



Desert Sky Observer

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NEWSLETTER OF THE ANTELOPE VALLEY ASTRONOMY CLUB, INC
P.O. BOX 4595, LANCASTER, CALIFORNIA 93539-4595
*The Antelope Valley Astronomy Club, Inc., is a 501(c)(3) Non-Profit Corporation.
Visit the Antelope Valley Astronomy Club website at www.avastronomyclub.org/ The
A.V.A.C. is a Sustaining Member of The Astronomical League and the International
Darksky Association.*



Up-Coming Events

June 4: Star Party, [Mt. Pinos](#)

June 6: New Moon

June 10: Monthly Club Meeting*

June 15: First Quarter Moon

June 22: Full Moon

June 28: Last Quarter Moon

* Monthly meetings are held at the S.A.G.E. Planetarium at the Cactus School in Palmdale on the second Friday of each month. The meeting location is at the northeast corner of Avenue R and 20th Street East. Meetings start at 7 p.m. and are open to the public. Please note that food and drink are not allowed in the planetarium



**Club
President
Debora
Pedroza**

It really amazes me when I realize that the month of June signals the halfway point in our club calendar year. Time itself, etched within the mystery of infinity, passes by us so quickly. When I sit back and reflect on our last six months, I am filled with positive thoughts. As your club president, allow me to throw some of these positive thoughts at you:

- Hearing the excited scream from the other end of the phone line when our Poppy Festival winner realized that she had just won a telescope;
- a new club member named Toni repeatedly shouting exclamations of joy as she experiences her first looks into telescopes at a club star party;
- the camaraderie among club members when there was a need to pull off a last-minute event in order to dispel any disappointment from a highly anticipated speaker who had canceled at the very last minute;
- observing smile after smile from young and old alike as they mingled through the workstations at this "impromptu" event;
- reading our valley students' essays about the journeys of space;
- seeing the display of our one and only "Water Heater" Dobsonian at all of our events;
- members shouting tirelessly at the Poppy Festival for community members to buy raffle tickets;
- reading our incredible Desert Sky Observer newsletter and checking out the photos;

- sitting in the planetarium when Jeremy spins the sky around;
- last but not least, the club president slipping in late into the club meeting during a speaker's presentation because she took ill-fated travel advice and got lost.

Honestly, I could go on because this club is so incredible. Having said all of this, I am extending an invitation to every club member to attend our monthly executive board meetings held at the Pedroza home. Our club elections are just around the corner. Find out more about how you can become more involved and make a difference.

Until then, take good care.



*Vice
President
Mindy
Peterson*

Our members are terrific! When a last minute cancellation could have resulted in disaster, several of our members jumped to my aid and created a fantastic evening for everyone. In fact, the evening was so great that the Board has voted to make the "Astronomy Fair" a yearly event. Thank you Debora Pedroza, Terry Pedroza, Jeremy Amarant, Matt Leone, Tom Koonce, Matt Taylor, Larry Oschner, Mary Andrus, and Milt Sawyer. If I am forgetting anyone, I apologize.

At press time, I am still in the process of confirming our speaker for the June meeting. The speaker is scheduled to be Kevin Grazier, who will present an update on the Cassini Mission. If Kevin is unable to speak, our own Jeremy Amarant will talk about his travels to Spain, Russia and China as it relates to astronomy, as well as the Global Network of Telescopes and Hands On Universe.

At the Youth Exploring Astronomy Essay Contest awards ceremony, Jeremy spoke about an event which will take place during the last half of June. Saturn, Mercury, and Venus will appear close in the western at dusk. On June 25th, Saturn moves to within 1° of Venus, and two evenings later Venus and Mercury will be a fine sight, only 0.1° apart. Enjoy the view.



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*Director of
Community
Development
Terry
Pedroza*

I was sitting in the spa the other night and realized what a hypocrite I am. I preach about dark sky issues and push for better lighting and look at my yard! I, like so many others, have these “beautiful” yard lights that light up the whole night. Look in my backyard and all you see are the two lamps next to the patio- you can’t see anything else for the glare. What am I thinking?! IDA, dark sky issues, let’s start at home before we preach to the choir.

Look around your home. Am I the only one? Shame on me. I will be looking for IDA approved lights for my home in the very near future. Next time you come to my home, if there are not *dark sky-friendly* lights, read me the riot act.

I never even gave it any mind- never even dawned on me. Then BAM, I see the light, or, should I say, the glare? At the RTMC this year I will be joining the International Dark Sky Association. I will do a better job of following the rules of better lighting and I hope that every member of the Antelope Valley Astronomy Club will do the same.

In the IDA newsletter this month is a list of IDA-approved lighting companies. If you will be buying new lights, support those that support us, the amateur astronomers of the world. I will. Dark Skies, all.



Planet Watch



MERCURY

In June, Mercury is in superior conjunction with the Sun (Mercury and Earth on opposite sides of the Sun) on the 3rd. Moving east of the Sun, the planet rapidly moves into the evening sky where it remains until late next month. The period from late June to July is one of the best periods to observe Mercury in the evening sky this year. The next good window occurs from mid-October to mid-November. Mercury leaves Taurus early in June to join Venus and Saturn in Gemini. As the speedy planet gains altitude it appears to chase Venus across Gemini, catching up when the pair is very close to Saturn on the Gemini/Cancer border. From the 23rd to 30th, the three planets form a rare triple grouping, fitting into a 5 degree circle. On the 26th the circle is a tight 1.3 degrees- a splendid sight. Mercury and Venus themselves are at their closest on the 27th and 28th at around 0.2 degrees apart, another superb treat.

VENUS

This month, Venus moves from Taurus to Gemini and finally into Cancer. Setting around 1.5 hours after the Sun. The planet, at -3.9 magnitude, is very prominent in the western early evening sky. Venus spends the month gradually approaching Saturn with Mercury in hot pursuit. At month's end, the three form a neat planetary triple grouping, and Venus and Mercury get really close. Twelve months have now passed since the historical transit of Venus; we trust our readers had clear skies, and a reminder that it's just seven years until the next one on June 6th, 2012.

MARS

Mars rises soon after midnight and travels from Aquarius, across a small section of Pisces, and into a corner of Cetus. Twice in the month the Moon appears near the planet: on the 1st a 23-day old Moon, and on the 29th the Last Quarter Moon.

JUPITER

Jupiter transits the meridian just after the end of astronomical twilight and can be seen high in the northern sky. On the evening of the 16th, the nine-day old Moon appears close to Jupiter; however the daytime view is much more interesting. For a challenge, try spotting Jupiter in the daytime- a good test for small instruments- but moderate-sized scopes (around 20cm) should have no difficulty. Venus, Jupiter and a few of the brighter stars are all visible during daylight hours, you just need a reference point. For Jupiter this month, we have the Moon as our guide and a good object to find focus on. Focusing a telescope to infinity can be tricky on a clear daytime sky. Sometimes a distant tree or telephone pole can help.

SATURN

Saturn is in conjunction with the Sun in July, and June provides the last views of the planet before it is lost in the evening twilight. The planet is still located in Gemini, low on the NW horizon in the evening twilight. On the 10th, the 3-day old crescent Moon will be just north (to the right) of the planet. During the last week of the June, Saturn, Mercury, and Venus produce a grand display. Close planetary groupings of a trio of planets (within a 5 degree circle) may occur several times a year, or even a few years apart. Particularly close alignments between set groups of planets are not so common. The last time Saturn, Mercury and Venus appeared this close together in the sky was in 1985. You won't see a similar view until 2008. After 2008, you will have to wait until 2041.

URANUS

Uranus is still located in Aquarius and rises around 11 pm. From mid-month until mid-November the planet will be in retrograde motion.

NEPTUNE

From late May until the end of October the planet will be in retrograde motion. Neptune is still located in Capricornus and rises around 9 pm. mid-month.

PLUTO

Pluto is at opposition on the 14th and is visible the entire night. This distant planet is currently 4,482,000,000 km from Earth (29.95 AU), with its light taking over 4 hours to reach us.

* the above was taken from the Brisbane Astronomical Society website: <http://www.bas.asn.au>

Astronomy Links on the Web

<http://www.astropaws.com>

(Terry Babineaux's astrophotos)

<http://www.actonastro.com/>

(Steve Trotta's website)

<http://www.noexitrecords.com/zerobox/astro.htm>

(Tom Varden's website)

<http://www.astro-tom.com/>

(Tom Koonce's website)

<http://saturn.jpl.nasa.gov/multimedia/images/latest/index.cfm>

(the latest Saturn pics from Cassini)

<http://www.astroleague.org/>

(The Astronomical League site)

<http://antwrp.gsfc.nasa.gov/apod/archivepix.html>

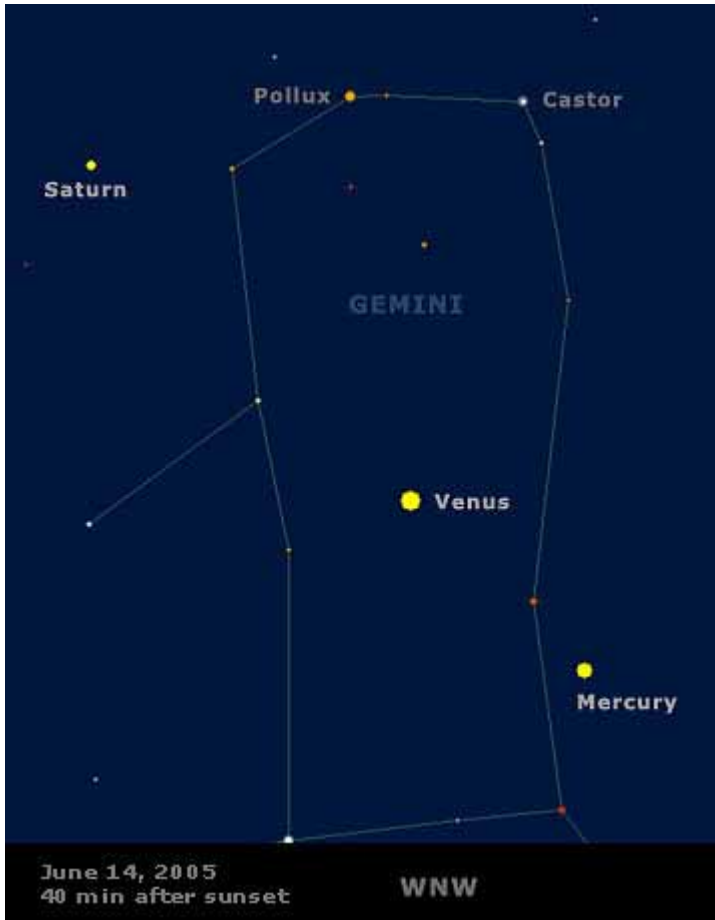
(Pic of the Day)

www.avastronomyclub.org/

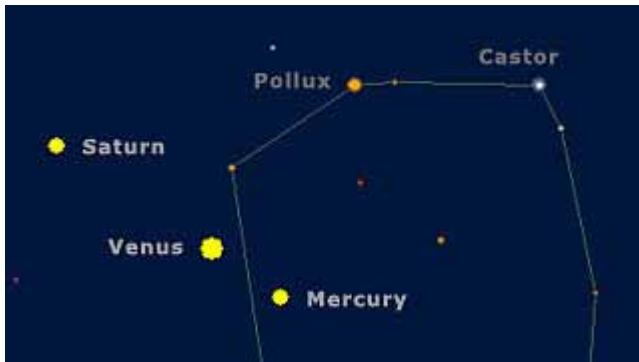
(sounds sorta familiar, doesn't it?)

The June Conjunction

The sky looking west-northwest 40 minutes after sunset:



During the second half of June, three of the five naked-eye planets will gather in the western sky for easy viewing. Venus, as the "Evening Star" will be there outshining all other objects. Mercury, the planet closest to the sun, will also be there making one of its best showings. The dimmest of the trio, Saturn, will be bright enough to see easily in the twilight, and outshine all of the stars in its area of sky. You can actually begin watching a few days earlier, but by June 14 Mercury will be high enough to spot easily in the twilight. The planets will be stretched across the constellation Gemini at first. As the days pass, Mercury and Venus will be seen higher and higher as if they are racing to see which one will get to Saturn first.



The sky view above shows the planet's positions 40 minutes after sunset on June 21. The speedy Mercury is catching up to Venus, but is starting to dim slightly from one day to the next. By the 24th, the scene below, they are closer still. Keep watching the dance of the planets to see that on the evening of the 26th, Mercury and Venus are so close, they are almost touching. One day later, Mercury will have finally passed Venus.



You do not need any special equipment to observe these sky scenes, though binoculars will enhance the view. Since the planets are bright, they can be seen even from the city.

* Gathered from the Internet

Did you know? ? ?

Cassini has discovered a small moon that orbits in the “Keeler Gap,” just outside the “A” ring of Saturn.

? ? ?



Seeing in the Dark with Spitzer

by Patrick L. Barry and Tony Phillips

Have you ever gotten up in the middle of the night, walked to the bathroom and, in the darkness, tripped over your dog? A tip from the world of high-tech espionage: next time use night-vision goggles.

Night vision goggles detect heat in the form of infrared radiation- a “color” normally invisible to the human eye. While wearing a pair you can see sleeping dogs, or anything that’s warm, in complete darkness.

This same trick works in the darkness of space. Much of the exciting action in the cosmos is too dark for ordinary telescopes to see. For example, stars are born in the heart of dark interstellar clouds. While the stars themselves are bright, their birth-clouds are dense, practically impenetrable. The workings of star birth are thus hidden.

That's why NASA launched the Spitzer Space Telescope into orbit in 2003. Like a giant set of infrared goggles, Spitzer allows scientists to peer into the darkness of space and see, for example, stars and planets being born. Dogs or dog *stars*: infrared radiation reveals both.

There is one problem, though, for astronomers. “Infrared telescopes on the ground can't see very well,” explains Michelle Thaller, an astronomer at the California Institute of Technology. “Earth's atmosphere blocks most infrared light from above. It was important to put Spitzer into space where it can get a clear view of the cosmos.”

The clear view provided by Spitzer recently allowed scientists to make a remarkable discovery: They found planets coalescing out of a disk of gas and dust that was circling- not a star- but a “failed star” not much bigger than a planet. Planets orbiting a giant planet?

The celestial body at the center of this planetary system, called OTS 44, is only about 15 times the mass of Jupiter. Technically, it’s considered a “brown dwarf,” a kind of star that doesn’t have enough mass to trigger nuclear fusion and shine. Scientists had seen planetary systems forming around brown dwarfs before, but never around one so small and planet-like.

Spitzer promises to continue making extraordinary discoveries like this one. Think of it as being a Hubble Space Telescope for looking at invisible, infrared light. Like Hubble, Spitzer offers a view of the cosmos that’s leaps and bounds beyond anything that came before. Spitzer was designed to operate for at least two and a half years, but probably will last for five years or more.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.



Cosmos 1 Ships in Preparation for June Launch

First Solar Sail Spacecraft Ready for Daring Flight

Cosmos 1, the world's first solar sail spacecraft, has shipped in preparation for a launch window that opens on June 21, 2005, traveling from the test facility of Lavochkin Association in Moscow to Severomorsk, Russia. The innovative and first-of-its-kind solar sail, a project of The Planetary Society and Cosmos Studios, will launch atop a converted ICBM from a submerged Russian submarine. It will deploy in Earth orbit and attempt the first controlled flight of a solar sail.

"Reaching this milestone puts us on the doorstep to space!" said Louis Friedman, Planetary Society Executive Director and the *Cosmos 1* Project Director. "We are proud of our new spacecraft and hope that *Cosmos 1* blazes a new path into the solar system, opening the way to eventual journeys to the stars."

The Planetary Society (<http://planetary.org/solarsail/>) is working with the spacecraft developers, the Lavochkin Association and the Space Research Institute in Russia, to fly this solar sail mission. *Cosmos 1* was funded by Cosmos Studios (<http://carlsagan.com>), the science-based entertainment company led by Ann Druyan, who also serves as the solar sail mission's Program Director. Additional donations from members of The Planetary Society helped make the mission possible.

Cosmos 1 has attracted world-wide attention by being the first attempt at a revolutionary and potentially much faster way of moving through space, and because the project was created by an independent, non-profit organization and financed by a private company. The combination of solar sail technology coupled with a submarine-based launch opens the door for new and low-cost space systems in the future.

Once *Cosmos 1* achieves Earth orbit, the mission team will spend the first few days monitoring the spacecraft and allowing any remaining air in the packed blades to leak out before deploying its eight solar sail blades. The pressure of photons - sunlight - bouncing off the highly reflective solar sail will provide the spacecraft's only form of propulsion.

NASA, the European Space Agency (ESA), Japan and Russia all have developed solar sails, but none has yet tried to prove that the sails can propel a spacecraft under controlled flight. Russia and Japan have conducted flight tests of deployment, while NASA and ESA have conducted ground test deployments, but thus far they have no test flights scheduled.

Two U.S. government agencies, NOAA and NASA, have signed cooperative agreements with The Planetary Society to receive valuable flight data from the solar sail mission. In return, the no-exchange-of-funds agreements permit the Society to utilize agency facilities and expertise in tracking and mission operations of *Cosmos 1*.

An experiment to accelerate the spacecraft with a microwave beam from Earth will be conducted during a later stage of the mission. Led by James Benford of Microwaves Sciences, Inc. and Prof. Gregory Benford of the University of California-Irvine, their team will use a NASA Deep Space Network radar antenna to send the beam to the spacecraft. The Planetary Society must approve the activation of the experiment and will do so only after the prime mission objective of controlled solar sail flight is achieved.

An international tracking network will receive mission data at stations scattered around the globe, from Moscow to Majuro in the Marshall Islands. The spacecraft will be tracked from the ground through its radio and an on-board GPS system and micro-accelerometer.

Solar Sail Watch, a program designed for the general public, will invite people around the world to help track *Cosmos 1* and photograph its progress across the night sky. Once its sails unfurl, *Cosmos 1* will be bright enough to be easily visible to the naked eye. The Planetary Society urges everyone to witness this historic mission first hand. Details on Solar Sail Watch are available at <http://planetary.org/solarsail/watch>.

The spacecraft will be launched on a *Volna* rocket to an approximately 800-km high, circular, near polar orbit.

Konstantin Pichkhadze, first deputy of Designer General and Director General of Lavochkin Association, stated, "The solar sail is an important step in development of space technologies. Now we are running through the final stage of this project, which became a reality thanks to the efforts of The Planetary Society and Cosmos Studios. Lavochkin Association has been creating automatic spacecraft since 1965 and performed the first soft landings on the Moon and Venus in the 1960's and 70's. Building the solar sail spacecraft has involved interesting and complicated problems, which we worked on solving with the Institute of Space Research of the Russian Academy of Sciences. The Lavochkin Association team developed a number of successful project and engineering solutions which helped us to create this small spacecraft to help conduct great space ventures."

* the above was provided by the Planetary Society

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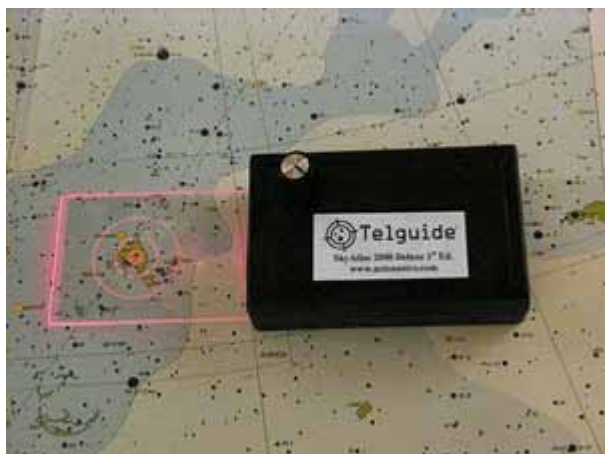
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QNET: 1529 E. Palmdale Blvd., Suite 200. (661) 538-2028. As an Internet provider, they are kind enough to provide us with a free website.

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A.V.A.C. Membership Information

Membership in the Antelope Valley Astronomy Club is open to any individual.

The Club has three categories of membership.

- Family membership at \$30.00 per year.
- Individual membership at \$25.00 per year.
- Junior membership at \$15.00 per year.

Membership entitles you to...

- Desert Sky Observer—monthly newsletter.
- The Reflector—the quarterly publication of the Astronomical League.
- The A.V.A.C. Membership Manual.
- To borrow club telescopes, binoculars, camera, books, videos and other items.

The Desert Sky Observer is available as a separate publication to individuals at a cost of \$10.00 per year. Subscription to the Desert Sky Observer does not entitle the subscriber to membership in the Antelope Valley Astronomy Club and its associated privileges.