



The Prairie Astronomer

September, 2011

Volume 52, Issue #9

The Official Newsletter of the Prairie Astronomy Club

September Program

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Featured Photo

Adventures in Telescope Making

By Brian Sivill

Brian is a long time member of the club and well respected for his knowledge of things astronomical. In addition, unlike me, he is NOT technically challenged. He's built his own homemade telescope and in his program will share his experience and knowledge. If you are thinking of building your own telescope or would like your first scope and are on a tight budget you'll want to be sure to take in Brian's Program.

PAC Club member Rick Johnson spies supernova in M101

Called the SN PTF11kly, the new Type Ia supernova was spotted by Caltech's Palomar Transient Factory (PTF) survey in the M101, also known as the Pinwheel Galaxy. SN PTF11kly is located 21 million light years away. You can see the supernova marked in the southern part of the galaxy.

Rick took this photo using a 14" LX200R telescope @ f/10, L=4×10' RGB=2×10', STL-11000XM camera and Paramount ME.



WE NEED VOLUNTEERS - PAC President Dan Delzell

It has become apparent that we're in dire need of new volunteers for Hyde. We've recently lost 3, and soon Emily Moravec will be returning to school. Emily is a physics student from St Olaf's College who has been volunteering at Hyde this summer. We greatly appreciate her help and the enthusiasm she's brought to the deck the past few months.

We have a great and very dedicated core group of volunteers, but I'm concerned that with the few that have dropped out of the schedule, we'll soon burn them out if we don't have new volunteers help pick up the slack. My goal as volunteer coordinator has been to make sure this doesn't happen.

This summer we've seen an increase in turn out at Hyde with 150 to 250 showing up on clear nights. The public appreciates the work we're doing. You may feel that you don't know enough to answer their questions, but remember that you never work the deck alone, there are always others there helping. The public understands that we're volunteers and they're okay answering that you don't know everything. Volunteering at Hyde is a great way for you to learn and it is fun to work with the public.

You may also worry that you'll be scheduled too often or that it's difficult to find a substitute. That isn't the case at all. I try to make the schedule three months in advance so we have plenty of time to make changes. If you let me know nights you can't work I work around them and the group has always been flexible, helping each other out when something comes up at the last minute. My whole purpose of reaching out to you is to make sure we're not scheduling people too often.

My fear is that if we don't have new volunteers we'll have to consider not opening some Saturdays. This would be better than over working our volunteers, but would be a disappointment to the community, and I'd hate to see that happen.

If you have ever considered volunteering at Hyde, now is the time. We really need you. Please let me know if you can help.

Thanks,

Dan

Internet Links of Interest

<http://www.zooniverse.org/>

The Zooniverse is home to the internet's largest, most popular and most successful citizen science projects. The currently live projects are here and plenty more are on the way. Some of the projects that you can help out with are The Milky Way Project, Moon Zoo, Planet Hunters, Galaxy Zoo, and Solar Storm Watch. Galaxy Zoo was important because not only was it incredibly popular, but it produced many unique scientific results, ranging from individual discoveries to those using classifications that depend on the input of everyone who's visited the site.

Solar System Creator

The forces of cosmic creation are at your command! Build the perfect star and fling planets into orbit around it. Will life evolve or will planets collide in fiery destruction? Construct the perfect solar system in the Known Universe Solar System Builder interactive. This is a great way to waste some time at work!

Apollo Flight Journal

Transcripts, commentary, and text from 7 of the Apollo flights. You can read through the entire flight along with audio and also the surface activities of the landings.

The Planetary Society

The Planetary Society is the largest and most influential public space organization group on Earth. The Planetary Society leads by example: through private ventures, such as the solar sail; through public-private partnerships, such as the Mars Microphone; through promoting grand and ambitious adventures, such as human missions to Mars. They continue to find more ways for members of the public to participate directly in humanity's evolution into a multi-planet species — as they inspire the people of Earth to explore other worlds and seek other life.

Club Events

ON THE NET

Newsletter submission deadline, October 15, 2011

PAC Club Meeting:

Tuesday September 27, 2011 7:30pm @ Hyde Observatory
Program: Making Telescopes by Brian Sivill.

PAC Club Meeting

Tuesday October 25, 2011 7:30pm @ Hyde Observatory
Program: Astronomy/Space Update by Jack Dunn

PAC Club Meeting

Tuesday November 29th 2011 7:30pm @ Hyde Observatory
Program: How to Buy a Telescope

PAC Club Meeting

Tuesday December 27, 2011 7:30pm @ TBA
Program: Social Event?

2011 PAC Star Party Dates

September	Sep 23rd	Sep 30th
October	Oct 21st	Oct 28th
November	Nov 18th	Nov 25th
December	Dec 16th	Dec 23rd

Lunar Party Dates:

Oct 7th
Nov 4th

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

Area Star Parties and Events

Mahoney State Park Star Party
Friday September 26, 2011

Okie-Tex Star Party
September 24 - October 2, 2011
Camp Billy Joe
Kenton, Oklahoma, USA

The Great World Wide Star Count
October 14 - 28, 2011

Your backyard or observing site

This program is an international citizen-science event that encourages everyone, astronomers and non-astronomers alike, to measure their local light pollution and report their observations online.

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.



October Observing: What to View--Jim Kvasnicka

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

Planets

Saturn: Passes through conjunction with the Sun on October 13th and is visible rising before the Sun after that.

Jupiter: Rises about an hour after sunset to start the month. It will reach opposition on October 28-29. It shines at magnitude -2.9 and its disk is 49.6' wide.

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

Mars: Rises in Gemini between 1 and 2 a.m. On the first day of October Mars is in the middle of M44.

Venus: Venus is very low in the west just after sunset shining brightly at -3.9.

Mercury: Look for it 2° below Venus the last week of October.

October Messier List

M11: The Wild Duck cluster in Scutum.

M16: Open cluster embedded in the Eagle Nebula in Serpens Cauda.

M17: Omega or Swan Nebula in Sagittarius.

M18/M25/M26: Open clusters in Sagittarius.

M24: The Small Sagittarius Star Cloud.

M55: Class XI globular cluster in Sagittarius.

M75: Class I globular cluster in Sagittarius.

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

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

NGC and Other Deep Sky Objects

NGC 457: The E.T. Cluster in Cassiopeia.

NGC 752: Nice binocular open cluster in Andromeda.

NGC 869/884: The Double Cluster in Perseus.

NGC 891: Elongated galaxy in Andromeda.

NGC 7009: The Saturn nebula in Aquarius.

NGC 7331: Elongated galaxy in Pegasus.

Double Star Club List

8 Lacerta: Four white stars.

Beta Cephei: White and blue pair.

Struve 2816: White primary with two blue secondary stars in Cepheus.

Xi Cephei: Yellow pair.

Delta Cephei: Yellow primary with a pale blue secondary.

Eta Persei: Bright yellow and light blue stars.

Struve 331: Yellow primary with a blue-white secondary in Perseus.

Epsilon Pegasi: Bright yellow and white stars.

Focus On Observing Clubs - Jim Kvasnicka

Comet Observers Club

There are two different levels that can be earned for the Comet Observers Club.

Silver Level – Observe 12 different comets.

Gold Level – Observe 18 additional comets for a total of 30.

Two of the comets observed can be observed prior to January 1, 2001 if all appropriate documentation is provided. The observations can be accomplished using binoculars, your personal telescope, an observatory telescope, or an accessible robotic telescope.

The observer will need to hand sketch or image the comet observed.

WHAT TO DOCUMENT IN YOUR OBSERVATIONS

- * Name, email, and address of the observer.
- * Date and time of observation.
- * Official designation of the comet and name.
- * Size of telescope and power used. Location of telescope used.
- * Documentation of observation.
- * A sketch or image of the comet (at least two to indicate the movement).
- * Exposure length for images.
- * Tick marks on your drawings indicating direction of movement.
- * Images should be numbered.

When you complete the Comets Observer 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 Comet Observers 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 Comet Observers Club or need help getting started please ask me and I would be glad to assist you.

Comet Observers Club Awardees from PAC
No PAC members have completed the Comet Observers Club.

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

Well, I just spent a week with the family at Table Rock Lake near Branson, MO and unfortunately that caused me to miss Cal's program on Comet Hunting. I hope everyone enjoyed it.

This month's PAC Meeting will be on Tuesday, September 27th. 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, "Making a Telescope", by Brian Sivill.

Brian is a long time member of the club and well respected for his knowledge of things astronomical. In addition, unlike me, he is NOT technically challenged. He's built his own homemade telescope and in his program will share his experience and knowledge. It's really not as hard as it seems to build your own telescope – well, at least as long as you're not ME (Mr. Measure Twelve Times, Cut Once and STILL get it wrong!!!).

If you are thinking of building your own telescope or would like your first scope and are on a tight budget you'll want to be sure to take in Brian's Program.

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

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.

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. 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 147

A dwarf galaxy about 2.58 Million light years away in the constellation Cassiopeia. NGC 147 is a member of the

Local group of galaxies and a satellite galaxy of the Andromeda Galaxy (M31). It forms a physical pair with the nearby galaxy NGC 185, another remote satellite of M31. It was discovered by John Herschel in September 1829. It has an apparent magnitude of 10.5



Atlas Image courtesy of 2MASS/UMass/IPAC-Caltech/NASA/NSF.

Beginner Object

NGC 457

The “E.T. Cluster” is an open star cluster in the constellation Cassiopeia. It was discovered by Friedrich Wilhelm Herschel in 1787 and lies over 7,900 light years away from the Sun. The cluster is called E.T. by amateur astronomers due to its resemblance to the movie character. Two bright stars, magnitude 5 Phi-1 Cassiopeiae and magnitude 7 Phi-2 Cassiopeiae can be imagined as eyes. It has an apparent magnitude of 6.4.



NASA's Kepler Mission Discovers a World Orbiting Two Stars

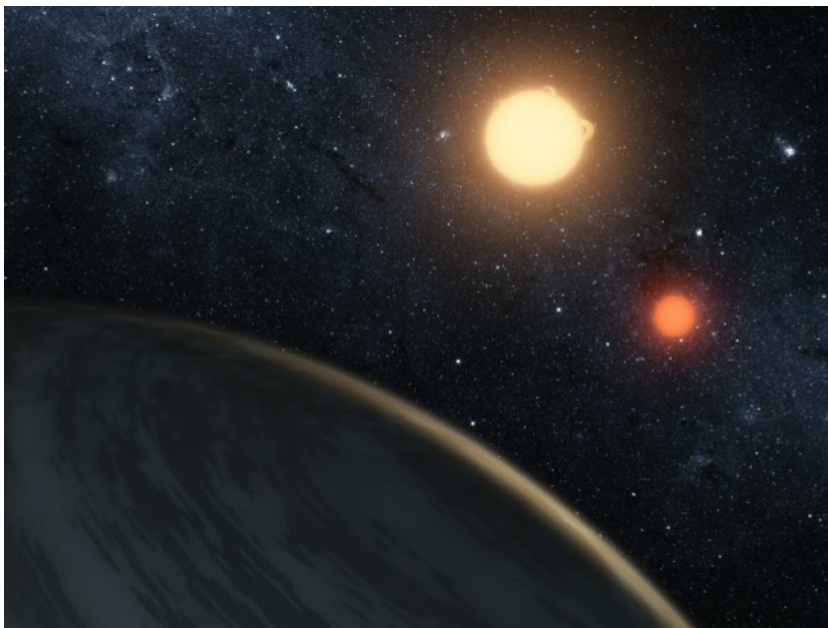
by Michele Johnson of the NASA Ames Research Center

The existence of a world with a double sunset, as portrayed in the film *Star Wars* more than 30 years ago, is now scientific fact. NASA's Kepler mission has made the first unambiguous detection of a circumbinary planet -- a planet orbiting two stars -- 200 light-years from Earth.

Unlike *Star Wars'* Tatooine, the planet is cold, gaseous and not thought to harbor life, but its discovery demonstrates the diversity of planets in our galaxy. Previous research has hinted at the existence of circumbinary planets, but clear confirmation proved elusive. Kepler detected such a planet, known as Kepler-16b, by observing transits, where the brightness of a parent star dims from the planet crossing in front of it.

"This discovery confirms a new class of planetary systems that could harbor life," Kepler principal investigator William Borucki said. "Given that most stars in our galaxy are part of a binary system, this means the opportunities for life are much broader than if planets form only around single stars. This milestone discovery confirms a theory that scientists have had for decades but could not prove until now."

A research team led by Laurance Doyle of the SETI Institute in Mountain View, Calif., used data from the Kepler space telescope, which measures dips in the brightness of more than 150,000 stars, to search for transiting planets. Kepler is the first NASA mission capable of finding Earth-size planets in or near the "habitable zone," the region in a planetary system where liquid water can exist on the surface of the orbiting planet. Scientists detected the new planet in the Kepler-16 system, a pair of orbiting stars that eclipse each other from our vantage point on Earth. When the smaller star partially blocks the larger star, a primary eclipse occurs, and a secondary eclipse occurs when the smaller star is occulted, or completely blocked, by the larger star.



Astronomers further observed that the brightness of the system dipped even when the stars were not eclipsing one another, hinting at a third body. The additional dimming in brightness events, called the tertiary and quaternary eclipses, reappeared at irregular intervals of time, indicating the stars were in different positions in their orbit each time the third body passed. This showed the third body was circling, not just one, but both stars, in a wide circumbinary orbit. The gravitational tug on the stars, measured by changes in their eclipse times, was a good indicator of the mass of the third body. Only a very slight gravitational pull was detected, one that only could be caused by a small mass. The findings are described in a new study published Friday, Sept. 16, in the journal *Science*. "Most of what

we know about the sizes of stars comes from such eclipsing binary systems, and most of what we know about the size of planets comes from transits," said Doyle, who also is the lead author and a Kepler participating scientist. "Kepler-16 combines the best of both worlds, with stellar eclipses and planetary transits in one system."

This discovery confirms that Kepler-16b is an inhospitable, cold world about the size of Saturn and thought to be made up of about half rock and half gas. The parent stars are smaller than our sun. One is 69 percent the mass of the sun and the other only 20 percent. Kepler-16b orbits around both stars every 229 days, similar to Venus' 225-day orbit, but lies outside the system's habitable zone, where liquid water could exist on the surface, because the stars are cooler than our sun.

"Working in film, we often are tasked with creating something never before seen," said visual effects supervisor John Knoll of Industrial Light & Magic, a division of Lucasfilm Ltd., in San Francisco. "However, more often than not, scientific discoveries prove to be more spectacular than anything we dare imagine. There is no doubt these discoveries influence and inspire storytellers. Their very existence serves as cause to dream bigger and open our minds to new possibilities beyond what we think we 'know.'"

Commercial Space Roundup by Jason Rhian of Universe Today

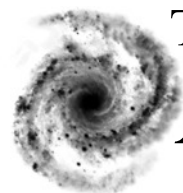
By all reports – commercial space is thriving. A number of recent announcements show that the burgeoning “private” space industry is thriving. NASA released its plans to obtain transportation services for its astronauts to the International Space Station (ISS) as well as optional milestones for the Commercial Crew Development Round 2 (CCDev2). “This is a significant step forward in America’s amazing story of space exploration,” said NASA Administrator Charles Bolden. “It’s further evidence we are committed to fully implementing our plan — as laid out in the Authorization Act — to outsource our space station transportation so NASA can focus its energy and resources on deep space exploration.” To help speed up the process Bolden has stated that NASA will fund some of the original milestones that have already been negotiated as part of some of the Space Act Agreements (SAA) under CCDev2.

NASA’s proposal outlines contracts that would benefit multiple firms that are set to provide the space agency with designs of spacecraft, rockets and other launch services. This contract is worth an estimated \$1.61 billion and is currently slated to run from July 2012 through April 2014. NASA has updated Sierra Nevada Corporation’s SAA with four more milestones – that total up to \$25.6 million meaning that the contract that this NewSpace firm now has with NASA is worth \$105.6 million – if the agency can successfully accomplish all of its milestones. “All four CCDev2 partners are performing very well and meeting their milestones,” said Phil McAlister, director of NASA’s Commercial Spaceflight Development. “These additional milestones were selected because they sufficiently accelerated the development of commercial crew transportation systems to justify additional NASA investment.”

Meanwhile, out in California, The Spaceship Company (TSC), the joint venture of Sir Richard Branson’s Virgin Galactic and Scaled Composites, announced a milestone of their own with the opening of its Final Assembly, Integration and Test Hangar (FAITH), at the Mojave Air and Space Port. The hangar, which cost an estimated \$8 million, supports the final stages of Virgin Galactic’s WhiteKnightTwo and SpaceShipTwo. It is hoped that this new facility will both support further commercial space ventures and create jobs. The facility is located on taxiway-B and encompasses approximately 68,000-square-feet. It will be used to assemble, prepare and test the vehicles. One of the building’s other roles is that of maintenance hangar. “We take great pride in the opening of FAITH as an accomplishment for our company, our current and future customers and our industry,” said The Spaceship Company Vice President, Operations Enrico Palermo. “Within this new facility, we will produce the highest quality commercial spaceflight systems.” With FAITH in place, the required infrastructure is now in place to manufacture a fleet of SpaceShipTwo (SS2) sub-orbital spaceships as well as the WhiteKnightTwo (WK2) carrier aircraft. The facility has been sized to support construction of SS2 and WK2 with room to build two of each of these craft – at the same time. The other structure that is needed to support SS2 and WK2 operations is a 48,000-square-foot building that is located at the Mojave Air and Space Port that TSC has recently had upgraded. If the sub-orbital space tourism market takes off TSC has optioned rights to expand the facility. “Despite the current state of the U.S. economy and rising unemployment, this is a strong time of growth for The Spaceship Company,” Palermo said. “We are creating excellent, high-skilled job opportunities for individuals with aerospace, engineering and hands-on space program experience. We want employees who are passionate about developing new and innovative ways of accessing space.”

Staying on the topic of sub-orbital space planes, Space Expedition Curaçao (SXC) and XCOR Aerospace, Inc. have announced the completion of a deal that will secure the wet lease of production Lynx tail number two for operation on the Caribbean island of Curaçao. “Since we signed the initial Memorandum of Understanding (MOU) in October of 2010, XCOR and SXC have worked diligently towards completing the Definitive Agreement,” explained XCOR CEO Jeff Greason. “Now that the ink is dry and the check has cleared we can proceed at full pace to begin operations in Curaçao in 2014.”

Since the first flights of SpaceShipOne high above the Mojave Desert, the commercial space industry has found its legs and has expanded its reach both nationally and internationally. With Space Exploration Technologies (SpaceX) plans to launch its next Falcon 9 rocket and Dragon spacecraft to the International Space Station in November the commercial space field appears to be cementing its beachhead on not only sub-orbital flights – but orbital ones as well.



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
September 26, 2011
7:30 PM
Hyde Observatory