The first magnitude star in Canis Minor, little dog.

Regulus: (See Lawgiver)

Religious year: Begins in the Spring, with the month Nisan.

Retrograde (motion): An apparent slowing, reversing, and then reestablishing of the motion of Mars, Jupiter, and Saturn. It results from the faster movement of the earth.

Sabbath: Generally the 7th day of each week; however, it also may be a feast day - Lev. 23:24.

Sagittarius: The 9th zodiacal sign, the Archer.

Saturn: The 6th planet from the Sun; second largest planet.

Scorpius: The 8th zodiacal sign, the Scorpion.

Sea Monster: (See Cetus).

Septuagint: Greek translation of the Hebrew Bible, done as an aid to worship by 70 (hence, LXX) scribes in Alexandria, Egypt, about 250 BC. It was much used by the people, even in Israel; quoted from by the Lord and the Gospel writers.

Serpens Caput: Non-zodiacal constellation, Serpent's Head. I Sidereal year: Time for 1 complete revolution of the Earth around the Sun relative to the fixed stars.

Sign (Zodiac): Twelve constellations equally spaced along the Ecliptic (Annual trace of the Sun). The signs are ancient and have remained unchanged for many thousands of years.

Sirius: (See Canis Major).

Sivan: The 9th month normally; 10th in an embolismic year.

Solar year: See "Tropical year"

Spica: First magnitude star in the zodiacal sign Virgo.

Star of Bethlehem: The conjunction of the planets Jupiter and Venus, June 17, 2 BC, in the sign Leo.

Superior planets: Those planets whose orbits are farther from the Sun than the Earth's orbit.

Synodic Month: Time between New or Full Moons; 29d, 12h, 44m.

Tabernacles: One of the 3 great feasts; from Tishri 15-22, it was last of the triad: Passover, Pentecost, Tabernacles.

Tammuz: The 10th month normally; 11th in an exubolismic year.

Taurus: (See Bull).

Tishri 1: (See New Year).

Tropical year: Time between 2 successive passages of the Sun through the vernal equinox, the calendar year.

Trumpets: Coincided with Tishri 1 - Rosh Hashana, the New Year. The shofar (ram's horn) was sounded to announce New Year.

Twins: (See Gemini).

Triple conjunction: When any three celestial bodies are close to one another in the sky. The planets Jupiter and Saturn are at conjunction every 20 years. Occasionally, when the Earth is at the right portion of its orbit, the two are in conjunction 3 different times over a 7 month period.., this is called a triple conjunction. The 3 conjunctions appear to be projected against one or two zodiacal signs.

Universal Time: Same as Greenwich Mean Time. World times are based on a division of 24 meridians of 15 degrees each, or one hour. Starting at Greenwich (England) and moving east or west the time grows greater or lesser (respectively) as the intervening distance from the meridian becomes larger.

Unleavened bread, feast of: Passover, 14 Nisan, was followed on 15 Nisan by the first of the seven days of the Feast of Unleavened bread. On the 1st and 7th days, Nisan 15 & 21, a Holy convocation was held. The one on the 15th of Nisan is the one mentioned in John 19:31.

Ursa Major: Non-zodiacal constellation, the Great Bear.

Venus: Second planet outward from the Sun; brightest planet.

Vernal Equinox: Vernal "Spring".. .Equinox "Equal". The time each year when the Sun crosses the equator on its journey back into the northern hemisphere after a winter spent in the southern hemisphere.

Virgo: The 6th zodiacal sign, the Virgin.

We-Adar: The 30 day month added at intervals to the religious year. It is embolismic, inserted to bring Sun and Moon to the same phase relationship they had 19 years before.

Zodiac: (See Sign, zodiac).

Zuben Akrabi: Star in Libra; "the price of the conflict".

Zuben el Genubi: Star in Libra; "the price deficient".

Zuben el Schamali: Star in Libra; "the price which covers".