

The High Desert Observer

The Bulletin of the Astronomical Society of Las Cruces

November, 2006

November 17 Meeting

The meeting this month will be held November 17 due to the Thanksgiving holiday. We will meet at the usual time and place (7:30pm, room 77, DABCC). Dr. Nancy Chanover will speak on Gas Giants. See the ASLC website for additional details (<http://www.aslc-nm.org/>).

Imaging the Mercury Transit

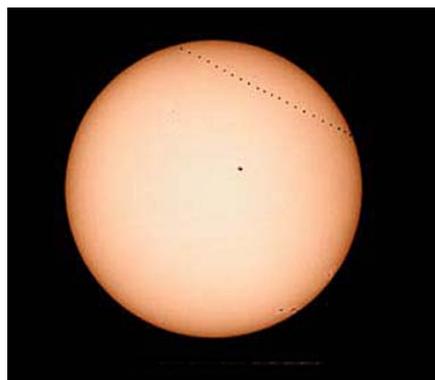
Dave Dockery

The transit or passage of a planet across the face of the Sun is a relatively rare occurrence. As seen from Earth, only transits of Mercury and Venus are possible. On the average, there are 13 transits of Mercury each century. In comparison, transits of Venus occur in pairs with more than a century separating each pair (1).

The principal events occurring during a transit are characterized by contacts, analogous to the contacts of an annular solar eclipse. The transit begins with contact I which is the instant when the planet's disk is externally tangent with the Sun. Shortly after contact I, the planet can be seen as a small notch along the solar limb. The entire disk of the planet is first seen at contact II when the planet is internally tangent with the Sun. During the next several hours, the silhouetted planet slowly traverses the brilliant solar disk. At contact III, the planet reaches the opposite limb and once again is internally tangent with the Sun. Finally, the transit ends at contact IV when the planet's limb is externally tangent to the Sun. Contacts I and II define the phase called ingress while contacts III and IV are known as egress (1).

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Transit of Mercury, D. Derick

The 2006 Mercury transit will occur on November 8 with contact I initiating the event at approximately 12:12pm locally and then the transit continuing for about five hours. Contact IV will occur at approximately 5:10pm during the sunset, which will complete at 5:14pm. Note that these transit times are approximate and could vary by a minute or two.

For those imaging the event, you'll need to use the same approved solar filtering setup that is used for visual observation, either white-light or H-Alpha.

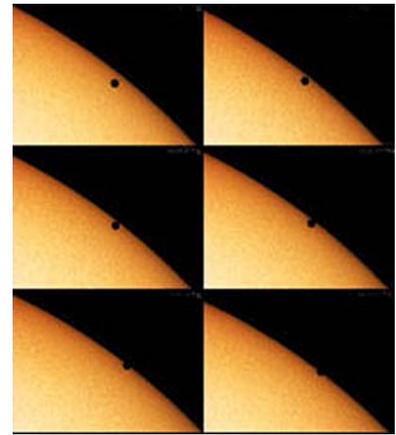
There are several approaches to capturing this event. One is to create a composite image of time lapsed exposures as in this image by D. Dierick from Ghent, Belgium. These were captured with a 155 mm

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Transit of Mercury, continued from page 1

EDFS Starfire refractor and a Nikon D100 digital camera. This imaging scale can also be used to create a time-lapse movie of the event. The problem with both of these approaches will be in capturing the final moments during sunset. Unfortunately, the final portion of the 2006 sequence will likely be incomplete or severely distorted by the low angle through the atmosphere.

Another approach is to use high magnification and capture individual images at various stages of the transit. A mosaic of images between contacts I and II can be interesting, as in this mosaic of the 2003 transit by Enrico Perissinotto. This is most likely the approach I will take to record the event. I plan to use my TV85 refractor and Nikon CoolPix 995 camera in an afocal configuration, coupled to a 35mm eyepiece. The zoom optics will afford me as much magnification as the seeing will support and with ingress occurring as the sun is near the meridian (maximum angle above the horizon), the atmospheric distortion should be minimized.



2003 transit, E. Perissinotto



*"Black Drop Effect,"
Johannes Schedler*

In talking to Walter Haas this week, one of the most interesting photo opportunities occurs briefly before contact II when the so-called "black-drop effect" is visible. As the trailing edge of the planet passes across the limb and moves into the body of the Sun it seems to be momentarily attached to the limb by a dark thread. Contact II occurs when this thread breaks and Mercury is surrounded by sunlight. Capturing this brief phenomenon may be difficult but should result in a striking image like this photograph by Johannes Schedler of Austria. The timing will be critical and using a webcam/Barlow combo at 5 frames per second might be the best approach.

Here are a few basic tips to successfully capturing images of the event this week:

1. Locate and check out all equipment you plan to use the night before the event and make sure everything is operating, batteries are charged, etc. Throw a large towel or cover in with the gear to provide shade for critical adjustments like focusing.
2. Set up your equipment early and focus carefully using sunspots or the solar limb. Make sure to look at a high-resolution test image to ensure that the focus is adequate. If you can't achieve a crisp focus, reduce the magnification and try again.
3. Make sure that no parts of the image are overexposed or saturated. Adjust your exposure time to be near the middle of the dynamic range (mid-histogram).
4. Take lots of images and throw out the bad ones. External conditions like seeing and wind will vary and multiple shots will ensure you get the best images possible.

Now let's get out there and get some great images this week. We won't have another chance at this until 2016 so make the most of it!

(1) From the *Observers Handbook 2006*, "2006 Transit of Mercury" by Fred Espenak, page 135.

As Far As the Eye Can See

Joseph Mancilla

Fall offers us many beautiful objects in the night sky. One of the more easily spotted objects is the Double Cluster in Perseus. A low power, wide field eyepiece is best for viewing these two large clusters. A little off the beaten path is Zeta Persei. This multiple star has 5 components: magnitudes 2.9, 9.5, 11.3, 9.5, 10.2. The separations range from 12.9 arcseconds to 120.3 arcseconds. I can spot 4 of the 5 in Las Cruces with my small 80mm refractor at 90x. Take a look. You'll be surprised.



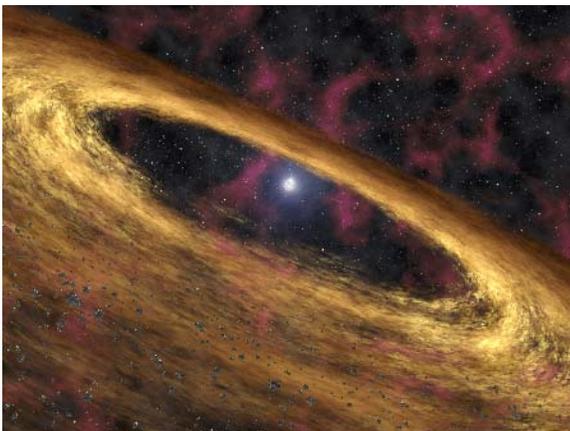
*The Double Cluster (NGC869/884),
George Hatfield*

In nearby Andromeda we have the famous Andromeda galaxy. This thing is huge! You really need a 2.5 degree field of view to do it justice. Large binoculars do very well with this object. Just east of Gamma Andromedae we find NGC 891. This beautiful edge-on spiral galaxy is a little tricky to find. At magnitude 12.0 it is pretty faint but once you see it, there is no mistaking it. First draw a line from Gamma Andromedae to Beta Persei (Algol). From Algol, go about 2/3 the distance to Gamma Andromedae and just a pinch north of that line. Scan the area slowly with a low power eyepiece.

A little more challenging is Stephan's Quintet in Pegasus. First find the galaxy NGC 7331. It is fairly bright at magnitude 9.1 and easy to find on any star chart. Once you have found it the scan about a half degree to the southwest. You should see a small fuzzy group of stars that look out of focus. Use higher power to get a better look. These galaxies are pretty faint (13th and 14th magnitude). In my 8" F/7 at 119x, I could make out 3 of the 5 galaxies. Those of you with larger scopes should be able to see them all. Happy hunting.

Deadly Planets

Patrick L. Barry and Dr. Tony Phillips



*Artist's concept of a pulsar and
surrounding disk of rubble*

About 900 light years from here, there's a rocky planet not much bigger than Earth. It goes around its star once every hundred days, a trifle fast, but not too different from a standard Earth-year. At least two and possibly three other planets circle the same star, forming a complete solar system.

Interested? Don't be. Going there would be the last thing you ever do.

The star is a pulsar, PSR 1257+12, the seething-hot core of a supernova that exploded millions of years ago. Its planets are bathed not in gentle, life-giving sunshine but instead a blistering torrent of X-rays and high-energy particles.

"It would be like trying to live next to Chernobyl," says

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Deadly Planets, continued from page 3

Charles Beichman, a scientist at JPL and director of the Michelson Science Center at Caltech.

Our own sun emits small amounts of pulsar-like X-rays and high energy particles, but the amount of such radiation coming from a pulsar is “orders of magnitude more,” he says. Even for a planet orbiting as far out as the Earth, this radiation could blow away the planet’s atmosphere, and even vaporize sand right off the planet’s surface.

Astronomer Alex Wolszczan discovered planets around PSR 1257+12 in the 1990s using Puerto Rico’s giant Arecibo radio telescope. At first, no one believed worlds could form around pulsars—it was too bizarre. Supernovas were supposed to destroy planets, not create them. Where did these worlds come from?

NASA’s Spitzer Space Telescope may have found the solution. Last year, a group of astronomers led by Deepti Chakrabarty of MIT pointed the infrared telescope toward pulsar 4U 0142+61. Data revealed a disk of gas and dust surrounding the central star, probably wreckage from the supernova. It was just the sort of disk that could coalesce to form planets!

As deadly as pulsar planets are, they might also be hauntingly beautiful. The vaporized matter rising from the planets’ surfaces could be ionized by the incoming radiation, creating colorful auroras across the sky. And though the pulsar would only appear as a tiny dot in the sky (the pulsar itself is only 20-40 km across), it would be enshrouded in a hazy glow of light emitted by radiation particles as they curve in the pulsar’s strong magnetic field.

Wasted beauty? Maybe. Beichman points out the positive: “It’s an awful place to try and form planets, but if you can do it there, you can do it anywhere.”

More news and images from Spitzer can be found at <http://www.spitzer.caltech.edu/>. In addition, The Space Place web site features a cartoon talk show episode starring Michelle Thaller, a scientist on Spitzer. Go to <http://spaceplace.nasa.gov/en/kids/live/> for a great place to introduce kids to infrared and the joys of astronomy.

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

WireFly X-Prize Cup Exhibit Report

Chuck Sterling



*ASLC Booth
at the WireFly X-Prize Expo*

By 6am in the morning, both days (Friday October 20 – Saturday October 21), the Las Cruces International Airport was lively with people rushing to finish their last-minute setups, with the Astronomical Society of Las Cruces among them. The telescopes were brought from within the tent and set up on the tarmac around the tables. The tables were soon covered with printed information about the club and its activities, the problems associated with light pollution, and not least important, offers to join the club. New members will have a chance to win a Meade DSI-II Pro CCD camera, donated by Meade. Meade also lent us a 10" LX-90 to

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X-Prize Report, continued from page 4

use for both days, but unfortunately we could not get it to work, and it wound up being only a conversation piece both days.

Friday was a busy day. School children came from Las Cruces and neighboring cities, some five thousand of them, herded from exhibit to exhibit by teachers carrying numbered signs and bullwhips (not really, though perhaps next year...). The place was carpeted with students all day, and there were lots of kids with an occasional embedded adult always in line to look through Richard's solar telescopes at the Sun or to see Saturn through my Meade LX-200 during the day. It seems both telescopes were a hit, but as the day wore on Saturn became more and more difficult to see. Finally at about 12:30pm we could no longer see it at all. We tried to get Jupiter in the field of view, but with no success; it was just too close to the Sun and there was not enough contrast to pick it out of the bright sky. The Solar scopes were of course useful all day.



Lined up to see Jupiter and Saturn



*Richard Jones
and solar observers*

Saturday was also busy, but at least not frantic. Saturday's crowd was more diverse, with a greater proportion of adults to children and lots of family groups. Richard and I actually got to say, "Okay, I'm taking a short break right now..." usually about t-minus-20 and counting for one launch or another. We were able to watch some really spectacular rocket launches, the Lunar Lander challenge, "Rocket Man," and flybys by a F-117A stealth fighter and an F-18 fighter. The F-117A banks and turns like it's under computer control, which is not surprising since it is under computer control and has to be just to stay in the air. And you don't hear it until it is right on top of you. The F-18 flew past three times, once at cruising speed, once very slow for a jet fighter, maybe 80 miles per hour, with its nose pointed high and engines roaring, and once really, really fast, subsonic but just barely. Those pilots must love doing that sort of thing.

Sometime during the weekend, and I no longer recall which day, the parachute on a rocket failed to open and it fell unhindered into the desert. The announcer, bless his heart, said, "Sometimes chute happens, sometimes it doesn't." I wonder how long he's been saving that line, hoping for a chance to use it.... Fortunately, that was the only crashed rocket; all the rest came down easy on their strings.

People find astronomy interesting even when faced with all the excitement of the X-Prize, as evidenced by the number of people around the tables asking questions on all sorts of related subjects. I have to admit to not knowing a lot about what actually went on at the tent; I was tending the Saturn watch, teaching people who had never before looked into an astronomical telescope how to find the field of view (easy; it was light blue) and where and how to look for a very small, very faint Saturn. On Friday, I barely had time to grab a sandwich and eat it at the rate of about one bite per watcher, which helped me to understand what last year's shorthanded volunteers went through. I also forgot to use sunscreen Friday until it was too late, but that's a different story.

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The Astronomical Society of Las Cruces (ASLC)

is dedicated to expanding members and public awareness and understanding of the wonders of the universe. ASLC holds frequent observing sessions and star parties, and provides opportunities to work on club and public educational projects. Members receive *The High Desert Observer*, our monthly newsletter, membership in the Astronomical League, including AL's quarterly *A.L. Reflector*. Club dues are \$35 per year. Those opting to receive the ASLC newsletter electronically, receive a \$5 membership discount. Send dues, payable to A.S.L.C. with an application form or a note to: Treasurer ASLC, PO Box 921, Las Cruces, NM 88004

ASLC members are entitled to a \$10 discount on subscriptions to *Sky and Telescope* magazine. S&T subscribers MUST subscribe and renew through the Society Treasurer for the special club rate. To avoid a lapse in delivery, this must be done when S&T sends their reminder, 4 months in advance.

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Minutes, October 2006 ASLC Meeting

Joseph Mancilla, ASLC Vice President, called the meeting to order. Joseph announced that our ASLC President, Vince Dovydaityis, was attending an AAVSO Meeting in Boston. Joseph asked for paper ballots to be turned in and he gave them to the ASLC Secretary for counting and discussion at the end of the meeting. Joseph asked for reports on the X-Prize Cup event. On October 20, there were approximately 5,000 school kids who came and they were able to view the Sun and Saturn during the day. On October 21, there was a more diverse crowd. The ASLC volunteers encountered some difficulty in getting people's attention and distributing the handouts. We also need a way to display imagery under bright lighting conditions. Meade donated a CSI camera to the ASLC and we plan to have a drawing to give it away to new members. There were two new members in attendance who came as a result of our X-Prize attendance. Dr. Neal Tyson stopped by the booth and the group had a nice discussion on Pluto and its planetary status. Rich Richins talked about the City of Rocks Star Party event. There were beautiful, clear skies. Most nights there were 15-16 people in attendance. For the Saturday Public Night, there were about 100 people. For up-coming events, John McCullough appealed for members to help out with the Renaissance Arts Faire.

Al Hughey discussed his experience in cleaning up and repairing the dome facilities for the ASLC's telescope at the NMSU campus. Paint is flaking and peeling off the walls. The facility needs to be sealed and repainted. In addition, the dome shutter is not operational. Al and Marie mentioned that they killed numerous black widow spiders in and around the dome. The exterior and interior of the facility needs to be sprayed against insects routinely. Joseph suggested that we should consider moving the facility to a darker sky area. Finally, the members were reminded that there would be a Mercury transit of the Sun on November 8

Janet Stevens announced that she was taking orders for the Royal Astronomical Society of Canada's "Observer Handbook" and calendar. She received a few more orders at the meeting. Members will pay Janet when they receive the order. Nils Allen announced that there were a number of star parties coming up at Las Cruces public schools during November and December. We need ASLC members to support these events. Nils is placing the announcements on dates and locations for these events on the ASLC Yahoo Group. There was a discussion whether the ASLC should become a member of the Meade 4-M group. There are potential benefits since Meade announces specials at times through this website. The consensus was that ASLC should become a member.

Rich Richins introduced Mr. Ken Abalos, Manager of the City of Rocks State Park. Ken discussed the past City of Rocks Star Party and some of the issues that the ASLC may be able to help improve for next year's event. Ken said that the star party was organized by John Gilkison, who heads the National Public Observatory (NPO). He did a great job, but there is room for improvement. They did not have enough telescope stations for the 100 or so participants in the Saturday Public Night. Many of the visitors turned away and left because of the long lines to view astronomical objects through the limited number of telescopes. He offered the ASLC members potential free public parking passes if we participate with our telescopes in next year's Public Night.

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October minutes, continued from page 6

For the evening program, our ASLC member, Joseph Zurlinden, gave PowerPoint presentation showing the progress and changes in the design and construction of his home observatory in El Paso. As Joseph increased his telescope capabilities, he needed to modify and improve upon his telescope pier and mount and home observatory facility. Joseph showed us some very innovative ways he was able to overcome some obstacles to construct a very nice dome and home observatory.

After the presentation, Bill Stein announced the vote count for the new ASLC officers. There were seven ballots and all voted for the slate without any write-ins. The remaining ASLC members ratified the vote. Here are the names of the new ASLC officers for 2007:

President:	Bert Stevens
Vice President:	Bill Stein
Secretary:	John McCullough
Treasurer:	Janet Stevens
Elected Director:	Al Hughey
Elected Director:	Chuck Sterling

Respectfully submitted by Bill Stein, ASLC Secretary

ASTRO-TIDBITS

Nils Allen

The Beginner's Corner will meet as usual at about 7:10pm on the next meeting night (November 17). At the October meeting we had good time looking at and naming a bunch of gorgeous astro-images on my laptop. We also discussed what was special and/or illustrated by each image. They included emission, reflection, dark, planetary nebulas, galaxies, and a few odd-balls. Fun for all!

To tell the truth, I haven't found a good Tidbits topic for the November meeting, so it will be a surprise. I will look for something special to talk about... appropriate for our (probable) last meeting for the year. Any suggestions are welcome – just let me know. Come and be surprised!

Educationally Speaking: Fall School Star Parties Galore!

Nils Allen

Calling all willing Astronomers! We have a number of requests for ASLC members to support star parties at various local schools – so far three in November and one in December (see below). More may yet materialize. A handful of volunteers (the usual suspects) have come forward already, but more than a bare minimum number of helpers is desired. Those lines at the scopes sometimes get rather long! Please consider if you can help out and let me know (Nils Allen, nils_a@comcast.net, 522-1456). More information will be forthcoming. Thanks!

November 9 - Jornada Elementary (on Elks)

November 16 - Tombaugh Elementary

November 14 - Camino Real Middle School

December 12 - Mesilla Park Elementary

X-Prize Report, continued from page 5

One important function of the Astronomical Society of Las Cruces is outreach, trying to interest more and more people in astronomy. I cannot think of a better way to do so than to make ourselves available at functions like this to entertain, amaze, and educate folks that might not otherwise have an opportunity to see the universe as only an astronomer can. We may accidentally find the next young Clyde Tombaugh and forever change the course of science. I will be here for the X-Prize and other functions next year and the next. I am profoundly regretful that it took me nearly sixty years to get here, but I am here to stay.

December Issue HDO

Articles for the December issue should be to me by Sunday, December 10. Material should be sent as email (gmhlcnm@msn.com) or as an attached Microsoft Word document. If you have any questions about submitting something to the HDO, please don't hesitate to contact me (532-5648 or via email). Thanks in advance! George Hatfield, Editor, ASLC Newsletter



Rich Richins getting ready for a night of viewing at the recent City of Rocks Star Party, Dave Dockery

ASTRONOMICAL SOCIETY of Las Cruces
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Las Cruces, NM 88004



ASLC - Sharing the Universe
With Our Community
for Over 50 Years