

THE STAR OF BETHLEHEM



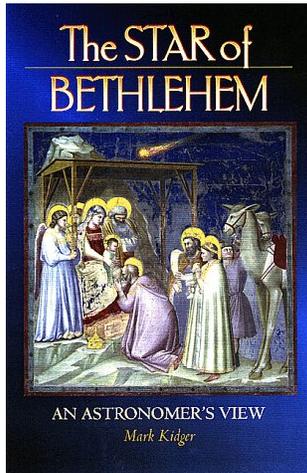
PROJECT A – GROUP 18

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Introduction



From the beginning of time, man has always been fascinated with the stars and planets that populate our night skies. To the ordinary observer like you and me the starry night would seem like a romantic setting to spend a special moment with one's loved ones. To the scientist all the happenings of space is a forum of endless arguments on who has the better or more reliable theories to explain all the astronomical phenomena. To the historian the stars are a way to explain certain historical facts. To the religious leaders the stars, planets, moon and sun are used to derive the dates for their festivals and even explain the origins of their religion i.e. Christianity. It is clear that the stars have played an important role in the development of mankind.

There is one 'star' out there which is particularly important to mankind because it would affect everyone living on earth regardless of background or religion. Currently, the existing timeline is defined by the B.C. and A.D. timeline whereby B.C. is the period 'Before Christ' and A.D. (Anno Domini which means the year of the Lord) is that after the birth of Christ. In the holy bible, it is mentioned that a bright star in the sky indicated the coming of the Messiah i.e. the birth of Christ. This mysterious star has then come to known as the 'Star of Bethlehem' named after the place of his birth. So far all the facts mentioned above have been closely related to the Christian faith. Why then is the 'Star of Bethlehem' of such importance to majority of the world population who are not of the Christian faith. Well, looking at the issue with a more objective mind would allow one to see that the accuracy of his birthday; in fact could alter our existing timeline. For all we know, we might be in the wrong century instead of the 21st century maybe we should only be in the 20th century. It is for this discrepancy in the timeline which would affect everyone around the world.

As you read on, you would be taken on a ride of discovery into the true origins of the 'Star of Bethlehem' and find out if there is any discrepancy in our existing timeline. We will discuss the issue with a scientific approach, religious approach etc. Hopefully, this would give a better understanding on the mysterious star which has baffled mankind for many centuries. Come solve this age-old mystery for yourself.

What is the Star of Bethlehem?

It's an astronomical mystery which has been puzzling mankind for a long time. A strange star in the dark skies that loom over the middle-eastern part of the world at that particular period claimed to have appeared at the birth of Jesus Christ. Let us first list down what basic knowledge we have about the star.

1. It signified the birth of the Messiah e.g. Jesus Christ
2. It signified kingship
3. It had a close relation to the Jewish people
4. It rose from the east just like the other stars
5. It appeared at a specific time
6. It could not be easily identified by King Herod or the ordinary Jewish people
7. It lasted for a considerable amount of time
8. It remained ahead of the Magi as they traveled south of Jerusalem to Bethlehem
9. It stopped above Bethlehem

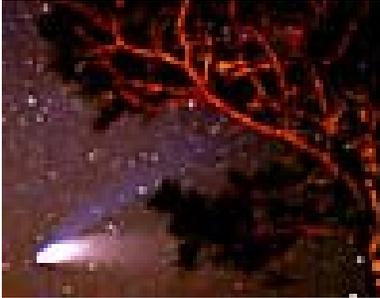


All the facts above were gathered from the Biblical Gospel of Matthew but all these were either observations or accounts passed through word of mouth thus the credibility of the facts is questionable. The 'Star of Bethlehem' is a powerful and enigmatic symbol of Christianity. Based on the accounts of the Roman and Jewish historians of that era alongside the predictions of the ancient prophets such as Daniel

who are said to possess mystical powers, the possible year of the appearance of the star ranges from 7 B.C. to 1 B.C. using the existing timeline. During that period, there were numerous astronomical phenomena ranging from supernovas to planetary conjunctions to the sudden appearance of comets.

Armed with the background knowledge of the 'Star of Bethlehem' we shall now explore all the possibilities to see which is the most likely explanation for the extraordinary phenomena. By comparing the visional accounts from the people and the astronomical records of that era with a little tinge of planetary mathematics and physics, we will try to come up with the explanation that would fit.

Astronomical Events (7 B.C. – 1 B.C.)



To have a better understanding on what could have been the 'Star of Bethlehem'. We must first look at all the astronomical events which would appear outstandingly bright in the darkness of the skies over current day Israel. Looking at all the possibilities ranging from comets to planetary conjunctions would allow for better judgment on the most likely outcome.

7 B.C.

- 29 May: Triple conjunction of planets Jupiter and Saturn in the constellation Pisces
- 03 Oct: Triple conjunction of planets Jupiter and Saturn in the constellation Pisces
- 04 Dec: Triple conjunction of planets Jupiter and Saturn in the constellation Pisces

6 B.C.

- Feb: Massing of Jupiter, Saturn and Mars came within 8° of each other in the constellation of Pisces
- 17 Apr: Jupiter underwent the 1st occultation (eclipses) of the moon
- 23 Aug: Jupiter underwent the 2nd occultation of the moon
- 19 Dec: Jupiter underwent 3rd occultation of the moon

5 B.C.

- 10 Mar – 27 Apr: A comet appeared in the constellation Capricorn and lasted 70 days which was recorded by the ancient Chinese astronomers
- Mar: A super nova was observed by the Chinese astronomers
- Apr: A super nova was observed by the Chinese astronomers

4 B.C.

- 24 Apr: A comet appeared which was recorded by the ancient Chinese astronomers

3 B.C.

- 03 May: Saturn and Mercury were within 40' (arc minutes) of each other
- 12 June: Saturn and Venus were separated by only 7.2'
- 12 Aug: Jupiter and Venus approached to within 4.2'
- 14 Sept: Jupiter came within 20' of the star Regulus Star (The Royal Star)

2 B.C.

02 Feb: Conjunction of Jupiter and Regulus Star was within 51' of each other

02 May: Conjunction of Jupiter and Regulus Star was within 44' of each other

17 June: Conjunction of Jupiter and Venus were within 6" (arc seconds) of each other

17 Aug: Mercury, Venus, Mars and Jupiter were close

1 B.C.

A super-nova was recorded by the ancient Chinese astronomers

From the timeline of astronomical phenomena, we can start to analyze each of them carefully to see if any of them have any properties or characteristics which could relate them to the 'Star of Bethlehem'. In fact, each of these phenomena does hold a hidden meaning, now we just have to try to interpret them and find the one that holds the key meaning to being the special Christmas Star (Star of Bethlehem). Let us now start with the smallest astronomical body i.e. the meteor and progress slowly to the larger astronomical beings i.e. planets assessing each of them for their significance in relation to the birth of Christ.

Meteor

Before assessing the credibility of a meteor, we must first know what a meteor is. Well, a meteor is a small fragment of space material – celestial dust – which enters Earth's atmosphere at great speeds resulting in a brightly glowing body as its outer layer vaporizes. A 'shooting star' would be a dramatic way of making an announcement in the heavens. Furthermore, an object of such beauty and splendor would be a perfect way of signaling the birth of Christ to all the Jewish people. Shooting stars do not rise in the east like other stars instead they have a form of random motion, shooting across the sky in any direction possible. Due to its nature of appearing suddenly and for mere moments,



This is a picture of a meteor shooting across the sky

possible for the Magi to have adequate time to form associations with the

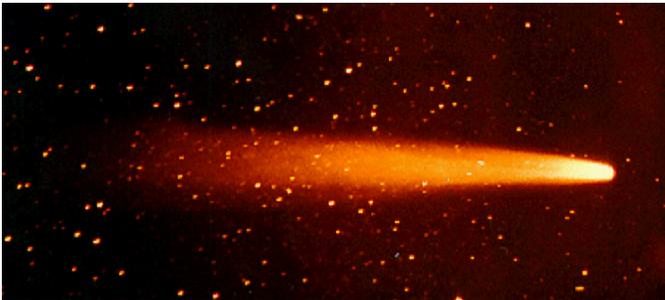
birth of a king, Jews, birthplace of the Messiah and all. Since it does not last for long, it is unable to satisfy the Biblical account. Therefore, the 'Star' could not be a meteor.

Comet



A comet is a celestial object which has a large orbit around the Sun thus it has an orbit of many years duration. Halley's Comet – a block of ice – being one of the most famous comet known to man, orbits the sun in a 75.5 year circuit. Comets rise in the east and they are able to endure over time.

At that time in history and all the way into the middle ages, comets were never regarded as good omens instead they were thought of as harbingers of destruction and doom. They were perceived as being bad because of their behaviour in nature. To the ancient people their action of breaking through the sky ignoring the high ordered and repetitive clockwork movement of the heavens was deemed as it was sign defiance against the heavens. Thus, if the purpose of the 'Star of Bethlehem' was to signify the coming of their Messiah which would be considered a joyous occasion it is unlikely that the Star could have been a comet.



According to the Biblical account, Herod needed to consult the mystically powerful Magi – trained astronomer – about the 'Star of Bethlehem'. If the Star was really a comet, everyone in the region of Bethlehem would have been

able to see it. In addition to its relative gigantic size, the slow movement of the comet would have easily spotted by anyone with untrained eyes and Herod would not need the help of the Magi. Therefore, it is highly unlikely that the 'Star of Bethlehem' is a comet.



This is the picture of one the most well-known comet in space – Halley's Comet which is a big block of ice

Nova or Super-Nova

A nova is a star which explodes at the end of its cycle. This explosion can increase in its brightness by a millionfold or more for a short period. In the event of tremendously intense explosion, a super-nova of brightness much greater than that of a nova would be formed.

The nova or super-nova being like other stars would rise in the east and it would last for a considerable length of time. Its sudden appearance would be spectacular making it easy to spot which fits right into the Biblical accounts.



This is a picture of a super nova during its explosion

To the people on Earth, the explosion of the star will suddenly grow as bright as Venus in the darkness of the night skies which could be easily spotted by the naked eye. Furthermore, the due to the lack of artificial lighting the darkness of the ancient skies would have allowed the people to view the stars with great ease. If a nova or super-nova



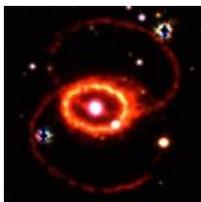
This is a picture of a nova



This is a picture of the Vela Supernova Remnant.

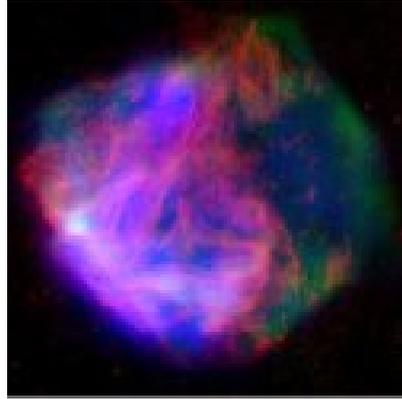
were to appear suddenly, being so familiar with the night skies, anyone would have been able to spot it. But for the fact that Herod needed assistance from the Magi who were trained astronomers to locate the 'Star of Bethlehem' clearly indicates that it was not easily spotted by the naked eye. If it was an astronomical event, it is very likely not a nova or super-nova.

Star



Stars, defined as large, gaseous, self-illuminous celestial bodies were widely considered to be God's handiwork, and therefore, a source of divine guidance. As a result, astrology overlapped with religion. Astrology offered a traditionally sanctioned way to discern a pattern, to extract relevant meanings from the chaos of current events, and to discern future ones.

Since the 'Star of Bethlehem' is being named as a star, ever wonder why nobody actually suspected any of the stars that populate our universe for being the star which signified the birth of Christ. For the fact that there is countless number of stars in the vast universe, it is quite impossible to come up with a substantial evidence to support the possibility of the 'Star of Bethlehem' being any of the current stars in our universe. In fact, most astronomers argue that the 'Star of Bethlehem' is actually an old star which is no longer in existence now. Numerous theories have been formulated to pin-point the star as well as those which disregard its existence all together.



Conjunction



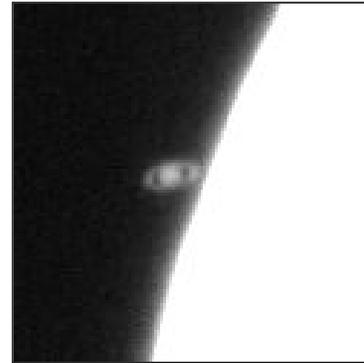
Between 7 B.C. and 1 B.C., there were many astronomical phenomena but one which seems to occur very too often within this timeframe is the conjunction, thus making it very difficult to overlook. Planets like the Earth have an orbit circling the sun but due to the differences in the distances of each planet from the Sun; this results in the different orbital distance moved by each planet. As the planets progress with their orbital motion, there are times when the planets appear to be very close to one another. And it is the result of this closeness that when it is observed from the Earth it seems as like a big and bright celestial body. During the suspected timeframe of Jesus Christ's birth, there were numerous conjunctions and all of them have their own special characteristics which makes their claim to being the 'Star of Bethlehem' very credible. Knowing this makes it very difficult to disclaim the possibility that the 'Star of Bethlehem' is the result of a conjunction that occurred a long time ago.

Furthermore, the fact that occurrence of conjunctions do not happen everyday makes it the perfect sign to signify the coming of someone as special as the Jewish Messiah – Jesus Christ. In fact, conjunctions are so rare that they only occur when the planets manage to get close to other planets. To see this kind of closeness of planets is difficult, due to the different sizes of the orbits of each planet.

Finally, planets being celestial bodies of such immense size make them very visible to the naked eye of person on the Earth. When a conjunction results the few planets involved are usually in such close proximity that to an observer on Earth it would seem as a very bright and magnificent celestial body. This celestial body seems as a suitable sign to make the coming of Jesus Christ. Therefore, it is possible to link the 'Star of Bethlehem' to one of the conjunctions.

Occultation

In the era of Jesus Christ birth, there were also a few occurrences of occultation. An occultation occurs when a celestial object passes in front of another celestial object. A good example to illustrate this fact would be as follows: when the Moon passes in front of a background star, light from the background star is prevented from reaching the Earth. A shadow of the Moon is cast by the star onto the Earth, and this shadow sweeps across the Earth at roughly the same speed as the Moon is moving. And it is this occultation that could have resulted in the formation of the 'Star of Bethlehem'.



Review on the Astronomical Events (7 B.C. to 1 B.C.)



After looking through all the astronomical events which have occurred, we now know that some of these phenomena might be magnificent in their own right but they might have characteristics which make them unsuitable to lay claim to being the 'Star of Bethlehem'. We are now better equipped to understand what could have resulted in the formation of the Christmas Star. Smaller celestial bodies – meteor, comet and nova – are automatically ruled out of contention due to the fact that they do not last long enough to be of any significance to the wise Magi. And a comet which is believed to be an omen of doom definitely cannot be the 'Star of Bethlehem'. Thus that leaves us with the more prominent astronomical phenomena which involve the much larger celestial bodies. Being so large in size would have made it easy for the Magi to spot. As we progress further, we will look into more detail at each possible phenomena to see if they are worthy of the title of being the 'Star of Bethlehem'.

The Stories of the 'Star of Bethlehem'



After looking at all the possible astronomical phenomena, only a few of them have the characteristics needed to fulfill the criteria of the 'Star of Bethlehem'. Now we will try to relate these astronomical phenomena to the events recorded in the Bible and analyze the two for any discrepancies. Although it might not be possible to accurately account for what resulted in the mystical formation of the 'Star of Bethlehem', at least we can come with a better picture of the astronomical phenomena responsible.

Now, we will slowly progress through the timeline and look at each event in greater detail. The journey that we take would be an intellectually challenging one because many differing views on the 'Star of Bethlehem'. Before we progress any further we must first arm ourselves with the essential knowledge needed for a more accurate judgment on the issue at hand. There are a couple of assumptions to be made. One major assumption to be made would be the age at which Jesus Christ was baptized. With that information we can calculate his estimated time of birth.

When was Jesus Born?

Luke says Christ was about thirty when he was baptized after John began his ministry in A.D. 29. The year of A.D. 29 is also indicated because the crucifixion of Christ most likely occurred in the spring of A.D. 33 (with A.D. 31 and 32 astronomically unacceptable), and the Book of John implies that his baptism was about three and a half years before.

If Christ was baptized in A.D. 29, one needs only to count back "about thirty" years to arrive at his birth date about 2 B.C. Today it is popular to interpret "about thirty" as meaning "26-34" in order to accommodate a birth date for Christ in 6-5 B.C. However, the early Christian fathers, such as Irenaeus and Epiphanius, accepted the straightforward interpretation that it meant a few months less than thirty.

Christ made a point of fulfilling the law of Moses in every detail (Mat. 5:17), which would have included beginning his public ministry at age 30 (Num. 4:3). He apparently began his public ministry at the Passover in A.D. 30 (after his baptism) because 1) his first miracle was done rather secretly "not many days" before that Passover (John 2:9-13); 2) at that time he said, "mine hour is not yet

come" (John 2:4), suggesting that the time for his public ministry had not arrived because he was not yet thirty; and 3) he then openly taught and did miracles at Passover (John 2:23), implying that he was then thirty. If so, Christ was born in the spring of 1 B.C., on or shortly before Passover.

Therefore, to aid our study on origins of the 'Star of Bethlehem', we will assume that Jesus was born somewhere between the 7 B.C. and 1 B.C. due to the fact that he was baptized in 29 A.D.

The assumptions are as follows:

1. Jesus Christ was baptized in his 30's – ranges from 26 to 34
2. The suspected time of his Birth is between 7 B.C. to 1 B.C.
3. The Magi were trained astronomers able to view the stars in the night sky accurately
4. People of that time would regard any bright celestial body in the dark skies that loom over the present day middle eastern region as stars
5. The viewing of the stars was done with the naked eye

With the aid of these simple assumptions we will now plunge straight into the issue of viewing all the possibilities. Eventually, we will come out with a logical argument to support one of these candidates. Now, without any more delays let us view our first candidate.

Triple Conjunction (7 B.C.)

In the year 7 B.C., a prominent astronomical phenomenon – triple conjunction – involving Jupiter and Saturn in the constellation which dazzled the universe occurred thrice. Making it the perfect sign to signify the birth of the Jewish Messiah, but this is not only its prominence which makes it so special. There are many other factors which also contribute to suspicion.



The picture of Jupiter and Saturn

Firstly, the most noticeable of all factors would be the dates on which the triple conjunctions of Jupiter and Saturn appeared. The dates are as follows 29 May, 3 October and 4 December all in 7 B.C... Looking at all the dates it is noticed that there is a good separation in the dates which would allow the Magi sufficient time to travel from their place in the East to Bethlehem – birth place of Jesus Christ. Since the ‘Star of Bethlehem’ is also known as the Christmas Star, it is easily related to Christmas celebrated on the 25th December. And with the last of the triple conjunction occurs on the 4th December makes it quite a compatible match.

Secondly, the occurrence of a triple conjunction is very rare. By using the mathematical formulas of Kepler, it can be estimated that a triple conjunction occurred at an interval that varies between 40 to 338 years. And its rareness can be seen in the fact that since 7 B.C. there have only been 11 such triple conjunctions. Like the rare occurrence of the triple conjunction the birth of the Jewish Messiah is also something that is special and happens once in a life time thus the triple conjunction would be the perfect sign.



Thirdly, at the time people bore certain significance to the planets, stars and other celestial bodies. The conjunction of Jupiter and Saturn would be the ideal sign to indicate the coming of the new king. Jupiter is known as the 'Planet of Kings' and Saturn known as the 'Protector of the Jews'. Furthermore, all of its occurrences were in the constellation of Pisces which is held in very high regard by the Christian faith. Thus its combined significance is the coming of the 'King who would protect all Jews'. Again making it a good sign.



Lastly, in the absence of artificial light the stars (at that time both planets and stars were referred to as stars) in the dark skies would be very prominent to everyone. That means only something special would catch the trained eye of the Magi but yet not be noticed by the ordinary man. The latter can be further confirmed by the fact that Herod had to consult the wise Magi about the appearance of the star. An event such as the conjunction between Jupiter and Saturn would probably be interpreted as a special sign which was significant enough to them for them to want to follow it.

Therefore, it is possible that the triple conjunction of Jupiter and Saturn were actually the 'Star of Bethlehem'. The only fact which contributes to the doubt if there is any is that the year in which it occurred is a little far from the more popular years of 2 B.C. and 3 B.C...

Conjunction involving Jupiter and Regulus (3 B.C. – 2 B.C.)

It was the **first Jupiter/Regulus conjunction** of **September 14, 3 BC** in the constellation Cancer that alerted the Magi to look for further signs. The magi are known wise men at that time, held in high regards in the astronomic arena. They are mostly based in Persia, descendants of those who followed closely after Daniel the prophet during the Nebuchadnezzar's reign. They set off on a starry journey towards the star which eventually led them to Bethlehem of Judea, approximately 6 km south of Jerusalem.



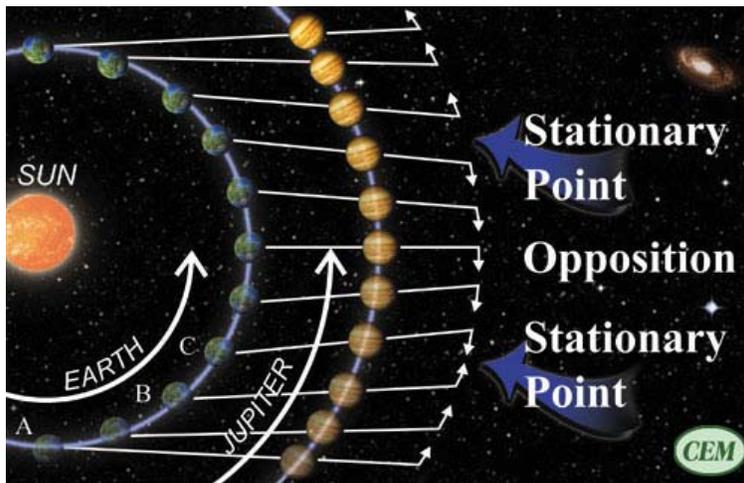
But it was the **second Jupiter/Regulus conjunction**, on **2 Feb, 2 BC**, in the evening, of Jupiter and Venus, in the constellation Leo. For the Jews, The

constellation Leo was not only considered the “head” or “chief” sign of the Zodiac, it was thought to be ruled by the sun, the “chief” star of the heavens. It was considered the “Royal Constellation”, dominated by the star Regulus. The name Regulus itself is derived from the Latin word for king; it was considered the “King Star”. Leo was also considered the beginning zodiacal sign for the astrological year and was thought to denote royalty and power for any of the planets found within it. Jupiter was regarded by the Roman people to be the guardian and ruler of the Roman Empire and it was thought to have the power to determine the course of all human affairs. Venus, now in conjunction with Jupiter, was believed to be the mother of the family of Augustus. So here were the two planets dedicated to the origins of Rome and the sovereignty of Augustus merging together in a “marriage” during one of the most glorious years in the history of Rome, and in the constellation of Leo.



This started the Magi on their way west. Although the Magi probably had predicted these celestial events in advance, they wanted confirmation that their predictions would come to pass. The “star” they followed was the planet Jupiter, the King Planet. The magi then went to the king Herod in Jerusalem, thinking that the child to be born the great king could be the descendant of

Herod’s line. But Herod himself was unaware of the signs of the stars. This set unrest in Herod as he sent out subjects to kill the child that is to be born King.

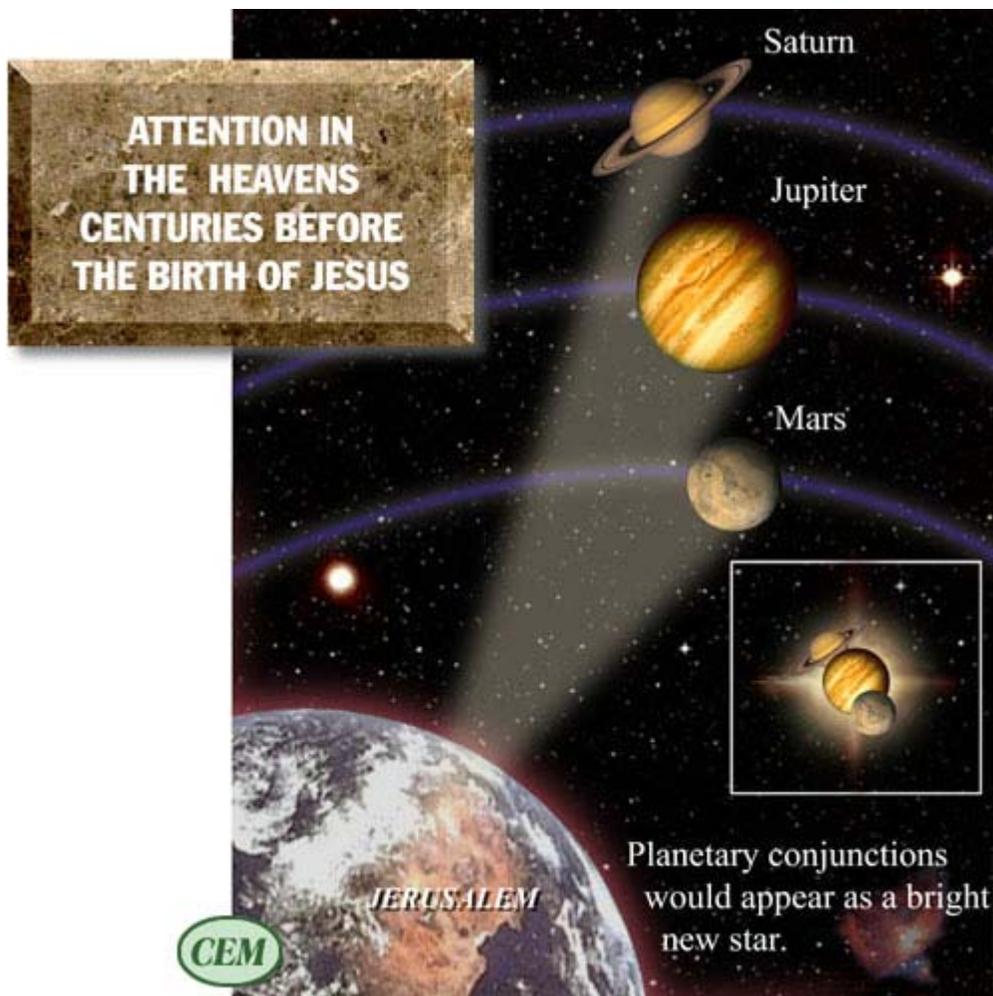


To astrologers, it appeared as though the King Planet was circling over and around Regulus, the King Star, “homing in” on it and pointing out the significance of the King Star as it related to the King Planet. This circular movement of Jupiter over Regulus would, in all probability, have signaled that a great king was then

destined to appear. This circling motion also provided another significant

astrological observation. The zero line for beginning and ending the 360 degrees of the Zodiac was determined by some astrologers as existing between Cancer and Leo. This means that this motion effect of Jupiter circling around Regulus was happening in the heavens just east of the zero degree line for astrological measurements. It occurred at the beginning section of the astrological Zodiac in the view of some Gentile astrologers. This interpretation is similar to that designed by Moses; the Biblical Zodiac designed by Moses also began with the royal sign of Leo, but its zero degree line was located in the middle of the constellation, not at its beginning. Whatever the case, these indications would unquestionably have shown the people of that era that a great king or ruler was then being introduced, to the people of the world.

After the **third Jupiter/Regulus conjunction** on **2 May 2 B.C**, the magi arrived in town of Bethlehem on 17 June 2 B.C to see the conjuncture very new the Regulus (perhaps the second conjunction of Jupiter with Regulus here). This conjunction of the three stars is perhaps very bright to many stargazers.



The westward motion of Jupiter would have led the magi to Jerusalem. Jupiter then, due to retrograde motion, appeared to “stop” in the sky, as viewed from Jerusalem, directly to the south, over Bethlehem. It came to its **normal stationary** position at dawn on **December 25th, 2 BC**. Not only that, but the planet came to a stop in the constellation Virgo. It remained there for nearly six days. Furthermore, being near the Winter Solstice, the sun was also “standing still”.



Well the list of events above we have managed to gather a rough understanding of what could have happened between Jupiter and Regulus. We will now make a more in depth study on each of the events in hope of getting a better understanding of their significance in the formation of the ‘Star of Bethlehem’.

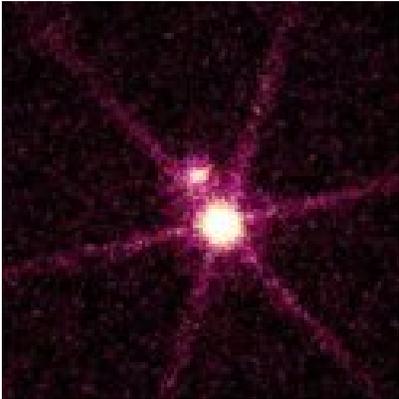
Jupiter is the name of the greatest god of Roman mythology and the name of the largest planet of our solar system. Jupiter has been known from ages-old to the present as the King Planet. This greatest of planets is a "gas giant," approximately eleven times the size of Earth and over 300 times more massive. It circles the Sun far beyond Earth, in an orbit of about twelve years duration. In ancient times, planets like Jupiter were considered "wandering stars." Since humans have assigned kingly qualities to this giant wanderer for dozens of centuries, might it have something to do with our ‘Star of Bethlehem’ announcing the birth of a king.

It's not sufficient to have a kingly name and reputation. To be the ‘Star of Bethlehem’, Jupiter as viewed from Earth would have to do peculiar things. More precisely, as considered by a magus viewing from the Middle East during the years 3 B.C. and 2 B.C., Jupiter's movements would have to be very special for it to be able to fulfill the characteristics of the ‘Star of Bethlehem’. In September of 3 B.C. at the time of the Jewish New Year, Rosh ha-Shanah, Jupiter began to do just that.



A magus watching Jupiter that September saw two objects – Jupiter and Regulus – moving so close that they appeared to touch. Our Middle Eastern observer – Magi – saw Jupiter coming into a close conjunction with the star, Regulus (Royal

Star). Regulus takes its name from the word root which yields our word 'regal.' The Babylonians called Regulus *Sharu*, which means 'king.' The Romans called Regulus *Rex*, which means 'king.' At the beginning of the new Jewish year, the Planet of Kings will meet the Star of Kings. This conjunction may have indicated kingship in a forceful way to a Babylonian magus. Would that have alerted the wise Magi?



Probably not because Jupiter glides slowly past Regulus about every 12 years. Let's assume our magus enjoyed a 50-year career, say from age 20 to age 70. We are not of the exact age of the Magi, but if they were in the second half of his career, they might have seen such a pass two or three times before. Jupiter's orbit wobbles relative to Regulus, so not every conjunction is as close as the one they saw in 3 B.C... Perhaps they recorded this event with some interest, but it is hard to imagine great excitement. There has to be more clues with made them go on their quest.

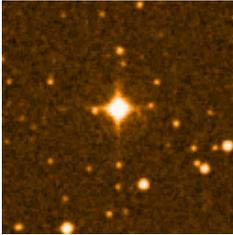
The planets move against the field of fixed stars. From Earth, they appear to be "active." For example, were you to watch Jupiter each night for several weeks, you would see that it moves eastward through the starry field in the darkness of the night sky. Each night Jupiter rises in the east. Each night it appears to be slightly farther east in the field of fixed stars. All of the planets move like this.

But the wandering stars (planets) exhibit another form of strange motion. Periodically, they appear to reverse course and move backward through the other stars. This may seem odd, but the reason is simple enough: we watch the planets from a moving platform – Earth – hurtling around the Sun in its own orbit. When you pass a car on the freeway, it appears to go backward as it drops behind. For similar reasons, when the Earth in its orbit swings past another planet, that planet appears to move backward against the starry field. Astronomers call this optical effect retrograde motion.



In 3 B.C. and 2 B.C., Jupiter's retrograde wandering would have called for our magus' full attention. After Jupiter and Regulus had their kingly encounter, Jupiter continued on its path through the star field. Then it underwent retrograde motion and headed back to Regulus for a second conjunction. After this second pass it

reversed course again for yet a third rendezvous with Regulus, a triple conjunction. A triple pass like this is very rare. Over a period of months, our watching magus would have seen the Planet of Kings dance out a halo above the Star of Kings. This course of event would have been interpreted by the Magi as the coronation of their future king (Jewish Messiah).



Jupiter's interesting behavior may explain the kingly aspect of the Star. How did Jupiter's movement relate to the Jewish nation? Is its association with the Jewish New Year enough? Where is an indication of a birth? Some might claim that the triple conjunction by itself would indicate to the powerful Magi that a new king was to be born.

The Jewish nation is composed of twelve ancient tribes. Jewish prophecy states that a particular tribe will bring forth the Messiah: the tribe of Judah. The symbol of Judah's tribe is the lion.

This association of Messiah with the tribe of Judah and with the lion is a productive clue. It clarifies the connection between Jupiter's behavior and the Jewish nation, because the starry coronation – the triple conjunction – occurred within the constellation of Leo (The symbol of the brave and noble lion). Ancient astronomers, particularly if they were interested in things Jewish, may well have concluded they were seeing signs of a Jewish king.

The last book of the New Testament is, in part, a prophetic enigma. But a portion of the *Book of Revelation* provides clear and compelling guidance for our astronomical investigation. The apostle John wrote the book as an old man while in exile on the island of Patmos. Perhaps the austerity of this exile or a lack of companionship left him time to ponder the night sky. Whatever the reason, *Revelation* is full of star imagery. In Chapter 12, John describes a life and death drama played out in the sky: the birth of a king.



And here are the main points as follows:

1. A great and wondrous sign appeared in heaven: a woman clothed with the sun, with the moon under her feet and a crown of twelve stars on her head.
2. She was pregnant and cried out in pain as she was about to give birth.
3. Then another sign appeared in heaven: an enormous red dragon with seven heads and ten horns and seven crowns on his heads.
4. His tail swept a third of the stars out of the sky and flung them to the earth. The dragon stood in front of the woman who was about to give birth, so that he might devour her child the moment it was born.
5. She gave birth to a son, a male child, who will rule all the nations with an iron sceptre...



A woman in labor, a dragon bent on infanticide and a ruler of the nations. We have already seen this ruler in the *Book of Genesis*, above. This would be the Jewish Messiah, in his role as King of Kings. If that interpretation is correct, then according to the gospel story the woman would be Mary, the mother of Jesus. The dragon which waits to kill the child at birth would be Herod, who did that very thing. John says the woman he saw was clothed in the Sun. She had the moon at her feet.

When we continue our study of the sky of September of 3 B.C., the mystery of John's vision is unlocked: he is describing in greater detail the starry dance which began with the Jewish New Year.

As Jupiter was beginning the coronation of Regulus, another startling symbol rose in the sky. The constellation which rises in the east behind Leo is Virgo, The Virgin. When Jupiter and Regulus were first meeting, she rose clothed in the Sun. And as John said, the moon was at her feet. It was a new moon, symbolically birthed at the feet of The Virgin.

The sheer concentration of symbolism in the stars at this moment is remarkable. These things could certainly lead the magi to conclude that a Jewish king had been born. But even this is not the whole story. These symbols could indicate a birth, but if they were interpreted to indicate the time of conception, the beginning of a human life, might there be something interesting in the sky nine months later? Indeed. In June of 2 BC, Jupiter continued the pageantry.

By the following June, Jupiter had finished crowning Regulus. The Planet of Kings traveled on through the star field toward another spectacular rendezvous, this time with Venus, the Mother Planet. This conjunction was so close and so bright that it is today displayed in hundreds of planetaria around the world by scientists who may know nothing of Messiah. They do it because what Jupiter did makes such a great planetarium show. Jupiter appeared to join Venus. The planets could not be distinguished with the naked eye. If the Magi had had a telescope, he could have seen that the planets sat one atop the other, like a figure eight. Each contributed its full brightness to what became the most brilliant star our man had ever seen. Jupiter completed this step of the starry dance as it was setting in the west. That evening, our Babylonian magi would have seen the spectacle of his career while facing toward Judea.



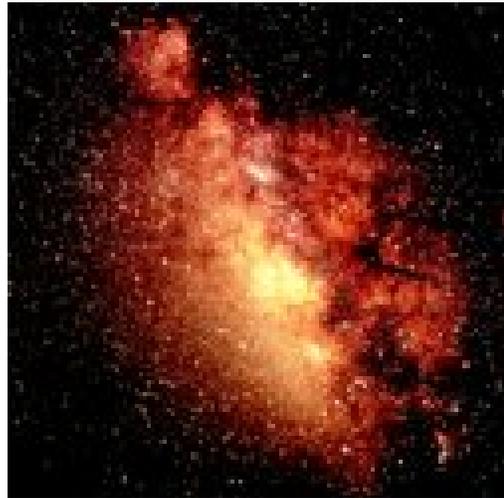
No one alive had ever seen such a conjunction. If the Magi only began their travel plans in September, when they saw this sight nine months later, at the end of their travel these experts would have arrived in Jerusalem. They told their tale, and "all Jerusalem was disturbed." Herod wanted to know two things: when the Star had appeared, and where this baby was. The Magi presumably described the timing of events starting in September of 3 B.C .and continuing through June of 2 B.C... Herod sent them to Bethlehem in search of the child with orders that they return to tell where he was.



To be the 'Star of Bethlehem', Jupiter would have to have been ahead of the Magi as they trekked 6km south from Jerusalem to Bethlehem. Sure enough, in December of 2 B.C. if the Magi looked south in the wee hours, there hung the Planet of Kings over the city of Jewish Messiah's birth.

The problem with a planet stopping is not what most people might think. The problem is not that planets can't stop. It is just the opposite. The problem is that all planets are always stopped to the eye of a human observer. The sky moves above Earth at half the speed of the hour hand on a common clock. Its movement is imperceptible to the naked eye. So, if all stars are always stopped, what can Matthew have meant?

Perhaps you have already anticipated the key to this final mystery: retrograde motion. An astronomer tracking the movement of planets through the star field watches not so much on the scale of minutes, but on the longer scale of days, weeks and months. On this scale of time, Jupiter did stop. On December 25 of 2 B.C. as it entered retrograde, Jupiter reached full stop in its travel through the fixed stars. Magi viewing from Jerusalem would have seen it stopped in the sky above the little town of Bethlehem.



After looking at all the facts we now summarise into the 9 main points and they are as follows:

1. The first conjunction signified birth by its association to the day with Virgo "birthing" the new moon. Some might argue that the unusual triple conjunction by itself could be taken to indicate a new king.
2. The Planet of King's coronation of the Star of Kings signified kingship.
3. The triple conjunction began with the Jewish New Year and took place within Leo, showing a connection with the Jewish tribe of Judah (and prophecies of the Jewish Messiah).
4. Jupiter rises in the east.
5. The conjunctions appeared at precise, identifiable times.
6. Herod was unaware of these things; they were astronomical events which had significance only when explained by experts.
7. The events took place over a span of time sufficient for the Magi to see them both from the East and upon their arrival in Jerusalem.
8. Jupiter was ahead of the Magi as they traveled south from Jerusalem to Bethlehem.
9. The 'Star of Bethlehem' is able to stop over the city of Jesus Christ's birth



The Star Theory



The latest theory being the one put forward by renowned British astronomer Mark Kidger. His new idea proposed that the 'Star of Bethlehem' is actually a real star that still can be seen through the telescope today. However, now the star is just a glimmer of its once glorious days when it led the Magi to the birth place of Christ. It is a rather dim object in universe as DO Aquilae. The star being a variable star was able to change its brightness and may have experience a tremendous nova outburst in the past. In fact, this outburst could have been the 'bright star' seen by the Magi a long time ago. Therefore, it is possible that the 'Star of Bethlehem' is actually the star DO Aquilae.



The picture of the constellation Aquilae – The Eagle

Scientific Outlook on the ‘Star Of Bethlehem’

Stars, defined as large, gaseous, self-illuminous celestial bodies were widely considered to be God’s handiwork, and therefore, a source of divine guidance. As a result, astrology overlapped with religion. Astrology offered a traditionally sanctioned way to discern a pattern, to extract relevant meanings from the chaos of current events, and to discern future ones.

Johannes Kepler



German-born Johannes Kepler was a brilliant astrologer. He is considered the “Father of Modern Astronomy”. He uncovered the Mathematics of the cosmos and discovered the laws of planetary motion. He also figured out the recurring patterns of conjunctions for Jupiter and Saturn.

Generally, it has been thought that Kepler came up with the theory that the triple conjunction of Jupiter and Saturn was the Star of Bethlehem. He suggested that in 7 B.C., there was a triple conjunction between the two planets Jupiter and Saturn. He further postulated that the three meetings of the two planets occurred in the constellation Pisces during late May, September and early December. In February 6 B.C., another conjunction of three planets occurred, when Mars, Jupiter and Saturn came within 8 degrees of one another. This conjunction occurs every 805 years. It was seen again in the sign of Pisces, which ancient astrologers named the house of the Hebrews. Jupiter was regarded as the ruler of the universe. Saturn was associated with Palestine. A probable explanation of the triple conjunction followed by the massing of the three planets in Pisces to the Magi could be an indication that a King of Israel and a Ruler of the Universe was about to be born in Israel.

Although Kepler was the first person to argue the possibility of the triple conjunction occurring in 7 B.C. by his calculations at length, he actually suggested something else. Kepler postulated that the Star of Bethlehem was ‘aliquid novi’= ‘something new’ in addition to that triple conjunction. In 1604, he observed a supernova in Ophiucus, which has actually his name, after the massing of Jupiter, Saturn and Mars. He advanced the view that the Star of Bethlehem might have been a nova occurring near a bright planet of planets in conjunction. Both the new stars (the supernova and the Star of Bethlehem) were the result of the planetary conjunction in his cosmological vision.



Kepler

Explanation



In December 1603, Kepler observed a conjunction of Jupiter and Saturn that occurred in Sagittarius in a morning sky. (Note that this was only a single conjunction). The point that the conjunction took place in a constellation that was one of the points of the Fiery Trigon (being Sagittarius, Aries and Leo) was actually astrologically important. Following this during the next autumn was a triangular grouping of Mars, Jupiter and Saturn—a fiery triangle in the Fiery Trigon. As an omen, this was surpassed only by a comet, and many astrologers in 1603 predicted that a comet would be produced due to the planets' close proximity in late 1604.

During Kepler's time, location of a conjunction had equal importance to the conjunction itself. The twelve zodiac signs were divided into four trigons, each made up of three associated and equally spaced constellations. The Jupiter-Saturn conjunction is a regular planetary rhythm that occurs at 20 year intervals and 117 degrees apart. It shifts westward(clockwise) through the signs of a given trigon, remaining within the signs of one trigon for approximately 200 years and then shifts into the adjacent trigon. They begin a new cycle back to nearly their original position as measured with respect to the vernal equinox after almost 800 years before that. Kepler believed that the event had happened only 8 times since the creation of the world.

Conclusion

Now we have come to the end of our meaningful journey of exploration through the history and the background of the 'Star of Bethlehem'. Like before we will try to come up with a logical argument to support the truth behind the 'Star of Bethlehem'.

The first thing which we have learned is that the possibility that some astronomical phenomena such as meteor, comet and super novas have no chance to of laying claim to the title of being the 'Star of Bethlehem'. This due to a number of reasons namely their lack of symbolic importance to the people of that era, the inability to last for a considerable length of time and the lack of prominence due to their dwarfish sizes when viewed from Earth. Thus eliminating them from our list of potential suspects.



After narrowing down our choice, we are left with 3 slightly more believable arguments which involve the triple conjunction of Jupiter and Saturn, the triple conjunction of Jupiter and Regulus and the star DO Aquilae. Upon strict scrutiny, all of them have their own special characteristics which allow them to lay claim to the throne of being the 'Star of Bethlehem'. For the fact, that a lot of calculated assumptions were made and other discrepancies in the way

data was collected at that time would have contributed to the error of each scenario. Making it very difficult to decide which has a stronger claim to the throne. But of the 3 scenarios the most suspectable would be the theory of the 'Star of Bethlehem' being the DO Aquilae of the Aquilae constellation (The Eagle). This is a relatively new theory which lacks the evidence to make a substantial claim to the throne. Thus, that leaves us with 2 more choices.

For the other 2 triple conjunctions, both of them are quite credible. Since we are unsure of the age of Jesus Christ during the time of his baptism, this makes it very difficult for us to decide on the 2 scenario. Till the day comes when some is able to prove that exact age of Jesus Christ when he was baptized would be able to come a conclusive ending. Because with his exact age we can count back to the year he was born which would able us to pin it to either the conjunction of Jupiter and Saturn (7 B.C.) or the conjunction of Jupiter and Regulus (3 B.C. – 2 B.C.)

After finishing this enriching journey, we hope it gives a better understanding on the topic with regards to the 'Star of Bethlehem'.

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