

# THE PRAIRIE ASTRONOMER

The Official Newsletter Of The Prairie Astronomy Club, Inc.

March 2004

Volume 45 Issue #3

## Internet Addresses

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 OAS Web Page: [www.OmahaAstro.com](http://www.OmahaAstro.com)  
 Hyde Observatory [www.hydeobservatory.info](http://www.hydeobservatory.info)  
 NEB-STAR [www.neb-star.org](http://www.neb-star.org)

## PROGRAM

March program: To be announced

### Note: changes in email addresses:

The PAC Email address is now [info@prairieastronomyclub.org](mailto:info@prairieastronomyclub.org) instead of [pac@4w.com](mailto:pac@4w.com).

The PAC-LIST address has also been changed.

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

For example:

Subscribe pac-list stargazer@myISP.com

To post messages to the list, send to the address [pac-list@prairieastronomyclub.org](mailto:pac-list@prairieastronomyclub.org)

### READ THIS NEWSLETTER ONLINE

Those who wish to help with publishing and postage costs by receiving only the on-line version of the newsletter should contact Liz Bergstrom at 464-2038. Mark Dahmke or Liz can give you the logon account and password for access. You may receive both the mailed version and the on-line version if you wish. A printable PDF version of this newsletter is also available through the website.

## CLUB EVENTS

**PAC Meeting 7:30pm**  
Tuesday, March 30, 2004

**Club Star Party**  
Friday, April 16, 2004

**Astronomy Day**  
Sunday, April 18, 2004

**PAC Meeting 7:30pm**  
Tuesday, April 27, 2004

**Club Star Party**  
Friday, May 14, 2004

**Mahoney Star Party**  
Friday, May 14, 2004

**Nebraska Star Party**  
Friday, July 18-23, 2004

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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 \$20/yr, Family \$22/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 on the last page of this newsletter. Newsletter comments and articles should be submitted to: **Mark Dahmke, PO Box 80266, Lincoln, NE 68501 or [mdahmke@4w.com](mailto:mdahmke@4w.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.

## Secretary's Report

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Prairie Astronomy Club Minutes for the Meeting of March 2, 2004  
(Postponed February Meeting)

President Dave Knisely called the meeting to order. We have three new visitors this month: Stephanie Luther-Dahmke, Bruce Smith, a new telescope owner and John Wood.

Due to the weather and confusion about scheduling, the New Telescope User's night program by Brian Sivill has been rescheduled to Saturday April 17, 2004. That is the evening prior to Astronomy Day. More on Astronomy Day later.

Dave Churilla is attempting to start a beginners' astronomy class for those new to the hobby and wish more personal attention to learning the ropes. For details, see Dave Churilla.

The last star party at Olive Creek was quite nice, with Dave Knisely giving the new NextStar 9.25-inch a workout.

The next PAC star party at Olive Creek is scheduled for Friday March 19, 2004.

The 11th annual Nebraska Star Party will be held on July 17-23 at Merritt Reservoir.

The dates for the Mahoney Star Parties are as follows:

May 14, June 11, July 9, August 13, Sept. 17

Hyde News: During the Week of March 20-27, Hyde will be open on the 23rd for viewing all 5 visible planets. Hyde Volunteer coordinator Dave Churilla asks if members would like to help, let him know, and he'll fit you in.

Also, some improvements are in the works for Hyde. Sometime soon, the 8-inch will be removed for re-coating of the mirror, and possibly some other needed maintenance. We may also be getting a new larger telescope and plans are still being made for the CCD and video feed.

On Sunday, April 18, 2004 from 1:30 to 4:30 p.m, Mueller planetarium will be hosting the annual Astronomy Day, with this year's guest, Nagin Cox, currently working on the MER project. Nagin's talk is at 7 p.m. in the evening at the Nebraska Union Auditorium. The previous evening, Hyde will be open with a public star party and Brian Sivill's New Telescope User's Seminar. PAC members are encouraged to bring their telescopes to aid the public. For details on the Hyde events, contact Dave Churilla. Also, the UNL Student Observatory is open that Sunday night from 9:30 to 11 p.m.

If you have any material you believe might be of value in the newsletter, contact club newsletter editor, Mark Dahmke who is also club webmaster.

Treasurer's report: The annual club audit was conducted on Saturday February 21, 2004. Attending members included Bob Leavitt, secretary Lee Taylor and treasurer Liz Bergstrom. All accounts were in order. No irregularities were found.

Ottwell Calendars and RASC handbooks have been in for some time, there simply hasn't been an opportunity to distribute them.

The 20th edition of Norton's has been published with positive reviews from club president Dave Knisely.

Both of the club telescopes are available to members who have paid full individual or family memberships. To check either of these out, contact Dave Brokofsky.

Dave Churilla moved to adjourn, Liz Bergstrom seconded, adjourn to program.

The program this evening was Mark Dahmke's installation of the new LX 200 Pier.

Respectfully submitted by,

Lee Taylor

## Hyde Observatory Volunteer Schedule

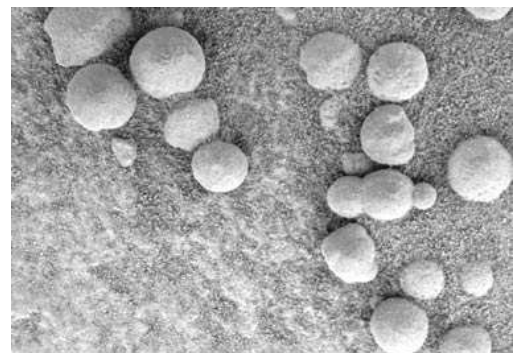
Date	Team Leader	Operators		Supervisor	Events
<b>March</b>					
3/20/04	Dan Delzell	Jared Delzell	Jeff Campbell	Dave Hamilton	
3/23/04	Dave Churilla	Josh Machacek	Joey Churilla	Dave Knisely	5 Planet Alignment
3/27/04	Dave C - on lawn	Jeff King	Joey Churilla		Scopes on Lawn
3/27/04	Bob Leavitt	Mary Winqest	AJ Benker	Rick Johnson	5 planet alignment star party
<b>April</b>					
4/3/04	Dan Delzell	Jared Delzell	Jeff Campbell	Erik Hubl	
4/10/04	Jeff King	Cece Hedrick	Steve Lloyd	Dave Churilla	
4/17/04	Bill Wells	Josh Machecek	Mary Winqest	Dave Knisely	Astronomy Day Hyde Star Party
4/17/04		Joey - Dave B - Lee T	Erica - Jeff C/Bino	Dave Churilla - Outside	Astronomy Day - Scopes on Lawn
4/24/04	Bob Leavitt	Mary Winqest	Erica Block	Rick Johnson	
<b>May</b>					
5/1/04	Jeff King	Josh Machecek	Joey Churilla	Dave Churilla	
5/8/04	Bill Wells	Mary Winqest	Steve Lloyd	Dave Hamilton	
5/15/04	Dan Delzell	Karla Bachman	Jared Delzell	Jack Dunn	
5/22/04	Bob Leavitt	Erica Block	Jeff Campbell	Rick Johnson	
5/29/04	Jeff King	Cece Hedrick	AJ Benker	OPEN	
<b>Summer Hours: April through September (Sundown to 11:00 PM)</b>					
<b>Winter Hours: October through March (7:00 PM to 10:00 PM)</b>					

## Mineral in Mars 'Berries' Adds to Water Story

A major ingredient in small mineral spheres analyzed by NASA's Mars Exploration Rover Opportunity furthers understanding of past water at Opportunity's landing site and points to a way of determining whether the vast plains surrounding the site also have a wet history.

The spherules, fancifully called blueberries although they are only the size of BBs and more gray than blue, lie embedded in outcrop rocks and scattered over some areas of soil inside the small crater where Opportunity has been working since it landed nearly two months ago.

Individual spherules are too small to analyze with the composition-reading tools on the rover. In the past week, those tools were used to examine a group of berries that had accumulated close together in a slight depression atop a rock called "Berry Bowl." The rover's Moessbauer spectrometer, which identifies iron-bearing minerals, found a big difference between the batch of spherules and a "berry-free" area of the underlying rock.



This microscopic image, taken at the outcrop region dubbed "Berry Bowl" near the Mars Exploration Rover Opportunity's landing site, shows the sphere-like grains or "blueberries" that fill Berry Bowl.

"This is the fingerprint of hematite, so we conclude that the major iron-bearing mineral in the berries is hematite," said Daniel Rodionov, a rover science team collaborator from the University of Mainz, Germany. On Earth, hematite with the crystalline grain size indicated in the spherules usually forms in a wet environment.

Scientists had previously deduced that the martian spherules are concretions that grew inside water-soaked deposits. Evidence such as interlocking spherules and random distribution within rocks weighs against alternate possibilities for their origin. Discovering hematite in the rocks strengthens this conclusion. It also adds information that the water in the rocks when the spherules were forming carried iron, said Dr. Andrew Knoll, a science team member from Harvard University, Cambridge, Mass.

"The question is whether this will be part of a still larger story," Knoll said at a press briefing today at NASA's Jet Propulsion Laboratory, Pasadena, Calif. Spherules below the outcrop in the crater apparently weathered out of the outcrop, but Opportunity has also observed plentiful spherules and concentrations of hematite above the outcrop, perhaps weathered out of a higher layer of once-wet deposits. The surrounding plains bear exposed hematite identified from orbit in an area the size of Oklahoma -- the main reason this Meridiani Planum region of Mars was selected as Opportunity's landing site.

"Perhaps the whole floor of Meridiani Planum has a residual layer of blueberries," Knoll suggested. "If that's true, one might guess that a much larger volume of outcrop once existed and was stripped away by erosion through time."

Opportunity will spend a few more days in its small crater completing a survey of soil sites there, said Bethany Ehlmann, a science team collaborator from Washington University, St. Louis. One goal of the survey is to assess distribution of the spherules farther from the outcrop. After that, Opportunity will drive out of its crater and head for a much larger crater with a thicker outcrop about 750 meters (half a mile) away.

Halfway around Mars, NASA's other Mars Exploration Rover, Spirit, has been exploring the rim of the crater nicknamed "Bonnevillie," which it reached last week. A new color panorama shows "a spectacular view of drift materials on the floor" and other features, said Dr. John Grant, science team member from the National Air and Space Museum in Washington. Controllers used Spirit's wheels to scuff away the crusted surface of a wind drift on the rim for comparison with drift material inside the crater.

A faint feature at the horizon of the new panorama is the wall of Gusev Crater, about 80 kilometers (50 miles) away, said JPL's Dr. Albert Haldemann, deputy project scientist. The wall rises about 2.5 kilometers (1.6 miles) above Spirit's current location roughly in the middle of Gusev Crater. It had not been seen in earlier Spirit images because of dust, but the air has been clearing and visibility improving, Haldemann said.

Controllers have decided not to send Spirit into Bonnevillie crater. "We didn't see anything compelling enough to take the risk to go down in there," said JPL's Dr. Mark Adler, mission manager. Instead, after a few more days exploring the rim, Spirit will head toward hills to the east informally named "Columbia Hills," which might have exposures of layers from below or above the region's current surface.

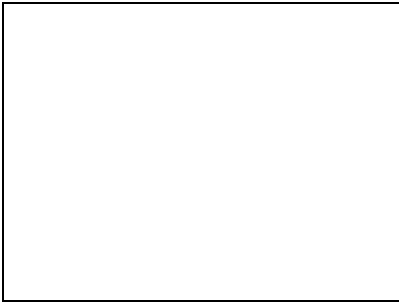
The main task for both rovers is to explore the areas around their landing sites for evidence in rocks and soils about whether those areas ever had environments that were watery and possibly suitable for sustaining life. JPL, a division of the California Institute of Technology in Pasadena, manages the Mars Exploration Rover project for NASA's Office of Space Science, Washington, D.C. Images and additional information about the project are available from JPL at <http://marsrovers.jpl.nasa.gov> and from Cornell University, Ithaca, N.Y., at <http://athena.cornell.edu>.

## **Most Distant Object in Solar System Discovered**

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NASA-funded researchers have discovered the most distant object orbiting Earth's Sun. The object is a mysterious planet-like body three times farther from Earth than Pluto.

"The Sun appears so small from that distance that you could completely block it out with the head of a pin," said Dr. Mike Brown, California Institute of Technology, Pasadena, Calif., associate professor of planetary astronomy and leader of the research team. The object, called "Sedna" for the Inuit goddess of the ocean, is 13 billion kilometers (8 billion miles) away, in the farthest reaches of the solar system.



Artist's concept of Sedna

This is likely the first detection of the long-hypothesized "Oort cloud," a faraway repository of small icy bodies that supplies the comets that streak by Earth. Other notable features of Sedna include its size and reddish color. After Mars, it is the second reddest object in the solar system. It is estimated Sedna is approximately three-fourths the size of Pluto. Sedna is likely the largest object found in the solar system since Pluto was discovered in 1930.

Brown, along with Drs. Chad Trujillo of the Gemini Observatory, Hawaii, and David Rabinowitz of Yale University, New Haven, Conn., found the planet-like object, or planetoid, on Nov. 14, 2003. The researchers used the 48-inch Samuel Oschin Telescope at Caltech's Palomar Observatory near San Diego. Within days, telescopes in Chile, Spain, Arizona and Hawaii observed the object. NASA's new Spitzer Space Telescope also looked for it.

Sedna is extremely far from the Sun, in the coldest know region of our solar system, where temperatures never rise above minus 240 degrees Celsius (minus 400 degrees Fahrenheit). The planetoid is usually even colder, because it approaches the Sun only briefly during its 10,500-year solar orbit. At its most distant, Sedna is 130 billion kilometers (84 billion miles) from the Sun, which is 900 times Earth's solar distance.

Scientists used the fact that even the Spitzer telescope was unable to detect the heat of the extremely distant, cold object to determine it must be less than 1,700 kilometers (about 1,000 miles) in diameter, which is smaller than Pluto. By combining available data, Brown estimated Sedna's size at about halfway between Pluto and Quaoar, the planetoid discovered by the same team in 2002.

The elliptical orbit of Sedna is unlike anything previously seen by astronomers. However, it resembles that of objects predicted to lie in the hypothetical Oort cloud. The cloud is thought to explain the existence of certain comets. It is believed to surround the Sun and extend outward halfway to the star closest to the Sun. But Sedna is 10 times closer than the predicted distance of the Oort cloud. Brown said this "inner Oort cloud" may have been formed by gravity from a rogue star near the Sun in the solar system's early days.



Size comparison of Sedna to Earth, Moon, Pluto and Quaoar.  
[+ Full caption](#)

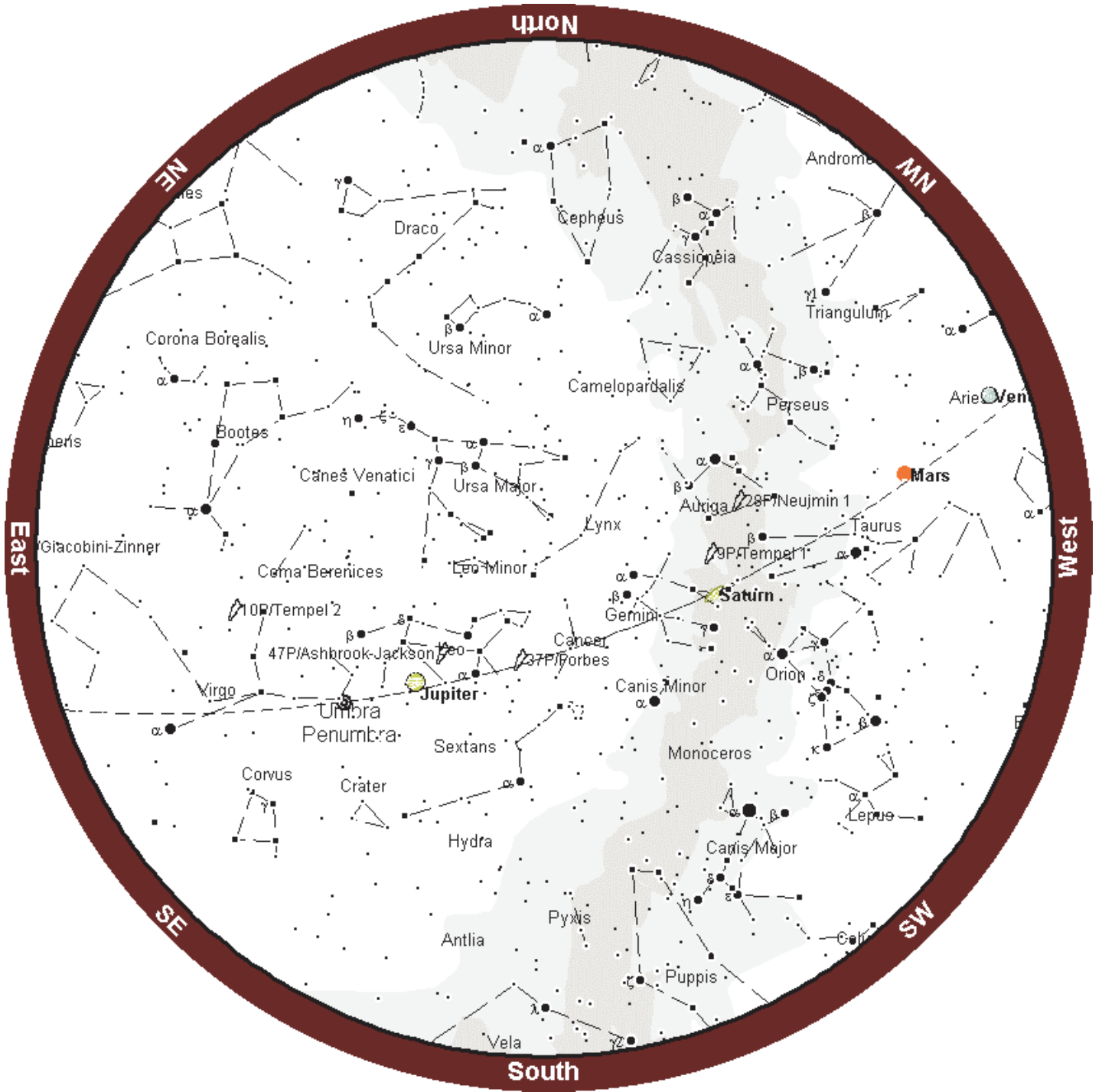
"The star would have been close enough to be brighter than the full moon, and it would have been visible in the daytime sky for 20,000 years," Brown explained. Worse, it would have dislodged comets farther out in the Oort cloud, leading to an intense comet shower that could have wiped out some or all forms of life that existed on Earth at the time.

Rabinowitz said there is indirect evidence that Sedna may have a moon. The researchers hope to check this possibility with NASA's Hubble Space Telescope. Trujillo has begun to examine the object's surface with one of the world's largest optical/infrared telescopes, the 8-meter (26-foot) Frederick C. Gillett Gemini Telescope on Mauna Kea, Hawaii. "We still don't understand what is on the surface of this body. It is nothing like what we would have predicted or what we can explain," he said.

Sedna will become closer and brighter over the next 72 years, before it begins its 10,500-year trip to the far reaches of the solar system. "The last time Sedna was this close to the Sun, Earth was just coming out of the last ice age. The next time it comes back, the world might again be a completely different place," Brown said.

NASA's Jet Propulsion Laboratory, Pasadena, Calif, manages the Spitzer Space Telescope. For more information about the research and images on the Internet, visit <http://www.spitzer.caltech.edu/Media/releases/ssc2004-05>. For information about NASA on the Internet, visit <http://www.nasa.gov>.

# March Star Chart





# Events Calendar

April 2004						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1 	2 	3 
				Sun: 18:10 - 06:51	Sun: 18:08 - 06:52	Sun: 18:06 - 06:53
					Dbl shadow transit on Jupiter	Hyde Observatory open to the public
4 	5 	6 	7 	8 	9 	10 
Sun: 19:05 - 07:54	Sun: 19:03 - 07:55	Sun: 19:01 - 07:56	Sun: 19:00 - 07:57	Sun: 18:57 - 07:58	Sun: 18:55 - 07:59	Sun: 18:54 - 08:00
Daylight saving time begins				Moon at perigee		Hyde Observatory open to the public
11 	12 	13 	14 	15 	16 	17 
Sun: 18:52 - 08:01	Sun: 18:50 - 08:02	Sun: 18:49 - 08:03	Sun: 18:47 - 08:04	Sun: 18:46 - 08:06	Sun: 18:44 - 08:07	Sun: 18:43 - 08:08
					Venus 10degN of Aldebaran; Club Star Party	Hyde Observatory open to the public;
18 	19 	20 	21 	22 	23 	24 
Sun: 18:41 - 08:09	Sun: 18:40 - 08:10	Sun: 18:38 - 08:11	Sun: 18:37 - 08:12	Sun: 18:35 - 08:13	Sun: 18:34 - 08:14	Sun: 18:33 - 08:15
Astronomy Day				Lyrid meteors peak	Venus 1.5degN of Moon	Hyde Observatory open to the public
25 	26 	27 	28 	29 	30 	
Sun: 18:31 - 08:16	Sun: 18:30 - 08:17	Sun: 18:29 - 08:18	Sun: 18:27 - 08:19	Sun: 18:26 - 08:20	Sun: 18:25 - 08:21	
		PAC Meeting 7:30pm		Mercury stationary		

Moon phase images by: António Cidadão

**Directions to Olive Creek  
Observing Site**

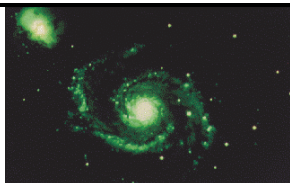
Shorter:

Take Hwy 77 South out of Lincoln until you get to the Crete corner (junction Hwy 77 and Hwy 33). Go West on Hwy 33 (toward Crete) until you get to SW 72 St. Turn Left (South) on SW 72 St. and go about 5 miles until you get to SW Panama Rd. Turn right (West) until you get to SW 100 St. (SW 100 St does NOT go through to Hwy 33). Turn Left (South) on SW 100 St and go about 1 to 1 1/2 miles until you see the sign and entrance to Olive Creek (this is the West side of the Park). It's on your left (East) side of the road. More Black Top:

Take Hwy 77 South out of Lincoln until you get to the Crete corner (junction Hwy 77 and Hwy 33). Go West on Hwy 33 (toward Crete) until you get to about SW 114 St. - the first intersection after SW 100 St. (forgot to look at this street sign, sorry - you'll see a sign for Olive Creek though at this road- but don't count on anymore signs after that, I didn't see any). Turn Left (South) on SW 114 St and go about 5 miles or so until you get to SW Panama Rd (you'll see a church and small school on your right). Turn Left (East) and go about a mile to SW 100 St, then turn Right (South) and go 1 to 1 1/2 miles until you see the Olive Creek entrance and sign (on your left hand side of the road).

**OFFICERS  
OF THE PRAIRIE ASTRONOMY CLUB**

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**The Prairie Astronomer  
c/o The Prairie Astronomy Club, Inc.  
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First Class Mail

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**Next PAC Meeting  
March 30, 2004  
7:30 PM  
Hyde Observatory**