

The Prairie Astronomer

The Official Newsletter Of The Prairie Astronomy Club, Inc.

June 2003

Volume 44 Issue #6

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 Hyde Observatory www.hydeobservatory.info
 NEB-STAR www.neb-star.org

JUNE PROGRAM

June program: To be announced

PAC-LIST: If you have an e-mail address and are not on the PAC List, you may subscribe by submitting an e-mail to list@4w.com. Write "Subscribe PAC-List" in the body of the e-mail.

CLUB EVENTS

Mahoney Star Party
Friday, June 20, 2003

PAC Meeting 7:30pm
Tuesday, June 24, 2003

Club Star Party
Friday, June 27, 2003

NSP Planning Meeting 7:30
Thursday, July 10, 2003 Mahoney Lodge

Mahoney Star Party
Friday, July 18, 2003

PAC Meeting 7:30pm
Tuesday, July 22, 2003

Club Star Party
Friday, July 25, 2003

Mahoney Star Party dates for 2003:
June 20, July 18, August 22, September 19.

Nebraska Star Party:
July 27 to August 1, Merritt Reservoir, Valentine, Nebraska.

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.

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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,** 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 — Lee Taylor

Prairie Astronomy Club Minutes for the meeting of May 27, 2003

President Dave Knisely called the meeting to order.

One new guest, Mitch Pain of Lincoln.

We had two impromptu star parties Friday and Sunday nights, the 23rd and 25th. Lot's of people, and not great skies.

Anytime you wish to go out and would like some company, put a note on the PAC-list you just might get some. The next scheduled PAC star parties will be at Olive Creek Friday, May 30th and June 27th.

Mars is a good morning object for the next couple of months. It has passed 12 arc seconds and quite a bit of detail is visible already. The May 15 Lunar eclipse was well attended, but not very well observed, clouds interfered until just after totality.

The Pioneers Part Nature Center's 40th anniversary was a great success with Eric Hubl, Dave and Joey Churilla and Dave Hamilton bringing 'scopes out. They had an enthusiastic crowd and lots of FUN!

Congratulations to local Celebrities, Clark Cheney and Erica Block for their appearance in TIME Magazine's recent article on amateur astronomy.

The dedication of Hyde's new Photovoltaic system was a great event, even though the clouds interfered again. Apparently, we've been getting better performance than expected so far.

The next NSP planning meeting will be on Thursday June 12 at Mahoney State Park.

The next club meeting will be Tuesday June 24, 2003 at Hyde. THE JULY MEETING WILL BE ON TUESDAY JULY 22 at 7:30 due to the occurrence of NSP on the 29th.

The next Mahoney star party will be on June 20 at the driving range.

The next UNL Student Observatory public night will be on June 6

If you wish to start any of the Astronomical League's observing programs, contact PAC's observing chair, Jeff King.

Club program chair, Brian Sivill is always looking for new programs. If there's something you've done recently, and would like to talk about it, contact Brian.

The AL's Mid-State's regional convention will be June 20-22, 2003 in Tulsa OK

Hyde news: Hyde will be getting new eyepieces! Current plans call for the 15 and 20mm Orion EXPANSE eyepieces and a University Optics Klee barlow. Also, a telrad will be installed on the 14-in.

PAC webmaster Mark Dahmke is looking into a redesign of the public website, also, if you have any ideas for articles, get in touch with him.

Treasurer's report: We have fewer newsletter leftover, thanks to everyone who has subscribed to the online newsletter. Also, we are looking into new club apparel, details by next month.

Dave Churilla moved to adjourn and Liz seconded. Adjourn to Jack Dunn's exclusive Mars exploration rover video and AJ's investigation into the gravitational 3-body problem.

Respectfully submitted by:

Lee Taylor

Hyde Observatory Volunteer Schedule

Date	Team Leader	Operators		Supervisor	Events
June					
6/14/03	Jeff King	Karla Bachman	Josh Machacek	Martin G	
6/21/03	Dave Churilla	Joey Churilla	Steve Lloyd	Dave H	
6/28/03	Bill Wells	Jeff Campbell	Bob Leavitt	Martin G	
July					
7/5/03	Dave Churilla	Jeff Campbell	Joey Churilla	Dave H	
7/12/03	Dave Churilla	Karla Bachman	Bob Leavitt	Martin Gaskell	
7/19/03	Bill Wells	Josh Machecek	Steve Lloyd	Martin Gaskell	
7/26/03	Bill Wells	Karla Bachman	Lynda Beck	Dave Churilla	
August					
8/2/03	Jeff King	Josh Machecek	Joey Churilla	Dave Churilla	
8/9/03	Jeff King	Dan Delzell	Jared Delzell	Martin Gaskell	
8/16/03	Dave Hamilton	Jeff Campbell	Karla Bachman	Martin Gaskell	
8/23/03	Bill Wells	Bob Leavitt	Steve Lloyd	Brian Sivill	
8/30/03	Dave Churilla	Joey Churilla	Erica Black	Dave Hamilton	
Summer Hours: April through September (Sundown to 11:00 PM)					
Winter Hours: October through March (7:00 PM to 10:00 PM)					

Moon Observations – Dave Knisely

DATE: June 11th, 2003, 02:45 to 04:30 hrs UT

LOCATION: Beatrice, Nebr. USA 40.283N, 96.735W, 402m elevation.

INSTRUMENT(s): 100mm f/6 Achromatic refractor: 43x, 76x, 122x, 190x, 250x 251mm ("10 inch") f/5.6 Newtonian: 101x, 178x, 288x, 356x, 446x

CONDITIONS: Partly-cloudy, Temp 70 deg. F (21 deg. C), wind calm.

SEEING: ~0.4 to 0.8 arc seconds (Antoniadi I to II).

LUNATION (age): 11 days.

OBSERVATIONS: After returning from a movie, I decided to do some testing of a friend's new 30mm Widescan III eyepiece in my Orion SkyView Pro 100 richfield refractor. This scope, while not a high-end apochromat, still yields fairly good overall performance, and its quick setup time has renewed my interest in viewing the moon on nights when I don't feel like dragging the ten-inch out for a look. After a few glances, it became apparent that the 30mm WideScan III eyepiece was fairly sharp out to about 80% of the field radius (4 degree true field of view), but more importantly, with my friend's TeleVue 2x Powermate, it became obvious that the seeing was outstanding. Quickly replacing the eyepiece with some of my shorter focal length combinations showed the moon in rich detail even without the use of my Sirius Optics NPC or MV-1 filters to cut down on the violet fringing which the scope produces at moderate to high power. This faint fringing becomes detectable past about 110x, but isn't all that objectionable. Use of the NPC produced a fairly natural color for the moon, and virtually eliminated the violet haze while the MV-1 killed the violet and gave me a brighter view, but turned the moon a pale yellowish hue.

The terminator was fairly far along with the craters Schiller, Doppelmayer, Gassendi, Letronne, Keppler, and Mairan all in fine viewing location. One area I seemed to keep coming back to was Mare Humorum, where the fine Hippalus rilles and those on the floor of Gassendi caught my eye. One tiny almost ring-like rille encircles the central peak of the small crater Vitello, and that one was easily visible in the 100mm scope. That, and the sighting of the tiny white dot of the central craterlet on the floor of Plato convinced me that it was time to pull out "the big gun" of my 10 inch Newtonian to see what it could do.

The ten-inch did not disappoint me, as even 178x seemed too low a power. The whole surface of the moon seemed to be dotted with nearly innumerable tiny craters and craterlets down to the resolution limit of the telescope. The south polar region was a particularly rich hunting ground for panoramic detail. The area just north of the south pole showed an unusual curving lane-like feature not far from the terminator, with high curved walls, probably caused by two large overlapping craters. The nearest crater I could identify on VIRTUAL MOON ATLAS was Malapert, but it is unclear whether it is involved in the formation. Farther south along the terminator was another broad lane-like feature with irregular walls and a broad flat floor bounded on the northeastern end by the craters Weigel and Weigel-A. I noticed the large crater Scheiner with what appeared to be a partial ridge down its middle along with several smaller craters on its floor. I took a look at Clavius, but the sun was a little too high to see the "Clavius-L" feature, although the ridge which causes it just after lunar sunrise was noticeable (located roughly between Clavius-C and Porter). Despite the high sun, the floor of Tycho at 355x was rich in fine but quite rough irregular detail around the central peak, with extensive detail in the terracing of the walls as well. The huge highly-elongated crater Schiller had its eastern wall and half its floor buried in shadow, but the small craterlet near the center of the floor was seen near the edge of that shadow.

Back towards the terminator, the irregular complex Hainzel was quite interesting. It appears to be three overlapping craters with interior walls which have partially if not totally collapsed. The northernmost one known as Hainzel-A has steep well-formed northern walls, and looks to be the newest of the three. Its southern wall has collapsed into the southern Hainzel-C. The third crater is the oldest, as only its southwestern wall and part of its floor remain reasonably intact. The floor detail was quite fine this night, with some terracing on the walls of Hainzel-A, and very rugged features where the two main craters overlap. To the northeast of Hainzel, a crack-like rille appears which runs off to the northeast almost to Palus Epidemiarum where it splits into a number of rilles that form a network of Rimae Ramsden bracketing the small flat-floored crater Ramsden. Ramsden also had a broader whiter-looking area on its western interior wall.

Farther north, I examined Vitello in detail, and with the higher power available in the 10 inch, the curving rille showed irregular detail as if portions of it were crater chains. Doppelmayer showed considerable detail in its rather flat interior as well, despite it being partially covered by mare lava flows on its northern side. The fine cracking and rille/ridge features of Mare Humorum stood out well in the low sun. Gassendi was again the highlight of this region, with low walls and a level floor, which was covered in a number of fine rilles which almost looked like wagon-wheel spokes. I could see at least six rilles, although some might just have been branches of others covered in shadow, but the interior was so rough looking under the low sun that this crater kept pulling me back for more looks at it. Farther north, Letronne showed its bay-like appearance with a small craterlet probably 3.5 kilometers across near its center that was also visible in my 100mm f/6 refractor. This craterlet had a small white ray-halo around it even at low sun, which might point to it being a fairly young formation.

A bit farther from the terminator, I looked at the region around Kepler for Rimae Maestlin. I found the main section which goes northeastward from the wall of a ruined and mostly buried crater Maestlin-R. It appears to be a rille with crater-chain-like characteristics. There were a few other minor extensions to the southwest from the broadest point of the main chain, but they were very fine.

I noticed that the sun was rising on Aristarchus, as only its upper rim was in clearly in sunshine. However, to the northeast of the partially buried crater Prinz were a set of three or four sinuous rilles (Rimae Prinz) which I like to call "the Snakes". The sun angle was perfect for viewing them.

I mentioned seeing the "white dot" of the central craterlet in Plato with the 100mm f/6 refractor, and I did take a longer higher-power look at the floor of that crater in the ten inch to see what else was visible even though the sun angle was quite high. "What else" turned out to be at least six or seven of the larger craterlets on Plato's floor. The "Big Four" craterlets turned out to be surprisingly easy, even at only 178x. The next two were on opposite ends (east side and west side) of the crater's floor and were somewhat more difficult, although not enormously so. The large irregular feature at the base of the eastern wall of Plato which I term "the East Wall Pit" (about 6.4 km across) was quite easy, and despite the high sun, I got glimpses of the white spots of two other craterlets.

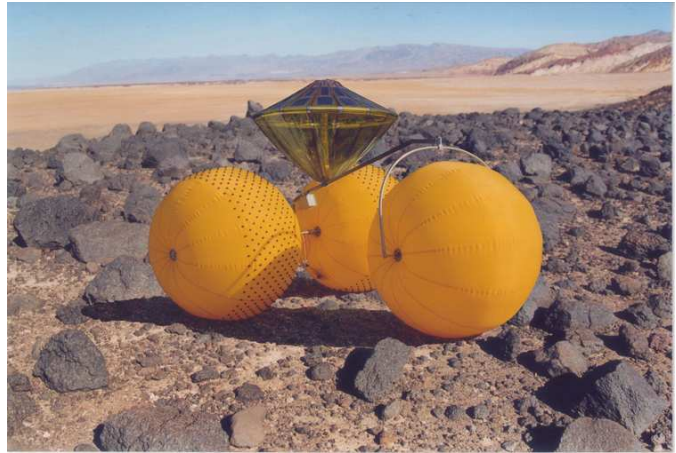
To finish things off, I went away from the moon and took a look at several double stars. I looked at the now-closing double Gamma Virginis, and could begin to see its duplicity even at 178x, although it looked a lot closer in separation than it had just a few years ago. At 440x, the two stars were clearly split, and 720x showed separate Airy disks with a narrow but well-defined lane of darkness between them, along with nice diffraction ring structure around them when the seeing settled a bit. I also looked at Eta Coronae Borealis (0.6 arc seconds?), and while the two stars Airy disks were close to being in contact, there was just a hint of a very narrow darkening between them at 720x. The narrow component of Zeta Bootis also was resolved in a similar manner at high power (0.7 arc second separation).

Monster Trucks on Mars – Patrick L. Barry and Dr. Tony Phillips

We all know what Mars rovers look like now: Robotic platforms, bristling with scientific instruments, trundling along on small metallic wheels. Planetary rovers of the future, however, might look a little different-like miniature monster trucks!

Enormous, inflatable tires can easily roll right over the rocks and rugged terrain of alien planets, just as they bound over old cars like as many speed bumps.

That's the idea behind a novel concept for robotic planetary rovers known as the "big wheels inflatable rover." Unlike rovers similar to the Sojourner robot that explored the surface of Mars in 1997 that depend on instructions sent from Earth or complex programmed intelligence to steer through rough terrain, this rover has three beach ball-like tires roughly five feet across that make it a true off-road vehicle.



"We sent this rover out to Death Valley, to a place called Mars Hill that has a general geological formation like Mars, and nothing could stop it," says Jack Jones, the mastermind of the inflatable rover concept at JPL. "It just kept going and going and going."

Lots of current research is devoted to developing advanced robotic intelligence that allows rovers to detect rocks in their path and maneuver around them. The alternative to such on-the-spot intelligence is tedium: Ground controllers on Earth working out the maneuvers by hand and waiting an hour or more for the instructions to travel to the distant planet.

A "big wheels" rover would need such computer intelligence to avoid very large boulders, but Jones asks, "Why worry about every little rock, pebble, and crack when you can just roll right over most of them?"

Jones imagines a scenario where multiple inflatable-wheel rovers could be sent out to explore the Martian terrain-easily and quickly traversing the rugged terrain. Samples gathered by the rovers could be returned to a central, stationary laboratory module for detailed analysis.

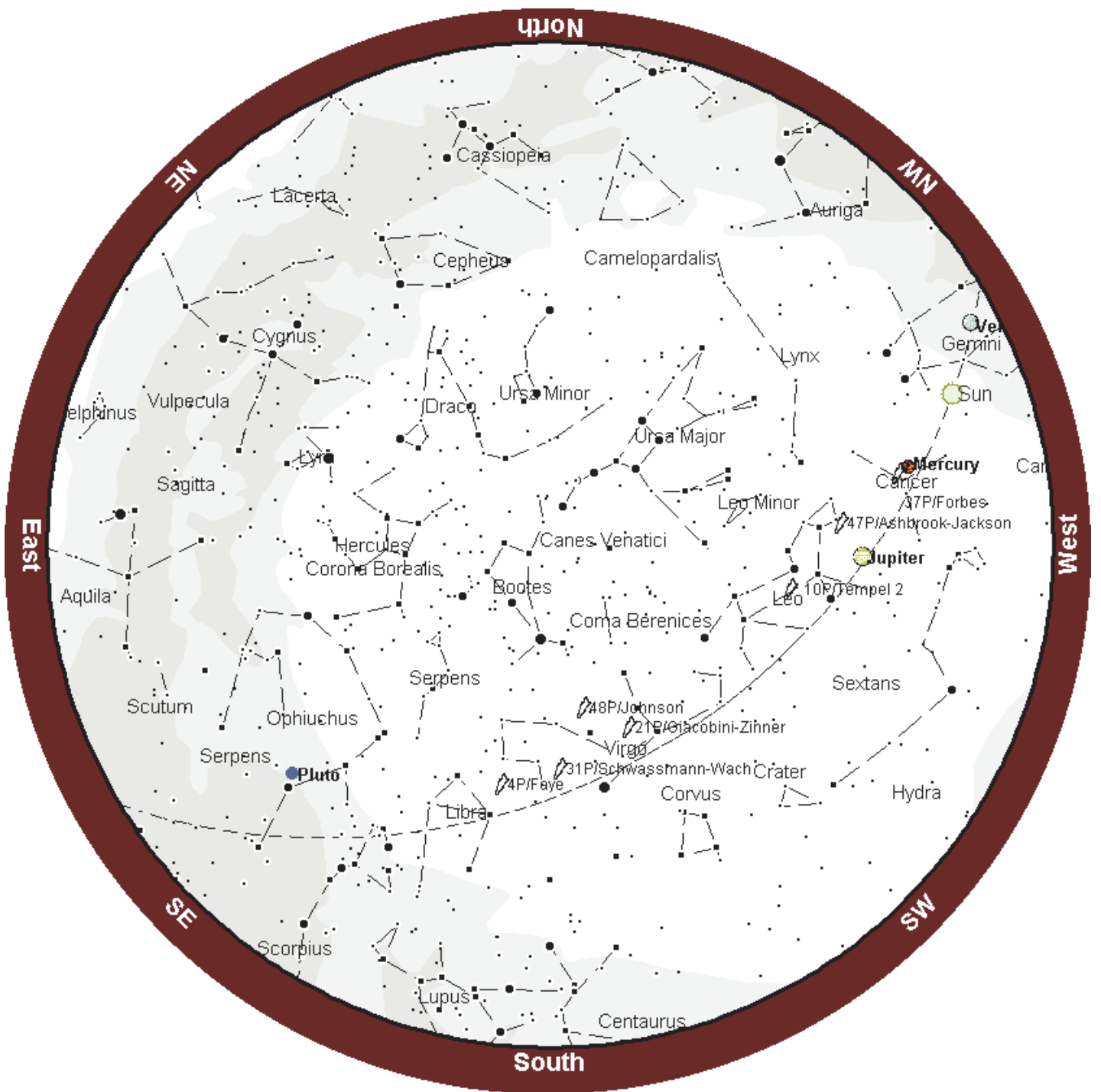
"The Martian surface is really very, very rough with a lot of rocks, and to be banging this laboratory equipment up and down over all of these rocks aboard the rovers doesn't make much sense," Jones says. "I suspect it might be better to leave it in a central location."

At the moment it's all very speculative; NASA currently has no definite plans to send inflatable rovers to Mars. But who knows, one day monster truck-like vehicles could be zipping over Mars' rough, red surface.

Kids can baffle their friends with a robot puzzle (including a "Big Wheels" rover) they make themselves at http://spaceplace.nasa.gov/robots/robot_puzzle.htm . For adults, find out more about NASA's inflatable rover program at http://www.jpl.nasa.gov/adv_tech/rovers/summary.htm .

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

June Star Chart



Events Calendar

July 2003						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1 	2 	3 	4 	5 
		Sun: 17:58 - 09:01	Sun: 17:59 - 09:01	Sun: 18:00 - 09:01	Sun: 18:00 - 09:01	Sun: 18:01 - 09:01
						Hyde Observatory open to the public
6 	7 	8 	9 	10 	11 	12 
Sun: 18:01 - 09:00	Sun: 18:02 - 09:00	Sun: 18:03 - 09:00	Sun: 18:03 - 08:59	Sun: 18:04 - 08:59	Sun: 18:05 - 08:59	Sun: 18:05 - 08:58
				NSP Planning Meeting 7:30		Hyde Observatory open to the public
13 	14 	15 	16 	17 	18 	19 
Sun: 18:06 - 08:58	Sun: 18:07 - 08:57	Sun: 18:08 - 08:57	Sun: 18:08 - 08:56	Sun: 18:09 - 08:55	Sun: 18:10 - 08:55	Sun: 18:11 - 08:54
				Moon 0.3° N. of Mars	Mahoney Star Party	Hyde Observatory open to the public
20 	21 	22 	23 	24 	25 	26 
Sun: 18:12 - 08:53	Sun: 18:13 - 08:53	Sun: 18:14 - 08:52	Sun: 18:14 - 08:51	Sun: 18:15 - 08:50	Sun: 18:16 - 08:49	Sun: 18:17 - 08:48
		PAC Meeting 7:30pm			Club Star Party	Hyde Observatory open to the public
27 	28 	29 	30 	31 		
Sun: 18:18 - 08:47	Sun: 18:19 - 08:47	Sun: 18:20 - 08:46	Sun: 18:21 - 08:45	Sun: 18:22 - 08:44		
Nebraska Star Party	Nebraska Star Party	Nebraska Star Party	Nebraska Star Party	Nebraska Star Party		

**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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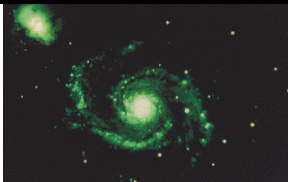
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First Class Mail

**Next PAC Meeting
June 24, 2003
7:30 PM
Hyde Observatory**