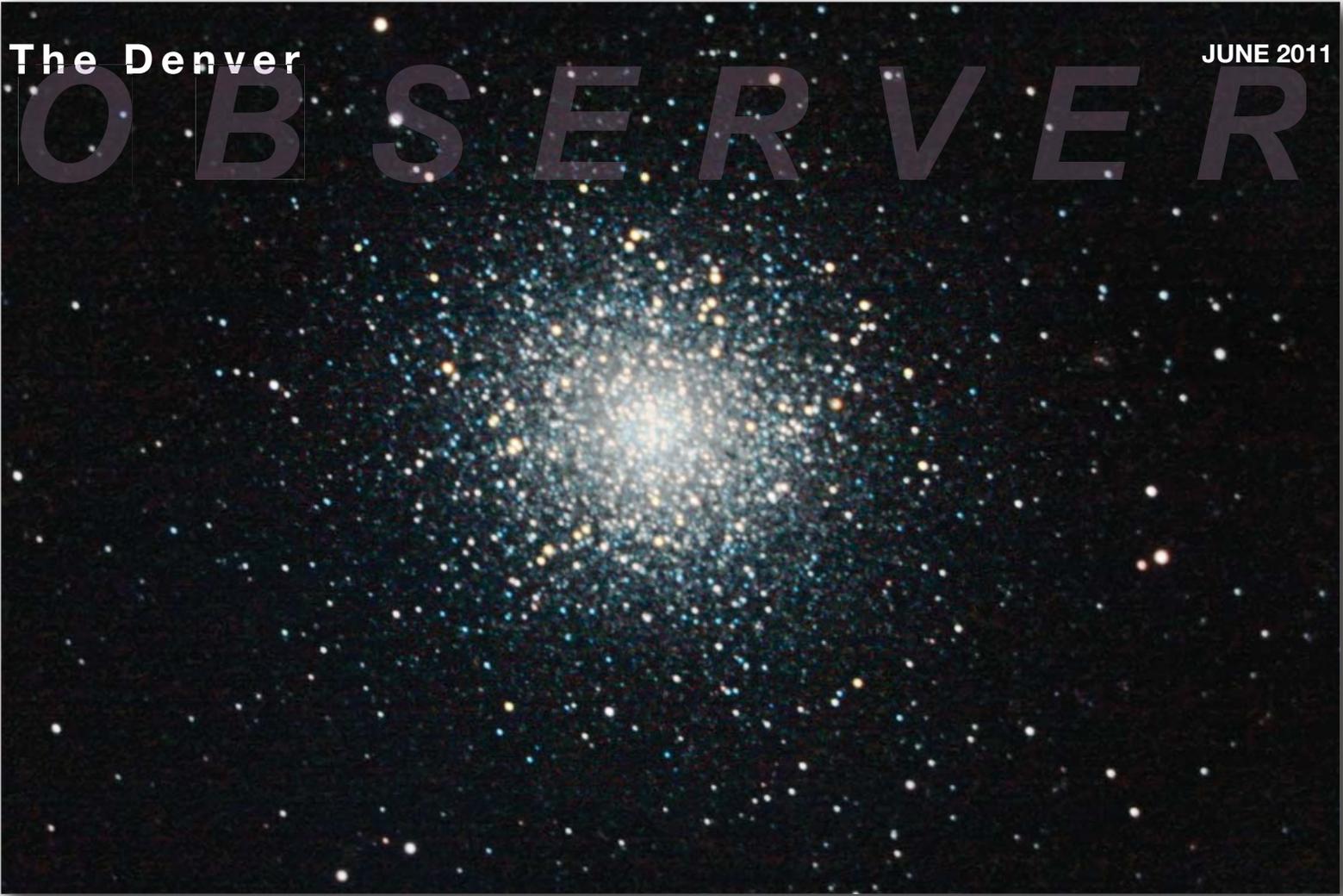


# OBSERVER



## DIAMONDS ON VELVET

How does one 'top' the galaxy parade of Leo and Virgo? By coming home to the beautiful globular clusters in our own Milky Way. Messier 13, in Hercules, is truly a sight, even in modest instruments. Located at the northwestern edge of the Champion's "keystone" asterism, this swarm of 300,000 luminous stellar bees is one of ~160 that inhabit the outer halo of our island universe. Just a celestial stone's-throw from Earth, M13's light travels 25,000 light years to reach us. *Details: Honis-modified Canon 450 D, C-11 working at f/6.3, data totaling 17 minutes, EGK dark site at Deer Trail.*

Image © Darrell Dodge

### Calendar

- 1..... New moon
- 8..... First quarter moon
- 15..... Full moon
- 23..... Last quarter moon

### Inside the Observer

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## JUNE SKIES

by Dennis Cochran

**R**ant of Spring: Partial eclipses are occurring apace this year, but at the poles. Meanwhile the penultimate shuttle is still trying to launch as of this writing (4/30). Shuttle re-entry tiles are being given, or maybe sold, to interested parties. The money for America's vanishing space program is in the war machine and in high rollers' pockets. Robert Heinlein's "Space Cadet," a happy prediction of a solar system-wide civilization, will be acted out by the Chinese—if they can survive global warming and overpopulation, two trends to which they have contributed mightily. In America, new jobs abound at fast food places while "American" companies create high level employment in India. But creating low-paying jobs does increase the number of people that can only afford fast food, so this has its own logic. Meanwhile in the scientific world, a researcher

spends years training just to become a grant proposal writer. Because of time lost to this activity, it takes mobs of Ph.Ds to do the research. The lonely Hubble at his telescope, living off a professor's salary, is a thing of the past (Milton Humason eventually joined Hubble. He was a college educated mule-skinner. We may see more of these in the future).

Saturn is still the planet of choice, getting higher in the sky all the time—no waiting for it to clear the trees any more. Most of the other planets are available in the hours before dawn. The waxing moon visits Saturn on the 10th, if an 8-degree separation constitutes a visit, so at Open House on the 11th you can see both of them with only a short swing of the telescope.

Arcturus reigns over the evening zenith. The bottom-of-the-kite biggie is only 36 light-years away,

*Continued on Page 3*

# PRESIDENT'S CORNER

by Ron Pearson

“Membership has its Privileges,” so the ad says. Your DAS membership has its privileges, and lately we have been working to increase the value of your membership. One of the privileges is membership in the denverastro Yahooogroup, where we can share all sorts of astronomical and society news, find out who is going to the Dark Site (another significant privilege), ask questions about the best eyepieces, star charts, telescope design or share our latest astrophotos.

In any society there is turnover, and after many years we have recently found that there were many former members still on the Yahooogroup. So we have recently gone through and removed nearly 70 of these people. It might seem like this is would be a simple exercise, but it turned out to be non-trivial. Most Yahoo list e-addresses are different than your personal email used in the roster, so figuring out who is who, and who is a current member made this exercise a chore. But the E-Board now has a truer picture of just how many of you get your DAS information by email. To join up, go to: <http://tech.groups.yahoo.com/group/denverastro/>. Please keep Darrell Dodge, our membership manager, informed of all changes to your email and Yahoo addresses.

After culling the former members, the Yahoo list now makes up only about 1/3 of the membership, which means that our “Constant Contact” e-service of distributing notices and the *Observer* newsletter is even more important. While we still mail out a small percentage of paper copies of the *Observer*, it is

necessary that you opt-in by letting Darrell know of your need. Many clubs and societies have either eliminated paper newsletters or charge extra for them. Recently, the E-Board approved my request to post the *Observer* to public access on our website after a month instead of automatically posting it to the world the same time as you get it. We hope these efforts will increase the value of the *Observer* to members and emphasize that we value your membership, as well as increase our ability to communicate with each other.

Another privilege is your automatic membership in the national Astronomical League, which is holding its annual convention (ALCON 2011) near Bryce Canyon National Park, Utah, this month. As the sweet observing season of summer and summer star parties is upon us, I hope you'll get a chance to attend the League convention or one of the other regional star parties such as “Rocky Mountain Star Stare (RMSS)” and “Weekend Under The Stars (WUTS).” Nothing can increase your enjoyment, knowledge and experience like a full three or four nights under a brilliant Milky Way at one of these events. They are a great chance to commune with “billions and billions” of stars, galaxies and nebulae, try out a new scope or astrophotography, and have your daytime filled with sharing stories or experiences with a few hundred others on the same journey in astronomy. To me, the ALCON is even more special this year because you get several days full of talks by great speakers. You'll learn the latest at a great night-sky observing location in the high canyon country of the Colorado plateau with an emphasis on public outreach and astronomy in the National Parks. If you've never been to a national convention, you might think a few days of talks are

*Continued on Page 6*

## DAS SCHEDULE

### JUNE

- 3-5 EGK Dark Sky weekend
- 11 Open House at Chamberlin (Begins at 8:00 P.M.) Saturn viewing!
- 17 DAS General Membership meeting (Begins at 7:30 P.M.). Speaker: Bob Koff
- 24 E-Board Meeting at Chamberlin (Begins at 7:30 P.M.)
- 29-2 ALCON
- 29-3 Rocky Mountain Star Stare

### JULY

- 1-3 EGK Dark Sky weekend
- 9 DAS Picnic (Begins at 4:00 P.M.) and Open House at Chamberlin (Begins at 8:30 P.M.) Saturn viewing!
- 15 DAS General Membership meeting (Begins at 7:30 P.M.). Speaker: Jamie Riggs of the Deep Space Exploration Society: *Radioastronomy*
- 22 E-Board Meeting at Chamberlin (Begins at 7:30 P.M.)
- 29-31 EGK Dark Sky weekend

*Public nights are held at Chamberlin Observatory 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.

*Costs to non-members are: \$3.00 adults, \$2.00 children.  
 Please make reservations via our website ([www.denverastro.org](http://www.denverastro.org)) or call (303) 871-5172.*

### Society Directory

- President:**  
 Ron Pearson (303) 670-1299  
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**Vice President:**  
 Lisa Judd (626) 487-8515  
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**Secretary:**  
 Dennis Cochran (720) 870-0465  
**Treasurer:**  
 Brad Gilman (720) 488-1028

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- Jack Eastman Keith Pool  
 Joe Gafford Tim Pimentel  
 Chuck Habenicht David Shouldice  
 Ron Hranac Dan Wray  
 Ron Mickle, Past President  
 President Emeritus, Larry Brooks

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- Van Nattan-Hansen Scholarship Fund:**  
 Ron Pearson (Chair)  
 P.O. Box 150743  
 Lakewood, Colorado 80215-0743  
**EGK Dark Site Committee:**  
 Darrell Dodge, Interim Chair  
 Email: [darksite@denverastro.org](mailto:darksite@denverastro.org)  
**IDA Representative:**  
 Dr. Robert Stencel  
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**Student Astronomy Chair:**  
 Naomi Pequette (Chair)  
**Finance Committee**  
 Frank Mancini (303) 663-5263

### Volunteers or Appointed Representatives

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 The *Observer* is available in color PDF format from the DAS website.  
**Website:**  
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 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](http://www.denverastro.org)

## JUNE SKIES (CONTINUED FROM PAGE 1)

is 25 times the diameter of the Sun, and is an orange star of spectral type K2. Try looking in the region southwest of Arcturus on the edge of its field of view for the asterism “Napoleon’s Hat.” It looks a bit like an upright Coathanger. The next star on the left (east) side of the kite is Epsilon, which we mentioned last month as a wide orange and green double. Continue up to the next kite star and then veer left to jump over the lovely Northern Crown to the keystone shape of central Hercules. The globular cluster M13 is near the wide end of the keystone, or “Chinese take-out box,” along its western side. Look for the faint galaxy NGC 6207 a hair north of it. Then, north of the upper end of the take-out box, towards the head of Draco, is M92, another globular. Back at M13, slide down the right-hand side of Hercules to his Beta star. Southwest of  $\beta$  (beta) Herc. and directly south of Corona Borealis is the little triangular head of Serpens Caput, a snake that Ophiuchus has to carry around. From Serpens Caput, take a side trip down and left 45-degrees, about three triangles worth, into the blank lower regions of Hercules to search for the faint planetary nebula, IC 4593.

Now, from the triangular head of Serpens Caput head south-southwest down the serpent’s body past a couple of faint galaxies to the Delta star, and then continue the same distance and a bit more in that direction to get to another big globular cluster, M5. This huge “star-city” deserves a long look. Why did it become a globular cluster instead of a full-fledged, even if dwarf, galaxy? From there ooze to the left and slightly down into the bottom half of bloated Ophiuchus, the big bell-shaped constellation, to search for the globular duo M12 and M10. Quite a way below these is another glob, M107, under the bottom of the bell, south-southwest from M12.

You should be “glob-ed” out by now. What I like about these mini-galaxies is how self-contained they seem to be. That they exist with, indeed, are clustered around, galaxies makes them mysterious in a nice way. If we understood why they formed we would understand the formation of galaxies, a hot research topic in astronomy.

Tired of hearing about Cor Caroli (Heart of Charles) and not knowing where it is? Cor



## AT THE TAIL OF THE KING

As the galaxies of Spring dive toward the west, leading the way is the finest troupe ever to grace an eyepiece. The “Leo Trio”, comprised of NGC 3628, plus Messiers 65 and 66, resides in the haunches of the Lion, just a fist’s-width west of the Virgo Cluster. The 7th magnitude star SAO 99552 crowns the triplet in Darrell’s stunning image, which reveals the effects of gravitational interaction on all three. The median journey of light to this beautiful galactic ballet is 35 million years. *Details: Honis-modified Canon 450 D, AstroTech 8-inch f/4 reflector, LRGB data totaling 47 minutes, from the EGK dark site at Deer Trail.*

Image © Darrell Dodge

Caroli is the Alpha star of the little two-star constellation Canes Venatici, the Hunting Dogs. They belong to Bootes, per Helvetius, just as Canis Major and Minor hunt with Orion. It is near the zenith northwest of Arcturus, just north of the corner constellation Coma Berenices—between it and the Big Dipper. Cor Caroli is a third-of-an-arc-minute double. Nearby to the north-northwest is M94, a galaxy that may be a Seyfert with a bright little nucleus. From M94 one can see  $\beta$  (beta) Canes Venatici star directly west.

Note its distance from Cor Caroli and then head northeast from there as if you were going over to the end of the Big Dipper the same distance to find M63, another Sb spiral galaxy. Far-out, man!

Last-minute info from astro mags: Bootid Meteor Shower June 27; the radiant rises before midnight. And if you want to see the lunar rille Rima Ariadaeus south of the crater Julius Caesar on the moon, it is well-illuminated around the 7th. Rima is a long, straight escarpment.

## 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 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. To contribute, please see the bottom of the membership form for details (found on the DAS website: [thedas.org](http://thedas.org)).

More information about the DAS, its activities and the special tax-deductible funds is available on the DAS website at [www.denverastro.org](http://www.denverastro.org).



# A GATHERING AT THE GRANGE

Article by Keith Pool, DAS External Outreach Coordinator  
Photos courtesy of Shelley Beauchamp

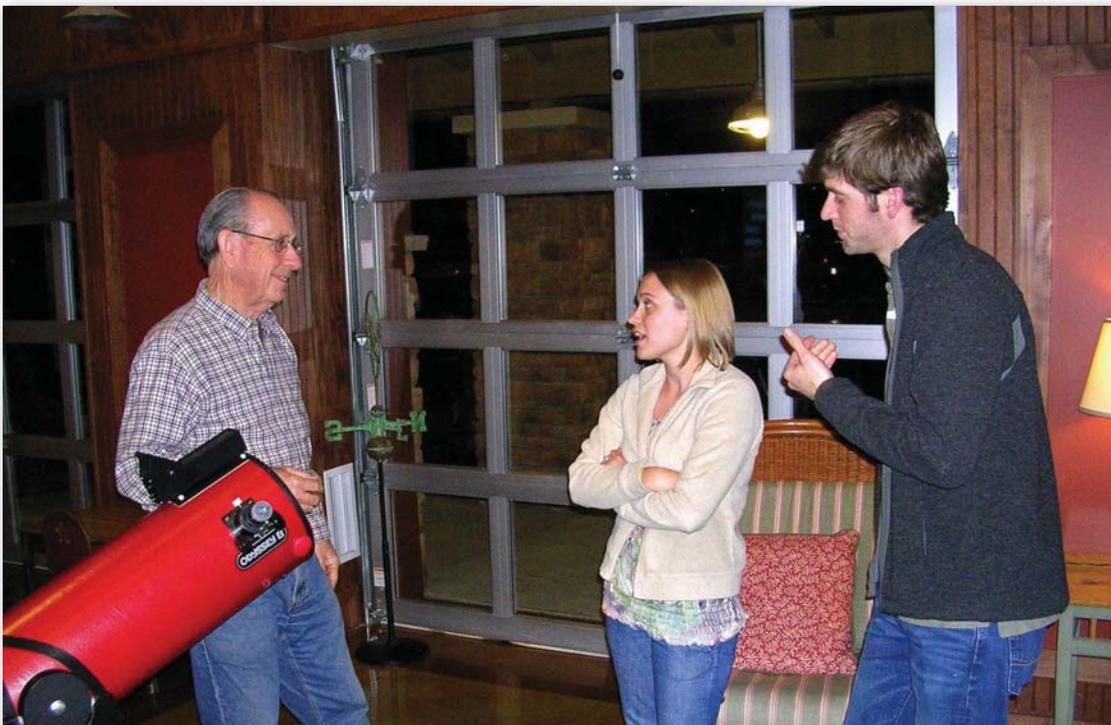
The DAS held a star party on the evening of April 25th at the Grange Community Center in Castle Rock, and although the weather did not cooperate, it was still well attended by about 15 members of the local community who were interested in astronomy. Steve Solon gave a very well-presented one hour-long lecture covering what we might have seen in the night sky, along with some basic pointers on choosing and using a telescope for newcomers to the hobby. Dennis Cochran, Cliff Simpson and I were also in attendance to display a couple of our telescopes and answer questions on how they work and about the night sky in general. All in all (despite the weather) we had a good time just being in each other's company and sharing our love of all things astronomical with the group.

A second star party at the Grange is scheduled for August 29th, so if you are interested in sharing your time and passion about astronomy with others, please feel free to contact me via e-mail or by telephone. No Ph.D is required, just a general love and enthusiasm for the night sky. Likewise, if you know of any groups who would be interested in hosting a public star party, please contact me for that, as well. Each of you can be my eyes and ears in reaching others about the visible wonders that lie far above our heads each cloudless night.



## ASTRONOMY VILLAINS AT WORK

Lousy weather held the stars at bay, but not the spirit. The DAS's troupe of astro-preachers kept the assembled informed and entertained. Pictured, left to right: Keith Pool, External Outreach Coordinator, Steve Solon, Lecturer, and Men-About-Town and Good Eggs, Cliff Simpson and DAS Secretary, Dennis Cochran. Photo below left: Cliff Simpson demonstrates the simplicity of the Dobsonian to two fascinated guests at the rained-out Grange party. The ease of the Dob's use intrigued all who were present and convinced several about their first telescope purchase.



# NEW BROOKS OBSERVATORY TAKING SHAPE AT THE DARK SITE

by Darrell Dodge

While the DAS Edmund G. Kline Dark Site east of Deer Trail is an observing venue that – on a good night – can rival the best dark sites in the country, it's always been missing one key feature: a dedicated observatory building. Thanks to the generosity of an anonymous donor, Celestron International, the work of S&S Optika, and the commitment of the E-Board to the outreach and research potential of the dark site, that feature will not be missing for long.

The namesake of the new Brooks Observatory is the late Larry Brooks, beloved DAS member, President Emeritus, and friend, whose efforts were instrumental in the development of the dark site. The head construction boss of the job is Ted Cox, a DAS member who is a professional carpenter and builder. He will lead small teams of volunteers in the construction efforts.

On May 3-4, the footings were dug and the cement poured for the new Brooks Observatory. A 10-foot by 10-foot wooden floor with 2x8 joists was built on May 21st. The building will house a 14-inch Celestron Schmidt-Cassegrain telescope on a Losmandy G-11 mount, affixed to a 10-inch diameter steel pier. After over 14 years of trying, the DAS will finally have a dedicated small observatory we can call our own.

Craig Betzina, a DAS member who is the Colorado ExploraDome dealer, (and who gave an informative presentation on the various options for small observatories at the April 2011 General Meeting) has agreed to store the dome and building kit at his business location north of Strasburg until the foundation and floor are ready for the aluminum and steel building kit sometime in May or early June. At that point, we'll help Craig haul the materials and dome out to the dark site and final construction will begin. The 8-foot white dome is constructed of UV-stabilized polyethylene, a material the durability of which has been tested and proven for many years in rural applications such as calf shelters and storage tanks constructed by the manufacturer, PolyDome. The long experience with this material, the hundreds of ExploraDomes that have been installed all over the U.S., the ability of the structure to resist high winds and hail, and the low cost were two of the reasons why this particular dome was chosen.

Uses of the new observatory are expected to be diverse, but priority will be given to those that support the society's charter and legal non-profit organizational objectives, including public outreach and research. It has always been difficult to conduct public education activities at the dark site because of the distance from populated areas, which creates a time crunch when an evening observing program has to accommodate erecting and tearing down a telescope by DAS volunteers. Another difficulty has always been the unreliability of the weather at the site, particularly the nocturnal winds, which have proven to be difficult for the various forecasting services to predict and can ruin plans even on a clear night. The enclosed, permanently-mounted telescope will make it much easier to plan and carry out educational activities. Anyone who has participated in public observing programs in light-compromised urban or suburban sites realizes the huge difference that dark site observing can make in stimulating and maintaining interest in astronomy.

To accommodate public viewing and to avoid blockage of views from the existing observing pads at the site, the observatory was sited within a few yards of the warming hut. This proximity will also allow remote operation of some observatory and telescope functions on cold nights.

While outreach and research uses will be prioritized, the observatory will also be available for use by members who have been certified in the operation of the telescope and the observatory.



## JUNE SPEAKER IS MR. BOB KOFF

by Lisa Judd

Our June Speaker is Mr. Bob Koff, owner and operator of the Antelope Hills Observatory in Bennett, Colorado. When things go bump in the night (sky), it's opportunity knocking. This lecture discusses observing programs particularly suited to amateurs, and geared to provide rapid response to unusual celestial events. With more and more large-scale surveys coming online, the opportunities for follow-up observations are exploding. Since such observations can be of great value to professionals, amateurs need to know what is required and how to report their observations.



## NASA'S SPACE PLACE

## MILKY WAY SAFARI

A Space Place Partner Article

by Dauna Coulter and Dr. Tony Phillips

Safari, anyone? Citizen scientists are invited to join a hunt through the galaxy. As a volunteer for Zooniverse's Milky Way Project, you'll track down exotic creatures like mysterious gas bubbles, twisted green knots of dust and gas, and the notorious "red fuzzies."

"The project began about four months ago," says astrophysicist Robert Simpson of Oxford University. "Already, more than 18,000 people are scouting the Milky Way for these quarry."

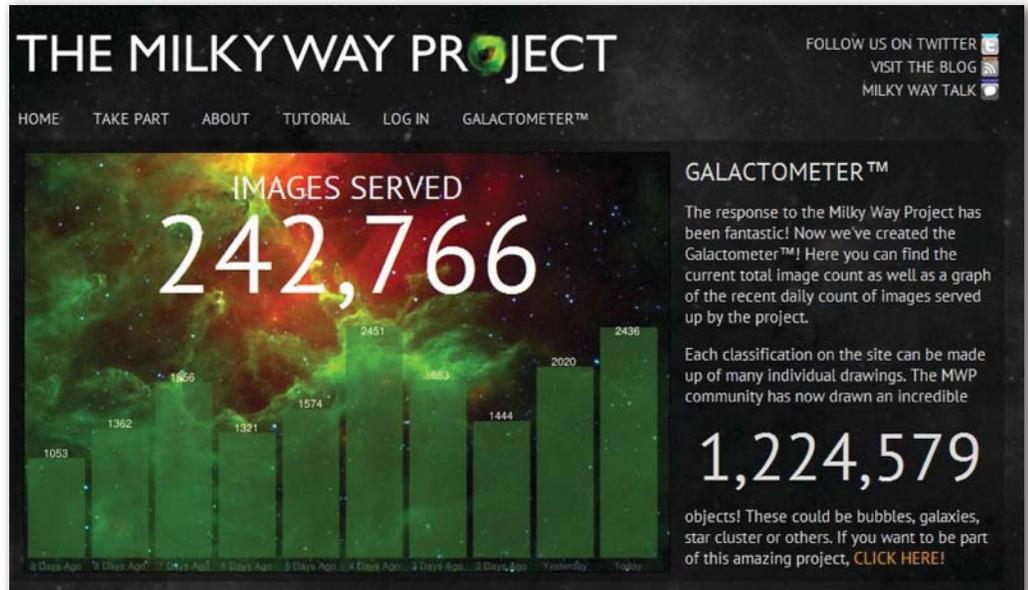
The volunteers have been scrutinizing infrared images of the Milky Way's inner regions gathered by NASA's Spitzer Space Telescope. Spitzer's high resolution in infrared helps it pierce the cloaking haze of interstellar gas and dust, revealing strange and beautiful structures invisible to conventional telescopes. The Milky Way Project is helping astronomers catalogue these intriguing features, map our galaxy, and plan future research.

"Participants use drawing tools to flag the objects," explains Simpson. "So far they've made over a million drawings and classified over 300,000 images."

Scientists are especially interested in bubble-like objects believed to represent areas of active star formation. "Every bubble signifies hundreds to thousands of young, hot stars. Our volunteers have circled almost 300,000 bubble candidates, and counting," he says.

Humans are better at this than computers. Computer searches turn up only the objects precisely defined in a program, missing the ones that don't fit a specified mold. A computer would, for example, overlook partial bubbles and those that are skewed into unusual shapes.

"People are more flexible. They tend to pick out patterns computers don't pick up and find things that just look interesting. They're less precise, but very complementary to computer searches, making it less likely we'll miss structures that deserve a closer look. And just the sheer numbers of eyes on the prize mean more comprehensive coverage."



Volunteers study infrared images of our galaxy from the Spitzer Space Telescope, identifying interesting features using the special tools of the Milky Way Project, part of the Citizen Science Alliance Zooniverse web site.

*Illustration courtesy of NASA/JPL.*

Along the way the project scientists distill the volunteers' data to eliminate repetitive finds (such as different people spotting the same bubbles) and other distortions.

The project's main site (<http://www.milkywayproject.org>) includes links to a blog and a site called Milky Way Talk. Here "hunters" can post comments, chat about images they've found, tag the ones they consider especially intriguing, vote for their favorite images (see the winners at <http://talk.milkywayproject.org/collections/CMWSo0002u>), and more.

Zooniverse invites public participation in science missions both to garner interest in science and to help scientists achieve their goals. More than 400,000

volunteers are involved in their projects at the moment. If you want to help with the Milky Way Project, visit the site, take the tutorial, and ... happy hunting!

You can get a preview some of the bubbles at Spitzer's own web site, <http://www.spitzer.caltech.edu/>. Kids will enjoy looking for bubbles in space pictures while playing the Spitzer concentration game at <http://spaceplace.nasa.gov/spitzer-concentration/>.

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

## MARK YOUR CALENDARS FOR THE DAS PICNIC AND OPEN HOUSE!

We hope to see you at Chamberlin for the Annual DAS Members Potluck Picnic before the July 9th Chamberlin Open House. Bring your favorite picnic dish to share and a comfortable lawn chair. DAS will provide ca-

tered Bar-B-Q meats and ice-cold drinks. The picnic begins at 4:00 P.M. and the Open House begins at 8:30 P.M.

## PRESIDENT'S CORNER (CONTINUED FROM PAGE 2)

boring, but think of it as an entire year or more of DAS regular monthly-meeting speakers, all in two or three days. Also at ALCON are a couple of great dinners and the chance to meet and talk telescopes

or astronomy with folks from all over the U.S. and the world. Check out the great list of speakers and events, and register at: <http://alcon.astroleague.org/>.

Whatever you do, I hope you (we) have a great summer of star parties and clear skies!

NEW ASTRONOMER'S DEN

June, 2011

At The Teeming Heart of Our Roiling Home Galaxy

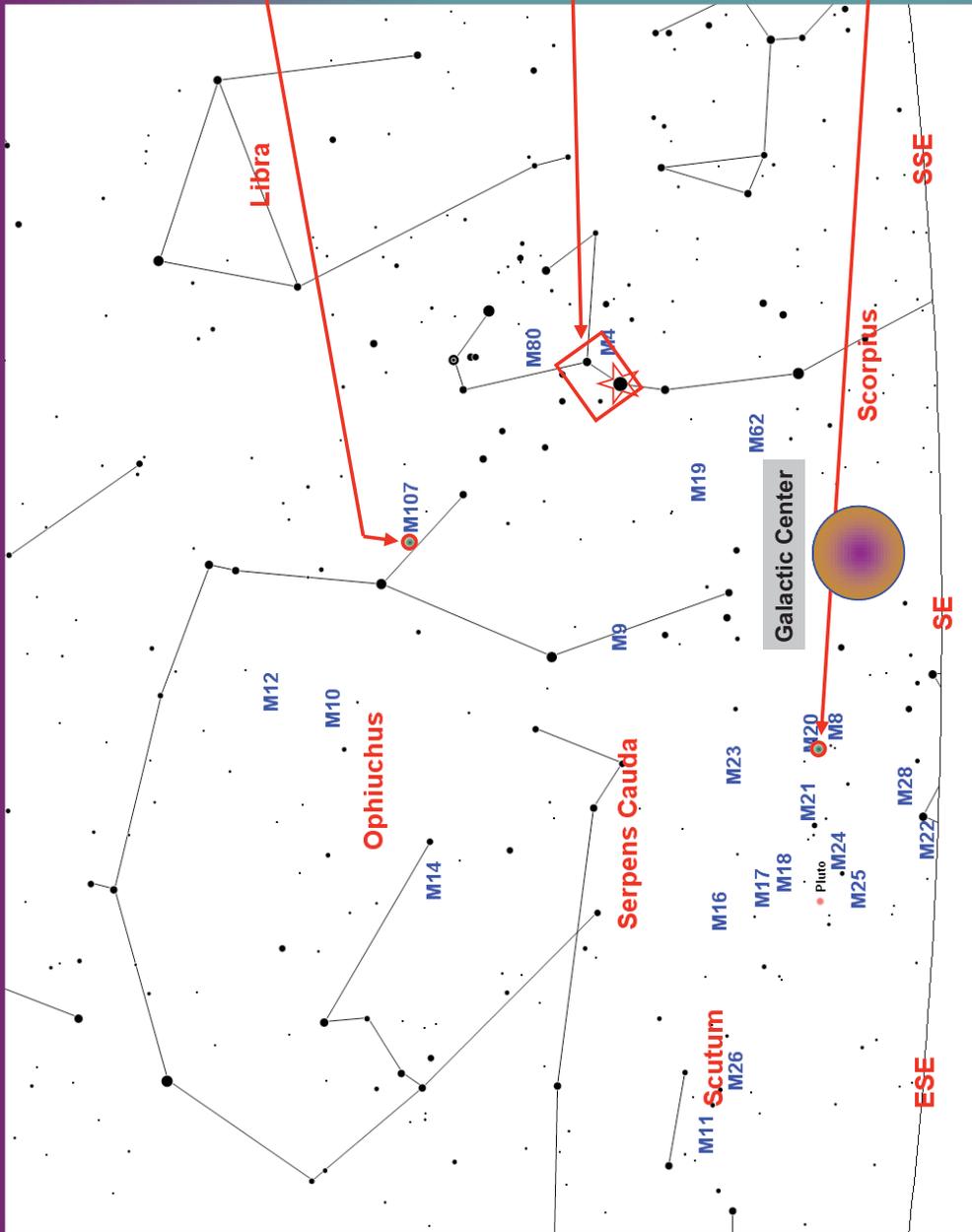


Despite a dense-appearing core, M-107's stars are widely dispersed, allowing close examination of its internal structure. One of several globulars in Ophiuchus, competition from brighter nebulae often leaves it overlooked.



Two types of nebulae populate galactic spaces, emission and reflection, defined by our eyes as the colors red and blue, respectively. The penultimate example of both exists in Messier 20, the Trifid Nebula, a true treat in larger filtered scopes.

Although visually dazzling in its own right, the western region of Scorpius is best revealed by digital imaging, highlighting red supergiant star, Antares, closely-packed globular cluster, M-4, and the surrounding misty nebulosity.



Southeastern Sky — 9:30 p.m.

Even a casual glance at the southeast sky dome under dark conditions conveys a feeling of something truly extraordinary, for this is the gateway to the monstrously turbulent core of the Milky Way. Nebulae and clusters crowd this hazy, star-rich region with some of the most beautiful telescopic objects in the heavens. A good 7x35 binocular will orient and familiarize you with this chart, but delve in deeper with a telescope to appreciate some of the best the galaxy has to offer. Take your time, though, for this spectacle will continue its rise through the following months, and close scrutiny will reward your patient efforts with a bounty of unimaginable celestial wonder.



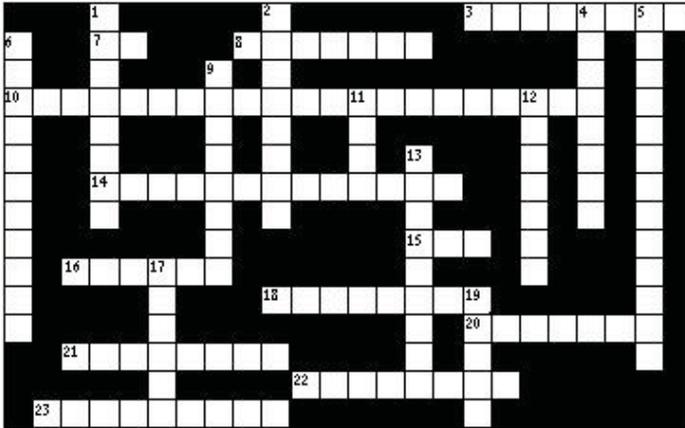
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Star chart courtesy TheSky6 astronomy software suite. © 2011 Software Bisque

*Fun Cloudy Nights.....*

**Crossword: Named Clusters.** The clues below describe famous clusters.



**ACROSS**

- 3. Cluster within a dark nebula
- 7. Cuddly guy
- 8. Busy household
- 10. Anybody that's lost in space
- 14. Naked-eye southern object
- 15. Another name for 7 Across
- 16. Triangle with bright superimposition
- 18. Better known as The Coathanger
- 20. (with '47'), huge cluster off the SMC
- 21. Discoverer of several clusters (this century)
- 22. M11
- 23. M6

**DOWN**

- 1. Cluster of many colors
- 2. Bright one in the keystone
- 4. 5-legged clinger
- 5. Seasonally-named cluster
- 6. The author's present age
- 9. What Orion chases
- 11. A constellation unto itself
- 12. In the center of a nebula
- 13. Melotte 15
- 17. Naked-eye in Perseus
- 19. Large, round clusters  
(2&25 are the best ones)

**CLUSTER PUZZLE**

Thanks to Lisa Judd for her hard work at creating numerous and diverse Astro Puzzles! As often as possible, the *Observer* will offer one of her talented creations. Enjoy! The answers will be published in next month's *Observer*.



The Denver Astronomical Society  
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 2930 E. Warren Ave.  
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