

STARSCAN

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Astronomical Society*

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Visual Observing June 2006

★**SSO:** (Solar System Objects) Summary for the 15 June 06

Object	Const	Mag	% III	Rise Time	Transit	Set Time
Sun	Tau	-26.7	100	06:20	13:20	20:21
Moon	Cap	----	78	00:00	04:51	10:11
Mercury	Gemi	0.2	48	08:09	15:08	22:11
Venus	Ari	-3.9	81	04:20	10:59	17:39
Mars	Cnc	1.8	96	09:36	16:25	23:17
Jupiter	Lib	-2.4	100	16:43	22:17	03:48
Saturn	Cnc	0.8	100	09:42	16:29	23:19
Uranus	Aqr	5.8	100	01:04	06:51	12:37
Neptune	Cap	7.9	100	23:48	05:14	10:41
Pluto	Ser	13.9	99	20:03	01:28	06:53
Schwassmann-Wachmann 73P	Cet	9.1	46	03:41	09:18	14:55
Honda - Mrkos - Pajdusakova 45P	Tau	9.7	84	04:49	11:34	18:18

Highlighted times denote daylight events.

Lunar phases for June 06

First 	Full 	Third 	New 
3 rd 18:06	11 th 13:03	18 nd 09:08	25 th 11:05

Central Daylight time

★**BSO:** (Bright Sky Objects)

NGC 5460 (Cr 280) – Open Cluster in Centaurs, Magnitude 5.6, Size 24', Stars 40.

NGC 5904 (M 5) - Globular Cluster in Serpens, Magnitude 5.7, Size 23'.

NGC 5457 (M 101, Pinwheel, Arp 26) – Galaxy system in Ursa Major, Magnitude 8.3, Size 28' x 27'.

NGC 5897 – Globular Cluster in Libra, Magnitude 8.4, Size 11'.

★**DSO:** (Dark Sky Objects)

NGC 5694 (C-66) - Globular Cluster in Hydra, Magnitude 10.2, Size 3.4.3'.

NGC 5466 (H-9-6) - Globular Cluster in Bootes, Magnitude 9.2, Size 9'.

NGC 5634 (H-70-1) - Globular Cluster in Virgo, Magnitude 11, Size 5.5'.

NGC 5866 (M 102) - Galaxy in Draco, Magnitude 10.7, Size 6.4' x 2.8''.

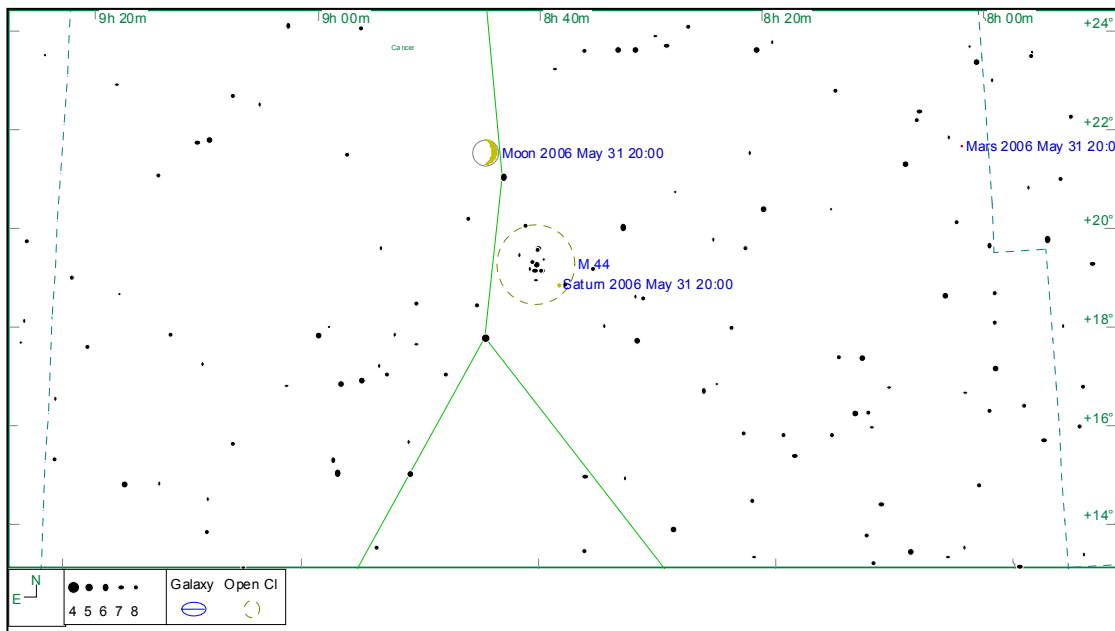
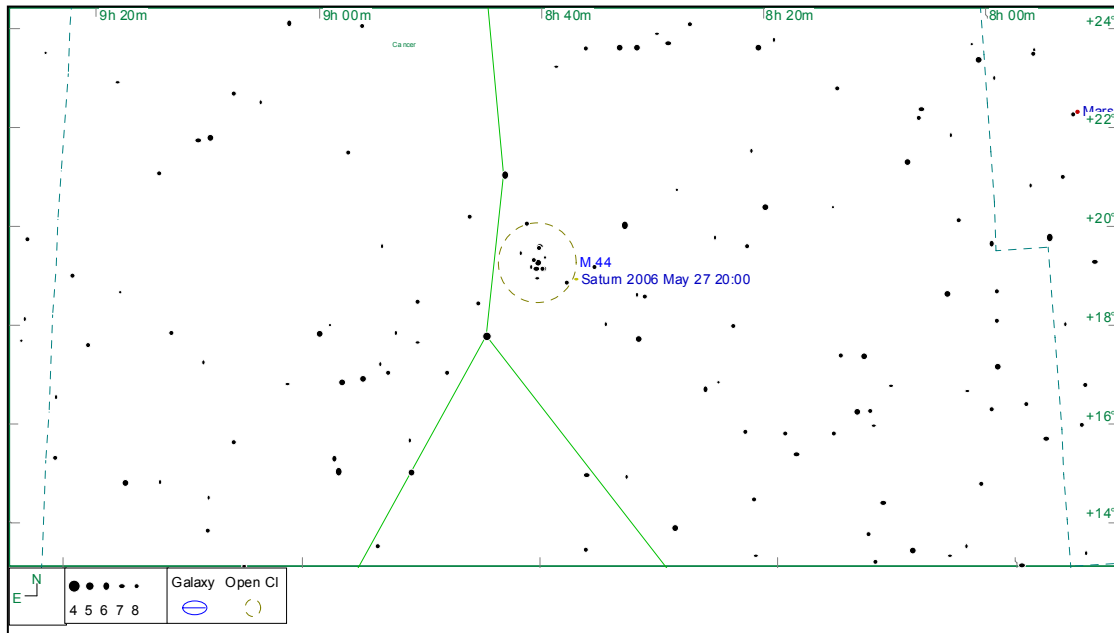
★**CDMP:** (Chris' Don't Miss Pick)

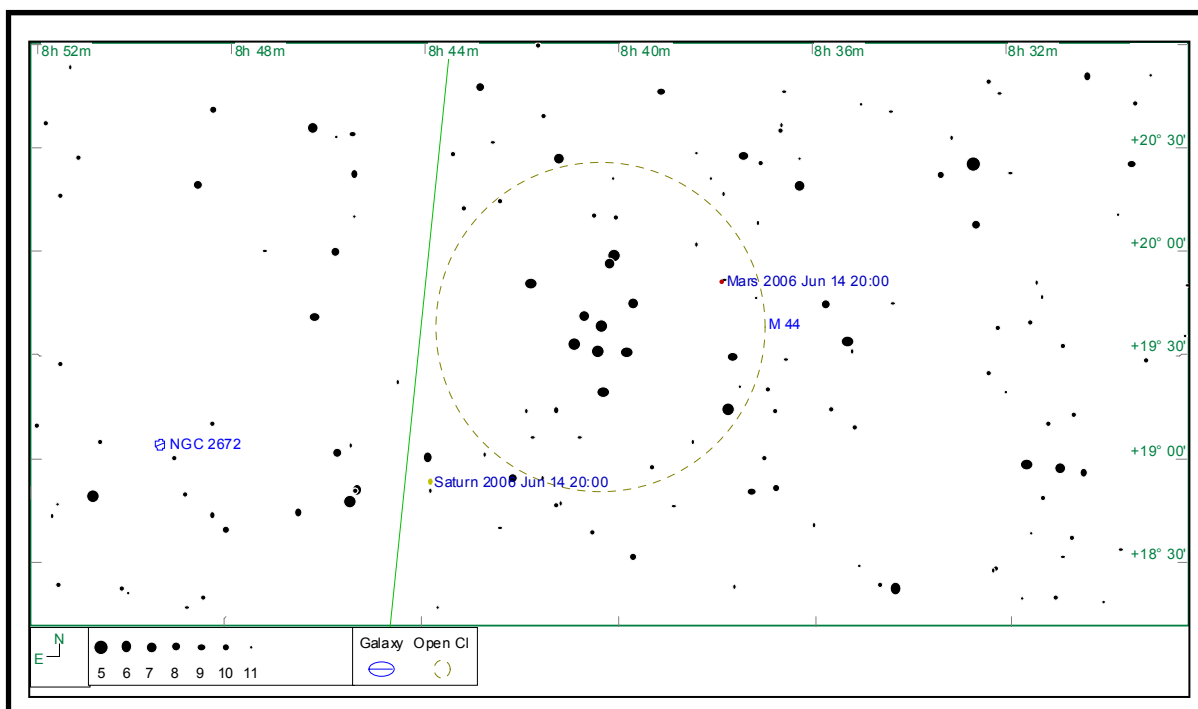
NGC 2632 (Praesepe) meets Mars & Saturn

(Continued on page 4)

(Continued from page 3)

Some of our neighboring planets are playing tag in the sky. Watch this dance each night starting around May 27th through the end of June. Go out each night and watch Mars race to catch and pass Saturn. During this race both of the planets will pass in front of M44. On June 18th at 01:00 Local time Mars and Saturn will be at their closest distance of 0.6 degrees. Unfortunately they will be just below the horizon at their closest, but watching the planets dance through out the month is an impressive sight.





Star Party Schedule

Event	Date	Sun Set	Moon			Jupiter		Saturn		Mars		Venus	
			Illum.	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
2006													
Moody Gardens	Aug26	19:47	7%	09:17	21:18	12:13	23:12	05:40	19:03	08:20	20:45	05:37	19:02
Haak Winery	Sep 23	19:13	1%	08:05	19:48	10:44	21:37	04:05	17:20	07:53	19:45	06:28	18:52
Fort McKavett	Oct 19 - 22	19:02	6%	05:28	17:47	09:48	20:28	02:52	16:08	07:51	19:09	07:35	19:03
Moody Gardens	Oct28	18:35	36%	13:31	23:46	08:59	19:42	02:02	15:12	07:22	18:30	07:30	18:38
Haak Winery	Nov11	17:25	61%	23:17	12:33	07:18	17:54	00:11	13:20	06:12	17:04	06:58	17:38

Our Cover Image, How It Was Done

The image of M57 and Comet 73/P Schwassmann-Wachmann 3 was taken with through a 16" Cassegrain with secondary focus at f/10. Guiding was accomplished with a TEC-140 f/7 guide scope. The telescope was mounted on a MK-100 GEM mount. The camera was a SBIG STL-11000M at -20C with an internal filter wheel and external and internal guider. Filters were Astro-nomik LRGB. The image was taken from Wildon, Austria.

Exposure guiding on comet head: L:R:G:B = 4000:600:600:600 sec (200-sec sub-exposures). Guiding on star near M57: R:G:B = 800:800:800 sec(200 sec sub-exposures). All exposures binned 2x2. Processing image acquisition and calibration in Maxim DL 4.11, median stacking for comet guided frames; DDP applied. M 57 area average aligned, DDP. Stacked comet guided image blurred in outer area and added to the M 57 image in lighten mode. Further processing in Imagesplus and Photoshop; North is up;

Ed Morrison

My dear friend, Ed Morrison, passed away at home on May 16th. He had been treated for cancer the prior week.



Ed and Alita lived four houses down the street from Eleta and me. Ed was a founding member of the Galveston Bay Area Scale Modelers Association, a long time member of JSCAS, a key figure in the Battleship Texas Commission, and the driving force behind GBASMA's project to equip the model of CVL-30 USS San Jacinto at the Bush Library with a complete 1/48 scale air wing.

Ed was a long-time member of JSCAS. His SP C-8 lived in his living room and was the first thing you saw when you entered their home. In the past, he and his son Jim supported our star parties.

He is survived by his dear wife, Alita Morrison, his sons, Jim and Gary, and Jim's wife, Stacey and darling daughter, Stephanie.

With much sorrow,
Ed Malewitz

Asteroid 16020 Tevelde

Ken Lester

I happened to stumble upon this on the Internet:

The Massachusetts Institute of Technology's Lincoln Laboratory has partnered with Science Service to promote science education through a program called the Ceres Connection. This program seeks to name minor planets after students in fifth through twelfth grades and their teachers. Students and teachers are selected through these Science Service competitions: the Discovery Channel Young Scientist Challenge, the Intel Science Talent Search, the Intel International Science and Engineering Fair, and the Intel Excellence in Teaching Award. All minor planets named in the Ceres Connection program have been discovered by LINEAR. (<http://www.ll.mit.edu/LINEAR/ceres.html>)

JSCAS member Vera te Velde was named a finalist in the 2003 Intel Science Talent Search, a science competition for high school seniors, for her physics project. She attended the Oklahoma School of Science & Mathematics, Oklahoma City, Oklahoma. For her efforts, an asteroid, 16020, was named for her. The asteroid, 16020 Tevelde, was discovered on February 12, 1999 by the MIT Lincoln Laboratory's Near-Earth Asteroid Research program.

Vera has been a JSCAS member since 2001. Here is an excerpt from the *2001 Fort McKavett Spring Star Party* article that appeared in the April 2001 Starscan:

"John and Vera teVelde drove in from Stillwater Oklahoma. Vera, 14, is the proud owner of a 10" equatorially mounted Newtonian. This was her first star party. Carl Reynolds helped her father, John, set up the scope, overcoming a problem with the mount. Bob Taylor and Triple Nickel helped in collimating her scope on Friday afternoon. Vera is very bright and always seems to be reading and studying. She asked great questions and made lots of new friends and received lots of advise about starting out in astronomy. She already keeps a log book and has subscribed to the newsletter. Triple gave her one of his famous grid log books. In addition she went home with a copy of the Starscan Archives. We welcome Vera as a new JSCAS member. It is refreshing to see someone of Vera's age so interested in Astronomy. Congratulations go to her dad for the tremendous support he has given her."

Congratulations to Vera for her hard work. Now someone needs to image 16020 Tevelde!

Living Astronomy History

Kelley Knight

In May, Kelley Knight participated in the Fort Chadbourne Days Event. She represented an 1890's astronomer to about 400 school children from all over West Texas. Her presentation consisted of the telling of some of the history of astronomy from after the Civil War to around 1900.

In addition, the children enjoyed looking at the Moon in period telescopes and field/opera glasses. Kelley had a modern version of Sir Newton's telescope design that was also used to look at the Moon.

She concluded her presentation by showing modern star charts, binoculars (that could be purchased at Wal-Mart) and beginner books that could be found at the library. She was excited at the response she received from the children. Several left very excited about stargazing.

In addition to making presentations to the children, she shared astronomy with other living historians. The Civil War/Indian War living historians liked learning a little about women astronomers and seeing a picture of the USS Kearsarge off the shores of Russia during an early eclipse expedition.

Kelley's adventure also included three chances to shoot a buffalo gun at a target of a white buffalo. Look out Annie Oakley.



About Fort Chadbourne

Fort Chadbourne was established October 28, 1852 by companies A and K of the Eighth United States Infantry. The fort was named for 2nd Lt. Theodore Lincoln Chadbourne who fought and was killed in the Mexican War in the Battle of Resaca de la Palma. Fort Chadbourne is one of the frontier forts established to protect the settlers moving west.

Fort Chadbourne is located halfway between Abilene and San Angelo, TX and is twelve miles north of Bronte on Hwy 277. A Fort Chadbourne billboard is located north of the entrance and a historical marker designates the entrance to the site.

The Pearline Maiden in the Moon

Kelley Knight

Have you ever heard of the woman/maiden in the Moon? Did you ever wonder where she came from? The maiden with the basalt-colored hair comes from an ad in the October 1891 edition of the Ladies' Home Journal.

On a journey through the old editions, while looking for dress styles for my living history astronomy outfit, her legend was discovered in a ragged bound edition of the magazine. The page was already out of the book so I think she'd been copied a few times. Seeing this reminded me of the time when I was learning how to show the skies to the masses and my friend Harriett showed the maiden to

me. She learned about the maiden from someone who showed her the skies. Harriett and I have shown her to possibly thousands of people. I'm sure some of you have shown her as well.

I wonder how long the maiden in the Moon will be in our culture. Will it last longer than "ho, ho, ho green giant" or some other advertising image.

The rabbit and the man have lasted a few millennia. The "green cheese" lasted since the time of Henry VIII. The "made of green cheese" comes from someone who made a greenish Stilton cheese. The wheels looked like the full moon and you can gather the rest of the lore.

Next time you look up at the Moon, find her and say, "howdy."

3,500,000 people may now see
the woman in the Moon ~
Price \$3,000

Not Since Eve left the Garden of Eden has Woman's sphere been so wide or so elevated as to-day. For centuries the Man in the Moon has had a monopoly; who ever heard of the Pearl Maiden in the Moon?—few, if any. Hear of her now with Pearline's compliments. The above illustrations are made from the finest photographs of the moon obtainable. The white outline in the small moon will locate the Pearl Maiden for you. Place the picture at some distance and you will see her in the large one—then you will have no difficulty in finding her in the moon itself, when the portion of the moon containing her is visible. When you find her you'll never see the Man in the Moon again; pardon the slang—he'll not be "in it." This magazine has from three and one-half to five millions of readers. The price of this page for one time is three thousand dollars. If each reader shows this Pearl Maiden to five others, more than twenty millions will see it, and in time the Pearl Maiden will take the place of the Man in the Moon, and our three thousand dollars will have been well spent.

If you see Pearline as here only to warn you against the many imitations, and advise you to use it as described on each package, to secure the best results.

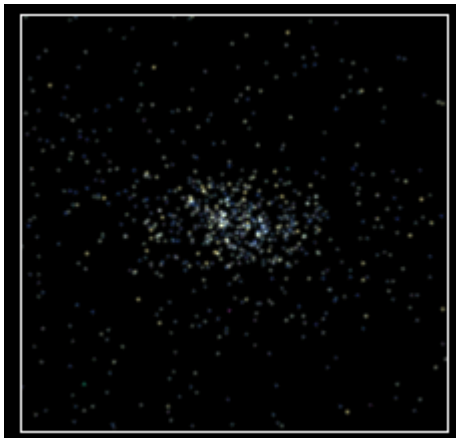
If you do not use Pearline the social evenings spent in finding the Pearl Maiden in the Moon will certainly bring you convincing evidence for it from those who use it.

If you see the imitations, try Pearline. The difference will be apparent and you'll continue to use it. Some of its advantages will only appear with time—for instance, its absolute harmlessness.

Millions NOW USE Pearline

New Milky Way Companions Found: SDSS-II First To View Two Dim Dwarf Galaxies

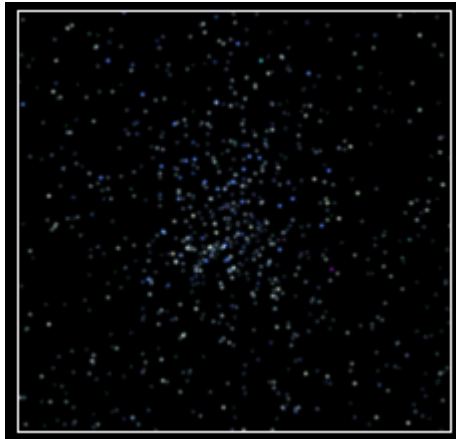
May 8, 2006



The Sloan Digital Sky Survey (SDSS-II) announced today discoveries of two new faint companion galaxies to the Milky Way.

The first was found in the direction of the constellation Canes Venatici (the Hunting Dog) by SDSS-II researcher Daniel Zucker at Cambridge University (UK). His colleague Vasily Belokurov discovered the second in the constellation Bootes (the Herdsman).

"I was poring over the survey's map of distant stars in the Northern Galactic sky — what we call a Field of Streams — and noticed an over density in Canes Venatici," Zucker explained. "Looking further, it proved to be a previously unknown dwarf galaxy. It's about 640,000 light years (200 kiloparsecs) from the Sun. This makes it one of the most remote of the Milky Way's companion galaxies."



Zucker emailed Belokurov with the news, and, just as discoveries often build upon one another, Belokurov excitedly emailed back a few hours later with the discovery of a new, even fainter dwarf galaxy. The new galaxy in Bootes, which Belokurov called Boo, shows a distorted structure that suggests it is being disrupted by the Milky Way's gravitational tides. "Something really bashed Boo about," said Belokurov.

Although the dwarf galaxies are in our own cosmic backyard, they are hard to discover because they are so dim. In fact, the new galaxy in Bootes is the faintest galaxy so far discovered, with a total luminosity of only about 100,000 Suns. But because of its distance (190,000 light years) it appears almost invisible to most telescopes. The previous dimness record holder was discovered last year in Ursa Major using SDSS-II data.

The figures are created from SDSS-II images. Each star in the photometric database is assigned a color and plotted as to the star's brightness. These images are filtered by selecting stars whose colors and magnitudes are characteristic of the stars in each galaxy.

Credit: Vasily Belokurov, SDSS-II Collaboration

New galactic neighbors are exciting in their own right, but the stakes in searches for ultra-faint dwarfs are especially high because of a long-standing conflict between theory and observations. The leading theory of galaxy formation predicts that hundreds of clumps of "cold dark matter" should be orbiting the Milky Way, each one massive enough in principle to host a visible dwarf galaxy. But only about ten dwarf companions have been found to date.

One possibility is that the galaxies in the smaller dark matter clumps are too faint to have appeared in previous searches, but might be detectable in deep surveys like SDSS-II.

"It's like panning for gold. Our view of the sky is enormous, and we're looking for very small clumps

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of stars," explained Cambridge University astronomer Wyn Evans, a member of the SDSS-II research team.

Added collaborator Mark Wilkinson: "Finding and studying these small galaxies is really important. From their structure and their motions, we can learn about the properties of dark matter, as well as measure the mass and the gravity field of the Milky Way".

The new discoveries are part of the SEGUE project (Sloan Extension for Galactic Understanding and Exploration), one of the three component surveys of SDSS-II. SEGUE will probe the structure and stellar make-up of the Milky Way Galaxy in unprecedented detail.

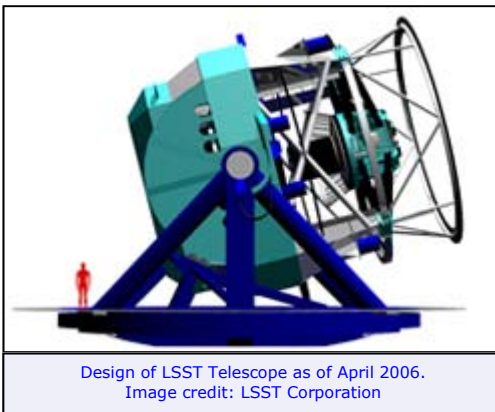
"I'm confident there are more dwarf galaxies out there and SEGUE will find them, said Heidi Newberg of Rensselaer Polytechnic Institute, co-chair of SEGUE.

Reference: <http://www.sdss.org/sdss.html>

Site in Northern Chile Selected for Large Synoptic Survey Telescope

Embargoed for release: May 17, 2006

Release LSSTC-04



Cerro Pachón, an 8,800-foot (2,682-meter) mountain peak in northern Chile, has been selected as the site for the proposed Large Synoptic Survey Telescope (LSST).

Scheduled to see "first light" in 2012, the 8.4-meter LSST will be able to survey the entire visible sky every three nights with its three-billion pixel digital camera, probing the mysteries of Dark Matter and Dark Energy, and opening a movie-like window on objects that change or move on rapid timescales: exploding supernovae, potentially hazardous near-Earth asteroids as small as 100 meters, and distant Kuiper Belt Objects. The decision to place the LSST on Cerro Pachón follows a two-year campaign of in-depth testing and analysis of

the atmospheric conditions and quality of astronomical "seeing" at four sites in Chile, Mexico, and the Canary Islands. The eleven members of the Site Selection Committee, chaired by Marc Sarazin from the European Southern Observatory, reviewed detailed proposals from two final sites, San Pedro Mártir in Baja California, Mexico, and Cerro Pachón, regarding their suitability for the project. The final selection of Cerro Pachón was made by the LSST Corporation Board of Directors based on a recommendation from the Site Selection Committee.

Important factors when considering a site for the LSST include the number of clear nights per year, seasonal weather patterns, and the quality of images as seen through the local atmosphere. The chosen site also needed to have an existing observatory infrastructure and access to fiber optic links, to accommodate the anticipated 30 terabytes of data LSST will produce each night.

Science Contact Information:

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Donald Sweeney, LSST Project Manager; 520-661-9247; sweeney@lsst.org

Media Contact Information:

Suzanne Jacoby, LSST Corporation; 520-881-2626; sjacoby@lsst.org

The director of the Astronomy Department at Universidad de Chile Leonardo Bronfman said "Chilean astronomers are enthusiastic about having the LSST sited in Chile and participating in its development and operation. We have unparalleled access to a wide suite of facilities in Chile, and are eager to utilize these resources to complement the strengths of LSST."

"The LSST will be the World's most powerful survey telescope and demands a superb site. We finally had a difficult decision between two wonderful sites at Cerro Pachón in Chile and San Pedro Mártir in Mexico. It's too bad we can't build two telescopes - one in each hemisphere." said Donald Sweeney, LSST Project Manager. "The final decision was influenced by the existing infrastructure at Cerro Pachón and the array of synergistic facilities in the south." Cerro Pachón is already home to the Gemini South 8-meter telescope and the SOAR 4.1-meter telescope. LSST will be located on a peak on Cerro Pachón named El Peñón.

"Siting LSST in Chile leverages the significant multi-wavelength astronomy investments already there," said University of California, Davis, Professor and LSST Director J. Anthony Tyson. "LSST will change the way we observe the universe by mapping the visible sky deeply, rapidly, and continuously. LSST will open entirely new windows on our universe, yielding discoveries in a variety of areas of astronomy and fundamental physics."

More information about the LSST including current images, graphics, and animation can be found at <http://www.lsst.org>.

NASA and Partners Release New Movies of Titan

Image Advisory: 2006-070

May 4, 2006

New views of the most distant touchdown ever made by a spacecraft are being released today by NASA, the European Space Agency and the University of Arizona. The movies show the dramatic descent of the Huygens probe to the surface of Saturn's moon Titan on Jan. 14, 2005.

The movies were put together with data collected by the Descent Imager/Spectral Radiometer instrument during the probe's 147-minute plunge through Titan's thick orange-brown atmosphere to a soft sandy riverbed. The Descent Imager/Spectral Radiometer was funded by NASA.

The data were analyzed for months after the landing and represent the best visual product obtained from the Huygens mission. It is the most realistic way yet to experience the Huygens probe landing. The movie "View from Huygens on Jan. 14, 2005," provides in 4 minutes and 40 seconds of what the probe actually "saw" during the 2.5 hours of the descent and touchdown.

"At first, the Huygens camera just saw fog over the distant surface," said Erich Karkoschka, team member at the University of Arizona, Tucson, and creator of the movies. "The fog started to clear only at about 60 kilometers [37 miles] altitude, making it possible to resolve surface features as large as 100 meters [328 feet]," he said. "But only after landing could the probe's camera resolve little grains of sand millions and millions of times smaller than Titan. A movie is a perfect medium to

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show such a huge change of scale."

For the second movie, scientists used artistic license and added sound to represent the different data sets collected. They re-created a scientifically accurate representation of the mission life in less than five minutes.

"These movies really demonstrate that the Huygens camera was very well designed for the job," said Jean-Pierre Lebreton, Huygens project scientist and mission manager at the European Space Agency. "They show so many different details of a landscape that covers only a tiny fraction -- one-thousandth -- of Titan's surface. This makes me dream of what a possible future mission to Titan may return of this wonderful and fascinating Earth-like world," he said.

The Huygens probe was delivered to Saturn's moon Titan by the Cassini spacecraft, which is managed by NASA's Jet Propulsion Laboratory, Pasadena, Calif. NASA supplied two instruments on the probe, the Descent Imager/Spectral Radiometer and the Gas Chromatograph Mass Spectrometer.

The Cassini spacecraft continues orbiting Saturn in its second year of its four-year tour. Cassini's next Titan flyby is on May 20, 2006. Twenty-two flybys of Titan are planned this year by Cassini, with 45 total flybys of Titan in the full tour.

The new movies and images are available at:

<http://saturn.jpl.nasa.gov>

<http://www.nasa.gov/cassini>

<http://saturn.esa.int> and

<http://www.lpl.arizona.edu/DISR/>

JPL Slide Show: The Infrared Universe



NASA's Spitzer Space Telescope is using its infrared eyes to turn the dark and dusty cosmos into a beautiful garden of colorful objects. Since its launch in August 2003, Spitzer has produced dozens of spectacular images.

Since its launch in August 2003, Spitzer has produced dozens of spectacular images. Click below to see some of these views.

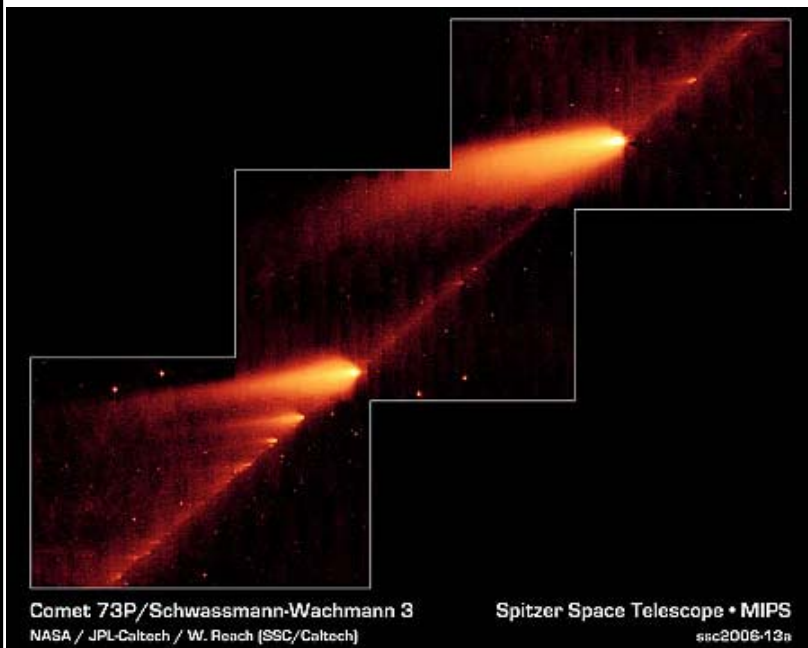
To see the slide show visit:

<http://www.jpl.nasa.gov/multimedia/slideshows/spitzer-200605/index.cfm>

Spitzer Telescope Sees Trail of Comet Crumbs

Image Advisory: 2006-075

May 10, 2006



NASA's Spitzer Space Telescope has snapped a picture of the bits and pieces making up Comet 73P/Schwassmann-Wachmann 3, which is continuing to break apart on its periodic journey around the sun. The new infrared view shows several chunks of the comet riding along its own dusty trail of crumbs.

Spitzer has revealed a trail of meteor-sized debris filling the comet's orbit," said Dr. William T. Reach of NASA's Spitzer Science Center at the California Institute of Technology, Pasadena. Reach and his team recently observed the comet using Spitzer.

Comet 73P/Schwassmann-Wachmann 3 consists of a collection of fragments that file along like ducks in a row around the sun every 5.4 years. This year, the bunch will pass by Earth beginning on May 12 before swinging by the sun on June 6. The fragments won't get too close to Earth, about 7.3 million miles, or 30 times the distance between Earth and the moon, but they should be visible through binoculars in the countryside night skies.

The icy comet began falling apart in 1995 during one of its tropical trips to the sun. Astronomers believe that its crusty outer layer cracked due to the heat, allowing fresh ice to evaporate and split the comet apart.

During the past six weeks, amateur and professional astronomers have been watching the comet fall apart before their telescopes' eyes. Spitzer viewed the broken comet from its quiet perch up in space May 4 to May 6, covering a portion of the sky that allowed it to spot 45 of the 58 known fragments.

The observatory's infrared view also provides the first look at the dusty trail left by the disintegrating comet after it splintered apart in 1995. The trail is made up of comet dust, pebbles and rocks that occasionally rain down on Earth in what is called the Tau Herculid meteor shower. From May 19 to June 19, as Earth passes through the outskirts of the trail, only a weak meteor shower is expected, with just a few "shooting stars" visible in the night sky. A larger meteor shower might occur in 2022 if Earth crosses near the comet's wake as predicted.

Spitzer's infrared eyes were able to see the dusty comet bits lining the trail because the dust is warmed by sunlight and glows at infrared wavelengths. Most of the dust particles, specifically the millimeter-sized nuggets, had never been seen before. Reach said that these particles probably represent the natural deterioration of the comet over the years, a process commonly observed in

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intact comets.

The comet dust also adds up to more evidence for the "icy dirtball" theory of comets. In recent years, more and more astronomers are coming to think of comets not as snowballs coated in dust, but as dirtballs crusted with ice.

"By measuring the brightness and extent of the debris trail, we are trying to find out whether most of the comet's mass disintegrates into vapors from evaporating ice, the house-sized chunks seen in images from the Hubble Space Telescope, or the meteor-sized debris seen in the Spitzer images," said Reach.

Reach and his team will continue to study the Spitzer data for clues to how the comet broke up. Their infrared data will tell them the sizes of the major fragments, which might indicate whether the comet did, as believed, crack under the thermal stress.

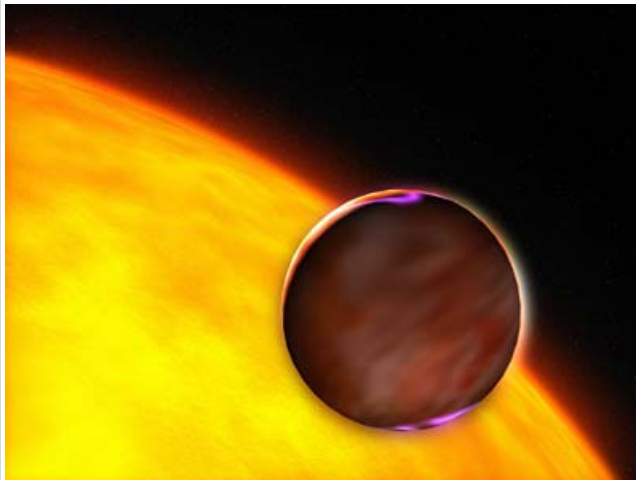
Comet 73P/Schwassman-Wachmann 3 should be dimly visible through binoculars on a clear night between the Cygnus and Pegasus constellations from May 12 to May 28. For more information about viewing the comet or the meteors, visit http://science.nasa.gov/headlines/y2006/24mar_73p.htm. None of the comet's fragments pose a danger to Earth. For more information, see http://www.nasa.gov/mission_pages/hubble/Comet_73P.html.

Members of Reach's team include: Dr. Michael Kelley of the University of Minnesota, Twin Cities; Dr. Carey M. Lisse of the Johns Hopkins University's Applied Physics Laboratory, Laurel, Md.; Dr. Mark Sykes of Planetary Science Institute, Tucson, Ariz.; and Dr. Masateru Ishiguro of the Institute of Space and Astronautical Science, Japan.

Astronomers Use Innovative Technique to Find Extrasolar Planet

Release Number: STScI-2006-22

Release Date: May 18, 2006



This artist's impression shows a dramatic close-up of the extrasolar planet XO-1b passing in front of a Sun-like star 600 light-years from Earth. The Jupiter-sized planet is in a tight four-day orbit around the star.

Credit: NASA, ESA and G. Bacon (STScI)

An international team of professional and amateur astronomers, using simple off-the-shelf equipment to trawl the skies for planets outside our solar system, has hauled in its first "catch."

The astronomers discovered a Jupiter-sized planet orbiting a Sun-like star 600 light-years from Earth in the constellation Corona Borealis. The team, led by Peter McCullough of the Space Telescope Science Institute in Baltimore, Md., includes four amateur astronomers from North America and Europe.

Using modest telescopes to search for extrasolar planets allows for a productive collaboration between professional and

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amateur astronomers that could accelerate the planet quest.

"This discovery suggests that a fleet of modest telescopes and the help of amateur astronomers can search for transiting extrasolar planets many times faster than we are now," McCullough said. The finding has been accepted for publication in the *Astrophysical Journal*.

McCullough deployed a relatively inexpensive telescope made from commercial equipment to scan the skies for extrasolar planets. Called the XO telescope, it consists of two 200-millimeter telephoto camera lenses and looks like a pair of binoculars. The telescope is on the summit of the Haleakala volcano, in Hawaii.

"To replicate the XO prototype telescope would cost \$60,000," McCullough explained. "We have spent far more than that on software, in particular on designing and operating the system and extracting this planet from the data."

McCullough's team found the planet, dubbed XO-1b, by noticing slight dips in the star's light output when the planet passed in front of the star, called a transit. The light from the star, called XO-1, dips by approximately 2 percent when the planet XO-1b passes in front of it. The observation also revealed that XO-1b is in a tight four-day orbit around its parent star.

Although astronomers have detected more than 180 extrasolar planets, XO-1b is only the tenth planet discovered using the transit method. It is the second planet found using telephoto lenses. The first, dubbed TrES-1, was reported in 2004. The transit method allows astronomers to determine a planet's mass and size. Astronomers use this information to deduce the planet's characteristics, such as its density.

The team confirmed the planet's existence by using the Harlan J. Smith Telescope and the Hobby-Eberly Telescope at the University of Texas's McDonald Observatory to measure the slight wobble induced by the planet on its parent star. This so-called radial-velocity method allowed the team to calculate a precise mass for the planet, which is slightly less than that of Jupiter (about 0.9 Jupiter masses). The planet also is much larger than its mass would suggest. "Of the planets that pass in front of their stars, XO-1b is the most similar to Jupiter yet known, and the star XO-1 is the most similar to the Sun," McCullough said, although he was quick to add, "but XO-1b is much, much closer to its star than Jupiter is to the Sun."

The astronomer's innovative technique of using relatively inexpensive telescopes to look for eclipsing planets favors finding planets orbiting close to their parent stars. The planet also must be large enough to produce a measurable dip in starlight.

The planet is the first discovered in McCullough's three-year search for transiting extrasolar planets. The planet quest is underwritten by a grant from NASA's Origins program.

McCullough's planet-finding technique involves nightly sweeps of the sky using the XO telescope in Hawaii to note the brightness of the stars it encounters. A computer software program sifts through many thousands of stars every two months looking for tiny dips in the stars' light, the signature of a possible planetary transit. The computer comes up with a few hundred possibilities. From those candidates, McCullough and his team select a few dozen promising leads. He passes these stars on to the four amateur astronomers to study the possible transits more carefully.

From September 2003 to September 2005, the XO telescope observed tens of thousands of bright stars. In that time, his team of amateur astronomers studied a few dozen promising candidate stars identified by McCullough and his team. The star XO-1 was pegged as a promising candidate in June

(Continued on page 16)

(Continued from page 15)

2005. The amateur astronomers observed it in June and July 2005, confirming that a planet-sized object was eclipsing the star. McCullough's team then turned to the McDonald Observatory in Texas to obtain the object's mass and verify it as a planet. He received the news of the telescope's observation at 12:06 a.m. Feb. 16, 2006, from Chris Johns-Krull, a friend and colleague at Rice University.

"It was a wonderful feeling because the team had worked for three years to find this one planet," McCullough explained. "The discovery represents a few bytes out of nearly a terabyte of data: It's like trying to distill gold out of seawater."

The discovery also has special familial significance for the astronomer. "My father's mentor was Harlan J. Smith, the man whose ambition and hard work produced the telescope that we used to acquire the verifying data."

McCullough believes the newly found planet is a perfect candidate for study by the Hubble and Spitzer space telescopes. Hubble can measure precisely the star's distance and the planet's size. Spitzer can actually see the infrared radiation from the planet. By timing the disappearance of the planet behind the star, Spitzer also can measure the "ellipticity," or "out-of-roundness," of the planet's orbit. If the orbit is elliptical, then the varying gravitational force would result in extra heating of the planet, expanding its atmosphere and perhaps explaining why the object's diameter seems especially large for a body of its calculated mass.

"By timing the planet's passages across the star, both amateur and professional astronomers might be lucky enough to detect the presence of another planet in the XO-1 system by its gravitational tugs on XO-1b," McCullough said. "It's even possible that such a planet could be similar to Earth."

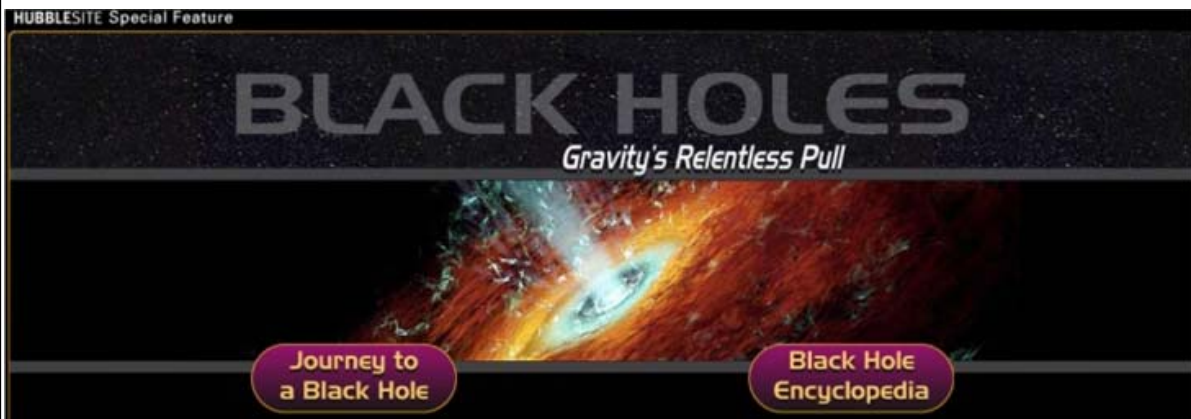
Astronomer Wins Top Prize For Creating Black Hole Web Site

Release No: STScI-PR06-21

Explore the world of black holes in an award-winning Web site created by a team led by Roeland van der Marel, an astronomer at the Space Telescope Science Institute in Baltimore, Md. The interactive Web site, called "Black Holes: Gravity's Relentless Pull," rescues black holes from the realm of science fiction and puts them back into the domain of science. Visit the site at:

<http://www.hubblesite.org/go/blackholes/>.

The Web site won the top prize for 2005 in the Pirelli INTERNETional Award competition, the first international multimedia contest for the communication of science and technology on the Internet.



Upcoming Events



Join Carlsbad Caverns in July for *Breakfast, Bats and Stars*.

Mark your calendars and join the staff of Carlsbad Caverns National Park for the 49th annual Bat Flight Breakfast and 2nd annual Celebration of the Night!

This year's Celebration of the Night! star party will begin the evening of July 28 and continue into the early morning hours of July 29. The Bat Flight Breakfast follows the star party, beginning at 5 a.m., Saturday morning.

Historically held the second Thursday in August, the park broke with tradition in 2005 and moved the breakfast to a Saturday in an effort to encourage more participation. This year, park staff moved both events to July and selected a weekend night optimal for night-sky viewing.

"We got an amazing response last year from Carlsbad residents and visitors," said Avelina Childress, coordinator for the Bat Flight Breakfast. "Many people have said to us in the past 'If you only had it on a weekend.' Well, last year, we moved it to a weekend and we doubled the number of people at the breakfast. I'd call that a success!"

Shannan Marcak, the star party's coordinator, said, "Moving the star party to the end of July, just after the New Moon, will hopefully move us out of the monsoon season and give us good night-sky viewing opportunities."

Activities will begin at dusk, on Friday, July 28, with the evening's Bat Flight program, where visitors watch as an estimated 400,000 Mexican free-tailed bats exit Carlsbad Cavern in search of their favorite meal—insects! The bat colony is capable of eating tons of insects a night.

The star party starts at 9:30 p.m. after the Bat Flight program. Telescopes will be provided, but visitors may want to bring their own binoculars, flashlights and lawn chairs. Star party programming will end at 3 a.m. just in time for a nature walk before an early-morning breakfast.

The Bat Flight Breakfast began in the late 1950s as a way to encourage visitors to see the bats' morning return flight. Unlike the shorter nighttime exodus out of the cave when the bats spiral up and leave the cave, the sunrise return to the cave normally spans several hours.

The breakfast—\$7 for adults and \$3 for children age 12 and under—includes cereal; ham, turkey and cheese croissants; yogurt and fruit; and juice, milk and coffee. The price includes free entrance to the self-guided portions of Carlsbad Cavern. Tickets for the Bat Flight Breakfast may be purchased during the star party or at the breakfast.

The annual breakfast is sponsored by the Carlsbad Caverns Activity Association and Cavern Supply Company in cooperation with the National Park Service and the Carlsbad Caverns Guadalupe Mountains Association.

Overnight camping will be allowed; however, space is extremely limited. Tent and car campers will be limited to two parking spaces and all vehicles will be limited to a 35-foot-length, including vehicles in tow.

Reservations are not accepted for the star party or the Bat Flight Breakfast. Astronomers planning to bring telescopes or other equipment to the star party should contact Shannan Marcak at 505.785.3134.

For Bat Flight Breakfast information, contact Avelina Childress at 505.785.3124 or Bridget Litten at 505.785.3024, or visit the park's website at <http://www.nps.gov/cave/>.

ALCON EXPO 2006
Arlington, Texas – Dallas / Fort Worth Metroplex
AUGUST 4-5, 2006

HOWDY! members of the Astronomy League are invited to Texas for the Astronomical League's annual grand gathering of amateur astronomers, ALConExpo 2006, in Arlington, Texas on August 4-5, 2006.

The Texas Astronomical Society of Dallas is host for this year's Astronomical League Convention and Exposition on the campus of the University of Texas at Arlington (UT Arlington). The University's College of Science is sponsoring us on the campus. Convention headquarters will be in the E. H. Hereford University Center.

MEMORABLE OCCASION: You will be enlightened by excellent speakers, special programs in UT Arlington's new state-of-the-art digital planetarium, the Astronomical League's Annual Awards Banquet, plus an astronomical trade show and vendor exposition featuring the latest innovations. Also, you will enjoy seeing old friends and making new ones, all who have the same interest ... the night sky!

LOCATION: UT Arlington is in Arlington, Texas, just off Interstate 30 in the Heart of the Dallas/Fort Worth Metroplex. You will be minutes from world-class museums, numerous entertainment facilities, such as Six Flags Over Texas, 10 professional sports venues such as the American League Texas Rangers, and only 15 miles from D/FW International Airport. If serious shopping is of interest, the malls in North Dallas are superb. If the Old West is of interest, the Stock Yards in North Fort Worth is a must!

ACCOMMODATIONS: Special rates for ALConExpo 2006 are available at the Marriott's SpringHill and TownePlace Suites in Arlington. Reservations must be made by July 5, 2006, for these rates. Shuttle service will be provided to/from the hotels, D/FW International Airport, and UT Arlington with limited hours. In addition, a limited number of rooms will be available in one of the University's residence halls - Arlington Hall - which is adjacent to University Center. Payment for these rooms must be received in advance by May 29, 2006.

SPECIAL EVENTS: The Astronomical League's Annual Council Meeting will be held in University Center on August 3, 2006. An exciting dinner and excursion to the Oscar E. Monnig Meteorite Gallery at TCU is also planned for the night of August 3, 2006. A Star-B-Que and star party are scheduled for Friday night, August 4, 2006. Additional surprises are planned in conjunction with other North Texas astronomical societies.

MORE INFORMATION: You may contact Convention Chair, Dr. Linda Fay McCalla, at lindamccalla@yahoo.com or the Convention Co-Chair Jeff Barton at chipdatajeffb@yahoo.com

Visit the official Alcon Expo 2006 website and register online at: <http://www.AlconExpo.com>

EXPLORE THE LONE STAR SKY!

While our club is not a member of the Astronomical League, some of our members are also independent members of the Astronomical League.

Interesting Website

Kelley Knight

May I suggest visiting the web site of the National Museum of Science and Industry in Britain.
(<http://www.scienceandsociety.co.uk/index.asp>) .

The image of the photon counter used at Mt. Palomar made me think of the SPPT that Dennis Webb promotes:

(<http://www.scienceandsociety.co.uk/results.asp?image=10324549&wwwflag=2&imagepos=1>)

Also see the fashion that will be all the rage for women doing astronomy outreach:

(<http://www.scienceandsociety.co.uk/results.asp?image=10419024&wwwflag=2&imagepos=9>)

Sky & Telescope and Astronomy Magazine Subscriptions – Don't Forget about the Club Discount!

Sky & Telescope offers a "Club Discount" on subscriptions. You can subscribe to Sky and Telescope for \$10 off the normal price (\$32.95 with the club discount). Astronomy magazine is also offering a club discount. JSCAS members can subscribe to Astronomy for \$34 a year. We need to have a minimum of five subscribers to take advantage of the discount. If you are a current subscriber, *please* contact me so I can put you on the list for the club discount when your subscription is due for renewal!

Contact me by the email listed on the JSCAS web site, catch me at a meeting, or send your check and renewal form to my home address: 2407 Elkton Ct., Pearland, TX, 77584. I'll put your renewal in the mail within 48 hours after I receive it.

David Haviland
Vice-president and Secretary

HOUSTON AREA ASTRONOMY CLUBS

Brazosport Astronomy Club

Meets the Third Tuesday of the month, 7:45 p.m.

At the Planetarium

400 College Drive

Clute, Texas

For more information, contact Judi James at the Planetarium

979-265-3376

Fort Bend Astronomy Club <http://www.fbac.org/>

Meets the third Friday of the month, 7:00 p.m.

First Colony Conference Center

3232 Austin Pkwy

Sugar Land, Texas

Houston Astronomical Society <http://spacibm.rice.edu/~has/>

Meets the first Friday of the month, 8:00 p.m.

University of Houston, University Park

Science and Research Building, room 117

North Houston Astronomy Club <http://www.astronomyclub.org/>

Meets the fourth Friday of the month, 7:30 p.m.

In the Teaching Theater at Kingwood College

20000 Kingwood Drive

Kingwood, Texas

Help turn off the lights...

Join the
International Dark-Sky Association (IDA)
<http://www.darksky.org>
"To preserve and protect the nighttime environment and
our heritage of dark skies through quality outdoor lighting."



Visit the homepage of the Texas IDA affiliate of the International Dark-Sky Association. Their web site is at:
<http://www.texasida.org/>.

Mercury Transit in 2006

On November 8, 2006, there will be a transit of Mercury across the Sun. A portion of the transit will be visible in the Houston Area. Here are some links with times and maps.

<http://sunearth.gsfc.nasa.gov/eclipse/OH/transit06.html>
<http://sunearth.gsfc.nasa.gov/eclipse/OH/image1/TM2006Nov08-Fig2.GIF>

For Sale

17.5" f4.5 Newtonian telescope with highly accurate microprocessor-controlled, stepper-based alt-az drive system with focal plane rotator. Designed and built by Andy Saulietis and the owner. Accepts ST4-compatible inputs for autoguiding. Mechanical and calibration work done by the owner to optimize system accuracy for autoguided CCD imaging. Original 1981 Coulter mirror refigured to smooth 1/8th-wave surface by Sky Optical in late 80's. Primary and secondary recoated with enhanced coatings group by PAP in early 90's. Optics in excellent condition. 80mm f5 finder. Breaks down to numerous major pieces for transport. With modest effort, can be a traveling scope, but better as a semi-permanent observatory.



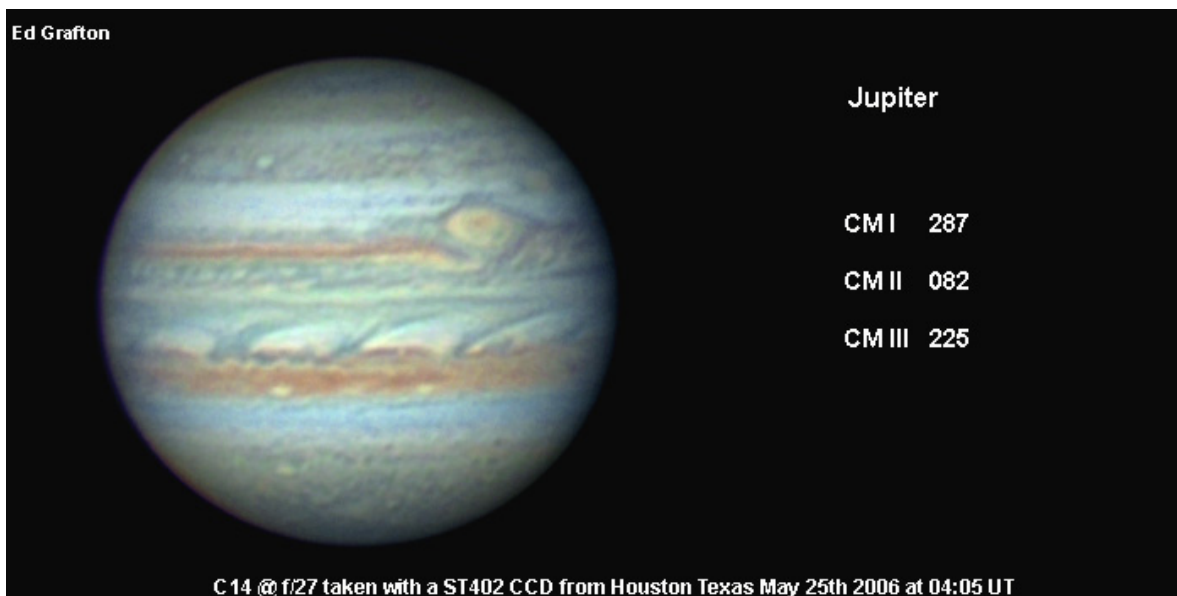
See my website, <http://www.ghq.net/akelly/>, for many images made with this system over the last decade.

Price negotiable. For pickup/delivery, maybe we can meet halfway. System breaks down for transport in a van.

1977 vintage orange-tube C8 with excellent optics. Original spur-gear drive supplanted by highly accurate Saulietis worm-driven HDPE gear. Includes Lumicon NGC Sky Vector digital setting circles with 12,000 object database. For autoguided imaging, system includes a modified Meade drive corrector for dual-axis autoguiding utilizing ST4-compatible inputs. Employs a Meade tangent-arm DEC drive motor. Includes field tripod and equatorial wedge. Other accessories TBD. See my website, <http://www.ghq.net/akelly/>, for many images made with this system over the past 10-15 years.

Price negotiable. For pickup/delivery, maybe can meet you halfway.

MEMBER'S GALLERY



Jupiter▲
©Ed Grafton



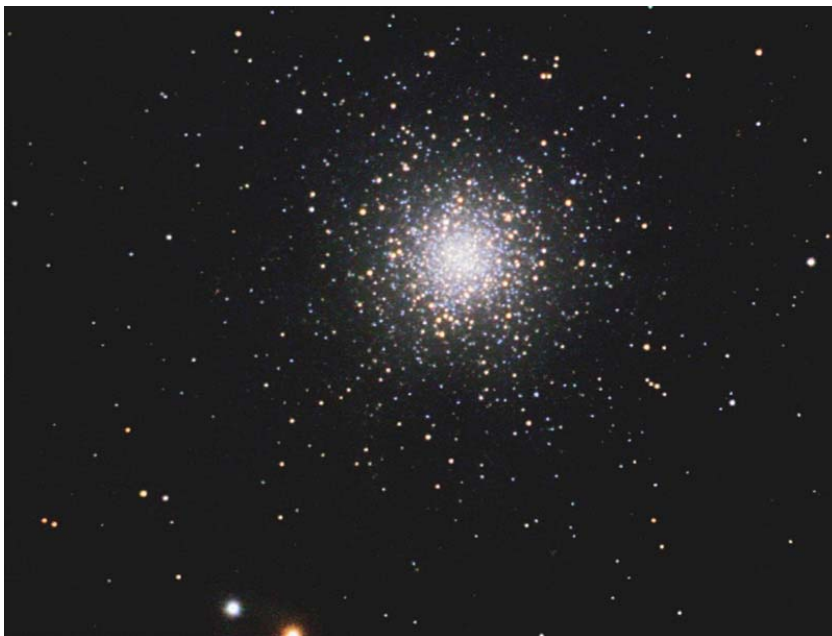
▲ M 51
©Chris Wells

Celestron C8 at f6.5 on PM1 equatorial mount. Meade 416 Imager with CFW L/RGB processing from 10 clear, 8 red, 8 green and 3 blue 1 minute images unguided and unbinned). Processed in AIP4WinV2 and Photoshop.



M 106 ▲
©Randy Brewer

This image was taken from Fort Davis, Texas on April 24th. 14.5" RCOS @ F/6 on a Takahashi EM-500 mount and a Takahashi pedestal. The camera was an SBIG ST-10XME using Don Goldman's LRGB filters. Exposure LRGB = 120:30:30:30 minutes.



◀ M 53
©Al Kelly

This image was taken from Friendswood on May 17th through a C8 Schmidt-Cassegrain using an MX916 camera.

L:R:G:B = 60:28:21:35 mins

Johnson Space Center Astronomical Society

An association of amateur astronomers dedicated to the study and enjoyment of astronomy. Membership is open to anyone wishing to learn about astronomy.

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June Meeting Agenda

June 9th, 7:30 p.m., Center for Advanced Space Studies/
Lunar Planetary Institute, 3600 Bay Area Blvd. (at Middlebrook Drive).

- Welcome!!!
- Guest Speaker: Break
- SIG reports, Star Party News
- Astronomical Oddities — Hernan Contreras
- Last Words, Door Prizes

Any unfinished discussions can be continued over food and beverages at a location to be announced at the end of the meeting.

Starscan Submission Procedures

Original articles of astronomical interest will be accepted up to **6 P.M. June 25th**.

The most convenient way to submit articles or a Calendar of Events is by electronic mail, however computer diskettes or CDs will also be accepted. All articles should include author's name and phone number. Also include any picture credits. The recommended format is Microsoft Word. Text files will also be accepted.

Submitter bears all responsibility for the publishing of any e-mail addresses in the article on the World Wide Web.

Editor's electronic address is: lesteke@swbell.net. Be sure to include the word Starscan in the subject line for proper routing of your message.

Starscan Staff

E d i t o r	Ken Lester
Associate Editors	Sheila Steele
	Ken Steele

Cover Image

Comet 73/P Schwassmann-Wachmann 3 and M57
Credit: ©Johannes Schedler

Comet 73/P Schwassmann-Wachmann 3 is a periodic comet approaching our Sun every 11 years. This comet was seen to split into several large pieces during the close-in part of its orbit in 1995. The loose ball of ice and dust left over from the early solar system is very sensitive to disintegration when getting close to the sun. However, this time the comet seems to be rapidly disintegrating with dozens of fragments, named alphabetically, now stretching several degrees across the sky. This image shows fragment B approaching the Ring Nebula M 57 in Lyra. See page 5 for technical details.