



# The High Desert Observer

The Bulletin of The Astronomical Society of Las Cruces

October, 2005

## X-cellent Outreach at the XPO

It had rained all night long and the Clear Sky Clock predicted more of the same most of Sunday. So I wasn't expecting too large a turn-out for the X-Prize Expo at the Las Cruces Airport. However, the weather Gods changed their minds and sun began to break through the clouds a mere hour before the start of the event. And clear skies meant people - lots of people - 20,000 people. And unlike the Mall walkers, this crowd was interested in space. It was a great place for ASLC to be.

The XPO opened early due to massive lines at the Fairground parking lot. From the early start until the end of the day, there was a constant crowd in front of our booth. Richard's 6" Meade refractor was a great eye-catcher. Once people were at the booth, they could watch a Powerpoint presentation featuring 60-something astroimages taken by Dave, Bill, Rich, Bert and both Steves. We had one of the 4.5 inch home-made Dobs on hand and folks could look at an image of Saturn that was taped to the far end of the exhibit tent. We also had information about upcoming ASLC activities including our MoonGazes, DSOs, astronomy classes, and telescope making classes



An estimated 20,000 people descended upon the Las Cruces Airport for the X-Prize Expo. ASLC was there with solar viewing and information about our club's activities. Image credit: Dean Moser.



XCOR's EZ-Rocket flew twice during the expo. Those flights were about the only break that our volunteers got during the day

information about upcoming ASLC activities including our MoonGazes, DSOs, astronomy classes, and telescope making classes

About the only downside to the event was that the huge crowd grabbed all of our ASLC handouts within 90 minutes of the start of the event. They also ate over 600 Tootsie-Rolls (some mouth candy to go along with the eye-candy). But we got four pages of names of individuals who are interested in our club's activities. Hopefully, the XPO will come to Las Cruces again next year, and a better-stocked ASLC will be there.

- Rich Richins, ASLC President

Upcoming ASLC Events	
<i>Please see the ASLC website &lt;aslc-nm.org&gt; for more information</i>	
October 22	CDNP Members Viewing
October 28	ASLC Monthly Meeting Speaker: Bert Verstraete (NASA)
November 5-6	Renaissance Faire (Young Park)
November 5	Deep Sky Observing (Upham Site)
November 12	Mars (and Moon) Gaze (International Delights Cafe)

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# ASLC Meeting Highlights

## October Meeting: “NASA’s TDRS facility” by Bert Verstraete.



Bert will give an overview of the NASA TDRS facility

The Tracking and Data Relay Satellites (TDRS) comprise the communication satellite component of the Tracking and Data Relay Satellite System (TDRSS). TDRSS is a communication signal relay system which provides tracking and data acquisition services between low earth orbiting spacecraft and control and/or data processing facilities. The system is capable of transmitting to and receiving data from spacecraft over at least 85% of the spacecraft's orbit.

The TDRSS space segment consists of six on-orbit Tracking and Data Relay Satellites located in geosynchronous orbit. Three TDRSs are available for operational support at any given time. The operational spacecraft are located at 41, 174 and 275 degrees west longitude. The other TDRSs in the constellation provide ready backup in the event of a failure to an operational spacecraft and, in some specialized cases, resources for target of opportunity activities.

Bert Verstraete, a long-time ASLC member, will give an overview of the NASA TDRS facility and a glimpse of the near-earth satellites that use TDRS services

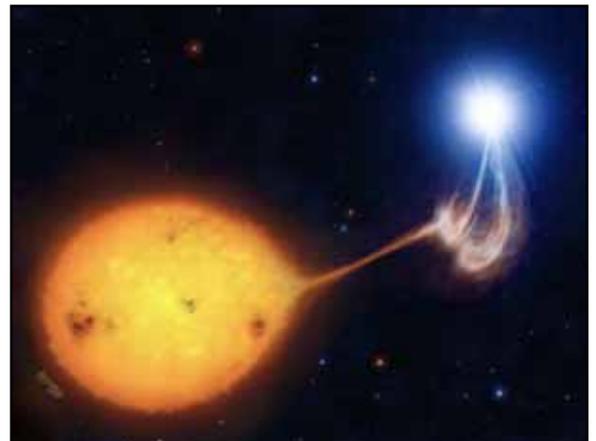


**ASLC monthly meetings take place at 7:30 pm usually on the fourth Friday of each month in room 77 at the main Dona Ana Branch Community College (just South of NMSU). A ‘Beginner’s Corner’ precedes each meeting.**

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## September Meeting: “New Results in Understanding on How Cataclysmic Variables are Made” by Dr. Tom Harrison.

Recent infrared spectroscopy has shown that normal cataclysmic variables do not follow the evolutionary history proposed by theorists. Strangely, cataclysmic variables with highly magnetic primaries do. There is no obvious explanation for this difference. Dr. Harrison spoke about how normal stars (like the Sun) evolve, and how this evolution changes when you put a star in a binary system. Studying cataclysmic variables gives us insight into how lower-mass binary systems evolve. He went on to discuss extending this research to high mass binary systems, those that eventually evolve into systems containing neutron star or black hole primaries



*Tom’s talk was recorded and may be viewed at: <http://aics-research.com/lectures/aslcnm/> ASLC is greatly appreciative of the efforts of Wirt Atmar in making ASLC’s lecture series available via web streaming.*

*Editor’s note: Wirt recently returned from 7th Annual Fellows Meeting of the NASA Institute of Advanced Concepts (NIAC). During his visit to the meetings, Wirt recorded a few of the presentations which he felt were of special significance. They may be viewed at:*

*<http://aics-research.com/lectures/niac05/index.html>*

# An 'A' in Our Future?!?

Standing high atop Tortugas Mountain (*aka* A-Mountain), sits NMSU's old A-Mountain Observatory. The facility hasn't been used in some years, but houses an excellent 24" telescope. It was a second home to our late friend, Scotty, who probably spent more hours up there than anybody. Some of us had talked about reopening the facility in Scotty's memory, and now it looks like there may be an opportunity.

Recently, there have been talks between the University, ASLC and the City of Las Cruces which could re-open the observatory as a living museum. If approved and funded, the road leading up the observatory would be improved, and necessary repairs would be made to the facility. ASLC members would act as 'wards' for the observatory - leading occasional tours for the public and gaining access to an excellent planetary telescope.

At this month's ASLC meeting, Shane Hollett, a major gifts officer for the University, will speak to the club regarding the project. Among other things, Shane needs to know if our membership will commit to supporting this venture. If implemented, this would be an incredible resource for our members as well as an opportunity for residents and visitors to tour a living piece of the area's astronomy roots. Please come and show your support on October 28th.

- rr



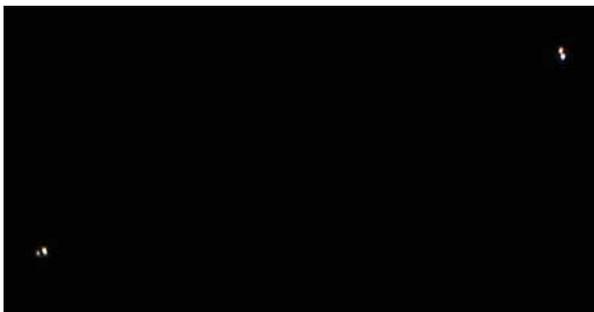
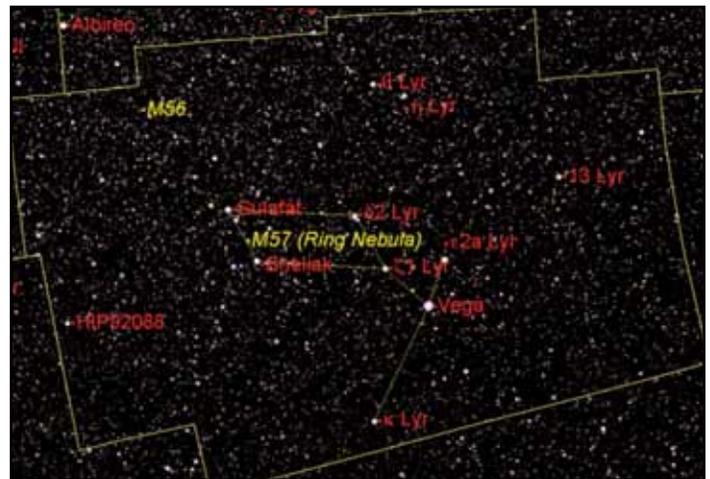
If current talk becomes reality, NMSU's A-Mountain observatory may again see light.

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## As Far As Eye Can See

The constellation Lyra rides high in the evening sky. Lyra is the home of the famous Double-Double star Epsilon Lyrae. Usually 100x or more will separate all the components. I have a different take on this star. How low can you go? What is the lowest power that will still let you resolve all four stars? Using my small 80mm refractor, I can usually resolve all the stars at 73x. One night under exceptional seeing conditions I was able to use 60x. Try it yourself. I think you will be surprised. Also in Lyra is the beautiful Planetary nebula M57.

There was an excellent article in the September 2001 issue of Sky and Telescope that dealt with detecting the faintest star in the vicinity of M57. The central star in the nebula is approximately mag.15. To see it requires high magnification and very steady seeing. I have not seen it myself. (not yet, that is ). I have been able to detect a 14.7 mag. star in the field. My 8 inch reflector is about the limit for a small aperture scope that can detect it. Those of you with 14 and 16 inch scopes should fare better under steady skies.



The Double Double (epsilon Lyrae) imaged by the editor. Interestingly, one of the first webcam images I ever did.

*Happy hunting - Joseph*

# October Sky Map

Chart shows positions of objects at about 9 pm (MDT) for mid October, about 8 pm for late October and about 6 pm (MST) for mid November



Oct 3



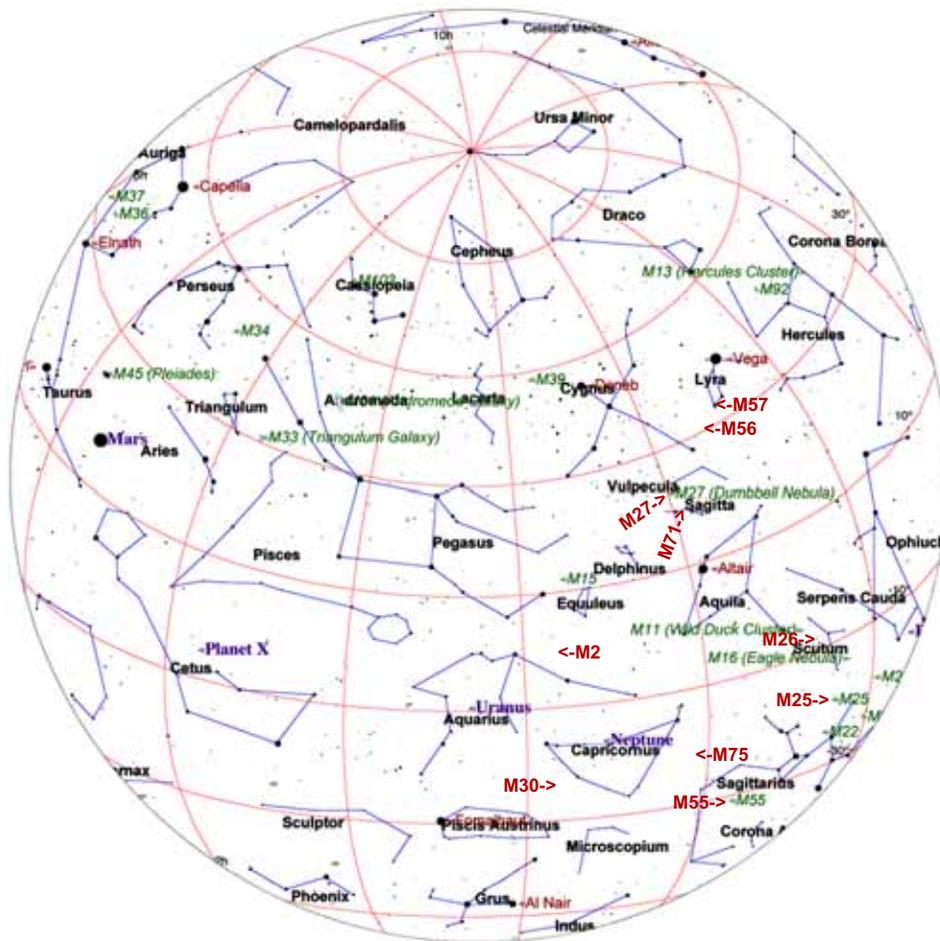
Oct 10



Oct 17



Oct 25



## Mars



In Aries  
Mag. -2.1  
Rises about 7:30 pm

## Jupiter



In Virgo  
Mag. -1.67  
In Sun's glare

## Saturn



In Cancer  
Mag. 0.34  
Rises about 1 am

## Astronomy Calendar

Dates are MDT. Please see the ASLC website  
<aslc-nm.org> for more information

- |            |  |
|------------|--|
| October 17 | Partial Lunar Eclipse                      |
| October 21 | Orionids Peak                              |
| November 3 | Taurids Peak                               |
| November 3 | Mercury, Venus greatest western elongation |
| November 6 | Mars at opposition                         |

## August's Challenge

August's challenge was NGC6384, a barred spiral galaxy in Ophiuchus. Though reasonably bright (mag 10.6), it's size (~6" x 4") gives it a low surface brightness.



## October/November Tour

### Binocular Objects

- 1) M2 (Globular Cluster)
- 2) M27 (Dumbbell Nebula)
- 3) M25 (Open Cluster)
- 4) M30 (Steve's Favorite Glob)
- 5) M55 (Globular Cluster)

### Telescope Objects

- 6) M26 (Open Cluster)
- 7) M56 (Globular Cluster)
- 8) M57 (Ring Nebula)
- 9) M71 (Globular Cluster)
- 10) M75 (Globular Cluster)

Joseph's Challenge - IC 5146  
OC+Neb (Cyg) 7.2 21H 53.6m, +47° 17.5'

# The Steve Smith Observatory Story: Part 2

Contributed by Tim Barnett-Queen (photos by Steve Smith)

This is a continuation of the article from August's HDO about Steve Smith's backyard observatory

## Stage 2 – The Pier, a Big Mistake and a Little Power



Pier was put in on July 1, 1996

After using his observatory without a roof for a while Steve was ready for the next level of convenience. His interest in astrophotography had been rekindled about this time so he began to look for a way to reduce the time and effort needed to critically polar align his scope. He quickly discovered he needed a permanent mount for his wedge.

He researched piers and was surprised by the size of footings that people were using. He excavated a 3 X 3 X 3 foot hole in the ground for the footing for his 10" SCT. This would ensure that there would be little or no settling and would give him a small "fudge factor" should he decide to buy his monster dream scope someday. The pier itself was a 6" diameter, 7 foot long steel pipe. Steve said having more energy than sense he decided to mix the cement myself and pour it into the hole. It took just under 30 bags of cement and the better part of a day to get it all done.

The day following the cement pouring, Steve was looking at the pole sticking out of the ground and decided that it would cause him much grief. Thinking the pier should be as rigid as possible, he filled the pipe with concrete. Steve cautions, if you ever build a pier DON'T DO THAT! (explanation below) To the top of the pier he welded a flat plate to hold the wedge of his SCT. He also mounted a small shelf around the pier to hold eyepieces and other astrophotography gear, then all was painted white.

Unfortunately, the extreme rigidity of the resulting pier caused the forks of his SCT to oscillate back and forth wildly! Vibrations took up to 10 seconds to dampen. After spending a year trying numerous things to solve this problem (some pretty successfully), Steve reports he ended up cutting the pipe off and welding on a replacement. The replacement was filled with sand, which helps dampen out vibrations nicely. Live and learn!

Next he ran electricity to the observatory. He dug a 120 foot trench from his closest circuit box and ran direct-burial electrical wire for the project. He then installed an outdoor floodlight (remember, no roof yet) and several waterproof electrical outlets inside the observatory.

What a difference these two enhancements made! Once he had polar aligned the wedge, it stayed on the pier permanently. Because it was exposed to the elements due to no roof, he simply covered it with a waterproof bag. Steve reported he never had any problems leaving it out this way. Set-up was now a simple matter of putting the scope on the wedge and connecting the power. Polar alignment issues were a thing of the past! He also didn't have to lug the tripod or wedge out each time he wanted to observe or image. Now, he just had the OTA to carry. An additional side benefit was that the observatory now seemed much bigger inside. This was because the pier takes up much less room than the tripod did. With power in place, he moved in a radio and other amenities. On very cold evenings, he's even been known to take a heating pad out to sit on. Of course, now he also had light available during set-up and take-down. His observatory stayed this way for over 1 year. During that time his astrophotography output increased, as did the number of observing sessions each month. Steve was a very happy camper.



The finished pier!

Next month: The next phase of Steve's evolving personal observatory.

# Three ASLC Winners at This Year's LodeStar

The LodeStar Astronomy Center and The Albuquerque Astronomical Society (TAAS) have announced the October 15 opening of the fourth annual "Astro-Images of New Mexico: Portraits from the Foothills of Space" astrophotography contest exhibition. The exhibition, a celebration of the unique beauty of the New Mexico sky, features 29 celestial images taken throughout the state of New Mexico by amateur photographers. Images were submitted in four categories: Land & Sky, Plate/Film/Digital, Photo Illustration, and CCD (very light-sensitive digital imaging).



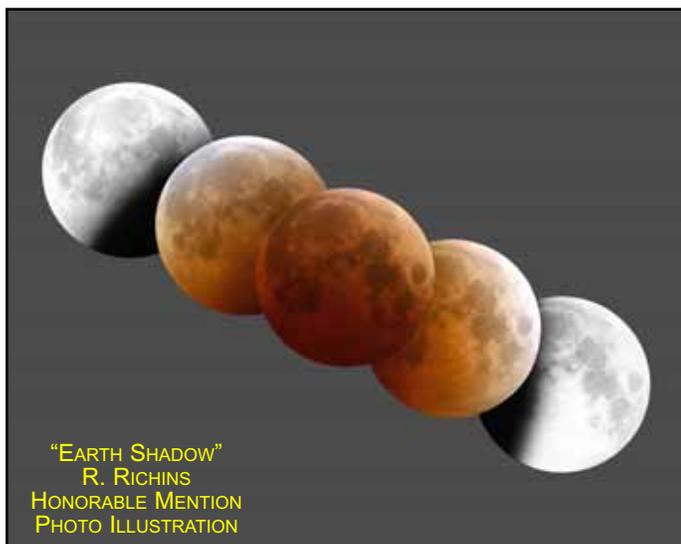
Three images by ASLC members were recognized in this year's contest. Two were by Dave Dockery including first place in the Plate/Film/Digital category for his image, "Desert Swan". Dave also took second place in the Plate/Film/Digital category

with his image of "The Seven Sisters". Rich Richins picked up an honorable mention in the Photo Illustration category for his eclipse series entitled, "Earth Shadow".

The images will be on display through February 28, 2006 at the LodeStar Astronomy Center, located in the New Mexico Museum of Natural History & Science in Old Town Albuquerque. The exhibit is open daily from 9 a.m. to 5 p.m. and is included with LodeStar or Museum admission. For information, call 505-841-5955 or visit [www.lodestar.unm.edu](http://www.lodestar.unm.edu) or [www.taas.org](http://www.taas.org).

The LodeStar Astronomy Center, located in Old Town Albuquerque, is a University of New Mexico project in partnership with the New Mexico Museum of Natural History & Science. The Center includes a planetarium, motion-simulation theater, observatory and exhibit gallery. For information, call 505-841-5955

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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 *ASLC Bulletin*, 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 Bulletin* 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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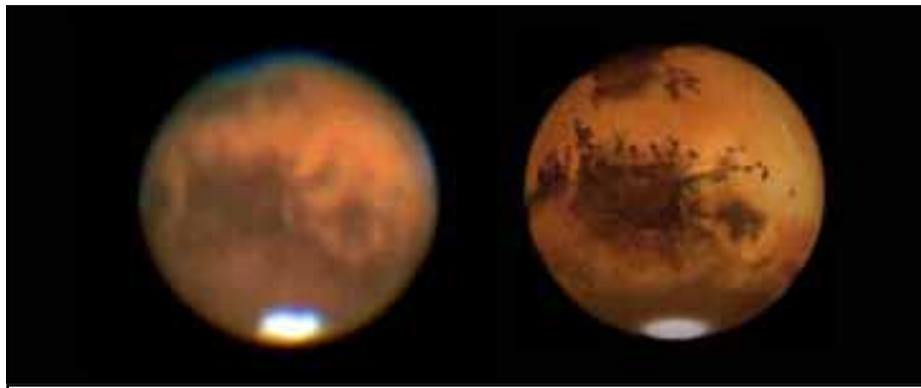
Emeritus (life) Members:

Walter Haas,

## Dave's Astrophotography Corner

### Imaging Mars

We've come again to the point in our orbital dance with the red planet most favorable for imaging those interesting surface details. It's been over two years since we've had such a grand opportunity to observe and image the red planet. Although closest approach will be farther away for this apparition, it will be much higher in the sky for those of us in the northern hemisphere (close to 73 degrees in alt. from Las Cruces.) Imaging will be optimal for the next month with opposition occurring Oct. 30th.



Mars captured by Dave during the last apparition (CalSky simulation on right)  
Image acquired on 8/29/03 12:18 AM MDT, Las Cruces, NM  
ToUCam @ prime focus on ASLC 12.5 Cassigrain

Webcams have become the camera of choice for planetary imaging over the past few years, and I've included a simple check list for planetary webcam imaging:

1. Watch the Clear Sky Clock for a night with good to excellent seeing conditions
2. Set up your telescope well before imaging and allow it to thermally match the ambient air temperature. (Note: planetary imaging can be done from the comfort of your backyard.)
3. Check collimation after the cool-down period.
4. Install the webcam and possibly a Barlow lens appropriate for the seeing conditions (usually 2X – 3X)
5. Focus on a nearby star using a Hartman mask. (Avoid saturation!)
6. Center Mars in the camera field of view and set the gain and exposure levels to capture short unsaturated frames. Higher gain will minimize the exposure time and help capture those moments of excellent seeing but watch for noise.
7. Ensure that the frame rate is set for 5 – 10fps. Higher frame rates will cause loss of detail due to compression.
8. Set the video capture filename and directory
9. Capture a series of AVI files and recheck focus periodically during extended imaging sessions.
10. Share your results!

Now dust off those cameras and let's get some good Mars images this month.

- Dave

# Proposed By-Law Amendment would Sync Memberships

October is the time each year for our club to come together and elect officers for the coming year. This year you're also being asked to consider a change in the club's By-Laws. The proposed amendment affects Article III, Section I (Membership). Specifically, it would cause all members' memberships to expire at the same time each year - on September 30. Currently, memberships expire throughout the year - a situation that causes some grief to the club Treasurer, Secretary and Bulletin Editor - all of whom must review the Club roster every month to see who has or has not renewed their membership. They're not the only ones who get grief. Most members don't know the anniversary date for their membership. Allowing the club to synchronize all memberships will save time and confusion. If adopted, most members will register for only a partial year during 2006 - one that expires on September 30. A sliding fee rate will apply depending on the duration of the membership. After that, everybody will be on the same schedule - allowing your club officers to use their time for better purposes. Please read the text of the proposed amendment and vote. A two-thirds majority is required since this represents a change in our By-Laws. *- Rich Richins, ASLC President*

## ASLC IMAGE GALLERY



The Helix Nebula, NGC 7293, imaged by Rich at the White Sands Star Party (September 30, 2005). Hutech-modified 300D and C11. Autoguided with ED80 and GuideDog



The Owl Nebula, M97, imaged by Bill Stein at New Mexico Skies with a Meade 16" LX200 and SBIG ST-2000X



An admittedly pathetic attempt to image Mars with a dslr. Foolishly attempted by Rich through his C11. Next time he'll use a webcam!

**ASTRONOMICAL SOCIETY  
of Las Cruces, New Mexico**  
PO Box 921, Las Cruces, NM 88004



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