Views of the Theologians: Celestial Objects: Robert W. Faid: Triple Conjunctions of Saturn & Jupiter in Pisces in 7 B.C.; Nova: Binary of a White Dwarf Primary & Giant Secondary: Can Illuminate from Invisibility to Naked-Eye Visibility Then Disappear& Reappear; Conceivable Explanation for the Star of Bethlehem

What we have just studied is the general understanding that the Magi had of the heavens during the time of the virgin pregnancy and virgin birth of Jesus.

These men were students of the stars and they had a clear understanding of the repetitiveness of the cycles evident in the movement of the planets and the earth's relation to the fixed stars stationed along its ecliptic forming the twelve-constellation Carousel.

There is nothing unusual about what happens within God's creation since the movements of objects throughout the universe are in perfect synchronization by divine design. However, from man's observation, incidences do occur that may be considered rare.

It was a combination of unusual simultaneous as well as sequential celestial events, taking place over a short period of time, that have led some theologians to take note. Some have written their conclusions which speculate these events are a possible explanation for what the Magi identified as "His star" and motivated them to organize a caravan to Jerusalem with confident expectation of finding and worshipping the Messiah of Israel.

We will examine the writings of three men who take this approach. The first excerpt we consult will be "The Star of Bethlehem! What Was It?" chapter 5 in Robert W. Faid's *A Scientific Approach to Biblical Mysteries*. Secondly, we will refer to "The Star of Bethlehem," chapter 17 in Joseph A. Seiss's *The Gospel in the Stars*. Finally, we will view Frederick A. Larson's documentary DVD, *The Star of Bethlehem*.

VI. The Views of the Theologians: Celestial Objects:

We have discussed the various celestial objects that were charted by the ancient astronomers. They included stars, constellations, planets, moon, meteors, and comets but the general terms were כּוֹכָב (*kochav*) in Hebrew and ἀστήρ (*astēr*) in Greek. The constellations were referred to in Hebrew by the word מַזָּרוֹת *mazzaroth*.

Robert W. Faid. This man is not really a theologian. The only place I could get any detailed information about him was on Wikipedia which I consider an untrustworthy site. Nevertheless, here's what it's got:

> **Robert W. Faid (1929–May 26, 2008) was an American author, numerologist and former nuclear engineer from Greenville, South Carolina. He held a master's degree in theology from Coatesville Bible College. Faid was an agnostic in his early life and converted to Christianity after recovery from a cancer.**
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> **Bob went to serve his country in the United States Army during the end of World War II, and later in the Korean Conflict. He was one of the first Airborne Rangers. He graduated with a degree in engineering from Johns Hopkins University, and began a twenty-five year career with W. R. Grace & Company, from which he retired in 1973. Mr. Faid was not only a Christian American author, as a nuclear engineer, Robert held the honor of being one of the top ten nuclear scientists until 1975. He also held a degree in theology from Coatesville Bible College, and was a faithful member of the Greenville First Church of the Nazarene.**

I was unable to locate a college called Coatesville Bible. He is apparently deep into numerology and other spurious ideas. Nevertheless, he did write a book which I've mentioned and his conclusions illustrate an attaboy effort but he winds up with no cigar. Here is his thesis:

> What the Magi Saw in the Sky! What had the Magi seen in the heavens which led them to come seeking this newborn babe who was to be king? To answer that, we must remember that almost six hundred years before, the Babylonian king, Nebuchadnezzar, had taken the Hebrews captive back to his kingdom. In 538 B.C. Babylon had been conquered by the Persians and Medes, and Cyrus had allowed the Hebrews to return to their own land **[see 2 Chronicles 36:22–23; Ezra 1:2–3].**
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> Not all of the Hebrews chose to return to Judea, however. In fact, less than fifty thousand Hebrews elected to return. The vast majority stayed in the area which had been Babylon and where they had established homes, shops, businesses, raised their children and grandchildren, and felt safe and secure. So they stayed and their culture stayed with them.
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> These Magi knew, therefore, that Hebrews considered the constellation of Pisces as representing their own nation. The wandering star called *Udi idim*, which we know as the planet Saturn, designated the city of Jerusalem to the Hebrews. Another wandering star, which the Babylonians called *Mul-babbar*, denoted royalty to the Hebrews. We call this the planet Jupiter.
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> What the Magi saw, then, was clear to them, and it involved the constellation of Pisces, the fish, and the two planets, Saturn and Jupiter. And the Magi knew exactly what these signs in the sky meant to the Hebrews in Judea. (p. 55)
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> Signs in the Sky. It began on the evening of May 29 in the year 7 B.C. We can picture the Babylonian astronomers, their eyes fixed on the constellation of Pisces where a rare event was taking place. The two wandering stars, Mul-babbar and Udi idim, were coming together in the constellation of Pisces. Of course, we know that the planets Jupiter and Saturn were not actually coming together, but when viewed from the earth, their orbits were crossing so that an observer would see them apparently merging together.
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> This conjunction of Saturn and Jupiter was not in itself amazing, but again on the evening of October 3 of 7 B.C. these two planets seemed to come together in Pisces. When this happened a third time, on December 4 of 7 B.C., we can guess that these men looked at one another in bewilderment. "What could these things mean?" they may have asked. Were these strange events announcing something?
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> They could calculate that once every 804 years there would be a single conjunction of these wandering stars, but three times in a single year! This was indeed a very unusual series of signs in the sky. Their wonder grew as in the spring of 6 B.C. an even rarer event took place. Again in the constellation of Pisces there was a conjunction, but this time of *three* wandering stars. Jupiter and Saturn were joined by Mars. The astronomers perhaps looked back on this series of events, trying to understand what these signs could mean.
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> Maybe one of them recalled that Pisces was the constellation denoting the nation of the Hebrews. Another may have added that one of these conjunctions, the event of October 3, 7 B.C., had taken place on what the Jews call their Day of Atonement. Another may have remembered that Udi idim was the star of the city of Jerusalem. They all knew, of course, that Mul-babbar meant royalty. (p. 56)

> That was it! There was going to be a king born in Judea of the Hebrews! That had to be the meaning, but they would wait for another sign. That did not come until the following year. They could calculate the conjunctions of the wandering stars. They could predict eclipses of both the sun and moon. But what happened in July of 5 B.C. they could in no way have expected.
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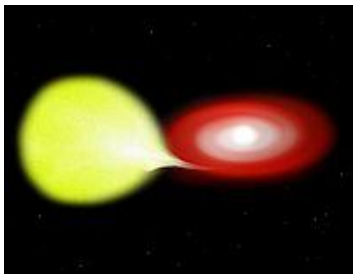
> Suddenly, in the constellation of Aquila, the eagle, a new star blazed, brighter than any in the sky. In fact, it was so bright that it could be seen even in the daytime. This had to be the sign they had waited for! This brilliant new star must be the announcement of the birth of the King of the Jews![1] (pp. 56–57)

The "new star" described by Faid is a nova. There is nothing *new* about a nova; it, too, is a star, in fact, it consists of two stars that are going through dramatic changes. A description of these changes is provided by this article on the Web site of the American Association of Variable Star Observers:

> Novae: dwarf, classical, or recurrent?

Artist's concept of a white dwarf pulling material from its companion star.



> Cataclysmic variables are a diverse group of binary variable stars composed of a white dwarf primary and a giant secondary star. The stars orbit closely enough about one another that mass is transferred from the secondary star to the white dwarf. Since that process of mass transfer can generate lots of energy, it is what makes them vary. And that variability can be "cataclysmic" in that these stars can (sometimes) get considerably brighter in a very short period of time.

[1] Robert W. Faid, "The Star of Bethlehem! What Was It?" in *A Scientific Approach to Biblical Mysteries* (Carmel, NY: Guideposts, 1993), 55–57.

What makes the class so diverse is how quickly mass transfer progresses, and what happens to the matter when it gets to the white dwarf. The word "nova" is used for many of these stars because one of their behaviors is to suddenly brighten, sometimes from telescopic invisibility to obvious naked-eye brightness. When this happens, they can briefly appear as a "new star" (or "*nova stella*") in the sky, hence the name. But "nova" is used for a very broad range of behavior. Three commonly-discussed types are dwarf novae, classical novae, and recurrent novae.

These classes differ in two ways: the reason for their sudden light increase, and the amount by which they brighten. The much more common dwarf novae brighten because the matter flow being accreted from the secondary to the white dwarf can, at somewhat random intervals, get hotter. When it gets hotter, it gets much, much brighter.

A dwarf nova outburst can increase the luminosity of these binary systems by a factor of 100 or more for several days or weeks until the accretion disk around the white dwarf can cool down again. This repeats again and again, taking anywhere from a few days to a few years, depending on the star.

The classical novae are quite a bit more spectacular. When they go into outburst, they can brighten by a factor of ten thousand or more! They still accrete matter like dwarf novae do, but in the classical novae, the matter that piles up on the white dwarf's surface gets hotter and denser over time and eventually undergoes a thermonuclear reaction. These stars are like giant thermonuclear bombs, temporarily flaring up with the brightness of ten thousand Suns. The light curves of individual novae vary, but typically they brighten from telescopic invisibility over the course of many hours to a day or two, reach a peak, and then fade away to telescopic invisibility over times ranging from days to several months, perhaps never to be seen as novae again, at least not in our lifetimes.

Recurrent novae: an exclusive club.

The recurrent novae are like classical novae in that they consist of a white dwarf primary star accreting mass from a stellar secondary. Accreted material builds up on the white dwarf and eventually reaches the temperature and pressure required for thermonuclear ignition. When it does, the shell of accreted material undergoes thermonuclear fusion, rapidly increasing the brightness of the system and ejecting this shell of material off the surface of the white dwarf. Where recurrent novae differ from the classical novae is that they repeat on observable timescales. Classical novae are not thought to repeat for hundreds or thousands of years (at the very least), but recurrent novae can recur on timescales of years or decades.

It is possible that there are not two classes of novae, but rather a continuum of recurrence times. However, the recurrent novae as a group also have higher mass accretion rates than classical novae on average; spectroscopic evidence seems to suggest that the secondaries in recurrent novae are all giant stars. The weaker surface gravities of a giant secondary star would make it easier for the white dwarf primaries to pull material off.

The short recurrence time also suggests that the white dwarf primary must be closer to the Chandrasekhar limit[2] for recurrent novae, simply because their stronger surface gravities are better able to compress the accreted hydrogen to thermonuclear fusion pressure and temperature sooner following a nova outburst.[3]

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[2] "The Chandrasekhar limit is an important value in astrophysics. It is the mass limit at which a nonrotating astral body cannot be supported by the pressure of the electron shells in its atoms anymore, and gravitational

What Faid suggests as being the "Star of Bethlehem" is conceivable. Novae are not visible to the naked eye until thermonuclear explosions cause their brightness to dramatically increase. Suddenly, a "new star," previously invisible, can appear within the boundaries of a given constellation. For example, in the case of a dwarf nova, the process of coming and going in and out of brightness can be repeated over a period of months or years.

Faid did not address the Magi's lost sight of the star while in Parthia followed by its reappearance upon their leaving Jerusalem for Bethlehem, but a nova would provide a reasonable explanation for such a phenomenon. This is apparently what our next theologian concludes as well.

collapse occurs. The Chandrasekhar limit is approximately 1.4 solar masses, or $2.85x10^{30}$ kg" http://www.wisegeek.com/what-is-the-chandrasekhar-limit.htm.

[3] American Association of Variable Star Observers, "Variable Stars," http://www.aavso.org/vstar/vsots/usco.html.

