

OBSERVER



SUMMER STAR PARTY SEASON!

IT'S RED-LIGHT SEASON IN THE ROCKIES!

The quiet ambiance of a star party is captured as the Milky Way glows above campsites at this year's Rocky Mountain Star Stare. David shot this image at midnight on June 7, 2013. He used a Canon EOS Rebel T2i Digital SLR Camera with a 10mm f/5 lens at ISO 6400 for 45 seconds.

Image © David Shouldice

Calendar

- 8.....New moon
- 15..... First quarter moon
- 22..... Full moon
- 28-29.Southern Delta Aquarids meteors
- 29..... 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
- NASA's Grand Challenge*..... 5
- June Speaker*.....5
- RTMC Reviewed*..... 6
- New DAS Members*..... 7
- DAS Picnic and Open House*.....
- *Back page*

JULY SKIES

by Dennis Cochran

July is here; break out the (root) beer! Jupiter has disappeared from our evening sky but appears in the dawn close to Mars on the morning of the 22nd. Mercury will be below it on the eastern horizon.

A bit of Arabic-star-name trivia: the alpha star of Hercules, Rasalgethi, is straight south of the famous keystone shape of Hercules's body, in a star dangle that is maybe the big guy's left foot. Just east of Rasalgethi and down a bit is the α (alpha) star of Ophiuchus (Rasalhagus), at the top of the serpent-bearer's head—two Rasals for the price of one. Ramadan, a month of fasting, begins on the 9th, or maybe the night before; ask a Moslem friend. I want to thank Naomi Pequette down at S&S Optika—and on last year's Executive Board—for informing me that there is a good section in Islamic

astronomy in the *Cambridge Illustrated History of Astronomy*. Having wanted such a book for a long time, I bought it. Although it's good on the topics it treats, it's not complete for modern times. There was nothing about the creation of the New General Catalog, so I'm still looking for a detailed history of modern astronomy.

Meteors: Late June we had the Boötids on the 27th, and at the end of this month on the 30th the Delta Aquarids and Alpha Capricornids peak. They are both spread out across this date but at their peak will get cooperation from the moon. Guy Ottewell in his *Astronomical Calendar 2013* remarks that the Delta Aquarids are mostly faint, while the Capricornids tend to be slow and bright. Wear a hard hat in case they really slow down!

Continued on Page 3

PRESIDENT'S MESSAGE

by Ron Hranac

One of the fun things about the combination of amateur astronomy and get-togethers such as the Denver Astronomical Society's open houses and other events is interaction with the public. In particular, I enjoy people's reactions to objects seen through the eyepiece or when looking at a table-top display of meteorites and "meteor-wrongs." Some of the questions are a hoot, too.

A favorite telescope accessory for both personal use and public outreach is a binocular viewer, more commonly known as a binoviewer. This gadget is inserted in a scope's eyepiece holder, splits the light into two paths, then directs the light to a pair of eyepieces. The result is a binocular-like view, allowing the use of both eyes when observing. While this setup doesn't provide a true binocular effect, I've read that perceived detail can be much as 40 percent or so better compared to the use of a single eyepiece. Some claim a 3D effect when looking at certain objects through a binoviewer, although that's really an illusion.

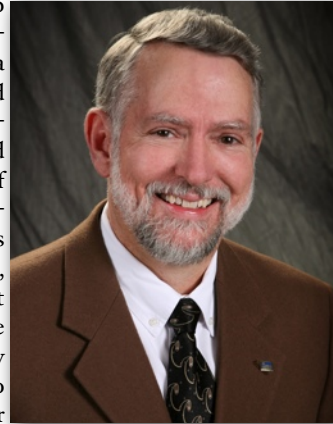
I remember during an open house when a woman sat down to take a gander at the Moon through my binoviewer-equipped scope, and she literally almost fell over backwards. She said the view was so realistic that it made her dizzy.

Whether looking through a binoviewer or a conventional single eyepiece setup, the most common reaction I've heard over the years from kids and grownups alike is "Wow." That exclamation is pretty typical when the peek through the eyepiece (or eyepieces) is the person's first time looking at the Moon

or maybe Saturn using a telescope. A few people have wondered aloud if they were looking at a picture or the real thing.

When it comes to the display of space rocks that

I sometimes set up inside of Chamberlin, there are a lot of smiles and surprised expressions when I hand folks a couple of potato-size meteorites. One weighs about two pounds, the other about four pounds. The surprise is how heavy the two specimens are for their size, and the weight difference.



And then there are the questions.

Students from middle, high school, and local community college science or astronomy classes are regular visitors at DAS open houses. The kids usually show up with a clipboard, note pad or a smart phone, and they often have a list of questions similar to the following. My answers are in parentheses. "What kind of telescope is that?" (apochromat refractor); "Apo what?" (brief explanation of an apochromat and a little about the difference between achromat and apochromat); "What is its focal length? (1000-mm, or just over 3 feet); "How big is the lens?" (130-mm or 5 inches); "What is the focal length of the eyepiece?" (varies, but a common value is 12-mm); "Overall magnification?" (brief explanation of how to calculate magnification, or in this

Continued on Page 4

DAS SCHEDULE

JULY

- 4 Independence Day
- 5-7 EGK Dark Sky weekend
- 13 DAS Picnic (4 P.M.) and Open House at Chamberlin Observatory (Begins at 8:30P.M.) Saturn!
- 19 General Membership Meeting at Olin Hall (Begins at 7:30 P.M.) Speaker: J. McKim Malville, *Archaeoastronomy of the Southwest*.
- 26 E-Board Meeting at Chamberlin (Begins at 7:30 P.M.)

AUGUST

- 2-4 EGK Dark Sky weekend
- 17 DAS Open House at Chamberlin Observatory (Begins at 8:00P.M.)
- 23 General Membership Meeting at Olin Hall (Begins at 7:30 P.M.) Speaker: Yuri Petrunin, *Antique Telescopes*.
- 30 E-Board Meeting at Chamberlin (Begins at 7:30 P.M.)

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

JULY SKIES

(CONTINUED FROM PAGE 1)

Incidentally, Ottewell also says of July observing that “. . . the heat-haze of afternoon is not cleared away by thunderstorms as in June.” He reminds us that the central bulge of the Milky Way in Sagittarius and Scorpius will be at its highest this month. Although August looks good to me in that regard. People with Dobsonian telescopes, like me, won't have to crane their necks aiming for these low-in-the-south objects.

I won't bore you with a list of the nebulae in the Sagittarius area: you know them all. Or do you? M55 is not a nebula but a large, loose globular cluster east of the teapot asterism of Sagittarius. You can find it by locating the handle of the teapot where Sigma and Tau are the outer edge, and drift southeast from Sigma to Tau and keep going twice that distance farther. Voila—M55! Or, you could say, “viola,” if you're in a string quartet. Nebula is a word that used to mean any faint fuzzy, for instance in Hubble's book *In the Realm of the Nebulae*, but in later times the nebulae he spoke of have come to be called galaxies. Many of the fuzzies in Sagittarius are the gas and dust clouds that are today called nebulae. Rather than whole galaxies they are part of the furniture of a galaxy—our galaxy, the Milky Way. The entire sky above us is a sort of privileged view of a galaxy seen from the inside. Of the objects we look at only the galaxies are outside of the Milky Way. The Sagittarius crowd of objects is a collection of nebulae, open star clusters and one globular cluster (M22), which is just east of the top of the teapot lid.

Way west of Sagittarius is everybody's favorite planet, Saturn. It's up all night and the go-to object of star parties, especially those intended for the earthbound public. Farther west of Saturn on the ecliptic is fainter Mars.

Far north of all of that, so far terrestrial north that it's past Polaris, IC 342 is a gorgeous face-on spiral galaxy in Camelopardalis the Giraffe, near



THE TRIFID NEBULA (M20) IN SAGITTARIUS

A favorite object for observers and photographers alike, the Trifid's name means “divided into three lobes.” It's very young, and is still in the process of forming stars. While this cluster may be unremarkable in smaller scopes, astrophotographers are able to glean spectacular detail within the neutral/reflecting gas, the ionized gas and the dusty neutral/absorption lanes. Technical: One hour of 180-300 second sub-exposures were used to create the image at the EGK Dark Site on August 18th, 2012, in the presence of strong winds and oil well lights. Darrell used a Canon 450D DSLR, shooting through an 8-inch f/4 Astro-Tech imaging Newtonian, and processed the image using Nebulosity 3.0 and PhotoShop CS5.

Image ©: Darrell Dodge

the northern horizon almost in Cassiopeia's territory at $04^h 08^m +68^\circ$. Can you see it? More importantly, can you dig it? Far out, man, as we used to say. As it is near the galactic plane, it is somewhat obscured by cosmic gas and dust. Lyn Hilborn got a beautiful shot of it with a refractor/CCD combination in the January-February 2013 issue of *Sky News*, the Canadian astronomy magazine. We might have to wait six months to see it. It will still be there. ★

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' 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 Cham-

berlin 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

HIGH-ENERGY SPY

by Dr. Martin C. Weisskopf

A Space Place Partners' article

The idea for the Chandra X-Ray Observatory was born only one year after Riccardo Giacconi discovered the first celestial X-ray source other than the Sun. In 1962, he used a sounding rocket to place the experiment above the atmosphere for a few minutes. The sounding rocket was necessary because the atmosphere blocks X-rays. If you want to look at X-ray emissions from objects like stars, galaxies, and clusters of galaxies, your instrument must get above the atmosphere.

Giacconi's idea was to launch a large diameter (about 1 meter) telescope to bring X-rays to a focus. He wanted to investigate the hazy glow of X-rays that could be seen from all directions throughout the sounding rocket flight. He wanted to find out whether this glow was, in fact, made up of many point-like objects. That is, was the glow actually from millions of X-ray sources in the Universe. Except for the brightest sources from nearby neighbors, the rocket instrument could not distinguish objects within the glow.

Giacconi's vision and the promise and importance of X-ray astronomy was borne out by many sounding rocket flights and, later satellite experiments, all of which provided years-, as opposed to minutes-, worth of data.

By 1980, we knew that X-ray sources exist within all classes of astronomical objects. In many cases, this discovery was completely unexpected. For example, that first source turned out to be a very small star in a binary system with a more normal star. The vast amount of energy needed to produce the X-rays was provided by gravity, which, because of the small star's mass (about equal to the Sun's) and compactness (about 10 km in diameter) would accelerate particles transferred from the normal star to X-ray emitting energies. In 1962,

who knew such compact stars (in this case a neutron star) even existed, much less this energy transfer mechanism?

X-ray astronomy grew in importance to the fields of astronomy and astrophysics. The National Academy of Sciences, as part of its "Decadal Survey" released in 1981, recommended as its number one priority for large missions an X-ray observatory along the lines that Giacconi outlined in 1963. This observatory was eventually realized as the Chandra X-Ray Observatory, which launched in 1999.

The Chandra Project is built around a high-resolution X-ray telescope capable of sharply focusing X-rays onto two different X-ray-sensitive cameras. The focusing ability is of the caliber such that one could resolve an X-ray emitting dime at a distance of about 5 kilometers!

The building of this major scientific observatory has many stories.

Learn more about Chandra

at www.science.nasa.gov/missions/chandra. Take kids on a "Trip to the Land of the Magic Windows" and see the universe in X-rays and other invisible wavelengths of light at spaceplace.nasa.gov/magic-windows.

Dr. Weisskopf is project scientist for NASA's Chandra X-ray Observatory. This article was provided by the Jet



Composite image of DEM L50, a so-called superbubble found in the Large Magellanic Cloud. X-ray data from Chandra is pink, while optical data is red, green, and blue. Superbubbles are created by winds from massive stars and the shock waves produced when the stars explode as supernovas..

Image courtesy: NASA

Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration. ★

PRESIDENT'S MESSAGE

case 1000-mm/12-mm = about 83x); "What is the scope pointed at?" (Moon, or . . .).

Occasionally a truly curious student will ask other questions and spend a few extra minutes chatting, but more often than not the kids jot down the answers on a piece of paper or in their smart phone and move on.

One of the strangest questions I've heard on numerous occasions is "How did you learn so much about astrology?" Answering this requires some tact, plus patience to not whack 'em upside the head with the mount's counterweight. I typically explain politely that I don't really know anything about astrology or horoscopes, but do know a little bit about astronomy – learned mostly from enjoying the hobby for many years.

"How powerful is your telescope?" Ok, this probably comes from ads for those department store scopes that claim 500x magnification. People tend to be quite surprised when they find out my scope's magnification is somewhere in the roughly 50x to 90x range. "That's all?"

(CONTINUED FROM PAGE 2)

"How far away can your telescope see?" This question definitely gets an "it depends" kind of answer. For instance, if the scope is pointed at the Moon, the distance is a little less than a quarter of a million miles. What about Saturn? That's an "it depends," too, but right now it's just shy of a billion miles. If we're looking at the Andromeda Galaxy, figure about 2.5 million light years, give or take.

If I happen to be using a green laser pointer to show where in the sky the object being viewed in the telescope is located, one question I hear a lot is, "How far does that laser beam go?" Like the Energizer Bunny, it keeps going and going and . . .

There's no doubt that the reactions, comments, and questions from members of the public during DAS outreach events can be a lot of fun. I find that they make it all the more worthwhile as I share some of the enthusiasm I have for the hobby. My favorite question, though, comes from my lovely wife. She has asked several times, "How do you know what those things in the sky are? They don't have labels." ★

NASA'S Asteroid and Comet Watch

A GRAND CHALLENGE FROM NASA

Since 1998, NASA's Near Earth Object Observation (NEOO) Program has led the global effort to find potentially hazardous asteroids, and has successfully found 95 percent of the near-Earth asteroids larger than one km. within the last 15 years. But the work is not over, as estimates suggests that less than 10% of objects smaller than 300 meters in diameter and less than 1% of objects smaller than 100 meters in diameter have been discovered, and it will take a global effort with innovative solutions to accelerate the completion of the survey of potentially hazardous asteroids.

While not imminent, the threat is real, and we need a team of the best and brightest working on it together. Building upon this history of excellent work and global contributions, NASA is seeking to expand the conversation of how we work together to address this problem: "find all asteroid threats to human populations and know what to do about them."

Observatories and organizations around the world already coordinate extensively with each other and with NASA on finding and characterizing asteroid threats. It is this foundation we want to build upon as we enhance our current ground-based detection facilities and consider further improvements to our own existing programs. Through this call to action, NASA will lead a dialogue on how we might leverage new partnerships and individual contributions through public private partnerships, citizen science initiatives, crowdsourcing, incentive prizes, and other participatory engagement approaches to aid in solving this problem.

This is one way to articulate a "North Star" for a variety of partners and individuals around the world to contribute to an effort of worldwide importance. NASA is committing to leading that effort and coordinating discussions among many possible contributors to co-create our collective implementation plan and look forward to expanding this important conversation in the coming months.

ASTEROID INITIATIVE REQUEST FOR INFORMATION

06.18.2013

NASA has released a Request for Information (RFI) on system concepts and innovative approaches for both aspects of the recently announced Asteroid Initiative. The initiative includes an Asteroid Redirect Mission, and an increased focus on defending our planet against the threat of catastrophic asteroid collisions.

Solicitation Number: NNH13ZCQ001L

Reference Number: N/A

NAIS Posted Date: June 18, 2013

FedBizOpps Posted Date: June 18, 2013

Response Date: July 18, 2013

Recovery and Reinvestment Act Action? No

Classification Code: A - Research and Development

NAICS Code: 336414 - Guided Missile and Space Vehicle Manufacturing

Set-Aside Code: N/A

Download the RFI from FedBizOpps:

<http://prod.nais.nasa.gov/cgi-bin/eps/synopsis.cgi?acqid=156731>

Respondents should review RFI submission guidelines outlined in the RFI. Check this page starting June 25 for more details on the Hangout session. ★

RESOURCES:

ASTEROID INITIATIVE REQUEST FOR INFORMATION:

<http://prod.nais.nasa.gov/cgi-bin/eps/synopsis.cgi?acqid=156731>

NEAR EARTH OBJECT PROGRAM:

<http://neo.jpl.nasa.gov/>

Additionally, **DAS member Joe Gafford** has been a part of this program since January, 2003. He may provide assistance to others interested in participating.

JULY MEETING SPEAKER: DR. J. MCKIM MALVILLE

During the International Geophysical Year Dr. Malville wintered over at Ellsworth Station in the Antarctic where he studied the aurora australis. He obtained his BS in physics from Caltech and his PhD in radio astronomy and solar physics from the University of Colorado. He has taught and engaged in research at the Universities of Michigan, Colorado, Oslo (Norway), and Sao Paulo (Brazil).

At Colorado he served as the Chairman of the Department of Astro-Geophysics, and directed the University's Honors Program as well as CU's Undergraduate Research Opportunities Program. His research interests have ranged from the aurora, the interstellar medium, and solar physics to, most recently, archaeoastronomy.

In 1997 he was a member of the team that revealed the world's oldest known megalithic astronomy at Nabta Playa near Abu Simbel in southern Egypt, earlier than Stonehenge by more than a millennium. In 2003 he was involved with Gary Ziegler and Hugh Thomson in the rediscovery of the sun temple of Llactapata, previously lost in a cloud forest near Machu Picchu.

He is presently Professor Emeritus in the Department of Astrophysical and Planetary Sciences at the University of Colorado, Adjunct Professor of Astronomy in the Centre for As-

tronomy of James Cook University, Queensland, Australia, and Tutor at the University of Wales Trinity Saint David, Lampeter, UK.

Books, which he has written or edited, include *A Feather for Daedalus*, *The Fermenting Universe*, *Prehistoric Astronomy of the Southwest*, *Canyon Spirits: Beauty and Power in the Ancestral Puebloan World*, *Ancient Cities*, *Sacred Skies: Cosmic Geometries and City Planning in Ancient India*, *Chimney Rock: the Ultimate Outlier*, and *Pilgrimage: Sacred Landscapes and Self-Organized Complexity*.

Dr. Malville will be speaking on Archaeoastronomy of the Southwest, highlighting recent work at Chaco Canyon, at the general meeting in DU's Olin Hall starting at 7:30 P.M., Friday, July 19th. ★

Dr. Malville sits on a rock known as Loaf Rock, which is on the road to Wijiiji, a Chacoan Anasazi great house and notable archaeological site located in Chaco Canyon. Loaf rock has a split in the center with spirals. Dr. Malville says there is a series of steps leading to the top, where there is a pecked basin that he is pointing out in this photo. It is very similar to pecked basins in Mesa Verde which mark astronomical sight lines. Dr. Malville will speak at the DAS General Membership meeting on July 19 at 7:30 P.M.



RTMC 2013

by F. Jack Eastman

Photos by Donald Lynn



At RTMC on Memorial Day weekend, Don shot the triple planetary conjunction from the Telescope Field on the evening of Sunday, May 26 at 8:3 P.M. He used a Canon T1i, at f/5 for 1/4 second at ISO 400. He used a tripod, with zoom lens set to 135 mm, manually focussed with auto exposure. Lower right is Venus, upper left is Jupiter and upper right (highest) is Mercury. The photo below right on this page shows Jack presenting the slide show of the 2010 lens cleaning and Dr. Bob's talk of the Saegmuller mount overhaul in 2012.

It's that season, yet again—Memorial Day weekend—and another Riverside Telescope Maker's Conference (RTMC) at Big Bear California beckoned.

The trip route was the same old, same old . . . I-70 to I-15 to Barstow then up the hill to Big Bear. I stopped at all the usual eating stops on the way out and Tuesday night, I camped at the usual site, Halloran Summit, -32 miles into California along I-15. Elevation there is 4,130 feet. Next day I drove on to Barstow, encountered some headwinds, then drove up to Big Bear. I stayed at Motel 6 and pigged out, as before, on enchiladas at La Paws restaurant. After a pleasant night at the motel in Big Bear City it was off to the camp Thursday midday. A few folks were there for the early opening, but I had no problem finding my usual campsite. I got set up and went off to reunite with many of the folks I've known from previous years. The reunion with the folks I grew up with, however, was somewhat compromised as many of them had other obligations and didn't make it. Thursday evening could have been a hungry one, as there was no meal service until Friday lunch—squirrels, lizards and snakes? Thanks, Eric, for the tube steaks Thursday afternoon.

The weather couldn't have been better—we had clear, sapphire daytime blue skies, and clear night skies, for the most part. Temperatures were tolerable—I'd estimate 70s during the daytime, nighttime lows in the 30s. We did have one 21° night with no wind.

It seems that all people voted to keep this RTMC during the usual Memorial Day weekend, no matter the moon phase, and, yes, we had a Full Moon. There was no hunting down of faint fuzzies, and as a result

the meeting seemed thinly attended, but there were around 524 folks according to the camp's billing.

Seeing was reasonably okay and allowed nice views of Saturn and a few double stars, but the real fun was the socialization—meeting new folks and renewing acquaintances with those from earlier meetings. I was gratified to see all the newbies, both to RTMC and astronomy in general. I was also able to put a few more faces to a number of disembodied names from some of the Yahoo listserves. The meal plan, short order style, worked very well and the food was plentiful and quite good.

Friday was essentially a free day. Friday night was the informal "Show and Tell,"—folks showed slides of astrophotos and equipment and all. I had planned to show some slides of the lens cleaning of the Chamberlin refractor, apologizing for not doing so the previous year. I was told, "No! You'll be on the program for a full blown presentation!" and so it was. Friday, Dan Schechter arrived. He usually brings up some old telescope or other, having quite an extensive collection of fine antique telescopes. This year, it was a

very rare Alvan Clark 3-inch type "T" very portable refractor, circa -1920s-30s. He also set up a nice Astrophysics 900 mount and we jury-rigged it to accommodate my 6-inch Clark (See photo next page, bottom left). A heavy, stable mount sure helps! We saw Saturn, several double stars and other things. I was truly impressed by the "Go-To" feature, which puts objects in the field of a 7mm eyepiece (337X)!

On the subject of telescopes, again Gerry Logan and Bob Pfaff brought up some very nice instruments. Bob had a very well made Schmidt-Newtonian with beautiful woodwork and workmanship in general. Gerry had a 7-inch Schupmann Medial refractor (see <http://robr.aiax.de/Chapter%0206.htm>). This design uses a large single element objective—correction for color is accomplished with a smaller lens near the focal plane. Gerry is a master at this with both optics (He has done apo triplets, large achromats and a 12-inch coma free Schmidt Cassegrain, among many others) and precision machine work for the mounts, drives and tube



assembly mechanics (See photo at right).

Saturday was a busy morning. Breakfast, the swap meet, starting at dawn, and the start of the formal talks. Believe it or not, I didn't buy anything at the swap meet this go around! After a few opening remarks, yours truly kicked things off with the discussion of the 2010 cleaning of the 20-inch Chamberlin lens (see the *Denver Observers*, April and May 2011) followed by a further discussion of Dr. Bob's presentation of the Saegmuller mount overhaul. It went well, nobody threw eggs or tossed (pun intended) salad! Later that morning Tim Thompson gave an excellent discussion on "The Hubble Deep Fields," an in depth look at what we think we have learned from those fabulous images. This did involve a fair bit of in depth cosmology. In the afternoon, Steven Flanders, Masters in the history of Science from Harvard and a docent at Palomar Observatory, spoke on the history of Palomar Observatory. Later Kin Searcy, also a docent at Palomar, among other things, talked about current science going on at Palomar. Yes, there's plenty of this going on. The 200-inch Hale telescope is definitely keeping busy. Later, Richard Berry talked about the optical designs of eyepieces and astrographs—I missed this due to the Western Amateur Astronomers (WAA) board meeting. We, the DAS, are in good standing—no more lost dues

checks. WAA has launched their new publication *The Pacific Stargazer*, which we hope will bring renewed attention to this organization. That evening the prestigious G. Bruce Blair award (see the September 2009 *Observer*), for lifetime achievement in amateur astronomy, was presented to Albert J. Highe for his outstanding contributions to the field. He has been active in public outreach at many Northern California starparties, and as a design engineer he has recently authored *Engineering, Design and Construction of Portable Newtonian Telescopes*. The keynote speaker for the evening was Trina Ray, co-chair of the Titan Orbiter Science

Team, coordinating the Titan science opportunities for the Cassini mission at Saturn. Her talk was an in depth discussion of the many discoveries from Cassini at Saturn.

Sunday talks, at least the ones I attended, included Charles Morris's "45 Years of Spectacular Comets" observations of the best comets of the recent past—Shoemaker-Levy-9, Halley, Hyakutake and Hale-Bopp, to mention a few. Alex McConahay's talk titled "Through Rose Colored Glasses," was a discussion of viewing the universe at different wavelengths—from radio, millimeter and infrared to Ultraviolet, X-rays and all, as well as the visible using color filters. The afternoon began with Martin Carey's "1843 Unlimited and from Scratch," an in depth discussion of the "Leviathon of Parsonstown," Lord Rosse's 72-inch telescope, which was really the world's largest until 1917 when the Mt. Wilson 100-inch came on line. It was interesting to note this telescope was still being used into the early years of the 20th century. It has been completely and faithfully restored to its former glory. Steve Edberg (the Grand Poohbah of the RTMC) and Charles Morris then



Photos clockwise from upper right: Gerry Logan's 7-inch Schupmann Medial refractor; and Jack (left) and Dan Schechter with Dan's AP-900 mount carrying Jack's 6-inch Clark.



gave a presentation about observations of Comet Ison. Then it was more door prizes and, amazingly, we finished before dark! Back to the telescopes for one final night. My 6-inch was back on its own mount, as Dan had to leave early Sunday. After sunset we had a great view of the triple conjunction, Jupiter, Venus and Mercury, nicely framed between a couple of large trees as darkness approached, then about a 30 minutes or so of dark (SQM reading was 21.45) and a view of PanSTARRS a couple of degrees from Polaris. We did see the anti-tail. It was difficult but we did see it. Thanks Brian, for finding it in my 6-inch.

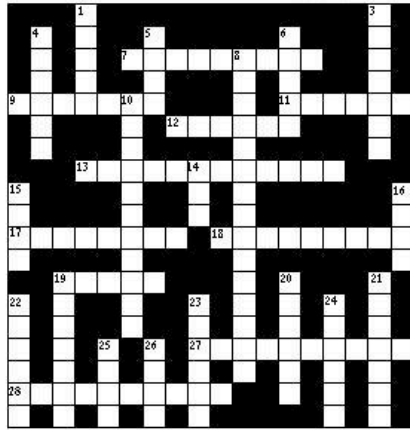
Monday morning, we ate a hearty breakfast, broke camp and headed out, back to Colorado. I had a few little glitches with the old van, nothing life threatening, and Tuesday evening arrive home. As usual, a great get together and, as I've said before, I am addicted and will do it again! Many kudos and thanks to those responsible for a great meeting. ★

WELCOME NEW DAS MEMBERS!

- John Beard
- Richard Browning
- Tamara Golden
- Ben Holland
- Ted Olson
- Alan Price
- Tim Weber

Fun Cloudy Nights.....

Crossword: Nebulae Famous non-planetary nebulae are hinted in the clues.



ACROSS

- 7. Dark silhouette in Orion
- 9. Winning horse decoration
- 11. Pretty island place
- 12. Soap sud
- 13. It's on the map
- 17. Best moon for observing
- 18. Furry terror
- 19. My old _____
- 27. Part of 13 Across
- 28. Southern naked-eye spender

DOWN

- 1. What you find in the grass
- 3. A place to peek
- 4. Home of spun silk
- 5. Egghead
- 6. Mailbox symbol
- 8. Looks like a negative of 5 Down
- 10. Piece of body armor
- 14. Social animal
- 15. Another name for 10 Down
- 16. It's not in Cygnus
- 19. Part of a fashion fur
- 20. Three-parted object
- 21. Sea catcher
- 22. Primitive weapon
- 23. Eat the dotted line
- 24. Bad thing for observing
- 25. Crotchety person
- 26. Colloquial for Venus' clouds



PICNIC TIME!!

It's almost time for our summertime picnic! On **July 13th at 4:00 P.M.**, we'll get together at Chamberlin for food and fun, followed by our usual July Open House night. It's free, and no reservations are required. Everyone is encouraged to bring a salad or dessert, and DAS will supply the drinks and a tasty barbecue.



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