

HEAVENLY NEWS

“Jupiter's Galilean Moons”

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January 7, 2010 will be the 400th anniversary of Galileo's discovery of the four moons of Jupiter which collectively bear his name (Io, Europa, Ganymede, and Callisto – the “Galilean Moons”). A spectacular sight in even a small telescope, the Galilean Moons hold an important place in science.

In 1610 the Earth was thought to be the center of the Universe in part because everything in the sky seemed to circle around it. The orbit of multiple moons around Jupiter showed that the Earth was not the only center of motion. This, in combination with Galileo's other discoveries, made it clear that the Earth was a planet orbiting the Sun and the stars were other Suns.

The need for accurate predictions of the motions of the moons led to the first measurement of the speed of light in 1676. Ole Roemer showed that light had a finite speed because the changing distances between the Earth and Jupiter changed the timing of events like eclipses of the moons. This fall, from our vantage point on Earth, we will see an alignment of the orbital planes of Jupiter's moons with the Earth and a number of such eclipses will be visible.

Speculation about life on Jupiter's moons began in the 19th century. Not knowing about atomic energy and the heat-producing potential of atomic decay, physicists thought that the presence of heat in the Solar System must be left over from the time of its formation and thus that the Solar System must be very young. Following this logic, it was thought that Jupiter might still be hot enough to make its large moons habitable. Many entertaining early science fiction stories involve the discovery of life on the moons of Jupiter.

In 1979 the potential for life on Jupiter's moons again became a subject for scientific speculation. A lesser degree of the tidal heating that is believed to power Io's volcanoes appears to heat a liquid ocean beneath the icy crust of the moon Europa. Probes to search for primitive life on Europa are in the planning stages.

Many gas giants like the planet Jupiter have been discovered orbiting distant stars. Some of them orbit within their star's habitable zones where temperatures would be suitable for life as we know it. A planet like Jupiter without a solid surface would be a poor home for life, but giant moons might be habitable. Such worlds might even resemble the habitable moons in the Star Wars movies.

As the season's change, so do the sights visitors can see at the Community Observatory, a gift of the Cameron Park Rotary Club. Jupiter and its four planet-sized moons are now popular sights at the observatory. For more information and driving directions go to www.communityobservatory.com. Also if you would like to support this wonderful community asset, a fundraiser for the observatory including a “Tour of the Night Sky” is being held on Friday evening, September 18, 2009 at David Girard Vineyards – please check out www.davidvineyards.com for more information.