

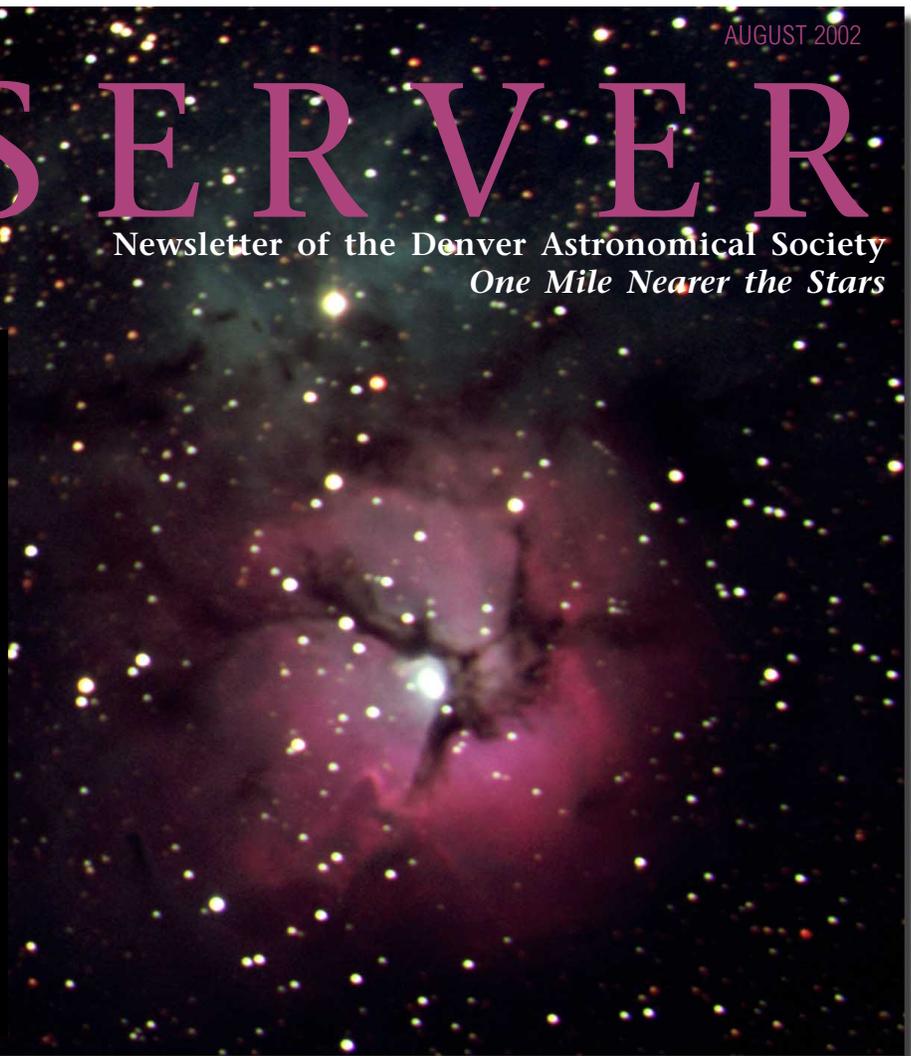
# OBSERVER

Newsletter of the Denver Astronomical Society  
*One Mile Nearer the Stars*

## Glorious Nebulae

About 2,500 light years distant lies one of the “showpiece” objects that astronomers look forward to observing each summer—M20, the Trifid Nebula in Sagittarius. The lower red part of this memorable object is a diffuse emission nebula. It’s distinguished by three dust lanes—a central triple star glitters in the intersection at which they overlap. The bluish upper part of the nebula is a reflection nebula that is physically unconnected to the lower part. Knowing where to look within the glorious Sagittarius starfield will help you locate this beauty with binoculars—the dust lanes resolve fairly easily in a medium size telescope. Chris Tarr made this photograph with his 12-inch LX200 at Grand Lake, Colorado during the July new moon weekend.—PK

Image: © Chris Tarr, 2002



# Celebrate the Perseids!

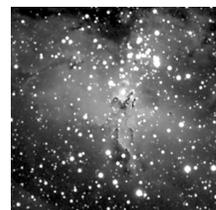
## Inside The Observer

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## AUGUST SKIES 2002

Meteor shower aficionados will undoubtedly cross fingers and toes during the first half of August. If we have clear skies during the late night/morning of the 11th and 12th, a dark moon should contribute to a terrific night of Perseid viewing. This shower is one of the most reliable events of the year and the *Observers Handbook 2002* (Royal Astronomical Society of Canada) predicts a Zenith Hourly Rate of 100. A night or so before and after the forecasted peak (August 12 at 22:00-22:30 UT) should be good observing times as well which coincides perfectly with the “Weekend Under the Stars (WUTS)” star party at Foxpark, Wyoming. Those folks who want to see the peak of the shower but will already have returned from WUTS should gather for a Perseid Party at the Edmund Kline Dark Site. Don’t forget the chaise longues! The best meteor watching times are generally from 2:00 A.M. to 4:00 A.M. A nice chart of the radiant is located at <http://comets.amsmeteors.org/meteors/showers/perseids.html>. Enjoy the dark!—Patti Kurtz

- 1 ..... Last quarter moon
- 8 ..... New moon
- 11-12 ..... Perseid meteor shower peaks (early morning hours)
- 15 ..... First quarter moon
- 22 ..... Full moon



Gary Jensen imaged the Eagle Nebula (M16) as it spread its wings in Serpens at Rocky Mountain Star Stare in June.

Image: © Sandy Shaw, 2002



At the Texas Star Party, astro-imager Joe Gafford displayed the observing dome he designed and built.

## PRESIDENT'S CORNER

Young people and astronomy—I have spent part of the summer teaching astronomy to Middle and High School students. It has been quite an experience and many of the students really became turned

on to astronomy. Several may be joining the DAS. I would like to see even more young members in the club. Members under the age of 22 can join the DAS for

\$10 per year. We do not have a special program for young people but can work them in to many of the current programs that we do have. If current members know of some young people who might be interested in joining, please encourage them to attend a meeting, or come to an Open House or Public Night event and pick up a newsletter to join. If members with young people in your family have any ideas on how we can better meet their needs, please send me an email. Thank you.—Larry Brooks



## DAS Schedule

### AUGUST

- 2 E-Board meeting, 8 P.M.
- 8-10 WUTS at FoxPark, and Dark Sky Site Weekend (9-11)
- 16 Ladies Night
- 17 **Clean-up Day** (4:00 P.M.) and **Open House** (the Open House begins at dusk.)
- 23 General Meeting at Olin Hall, DU, 7:30 P.M.—Jack Murphy and Chris Peterson, “Investigation of the August 17, 2001 Fireball.”

### SEPTEMBER

- 6-8 DAS Star Party at North Sterling Reservoir, and Dark Sky Site Weekend
- 13 E-Board meeting, 8 P.M.
- 14 **Clean-up Day** (4:00 P.M.) and **Open House** (the Open House begins at dusk.)
- 20 General Meeting at Olin Hall, DU, 7:30 P.M.—Dr. David Nesvorny (SWRI), “Asteroid Breakup Event in the Main Asteroid Belt.”

Public Nights are held every Tuesday and Thursday from 8:30 P.M. at Chamberlin Observatory. Costs to non-members are: \$3.00 adults, \$2.00 children. Please call (303) 281-9052 (new phone number) for reservations.

## DAS Officers

### President:

Larry Brooks (303) 986-5255  
Email: LBrooks100@aol.com

### Vice President:

Carla Swartz (303) 246-6926  
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### Secretary:

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### Chief Observer:

Jack Eastman

## Executive Board Members

Ted Cox	Sandy Shaw
Jack Eastman	David Shouldice
Joe Gafford	Steve Solon
Patti Kurtz	Dan Wray
George Jones, Past President	

### DAS Information Line:

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### Newsletter:

Denver Observer editor, Patti Kurtz  
StarFire Creations Unlimited  
(303) 948-5825

The Observer is available in color PDF format from the DAS website.

The Executive Board conducts the business of the DAS at 8 P.M. at Chamberlin Observatory. Please see the Schedule of Events for meeting dates. All members are welcome.

[www.denverastrology.org](http://www.denverastrology.org)

# Space Science Events at the Denver Museum of Nature & Science

## UPCOMING EVENTS

**Tuesdays & Thursdays, August 6, 8, 13 & 15, 7:00-9:00 P.M.**

### *Astronomy for Families*

Christian Greer, manager of DMNS Theater Programs  
Phipps IMAX Theater, Denver Museum of Nature & Science

Cost is \$10 for members, \$15 for non-members  
*Class sessions will include interactive activities, demonstrations, and story-telling. The Perseid meteor showers occur about midway through the course, providing outstanding sky-watching experiences. Call 303-722-3009 to sign-up.*

**Friday, August 9, 6:30 P.M.—Saturday, August 10, 9:00 A.M.**

**Saturday, August 10, 6:30 P.M.—Saturday, August 11, 9:00 A.M.**

### *Astronomy Campouts*

Cost is \$30 for members, \$35 for nonmembers, \$15 for children (6-13 years).

*Spend the night camping out in the shadow of Mount Evans at the Jefferson County Outdoor Lab School. Please bring your own dinner, snacks are provided. These two camp-outs will celebrate the Perseid Meteor Shower. Call Jeff Rautus at 303-370-6090 for information and 303-322-7009 for reservations.*

**Wednesdays, August 14—September 18, 6:30-8:30 P.M.**

### *Introduction to the Night Sky*

Larry Brooks and Jeff Rautus, DMNS Astronomers  
Naturalist Nook, Denver Museum of Nature & Science

Cost is \$100 for members, \$120 for nonmembers  
*Learn to navigate the night sky. From the sun to pseudo-science, this general astronomy course will instruct you on measurement systems, our solar system, and more. Call 303-322-7009 for reservations.*

**Friday, September 6—Sunday, September 8**  
***Stargazer's Weekend in Estes Park***

**Sky & Telescope sends only one notice before subscriptions end. The DAS sends only one issue of The Denver Observer after dues expire. The cost of magazines (Astronomy and Sky & Telescope) is in addition to the annual dues. For questions concerning memberships, please contact DAS Treasurer, Chuck Carlson (chcarlo@du.edu). See the back page of this newsletter for more information.**



**Our star has been quite active lately. Using a 10-inch reflector and a digital camera, new member Jim Cole captured these sunspots on July 27, 2002.**

*Join DMNS and University of Colorado scientists for our second annual Stargazer's Weekend! Relax in a beautiful setting at the YMCA of the Rockies in Estes Park while learning about astronomy and the sky. Activities will include lectures and discussions about the latest in space science research, dark-sky telescope viewing, and "legends of the sky" storytelling around the campfire. Call Barbara Farley at 303-370-6304 for more information.*

**Wednesday, September 25, 7:00 P.M.**

### ***60 Minutes in Space: Beyond the Headlines***

Curator from the Department of Space Sciences  
VIP Room, Denver Museum of Nature & Science  
Cost is \$7 for members, \$10 for nonmembers, \$5 for students

*Dr. Laura Danly or Dr. Steve Lee will take you behind the headlines and give you the spicy details of breaking news in space science. Find out what's happening in the cosmos with up-to-the-minute reports of breakthroughs and events in astronomy and space exploration. Call 303-322-7009 for reservations.*

## UPCOMING CHILDREN'S CLASSES

**Thursday, August 8, 7:00-8:00 P.M.**

### ***Skies for Scouts***

Jeff Rautus, DMNS astronomer  
Classroom 301, Denver Museum of Nature & Science  
Cost is \$3 for children or adults

*This program is especially designed to help Boy and Girl Scouts of all ages acquire their achievement awards and badges in space science and astronomy. This activity is also a great way to attain skills in identifying some of the wonders of the sky to make campouts and family activities more enjoyable. Call Jeff Rautus at 303-370-6090 for more information.*

## ***AstroTrivia***

***(Look for the answer in this issue.)***

**Q. What is the Silver Coin and who discovered it?**

***AstroTrivia is contributed by Sandy Shaw.***

## **Note from the editor:**

Newsletter contributions (ccd and film astrophotos, members with telescopes, star party candid, short observing anecdotes, observing and imaging tips, etc.) are welcome and encouraged. This is your chance to strut your stuff! **Please call me for submission instructions.**

***\*\*Patti Kurtz***

***(303) 948-5825***

***All articles and images are © the author or photographer, and may not be reproduced without their written permission—Ed.***

# u p d a t e s

# Preliminary Ramblings on the 8-inch Refractor Lens

by Tom Dadisman

Several years ago I had an opportunity to purchase an 8-inch achromat refractor lens with the promise that it was exceptional and would assemble into a good telescope. I've observed through a few 8-inch refractors in the past and my vague memory told me that the views could be very nice if the optics were good. I also remembered the size of these instruments and the requirements that were needed to mount such large optical tube assemblies. One of the most beautiful instruments I have ever seen belonged to a fellow in California named Jon Ponds. In I believe 1986 three of us myself, Tim Havens and Jack Eastman traveled in Tim's van to Riverside with a newly assembled Clave' 150mm refractor which I thought was on the outside of being "transportable" until I saw the 8-inch  $f/20$  refractor someone had brought to the party. Before the Riverside meeting we met up with a fellow Tim knew named Jon Ponds at his apartment in the L.A. basin...perfect instrument, ideal location...NOT! Jon wanted to show us his

8" refractor that he kept tucked away in his one bedroom apartment. This was the most impressive amateur scope assembly of an 8" refractor I had seen to-date. The tube assembly was a huge non-folded type with beautifully machined components. This tube assembly was placed on a large Byers mount which in-turn sat on a massive custom pier assembly. I was truly amazed that this instrument was placed in Jon's apartment in the middle of L.A. and that he could only assemble it when a few of his friends happened to stop by. I do not as of this day know what ever happened to that large and impressive instrument. I suppose my visit to Riverside that year sparked my less than practical interest in refractors.

Well years later when the opportunity to purchase an 8" lens presented itself I simply did not think of or did not recall all that is needed to make such a lens into a working telescope. The lens I ultimately purchased has a history that I believe started in the 70s. This lens was originally

commissioned for manufacture by a couple of fellows that worked in the Physics Department of John Hopkins University, the instruments projects department I think they call it. I have long since lost track of the individual that sold me the lens but if I ever get a hold of him...nah just kidding! A master optician at a now defunct small company known as Muffaletto Optical made the lens, I think that is how Vern spelled it. This company was a supplier of precision industrial optics for various industries involved in the space program as an example. Well this lens arrived at my home complete with ray traces, design specifications and actual test data. The numbers indicated the lens was very excellent quality. I should also note that this lens is anti-reflection coated, which looks very pretty in certain light! I knew then that it would be sometime if ever that I could actually look at the sky through this lens given it's size and focal ratio. At some point I started to wonder about the considerable investment in time that would be needed to construct a finished 8" refractor especially one with a lens I have never looked through. I tried numerous times to unload...I mean sell it to a lucky some buyer but without success. So I decided to construct a temporary one time use so-to-speak tube assembly and alt-az stand, Note; I didn't say mount which

## Panoramic View on Mt. Evans

While observing at the Meyer-Womble Observatory atop Mt. Evans, Mark Vincent took some time away from the eyepiece to get this spectacular photo.

Photo: © 2002, Mark Vincent



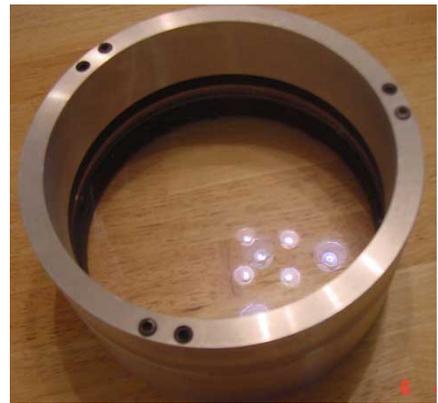
o b s e r v e r s d e c k

to this engineer represents something one would need two friends and a truck to haul about. I simply wanted to at least “see” what sort of lens I had purchased and a wooden stand would suffice for that. I did not wish this small effort to consume too much time but considering I would need to wait till the next full moon for the clouds to clear after placing an new telescope in service (my experience through the years) I decided to get started ASAP. Well, as with all my scope projects, a short three months later I had a kludge of scrap wood and screws pieced together to give me enough confidence to mount the heavy 8-inch lens and nearly as heavy adjustable aluminum lens cell. Together with the focuser borrowed from my Newtonian reflector I was able to get the beast collimated well enough to see a glint of sunlight on a building on the horizon in downtown Denver...I was excited for dusk to begin!

Well first light on my new to me 8-inch refractor lens on its 2x4 temporary wooden assembly went better than hoped for. The classic “star test” was done using Vega, which exhibited just a bit of color when observed in focus. As I viewed the nearly perfect diffraction disks on either side of focus I wondered, where’s the dark spot, as I was use to my 8-inch reflector! With no turbulence or cooling problems in evidence, with my lens and 2x4 tube

assembly I decided to move on to the next target. The double-double (Epsilon Lyrae) was cleanly split and then stepped up to over 400x to show textbook Airy disks. As I continued to scan the sky I viewed M13 at 150x with a Nagler, and then compared it to M92 at a higher power to create approximately equal eyepiece impressions. Both displayed a wealth of pinpoint stars even though the sky was not yet out of late astronomical twilight. Of course I checked out Alberio, and favoring colored doubles I moved over to see Alpha Hercules (Rasaigethi - ‘the head of the kneeler’), which is like Alberio but with a closer spacing. Again, using a higher power to equilibrate the view, I recreated a ‘setup’ for relative newcomers who might mistake one for the other. (This trick is more commonly done with M92 and M13.) I next choose 95 Hercules - yet another colored pair, although less bright and with less color contrast than the last two pair. The eight-inch aperture does limit the grasp of galaxies and more nebulous objects to the brighter examples however the views of the double stars and planets are stunning at least thus far.

I have a fondness for open clusters, so I consulted my observing partner this evening my laptop and installed star map software for targets. I managed to find a fine little cluster in Lyrae. I looked it up in



The 8-inch lens showing its massive cell and coatings.

Uranometria and found it to be Ste1 (Stevens 1) around 11 & 12 delta Lyrae, also noted in Sky Atlas 2000. “Kewl” as they say in the islands when I first spied this through the eyepiece at about 80x the cluster filled the field. It was reminiscent of a little Pleiades, with a splash of stars and a colored double (yellow-blue) pair distinctively spaced! A prominent blue star made this really a multicolored trio.

I had no trouble finding the Cat’s Eye Nebula (NGC 6543), using medium-high power, and my O-III filter made the view of this fairly concentrated planetary quite pleasing. The Ring Nebula (M57) and the

Photo: © 2002, Tom Dadisman

*Continued on page 6*



# o b s e r v e r s d e c k

Dumbbell Nebula (M27) were very nice using the same filter, with the ring satisfactorily sustaining higher power. A bright veil segment (NGC 6960) was detectable, but would have benefited from a larger true field of view that a different instrument may have provided. I removed the O-III filter and looked at M10 and M12 clusters lower down about the equator and in addition M11 (the Wild Duck), also snapped into view quite crisp and contrasty.

With a focal length of about 128" (f/16), the 8-inch refractor had a low power of 81x and a .82 degree true field of view (FOV) with my Meade 40mm series 4000 'super-wide' eyepieces. Top power that evening was with a 7.4mm Plossl at 440x and a tight .12 degree FOV.

Next I pointed my less than smooth but solid wooden mount towards Saturn, the rings showed bright and finite divisions: Cassini's division was very apparent as was Encke. Mars was very impressive showing more detail than I have knowledge to comment on which indicated that this night was clear and steady, a rarity in these parts! I don't look at the moon often but I could certainly not recall when I have never seen so much detail. Jupiter one of my favorite subjects showed many faint light ovals and a lot of structure within the belts, festoons and in the GRS. I was also surprised by the virtual absence of false color, which is hardly noticeable at best focus. The only other time I had seen such clarity in an amateur sized scope was with Jack Eastman's 12 inch Newtonian on one exceptional night.

So what is the next step...hum-mm I found myself last week pricing out long pieces of tubing...one fellow tells me to look into carbon-fiber tube material another mentions stick with aluminum. I have to say both are correct the only missing ingredient is time, a project to equatorially mount such a large lens is substantial and offers to buy the lens always

tempt me to sell, however I have now started a mental list of objects to look at with a big refractor...hum-mm the new owner would surly spare some eyepiece time! Now I have a sort of known quantity for my 8" refractor lens. The lens now sits as it has for many years quietly in my china cabinet protected from dust and the ravages of starlight!

### Astro-Trivia Answer

A. Caroline Herschel discovered NGC 253, known as the Silver Coin Galaxy, on September 23, 1783. The brightest member in the Sculptor group of galaxies, NGC 253 is an almost edge-on spiral galaxy that can be seen with binoculars from Denver's latitude. Four super star clusters have been identified in Hubble Space Telescope images of NGC 253. Super star clusters, knots of young stars much brighter and more massive than other known clusters, may shed light (!) on the evolution of our own galaxy.

## Observing Report

### Occultation of Tycho 6336-01340 by Minor Planet Adorea

by Chris Tarr

A while back Gary Emerson came to a DAS meeting to present. At that time he solicited help for observation of occultation events. Since then he has been sending me a heads up when an event is approaching.

Last Saturday morning I caught my first one on CCD. The following is the report.

As this is my first observation, Jim and others are evaluating the data and I hope to get feedback soon. I would really encourage others to try this. I compare it to fishing. You know there are fish down there, but you are never sure you will catch something. When you do, it's quite a thrill.

#### Technique Used:

With the drive off I timed the transit time of a star trace in the CCD FOV.

From this I found I could keep the trace safely in the FOV for 90 seconds.



Chris Tarr captured the occultation event showing a star trace with an overlay of the star field. The event is circled.

### Welcome New Members!

The following folks joined the Denver Astronomical Society during the last month. Welcome new members!

- Hank Bielinski
- Peter F. McMillan
- Thomas M. Maytham
- Ted Nichols, III
- Sita Thomas

### LADIES NIGHT

*For Ladies Only*—Whether you're a DAS member or related to one, please join us on the evening of **Friday, August 16**. The gathering place will be determined after we know how many women to expect. You don't have to be an observer/astrophysicist—the purpose of the gathering isn't observing—we're just getting together to get to know each other! Please R.S.V.P. to Patti Kurtz either by e-mail: [pkurtz@att.net](mailto:pkurtz@att.net) or telephone (303) 948-5825, or phone or e-mail Carla Swartz at (303) 246-6926 or [CSastrogirl@aol.com](mailto:CSastrogirl@aol.com)

o b s e r v e r s d e c k

Then I positioned TYC 6336-01340 to the left of the CCD chip. I used a live GPS time feed for my time. Then I did the following:

1. At 12:56:30 I took a 5-second exposure to record the starfield.
2. At 12:57:25 I turned the drive off.
3. At 12:57:30 I started a 90-second exposure.

**Data:**

**Occulted Star:** Tycho 6336-01340

**Minor Planet:** (268) Adorea

**Date:** 07-13-02

**Location:** 105 deg 48 min 20 sec West  
40 deg 14 min 32 sec North

**Exposure start:** 6:57.30 UTC

**Exposure duration:** 90 seconds

**Occultation start:** 6:57.56 UTC

**Occultation duration:** 9.92 seconds

**\*\*NOTICE:** *There is a combination lock on the front gate at the Edmund Kline Dark Site. Any DAS member in good standing may obtain the combination by calling Larry Brooks at (303) 986-5255. Members can receive the combinations to the electricity and the shed after they have been briefed as to their use.\*\**

## Dark Sky Site Courtesy

*Please remember that white light disrupts the eye's dark adaptation and can ruin astrophotography. Following these simple guidelines will improve the experience for all:*

- ★ Upon arrival at the site, check to see if sign in has been instituted at the warming hut. We hope this will help alleviate problems members may be experiencing in trying to find a place to set up.
- ★ Drive carefully on the road, there are blind spots in the low area and you will find cattle on the road at times.
- ★ Try to arrive before dark.
- ★ If you have to arrive after dark, turn off headlights when turning into site.
- ★ Turn off all dome and trunk lights. If a light can't be turned off, pull the fuse, use layered red brake light tape or just duct tape over it.
- ★ When you drive in, position your car so you can drive out directly instead of using your back up lights.
- ★ Use only dim red flashlights. Never shine a flashlight in someone's face or on their scope.
- ★ Please wipe your feet carefully before using the warming hut.
- ★ Please chip in and do some cleaning up in the hut or at the observing sites. It is the responsibility of all users to keep the place nice.
- ★ Serious astrophotographers may wish to use the South field since it is somewhat isolated from the rest of the area.
- ★ If you are the last person to leave the site, turn off the lights and the heaters in the warming hut. Then, lock the warming hut and close the gate to the site.
- ★ Members are responsible for educating their guests as to the rules.

- ★ Prospective members, out of town astronomers, and others may be guests one time.
  - ★ Members can bring family any time and personal friends on a limited basis, but should not abuse the privilege.
  - ★ Groups of five or more guests must be cleared through the President or Vice President prior to visiting the Dark Sky Site.
  - ★ There is no sleeping in the warming shed overnight. However if you need to nap for a short period, you can use the shed. We would rather you fall asleep there rather than at the wheel on the way home.
  - ★ You may warm drinks in the microwave—it is not there for warming food and cooking since we have no water to clean up. If you spill, please clean up after yourself
- OTHER SUGGESTIONS:**
- ★ Wear warm clothing. The nights can be extremely cold in the winter and surprisingly cold in the summer.
  - ★ Bring your own power such as a battery and/or an inverter since the power sites are limited. Also bring extension chords.
  - ★ Hot drinks can help you survive the night!
  - ★ When approaching the telescope of someone who does not know you, introduce yourself and ask before looking through the scope. Most members (with the exception of astrophotographers when they are taking pictures) will be happy to share their scopes.
  - ★ Bring your own toilet paper in case that in the porta-potty runs out.

## Directions to the E.G. Kline Dark Site

*The DAS Edmund G. Kline Dark Site is about 60 miles east of the "mouse-trap" in downtown Denver.*

Take I-70 east to the Deer Trail exit (exit 328), turn left at the end of the exit ramp, and turn left again on CR 217 (after the Texaco station). Take CR 217 just over 1/2 mile, and turn right (east) onto CR 34. Stay on CR 34 about 6 miles until you get to CR 241. Turn left (north) onto CR 241 and continue about 1.5 miles – you'll see a culvert with a wide gate on the right (east) side of the road.

*Directions to the site from Denver, arrival from the North (for after-dark arrivals):*

Take I-70 eastbound to exit 316 (Byers). Turn left at end of ramp which puts you on eastbound US-36. Take US-36 east 17.2 miles to CR 241. Turn right (south) onto CR 241 and continue for 6.2 miles. The DSS entrance is on the left between two tall posts.

*Note: Travel distance from Denver using the North route is actually 3.9 miles shorter than the traditional route. The first 5 miles of CR 241 going south from US-36 is narrow and somewhat rough. Be careful.*

## Warming Hut Rules

- The last people on the site must turn off the lights and the heat.
- A microwave will be provided for warming food. Please clean up after yourself.
- No pots and pans, appliances, or other supplies are to be left in the shed.
- No personal supplies are to be left in the shed overnight.
- Do not donate furniture or other things unless you clear it with the D.S.S. committee first.
- No food left overnight in the shed.
- No sleeping overnight in the shed.
- Quick naps are permitted if you feel you might fall asleep on the way home. We would prefer you get your nap rather than falling asleep on the road. However, we don't want it to become a tent for camping.
- Clean up after yourself before you leave the site.
- Please clean up all food that drops or is spilled, otherwise it will attract mice and insects.

# edmund g. kline dark site

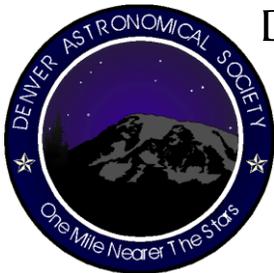
## About the Denver Astronomical Society

The DAS is a group of amateur and professional astronomers that share a mutual interest in the heavens. The DAS operates the University of Denver's Chamberlin Observatory, along with its prized 1894 Alvan Clark 20-inch refracting telescope. Our members have been involved with the first public planetarium at the Denver Museum of Science and Nature and the Smithsonian Astrophysics Observatory's "Moon Watch" program. The DAS successfully petitioned to have the Chamberlin Observatory listed on the National Register of Historic Places.

Our Credo is to provide members a forum for increasing and sharing their knowledge, to promote and educate the public about astronomy, and to preserve the historic telescope and observatory in cooperation with the University of Denver. To these ends we have established three tax deductible funds: the Van Nattan Scholarship Fund, the Chamberlin Restoration Fund, and the DAS Dark Sky Site Fund. This last fund was established in order to construct and maintain observing facilities near Deer Trail in eastern Colorado.

Please call our Info Line at (303) 871-5172 and drop by the General Membership meetings. Become a member and enjoy speakers, facilities, events, and our monthly newsletter, *The Denver Observer*.

APPLICATION FOR MEMBERSHIP TO THE DENVER ASTRONOMICAL SOCIETY	
New	<input type="checkbox"/>
Renewal	<input type="checkbox"/>
Name: _____	
Address: _____	
City, State, Zip: _____	
Phone numbers: Home ( ) _____ Work ( ) _____	
E-mail Address: _____	
Occupation: _____	
Other Interests: _____	
(Associates Only) School: _____	Grade: _____
Do you want to download the newsletter in PDF format from our website instead of by postal mail?	
Yes	<input type="checkbox"/>
No	<input type="checkbox"/>
Do you want the above information excluded from the yearly roster?	
Yes	<input type="checkbox"/>
No	<input type="checkbox"/>
<i>Please Circle All That Apply:</i>	
Regular Membership: \$30	Associate: \$10 (Age 22 and younger)
..... \$ _____	
Astronomy Magazine/\$29	
Sky & Telescope Magazine/\$29.95	
..... \$ _____	
Van Nattan Scholarship Fund	..... \$ _____
Chamberlin Restoration Fund	..... \$ _____
Total Amount Paid	..... \$ _____
<i>Please mail Dark Sky Site donations to: DAS Treasurer, Chuck Carlson, at the address below. (Make checks payable to the Dark Sky Site Fund). Please complete this form, or a copy, and mail it with your check or money order payable to The Denver Astronomical Society: DAS Treasurer, Chuck Carlson; 1521 So. Vine St.; Denver, CO 80210</i>	



## Denver Astronomical Society

c/o Chamberlin Observatory  
2930 East Warren Avenue  
Denver, Colorado 80208

### AUGUST'S MEETING

**AUGUST 23:**

Jack Murphy (Denver Museum of Nature & Science) and Chris Peterson, "Investigation of the August 17, 2001 Fireball."

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