



The High Desert Observer

The Bulletin of The Astronomical Society of Las Cruces

August, 2005

Rain, Rockets and Reaching Out

Like many of you, the monsoon season has dramatically cut into my observing time. It has, however, given me some time to work on my truss tube scope with Nils (it's really almost finished) and work on a bathroom wallpapering project (it's barely begun). It's also given me some time to do some thinking about upcoming ASLC events. We have some excellent outreach opportunities this Fall. The White Sands Star Party, this Fall's Mars opposition and the Renaissance Faire are all great opportunities for the public to meet us. The question is - how can we best utilize our resources?

I believe that our Renaissance Faire presence will be greatly enhanced by the addition of H-alpha solar observing (three club members now own H-alpha scopes!). In addition, we'll be doing some daytime observing (ala TSP) of Saturn and the crescent moon. More info will be coming soon so get your costumes ready!



H-alpha views of the sun, like this image by Steve Smith, should add to Renaissance Faire-goers' pleasures

For the Mars Event, Dave suggested that we partner with NMSU, and invite Dr. Jim Murphy to speak. The Sun-News has already begun inquiring about our Mars viewing plans, so I think we can count on some good publicity. We just need to coordinate with NMSU. While at the Rocky Mountain Stare Stare last month, one of the attendees said that his club links up with the local rocketry club for public events. Seemed like a good idea, so I contacted the local rocketry club (FLARE) and they seem delighted at the prospect. We've just begun formulating some ideas, but perhaps FLARE will host an evening launch (just East of the NMSU football stadium) followed by a presentation and viewing. It could be an exciting evening for all ages (kids really like the rockets).



Finally, there's White Sands. Typically, there are hundreds of visitors to the Saturday night public event. While this is not really an ASLC event, I think we should have ASLC promotional material such as Nils' ATM workshop, and upcoming ASLC events readily available since many of the attendees will be from Las Cruces. Finally, remember to volunteer a bit of your time to support WSSP.

- Rich Richins, ASLC President

Upcoming ASLC Events

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

- August 11 - The Perseids from Upham
- August 13 - MoonGaze (Int'l Delights)
- August 26 - ASLC Board Meeting (7 pm, DABCC)
- August 26 - ASLC Monthly Meeting (7:30 pm, DABCC)
- September 3 - Deep Sky Observing (Upham)
- September 9-10 - Project Astro Training (Sunspot, NM)

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ASLC Meeting Highlights

August Meeting: “Recent Studies on Saturn’s Atmosphere” by Nancy Chanover.



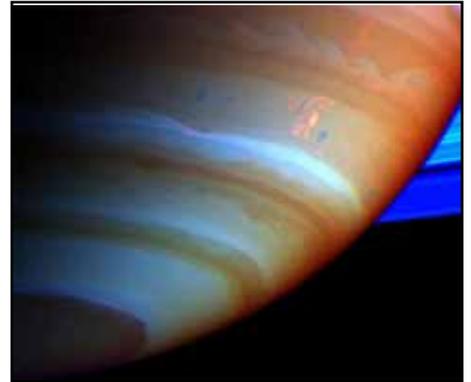
Dr. Nancy Chanover, a specialist in planetary atmospheres and a faculty member in the NMSU Astronomy Department, is our featured speaker for August

The recent arrival of the Cassini spacecraft to the Saturn system heralded a new era in the exploration of Saturn's atmosphere.

The new Cassini data, along with supporting ground-based observations, are being acquired with more sensitive and sophisticated instrumentation than during the Voyager epoch of the early 1980's. This has led to an improved understanding of Saturn's atmosphere, including its chemistry, cloud formation and evolution processes, and dynamics. Recent results pertaining to some of these aspects of Saturn's atmosphere will be discussed.

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).



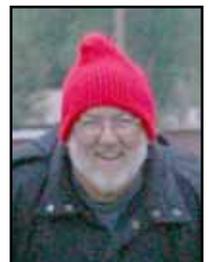
August Beginner's Corner:

Summer Signposts - we will explore some well-known & lesser-known facts and maybe even some stories about the stand-out stars and constellations of our summer night sky.

Beginner's Corners immediately precede the regular ASLC monthly meeting starting at 7:00 pm in Rm 77 of the main DABCC campus.

July Meeting: “Low-Cost Webcam Autoguiding” by Steve Barkes.

Steve, author of the immensely popular Guide-Dog webcam autoguiding software, talked about autoguiding options available to individuals using CCD cameras and webcams. He shared his reasons for developing the software (*i.e.* an hour of manual guiding), and guided the audience through the interface of his software. Guidedog is about to undergo a major revision with a 'pro' version (containing many enhancements) to be released in the very near future.



Throughout his talk, Steve showed a number of astrophotos that he has taken (using GuideDog) that were previously unknown to humankind. Yes Virginia - Steve can do astrophotography!

Steve'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.

July Beginner's Corner:

(see educational article on page 6)

Eye Candy

by Steve Barks

Well it's that time of year again....MONSOON!! It just seems like there's never a good time to do any observing. We had a clear night during the week before new moon, and I felt obligated to take a day of vacation from work the next day so I could stay up all night and get some observing/imaging in. Dave Dockery, Rich Richins and I had a great night at Upham when you discount all of the moths that landed in my coffee.



But as bad as things seem to be here, they could be much worse. I'm still on the email list from my old club in Greenbelt Maryland. Their observing site is a football/softball/soccer complex which is located within a few thousand feet of the I-495 the Capital Beltway between Baltimore and Washington DC. I saw a report from a recent star party where some of the guys were observing. One comment that was made was that one person "believed" they had found M-13 but needed a couple of other people to be able to confirm it!!! And these are not beginning stargazers.

My latest visual target has been the Helix Nebula. It's well placed after midnight and is a really large planetary nebula. I was somewhat surprised that I'd never taken the time to look at it, and after seeing some images on the Internet, made a commitment to hunt it down. With the 8" and a nebula filter, it looks like the Ring Nebula on steroids. Not as bright, but it really fills up the eyepiece.

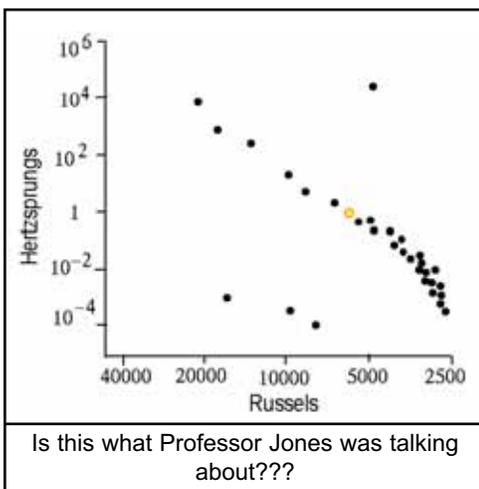
And finally I had a good look at Mars during our last outing. At 200X in the 8" it is really starting to get good. The southern polar cap was quite prominent, and even showing a ? phase I could detect some surface markings. Mars should present quite a show here in a couple of months.

And hopefully we will be done with the....MONSOON!

What's the R-H Diagram?

This anecdote may be of some interest to almost any teacher or to anyone who has studied the many implications of the Russell-Hertzsprung Diagram, which basically relates the luminosity and surface temperature of stars, and has all kinds of implications for astronomy students.

Professor Jones was having great difficulty in deciding what grade to give to student Smith. Was



Smith really very smart about the subject and at the top of the class? Or was he just a master deceiver or future politician, very good at pretending to know all about everything when he really knew nothing??

One day the teacher asked on a written test : "What is the R-H Diagram"? The student answered : "A plot of R against H".

Then the professor knew exactly what grade to give.

- Walter

August Sky Map

Chart shows positions of objects at about 10 pm (MDT) for mid August, about 9 pm for late August and about 8 pm for mid September



Aug 5



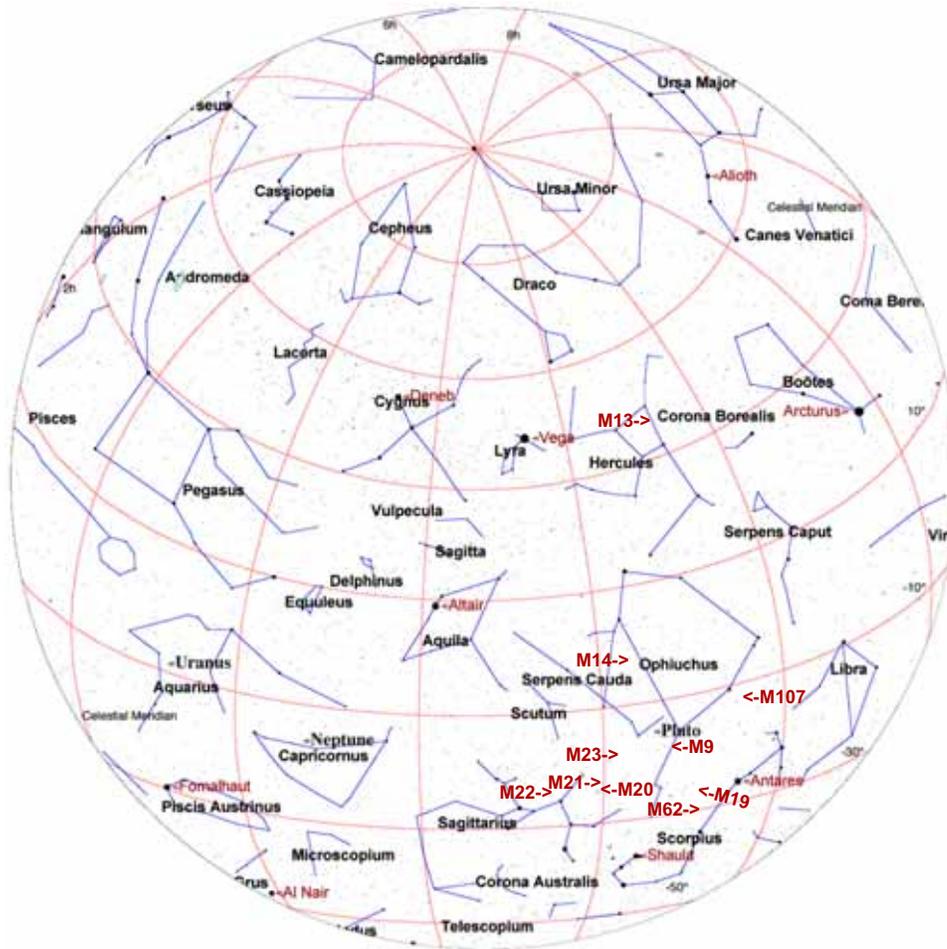
Aug 13



Aug 19



Aug 26



Mars



In Aries
Mag. -0.7
Rises about 11:30 pm

Jupiter



In Virgo
Mag. -1.8
Sets about 10:15 pm

Saturn



In Cancer
Mag. 0.26
Rises about 5 am

Astronomy Calendar

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

- Aug. 12 Perseids peak
- Aug. 13 (89) Julia occultation
- Aug. 24 Mercury at greatest W elongation
- Aug. 25 Northern Iota Aquarids Peak
- Sep. 1 Uranus at opposition
- Sep. 14 John Dobson's 90th Birthday!

July's Challenge

Located just 3 degrees above Antares, IC4604 (the Rho Ophiuchus complex) shows rich nebulosity. This would make a nice shot for one of our new astroimagers!



August/September Tour

Binocular Objects

- 1) M13 (Globular Cluster)
- 2) M19 (Globular Cluster)
- 3) M22 (Globular Cluster)
- 4) M23 (Open Cluster)
- 5) M62 (Globular Cluster)

Telescope Objects

- 6) M9 (Globular Cluster)
- 7) M14 (Globular Cluster)
- 8) M20 (Open Cluster + Neb)
- 9) M21 (Open Cluster)
- 10) M107 (Globular Cluster)

Joseph's Challenge - NGC6384
Gal (Ophiuchus) 10.6 17H 32.4m, +7° 4.0'

The Steve Smith Observatory Story: Part 1

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

This is the second in our on-going series about ASLC members' observatories. Steve Smith has generously agreed to "write up" his reasons for building an observatory and his experiences with the project. Along the way, he'll share some interesting happenings, funny stories, and mistakes I made. Finally, he'll share some things he would have done differently if he were to start all over again."

A little over 12 years ago Steve and his wife moved from El Paso to Chaparral, NM. Mrs. Smith had horses and wanted to be able to keep them on their own land. Steve wanted to get away from the city lights. They spent the first year getting the "ranch" ready for the horses. It seemed like an endless process of water lines, post hole digging, concrete and welding, but when finished they had a six horse barn complete with a hay and tack room.



What does a barn have to do with astronomy? Well, it was the "leftovers" from that project that eventually became Steve's observatory. Steve said he'd be lying if he said that he planned every aspect of the observatory and that everything came together perfectly. He definitely does not think of himself as a designer or architect. His observatory started as an idea over 10 years ago and has evolved through several developmental stages.

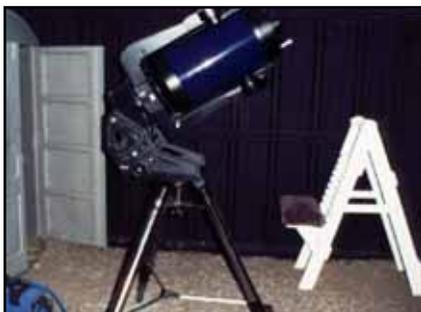
Stage 1 – A Light and Wind Shield

Most of the materials used for constructing the observatory were left over from the horse barn project. Steve's main objective was to erect a small building that was more of a windbreak and light shield than an actual observatory. However, he knew that some day he would want to add a roof, electricity and a permanent pier for his scope. The metal panels were 3 feet wide and problematic to cut lengthwise; practicality dictated a multiple of 3 feet for the length and width of the building. It came down to a choice between 9 feet or 12 feet long walls. Erring on the side of caution, Steve decided to make the observatory 12 feet square.



"I chose an area that is several hundred feet from our house that was not obstructed by trees and is away from any of my wife's horse activities. The first thing I did was to build up the ground in and around the observatory about 8 inches. This would ensure that water would not enter the building. I put down a mixture of dirt and gravel and compacted it by watering it down and driving my truck over it. I did this for about a week."

The next step was to erect 4 steel posts (the corners of the observatory). He erected 4 more posts to the south. These would eventually hold the rails onto which the roof would roll off. All of the poles were 2.5 inches in diameter and set 2 feet deep in concrete. To determine the height of the observatory he stood in the middle of the poles one night marking each pole where the neighbors' lights were blocked, then added a couple of inches.



After cutting off the poles to the correct height, he then planted two upright 4 x 4 wood posts and welded 6 inch "C" purlins between the posts at the corners of the observatory. To these, he attached the white panels that make up the walls. He added a door, and a deadbolt lock. Steve painted the interior of the observatory flat black to keep scattered light to a minimum. He decided to leave the floor as gravel. Concrete would store too much heat; wood might invite too many critters.

"The building worked very well, and I used it like this for well over 6 months. I put in a small Rubbermaid cabinet to keep some things stored there, but I still had to lug the scope in and out of the house and do a polar alignment each session. Soon, I would have to do something about that!"

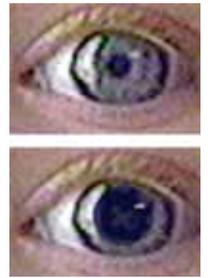
Next month: Stage 2 of Steve's evolving personal observatory.

Seeing In The Dark

The phenomenon called dark adaptation (letting your eyes adjust to the darkness) is crucial for visual observation of faint objects, such as galaxies and nebulae. Believe it or not, the human eye is biologically designed to see by starlight at night. [it's called Scotopic Vision]

Dark Adaptation, the physical process has several steps:

1. The iris of your eye quickly opens the pupil, the central "black hole", to its maximum width, usually 5 to 7 millimeters, depending mostly on your age.
2. Over several minutes the concentration of certain chemicals (rhodopsin for one) begins to grow, making the rod & cone cells in the retina much more light sensitive.
3. After 7 minutes the color-vision cones have reached their max sensitivity, while the rods (for low light levels, detecting shades of gray) keep gaining sensitivity for 20-30 minutes.



The Rods Make It Happen

Not only does your night vision lack color, but also you see less fine detail. This is because the rods are not tightly packed and most are away from the fovea. This is easy to experience when trying to read a detailed star chart with very dim light. Also note that your peak of sensitivity is blue-shifted from normal daytime vision (less sensitive to red light, which is why most H-alpha nebulae are really hard to see).

Ten Tips for Improving Your Night Vision:

1. Observe from a dark site. Any amount of light will reduce your dark adaptation, so get away from street lamps, porch lights, car headlights, and urban skyglow.
2. When you need some light to see what you're doing, use a dim red flashlight, the dimmer the better (one with adjustable brightness is great). Red light has the least effect on your rhodopsin. Some believe that a very dim green light is better – why?
3. Avoid bright sunlight as much as possible during the day prior to an observing session. Intense light will bleach out your rhodopsin in advance! Wear wrap-around sunglasses.
4. In light-polluted areas, do whatever you can to block ambient light from your eyes, especially direct light rays (glare). Consider a dark shroud over your head or at least cupping your hand around your eye & the eyepiece.
5. In a light-polluted location consider wearing dark glasses except when actually observing. Use your arms & hands to block glare when getting oriented to the sky with your bare eyes.
6. Since your eyes adapt separately, keep your observing eye dark-adapted if you have to see something 'bright'. I use an eye-patch. Aarrgh!!
7. Use averted vision (looking slightly off to the side of an object rather than straight at it). That puts the image directly on the greatest concentration of rods.
8. If you take a break from observing, keep away from any light as much as possible. If you can, cover or close your eyes.
9. Breathe deeply. Avoid shallow breathing or holding your breath when concentrating intently on a dim object. Reduced oxygen diminishes your night vision. Try "oxygen loading" - breathe deeply for 20 seconds just before looking and keep it up as you observe (don't pass out though!) When it's really cold I modify this technique.
10. Avoid drinking alcohol (even Steve's mystery coffee!) before or during an observing session. Alcohol is a depressant and will decrease your visual acuity.



In visual observing the name of the game is seeing as much as you can possibly see. So it pays to take a few extra steps to achieve and maintain your maximum dark-adapted night vision -- it's not hard to do. Your eyes are amazing instruments!

Case in Point: compare the typical in-town "dark-sky illusion" with a good night at TSP or Upham -- appearances can be deceiving!

- Nils Allen (ASLC Education Chair)

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.

ASLC OFFICERS, 2005

<Board@aslc-nm.org>

President:

Rich Richins

rrichins@zianet.com / 532-5365

Vice President

Dave Dockery

dave.dockery@comcast.net / 541-0717

Treasurer

Janet Stevens

jastevens@zianet.com / 382-9131

Secretary

Timothy Barnett-Queen

trbqueen@zianet.com

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Dave's Astrophotography Corner

Astro-imaging 101 - Image Processing

We wrapped up the astro-imaging series of courses with an image-processing workshop, held on July 19th at DABCC. The goal of the series was to have the participants gain hands-on experience by working through all the processes of astrophotography from capturing images to processing and posting them. This final session introduced the basic principals and tools of digital image processing and then participants followed a basic IP procedure to process the image below using GIMP2 software.



Image Processing Procedure: (included as a reference)

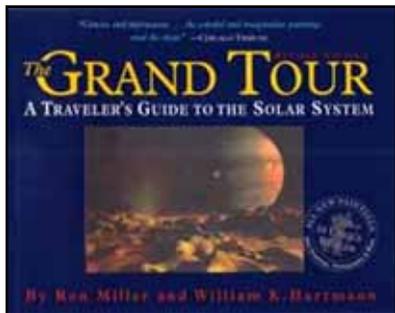
1. Evaluate the image
 - Check focus and tracking at 100% zoom level
 - Locate the high and low image level locations using the threshold tool
2. Set the black and white points
 - Sample the high/low pixels and adjust the levels tool black and white point sliders to remap the brightest and darkest pixels to 245,245,245 and 15,15,15
3. Adjust the brightness of the mid-tones
 - Use the Curves tool and boost the midrange pixel values
 - Continue to monitor the black and white set points
4. Perform a final color correction
 - Monitor a region of the sky background or a neutral mid-level region and adjust levels and curves to balance the colors and enhance desired features
5. Increase the contrast
 - Final levels adjustment of overall black and white points (255, 255, 255)
6. Dodge/burn - perform localized color correction
 - Use lasso tool, curves, and feathering
7. Crop and remove unwanted artifacts
 - Use the crop and clone (rubberstamp) tools
8. Sharpen for output
 - Use the unsharp mask filter – it provides most control
 - Careful - too much causes artifacts and bloated stars
9. Resize, resample, and save for output
 - Save full resolution in TIF format then resize and save as JPG
 - 200 – 300 DPI for printing and 72 DPI at typical screen resolution for web

My thanks to everyone that helped out (especially Steve Barkes) and I hope all the participants found the workshop series informative and fun.

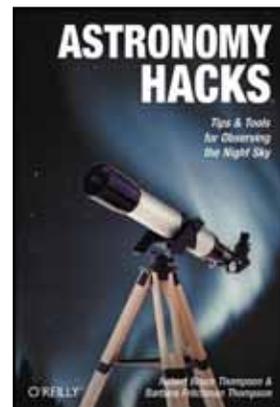
My final bit of advice – practice, practice, practice... Dave

New Books (special deals for ASLC members)

Attendees of our July meeting had a chance to preview two new books, *The Grand Tour: A Traveler's Guide to the Solar System*, and *Astronomy Hacks*. *The Grand Tour* was originally published in 1981 and is now completely updated by the scientific findings of the past decade. It contains a myriad of photographs and artwork depicting our Solar System. *Astronomy Hacks* covers the



basics of observing, and what you need to know about tweaking, tuning, adjusting, and tricking out a 'scope. Orders are currently being taken for both books. *The Grand Tour* costs \$19.95 (\$11.97 if we get 10 or more orders). *Astronomy Hacks* costs \$17.50 (Janet was able to get club members a 30% discount). Please contact Janet <jastevens@zianet.com> if you are interested in either book. Orders will be taken thru 8/26/05.



ASLC IMAGE GALLERY



Rich imaged M57 at the Rocky Mountain Star Stare (West of Colorado Springs) using his C11 and 300D.



A portion of a widefield image (by Steve Smith) showing the area in the vicinity of Antares. Antares is the bright red star in the bottom left of the apparent pentagon. IC4604 (July's Challenge) is directly above the pentagon.



M20 (The Trifid Nebula) imaged by Dave Dockery last year at TSP with his LX200 and Digital Rebel.

**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*