Desert Sky Observer

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NEWSLETTER OF THE ANTELOPE VALLEY ASTRONOMY CLUB, INC
P.O. BOX 8545, LANCASTER, CALIFORNIA 93539-8545
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 Dark-Sky Association.

Up-Coming Events

November 9: Club Meeting* - Mark Rayman "Dawn Mission to the Asteroid Belt"
November 10: Dark Sky Star Party @ Mt. Pinos
November 12: Board Meeting @ Pedroza Flats
November 17: Leonid Meteor Shower @ The AV Poppy Reserve
November 24: Full Moon Walk @ Prime Desert Woodland

* Monthly meetings are held at the S.A.G.E. Planetarium on the Cactus School campus in Palmdale, 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
Terry Pedroza

I was recently asked a question. What are you doing here? Is this a membership drive? I had a hard time trying to answer the question. "But why" you might ask? Here's why.

I've been doing this (Public Outreach) for so long that it has become a habit to me. I had forgotten even why I do this anymore. This one question has been a godsend to me. Now when the day seems to be getting sooo long I just think about why I'm doing this.

I'm doing it because I love Astronomy and I want to share it with the whole world. I do it because of the thrill I get when someone says "WOW" as they look through my scope. I do it because I want to share the absolute beauty of the night sky with everyone that will take the time to JUST LOOK UP!

I'm writing this on Sunday morning October 21st after viewing the Orionid meteor shower. I have been out since 2:00 am enjoying the beauty of the night sky and wishing everyone could experience what I have just experienced, this beautiful show that God has given me. I noticed stars tonight that I had never noticed before. I saw beautiful meteors, short and quick and bright with long trains behind them. I saw Venus rising with Leo and enjoyed a complete peace that I have never known before. I hope that each and every one of you can experience the peace that I feel.

So, the next time that you wonder why you are spending your day out in the Sun or on a cold night letting everyone else spend more time at the eyepiece of your telescope than you, ask yourself "WHY." I hope that you spend as much time smiling about it as I have, since I was asked "WHY."

Clear Skies
Terry

Vice President
Shane Barker

Our speaker for November is Dr. Marc Rayman who will be speaking about:"The Dawn Mission to the Asteroid Belt." NASA's latest venture into the solar system is the ambitious and exciting Dawn mission, launched in September 2007. The spacecraft will orbit both Ceres and Vesta, which are among the last unexplored worlds in the inner solar system. They are the two most massive residents of the asteroid belt, a vast collection of bodies between Mars and Jupiter. Ceres is so large that it is included in the new category of dwarf planets, along with Pluto. The alien landscapes Dawn will reveal should provide humankind with a new perspective on the solar system. Remnants from the time that planets were formed, Ceres and Vesta hold clues that will help scientists understand the dawn of the solar system. Dawn will be the first spacecraft ever to orbit an object in the asteroid belt and the first ever to orbit two targets. Such a mission would be impossible without the use of ion propulsion, a technology that has mostly been in the domain of science fiction, but which was tested extensively on the successful Deep Space 1 mission, paving the way for Dawn. Dr. Marc Rayman will describe the Dawn spacecraft and its use of ion propulsion as well as its two exotic destinations. He will also share the excitement of flying a mission in deep space.

Marc Rayman grew up in Toledo, Ohio and earned an A.B. in physics from Princeton University. His undergraduate work focused on astrophysics and cosmology. He received an M.S. in physics from the University of Colorado in Boulder, where he conducted investigations in nuclear physics. He then performed research at the Joint Institute for Laboratory Astrophysics (JILA) on experimental tests of special relativity and atomic and laser physics, and received his Ph.D. there.

Dr. Rayman combined his scientific training with his lifelong study and interest in the exploration of space by joining NASA's Jet Propulsion Laboratory in 1986. His work there has spanned a broad range, including optical interferometry missions for detecting planets around other stars, a Mars sample return mission, a Mars laser altimeter, the Spitzer Space Telescope, and the development of systems to use lasers instead of radios to communicate with interplanetary spacecraft.

In 1994, he helped initiate a new NASA program to characterize highly advanced and risky technologies for future space science missions by flying them on dedicated test flights. The first mission of this New Millennium program, Deep Space 1, was launched in October 1998, and he worked on it from its inception in 1995 to its conclusion in 2001. During the course of the project, Dr. Rayman served as Chief Mission Engineer, Mission Director, and Project Manager. The new technologies that were tested on DS1 (including such exotic systems as ion propulsion and artificial intelligence) were designed to reduce the cost and risk and to improve the performance of subsequent interplanetary missions. The primary mission was extremely successful and led to a very productive and exciting extended mission, culminating in a spectacular encounter with Comet Borrelly that yielded the best images that had ever been taken of the nucleus of a comet. The spacecraft remains in orbit around the Sun.

Now he is mission manager and project system engineer on a mission that builds on DS1 to study two of the largest unexplored worlds in the inner solar system. Launched in September 2007, Dawn will visit the two most massive asteroids, Ceres and Vesta, in an ambitious mission that should reveal much about the dawn of the solar system.

Dr. Rayman is the recipient of numerous honors. Among his awards from NASA are two Exceptional Achievement medals and the Outstanding Leadership medal. In addition, he is the only person to have won the Exceptional Technical Excellence award and the Exceptional Leadership award, two of JPL's highest honors. Asteroid (10050) Rayman was named in recognition of contributions to space exploration.

Interesting tid bit:

Huge Outburst of Comet Holmes. On October 24th news flashed around amateur networks that faint little Periodic Comet Holmes (17P) had undergone an enormous outburst — and was shining at 3rd magnitude, easily visible to the naked eye. The presumed ejection of gas and dust was still so close to the comet's nucleus as to appear almost star like, as if this were a nova rather than a comet. The cloud of ejected stuff is expected to enlarge into a more traditional cometary appearance in the next several days.

The comet had been magnitude 17. Such wild behavior has a precedent, though; Holmes was also in a great outburst when it was discovered in 1892, reaching 5th magnitude. Back then, in fact, it had two such eruptions; the second came 2 1/2 months after the first.

Comet Holmes is in Perseus, perfectly placed, high in the northeast late in the evening. It's not far from Delta Persei and is moving slowly.

Shane Barker
Vice President

Director of Community Development
Rose Moore

We have a few events coming up this month! Our first big event is the Joe Walker Super Science Saturday event at Joe Walker Middle School in Lancaster. This is set for Saturday, Nov. 17th, beginning at 8:30am and ending approximately at 12:30pm. We need volunteers for the following: outside scopes with solar filters for observing, club members who could do video presentations, display a meteor collection, display astronomy photographs they have taken with their own telescopes, and someone to show and tell anything else they have that would be interesting to the students. Please contact me as soon as you know you will be able to attend and how you can help. Wes Thomas, a club member, is our contact person at the school for the event.

Also the night of Saturday, Nov. 17th, at the Poppy Reserve is a club and public star party for the Leonid Meteor Showers. We need volunteers for this event to come out with their scopes, as well as to talk to the public about meteor showers and help them find their way around the night sky. Please contact me, or sign up at our next club meeting. We will be working out details for the possibility of allowing only members to camp overnight. Other details to follow.

We have scheduled the following Prime Desert Moon Walks with Jeremy, all on Saturday nights, on the following dates: Oct. 27th at 7:00pm, Nov. 24th at 6:00pm, and Dec. 1st at 6:00pm. We always need volunteers with scopes for this event that now draws large public turnouts!

Some non-club activities coming up for November: (1) "A Night Under the Stars" at Alamo Lake State Park, Arizona; Saturday Nov. 3rd. contact Jeff Reichman for details, or http://www.azstateparks.com (2) Carnegie Observatories 6th Annual Open House in Pasadena, CA., on Sunday Nov. 4th; for directions and info visit: http://www.ociw.edu/Events/openhouse/ (3) Colorado River Astronomy Club 3rd Annual Colorado River "Star Stare" the weekend of Nov. 9-11th in Blythe, CA. For more information email the Colorado River Astronomy Club at: mastroclub@earthlink.net

More detailed information on our club events to come as they are available prior to each event.

Clear Skies!
Rose M.

What Time is It? Depends On How You Ask…

By The Astronomical League

There are many methods used to keep time, each having its own special use and advantage.

Apparent Time
This is the time kept by a sundial. Since it is dependent on the observer's location, it is also a local time. Being measured according to the true solar position, it is subject to all the irregularities of the Earth's motion. The reference time is 12:00 noon when the true Sun is on the observer's meridian.

Mean Time
Mean time uses the position of a fictitious "mean Sun" which moves smoothly and uniformly across the sky and is insensitive to the Earth's irregularities. A mean solar day is 24 hours long.

Local Mean Time (LMT)
Local mean time is determined by the mean Sun's position relative to the local meridian of the observer. As with any "local" time, it depends on the observer's geographic location. The reference time is 12:00 noon when the mean Sun is on the local meridian.

Mean Civil Time
Also called clock time or zonal time, this is the standard time by which most of our non-astronomical activities are measured. The Earth's surface is divided into 24 time zones, each spanning 15 degrees of longitude with some variance to accommodate political boundaries. The central meridian of each zone is precisely defined, however, to be an integral multiple of 15 degrees longitude. The reference time for the entire zone is 12:00 noon when the mean Sun is on the central meridian of the time zone.

Universal Time (UT)
This is the basis for all civil timekeeping and is very close to the LMT at 0 degrees longitude at Greenwich Observatory. Hence, it is sometimes called Greenwich Mean Time or GMT. The military often uses the term "Zulu" to refer to universal time. This time is based on an atomic clock and is "corrected" by adding occasional "leap seconds" to keep it in reasonable agreement with universal time.

International Atomic Time (IAT)
International atomic time is the time kept by atomic clocks. The Systemme Internationale (SI) second is defined so that the frequency of a certain resonance of the cesium atom is 9,192,631,770 hertz.

Sidereal Time (ST)
Sidereal time is measured relative to the stars and is based on the true rotation period of the Earth. Since the Sun appears to move relative to the stars, a sidereal day is 3 minutes 56 seconds shorter than a solar day. Sidereal time is measured by the position of the vernal equinox relative to the meridian.

The Red (Hot?) Planet

by Patrick L. Barry

Don't let Mars's cold, quiet demeanor fool you. For much of its history, the Red Planet has been a fiery world.

Dozens of volcanoes that dot the planet's surface stand as monuments to the eruptions that once reddened Mars's skies with plumes of glowing lava. But the planet has settled down in its old age, and these volcanoes have been dormant for hundreds of millions of years.

Or have they? Some evidence indicates that lava may have flowed on Mars much more recently. Images of the Martian surface taken by orbiting probes show regions of solidified lava with surprisingly few impact craters, suggesting that the volcanic rock is perhaps only a million years old.

If so, could molten lava still occasionally flow on the surface of Mars today?

With the help of some artificial intelligence software, a heat-sensing instrument currently orbiting Mars aboard NASA's Mars Odyssey spacecraft could be just the tool for finding active lava flows.

"Discovering such flows would be a phenomenally exciting scientific finding," says Steve Chien, supervisor of the Artificial Intelligence Group at JPL. For example, volcanic activity could provide a source of heat, thus making it more likely that Martian microbes might be living in the frosty soil.

The instrument, called THEMIS (for Thermal Emission Imaging System), can "see" the heat emissions of the Martian surface in high resolution—each pixel in a THEMIS image represents only 100 meters on the ground. But THEMIS produces about five times more data than it can transmit back to Earth.

Scientists usually know ahead of time which THEMIS data they want to keep, but they can't plan ahead for unexpected events like lava flows. So Chien and his colleagues are customizing artificial intelligence software called ScienceCraft to empower THEMIS to identify important data on its own.

This decision-making ability of the ScienceCraft software was first tested in Earth orbit aboard a satellite called Earth Observing-1 by NASA's New Millennium Program. Earth Observing-1 had already completed its primary mission, and the ScienceCraft experiment was part of the New Millennium Program's Space Technology 6 mission.

On Odyssey, ScienceCraft will look for anomalous hotspots on the cold, night side of Mars and flag that data as important. "Then the satellite can look at it more closely on the next orbit," Chien explains.

Finding lava is considered a long shot, but since THEMIS is on all the time, "it makes sense to look," Chien says. Or better yet, have ScienceCraft look for you—it's the intelligent thing to do.

To learn more about the Autonomous ScienceCraft software and see an animation of how it works, visit http://ase.jpl.nasa.gov .

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

AVAC Observing Challenge

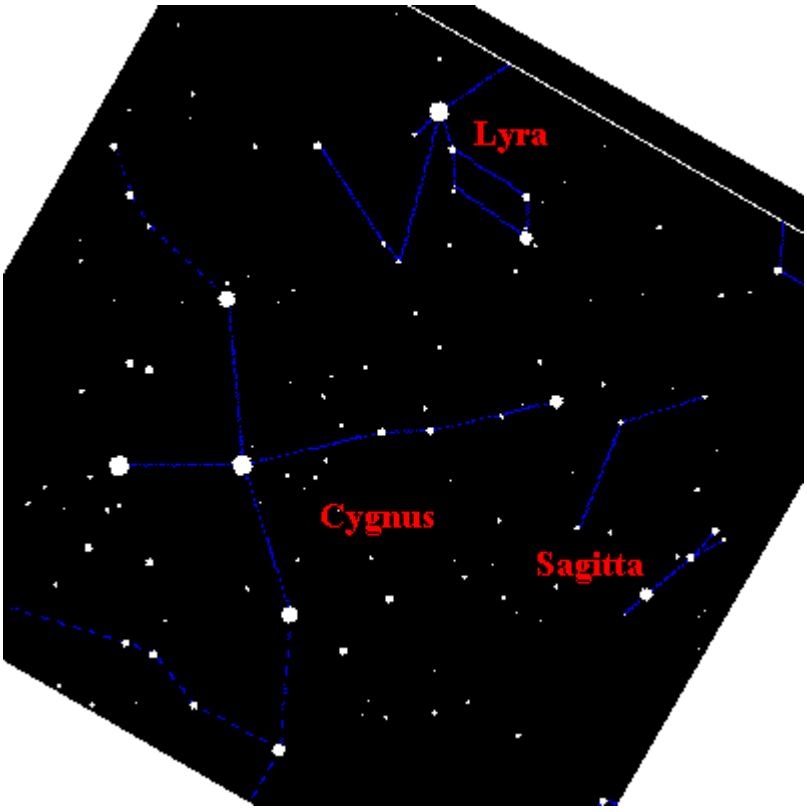
By Tom Koonce
Reference: http://seds.org

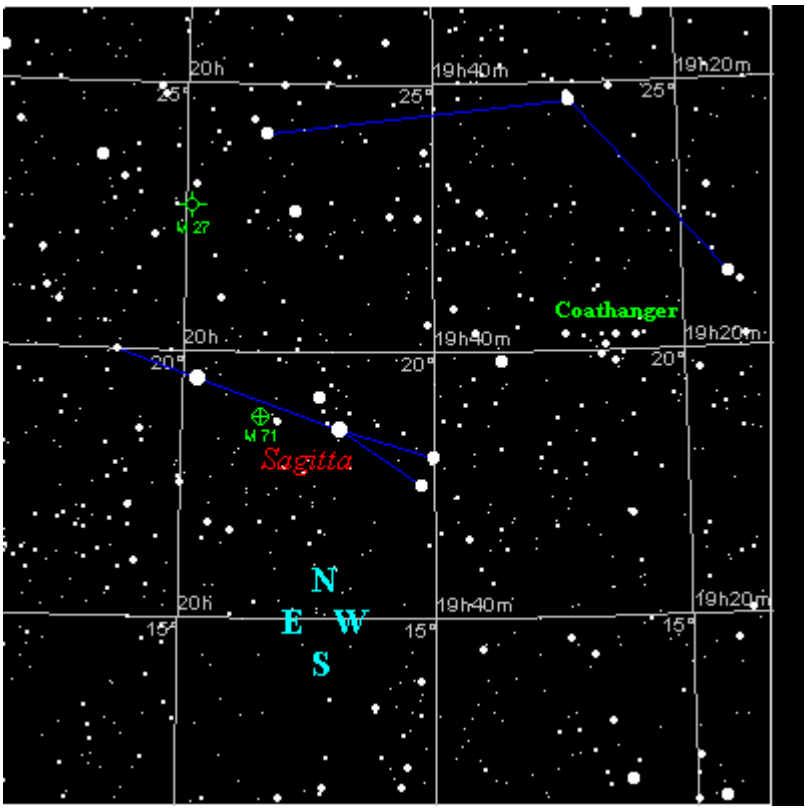
This month's entire challenge is for beginning amateur astronomers and intermediate level members that would like to know how to find a good Star Party favorite.

This month take out your trusty 10 X 50 binoculars and pointing them high up in the sky after sunset near the Summer Triangle. Enjoy the irony, just for a moment, that this constellation is most easily seen in the Fall. This is what we're after this month… easy to see objects.

The 'backwards coat hanger' is an asterism of obvious 10 stars, and 30 or so others surrounding it. To find it, let's "Star Hop". First get yourself oriented to the sky at about 8:00 pm over your head. Refer to the map below to see where in the Summer Triangle we'll be looking. You can easily see the bright star Vega in Lyra and the 'back end' of Cygnus the Swan, the bright star Deneb. Look out towards the long neck of the Swan, to the last bright star at the beak, the beautiful telescopic double star Albireo. Southwest of Albireo, you should be able to make out the constellation of Sagitta with its distinctive arrow pointing to the east.

Ref: http://ottawa.rasc.ca/articles/taylor_richard/sagitta/sagitta.html





Let's take a close look within the constellation of Sagitta. Can you imagine the arrow at the bottom right of the map and the drawn bow above it?

This more detailed map will allow you estimate where the Coathanger cluster is located. Start by slowly sweeping your binoculars North west from the tail feathers of the arrow. The upside-down Coathanger will jump out of the background stars, a fun object to find.. This asterism is very large, so don't try it with a telescope unless you are using extremely low power (< 50X).

Beginner Challenge	Brocchi's Cluster, Collinder 399. Open Cluster in Vulpecula. Right Ascension 19:25.4 (h:m) ; Declination +20:11 (deg:m); Distance 0.42 (kly); Visual Brightness 3.6 (mag); Apparent Dimension 60 (arc min). This cluster was described in 964 AD by the Persian astronomer Abd-al-Rahman Al-Sulfi, in his "Book of Fixed Stars". Messier, the Herschels and the NGC did not assign it a number, probably because of the cluster's size: Even at moderate power, it doesn't match in one field of view, and is best seen in a good pair of binoculars. Brian Skiff of Lowell Observatory has investigated astrometrical data of the stars counted to Collinder 399 acquired by ESA's Hipparcos satellite, and found new evidence that this object may be an asterism instead of a cluster.
 *The backwards Coathanger Cluster can be seen at low power.*	

While you're in the neighborhood, you can pull out your telescope and check out M27 and M71. Both of these can be located from the chart above, but can't usually be spotted by amateurs in binoculars.

Clear Skies!
- Tom

Did you know? ? ?

Right Ascension (RA) and Declination (Dec) are the coordinates that astronomers use to precisely locate stars in the sky. They are very similar to longitude and latitude on the Earth, except that RA is measured from 0 to 24 hours instead of 0 to 360 degrees, like longitude.

Angular Distance

By Lisa Judd

(Used with permission. Originally published June 2004, CSAS Newsletter)

When learning the sky, it s nice to learn with others so you can point out a new constellation that you may have just learned. However, this activity can quickly run into a communication problem - describing how far away one star, or group of stars, is from another. One of the biggest snags a constellation learner can hit is to not be aware of how big the constellation is. The best learning guides will use terrestrial foreground, but photo guides are more likely to just have a picture of sky, leaving a novice with no clue about how much expanse to be looking at for a particular picture, unless there s a little full-moon in the corner for reference. When it comes to describing distances in the sky (as projected onto the celestial sphere, mind you - not in three-dimensional space) to others, one person s inch is another person s mile. So, astronomers use angular size.

The concept involves just basic junior-high school geometry - if you point at one star with your left and another with your right, then your arms will form an angle, measurable in degrees, minutes and seconds like you would with a protractor. It's not expected that you construct a protractor large enough to wear, especially if you're in the field and already wearing binoculars around your neck (and you are, aren't you?), so there s an easy way around it.

When held at arm's length, the width of your thumb will cover one degree of sky - about twice the width of the full moon. A closed fist, from thumb knuckle to pinkie knuckle, will span ten degrees. And an open hand, from the tip of your thumb to tip of your pinkie, spans twenty degrees. Not surprisingly, the distance from horizon to zenith is 90 degrees, just like a right angle with your eye at the vertex. You can easily find your latitude by dropping a vertical from Polaris directly onto the due north horizon, then using the hand trick to measure it.

Remember that complimentary angle and circle chord-cutting stuff from math class? If not, then it's interesting to compare constellations - not to mention the neat deep-sky objects further south - when you travel towards the Mexican border (or further). Yes, there s PLENTY down there that you can't see from here, which should be taken into account when you plan your next trip to Hawaii or the Florida Keys, or to exotic locations south of the equator where the seasons are reversed and all the constellations are upside down.

Smaller angular distances are helpful to know at the eyepiece. Most low power eyepieces will give roughly a one-degree field of view (FOV), depending on your scope's focal ratio and that of your eyepiece - more math. If you're not the calculating type, just point it at the moon and see how much of the FOV it takes up - the moon is 1/2 degree in width. It also helps you to equate how much you're seeing in the FOV with how much space is on your star map, so you can use your thumb on the page when navigating from a bright, identified star to a deep-sky object. In the observing pages of Sky & Telescope, deepsky objects and double stars are described as being so many minutes in length, or seconds if you're going after the more challenging ones. I confess that my observing log contains few numbers, as I m still describing things in terms of other things, like double stars 1/3 as far apart as Albireo or galaxies 3X the length of the Sombrero.

A confusing puzzle is how constellations look larger on the horizon than they do at the zenith, not to mention a rising moon that looks twice as far across as when it s overhead – we've all seen it shrink as it rises. This is often attributed to the idea that you're looking through more atmosphere. Not so - use the hand trick on rising moon, or rising constellations, and you'll see that it s exactly the same size. It's a perception trick that astronomers, opticians and visual-cue psychologists have all tried to explain, but so far we are still at a loss for why things look so much larger in low areas of the sky.

News and Headlines

Pacific Astronomy and Telescope Show
This international conference/exhibition/convention/workshop will become a grand meeting place for amateur astronomers. It complements our world-renowned springtime event, the RTMC Astronomy Expo, held over Memorial Day weekend near Big Bear City, California.
http://www.rtmcastronomyexpo.org/PATS.htm

Astronauts fix ripped solar wing
Astronauts successfully unfurled a torn solar power wing at the international space station on Saturday after spacewalker Scott Parazynski cut loose a tangled clump of wires and patched everything up.
http://news.yahoo.com/s/ap/20071103/ap_on_sc/space_shuttle

Massive Black Hole Smashes Record
Using two NASA satellites, astronomers have discovered a black hole that obliterates a record announced just two weeks ago. The new black hole, with a mass 24 to 33 times that of our Sun, is the heftiest known black hole that orbits another star.
http://www.spaceref.com/news/viewpr.html?pid=23908

Enjoy Comet Holmes at its best
Comet 17P/Holmes remains a striking target for binoculars, small telescopes, and even the unaided eye. Take the time to see this unusual visitor, which leapt from obscurity to celebrity last week.
http://www.astronomy.com/asy/default.aspx?c=a&id=6183

NASA Extends Operations for its Long-Lived Mars Rovers
NASA is extending, for a fifth time, the activities of the Mars Exploration Rovers, Spirit and Opportunity. The decision keeps the trailblazing mobile robotic pioneers active on opposite sides of Mars, possibly through 2009. This extended mission and the associated science are dependent upon the continued productivity and operability of the rovers.
http://www.spaceref.com/news/viewpr.html?pid=23805

NASA's SOFIA Begins Aircraft Testing Phase
The U.S. space agency has started a series of flight tests involving its Stratospheric Observatory for Infrared Astronomy, known as SOFIA. The flight tests involve a highly modified Boeing 747SP aircraft and are the first of several phases required to verify the aircraft is structurally sound for future science flights.
http://www.skyandtelescope.com/news/wires?id=111248528&c=y

Amateurs Spot Transiting Exoplanet
An international network of astronomers has announced one of the most impressive discoveries ever made that involves amateurs. The group has found an extrasolar planet that crosses the face of its host star, an event known as a transit.
http://www.skyandtelescope.com/news/10574496.html

Russia recalls historic dog space flight
Just a month after the Soviet Union stunned the world by putting the first artificial satellite into orbit, it boasted a new victory — a much bigger satellite carrying a mongrel dog called Laika. The mission, 50 years ago Saturday, ended sadly for Laika but helped pave the way for human flight.
http://news.yahoo.com/s/ap/20071102/ap_on_sc/russia_space_dog;_ylt=As5vDgdx9NTG9O5t3syYDFaHgsgF

For Cloudy Nights.....

Word Find: Astronomical League observing. www.astroleague.org has a number of certificates one can earn for observing. Find them all below.

A Y E G I M C H R U A K S U E O U T R E A C H B I
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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.

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