

OBSERVER

Newsletter of the Denver Astronomical Society
One Mile Nearer the Stars

Image copyright 2003, Joe Gafford

Soar Like an Eagle

A favorite target of many astrophotographers, including those that operate the Hubble Space Telescope, the Eagle Nebula (M16) in Serpens soars high in the summer skies. (See Page 5 for technical information.)

Aim For Warm Nights and Clear Skies

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JUNE SKIES 2003

The summer's main event is, of course, Mars. In late August it will be closer to us than it's been in thousands of years. Rising around 1 A.M. at the beginning of June, by the end of the month it will be about as bright as Sirius. Also shining brightly is Venus which will pair up with much dimmer Mercury near

the east-northeast horizon about 30 minutes before sunrise for most of the month. Soon we'll say good-bye to Saturn as it slips into the sun's glow, but for a few days it lies low above the west-northwest horizon 30-45 minutes after sunset. Jupiter is still sparkling in Cancer but will reach the Cancer-Leo border by June's end—it's nice and bright in the west during twilight and getting lower by the week. A beautiful sight in a telescope, use your scopes on it during the first few weeks before it gets too low. Enjoy your summer and have a happy solstice!—Patti Kurtz

7	.....	First quarter moon
14	.....	Full moon
21	.....	Last quarter moon,
	.....	Summer solstice 1:10 p.m. MDT
22	.....	Uranus is 3° north of Mars
29	.....	New moon

PRESIDENT'S CORNER

Uncork your bottled-up enthusiasm for astronomy and help us take the show on the road.

During the last few months we have held star parties for numerous elementary and middle schools. Often, this is the first opportunity some of the parents and kids have had to look through a telescope and see the wonders of the universe firsthand. Not only do we bring telescopes, but we are often asked to do a short presentation. Steve Solon has been very gracious in facilitating these presentations over the past few months, but we are always on the lookout for new volunteers. If you are interested in giving a short presentation, let us know and we can help you with your preparation and delivery.

Watch for invitations to upcoming school parties on the DAS Yahoo! group list. If you don't belong to the Yahoo! group list, but would like information on upcoming school star parties, send me your email address and I can notify you directly. Also, if you have children in school and would like us to put on a star party for your child's class, please email me at csastrogirl@aol.com.



Jefferson County Open Space coordinator Tabbi Kinnion lines up the telescope at Pine Valley Observatory in the Pine Valley Open Space near Pine, Colorado. The DAS picnic previously scheduled for July 12, has been changed to Friday, July 18th and combined with the DAS Regular Meeting—all to be held at the Pine Valley Open Space. See Page 7 for details.

Image copyright 2003 Dan Wray

For those who don't have a scope, but would still like to participate, the DAS has a Celestron 8-inch dobsonian (equipped with two eyepieces and a Telrad) available for these types of activities. The scope is also available for up to two weeks at a time for members who would like to use it for their own observing. We ask for a \$200.00 cash deposit, which is fully refunded upon return of the scope in good condition.

Thanks to everyone who has participated in the recent star parties and a warm welcome to those who will be joining us in the future.—
Carla Swartz

DAS Officers

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Ivan Geisler	David Shouldice
Ron Mickle	Steve Solon
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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.

DAS Schedule

JUNE

- May 31-June 1
Dark Sky Site Weekend
- 6 E-Board meeting, 8 P.M.
- 7 **Open House** (the Open House begins at dusk.)
Chamberlin Clean-Up Day begins at 5:00 P.M.)
- 13 General Meeting at Olin Hall, DU, 7:30 P.M.—Speaker: Patti Kurtz (DAS member), "Adventures under Southern Skies."
- 26-29 Star Stare
- 28-29 Dark Sky Site Weekend

Public nights are held every Tuesday and Thursday evenings beginning at the following times: October 1 - March 31 at 7:00 P.M.
April 1 - September 30 at 8:30 P.M. at Chamberlin Observatory
Costs to non-members are: \$3.00 adults, \$2.00 children.
Please call (303) 281-9052 for reservations.

JULY

- 11 E-Board meeting, 8 P.M.
- 12 Chamberlin Clean-Up Day begins at 5 P.M., and
Open House (the Open House begins at 7:30 P.M.)
- 18 **General Meeting and Picnic at Pine Valley Ranch, 6:00 P.M.**
(Details on Page 7)
- 24-26 WUTS: Foxpark
- 26-27 Dark Sky Site Weekend

www.denverastro.org

Eggs in the Air

by Patrick L. Barry

The sky will be filled with flying eggs on May 10, 2003, when a thousand students converge on The Plains, Virginia, for the first-ever national high school rocketry competition.

Called the Team America Rocketry Challenge (<http://www.rocketcontest.org>), the competition sets the goal of flying a custom-built, two-stage rocket carrying two raw eggs to a height of exactly 1,500 feet, and then returning the eggs to the ground unbroken. The team that comes closest to 1,500 feet without breaking their eggs will win the national title.

The competition is being organized by the Aerospace Industries Association and the National Association of Rocketry (NAR). NASA administrator Sean O'Keefe will attend the final event.

"The idea is to get kids interested in the world of aerospace," says Trip Barber, director of the competition and vice-presi-

Welcome New Members!

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

- Gar A. Bergstedt
- Keith Estes
- Stephan L. Grove
- Ed Ladner
- David Litoff
- Mike Otero
- Ian Rawlings
- Karleen Schofield
- Darlene Stapleton
- Christian Toohey

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 (cbcarlso@du.edu). See the back page of this newsletter for more information.

dent of the NAR. "And they will learn some important lessons about the power of math and science-and cooperation and teamwork-along the way."

To develop their designs, the students first used computer simulator software provided by NAR. Then they had to apply old-fashioned ingenuity and craftsmanship to bring the design to life and flight testing to refine it.

Students constructed rocket bodies using a combination of hobby-store rocket kit parts and custom materials. A typical rocket might consist of cardboard tubes from paper-towel or wrapping-paper rolls, a pre-made nose cone, rocket-kit body segments cut to size, and light-weight, balsa wood fins. But the greatest challenge for many was designing the compartment for the eggs.

Some used plastic Easter eggs as casings, padding the inside with bubble wrap, foam peanuts, or even gelatin. Others decided not to "reinvent the wheel," making a cradle from the egg-crate material used for shipping eggs. Some chose to make larger, more powerful rockets big enough to carry the eggs inside, while others made smaller, more efficient rockets that have a bulging egg compartment mounted on top.

A hundred unique designs will be put to the test in Virginia. Only one will win. But for the students, the real prize has already been won: Learning an approach to problem-solving that works, whether you're launching eggs over a field or sending astronauts to Mars.

In the end, it's all about the future: Future technologies and the kids who will grow up to create them. Many advanced technologies are being developed now by NASA's New Millennium Program (<http://nmp.nasa.gov>). Who will do that work in the future? Perhaps some kids who spent their weekends launching eggs in the air.

Are you a kid? Would you like to build your own rocket? Visit NASA's Space Place and learn how to make a bubble-powered rocket! (<http://spaceplace.jpl.nasa.gov/rocket.htm>). It won't take you to Mars, but it's a good way to get started.



A Boeing Delta II (7326) rocket launched the New Millennium Program Deep Space 1 spacecraft on October 24, 1998.

Charts Courtesy: NASA

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

AstroTrivia

(Look for the answer in this issue.)

Q. What is the nearest (and possibly the largest) star cluster?

AstroTrivia is contributed by Sandy Shaw.

Note from the editor:

Thanks to **Craig Anderson** who wrote this month's feature and to **Sandy Shaw** for this month's "AstroTrivia."

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

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u p d a t e s

Quasars: We Shouldn't Even be Seeing Them!

by Craig Anderson

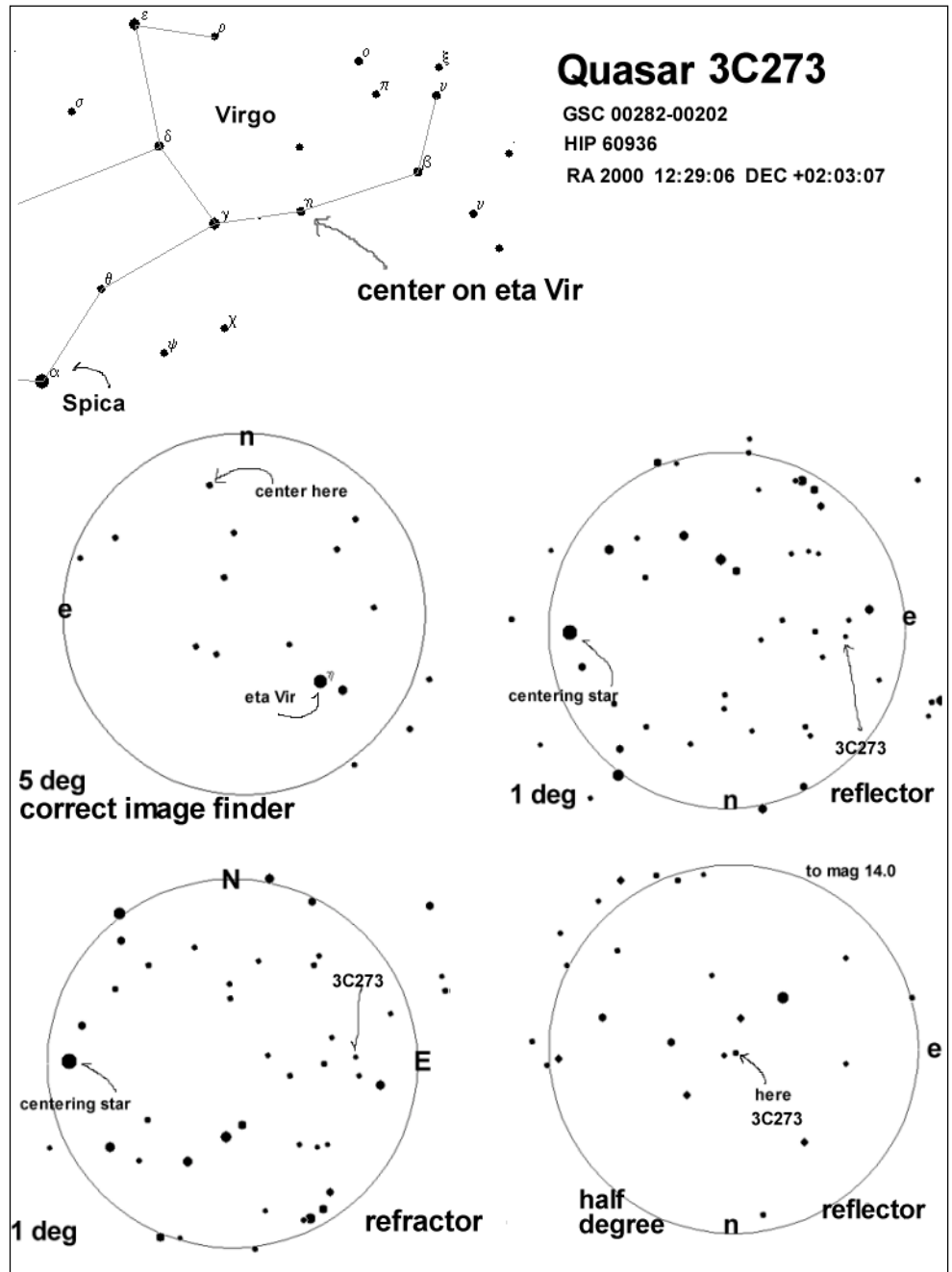
Quasars are compact but brilliant objects common in the small, early universe a few billion years after the big bang. Compressed into a volume about the diameter of our solar system, the quasar pushes out an unsettling amount of energy.

Estimates reach as high as ten thousand times the total energy produced by the entire Milky Way. All that punch coming from a “thing” no bigger than our own solar neighborhood. Still not impressed? A quasar’s energy production is analogous to an object the size of a basketball producing as much energy as our friend, the Sun. Whew!

Not only are they compact and brilliant -they are weird, really, really weird. Current thinking is that quasars are powered by central black holes where time and space are folded and light can never escape. They are hyperactive galaxy “seeds” that contain no baryonic matter -that is, no atoms.

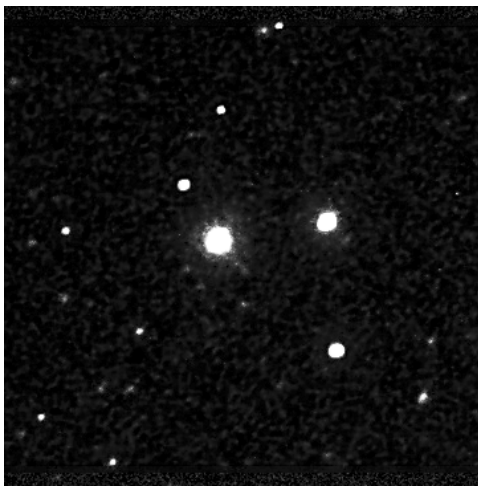
Quasars are also very old, and because of this very, very distant. In fact, there is no known subatomic particle that could even travel that distance. Some have come up with a new theoretical particle called the S0 to fill the need. Yes, scientists have a very difficult time explaining just how we can even see quasars.

But see them we can. In fact early summer is a very good time to see a relatively bright one, about magnitude 12 or so. Discovered in 1963, 3C273 was called a quasar since it looked kind



User this finder chart to locate Quasar 3C273 in Virgo.

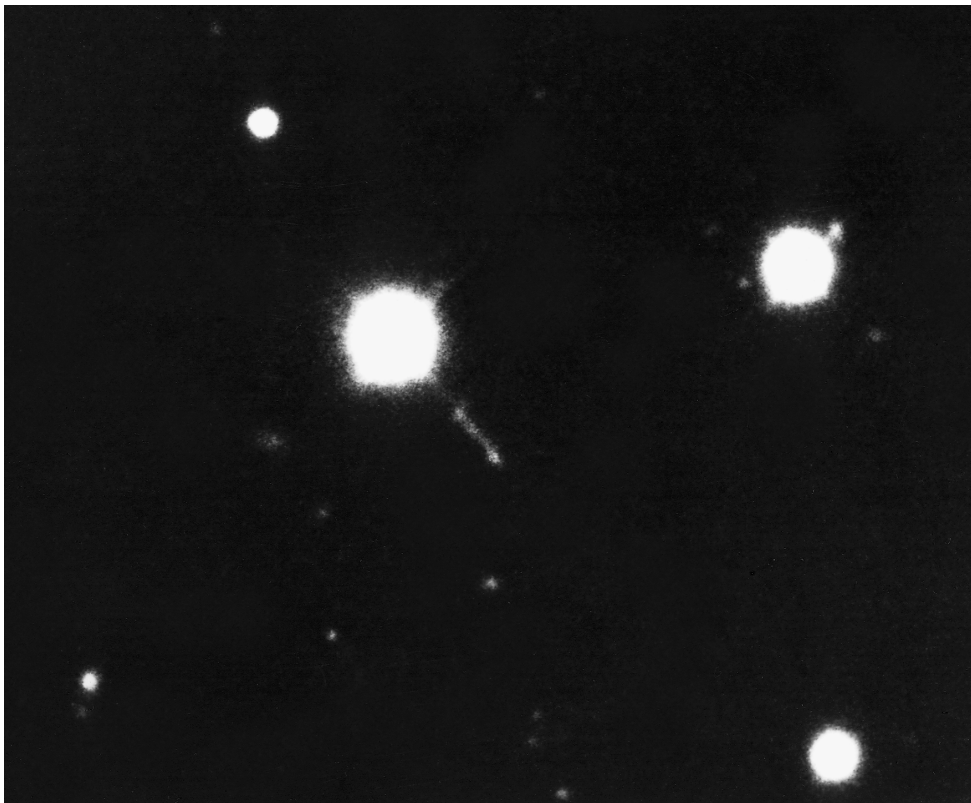
Copyright 2003 Craig Anderson



Look closely to see the jet bursting from Quasar 3C273. Amateur astronomers made this image during an session at the Kitt Peak Visitor's Center Advanced Observing Program on March 24, 2001.

Image copyright 2003 Alan and Lynn Gingrich/Adam Block/
NOAO/AURA/NSF

of like a star and it was a radio frequency source (Quasi Stellar Radio source).



3C273 is a strong radio source in the constellation Virgo: this image from the KPNO 4-meter Mayall telescope shows the visible part of the object. The quasar (quasi-stellar object) may radiate a hundred times more light than the brightest ordinary galaxy, and its jet may measure some 150000 light-years in length.

Image copyright NOAO/AURA/NSF

Ironically, very few quasars are radio sources. The following maps should help out. If you don't already know, use a generic star map to find the constellation Virgo and its alpha star Spica in the southern. Head for a clear, dark site and get your scope ready to track down this item that was well past middle age when the dinosaurs roamed Colorado.

Temporary Change to Newsletter Editor

Patrick Ryan will take over the newsletter editor duties for the July and August issues of the *Denver Observer*. Pat was newsletter editor for several years

Cover Shot:



At this year's Texas Star Party, Joe Gafford captured this image of the Eagle Nebula (M16) in Serpens. It is a composite of two 2-minute filtered exposures each of red, green, and blue. He used an 18-inch f/4.5 telescope through a field flattener with an SBIG 2000XM ccd camera binned 1x1. The Eagle Nebula is a gigantic stellar nursery that has led many professional astronomers to new discoveries about the birth of stars.

and graciously offered to produce the club's newsletter while the current editor, Patti Kurtz, takes a two-month "leave of absence."

If you have updates and/or articles you'd like to share please contact Pat at pluto6@qwest.net.

Thank you, Pat, for taking on this responsibility.—*Patti Kurtz*

A Total Solar Eclipse
at Midnight?
How weird is that?

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

Directions to the E.G. Kline Dark Site

The DAS Edmund G. Kline Dark Site is about 60 miles east of the "mousetrap" 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.



A nice globular cluster in Scorpius, NGC 6144 lies just northwest of Antares. Joe Gafford imaged this jewel at the Texas Star Party this year. Image copyright 2003 Joe Gafford

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.

edmund g. kline dark site

Annual Picnic and Meeting Change for June

The DAS Picnic previously scheduled for July 12, has been changed to Friday, July 18th and combined with the DAS Regular Meeting. Both the picnic and meeting will be at Pine Valley Open Space Park, near Pine, CO., where we will have an evening picnic and then go up to the Pine Valley Observatory at dusk.

The picnic starts at 5 p.m. with the grilling of meat and other delicacies. Members should bring lawn chairs and a covered dish to share. The DAS will provide hamburgers, veggie patties, hot dogs (and the trimmings), cold drinks, plates, utensils, and napkins. You can bring your own scope if you wish, however, observing and parking space next to the observatory is limited. Following the picnic, we will car-pool or shuttle up to the observatory. If you want to work off that extra burger, you can walk up, but it is a fairly steep climb. Charcoal grill fires are allowed assuming there is no fire ban in effect by then.

Getting There:

From U.S. Highway 285 at Pine Junction, turn southeast onto Pine Valley Road (County Road 126). Continue 5.8 miles toward the town of Pine, then follow the signs to the park.

About the Observatory:

Pine Valley Observatory was built in the late 1930s by the Pine Valley Ranch owner



Western Amateur Astronomers presented the 2003 G. Bruce Blair Award to our very own Jack Eastman at the Riverside Telescope Makers Conference in Big Bear, CA. on May 24, 2003.

Image copyright 2003 Joe Gafford

Conrad Johnson. The observatory houses a 6 inch Fecker Refractor. The dome turns on track that was originally narrow gauge rail for an ice-train that ran in the ranch. The ranch was acquired by Jefferson County Open Space in the 1980's. The observatory and telescope has been beautifully restored by JeffCo Open Space where it now serves to show the public the stars and planets from high above this beautiful valley under dark skies.

The telescope has a weight driven clock drive, and looks very much like a miniature of the Clark 20 inch in Chamberlin. Late in 2002, the cable for the weights broke and dropped to the bottom of the pier. JeffCo. Open Space coordinator Tabbi Kinnion called on Dave Trott for help in repairing the drive. Subsequent calls got DAS members, Ron Pearson, Neil Pearson, and Dan Wray all involved in the disassembly and repair of the drive. Dan successfully completed the repair in Feb. of this year. JeffCo Open Space and DAS in-

vite you to come up and enjoy this beautiful observatory and park.

More information about the park can be found at http://206.247.49.21/ext/dpt/comm_res/openspac/pvr.htm.—Ron Pearson

Astro-Trivia Answer

A. The five central stars of the Big Dipper (Beta, Gamma, Delta, Epsilon and Zeta Ursae Majoris) are among the brightest members of the Ursa Major Moving Cluster, also known as Collinder 285. More than 100 years ago astronomers discovered that these five stars have about the same radial velocity and proper motion, indicating that they are moving through space together. Centered about 75 light years away, the group is our nearest star cluster. With an apparent diameter of more than 20 degrees, it is also probably the largest. The cluster includes stars from the constellations Corona Borealis (Alpha and Eta), Bootes (Zeta and Kappa), Leo (Delta and Zeta) and Leo Minor (21), all of which can be seen with the unaided eye or with binoculars.—Sandy Shaw

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updates

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 Renewal

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*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*



Denver Astronomical Society

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

JUNE'S MEETING
JUNE 13:
General Meeting at Olin Hall, DU, 7:30 P.M.—Speaker: Patti Kurtz (DAS member), "Adventures under Southern Skies."

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