

Astronomy of Christmas

VOICE: I'm puzzled. I've been reading a report that says a star moved one direction, disappeared, reappeared again and stood still. How can that be?

PROF.: It's an unusual situation. Let's get two astronomers on the case, and see what we can discover.

FORMAT: THEME AND ANNOUNCEMENT

PROF.: O.K., friend. Who wrote this astronomy report that has you puzzled?

VOICE: Matthew. He reports a celestial object in chapter two of the Gospel of Matthew.

PROF.: Please read it.

VOICE: "After Jesus was born in Bethlehem in Judea, during the time of King Herod, Magi from the east came to Jerusalem and asked, 'Where is the one who has been born king of the Jews? We saw his star in the east and have come to worship him.'

"When King Herod heard this, he was disturbed, and all Jerusalem with him. When he had called together all the chief priests and teachers of the law, he asked them *where* the Christ was to be born.

"'In Bethlehem in Judea,' they replied, 'for this is what the prophet has written: "And you, Bethlehem, in the land of Judah, are by no means least among the rulers of Judah; for out of you will come a ruler who will be the shepherd of my people Israel." ' "

PROF.: He was quoting the prophet Micah. (Micah 5:2). God informed him of the detail of where Jesus Christ would be born, seven centuries before the birth occurred.

VOICE: Matthew continues, "Then Herod called the Magi secretly and found out from them the exact time the star had appeared. He sent them to Bethlehem and said, 'Go and make a careful search for the child. As soon as you find him, report to me, so that I too may go and worship him.'

"After they had heard the king, they went on their way, and the star they had seen in the east went ahead of them, until it *stopped* over the place where the child was." (Matt. 2:1-9).

PROF.: Good. What's your question?

VOICE: Isn't it unusual for a star to move so erratically? – to move and then to stop?

- PROF.: Before we answer that, let's add another complication or two. The scholars from the east *stopped* in Jerusalem to *ask* where the newborn king was. That fact seems to imply that the celestial object they were following was no longer visible to them.
- VOICE: So let me elaborate my question: Isn't it unusual for a star to move, *disappear, reappear*, move again, and stand still?
- PROF.: Some celestial objects are more like that, than an actual star would be. Astronomer Dr. Hugh Ross explains, "Although the word 'star' is used in our...translation, in the original text, the word selected could have described a star, a planet, a comet, an asteroid, a meteor, or an exploding star – called a nova or supernova."
- VOICE: Is that because, two thousand years ago scholars didn't know there were so many kinds of objects in the skies? So they didn't have a specialized vocabulary for various kinds of astronomical objects?
- PROF.: Right. So they called any glowing night-time object except the moon, a "star."
- VOICE: Which kinds of celestial objects could have guided the "wise men from the East," first to Jerusalem and then to Bethlehem?
- PROF.: There are several possibilities. Dr. Ross admits that no one knows which method God used. But there is more than one credible speculation about how either *one* object in the sky – or a combination of *several* objects – could have been God's messenger.
- VOICE: God would have wanted to make that "star" conspicuous enough, that scholars from a great distance would know with certainty that a very special baby had been born.
So what are the ways God may have achieved that?
- PROF.: One possibility would be a *comet*. Dr. Ross explains, "A comet could have been observed by the wise men. Like Halley's Comet as viewed in 1986, it might have been faint at first sighting, appearing to disappear as it moved toward the sun and then becoming more spectacular after it rounded the sun and returned on a path closer to Earth. However, comets are fairly common, and no records mention a spectacular one during the appropriate time frame."
- VOICE: Halley's Comet appears at intervals of between 75 and 76 years. I read on-line that it was observed in 87 B.C. and A.D. 66.

- PROF.: 87 B.C. to A.D. 66 is a 153-year period. So there would have been another appearance halfway between those sightings – in about 12 or 13 B.C.
But that's not in the decade when Jesus was born. So Halley's Comet probably wasn't the heavenly object that guided the Wise Men to find Jesus.
- VOICE: You mentioned that there might have been more than one object acting together. I've sometimes heard that several *planets* may have traveled together to produce this effect – in a phenomenon called a *conjunction*.
- PROF.: Yes. Regarding the possibility of a conjunction, Dr. Ross says, “Two or more planets lining up in one part of the sky could occur briefly. Then they could move apart and line up again a year or two later, which fits Matthew's writings.”
- VOICE: Matthew says that Jesus was born while Herod was king of that area. What years did he reign? What happened in the skies during those years?
- PROF.: There were several kings who were called Herod. The one that Matthew mentions is Herod the Great, who became king in 37 B.C. and died approximately 4 B.C.
- VOICE: Were there any planetary conjunctions during those years?
- PROF.: Yes. The late astronomy professor Dr. Karlis Kaufmanis figured it out this way. In his words, “Beginning in 7 B.C., Jupiter and Saturn came together in the heavens..., to be joined approximately a year later by Mars. ...It was the first time three planets had been together in that manner in 853 years. For more than eight months of 7 B.C., the planets remained side by side, and during this period they were in conjunction three times.”
He continues, “The first part of that year, Jupiter and Saturn were hidden by rays of the sun. But on 12 April shortly before sunrise, they emerged out of the glowing dawn... They kept moving closer until 29 May, then started moving away from each other. In mid-July, they reversed and once more closed the distance between them during late September and early October, shedding upon the Earth their double brilliance through the nights.”
- VOICE: In the year 7 B.C.
- PROF.: Yes. The third of October was the *peak* of this very rare triple conjunction. The distance between the planets increased a little from then until the middle of November, when both planets started *moving toward each other for the third time*. They reached their closest position on December 4, then began their final withdrawal.
However, before they disappeared in the rays of the sun at the beginning of the year 6 B.C., they were joined by Mars – giving this unusually long and impressive parade of planets a grand a spectacular conclusion.

VOICE: Earlier Dr. Ross said that in the language in which this part of the Bible was originally written, the same word can mean a star, a planet, a comet, an asteroid, a meteor, or a nova or supernova. Which of them seems most like what Matthew described?

PROF.: Dr. Ross thinks it may have been what astronomers call a “recurring nova.” He elaborates, “When a star explodes, or becomes nova, it usually *dims permanently* after the initial flare-up. But a tiny fraction of novae have the capacity to undergo *multiple explosions* separated by months or years. This repeat occurrence seems necessary to fit Matthew's description of a star that appeared, disappeared, and then reappeared sometime later.

VOICE: So the recurring nova is a distinct possibility that would match what Matthew wrote.

PROF.: Yes, and another strong possibility is the conjunction of several planets – as Dr. Kaufmanis described. There are several possible methods that God might have provided as the “sign” to guide the oriental scholars to find the young Jesus Christ.

VOICE: We don't need to know *how* God did it, in order to recognize that this was a real event that fits smoothly into a pattern that astronomers and historians can verify. And we recognize that God used it to indicate how important this very special child was.

PROF.: It's interesting that the Bible reads like reliable history, not as fiction. It doesn't use the “Once upon a time” language of fantasy. Instead, it spells out details like which historical king was reigning at the time. And when astronomers check records of the astronomical events that occurred during the reign of King Herod the Great, they discover that Matthew reported them accurately.

VOICE: Now that we know this, my friends and I will read the Christmas portions of the Bible with greater credibility and respect. The second chapter of the Gospel of Matthew is an excellent place to start.

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