

The Denver

OBSERVER

Newsletter of the Denver Astronomical Society
One Mile Nearer the Stars

Image copyright 2007 Steve Solon

Cosmic Soup

The dark heavens are ablaze with the fascinating, the colorful and the beguiling. If earth-bound imagers put together their own Hubble Deep-Field -type picture, these are some of the targets they might choose—familiar, color-rich and far away. This montage of subjects comprises some of Steve’s work over several years from his backyard observatory. He says the black and white images “ . . . harken back to the days of the closing credits from the original *Outer Limits*. — now that was good stuff.”

GEAR UP FOR ASTRONOMY DAY!

S E P T E M B E R S K I E S

Inside The Observer

Jupiter is already sliding down towards the West in the evening, setting at 10 P.M. by the end of the month, while Mars isn't seeable until midnight. For those who might want to observe the Moon every night as the

<i>Schedule of Events</i>	2
<i>Society Directory</i>	2
<i>CAD Update</i>	3
<i>ALCON Report</i>	4
<i>NASA's Space Place</i>	7
<i>Membership Info</i>	back page

terminator advances from right to left across its face, the cycle starts on the 11th with New Moon and ends on the 26th with Full Moon. Features on its surface look best in the dramatic shadows of the terminator.

Let's concentrate on Lyra and Cygnus this month. These constellations differ greatly in size. Cygnus the Swan, or the Northern Cross, flies right down the Milky Way. Little Lyra floats just northwest of it, basking in the brilliance of its big star Vega, a member of the Summer Triangle of Vega, Deneb at the top of the Cross and Altair in Aquila the Eagle. Besides

4	Last quarter moon
11	New moon
19	First quarter moon
23	Autumnal equinox
26	Full moon

Vega, Lyra is known as the home of M57, the Ring Nebula, one of the best-known of the exploding stars, the planetary nebulae. The parallelogram of Lyra hangs down below Vega like an elongated diamond with two long sides and two short ones. On the short side closest to Vega, the star farthest from Vega, Delta Lyrae is a double star in a scattered cluster. The Ring Nebula is in the middle of the short side at the far end of the parallelogram, a position that's easy to memorize. It looks like a small ghostly cheerio.

Southeast of that end of Lyra is Albireo, the beautiful double star at the head of Cygnus or the bottom of the Cross. This pair is proof that stars have different colors—and that means different temperatures: the blue star is

Continued on page 6

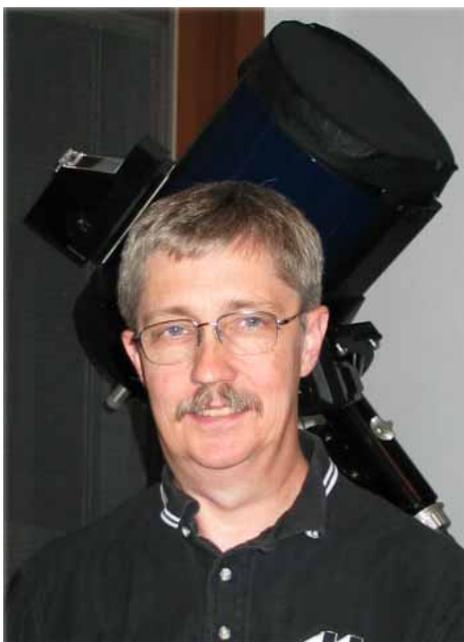
President's Corner

Another Astronomical League (AL) Convention has come and gone. The attendance was ~150 people, about the same as Weekend Under the Stars! The council meeting was good with the chief topics being how to revitalize amateur astronomy in general, and the League in particular. I polled the major groups AAVSO, ALPO, IOTA and the League, where all but AAVSO said they were having problems recruiting new people. DAS has this problem as well. We need new and younger blood to carry on our traditions for another 60 years or so.

We have Astronomy Day approaching on September 15. We will be holding forth at the Denver Museum of Nature & Science during the day, and at Chamberlin Observatory in the evening. I suggest that some of you who do not usually plan to attend these festivities, get together and take your telescopes to a popular location near you for some good old "Sidewalk Astronomy!" We can make some packets about DAS available and see who bites!



I have been recommending that newcomers to astronomy DO NOT buy a telescope, but contact



Wayne Green, DAS President

their local clubs first. This way they can see different telescopes and make a good buying decision after gaining some very valuable experience. You guys might want to spread this little factoid around.

The AL really liked the "Astronomy Club in a Box" idea for developing community based astronomy clubs. The main problem with getting students started in astronomy is the driving distance to gatherings. The

Society Directory

President:

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Keith Pool (303) 718-7273

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Executive Board Members

Jack Eastman	Ron Pearson
Joe Gafford	David Shouldice
Frank Mancini	Bryan Wilburn
Ron Mickle	Dan Wray

Steve Solon, Past President

President Emeritus, Larry Brooks

Committees

Van Nattan-Hansen Scholarship Fund

Ron Pearson (Chair)

P.O. Box 150743

Lakewood, Colorado 80215-0743

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Wayne Kaaz (Chair) (303) 840-1549

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IDA Representative:

Dr. Robert Stencel

Public Outreach Committee:

Ron Mickle (Chair)

Bryan Wilburn (External Outreach Coordinator)

Email: bwilburn@4dv.net (303) 542-5137

Student Astronomy Committee:

Naomi Pequette (Chair)

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

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Darrell Dodge

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(303) 871-5172

DAS Correspondence:

Denver Astronomical Society
Chamberlin Observatory C/O Wayne Green

2930 East Warren Avenue
Denver, Colorado 80210

The Executive Board conducts the business of the DAS at 7:30 P.M. at Chamberlin Observatory. Please see the Schedule of Events for meeting dates. All members are welcome.

SEPTEMBER

- 3 Labor Day
- 8-9 EGK Dark Site Weekend
- 15 Colorado Astronomy Day (Solar observing at DMNS [11 A.M.-3 P.M.], Open House at Chamberlin Observatory (Begins at 6:00 P.M.))
- 28 E-Board meeting at Chamberlin Observatory (Begins at 7:30 P.M.)

OCTOBER

- 5 General Membership Meeting at D.U.'s Olin Hall (Begins at 7:30 P.M.)
- 6-14 Okie Tex Starparty
- 14-15 EGK Dark Site Weekend
- 20 Open House at Chamberlin Observatory (Begins at 5:00 P.M.)
- 28 Annual DAS Auction (Begins at 11:00 P.M.)

Public nights are held every Tuesday and Thursday evenings beginning at the following times:

March 9 - April 14 at 8:00 P.M.

April 15 - September 1 at 8:30 P.M.

September 2 - March 8 at 7:00 P.M. at Chamberlin Observatory

Costs to non-members are: \$3.00 adults, \$2.00 children.

Please make reservations via our website (www.thedas.org) or call (303) 871-5172.

DAS Schdule

thedas.org

Bringing Astronomy to the People: Colorado Astronomy Day 2007

by Darrell Dodge

On September 15th, all DAS members will have an opportunity to get others hooked on our passion. On that day, Colorado Astronomy Day (CAD) will begin at 11 A.M. at the Denver Museum of Nature & Science (DMNS) and won't let up until the last scope is put away at Chamberlin Observatory (probably about 11 P.M.).

For those who've participated before, the day has familiar outlines: We'll begin setup at the DMNS about 10 A.M. Volunteers will check in at the volunteer's station to the left of the West museum entrance. We will be setting up on the West patio. Those who have them should use their DAS I.D. badges in addition to the one issued by the DMNS. There will also be special CAD badges for those who need them. Hand trucks will be available.

Solar observing will begin at 11 A.M. or so and continue until 3 P.M.. DAS will have a two-table information station across from the entrance to Space Odyssey. There will be presentations on the Galaxy stage by DAS members and DMNS curators. After 4 P.M., activity will switch over to Chamberlin Observatory. Members are invited to bring displays of meteorites, astrophotos, and special equipment set-ups to show inside the Observatory. (Please remember to contact the coordinator about what you're

bringing.) And, of course, we'll have a regular expanded Open House on the lawn and viewing through the 20-inch Clark Refractor.

Another possibility for outgoing members is to form a small observing team and set up on a sidewalk somewhere in Denver. John Dobson started the "Sidewalk Astronomy" approach to outreach in San Francisco, and it would be great to get it started here. Of course, a rugged Dobsonian scope, with an aperture of 8 or 10 inches and a set of Plossl eyepieces is an excellent choice. It would be wise to check out the location beforehand to make sure it's not too bright, has a good view of the brighter available objects, and is reasonably safe.

Many have signed up to participate already, but all are invited. We need solar scopes (HA, calcium and white) for the



DAS members are shown preparing for Colorado Astronomy Day in October of 2005. On September 15, Colorado Astronomy Day 2007 will be a full day of sharing astronomy with the public.

DMNS, and exhibit stations for Chamberlin. Everyone is also invited to bring nighttime scopes for the lawn in Observatory Park, but there's no need to sign up for that, though we would like to know if you're bringing some special equipment, like an imaging station or a video set-up. Please contact the CAD coordinator, Darrell Dodge at 303-932-1309 or dmdodge@aol.com

President's Corner (continued)

League will be working to make the idea more accessible. We decided to break down and accept the GOTO telescopes for what they are. People get these things, have no idea how to use them but have already sunk their cash in the investment. To these ends the use of GOTO scopes should be welcomed—the League is discussing the addition of the GOTO label to the certificate obtained with these scopes.

The main thing here is that to get people "where they need to be," we have to start working with them "where they are."

I have been recommending a basic kit for students that includes a planisphere, a pair of binoculars, the Orion *Deep Map 600*, and a good book on Binocular Observing. This keeps the entry price below \$100, and if students lose interest the bin-

oculars can at least be used for something else! Once they start with the binoculars we know they will just have to have a good telescope.

The times of our events will change this fall, as school starts and the nights are finally getting to a useful length. Now if we can get these pesky clouds to leave! Clear Skies.—*Wayne Green*



ALCON 2007 Report

by Wayne Green

The Astronomical League Convention is always a fun and interesting time. This year's convention was held in Portland, Oregon. The Council meeting brings the officers, regional delegates, convention planners, observing program coordinators, and other interested parties together to discuss where we've been and where we're headed. A separate business meeting is held during the convention proper, where the next year's budget is approved. The convention itself consists of panels, and papers related to topics of interest to amateurs. This year's accommodations were in a hotel associated with Portland State University. Vendors attend, there are side trips for the non-astronomical family of the attendees. There is a Star-B-Que where the delegates eat, and hold a public star party afterwards. The Banquet caps off the convention and everyone scatters back home.

At the council meeting, we discussed the

very real decline in amateur astronomy. We discussed a decrease in applicants to the NYAA and other awards. These are problems facing most other amateur observing programs. I called Dr. Mike Reynolds - the new director of ALPO and Elizabeth Waagen of the AAVSO and I had spent time with Paul Maley of IOTA. I had asked them how their respective organizations were 1) developing membership and 2) developing their leadership. Membership and leadership development are serious concerns for all, but AAVSO reports they are doing pretty well getting new observers and they do have a good leadership development program.

DAS has these very same issues.

We discussed clarifying the message about amateur observing and astronomy, about the commitment and the rewards through activities, the press, and with something on the scale of National Public

Radio. Kelley Beatty suggested working closely with scouting programs, schools, and other civic organizations. We explored the benefits to the members, and approved the council members to explore league sponsored travel for celestial events.

Naomi Pequette, our very own NYAA winner this year, agreed to work with other NYAA recipients on ways to promote the award program, to encourage applicants and provide some suggestions for project/programs. Dr. Stencel has agreed to help with this effort as well. We asked about previous winners and asked the regions to track down former recipients to get their perspective on the awards program.

The tentative dates for the next Astronomy Days are 10 May and 4 October 2008. There is no experience with a fall event so next year will see two dates. The general consensus is that the Fall date will offer better weather.

The AL has done quite a revamp of its web site. Thanks to Tammi Plotner, Mike Hotka, and Vern Paxon the new website is online and ready for use. The AL store has also been revamped and is online. Visit the website at <http://www.astroleague.org>.

The benefits to members are understated, and the League has implemented a "What's Up" newsletter to be mailed to ALCORs. This will bring timely news to the ALCOR about league activities. Establishing better communications is a priority.

To these ends we discussed what the League can do to promote developing amateurs, and I presented the "Astronomy Club in a Box" idea that Bill Travis of BASS and I have been kicking around for several years. The League loved the concept, as it develops small astronomy clubs at the community level. We discussed things the League can do to help with astronomy. Terry Mann suggested we pursue grants to develop programs related to our work with amateur astronomy.

We discussed the fact that GOTO telescopes are something we have to warmly

This image of the Bubble Nebula (NGC 7635) in Cassiopeia was taken at last month's Weekend Under the Stars (WUTS) star party at Foxpark, WY. Joe used his JMI 18-inch f/4.5 telescope with an SBIG ST-2000XM CCD camera. Exposures were 10,10,7,10 minute LRGB.

Image copyright Joe Gafford



DAS'S NAOMI PEQUETTE ACCEPTS AL NYAA AWARD

Our Van Nattan-Hansen scholarship winner, Ms. Naomi Pequette, was this year's National Young Astronomer Award Recipient. The award recognizes her efforts to develop youth astronomy programs and content, in addition to her work at Mt. Evans and papers for school projects. The award consisted of a \$1,000 scholarship, a nice Meade LX-200R telescope, a lifetime observing pass to McDonald Observatory, a membership with IDA and an expense-paid trip to ALCON 2007.



Photo credit: Jan Keiski, Rose City Astronomers

Ms. Pequette attended the Astronomical League's Council Meeting where she agreed to develop a program to follow-up with past NYAA recipients and to develop ways to encourage future applicants. She will be working with Max Moe, a student at CU, recent DAS speaker, and the 2003 NYAA winner.

Ms. Pequette was active with astronomy camps and teaching astronomy and physics to kids in the Denver area. In addition to this work, she worked with Dr. Stencel at the Meyer-Womble observatory this summer supporting research efforts there. She enters the University of Denver this fall as a sophomore majoring in Physics and Astronomy.—Wayne Green

embrace, since most people buy the things before they join an astronomy club. We are discussing adding GOTO to many of the certificate programs (with the word GOTO in the certificate) to keep with the spirit of orienting people to the sky in general and to the many observing areas in particular. Mel Bartels suggested the use of large, fancy, and expensive telescopes at star parties may put people off to basic observing. We discussed sidewalk astronomy as a way to reach more people.

The MARS region is in need of elections, and I will be working with folks to get a new slate of MARS officers and staff in position. We are a large geographic area, and have quite a few League and non-League clubs. If any of you want

to volunteer for League positions get in touch with me or Jerry Sherlin.

I had the opportunity to meet and discuss this issue with Mel Bartels. First, I expressed the DAS's great appreciation of the responses to emails and help with our telescope making efforts these past few years. He is always supportive, positive, and helpful with the questions we emailed to him. I shared the banquet dinner with Richard Berry of *CCD Cookbook* fame—a very delightful person. I had the time to talk with Kelley Beatty of *Sky & Telescope* about several topics—he has the same problems with *S&T* subscriptions we have!

At the end of the convention, I came away with the sense that there is a lot of

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work we need to be doing to bring new people to astronomy.

With the Christmas season coming up, I suggest we tell people not to buy a telescope, but rather find a local astronomy club and get a perspective on existing equipment and explore areas of astronomy that interest them. The starter kit I am putting forward consists of a planisphere, a "Deep Map 600" star map, a pair of 7x50 binoculars and a book on binocular observing. We discussed a new meeting for DAS, to be held one hour prior to the Open House - tentatively called the Observers Meeting. Let the attendees come up with a final name! This will be lights-on brains-on time to learn about equipment and tricks of the trade - then off to the lawn of Chamberlin to put those new skills to use! This is a family oriented program. It is open to the public and we hope people will join the DAS!

Many thanks to the The Astronomical League, the Rose City Astronomers and the many speakers and attendees that made this year's convention a great place to share ideas.





The Andromeda Galaxy (M31) is on a collision course with our own Milky Way. . . There goes the neighborhood! At 2.54 million light-years away and with its newly estimated 1 trillion stars, Andromeda could collide with the Milky Way Galaxy in about 3 billion years. Is it too soon to buy Galactic Collision Insurance? David used a Hap Griffin Modified Rebel XT; Orion 80ED with .8 reducer; ISO 800; 64 subs at 90 seconds each; images Plus 2.82; taken from Chainlube Observatory in Englewood. Image copyright David Wolf

September Skies (continued)

Continued from page 1

hotter than the pale gold star. Open cluster hunters: while in Cygnus, near the center of the cross is the cluster M29, and a good way northeast of the tail star, Deneb, is M39.

Now that you're familiar with the territory, go back to the bottom of Lyra where M57 is and slide down halfway to Albireo to find the small globular cluster M56. To find the other well-known planetary, M27 the Dumbbell Nebula in Vulpecula, re-examine the distance and direction from Lyra to Albireo, then continue a similar distance and direction past Albireo to M27, which is much bigger than the Ring. It may look like an hourglass, or in smaller scopes just a rectangle.

Now we move into the Deep South. Having extended the M57-Albireo vector to get to M27, now extend similarly southeast again but a bit farther. This gets us to Delphinus the Dolphin, a small but distinct constellation—a diamond with a tail. Now extend yet again, this time drifting a bit farther and to the left to find M15, one of the biggest globular clusters we can see, and many people think the most beautiful.

Now you're in the middle of nowhere, above the dim constellation Aquarius. Between Aquarius and the teapot of Sagittarius to the West is the jester's smile shape of Capricornus the Goat. It may not be easy to find until late evening. If you can see the whole of it eas-

ily, the glob M30 is just off its lower left side. Another glob M2 is halfway between M15 and Capricorn's left corner. The moon will be at that corner on the 23rd. Now slide West to the teapot of Sagittarius. Way above and to the left is Altair. Imagine a line from the top of the teapot to Altair and a point halfway between. A bit to the right of that point is the Wild Duck cluster, M11, featured in page 44 of September's *Astronomy Magazine*. From there you might want to go back down to revisit all the Messier objects of Sagittarius floating up on the teapot's plume of steam, the meaty part of the Milky Way that marks the center of our galaxy. —Dennis Cochran

updates

Cosmic Cockroaches

By Dr. Tony Phillips

Cockroaches are supposed to be tough, able to survive anything from a good stomping to a nuclear blast. But roaches are wimps compared to a little molecule that has recently caught the eye of biologists and astronomers—the polycyclic aromatic hydrocarbon.

Polycyclic aromatic hydrocarbons (PAHs for short) are ring-shaped molecules made of carbon and hydrogen. “They’re all around us,” says Achim Tappe of the Harvard Center for Astrophysics. “PAHs are present in mineral oils, coal, tar, tobacco smoke and automobile exhaust.” Aromatic, ring-shaped molecules structurally akin to PAHs are found in DNA itself!

That’s why Tappe’s recent discovery may be so important. “PAHs are so tough, they can survive a supernova.”

The story begins a few thousand years ago when a massive star in the Large Magellanic Cloud exploded, blasting nearby star systems and interstellar clouds with hot gas and deadly radiation. The expanding shell, still visible from Earth after all these years and catalogued by astronomers as “N132D,” spans 80 light years and has swept up some 600 Suns worth of mass.

Last year “we observed N132D using NASA’s Spitzer Space Telescope,” says Tappe. Spitzer is an infrared (IR) telescope, and it has a spectrometer onboard sensitive to the IR emissions of PAHs. One look at N132D revealed “PAHs all around the supernova’s expanding shell. They appear to be swept up by a shock wave of 8 million degree gas. This is causing some damage to the molecules, but many of the PAHs are surviving.”

Astronomers have long known that PAHs are abundant not only on Earth but throughout the cosmos—they’ve been found in comet dust, meteorites and many cold interstellar clouds—but who knew they were so tough? “This is our first evidence that PAHs can withstand a supernova blast,” he says.



Using the IR spectrometer on the Spitzer Space Telescope, scientists found organic molecules in supernova remnant N132D.

Their ability to survive may be key to life on Earth. Many astronomers are convinced that a supernova exploded in our corner of the galaxy 4-to-5 billion years ago just as the solar system was coalescing from primitive interstellar gas. In one scenario of life’s origins, PAHs survived and made their way to our planet. It turns out that stacks of PAHs can form in water-think, primordial seas-and provide a scaffold for

nucleic acids with architectural properties akin to RNA and DNA. PAHs may be just tough enough for genesis.

Cockroaches, eat your hearts out.

Find out about other Spitzer discoveries at www.spitzer.caltech.edu.

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

FREE SNEAK PREVIEW OF NEW PBS TV6 SHOW:

Timothy Ferris, “Seeing in the Dark”

(see article in the September *Sky & Telescope*)

Wed Sept. 12th, 7:30 P.M.

DU campus Boettcher Auditorium

2050 E. Iliff Ave (adjacent to Olin Hall—site of DAS general meetings; parking passes for Olin lot will be provided).

The Bisque brothers will be attending to explain their role in the movie.

See also:

<http://seeinginthedark.org>

<http://sfsidewalkastronomers.org/newsarticles/news/seeingindark>

nasa's space place

About the Denver Astronomical Society

Membership in The Denver Astronomical Society is open to anyone wishing to join. The DAS provides trained volunteers who host educational and public outreach events at the **University of Denver's Historic Chamberlin Observatory**, which the DAS helped place on the National Register of Historic Places. First light at Chamberlin in 1894 was a public night of viewing, a tradition the DAS has helped maintain since its founding in 1952.

The DAS is a long-time member in good standing of the **Astronomical League** and the **International Dark Sky Association**.

The DAS' mission is to provide its members a forum for increasing and sharing their knowledge of astronomy, to promote astronomical education to the public, and to preserve **Historic Chamberlin Observatory** and its telescope in cooperation with the University of Denver.

The DAS is a 501(c)(3) tax-exempt corporation and has established three tax-deductible funds: the Van Nattan-Hansen Scholarship Fund, the Public Outreach Fund, and the Edmund G. Kline Dark Site Fund. To contribute, please see the bottom of the membership form for details.

More information about the DAS, its activities, and the special tax-deductible funds is available on the DAS web site at www.thedas.org.



**APPLICATION FOR MEMBERSHIP TO THE
DENVER ASTRONOMICAL SOCIETY**

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