

OBSERVER



FALLING FOR AUTUMN SKIES

NORTH AMERICA AND PELICAN NEBULAE IN CYGNUS

The North America (NGC 7000)-Pelican (IC 5070) nebulae are visible from a dark site by some people with binoculars (your editor has never been able to resolve these two under any circumstances). The two emission nebulae are approximately 50 light-years across, and are 1,500 light-years distant. They are part of the same interstellar cloud of ionized hydrogen (H II region). This image was taken with Darrell's DSLR through his 72mm refractor at the Rainbow Point Overlook in Bryce Canyon National Park in Utah during July, 2011 on the last night of the ALCon there.

Image © Darrell Dodge

Calendar

5.....	New moon
12.....	First quarter moon
19.....	Full moon
22.....	Autumnal equinox
26.....	Last quarter moon

Inside the Observer

- President's Message..... 2
- Society Directory..... 2
- Schedule of Events..... 2
- About the DAS..... 3
- NASA's Space Place..... 4
- September Speaker..... 4
- Members Astrophotos..... 5
- Member Profile..... 6
- New Members..... 6
- Job Jar..... 7
- Delphinus Nova..... 7
- Cassini Looks Back..... Back Page

SEPTEMBER SKIES *by Dennis Cochran*

The Veil Nebula is overhead these evenings. Just find Cygnus the Swan, also known as the Northern Cross, flying southwest and search down the lower wing of the bird. South of the south-east cross star is the Veil in the region 20^h 28^m 29^s. Use a nebula or an O3 filter in order to see it better. The flying swan is east of compact Lyra, whose trapezoidal shape dangles down from the very bright star Vega. Remember that the Ring Nebula is tucked between the two bottom stars of the trapezoid—it looks like a Cheerio in the sky.

Farther east Pegasus also flies, but we'll discuss him and his friend Andromeda next month. Little Delphinus the Dolphin leaps up into the space south of Cygnus, in a Pegasus direction from the bright Altair of Aquila the Eagle. I'm always confused about whether Aquila is diving or rising.

Equuleus the tiny horse, about the size of Delphinus, is southeast of the same. You'd think a horse constellation would be rather large. Obviously the wrong people were in charge of this constellation naming project! In the *Peterson Guide to the Stars and Planets*, edition 2, chart 32 shows that the two top stars of the Equuleus quadrangle are doubles. See if you can split them; they are not mentioned in the Peterson text. Having found the four-sided tiny horse, aim down its long axis a horse's worth past the horse's bottom to find globular cluster M2, with a very condensed center (21^h 35^m -01^s). From M2 you can cast your eyes east to the jumble of stars along the top of Aquarius. Just east of the α (alpha) star is a small "Y" formed by the γ (gamma), ν (nu), ζ (zeta) and π (pi) stars. The ζ (zeta) star in the middle of the "Y" is a

Continued on Page 3

PRESIDENT'S MESSAGE

by Ron Hranac

Do you practice safe astronomy? "What's to practice?" you ask. "Amateur astronomy is a whole lot safer than skydiving, climbing a fourteener, white water rafting, or even playing a game of softball."

At first glance, one might be inclined to think that amateur astronomy is a pretty benign hobby with few risks. But is it?

Several years ago a friend and I set up our scopes between the parking area and the picnic shelter at Daniels Park. We were enjoying the nighttime eyepiece views when something suddenly started to make a lot of noise in a nearby Dumpster. The first thought that crossed our minds was "bear." We nervously aimed our flashlights toward the racket, and were very relieved to see an obviously well-fed raccoon rummaging through the trash. To this day I still wonder what we would have done if the critter had been a bear.

Unfortunately, amateur astronomy does come with some potential safety risks. More often than not they're self-induced. For example, not properly tightening hardware on a tripod or mount might result in the whole setup tumbling to the ground, possibly landing on you or someone else. Ever drop a counterweight? Trip over wiring between a power source and your setup? Stumble over an equipment case? Forget to cap or remove the finder scope when observing the Sun, or worse, forget to install the solar

filter before taking a peek through the eyepiece? Do you make an effort to use your legs and not your back when lifting heavy objects such as a telescope? Hopefully you've never fallen off of a step ladder used to reach the eyepiece of a big Dob.

See where this is headed? Sometimes we get in a hurry or maybe just a little complacent. Heck, most of us can easily set up and tear down our scopes in the dark! Not being careful is what causes most accidents to happen.

I want to get back to the critters part of safety. Recently there was a discussion on the Yahoo list serve about a rattlesnake sighting at the dark sky site and what to do in case of snakebite. Quite a bit of good information went back and forth in that discussion. Snakes are only part of the dangerous critter picture, though. (For what it's worth, I've seen a rattlesnake in the wild just once in my life. I was a teenager at the time, hunting birds in northern Idaho with a high school pal. Neither of us was hurt, but the experience caused us to pay a bit more attention as we continued our hike along that game trail).

Frankly, there are many other risky critters that we're much more likely to encounter than venomous snakes during our astronomical adventures. Think mosquitos (West Nile virus); ticks (Rocky Mountain spotted fever and other diseases); raccoons, skunks, foxes, coyotes, and some bats (rabies); spiders (bites); bees (possible allergic reaction to a sting); prairie dogs (plague); and so on. And don't forget bears, moose, mountain lions, and other wild animals that call Colorado home.



Continued on Page 6

DAS SCHEDULE

SEPTEMBER

- 6-8 EGK Dark Sky weekend
- 14 DAS Open House at Chamberlin Observatory (Begins at 7:00 P.M.); Yom Kippur
- 20 General Membership Meeting at Olin Hall (Begins at 7:30 P.M.) Speaker: Chris Peterson, Meteorite/all-sky cam happenings.
- 27 E-Board Meeting at Chamberlin (Begins at 7:30 P.M.)
- 28 or 29 Solar Observing at DMNS (Watch the DAS website for date confirmation).
- 28-6 Okie-Tex Star Party

OCTOBER

- 4-6 EGK Dark Sky weekend
- 12 DAS Colorado Astronomy Day at Chamberlin Observatory (Details forthcoming!) and Open House (Open House begins at 6:30 P.M.)
- 19 DAS Auction (Setup begins at 11:00 A.M., 1:00 P.M. bidding)
- 25 E-Board Meeting at Chamberlin (Begins at 7:30 P.M.)
- 31 Hallowe'en

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

April 9 - October 1 at 8:30 P.M.

October 2 - April 8 at 7:30 P.M.

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

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

Society Directory

- President:**
Ron Hranac 303-790-0893
president@denverastro.org
- Vice President:**
Lisa Judd (626) 487-8515
vp@denverastro.org
- Secretary:**
Dena McClung 303-564-8630
secretary@denverastro.org
- Treasurer:**
Brad Gilman (720) 488-1028

Executive Board Members

- | | |
|-----------------|-------------|
| John Barela | Digby Kirby |
| Jack Eastman | Scott Leach |
| Joe Gafford | Ed Scholes |
| Chuck Habenicht | Dan Wray |

Past President, Ron Pearson
President Emeritus, Larry Brooks

Committees

- Van Nattan-Hansen Scholarship Fund:**
Tim Pimental (Chair)
PO Box 100621
Denver, CO. 80250-0621
- EGK Dark Site Committee:**
Darrell Dodge, Interim Chair
[Email: darksite@denverastro.org](mailto:darksite@denverastro.org)
- IDA Representative:**
Dr. Robert Stencel
[Email: coloida@botmail.com](mailto:coloida@botmail.com)

Volunteers or Appointed Representatives

- ALCor:**
Darrell Dodge (303) 932-1309
- Newsletter:**
Editor: Patti Kurtz (720) 217-5707
[Email: p_kurtz@comcast.net](mailto:p_kurtz@comcast.net)
The Observer is available in color PDF format from the DAS website.
- Website:**
Darrell Dodge
[Email: webmaster@denverastro.org](mailto:webmaster@denverastro.org)
- IT Coordinator:**
Scott Leach

- Librarian:**
Phil Klos
DAS Information Line: (303) 871-5172
- DAS Correspondence:**
Denver Astronomical Society
Chamberlin Observatory c/o Ron Pearson
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.

www.denverastro.org

SEPTEMBER SKIES

(CONTINUED FROM PAGE 1)

fine double with components of almost equal brightness, at $22^{\text{h}} 25^{\text{m}} 00^{\circ}$.

Guy Ottewell says that this month is the maximum of the 11-year solar cycle, so look out for auroras. Meanwhile Comet ISON gets closer and closer—*aieeah!* Listen for a kind of swishing, zooming sound. That might be it, or if you're like me it's probably the wind blowing in one ear and out the other, unimpeded.

Saturn is not dead yet, being an after-sunset object in the west. The Saturn Nebula, however, one of those variously-shaped planetaries, is on or near the meridian in the cradle of the curving top of Capricornus's jester grin, south of the Delphinus-Equuleus stuff we started with, at $21^{\text{h}} 05^{\text{m}} -11^{\circ}$. Southeast of it are M72 and M73, a globular and an open cluster. They're right in the moon's path—it will be waxing there on the 16th and 17th, so don't look for the nebula on those days. Waxing what? Towards the full phase, of course—this occurs on the 19th and is the famous Harvest Moon. Celebrate by doing something rural/autumnal, like carving a pumpkin, or better yet, showing someone the moon. The new moon comes early in the month on the 5th. Look for a crescent moon near Venus in the western sunset on the 8th; Spica will be there too: PHOTO OP! And you don't have to stay up late for this one.

Mars is in the Beehive Cluster in the middle of three-legged Cancer the Crab during the morning of the 8th and 9th. Is this constellation a crustacean or a grumpy astronomer?



M33 - THE TRIANGULUM GALAXY IN TRIANGULUM, AND SATURN

Above photo: DAS member Donald Lynn imaged Messier 33 (NGC 598)—the third largest galaxy in the local group that also contains the Andromeda Galaxy and our own Milky Way. Photo below left: we say good-bye to Saturn this month. Seeing in the Rockies can be challenging—Scott Leach and his friend Floyd Glick shot over 4500 (!) images of the famous ringed planet, but were only able to salvage the 27 of them that comprise this stacked image.

The morning objects won't be on the *S&T* sky chart, which is set up for the evening. Fred Schaaf of *S&T* reminds us to take a good last look at those summer objects in the steam from the spout of the "Teapot," and don't forget those non-steam star clusters M6 and M7 below-right of the spout and above the little zig-zag of stars that makes

up the stinger of the scorpion. M7, the lower, farther east of the two, is at $17^{\text{h}} 52^{\text{m}} -35^{\circ}$. NGC 6453, a globular cluster, is just on its northwest edge. An open cluster NGC 6231 is likewise just north of the ζ (zeta) star of the scorpion, the star where the tail turns from south to east. It is in a group of bright silver-blue O-B stars called H12. A cluster crawling up the scorpion's body is NGC 6242, a hair above -40° just west of 17^{h} . Then, west of H12 about 6 degrees is cluster NGC 6124 at $16^{\text{h}} 22^{\text{m}} -41^{\circ}$. NGC 6193 is a large cluster actually in Ara the Altar, below Scorpius at $16^{\text{h}} 47^{\text{m}} -49^{\circ}$, if you can see that low. I won't be able to see it from where I'll be in September—in the land of Herschel. ★

ABOUT THE DAS

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's 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 501 (c)(3) tax-exempt corporation and has established three tax-deductible funds: the Van Nattan-Hansen Scholarship Fund, the DAS-General Fund and the Edmund G. Kline Dark Site Fund.

More information about DAS activities and membership benefits is available on the DAS website at www.denverastro.org ★



NASA'S Space Place

SIZE DOES MATTER, BUT SO DOES DARK ENERGY

by Dr. Ethan Siegel

A Space Place Partners' article

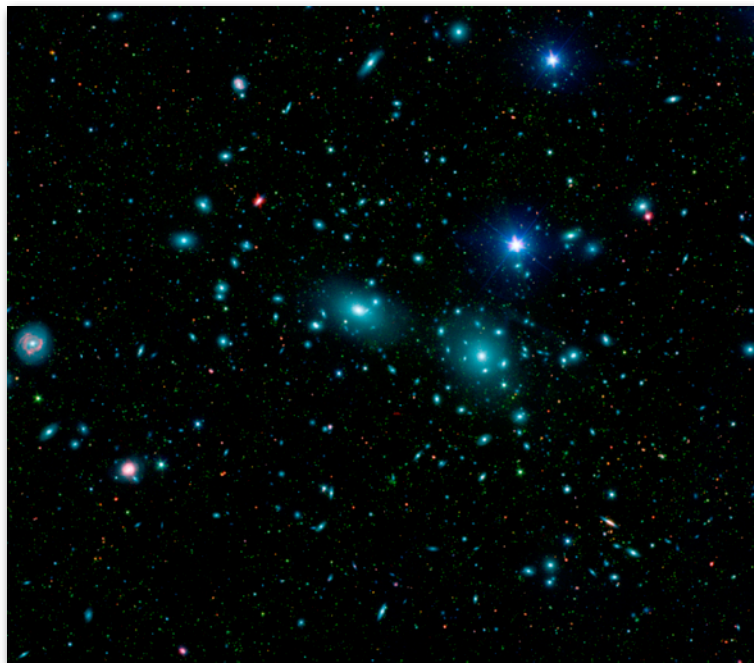
Here in our own galactic backyard, the Milky Way contains some 200-400 billion stars, and that's not even the biggest galaxy in our own local group.

Andromeda (M31) is even bigger and more massive than we are, made up of around a trillion stars! When you throw in the Triangulum Galaxy (M33), the Large and Small Magellanic Clouds, and the dozens of dwarf galaxies and hundreds of globular clusters gravitationally bound to us and our nearest neighbors, our local group sure does seem impressive.

Yet that's just chicken feed compared to the largest structures in the universe. Giant clusters and superclusters of galaxies, containing thousands of times the mass of our entire local group, can be found omnidirectionally with telescope surveys. Perhaps the two most famous examples are the nearby Virgo Cluster and the somewhat more distant Coma Supercluster, the latter containing more than 3,000 galaxies. There are millions of giant clusters like this in our observable universe, and the gravitational forces at play are absolutely tremendous: there are literally quadrillions of times the mass of our Sun in these systems.

The largest superclusters line up along filaments, forming a great cosmic web of structure with huge intergalactic voids in between the galaxy-rich regions. These galaxy filaments span anywhere from hundreds of millions of light-years all the way up to more than a billion light-years in length. The CfA2 Great Wall, the Sloan Great Wall, and most recently, the Huge-LQG (Large Quasar Group) are the largest known ones, with the Huge-LQG—a group of at least 73 quasars—apparently stretching nearly four billion light years in its longest direction: more than 5% of the observable universe! With more mass than a million Milky Way galaxies in there, this structure is a puzzle for cosmology.

You see, with the normal matter, dark matter, and dark energy in our universe, there's an upper limit to the size of gravitationally bound filaments that should form. The Huge-LQG, if real, is more than double the size of that largest predicted structure, and this could cast doubts on the core principle of cosmology: that on the largest scales, the universe is roughly uniform everywhere. But this might not pose a problem at all, thanks to an unlikely culprit: dark energy. Just as the local group is part of the Virgo Supercluster but recedes from it, and the Leo Cluster—a large member of the Coma Supercluster—is accelerating away from Coma, it's conceivable that the Huge-LQG isn't a single, bound structure at all, but will eventually be driven apart by dark energy.



Digital mosaic of infrared light (courtesy of Spitzer) and visible light (SDSS) of the Coma Cluster, the largest member of the Coma Supercluster.

Image credit: NASA / JPL-Caltech / Goddard Space Flight Center / Sloan Digital Sky Survey.

Either way, we're just a tiny drop in the vast cosmic ocean, on the outskirts of its rich, yet barely fathomable depths.

Learn about the many ways in which NASA strives to uncover the mysteries of the universe: <http://science.nasa.gov/astrophysics/>. Kids can make their own clusters of galaxies by checking out *The Space Place's* fun galactic mobile activity: <http://spaceplace.nasa.gov/galactic-mobile/>. ★

SEPTEMBER SPEAKER: CHRIS PETERSON

Chris started developing computerized, guided mounts in the late 1970s. His astronomical interests follow two paths: instrumentation and analytical imaging. On the instru-

mentation front, he has designed or consulted in the design of a number of mount controllers. Very early on he became interested in aspects of remote observation, and has worked with methods of accessing astronomical instrumentation over local and wide area networks. He has also developed numerous CCD and CMOS cameras, both for imaging and for guiding, and developed guiding systems currently used on space-based platforms. For the last ten years his primary research interest has focused on meteoritics: the statistics of sporadic and shower meteors, the dynamics of meteors in the atmosphere during incandescent and cold flight, and the prediction of meteorite falls based on photographic data.

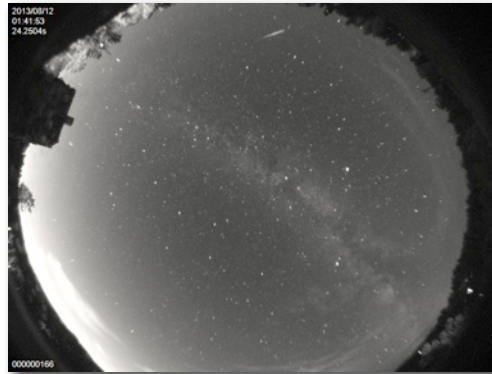
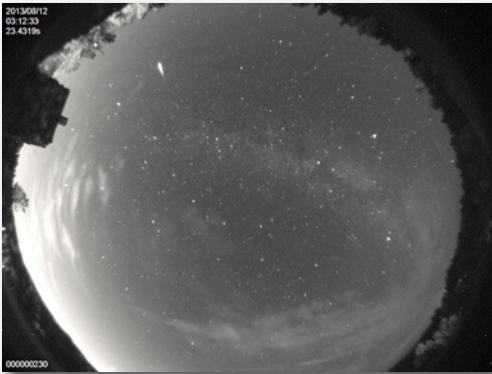
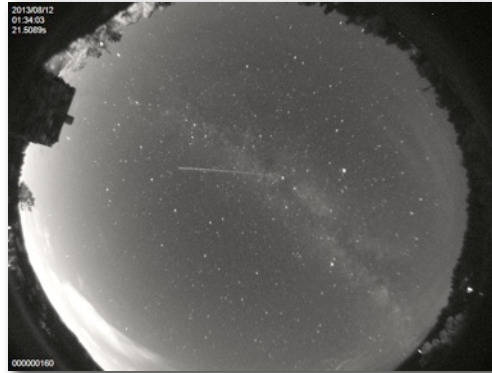
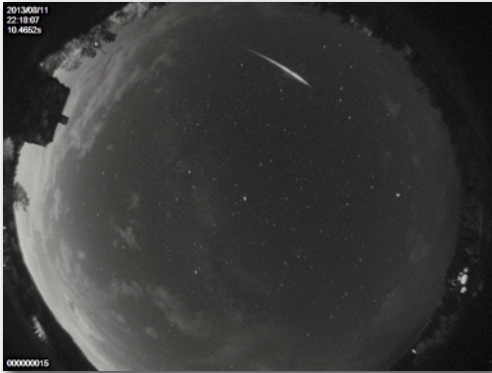
Chris has a BS in Applied Physics from the California Institute of Technology. He owned a

California company for many years which designed and built ophthalmological surgical instruments. He is currently an independent consultant, and a Research Associate at the Denver Museum of Nature & Science. He operates a network of allsky cameras which collect meteor and fireball data over Colorado and the surrounding states.

He lives in the tiny town of Guffey, Colorado, with his wife Louise and their assortment of animals. When not working in his observatory or analyzing data, he might be found hiking or riding in the local mountains. ★

WHAT HAVE YOU OBSERVED?

DAS photographers share some of the images they've made: Photo clockwise from upper right: M65 & M66, with NGC 3628 (Donald Lynn); July's "Supermoon" shot from Colorado Springs (Bill Smyth); M31, the Andromeda Galaxy, with M32 and M110—Joe Gafford made this 15-panel mosaic during October and November, 2007 at the Okie-Tex star party and a month later at the EGK DSS. M32 is in the lower right of center, M110 top center. The extended halo and bridge to M31 is visible around M110. Next, a quartet of all-sky images during August's Perseid meteor shower. They were taken about five miles east of Nederland, CO. (John Anderson).



MEET YOUR FELLOW ASTRONOMER

by Dena McClung

This is our first installment of "Meet Your Fellow Astronomer." We hope it will give you a chance to get to know your fellow DAS members—we plan to publish this with a different member on a monthly basis. Thanks to Dena McClung for taking this on!

Our first DAS member profile features Jeff Tropeano, a 31-year-old software consultant who moved to Denver from New York City two years ago and joined the DAS earlier this year.

Jeff has always been interested in astronomy. He began reading books, watching science shows and pursuing information online about it in his early youth. Having grown up in South Boston before spending ten years living in the Big Apple, he had little opportunity to see anything but the moon in the night sky. The night before his wedding in the White Mountains of New Hampshire in 2010, Jeff and his group were invited to stargaze by the owner of the inn where the wedding party was staying. The innkeeper, it turned out, owned the largest private telescope in the state, a 20-inch Obsession Dobsonian, which required a ladder to reach the eyepiece. Jeff was amazed by what he could see, and that night ignited a keen desire to begin exploring the skies on his own. This, he says, made astronomy "touchable" for him, giving life to his self-study of astronomy and quantum physics by combining those with observation, resulting in a more complete and satisfying personal experience for him.

After leaving the light-flooded east coast, he decided to seek out dark Colorado skies via Google, which led him to the Edmund G. Kline Dark Sky Site, and in turn, the DAS and Chamberlin Observatory. He is enthusiastically looking forward to being a "regular guest," soaking up the lectures when his schedule allows him to attend the general membership meetings and learning from his fellow members. He is happy to have found a club with such a depth of knowledge and experience, as well as access to facilities such as Chamberlin and the DSS. Jeff has already begun volunteering on Public Nights, as a way to gain more knowledge as well as to give back to the club; he has an authentic self-professed passion for both. He plans to get acquainted with the Kline Dark Sky Site as well, and for those of you who take everything but the kitchen sink out to Deer Trail, he is willing to help load and unload, set up and tear down, in exchange for getting to tag along and learn from the DSS regulars. His current equipment list is a pair of binoculars, a planisphere, an LED red



JEFF TROPEANO

Image credit: Rob Strong

flashlight, a car (something he didn't have in NYC), and one of DAS's loaner Dobsonians. He looks forward to owning his own telescope and some astro-photography equipment at some point.

Jeff spends some of his free time building websites and using social media. He and his wife, Laurel, have a two-year-old Basset hound named Murphy, and they like to visit the mountains. ★

PRESIDENT'S MESSAGE (CONTINUED FROM PAGE 2)

Arguably the most dangerous part of our hobby is the drive to and from wherever we're setting up to observe, whether in the park next to Chamberlin, the dark sky site, or somewhere else.

Most of the previous safety gremlins can be avoided with a little extra diligence and plain ol' common sense. The following checklist is a good place to start.

- Take your time setting up your scope, tripod and mount, and accessories.
- Tighten everything properly.
- Set the equipment cases out of the way.
- Route wires/cables so they don't pose trip hazards.
- Use both hands when handling counterweights.
- Apply a good DEET-based insect repellent when outdoors. Keep it off of your optics, though.
- Long pants and tall, sturdy boots are recommended in snake country.

- Sunscreen is a must during daylight hours.
 - When observing the Sun, check everything twice (or more!), and then look through the eyepiece.
 - If possible, go with a buddy when observing.
 - Make sure your cell phone is fully charged.
 - Carry a first aid kit and small fire extinguisher in your car. While these items are available in the dark sky site's warming hut and at Chamberlin, it's a good idea to have your own handy.
 - Always let someone else know where you're headed and when you expect to return. And actually take time to know where you are: street address, distance and direction from nearest intersection, GPS coordinates.
 - Stay alert, and be aware of your surroundings.
- I don't want to come across as a purveyor of doom and gloom, but the reality is that just about everything we do has some sort of safety risk. Be careful, and most of all, have fun! ★

WELCOME NEW DAS MEMBERS!

John Beard	Richard Johnson
Beth Blount	Sean Kennelly
Janet Bowers	Jay Lemery
Richard Browning	Ted Olson
Nick Corl	Ida Oltmann
Ian Dix	Steffanie Peterson
Susan Gibson	Alan Price
Tamara Golden	Samuel Saindon
Bradley Hitch	Brian Schieltz
Clyde Hoadley	RJ Smith
Ben Holland	Tim Weber

JOB JAR

Now that our new administration has settled in, we've identified volunteer opportunities for our club's most pressing needs. These are important jobs—though not necessarily difficult or time-consuming, they're certainly rewarding, and we need some help PDQ. Thanks to **Amanda Parry** for her brief service as previous outreach coordinator before a sudden injury, and to our current loaner program coordinator **Chuck Carlson** who has served DAS in many different roles throughout the years. If you've got the time and talent for the activities below, please contact one of your officers to volunteer!

Did you know that as a DAS member you can train to operate the University of Denver's historic 20" Clark-Saegmuller telescope at Chamberlin Observatory?

Well, you can, and in doing so you would participate in the society's public night partnership with DU.

For more information contact Lisa Judd at vp@denverastro.org

EXTERNAL OUTREACH COORDINATOR: DAS has two types of public outreach—internal (centered at Chamberlin) and external. We need someone to coordinate requests from schools and other community venues that ask us to bring scopes to their events. There are some we've supported for years, but of late they've been popping up all over and DAS members have enjoyed sharing their eyepiece views on an as-you-hear-it basis. Most clubs do this in a more organized way, so some may be experienced already. But if you'd like to give it a first try, call your veep Lisa for elaboration on the tasks below:

At a minimum, the coordinator should:

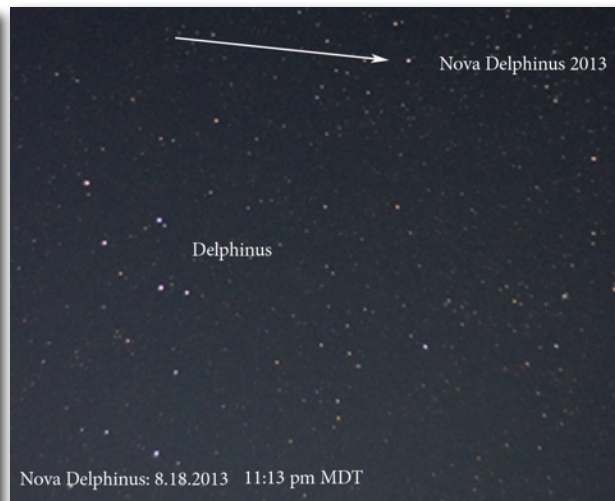
- Be accessible by email from our webpage
- Develop a list of club members that like to volunteer, and where they live
- Coordinate with event requesters for participants' astronomical needs (outdoor lighting, setup area, age of the visitors, food, rain date); verify an appropriate event theme
- Learn about the events that DAS supports regularly, like DMNS Astronomy Day
- Keep the pulse of local astronomy besides ours, like Forest Service or scouting
- Carefully monitor our ability to support, and don't overextend our resources
- Make donation requests as appropriate, per DAS's policy depending on venue
- Attend some of the events to see how they go (no need to drop in on every one)
- Be available to other club members that would like help to organize events
- Attend e-board meetings frequently, or if you need any help.

DAS PROPERTY QUARTERMASTER: We have an urgent need to police our inanimate objects that sometimes grow an unhealthy sense of wanderlust, and a comprehensive inventory is badly needed. Your board is looking into storage and security to cage them, but we need a go-to person for anyone that wants to borrow things. Naturally, this person should be a long-time club member and be able to work with our librarian, webmaster (for classifieds), and observatory director as we keep most of our belongings at Chamberlin. Our club's long-time Scope Loaner program, run by our dearly missed friend Bill Ormsby, is also part of the job – and may involve other equipment besides telescopes such as our photometer or various accessories that are so in need of a catalog.

PUBLIC NIGHT VOLUNTEERS: As usual, our spots available on the teams that handle Tuesday and Thursday internal outreach at Chamberlin tend to come and go—and now there are a few that have opened up. ★

A NOVA IN DELPHINUS

Discovered by Koichi Itagaki in Yamagata, Japan on August 14, 2013, a rather bright nova in Delphinus has had DAS members on the hunt making visual and photographic observations. Ron Pearson (photos right): The pre-nova picture on August 11 was shot with a Canon 7D DSLR and a 17mm lens at f/2.8 at ISO 2000, (he was shooting for Perseids). The stars are at about 10th magnitude in this image. The image of the nova was shot with a Canon 7D using a 50mm f/1.8 lens at f/2 for 3 seconds at ISO 2000 in bright moonlight. ★



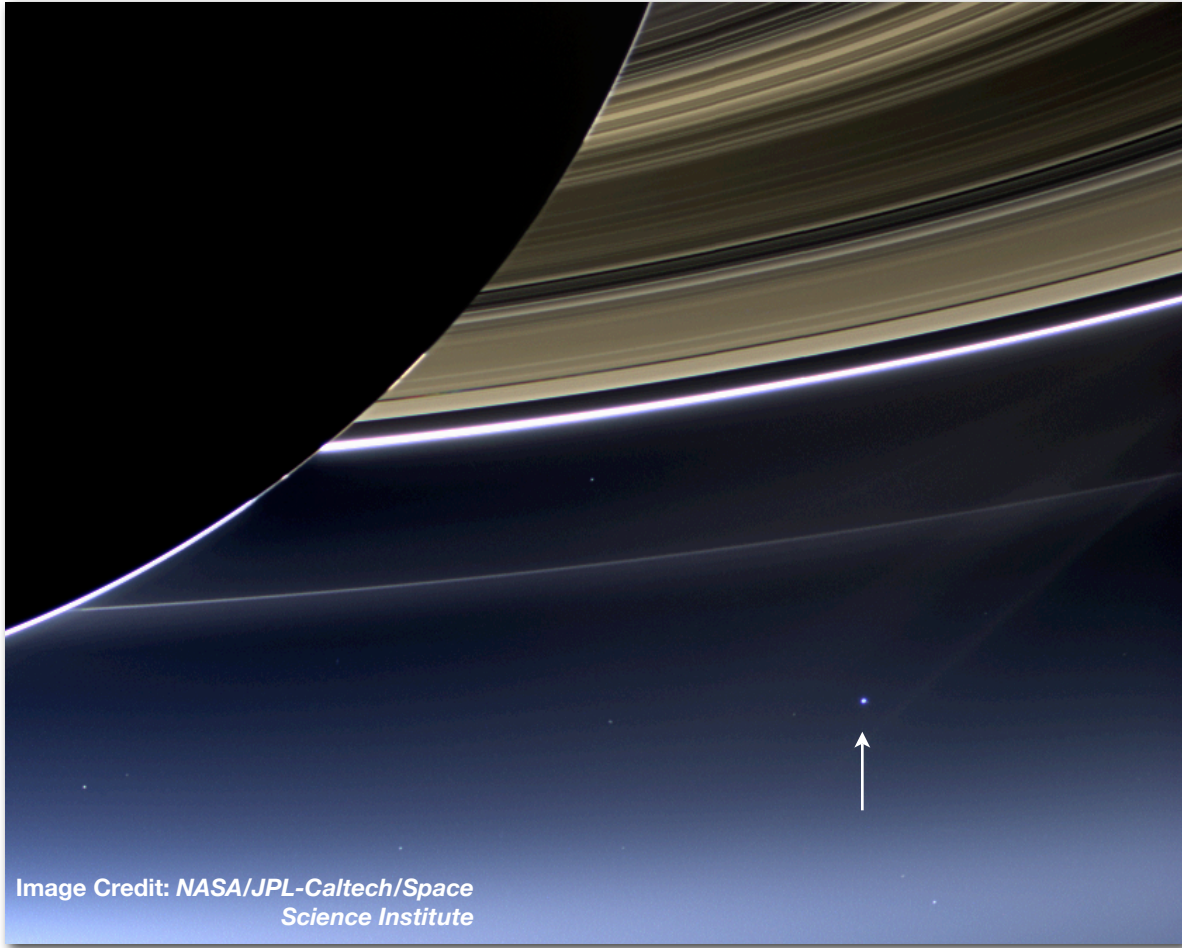


Image Credit: NASA/JPL-Caltech/Space Science Institute

NASA Science News:
Pale Blue Dot: Distant
Spacecraft Photograph
Earth

JULY 23, 2013: In this rare image taken on July 19, 2013, the wide-angle camera on NASA's Cassini spacecraft captured Saturn's rings and Earth in the same frame. In the Cassini images Earth and the moon appear as mere dots—Earth a pale blue and the moon a stark white, visible between Saturn's rings. It was the first time Cassini's highest-resolution camera captured Earth and its moon as two distinct objects.

It also marked the first time people on Earth had advance notice their planet's portrait was being taken from interplanetary distances. NASA invited the public to celebrate by finding Saturn in their part of the sky, waving at the ringed planet and sharing pictures over the Internet. More than 20,000 people around the world participated.



The Denver Astronomical Society
c/o Chamberlin Observatory
2930 E. Warren Ave.
Denver, Colorado 80210