The Prairie Astronomer

November, 2011 Volume 52, Issue #11

The Official Newsletter of the Prairie Astronomy Club

November Program

"How to Buy a Telescope"

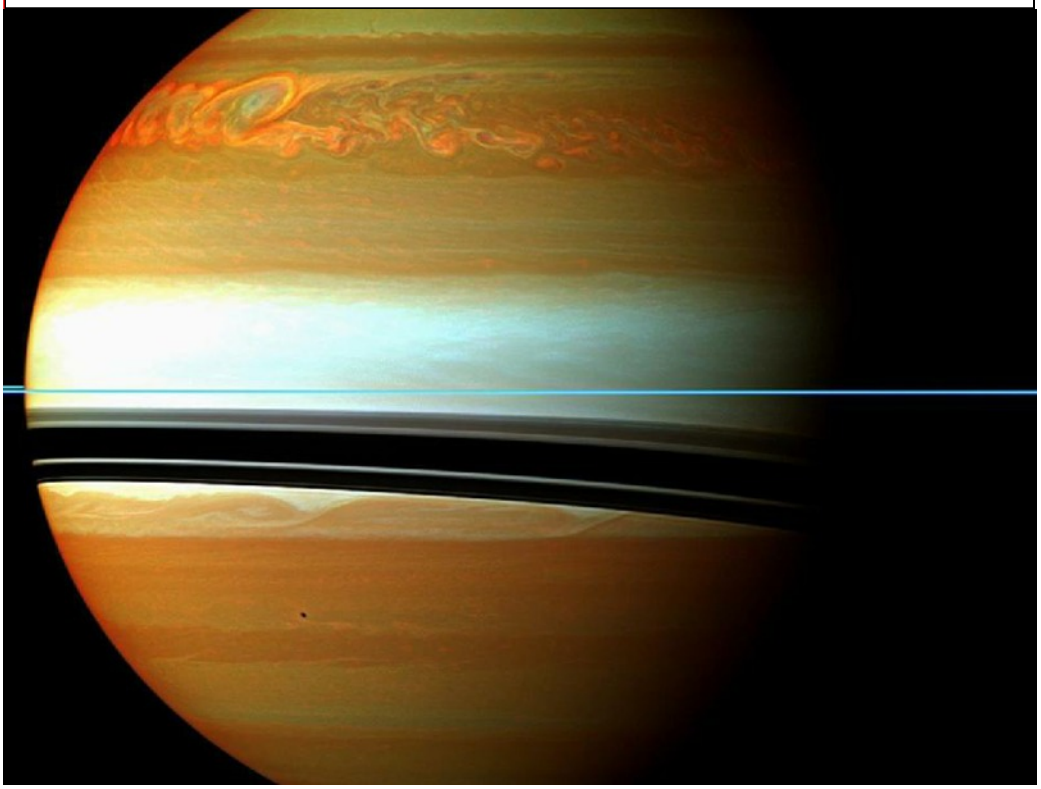
By the Prairie Astronomy Club

This is our annual program to help the people who are considering purchasing a telescope either as a gift or for themselves make informed choices about the purchase. Dan will give a short presentation about Telescopes then we'll have our guests talk to members of the club to answer questions one on one.

In This Issue:

Featured Photo

This false-color mosaic from NASA's Cassini spacecraft shows the tail of Saturn's huge northern storm. he head of this storm is beyond the horizon in this view. Saturn's atmosphere and its rings are shown here in a false color composite made from 12 images taken in near-infrared light through filters that are sensitive to varying degrees of methane absorption. The rings appear as a thin horizontal line of bright blue because they are outside of the atmosphere and not affected by methane absorption.This view looks toward the northern, sunlit side of the rings from just above the ring plane. The shadow of the moon Enceladus is visible on the planet in the lower left of the image.The images were taken on Jan. 12, 2011, over about one hour at a distance of approximately 684,000 miles (1.1 million kilometers) from Saturn and at a sun-Saturn-spacecraft, or phase, angle of 52 degrees. The images were re-projected to the same viewing geometry, so that scale in this final mosaic is 76 miles (122 kilometers) per pixel. *Image Credit NASA*



Meeting Minutes - Secretary Dale Bazan

Dan Delzell called meeting to order at 7:33 PM
-29 people in attendance (28 adults, 1 child)

-Welcomed members and visitors, and announced program "NASA Update & Future" by Jack Dunn. There were several visitors at the meeting, some from UNL's space law area.

-Next meeting Tuesday November 29th, 7:30. Program will be "How to Buy a Telescope"

Upcoming Events
- PAC Christmas Social

Observing Report by Jim Kvasnicka
September 23 - Five scopes/members
September 30 – Star Party at the Farm
October 7 – Lunar Party at Jim's House 6300 Rebel Drive - Cloudy
October 21 – Party of One – Cloudy near Lincoln
October 28 – Star Party
November 4 – Lunar Party Cancelled

Evening Planets
Venus – low in wet after sunset; -3.9 magnitude
Mercury – 2 degrees below Venus first half of November

Night Planets
Jupiter – Visible all month, best month for viewing; Mag -2.9
Uranus and Neptune – Both rise before midnight in Pisces and Aquarius

Morning Planets
Mars – will be in middle of M44; rises around 1 AM as early as 11:30 by end of November
Saturn – will rise about 6 AM

Leonid Asteroid shower peaks Nov 17-19, 2011.

Messier List
M27, M30, M56, M57, M71, M72, M73
- Took closer look at M56 globular cluster.
Non Messier Objects
NGC 55, NGC 253, NGC 654, NGC 7662, Gamma Andromodae
- Took closer look at NGC 253, The Sculptor Galaxy

Observing Clubs
- Double Star Club
    - 100 of finest double and multiple stars
    - Must observe all 100
    - Encouraged manually and varying magnifications
- Logs should include object, date, time, power, seeing, telescope used, and drawing that shows North and either East or West
    -Submit to Jim Kvasnicka
- Dave Brokofsky, Jim Kvasnicka, Bob Kacvinsky, Eugene Lanning

Club Business
- PAC Treasure Report was presented by Bob Kavinsky
- Question about whether calendars would be ordered from RSC. Easier to order direct Bob said.
- Sky and Telescope has group discount and if minimum by 5 have special promotion including Mars DVD and observing charts. Bob needed at least 5.
- 1.5 – 2% return on CDs was mentioned.
- Officer elections (open until next month when vote will occur):
    - President
        - Dan Delzell
    - Vice President
        - Jason Noelle
    - Secretary
        - Dale Bazan
    - Treasurer
        - Bob Kavinsky
    - 2nd Vice President – Program Chair
        - Dave Churilla
- No nominations from floor. Moved by Dave Knisely and seconded by Jack Dunn to close nominations. Unanimous approval to close nominations. Officers were installed by acclamation.
- Officers introduced themselves.

Business portion of meeting closed at 7:54 by Dan. Jack Dunn was announced for program on NASA.

Club Events

Newsletter submission deadline, December 15, 2011

PAC Club Meeting
Tuesday November 29th 2011 7:30pm @ Hyde Obeservatory
Program: How to Buy a Telescope

PAC Club Meeting
Tuesday December 27, 2011 7:30pm @ Mueller Planetarium
Program: Social Event

PAC Club Meeting
Tuesday January 31, 2012 7:30pm @ Hyde Observatory
Program: How to Use a Telescope

2011 PAC Star Party Dates

November	Nov 18th	**Nov 25th**
December	Dec 16th	**Dec 23rd**

Lunar Party Dates:

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

Internet Links of Interest

http://www.spacenews.com/commentaries/111111-guest-blog-apollo-spirit-alive-and-well.html

http://www.thespacereview.com

http://www.thespacereview.com/article/1945/1

http://space.flatoday.net/

http://www.spaceportamerica.com/

http://spacerefpress.com/2011/09/first-issue-of-space-quarterly-magazine-released.html

http://www.nasaspaceflight.com/

http://www.spacex.com

ON THE NET

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: imailsrv@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.

December Observing: What to View--Jim Kvasnicka

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

Planets

Venus: Very bright at -3.9 magnitude. Look for it about 9° above the southwest horizon 45 minutes after sunset.

Jupiter: Dims a little from -2.8 to -2.6, look for it high in the south around 8:00 pm.

Uranus/Neptune: In Pisces and Aquarius. For finder charts see page 53 in the September Sky & Telescope.

Mars: Rises around 11:30 pm to start the month. It will increase in brightness from 0.8 to 0.2 magnitude.

Saturn: Rises a few hours after midnight just to the left of Spica in Virgo. The rings open up from 14° to 15°, the most open view we have had since 2006.

Mercury: Low in the dawn light.

Meteor Showers

Geminids: December 13th and 14th with the peak at 12 noon on the 14th. The gibbous Moon will hide all but the brightest.

Messier List

M2: Class II globular cluster in Aquarius.

M15: Class IV globular cluster Pegasus.

M29: Open cluster in Cygnus.

M31: The Andromeda Galaxy.

M32/M110: Companion galaxies to M31.

M39: Open cluster in Cygnus.

Last Month: M27, M30, M56, M57, M71, M72, M73

Next Month: M33, M34, M52, M74, M75, M76, M77, M103

NGC and Other Deep Sky Objects

Mel 20: Large open cluster in Perseus, use binoculars.

Kemble's Cascade: A line of 20 stars in Camelopardalis

NGC 1502: Open cluster in Camelopardalis at the end of Kemble's Cascade.

NGC 246: Fairly bright planetary nebula in Cetus.

Double Star Club List

Eta Cassiopeiae: Yellow primary with a rose colored secondary.

Sigma Cassiopeiae: Yellow and light blue stars.

Theta Aurigae: Bright white and pale blue pair.

1 Camelopardalis: White and pale blue stars.

32 Camelopardalis: Equal white pair.

Gamma Ceti: White primary with a pale yellow secondary.

Chi Tauri: White primary with a pale blue secondary.

118 Tauri: White and yellow pair.

Focus On Observing Clubs - Jim Kvasnicka

Globular Cluster Club

The Globular Cluster Club is designed to introduce you to some of the finest globular clusters in the sky. You can use any telescope but an 8 inch scope is recommended. This program is meant to allow you to enjoy comparing different globular clusters to each other, not to test your equipment.

To perform this program you will need to purchase the Guide to the Globular Cluster Observing Club from the AL Bookstore on line. The guide was specifically written to support this observing club. The cost of the guide is $13.00.

The observing guide explains in detail the Regular and Challenge Observing Lists. Included are 190 galactic and extra-galactic globular clusters.

This program is more than just observing globular clusters. You will need to apply a concentration classification to each globular cluster you observe. This concentration classification is called the Shapley-Sawyer Concentration Class. The guide provides reference pictures of globular clusters and their concentration class.

For the Globular Cluster Club the observer is required to observe 50 globular clusters with at least one globular cluster from the challenge lists. You can choose any 50 globular clusters that you want to observe. You will need to record the usual data required by the Astronomical League along with the concentration class for each object observed. Since you will be comparing globular clusters all observations should be made with the same telescope and magnification. You can use any method to find the objects including GO-TO and PUSH-TO.

When you complete the Globular Cluster 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 Globular Cluster 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.

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

Globular Cluster Club Awardees from PAC

Jim Kvasnicka, Dan Delzell, Dave Churilla, Bob Kacvinsky, Brett Boller

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:
Checked Out

13 inch Truss Dobsonian:
Checked Out

Program Chair Minute - Dave Churilla

The October Program featured Jack Dunn talking about where we're going (or not going) with the space program, NASA, and space exploration in general. Jack gave us all something to think about.

This month's PAC Meeting will be on Tuesday, November 29th. As usual we'll have a short business meeting at 7:30 PM followed by Observing Chair Jim Kvasnicka's Observing Report followed by the evening's program, "How to Buy a Telescope", hosted by Dan Delzell.

This is our annual program to help the people who are considering purchasing a telescope either as a gift or for themselves make informed choices about the purchase. Dan will give a short presentation about Telescopes then we'll have our guests talk to members of the club to answer questions one on one. We'd like to have few telescopes there so if you'd like to bring yours please do. We'll probably set them up on the deck unless we have a lot of them, in which case we move out onto the lawn. We can use everyone's help this night to assist our guests. Jack Dunn will be putting out publicity for the event.

Following are upcoming programs that we have planned or are in the process of planning that you won't want to miss. Last meeting we had some guests from UNL Graduate Studies who were in a Space Law studies program. Dan, Jack and I got a chance to talk to some of the students and their professor and they are interested in giving a program on Space Law. So we may have to juggle some of the programs a bit in the future to accommodate them. We'll let you know soon.

Dec 2011: PAC Holiday Get-Together Last December we moved the PAC Meeting to Mueller Planetarium for a club gathering for the Holiday Season. We had some refreshments and club members and their families enjoyed a social get-together to visit other members and enjoy Jack Dunn's hospitality at the planetarium with a few shows. We hope to do the same this year. More to come.

Jan 2012: How to Use Your Telescope This is the follow up public program to our November "How to Buy a Telescope". We will invite the public once again to bring their telescopes so we can help them learn how to use them. We'll need your help assisting guests.

Feb 2012: Update on Mars Exploration Jack Dunn will be giving us a multimedia update on Mars exploration. More to come.

Mar 2012: Fun Astronomy Night (still working on this program) The Executive Board will present a humorous look at the media, film, and astronomy supplemented with a star party if the weather cooperates. Snacks might be available. We're still working on this program so stay tuned for details.

Apr 2012: Astronomy and the Internet (still a working title) Dale Bazan is working on a presentation on astronomy and the internet. More to come as he refines the topic.

May 2012: Tentative: Near Star Party: We are considering another Near Star Party that will begin early and go until about 8:00 PM with the business meeting afterward. We'll let you know.

June 2012: BBQ Social (tentative) We are considering once again a BBQ social perhaps featuring Cajun Bob's Pulled BBQ Pork and an enjoyable evening of visiting with one another. Stay tuned for more info.

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.

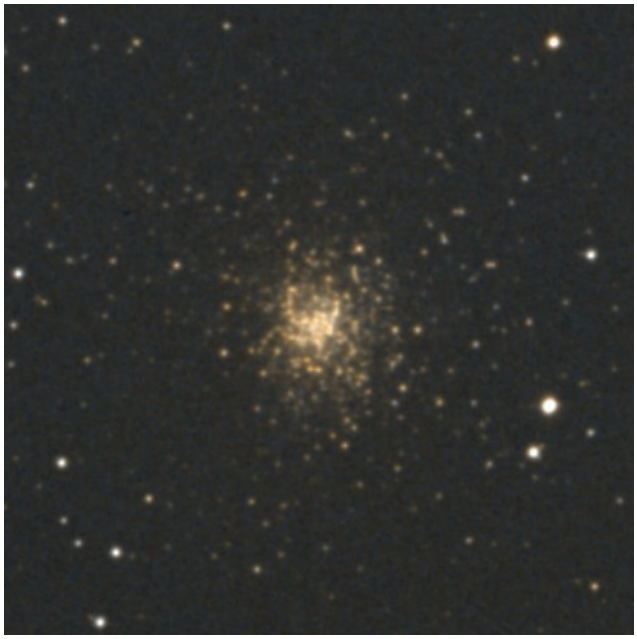
Challenge Observing Objects for November/December

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

Palomar 2

Palomar 2 is an "outer halo" globular which lies much father from the center of our galaxy than most. Most globulars lie within 20,000 light years of the galactic center, but Palomar 2 lies over 100,000 light years distant. Although not the most distant known, Palomar 2 lies at a galactic longitude of 170 degrees, nearly in the opposite direction of the galactic center as seen from our vantage point. It lies about 90,000 light years from Earth with an apparent magnitude of 13 in the constellation of Auriga.



Beginner Object

The Kite Cluster (NGC 1664)

The primary stars of the main cluster form a diamond-shaped outline with a trail of similar stars extending off one of the four corners. Some people also see a heart shaped balloon. The majority of the stars that form the recognizable asterism are 10th magnitude. The cluster has an apparent magnitude of 7.2 and lies about 3,900 light years in the constellation of Auriga.

Do-It-Yourself Guide to Measuring the Moon's Distance
by Amy Shira Teitel of Universe Today

When the distance from the Earth to the Moon comes up, the common figure thrown around is 402,336 km (or 250,000 miles). But have you every wondered how astronomers got that figure? And how exact it really is? There are a couple of ways you can measure the distance of the Moon that don't require lasers or any instruments. All you need are your eyes, a clear sky, and someone else willing to stand outside all night with you.

There are two ways to measure the distance from the Earth to the Moon on your own: using a Lunar eclipse and using parallax. Let's look at eclipses first.

The Ancient Greeks used Lunar eclipses – the phenomena of the Earth passing directly between the sun and the Moon – to determine the distance from the Earth to its satellite. It's a simple matter of tracking and timing how long it takes the Earth's shadow to cross over the Moon. Start with the few knowns. We know, as did the Ancient Greeks, that the Moon travels around the Earth at a constant speed – about 29 days per revolution. The diameter of the Earth is also known to be about 12,875 km or 8,000 miles. By tracking the movement of the Earth's shadow across the Moon, Greek astronomers found that the Earth's shadow was roughly 2.5 times the apparent size of the Moon and lasted roughly three hours from the first to last signs of the shadow. From these measurements, it was simple geometry that allowed Aristarchus (c. 270 BC) to determined that the Moon was round 60 Earth radii away (about 386,243 km or 240,000 miles). This is quite close to the currently accepted figure of 60.3 radii.

You can follow Aristarchus' method in your own backyard if you have a clear view of a Lunar eclipse. Track the movement of the Earth's shadow on the Moon by drawing the changes and time the eclipse. Use your measurements to determine the Moon's distance.

For the second method, you'll need a friend to help out. The Ancient Greeks also knew about parallax, an object's apparent change in position when seen from two different viewpoints. You can experience parallax by holding a pen out at arm's length and looking at it with one eye at a time. As you switch between your left and right eye, the pen will appear to move back and forth.

The same thing can be seen on a giant scale. Two observers in different parts of the world (at least 3,200 km or 2,000 miles apart) will see the Moon's position as different from where calculations say it should be in the night sky.

To find the distance of the Moon from the Earth, you and a friend stand 3,200 km apart and each take a picture of the Moon at exactly the same time. Then, compare your images. The Moon will be in a different spot, but the background stars will be in the same place. What your images have given you is a triangle. You know the base (the distance between you and your friend), and you can find the angle at the top (the point of the Moon in this triangle). Simple geometry will give you a value for the distance of the Moon.

It might be a little more labor intensive than searching the internet, but determining the Moon's distance yourself is sure to be more fun! If you really want to get involved, check out International Measure the Moon Night on Dec. 10, 2011. Join participants around the world who register their own events and share their images and observations!

NASA's Curiosity Set to Search for Signs of Martian Life by Ken Kremer of Universe Today

In just 5 days, Earth's most advanced robotic roving emissary will liftoff from Florida on a fantastic journey to the Red Planet and the search for extraterrestrial life will take a quantum leap forward. Scientists are thrilled that the noble endeavor of the rover Curiosity is finally at hand after seven years of painstaking work. NASA's Curiosity Mars Science Laboratory (MSL) rover is vastly more capable than any other roving vehicle ever sent to the surface of another celestial body. Mars is the most Earth-like planet in our Solar System and a prime target to investigate for the genesis of life beyond our home planet.

Curiosity is all buttoned up inside an aeroshell at a seaside launch pad atop an Atlas V rocket and final preparations are underway at the Florida Space Coast leading to a morning liftoff at 10:25 a.m. EST on Nov. 25, the day after the Thanksgiving holiday. "MSL is ready to go," said Doug McCuistion, director of the Mars Exploration Program at NASA Headquarters in Washington, at a media briefing. "It's a momentous occasion. We're just thrilled that we're at this point." "Curiosity is 'Seeking the Signs of Life', but is not a life detection mission. It is equipped with state-of-the-art science instruments."

"It's not your father's rover. It's a 2000 pound machine that's over 6 feet tall – truly a wonder of engineering," McCuistion stated. "Curiosity is the best of US imagination and US innovation. And we have partners from France, Canada, Germany, Russia and Spain. Curiosity sits squarely in the middle of our two decade long strategic plan of Mars exploration and will bridge the gap scientifically and technically from the past decade to the next decade. Mars Science Laboratory builds upon the improved understanding about Mars gained from current and recent missions," said McCuistion. "This mission advances technologies and science that will move us toward missions to return samples from and eventually send humans to Mars."

The car sized rover is due to arrive at Mars in August 2012 and land inside Gale Crater near the base of a towering and layered Martian mountain, some 5 kilometers (3 miles) high. Gale Crater is 154 km (96 mi) in diameter. The landing site was chosen because it offers multiple locations with different types of geologic environments that are potentially habitable and may have preserved evidence about the development of microbial life, if it ever formed. Gale Crater is believed to contain clays and hydrated minerals that formed in liquid water eons ago and over billions of years in time. Water is an essential prerequisite for the genesis of life as we know it.

The one ton robot is a behemoth, measuring 3 meters (10 ft) in length and is nearly twice the size and five times as heavy as NASA's prior set of twin rovers – Spirit and Opportunity. Curiosity is equipped with a powerful array of 10 science instruments weighing 15 times as much as its predecessor's science payloads. The rover can search for the ingredients of life including water and the organic molecules that we are all made of. Curiosity will embark on a minimum two year expedition across the craters highly varied terrain, collecting and analyzing rock and soil samples in a way that's never been done before beyond Earth. Eventually our emissary will approach the foothills and climb the Martian mountain in search of hitherto untouched minerals and habitable environments that could potentially have supported life's genesis. With each science mission, NASA seeks to take a leap forward in capability and technology to vastly enhance the science return – not just to repeat past missions. MSL is no exception.

Curiosity was designed at the start to be vastly more capable than any prior surface robotic explorer, said Ashwin Vasavada, Curiosity's Deputy Project Scientist at NASA's Jet Propulsion Laboratory in Pasadena, Calif "This is a Mars scientist's dream machine." Therefore this mission uses new technologies to enable the landing of a heavier science payload and is inherently risky. The one ton weight is far too heavy to employ the air-bag cushioned touchdown system used for Spirit and Opportunity and will use a new landing method instead. Curiosity will pioneer an unprecedented new precision landing technique as it dives through the Martian atmosphere named the "sky-crane". In the final stages of touchdown, a rocket-powered descent stage will fire thusters to slow the descent and then lower the rover on a tether like a kind of sky-crane and then safely set Curiosity down onto the ground. NASA has about three weeks to get Curiosity off the ground from Space Launch Complex 41 at Cape Canaveral Air Force Station in Florida before the planetary alignments change and the launch window to Mars closes for another 26 months. "Preparations are on track for launching at our first opportunity," said Pete Theisinger, MSL project manager at NASA's Jet Propulsion Laboratory (JPL) in Pasadena, Calif. "If weather or other factors prevent launching then, we have more opportunities through Dec. 18."

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.

The Prairie Astronomer
c/o The Prairie Astronomy Club, Inc.
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Lincoln, NE 68505-0585

FIRST CLASS MAIL

Next PAC Meeting
Tuesday
November 29, 2011
7:30 PM
Hyde Observatory