

Night sky lights that lead us

Rich Heffern | Dec. 23, 2009



(NASA)

Some have called astronomy religion's mother. From England's Stonehenge to New Mexico's Chaco Canyon, many of religion's ancient artifacts turn out to be observatories marking important sky events. The Bible begins with creation stories and Matthew's Gospel leads with a genealogy, then the story of a star directing Wise Men to the birthplace of Jesus.

It's thought now that these astrologers saw two objects in the sky moving so close that they appeared to touch. Such an event is called a conjunction. In the year 3 B.C., Jupiter was in close conjunction with the star Regulus in the constellation Leo. Such a sky event would have called for the Magi's attention. After Jupiter's encounter with Regulus, it continued on its path through the star field, but then entered retrograde. It headed back to Regulus for a second conjunction. After this second pass it reversed course again for yet a third rendezvous, a triple conjunction, an extremely rare event.

To qualify as Bethlehem's star, Jupiter also would have had to have been ahead as the Magi trekked south from Jerusalem to Bethlehem. Sure enough, in December of the year 2 B.C., if the Magi looked south in the wee hours, there hung Jupiter over the town of Jesus' birth.

It's in the southwestern sky in North America now, after sunset.

On an evening last month my wife and I took our new amateur telescope to a rural site. After taking a good look at Jupiter and its four moons, I pointed the scope almost directly upward to an area of the sky between the constellations Andromeda and Cassiopeia. Pushing the barrel around I located a cloud in the eyepiece, a haze of unearthly light, the famous Andromeda galaxy.

To see this object well requires a dark, clear night. With the unaided eye it appears as nothing more than an indefinite, mysterious glow, a diffuse, elongated smear perhaps two or three times the width of the Moon. In autumn and early winter it's almost directly overhead every night in the Northern Hemisphere, seen, even without a telescope, as a smear of light on the blackboard of the night sky. It's the farthest one can see with the naked eye.

Galileo's rival, Simon Marius, is credited with the first telescopic observation of the galaxy in December 1612. He described the nebula as an indefinite glow "like a candle shining through the horn window of a lantern."

There is a good reason this patch of light appears so faint. It's been traveling some 2.9 million years to reach us, traveling all that time at the tremendous velocity of 671 million miles per hour.

The light that bounced off the telescope's mirror and into my eye is around 25,000 centuries old and began its journey around the time of the dawn of human consciousness. It's at least 480 times older than the Pyramids.

When it began its nearly 15 quintillion (15, followed by 18 zeros)-mile journey Earthward, mastodons and saber-toothed tigers roamed over much of America and prehistoric humans were struggling for existence in what is now the Olduvai Gorge of East Africa.

What's more, this is also the light that helped humanity first comprehend the unimaginably huge scale of our universe.

For centuries this object in Andromeda was considered to be a gaseous nebula, one of many visible in the skies and located in our own Milky Way galaxy. In 1923, astronomer Edwin Hubble, using the newly built Mount Wilson 100-inch telescope, found dozens of variable stars in Andromeda, and determined their distance. He calculated that Andromeda must be at least 10 times farther away than the farthest stars in the Milky Way. The Andromeda nebula was really a galaxy. This discovery implied that other, even fainter, spirals were probably also galaxies even farther away.

Hubble published his work in 1929 and changed forever our view of the universe. Astronomers no longer thought our galaxy was the entire universe. Now they know that the universe is composed of hundreds of billion galaxies, each galaxy containing a few hundred billion stars. Incredibly, there are, in fact, more stars in our universe than there are grains of sand on all our planet's beaches, playground boxes and deserts. Math students at the University of Hawaii once made that calculation. For the stars, it's the number 7 followed by 22 zeros.

The space telescope named after Hubble has revealed the extent of the galaxies, the basic units of creation. If you cross two sewing pins at arm's length against the sky, that tiny area covers thousands and thousands of them.

What then do these two celestial phenomena -- Bethlehem's star and Andromeda's vast stellar city -- say to us now?

Episcopal Bishop John Shelby Spong said recently: "Critics seem not to recognize how badly compromised that entity called Christian orthodoxy has become. ... No thinking person can today assert, for example, that the Earth is at the center of the universe. Yet that assertion remains a far greater component of orthodox Christianity ... than these defenders of the faith seem willing to admit." The great Catholic theologian Thomas Aquinas also famously wrote: "A mistake about the universe means a mistake about God."

It's not difficult to recalibrate our faith based on the relationship between these two great revelations of Divine Mystery seen in the heavens. Both confer on us, the sky watchers, blessedness and dignity as we reimagine what it means that the creator of the unimaginably vast universe that gave us all birth became one of us, and probably shivered as well in the thrall of the great beauty of the night sky overhead.

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