



The Prairie Astronomer

July, 2011

Volume 52, Issue #7

The Official Newsletter of the Prairie Astronomy Club

July Program

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“Astrophotography”

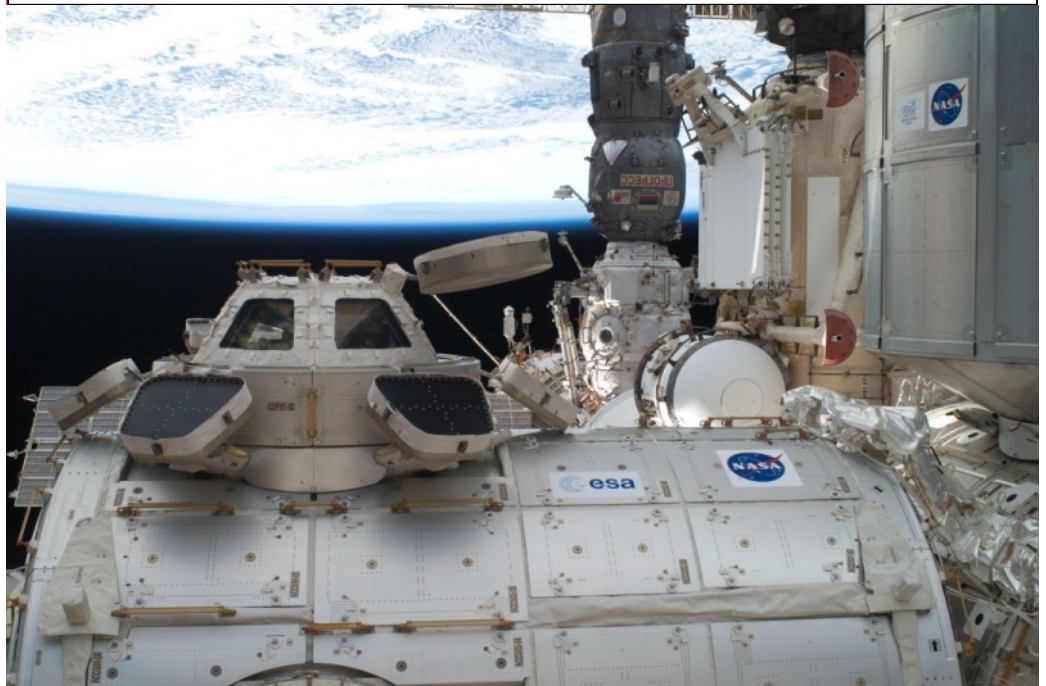
By Brett Boller & John Willman

John & Brett will talk about equipment needed for astrophotography from the very basics to advanced setups. They'll go through the steps of setting up, taking the photo, and then post processing tips.

In this view of the International Space Station's Cupola, a variety of modules and components of the station showcase the contributions of the many nations making up some of the international partnerships behind the space station. On the left is the Cupola, backdropped against black space, and on the right are various components of the orbiting outpost, including Node 3 or Tranquility (on which the Cupola is mounted) and the Leonardo Permanent Multipurpose Module. In the background is a Progress resupply spacecraft. This image was taken during the spacewalk conducted on July 12, 2011.

Image Credit: NASA

Featured Photo



Meeting Minutes - Secretary Brett Boller

June 28th PAC Meeting

Evening Planets

Dan Delzell Brought the meeting to order

Saturn

Next meeting July 26th

Midnight to Dawn Planets

Astrophotography with John Willman and Brett Boller

Uranus and Neptune

August – Comets with Cal Beard

Morning Planets

Star Parties

Jupiter, Mars and Venus.

May 27th – cloudy

Hercules was the topic constellation.

June 3rd – cloudy

Upcoming events

June 10th – cloudy

NSP July 31st-Aug5th

Upcoming Star Parties

Early registration ends July 1st

June 24th

Ducan Brown from Syracuse University will be at the UNL student auditorium

July 1st

July 27th at 7:30 pm giving a talk entitled “The New Astronomy of LIGO”

July 8th

A Quick Message from PAC President Dan Delzell

At the May meeting, a proposal was introduced to establish a club membership classification for students. This would require a change in the club bylaws. The club members present agreed to move forward with the proposal.

David Knisely was kind enough to review the bylaws on making such a change. The bylaws state that the proposed change must be presented at a regularly scheduled meeting previous to the meeting at which the vote is taken, and published in the Club newsletter previous to the meeting at which the vote is taken.

The proposal is to define a special PAC membership for full time students. To be eligible, they must be a full-time high school or college student 16 years old and older and serve as a Hyde Volunteer 3 times a year, and/or volunteer for 2 PAC outreach events such as Astronomy Day, Waterfest, Twilight on the Tall Grass or other similar outreach event.

Cost of the membership will be \$10 per year. Student members will have full PAC membership privileges including membership to the Astronomical League, be welcome to attend all PAC star parties, have full use of club telescopes, and vote for officers and issues at club meetings.

If the club agrees with this proposal and votes it in at the July meeting, we will develop a low-cost promotional campaign to promote the benefits for students when school resumes in August. If you have thoughts on ways to promote this please bring them to the meeting.

Thank you for your consideration of this proposal. The July meeting is the pulled pork social and swap meet so come hungry with the astronomy stuff you've accumulated that you no longer use and trade it for stuff you would!

Thank you, Dan Delzell

Club Events

ON THE NET

Newsletter submission deadline, August 15, 2011

PAC Club Meeting:

Tuesday July 26, 2011 7:30pm @ Hyde Observatory

Program: Astrophotography by Brett Boller & John Willman

PAC Club Meeting:

Tuesday August 30, 2011 7:30pm @ Hyde Observatory

Program: Comet Hunting by Cal Beard

PAC Club Meeting:

Tuesday September 27, 2011 7:30pm @ Hyde Observatory

Program: Making Telescopes by Brian Sivill.

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

2011 PAC Star Party Dates

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:

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

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-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.



August Observing: What to View--Jim Kvasnicka

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

Planets

Saturn: Shines at magnitude 0.9 in the WSW about 25° high to start August.

Jupiter: Rises around midnight to start the month at -2.5 magnitude in Aries.

Uranus/Neptune: In Pisces and Aquarius. Both rise before midnight.

Mars: Rises between 2 and 3 am in August at magnitude 1.4 in Gemini.

Mercury: It is too dim to be seen at dawn until the last few days of August.

Venus: Lost from view in August as it passes behind the Sun.

Vesta: Shines at Magnitude 5.6 to start August and won't be this bright again until 2018.

Meteor Showers

Perseids: Peaks the night of August 12-13. Unfortunately the full Moon will hide all but the brightest.

August Messier List

M6/M7: Large open clusters in Scorpius.

M8: The Lagoon Nebula in Sagittarius.

M9/M10/M12/M19: Class VIII, VII, IX, and VIII globular clusters in Ophiuchus.

M20: The Trifid Nebula in Sagittarius.

M21/M23: Open clusters in Sagittarius.

M62/M107: Class IV and X globular clusters in Ophiuchus.

Last Month: M3, M4, M5, M53, M68, M80, M83

Next Month: M13, M14, M22, M28, M54, M69, M70, M92

NGC and Other Deep Sky Objects

NGC 6709: Open cluster in Aquila.

NGC 6755: Moderately rich open cluster in Aquila.

NGC 6781: Large planetary nebula in Aquila.

NGC 6818: Little Gem, planetary nebula in Sagittarius.

B86: The Ink Spot, dark nebula in Sagittarius.

Double Star Club List

Struve 2404: Close orange pair of stars in Aquila.

57 Aquilae: White pair.

Beta Cygni: Albireo, Beautiful gold and blue stars.

31 Cygni: Yellow primary with a blue secondary.

61 Cygni: Two orange stars.

Epsilon Lyrae: The Double Double.

Zeta Lyrae: Pair of yellow stars.

Beta Lyrae: Yellow primary with multiple white stars.

Challenge Object

NGC 6717 – Pal 9: Faint 1' unresolved Class VIII globular cluster in Sagittarius

Focus On Observing Clubs - Jim Kvasnicka

Telescopic Messier Observing Club

As part of my monthly observing report I've been covering a different constellation each month. I've presented 25 different constellations and I think it's a good time to switch my focus back to the different observing clubs offered by the Astronomical League that PAC members can participate in. There are 35 observing clubs offered by the Astronomical League that PAC members can choose from. They range in experience level from beginner, intermediate, and advanced observer.

The first observing club I will present is the most popular, the Telescopic Messier Observing Club. All amateur astronomers become aware of the Messier Catalog soon after they get into the hobby of astronomy. The Messier list contains 110 objects to observe. The objects cover a variety of Deep Sky Objects. Observations must be made using manual methods. The use of GOTO or PUSH TO telescopes is not allowed. The Astronomical League offers special recognition in the form of a Messier Club Certificate for those who have observed at least 70 of the Messier objects. They offer an Honorary Messier Club Certificate for those who have observed all 110 objects along with a Messier Pin.

When you complete the Messier Observing Club you will need to submit a copy of your observing logs to me for review. If the logs are accurate and complete I will submit your name to the Messier Observing Club chair for approval. The chair will forward to me your certificate and pin that I will present to you at our monthly PAC meeting.

In my monthly observing report that I include in the newsletter and present at the club meeting I go over a monthly Messier list. If you observe and log these Messier objects monthly you can complete the Messier Club in 12 months.

If you have any questions regarding the Messier Observing Club or need help getting started please ask me and I would be glad to help.

Telescopic Messier Club Awardees from PAC:

Rick Johnson, Earl Moser, David Knisely, Ron Veys, Lee Thomas, Erik Hubl, Kevin Dowd, Jeff King, Dave Hamilton, Dave Churilla, Joey Churilla, Dave Brokofsky, Bob Kacvinsky, Jim Kvasnicka, Bob Leavitt, Dan Delzell

Number of Objects in the Messier Observing Club

Star Cloud – 1	Nebulae – 7
Asterism – 1	Open Clusters - 26
Double Star – 1	Globular Clusters - 29
Supernova Remnant – 1	Galaxies - 40
Planetary Nebulae – 4	

Total Objects - 110

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

The June BBQ and Swap meet was a big success...well, I don't know if anyone bought anything at the swap meet (at least I still have all my equipment) but with 38 people attending the meeting that's one of the largest turnouts we've had for awhile. Thanks to Bob Kacvinsky for smoking the pork and Jim Kvasnicka for helping him and bringing the tables. Those 2 did most of the work and it was great food and a very pleasurable social evening for club members and families.

This month's PAC Meeting will be on July 26th. We'll have a short business meeting at 7:30 PM followed by the evening's program, "Astrophotography", by Brett Boller and John Willman.

Brett is currently the club's secretary and is a Radiological Technologist at Warren Memorial Hospital in Friend, Nebraska. His telescope is the CPC 1100 XLT GPS.

He's from Dorchester, 24 years old and started taking photos a year and a half ago but got serious about a year ago when he bought the CPC and "uber" serious with the wedge and guider around Christmas time.

John has an academic background in physics/astronomy, but, according to him, it was a long time ago in the age of big hair (i.e., 1980's). While astronomy was his first pick for a profession in the past, it has technically always been an amateur pursuit. Fate and opportunity took him down another path. For the last 5 years he's been responsible for making software meet throughput and scalability expectations for Fiserv.

John & Brett will talk about equipment needed for astrophotography from the very basics to advanced setups. They'll go through the steps of setting up, taking the photo, and then post processing tips. Another topic that I know I'm fuzzy on and would like to know more about that they'll touch on are the different types of photos to enhance the images like dark frames, bias frames, and flat frames. I've seen some of their photos, which we'll also get to see, and they're outstanding so you won't want to miss this program.

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

Aug 2011: *Comet Hunting* by Cal Beard. This presentation should be very interesting. More to come.

Sep 2011: *Making Telescopes* by Brian Sivill. Building your own scope isn't as difficult as many think it is. Brian will help with some basics. More to come.

Oct 2011: *Astronomy Update* by Jack Dunn. Jack will fill us in on things space and astronomy as well as multimedia. More to come.

Nov 2011: *How to Buy a Telescope* This will be our now annual public seminar on how to buy a telescope. We'll need your help assisting guests. 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.

Challenge Observing Objects for July/August

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 6717 – Palomar 9

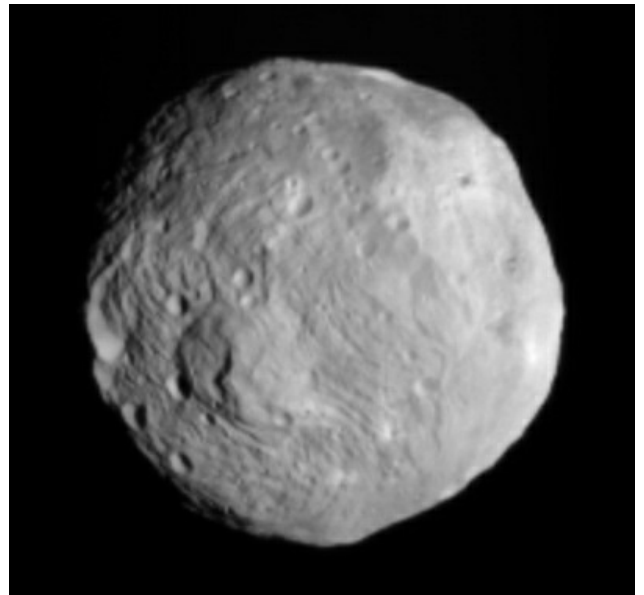
Discovered by William Herschel on August 7, 1784. He described it as a very faint round nebula and apparently thought it was a cluster with nebulosity. It was first recognized as globular cluster by Per Collinder in 1931. When compiling his catalog of newly discovered globular clusters, George Abell (1955) included this object, apparently unaware of its identity, as it was not previously classified as a globular cluster. It is located about 23,100 light years away in the constellation Sagittarius and has an apparent magnitude of 9.3 with an diameter of 9.9'. The bright star in this image is 35 Sgr at about 5th magnitude.



Beginner Object

4 Vesta

Comprising an estimated 9% of the mass of the entire asteroid belt it is the second-most-massive object in the belt after the dwarf planet Ceres. Vesta was discovered by the German astronomer Heinrich Wilhelm Olbers on March 29, 1807. It lies in the inner asteroid belt interior to the Kirkwood gap at 2.50 AU. Vesta will come to opposition on August 5, 2011, in the constellation of Capricornus at about magnitude 5.6. Its diameter is a tiny 0.6" to 0.2".



*Image Credit: NASA/JPL-
Caltech/UCLA/MPS/DLR/IDA*

Are The Galaxies In Our Universe More Right-Handed... Or Left-Handed? by Tammy Plotner

It's called mirror symmetry and it has everything to do with a recent study done by physics professor Michael Longo and a team of five undergraduates from the University of Michigan. Their work encompasses the rotation direction of tens of thousands of spiral galaxies cataloged by the Sloan Digital Sky Survey. What they're looking for is the shape of the Big Bang... and what they found is much more elaborate than they thought.

By utilizing SDSS images, the team began looking for mirror symmetry and evidence the early universe spun on an axis. "The mirror image of a counter-clockwise rotating galaxy would have clockwise rotation. More of one type than the other would be evidence for a breakdown of symmetry, or, in physics speak, a parity violation on cosmic scales." Longo said. However, there seems to be a certain "spin preference" when it comes to spiral galaxies toward the north pole of the Milky Way. Here they found an abundance of left-handed, or counter-clockwise rotating, spirals – an effect which extended beyond an additional 600 million light years. "The excess is small, about 7 percent, but the chance that it could be a cosmic accident is something like one in a million," Longo said. "These results are extremely important because they appear to contradict the almost universally accepted notion that on sufficiently large scales the universe is isotropic, with no special direction."

On the other hand, be it left or right, Galaxy Zoo has done some very interesting research into mirror symmetry as well. In conjunction with the Sloan Digital Sky Survey, the team also involved the public for their input – a total of 36 million classifications for 893,212 galaxies from 85,276 users. The GZ study is absolutely fascinating and took every variable into account.

"We wish to establish the large scale statistical properties of the galaxy spins. Although there is some level of uncertainty in the overall number counts, it is still possible to look for a dipole, for example, in the spin distributions." says Kate Land, et al. "Curiously, the dipoles from these two analyses are in completely opposite directions. The samples cover different amounts and parts of the sky, with SDSS mainly in the Northern hemisphere and the sample of Sugai & Iye (1995) predominantly in the Southern hemisphere. In both cases the dipoles tend to point away from the majority of the data but neither analysis fits for a monopole or takes account of their partial sky coverage in assessing the dipole. With incomplete sky coverage the spherical harmonic decomposition is no longer orthogonal and for a sample covering less than half of the sky it is hard to tell the difference between a monopole (an excess of one type over the other) and a dipole (an asymmetry in the distribution)."

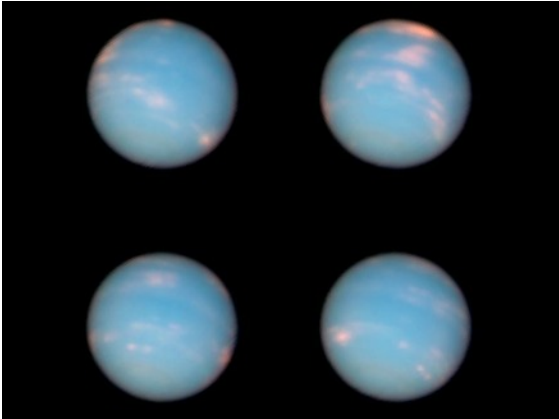
So what's the end result? Well, chances are good that our universe was born spinning... but like any family, there isn't much evidence one way or another that says most members have to be right – or left – handed. It's more about how we, as humans, perceive them...



Image Credit: NASA

Neptune's Discovery Anniversary Pictures

On July 12, 2011 Neptune has arrived at the same location in space where it was discovered nearly 165 years ago. To commemorate the event, NASA's Hubble Space Telescope has taken these "anniversary pictures" of the blue-green giant planet. Neptune is the most distant major planet in our solar system. German astronomer Johann Galle discovered the planet on September 23, 1846. At the time, the discovery doubled the size of the known solar system. The planet is 2.8 billion miles (4.5 billion kilometers) from the Sun, 30 times farther than Earth. Under the Sun's weak pull at that distance, Neptune plods along in its huge orbit, slowly completing one revolution approximately every 165 years.



These four Hubble images of Neptune were taken with the Wide Field Camera 3 on June 25-26, during the planet's 16-hour rotation. The snapshots were taken at roughly four-hour intervals, offering a full view of the planet.

The images reveal high-altitude clouds in the northern and southern hemispheres. The clouds are composed of methane ice crystals. The giant planet experiences seasons just as Earth does, because it is tilted 29 degrees, similar to Earth's 23-degree-tilt. Instead of lasting a few months, each of Neptune's seasons continues for about 40 years. The snapshots show that Neptune has more clouds than a few years ago, when most of the clouds were in the southern hemisphere. These Hubble views reveal that the cloud activity is shifting to the northern

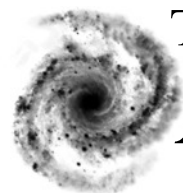
hemisphere. It is early summer in the southern hemisphere and winter in the northern hemisphere. In the Hubble images, absorption of red light by methane in Neptune's atmosphere gives the planet its distinctive aqua color. The clouds are tinted pink because they are reflecting near-infrared light. A faint, dark band near the bottom of the southern hemisphere is probably caused by a decrease in the hazes in the atmosphere that scatter blue light. The band was imaged by NASA's Voyager 2 spacecraft in 1989, and may be tied to circumpolar circulation created by high-velocity winds in that region.

The temperature difference between Neptune's strong internal heat source and its frigid cloud tops, about minus 260 degrees Fahrenheit, might trigger instabilities in the atmosphere that drive large-scale weather changes. Neptune has an intriguing history. It was Uranus that led astronomers to Neptune. Uranus, the seventh planet from the Sun, is Neptune's inner neighbor. British astronomer Sir William Herschel and his sister Caroline found Uranus in 1781, 55 years before Neptune was spotted. Shortly after the discovery, Herschel noticed that the orbit of Uranus did not match the predictions of Newton's theory of gravity. Studying Uranus in 1821, French astronomer Alexis Bouvard speculated that another planet was tugging on the giant planet, altering its motion.

Twenty years later, Urbain Le Verrier of France and John Couch Adams of England, who were mathematicians and astronomers, independently predicted the location of the mystery planet by measuring how the gravity of a hypothetical unseen object could affect Uranus's path. Le Verrier sent a note describing his predicted location of the new planet to the German astronomer Johann Gottfried Galle at the Berlin Observatory. Over the course of two nights in 1846, Galle found and identified Neptune as a planet, less than a degree from Le Verrier's predicted position. The discovery was hailed as a major success for Newton's theory of gravity and the understanding of the universe. Galle was not the first to see Neptune. In December 1612, while observing Jupiter and its moons with his handmade telescope, astronomer Galileo Galilei recorded Neptune in his notebook, but as a star. More than a month later, in January 1613, he noted that the "star" appeared to have moved relative to other stars. But Galileo never identified Neptune as a planet, and apparently did not follow up those observations, so he failed to be credited with the discovery. Neptune is not visible to the naked eye, but may be seen in binoculars or a small telescope. It can be found in the constellation Aquarius, close to the boundary with Capricorn.

Neptune-mass planets orbiting other stars may be common in our Milky Way galaxy. NASA's Kepler mission, launched in 2009 to hunt for Earth-size planets, is finding increasingly smaller extrasolar planets, including many the size of Neptune.

Story and Photo Credit: NASA.gov



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
July 26, 2011
7:30 PM
Hyde Observatory