



The Prairie Astronomer

March, 2011

Volume 52, Issue #3

The Official Newsletter of the Prairie Astronomy Club

March Program

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Featured Photo

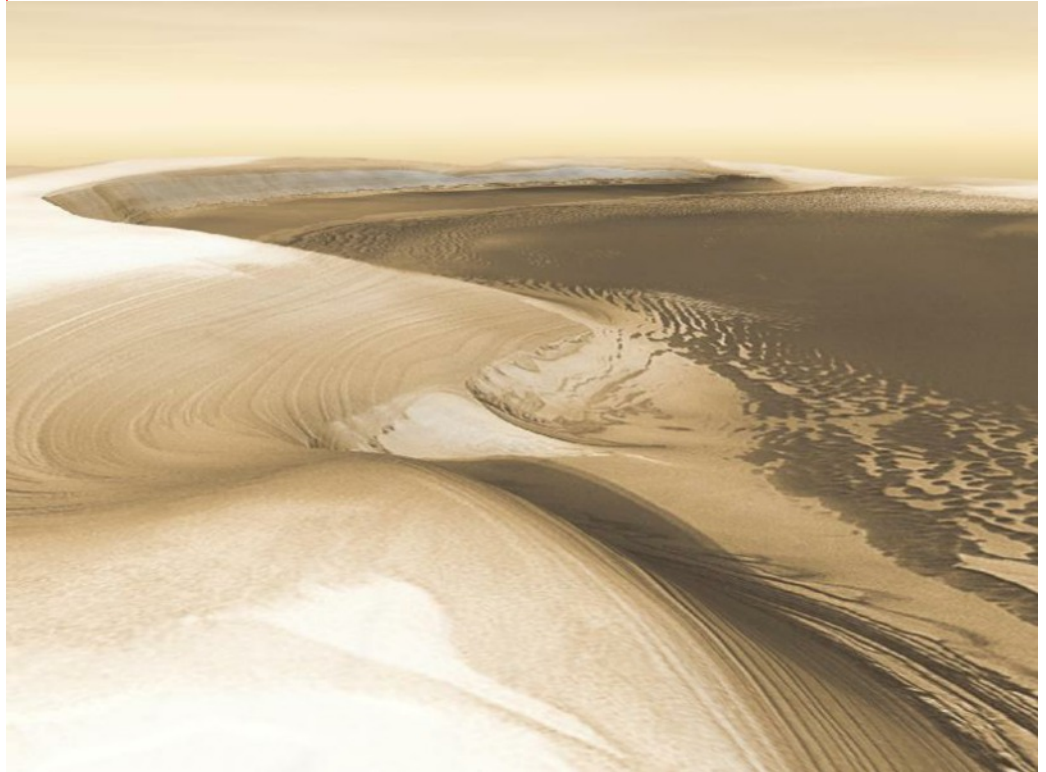
Sketching Your Observations

This month we are again pleased to present one of our own club members, Jim Kvasnicka, as our featured speaker for the PAC Meeting in March. Jim will be presenting a program on "Sketching Your Observations".

Don't miss Jim's presentation this month as it will be very interesting. If nothing else you'll want to be sure to enjoy the sketches! Besides doing an outstanding job as our Observing Chair, he is an accomplished observer having earned a number of AL Observing Club awards. His sketches are fascinating to look at and we've used them often to show beginners and prospective astronomy hobbyists what objects will look like in the telescope.

Chasma Boreale, a long, flat-floored valley, cuts deep into Mars' north polar icecap. Its walls rise about 4,600 feet, or 1,400 meters, above the floor. Where the edge of the ice cap has retreated, sheets of sand are emerging that accumulated during earlier ice-free climatic cycles. Winds blowing off the ice have pushed loose sand into dunes and driven them down-canyon in a westward direction. This scene combines images taken during the period from December 2002 to February 2005 by the Thermal Emission Imaging System instrument on NASA's Mars Odyssey was part of a special series of images marking the orbiter as the longest-working Mars spacecraft in history.

Image Credit: NASA/JPL-Caltech/ASU



Meeting Minutes - Brett Boller

February 22th, 2010 PAC Meeting

Announcements:

Dan Delzell called the meeting to order.

The next PAC star parties will be on March 4th and March 11th.

The next PAC meeting will be Tuesday March 29th, 7:30 PM at Hyde.

Upcoming Programs will be

March – Jim Kvasnicka – How to sketch your observations.

April – A guide to filters by Dave Knisely

Outreach upcoming events

Beginning Astronomy Class – April 7th & 8th.

Lunar Party at Hyde April 8th.

Nebraska Realtors Convention April 13th 6:30pm to 9:00pm

Astronomy Day May 7th.

Hyde Saturday nights.

Volunteer at Hyde

We are looking for Volunteers.

Observing Report

Star parties, Both dates had snow on the ground.

Jan. 28 0 attendees.

Feb. 4th 0 attendees.

Evening planets in March include Jupiter and Mercury.

Night Planets in February include Saturn.

Morning Planets in February include Venus and Neptune

Puppis was the topic constellation.

John Reinert gave a fact filled presentation of his experience behind the shuttle engines.



Club Events

ON THE NET

Newsletter submission deadline, April 15, 2011

PAC Club Meeting:

Tuesday, March 29, 2011 7:30pm @ Hyde Obsv.

Program: How to Sketch Your Observations by Jim Kvasnicka.

PAC Club Meeting:

Tuesday April 26, 2011 7:30pm @ Hyde Obsv.

Program: The Dummy's Guide to Filters by Dave Knisely

PAC Club Meeting:

Tuesday May 31, 2011 7:30pm @ Hyde Obsv.

Program: Safely Viewing the Sun by Dave Churilla

PAC Club Meeting:

Tuesday June 28, 2011 7:30pm @ Hyde Obsv.

BBQ & Swap Meet

2011 PAC Star Party Dates

March	Mar 25th	Apr 1st
April	Apr 22nd	Apr 29th May 6th
May	May 27th	Jun 3rd
June	Jun 24th	Jul 1st
July	Jul 22nd	Jul 29th
August	Aug 26th	Sep 2nd
September	Sep 23rd	Sep 30th
October	Oct 21st	Oct 28th
November	Nov 18th	Nov 25th
December	Dec 16th	Dec 23rd

Lunar Party Dates:

Apr 8th
May 13th
Jun 10th
Jul 8th
Aug 5th
Oct 7th
Nov 4th

Dates in **BOLD** are closest to the New Moon. Lunar Party dates are possible dates and not official.

Volunteer Activities

Hyde Observatory on Saturday nights

PAC Beginners Field Class: April 7 and 8

New Club Member's Instructional Class: To be determined.

Please see the website or email a club member for more information and as always additional volunteer events will occur when they are scheduled.

PAC:

www.prairieastronomyclub.org

PAC E-Mail:

info@prairieastronomyclub.org

NSP:

www.nebraskastarparty.org

NSP E-Mail:

info@nebraskastarparty.org

OAS

www.OmahaAstro.com

Hyde Observatory

www.hydeobservatory.info

Panhandle Astronomy Club

Panhandleastronomyclub.com

PAC-LIST: You may subscribe to the PAC listserv by sending an e-mail message to: mailsrv@prairieastronomyclub.org. In the body of the message, write "Subscribe PAC-List your-email-address@your-domain.com"

For example:

Subscribe pac-list me@myISP.com

To post messages to the list, send to the address

pac-list@prairieastronomyclub.org

PAC can also be found on Twitter and Facebook.

Buy club apparel through the club website. Shirts, hats, mugs, mouse pads and more.



April Observing: What to View--Jim Kvasnicka

This is a partial list of objects visible for the upcoming month.

Planets

Venus: Rises 80 minutes before the Sun at -3.9 magnitude.

Neptune: In Aquarius and visible in a telescope just before dawn.

Uranus/Mercury/Jupiter/Mars: All are low at dawn making for difficult observing.

Saturn: Rises before sunset. It shines at 0.4, the brightest it has been in three years.

Meteor Showers

Lyrids: Peaks the night of April 22-23. Expect around 10-20 per hour. The waning gibbous Moon will interfere.

April Messier List

M40: Multiple star in Ursa Major.

M65/M66: Galaxies in the Leo Triplet Group.

M95/M96: Galaxy pair in Leo.

M105: Galaxy in Leo.

M106: Galaxy in Canes Venatici.

M108: Galaxy in Ursa Major.

M109: Galaxy in Ursa Major.

Last Month: M41, M44, M46, M47, M48, M50, M67, M81, M82, M93

Next Month: M49, M51, M61, M63, M64, M85, M94, M101, M102, M104

NGC and Other Deep Sky Objects

NGC 2903: Bright galaxy in Leo.

NGC 3079: Thin elongated galaxy in Ursa Major.

NGC 3109: Faint, elongated galaxy in Hydra.

NGC 3521: Oval shaped galaxy in Leo.

NGC 3628: Galaxy in the Leo Triplet Group.

Double Star Club List

Alpha Leonis: Regulus, white and yellow pair.

Gamma Leonis: Algieba, pair of yellow stars.

54 Leonis: Yellow primary with a greenish colored secondary.

Alpha Canum Venaticorum: Cor Caroli, Bright white and greenish yellow stars.

Zeta Ursa Majoris: Mizar, pair of white stars.

Gamma Virginis: Porrima, close pair of yellow stars.

24 Comae Berenices: Yellow and pale blue pair.

Delta Corvi: White primary with a rose colored secondary.

Focus On Constellations - Jim Kvasnicka

Ursa Major, the Great Bear, is the third largest constellation covering 1,280 square degrees. Seven of the brightest stars form the Big Dipper, the best known of all star patterns. The Big Dipper is only the hind quarters and tail of the Great Bear. Ursa Major lies far away from the Milky Way, therefore like most constellations off the Milky Way it is rich in galaxies, or in the case of Ursa Major it is exceptionally rich in galaxies. Ursa Major is best seen in the month of April.

Mythology and History

In Greek mythology Zeus fell in love with Callisto, a beautiful young woman. Hera, Zeus's wife found out and turned Callisto into a bear, but she kept her human feelings. She roamed the woods in fear of the other animals and of hunters. One day she came face to face with a young hunter who she recognized as her own son Arcas. She rushed to hug him but Arcas didn't know the bear was his mother. Thinking the bear was attacking he raised his spear and was about to throw it when Zeus turned him into a bear like his mother. Callisto became Ursa Major and Arcas became Ursa Minor.

Objects Magnitude 12.0 and Brighter

Galaxies: M81, M82, M101, M108, M109, NGC2742, NGC2654, NGC2681, NGC2685, NGC2693, NGC2768, NGC2787, NGC2805, NGC2841, NGC2880, NGC2950, NGC2976, NGC2985, NGC3027, NGC3079, NGC3077, NGC3184, NGC3198, NGC3206, NGC3264, NGC3310, NGC3319, NGC3359, NGC3583, NGC3600, NGC3614, NGC3610, NGC3613, NGC3619, NGC3631, NGC3642, NGC3665, NGC3675, NGC3683, NGC3718, NGC3726, NGC3729, NGC3738, NGC3756, NGC3769, NGC3780, NGC3877, NGC3893, NGC3898, NGC3917, NGC3938, NGC3941, NGC3945, NGC3949, NGC3953, NGC3963, NGC3982, NGC3998, NGC4013, NGC4026, NGC4036, NGC4041, NGC4051, NGC4062, NGC4088, NGC4096, NGC4100, NGC4102, NGC4144, NGC4157, NGC4290, NGC4605, NGC4814, NGC5204, NGC5308, NGC5322, NGC5389, NGC5422, NGC5430, NGC5448, NGC5473, NGC5474, NGC5485, NGC5585, UGC4305, IC750

Open Clusters:

Globular Clusters:

Planetary Nebulae: M97

Bright Nebulae:

SNREM:

Dark Nebulae:

Named Stars: Dubhe (Alpha), Merak (Beta), Phad (Gamma), Megrez (Delta), Alioth (Epsilon), Mizar (Zeta), Alkaid (eta), Talitha (Iota)

Number of Objects in Various Observing Clubs

Messier Club: 7 objects

Double Star Club: 1 object

Herschel 400 Club: 46 objects

Globular Cluster Club: 0 objects

Open Cluster Club: 0 objects

Planetary Nebula Club: 1 object

Urban Club: 3 objects

ANNUAL MEMBERSHIP

REGULAR MEMBER - \$30.00 per year. Includes club newsletter, and 1 vote at club meetings, plus all other standard club privileges.

FAMILY MEMBER - \$35.00 per year. Same as regular member except gets 2 votes at club meetings.

If you renew your membership prior to your annual renewal date, you will receive a 10% discount.

Club members are also eligible for special subscription discounts on Sky & Telescope Magazine.

Club Telescopes

To check out one of the club telescope contact **Jason Noelle**. If you keep a scope for more than a week, please check in with Jason once a week, to verify the location of the telescope and how long you plan to use it. The checkout time limit will be two weeks, but can be extended if no one else has requested use of a club scope.

100mm Orion refractor:
Available

10 inch Meade Dobsonian:
Available

13 inch Truss Dobsonian:
Available

Program Chair Minute - Dave Churilla

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Following are upcoming programs you won't want to miss.

April 2011: A Guide to Filters by Dave Knisely. This will be a very beneficial program as filters can enhance your observing enjoyment of many objects and Dave is extremely knowledgeable about them. He'll try to give you a good idea of what to use, which are the best, and which are the best for the money. And NO – I don't think he'll have a review of Ron Veys' Cloud Filters!!!

May 2011: Safely Viewing the Sun by Dave Churilla. This will be a short presentation on Solar Filters, both White Light and H-Alpha, how to view the sun safely, how to get started, what's new in the past few years and what are the best buys. Its will be, by necessity, very NON-TECHNICAL (meaning I'm Techno-Challenged).

If the sky is clear I will be giving the presentation at the beginning of the meeting and outside with the telescopes for a more hands experience with White Light and H-Alpha filters and will have slides on my laptop. We'll then adjourn to inside Hyde for the main meeting. But you know my reputation so it's likely we'll be INSIDE (due to clouds) with a regular PowerPoint presentation.

June 2011: BBQ & Swap Meet We are considering a swap meet & possibly a BBQ in June. If so it will feature Cajun Bob K's Smoked Pulled Pork sandwiches. Stay tuned for details.

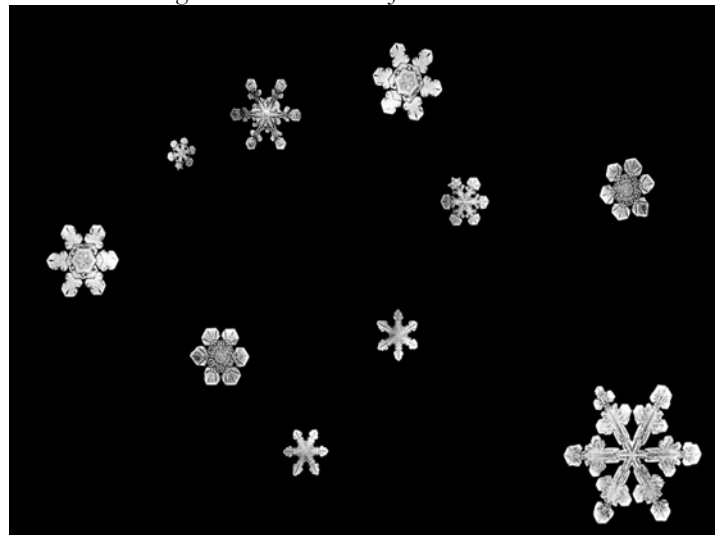
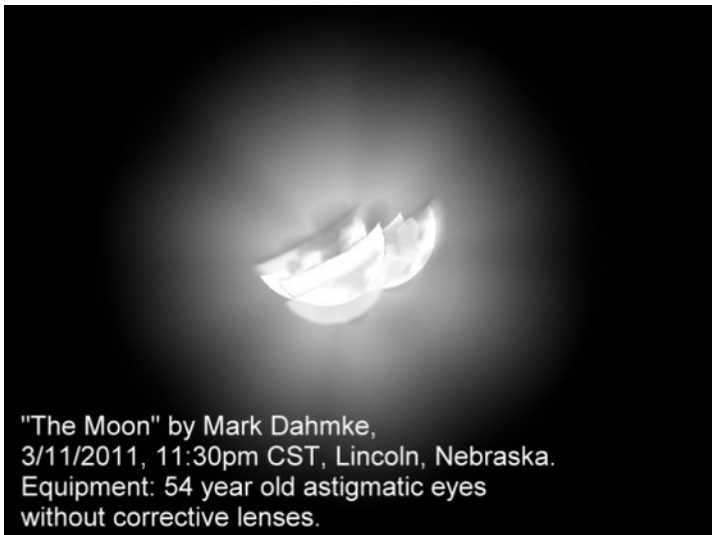
July 2011: Comet Hunting by Cal Beard. (Tentative) This presentation should be very interesting. More to come.

I'll try to keep you apprised of upcoming programs so you can plan to attend.

The members of the PAC Executive Committee work together to plan the monthly PAC Programs. Our goal for the programs is to provide a good mix of information, entertainment (including time to visit with one another), and to make them relevant for all experience levels as well as to hit all interests in astronomy. In addition we want to get club members involved with giving presentations as there is a lot of expertise in different areas that we all could benefit from. So we would love to have your comments and suggestions concerning what you would like see in our programs. Call me at 402-467-1514 or email me at weber2@inebraska.com.

Bad Observing or Terrible Observing? You decide...

The Moon, during a snowstorm, without my glasses. I think this is how the moon got its water. -Rick Johnson



Challenge Observing Objects for March/April

Each month I will have two objects, one for the more seasoned observer and one for the beginning observer. Each object I hope will challenge you just a little bit. I will provide you with a little bit of information about the object. It is your job to find it and if you would write a little report or draw what you see. The first person to report back on each object will have their report published in the next issue of the newsletter. Happy Hunting!

Advanced Object

NGC 4485 and NGC 4490

Interacting galaxies in Canes Venatici. NGC 4490 is the Cocoon Galaxy and the larger of the two. They are separated by 3.5' N-S. A tail of stars stretches between the galaxies which are separated by at least 24,000 light years. Both galaxies are about 40 to 50 million light years distant and have an apparent magnitude of 10.0.



Image credit: NASA

Beginner Object

The Eskimo Nebula (NGC 2392)

NGC 2392 lies more than 2,870 light-years away and is visible with a small telescope in the constellation of Gemini. The formation resembles a person's head surrounded by a parka hood. The central star is HD 59088, a massive O8 star that is a suspected variable. It has an apparent magnitude of 10.1.



Image credit: NASA

Astronomy Day Volunteers: Dave Churilla

May 7, 2011 is Astronomy Day. This is a day across the nation that we celebrate the science and hobby of Astronomy and Space Exploration. For those new to the club, PAC joins with other groups to man stations at the UNL Museum, Morrill Hall, to allow the public to experience first hand the fun and fascination of the different disciplines of Astronomy. Last year PAC had 9 stations and we will need volunteers to man those stations again this year. It encompasses several floors and generally draws over 500 people. It's a great outreach opportunity for PAC not to mention a lot of fun.

This year I'll be organizing the volunteers ahead of time and assigning the stations, and Kris Gainsforth will be task master the day of the event to help you get to your assigned stations as I can't be there because my son is graduating from UNL that day. I'll be emailing everyone in PAC as a reminder about the event and volunteering then I'll try to email you individually or talk to you at a meeting to see if you can help out and assign you a station to work if you don't have a preference. We like to have the same stations we did last year although we'll be replacing a couple of the stations with new ones. But if you know ahead of time you want to work, please email me and let me know at weber2@inebraska.com or call me at 402-467-1514. Now this is not a warning to hide when you see me emailing you for help or asking for it during meetings. But it is a heads up that we will be looking for people to work Astronomy Day. So please be thinking of what you want to do. And mark May 7th on your calendars and I'll be in touch!!!

GOES-R, Zombie Fighter by Dr. Tony Phillips

On April 5, 2010, something eerie happened to the Galaxy 15 telecommunications satellite: It turned into a zombie.

The day began as usual, with industry-owned Galaxy 15 relaying TV signals to millions of viewers in North America, when suddenly the geosynchronous satellite stopped taking commands from Earth. It was brain dead! Like any good zombie, however, its body continued to function. Within days, Galaxy 15 began to meander among other satellites in geosynchronous orbit, transmitting its own signal on top of the others'. Satellite operators scrambled to deal with the interference, all the while wondering *what happened?*

In horror movies, zombies are usually produced by viruses.

“In this case, the culprit was probably the sun,” says Bill Denig of the National Geophysical Data Center in Boulder, Colorado. He and colleague Janet Green of NOAA’s Space Weather Prediction Center recently led a study of the Galaxy 15 anomaly, and here are their conclusions:

On April 3rd, a relatively minor solar flare launched a cloud of plasma toward Earth. Galaxy 15 had experienced many such events before, but this time there was a difference.

“Galaxy 15 was just emerging from the shadow of Earth when the cloud arrived and triggered a geomagnetic storm,” explains Denig. Suddenly exposed to sunlight and the ongoing storm, “the spacecraft began to heat up and charge [up].”

Electrons swirling around Galaxy 15 stuck to and penetrated the spacecraft’s surface. As more and more charged particles accumulated, voltages began to rise, and—zap!—an electrostatic discharge occurred. A zombie was born.

“At least, this is what we suspect happened based on data collected by GOES satellites in the vicinity,” he says. “We’ll be able to diagnose events like this much better, however, after GOES-R is launched by NASA in 2015.”

GOES-R is NOAA’s next-generation Geostationary Operational Environmental Satellite. One of the instruments it will carry, a low-energy electron counter, is crucial to “zombie fighting.” Low energy-electrons are the ones most likely to stick to a spacecraft’s surface and cause brain-frying discharges. By monitoring these particles in Earth orbit, GOES-R will provide better post-mortems for future zombie outbreaks. This could help satellite designers figure out how to build spacecraft less susceptible to discharges. Also, GOES-R will be able to issue alerts when dangerous electrons appear. Satellite operators could then take protective action—for example, putting their birds in “safe mode”—to keep the zombie population at bay.

Meanwhile, Galaxy 15 is a zombie no more. In late December 2010, after 9 months of terrorizing nearby spacecraft, the comsat was re-booted, and began responding to commands from Earth again.

All’s well that ends well? True zombie fighters know better than to relax. Says Denig, “we’re looking forward to GOES-R.”

You and the kids in your life can learn about space weather at <http://scijinks.gov/space-weather-and-us>.

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

Capturing Thor's Helmet by Tammy Plotner of Universe Today

It spans nearly 30 light years of space... and resides approximately 15,000 light-years from Earth. Its heartbeat is an extremely hot giant star thought to be in a brief, pre-supernova stage of evolution. Interactions with a nearby dense, warm and large molecular cloud are what may have contributed to its complex shape and curved bow-shock structure. Step back into mythology and see if you have what it takes to capture "Thor's Helmet"...

Unlike many nebula, this unusual character is the product of the central Wolf-Rayet star, its stellar winds, and the surrounding interstellar matter. The powerful star emits a high velocity wind, pushing matter ahead of it. This process both compresses and expands its ring-like shell. As it grows, it collects even more gas and dust from the interstellar medium. But how many times and how many events? "We have detected three different velocity components, and determined their spatial distribution and physical properties. The kinematics, morphology, mass and density are clearly stratified with respect to the W-R star." says JR Rizzo (et al). "These features allow us to learn about the recent evolutionary history of HD 56925, because the multiple layers could be associated to several energetic events which have acted upon the surrounding circumstellar medium. Hence, a careful study of the different shockfronts contain clues in determining the present and past interaction of this evolved massive star with its surroundings."

While most planetary nebulae contain old stars nearing the end of their lives, the central Wolf-Rayet star in NGC 2359 is very young. Its ultraviolet photons are the fueling source of the emission nebula. Wolf-Rayets are evolved, massive and extremely hot – up to ~50,000 K. Not only that, but their luminosity is incredible, too... up to 10L to the fifth or sixth power. Their surface composition is extremely exotic, being dominated by helium rather than hydrogen and the stars themselves are rare, simply because they are so short-lived. It was only three short decades ago that astronomers also realized that WRs suffered from heavy mass loss as well. Their ejecta bursts outward at speeds comparable to a nova. The whole process of formation simply isn't clearly understood yet. The layers may be from differential rotation – but they could be the results of the exposed stellar core. "The overall emission in the nebula is dominated by the overwhelming contribution of the H II region and is characteristic of photoionization processes. The embedded, photoevaporating cloud contributes enough mass over a dynamical lifetime to account for the shell mass of 5.0 solar mass." says TE Jernigan. "In NGC 2359, imagery reveals variations in density, temperature, and ionization structure on scales ranging from the size of the nebula down to the seeing limit of approximately 2.1 seconds. The structure of the H II region can be understood in terms of a photoionized conical cavity protruding into the surrounding molecular cloud. The emission in the bubble region is characteristic of that produced in the incomplete cooling region behind a stellar-wind shock wave." No matter what explanation lay behind it, observing "Thor's Helmet" is a pure pleasure. You'll find it located about a fist width east-northeast of Sirius (07h 18m 30s, 13° 13' 48"). This Herschel object is a delightful 8th magnitude and well worth the effort!



Thor's Helmet — NASA, Hubble Telescope



THE *Prairie*
Astronomy
Club

Amateur Astronomy --
A Hobby as Big as the Universe

The Prairie Astronomer is published monthly by the Prairie Astronomy Club, Inc. Membership expiration date is listed on the mailing label. Membership dues are: **Regular \$30/yr, Family \$35/yr.** Address all new memberships and renewals to: **The Prairie Astronomy Club, Inc., PO Box 5585, Lincoln, NE 68505-0585.** For other club information, please contact one of the club officers listed to the right. Newsletter comments and articles should be submitted to: **Jason Noelle at oegrad2002@yahoo.com,** no less than ten days prior to the club meeting. The Prairie Astronomy Club meets the last Tuesday of each month at Hyde Memorial Observatory in Lincoln, NE.

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FIRST CLASS MAIL

Next PAC Meeting
Tuesday
March 29th , 2011
7:30 PM
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