

THE PRAIRIE ASTRONOMER

The Official Newsletter Of The Prairie Astronomy Club, Inc.

June 2004

Volume 45 Issue #6

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 OAS Web Page: www.OmahaAstro.com
 Hyde Observatory www.hydeobservatory.info
 NEB-STAR www.neb-star.org

PROGRAM

June program: To be announced

CLUB EVENTS

PAC Meeting 7:30pm
Tuesday, June 29, 2004

Mahoney Star Party
Friday, July 09, 2004

Club Star Party
Friday, July 16, 2004

Nebraska Star Party
July 18-23, 2004

PAC Meeting 7:30pm
Tuesday, July 27, 2004

Club Star Party
Friday, August 13, 2004

Mahoney Star Party
Friday, August 13, 2004

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 stargazer@myISP.com

To post messages to the list, send to the address 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.

CONTENTS:

Secretary's Report	Page	2
Hyde Schedule	Page	2
Venus Transit from Moscow – by Martin Gaskell	Page	3
Venus Transit from Minnesota – Rick Johnson	Page	4
Space Weather	Page	5
Star Chart	Page	6
Events Calendar	Page	7
Club Viewing Site Directions and List of Club Officers	Page	8

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,** 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

Minutes for the meeting of May 25, 2004

President Dave Knisely called the meeting to order, one new visitor, Jim Kvasnicka, welcome Jim.

The last PAC star party was Friday May 14, 2004 at Olive Creek. We had about 20 people and about half a dozen telescopes. The sky got a little hazy about 11:00 PM, but until then, we had a pretty good night.

The next PAC star parties are scheduled for June 11 and 18. The 11 is also the next Mahoney star party.

The next NSP planning meeting will be Thursday June 10 at 7:30 PM at Mahoney State Park.

PAC outreach coordinator, Jeff Campbell will be busy the next couple of months with the following 4-H presentations. If you would like to help, contact him.

Boldly Bound Camp: June 7, 8, 9, or 10th - 80 kids

Discovery Elementary: June 16, or 17th - 100 kids

Discovery Middle School: July 6, 7, or 8th - 80 kids

Outdoor Skills: July 12, 13, 14 or 15th - 80 kids

Splash Bash: July 26, 27, 28, or 29th - 100 kids

You only need to go out one evening, for a couple of hours.

The Astronomical League has awards for completing their observing programs, the most famous of which is the Messier Pin. There are many others. If you've completed any of these programs, or for more information, contact club observing chair, Jeff King.

Club program chair, Jack Dunn is always looking for new material for club programs. If you've done something with astronomy you'd like to talk about, contact Jack.

The eleventh annual Nebraska Star Party will be July 17-23 at Merritt Reservoir. The final date for early registration is June 1st. Register before this date for \$15, after that, it will be \$25.

Treasurer's report: all accounts are in order. New information on dues, etc. for the AL will be coming soon, if any.

Telescopes for Sale: 3-inch Questar, with 2-eyepieces, tabletop tripod, manuals, etc. for details and asking price, contact:

Foster Woodruff

4010 Thomson Court

Lincoln, NE 68520

Dave Hamilton moved to adjourn, seconded. Adjourn to Jack's preview of the new planetarium show: RINGWORLD.

Respectfully submitted by,

Lee Taylor

Hyde Observatory Volunteer Schedule

Date	Team Leader	Operators		Supervisor	Events
June					
6/26/04	Jeff King	Bob Kacvinsky	Josh Machecek	Martin Gaskell	
July					
7/3/04	Brian Sivill	Jeff Campbell	Dave Brokofsky	Dave Hamilton	
7/10/04	Jeff King	Josh Machecek	Erica Block	Erik Hubl	
7/17/04	Bill Wells	Erica Block	Josh Machecek	Martin Gaskell	
7/24/04	Dave Churilla	Joey Churilla	Steve Lloyd	Martin Gaskell	
7/31/04	Jeff King	Dave Brokofsky	Bob Kacvinski		
August					
8/7/04	Bill Wells	Erica Block	Josh Machecek		
8/14/04	Dan Delzell	Jared Delzell	Bob Kacvinsky		
8/21/04	Bob Leavitt	Dave Brokofsky	Joey Churilla	Dave Churilla	
8/28/04	Jeff King	AJ Benker	Steve Lloyd		
Summer Hours: April through September (Sundown to 11:00 PM)					
Winter Hours: October through March (7:00 PM to 10:00 PM)					

Venus Transit from Moscow– by Martin Gaskell

TRANSIT UNDERWAY IN MOSCOW!

The forecast yesterday for today in Moscow had been for totally overcast all day, but based on my experiences here I didn't believe it. The weather changes so much here that I felt that at least some of the day would be clear. The pattern recently has been that days start off sunny but can cloud over or even rain in the late afternoon.

My alarm went off at 8:00 a.m. and to my delight sunlight was streaming in through my window on the 6th floor of Stalin's massive "Main Building" at Moscow State University. I headed in to the Shternberg Astronomical Institute a little after nine. I wasn't exactly sure where I would watch the transit, but I knew that there would be lots of telescopes set up. On the path through the grounds I immediately ran into a group of delightful, mostly young, amateurs from the "Astro Club". I opted to watch the start of the transit (9:18 here) with them rather than with one of the big telescopes since the amateurs were such a nice bunch and I hadn't met too many amateurs in Russia before. They had VERY small telescopes, a homemade 30mm refractor on an improvised laboratory stand, and a very old fashioned 70mm Newtonian. They had both homemade objective mylar filters, and they projected the sun onto hand-held pieces of paper. The sky was 50% clouded or so.

One of the amateurs had a Russian equivalent of "Sky and Telescope" with a good article on the transit (rather better than the articles in "Astronomy" and "Sky and Tel", I think) and we got the precise time of 1st contact from it. I was the only person with an accurate watch so I gave a rough countdown to first contact (I have enough trouble counting forwards in Russian, let alone backwards). Fortunately the sky almost totally cleared up in time. Within a minute of first contact they saw a little tiny notch appear on the bottom left edge of the sun. We cheered. The transit was underway!

I had my laptop computer with me and I put on the recording of the "Transit of Venus" march, and a .GIF of the music. It made for a very cheery atmosphere, the Sousa march playing as people came by on the path and stopped to watch the transit! The amateurs wanted copies of the music so we copied my files to their flash drives.

I had a naked eye "eclipse filter with me" and within a few minutes after first contact I could make out a little notch on the edge of the sun with my naked eye. I was REALLY seeing the transit now! No telescopes, or eyepiece projection. I was seeing the real thing!

I took photos of the people, and the transit, particularly of the "black drop" effect at second contact. I talked with people about the transit. One of the amateurs commented that it was interesting that I was in "the capital of the evil empire" (hopefully, "ex-evil empire" now!) to see it. I explained that Moscow was getting a much better view than Lincoln.

A beautiful 30-cm refractor was open nearby. Had I been thinking better (my brain doesn't function well first thing in the morning!), I would have gone there between first and second contact to try to see the atmosphere of Venus (first discovered from Moscow by the famous Lomonosov, after whom the University here is named). The morning daytime seeing is often superb in Moscow (they have a high-quality solar observatory on campus), and I could see the granulation well. I realized that I should have been here for a while before second contact to try to see the atmosphere of Venus. I'm going to try to be there between third and fourth contact at the end of the transit.

We set up my laptop in the dome to play the Sousa march. Some of the amateurs and professional astronomers pretended to march around the dome to it. "We are helping Venus march across the sun", one woman explained!

One thing about observing with the 30-cm refractor does deserve comment. They were doing something I always stress to my students that they should never do - they were observing the sun through the eyepiece WITH A HAND HELD NEUTRAL-DENSITY FILTER!!! I probably saved one member of the public from eye damage by shouting out a warning to the person managing the telescope, as the member of the public was just about to look into the refractor without the filter!

Last night, as part of the conference I am speaking at here, they had a concert of classical music. The organizer of the concert had asked me to play in it. I declined, but I suggested that one of the pianists play the Sousa "The Transit of Venus" march. We printed out a copy about 15 minutes before the start of the concert. At the end of the concert they had me stand up and explain what the march was going to be and its significance. Then the (very good) pianist sight-read the march. Since I had been introduced as "an American composer", at least one person in the audience thought that I was the composer of the march and congratulated me afterwards. I explained that I was not born yet in 1882! Fortunately most other people understood that the march was in fact written by an American called John Philip Sousa.

Tak (that's Russian), the sun is still shining!

EGRESS FROM MOSCOW - SEEING THE ATMOSPHERE OF VENUS

I kept track with my solar filter of the motion of Venus across the bottom of the sun's disk during the day. In the afternoon Liz Klimek and I went down to the basement of the solar observatory in the Shternberg Astronomical Institute. I had a conversation (in French) with a solar physicist about their observations of the transit. He directed us to a graduate student who was in the process of making a movie in H alpha of the transit. The view through the solar telescope was not as sharp as through the 30-cm Zeiss refractor, so I opted to go to the 30-cm for third and fourth contacts.

I had been told that they had switched over from the risky solar filter (see my account of ingress) to eyepiece projection at the 30-cm because of the large number of people coming by. So my hopes of having another careful exquisite view through the solar filter on the 30-cm refractor were dashed. The dome was particularly crowded for third and fourth contact. Quite a number of astronomers from the conference who knew that third contact would be a good time to see the atmosphere of Venus were there, and there were a lot of high-schoolers and other members of the public. One had to squeeze in with a lot of Russian bodies to get any glimpse of the transit at all. It was quite a sight, everyone squeezed around that projection screen from every possible position between third and fourth contacts!

Just after third contact I failed to see the atmospheric arc that Mikhail Lomonosov had seen over two hundred years ago. The problem was that the dome was too bright. About a quarter to a third of the way from third contact to fourth contact I did see clear evidence of the atmosphere though: the two cusps on the solar limb were pointing slightly outwards. After fourth contact Academician Nikolai Gennadievich Bochkarev, former president of the Eurasian Astronomical Society (and someone who knows everything about everything!), and I compared drawings, and we both agree with what we had seen. His wife, Evgenia, who is also an astronomer, thought that she had seen some brightening of the cusps in addition to their extension away from the sun. I think she was probably right.

Nikolai Gennadievich, who looked longer and harder than I did, thought he saw some occasional brightenings in a possible atmospheric arc. I had also thought I saw some, but I wrote them off as irregularities on the projection screen.

I conversed with about half a dozen high school girls and learned that they had heard about the transit from their teacher the previous week (that was the last week of school here). They spoke very good English, and their teacher who was lurking in the background was pleased that they were using their English. There was another group of high schoolers from a French high school in Moscow.

Finally, fourth contact came. I gave another countdown. People strained to see the last little bite of Venus leaving the sun, and then it was all over. The crowd evaporated, and the graduate students from the Institute who had been manning the refractor shook hands and congratulated themselves.

Outside, the many small portable telescopes people had brought were being put away. Everyone was happy.

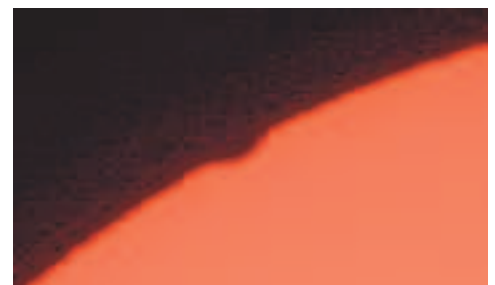
As Nikolai Gennadievich, his wife, and I returned to the Institute and compared our impressions, I felt how fortunate I was not only to have been able to have seen the transit, but to have followed the whole thing. The 2004 transit of Venus was something I had been waiting for since I was probably about nine or ten years old and I was glad that I saw it.

The next transit will be visible (weather permitting) from Nebraska. What would I do different next time? I think I will try to view the four contacts on my own with high-quality equipment so that I can concentrate on looking for the effects of the atmosphere of Venus.

If the PAC program chairman is willing, and if all my photos come out, I can give a detailed report at the August meeting on the many aspects of this astronomical visit to Central Asia, Russia and Ukraine.

Venus Transit from Minnesota— by Rick Johnson

Viewing from the lakeshore means you view from a hole ringed by 100' trees. While the sun was up for about 45 minutes before the end of the transit I was able to see only the last few minutes by the time the sun finally cleared the trees. Even then much of the disk of the sun was still in trees about 5.5 degrees above the "horizon". This is the only shot I got that came out. Seeing was horrible and Venus was never round. This was the first shot showing Venus about a minute after it first cleared the trees. You can see how bad the distortion was. Due to the horrid seeing I saw no atmospheric



distortions from Venus' atmosphere, but plenty from ours :(

Space Weather– by Patrick Barry and Tony Phillips

Radiation storms, 250 mile-per-second winds, charged particles raining down from magnetic tempests overhead ... it sounds like the extreme weather of some alien world. But this bizarre weather happens right here at Earth.

Scientists call it "space weather." It occurs mostly within the gradual boundary between our atmosphere and interplanetary space, where the blast of particles and radiation streaming from the Sun plows into the protective bubble of Earth's magnetic field. But space weather can also descend to Earth's surface. Because the Earth's magnetic field envelops all of us, vibrations in this springy field caused by space weather reverberate in the room around you and within your body as much as at the edge of space far overhead.

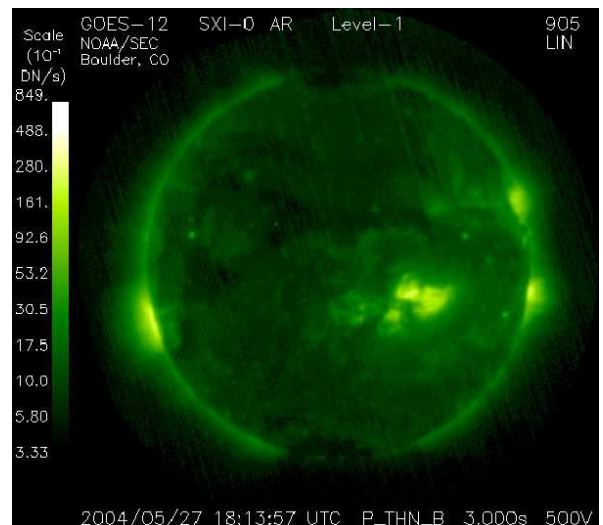
In fact, one way to see these "geomagnetic storms" is to suspend a magnetized needle from a thin thread inside of a bottle. When solar storms buffet Earth's magnetic field, you'll see the needle move and swing. If you live at higher latitudes, you can see a more spectacular effect: the *aurora borealis* and the *aurora australis*. These colorful light shows happen when charged particles trapped in the outer bands of Earth's magnetic field get "shaken loose" and rain down on Earth's atmosphere.

And because a vibrating magnetic field will induce an electric current in a conductor, geomagnetic storms can have a less enjoyable effect: widespread power blackouts. Such a blackout happened in 1989 in Quebec, Canada, during a particularly strong geomagnetic storm. These storms can also induce currents in the metallic bodies of orbiting satellites, knocking the satellite out temporarily, and sometimes permanently.

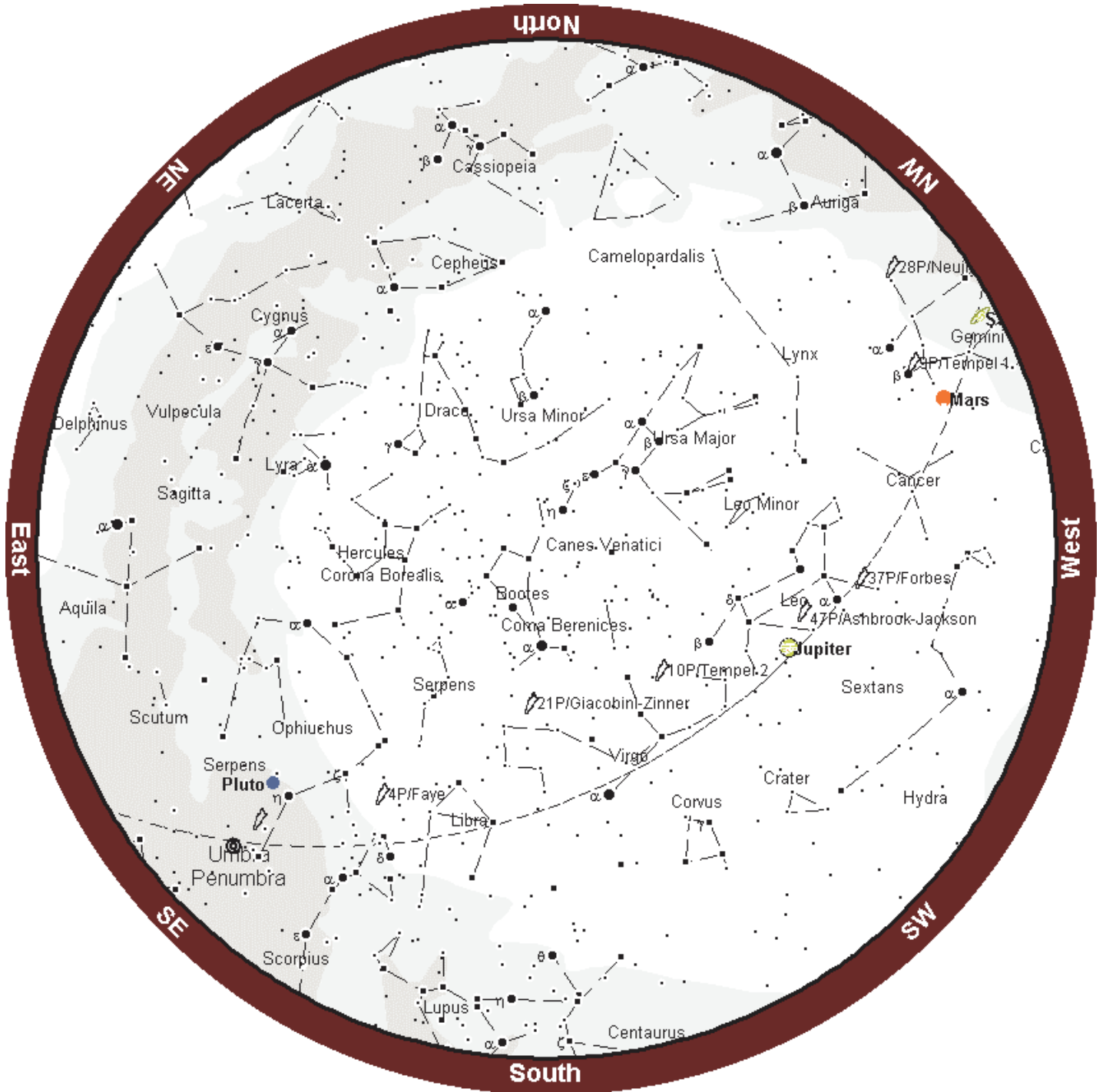
Partly because of these adverse effects, scientists keep close tabs on the space weather forecast. The best way to do this is to watch the Sun. The NASA/ESA SOHO satellite and NOAA's fleet of GOES satellites keep a constant watch on the Sun's activity. If a "coronal hole"--where high-speed solar wind streams out from the Sun's surface--comes into view, it could mean that a strong gust of solar wind is on its way, along with the geomagnetic storms it will trigger. And an explosive ejection of hot plasma toward the Earth--called a "coronal mass ejection"--could mean danger for astronauts in orbit. The advancing front of ejected matter, moving much faster than the solar wind, will accelerate particles in its path to near the speed of light, spawning a radiation storm that can threaten astronauts' health.

You can read today's space weather forecast at <http://www.sec.noaa.gov/>.














Image caption: This image shows the outer solar atmosphere, or corona, as viewed by the GOES 12 Solar X-ray Imager (SXI). It shows the plasma at 4.0 MK (million degrees Kelvin). Bright areas are associated with sunspots seen in white light images and may produce explosive events known as flares. Dark regions are coronal holes where the fastest solar wind originates. Image courtesy of the Space Environment Center/NOAA.



June Star Chart



Events Calendar

July 2004						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1 	2 	3 
				Sun: 17:59 - 09:01 Mercury 5deg S of Pollux	Sun: 17:59 - 09:01	Sun: 18:00 - 09:01 Hyde Observatory open to the public
4 	5 	6 	7 	8 	9 	10 
Sun: 18:01 - 09:01 Venus 1.1deg N of Aldebaran	Sun: 18:01 - 09:01	Sun: 18:02 - 09:00 Double shadow transit on Jupiter	Sun: 18:02 - 09:00	Sun: 18:03 - 09:00	Sun: 18:04 - 08:59 Mahoney Star Party	Sun: 18:04 - 08:59 Mercury 2deg N of Mars; Mercury is 1/4 deg above Mars; Hyde Observatory open to the public
11 	12 	13 	14 	15 	16 	17 
Sun: 18:05 - 08:58	Sun: 18:06 - 08:58	Sun: 18:07 - 08:57	Sun: 18:07 - 08:57	Sun: 18:08 - 08:56	Sun: 18:09 - 08:56 Club Star Party	Sun: 18:10 - 08:55 Hyde Observatory open to the public
18 	19 	20 	21 	22 	23 	24 
Sun: 18:11 - 08:54 Nebraska Star Party	Sun: 18:12 - 08:54 Nebraska Star Party	Sun: 18:12 - 08:53 Nebraska Star Party	Sun: 18:13 - 08:52 Nebraska Star Party	Sun: 18:14 - 08:51 Nebraska Star Party	Sun: 18:15 - 08:50 Nebraska Star Party	Sun: 18:16 - 08:50 Regulus is 1.3 deg above Mercury; Hyde Observatory open to the public
25 	26 	27 	28 	29 	30 	31 
Sun: 18:17 - 08:49	Sun: 18:18 - 08:48 Mercury at greatest elongation	Sun: 18:19 - 08:47 PAC Meeting 7:30pm	Sun: 18:20 - 08:46	Sun: 18:21 - 08:45	Sun: 18:22 - 08:44	Sun: 18:22 - 08:43 Hyde Observatory open to the public

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).

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OF THE PRAIRIE ASTRONOMY CLUB**

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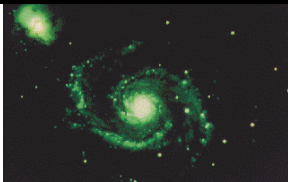
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First Class Mail

**Next PAC Meeting
June 29, 2004
7:30 PM
Hyde Observatory**