

The Prairie Astronomer

The Official Newsletter Of The Prairie Astronomy Club, Inc.

November 2003

Volume 44 Issue #11

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

SEPTEMBER PROGRAM

November program: To be announced

CLUB EVENTS

Club Star Party

Friday, November 21, 2003

PAC Meeting 7:30pm

Tuesday, November 25, 2003

Club Star Party

Friday, December 19, 2003

PAC Meeting 7:30pm

Tuesday, December 30, 2003

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.

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

President Dave Knisely called the meeting to order, there were no new visitors.

The last club star party was on Wednesday, Oct. 22 with good skies, 5 people and six telescopes, yours truly was able to double his logged Messiers! Also in attendance were Dave K., Dave B., Dave C., and Bill Lohrberg.

This years fall banquet was a great success with 69 people in attendance from PAC and OAS to hear Dr. Gaskell's talk about viewing Mars this apparition. Next year's banquet will be on Friday Oct. 8.

There has been quite a bit of solar activity in the past few days. We had a good aurora for the PAC star party and this morning (10/28) we had a MAJOR flare headed straight for Earth.

The next club star party is scheduled for Nov. 21 at Olive Creek and the next club meeting is on the 25th.

The next NSP planning meeting will be on Thursday Nov. 13 at Mahoney State Park.

Hyde observatory will be open to the public early on Nov. 8 for the total lunar eclipse starting around 5:30 and running until about 10:30. Hyde volunteer coordinator, Dave Churilla has again asked members to bring their 'scopes to set up on the lawn for the public.

Also, Dave is always looking for new volunteers; if you'd like to help out at Hyde, contact Dave.

Treasurer's report: PAC apparel is HERE!!!! If you ordered something from Liz, she has it for you. Also, we are now taking orders for the 2004 Royal Astronomical Society of Canada (RASC) handbook and the Ottwell astronomical calendar. Costs are \$17 for the RASC and \$21 for Ottwell. Get your order and payment to Liz by the first week of December.

PAC Election results:

President: Dave Knisley

Vice President: Dave Brokofsky

Secretary: Lee Taylor

Treasurer: Liz Bergstrom

2nd VP(program chair): Jack Dunn

Both of the club telescopes are available, contact Dave Brokovsky if you'd like to check either of them out.

I moved to adjourn, Dave Churilla 2nd. Adjourn to some animations of SOHO observations of this morning's solar flare.

Respectfully submitted by:

Lee Taylor

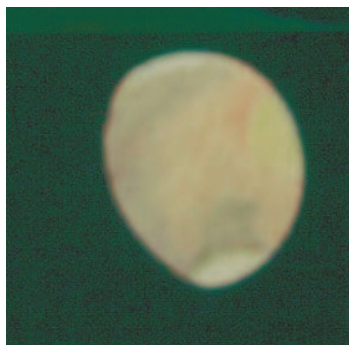
Hyde Observatory Volunteer Schedule

Date	Team Leader	Operators		Supervisor	Events
November					
11/15/03	Bill Wells	Jeff Campbell	Karla Bachman	Erik Hubl	
11/22/03	Dan Delzell	Jared Delzell	Erica Block	Rick Johnson	
11/29/03	Brian Sivill	Jeff Campbell	Josh Machacek	Jack Dunn	
December					
12/6/03	Bill Wells	Jeff Cmpbell	Erica Block	Brian Sivill	
12/13/03	Jeff King	Erin Miles	Joey Churilla	Dave Churilla	
12/20/03	Dan Delzell	Jared Delzell	Josh Macheck	Dave Hamilton	
12/27/03	Bob Leavitt	Karla Bachman	AJ Benker	Rick Johnson	
January					
1/3/04	Dan Delzell	Jared Delzell	Jeff Campbell	OPEN	
1/10/04	Dave Churilla	Joey Churilla	Erica Block	Brian Sivill	
1/17/04	Bob Leavitt	Karla Bachman	AJ Benker	Dave Hamiton	
1/24/04	Jeff King	Josh Macheck	Cece Hedrick	Rick Johnson	
1/31/04	Bill Wells	Erin Miles	Steve Lloyd	Dave Churilla	
Summer Hours: April through September (Sundown to 11:00 PM)					
Winter Hours: October through March (7:00 PM to 10:00 PM)					

Observing Mars – Martin Gaskell

The planet Mars is (as my 7-year old daughter put it!), “a large rock” orbiting around in the inner solar system. Looking at the earth we see high- and low-lying areas (the low-lying ones are covered with water), some large volcanoes (like the big island of Hawaii), signs of the earth’s crust moving apart (e.g., the Red Sea where Africa is moving away from the Middle East). Spacecraft have revealed that Mars is a very similar world in these regards to the earth, but I want to talk here about what Mars looks like in a telescope, and then if I get round to writing the concluding installments of this, I’ll talk about effects of the advances in our technology for amateur observations of Mars.

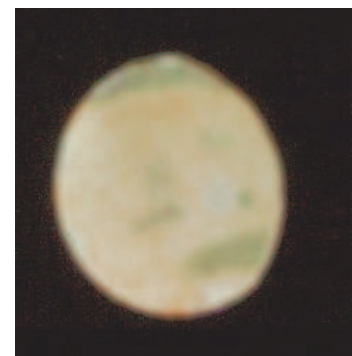
Mars is only half the diameter of the earth, so looking at Mars in a telescope is like looking at the earth and only seeing the continent of Africa. On July 17 of this year there was a grazing occultation of Mars by the moon. It wasn’t visible here in Nebraska, but parts of Florida caught it. Looking at pictures of the graze emphasizes just how small Mars is compared with the moon. Looking at Mars even at its best is like just looking at the inside of just one moderate-size crater on the moon.



Here is a drawing of Mars I made in 1996 using “Tel’Poke”, our family 6-inch Newtonian. That apparition Mars was showing opposite hemisphere towards us from this year.

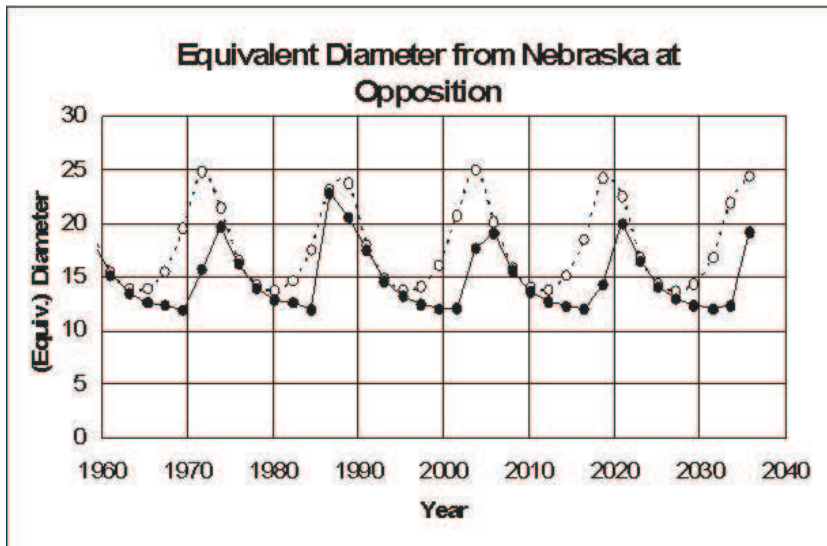
At the time I made this sketch Mars was barely 6 arcseconds across – much smaller than his summer – and a 6-inch is not a very big telescope,

but this little sketch shows reveals a lot. The most obvious thing is the bright polar ice cap at the bottom, but you can also see some albedo features, some polar haze in the south (at the top), and some yellow on the morning limb on the right. This yellow is probably produced by dust in the Martian atmosphere. Here is another drawing of Mars made with Tel’Poke in the spring of 1997 in the same apparition, but now well after opposition (as you can tell from the changed direction of illumination). At this time Mars was around 9 or 10 arcseconds across.

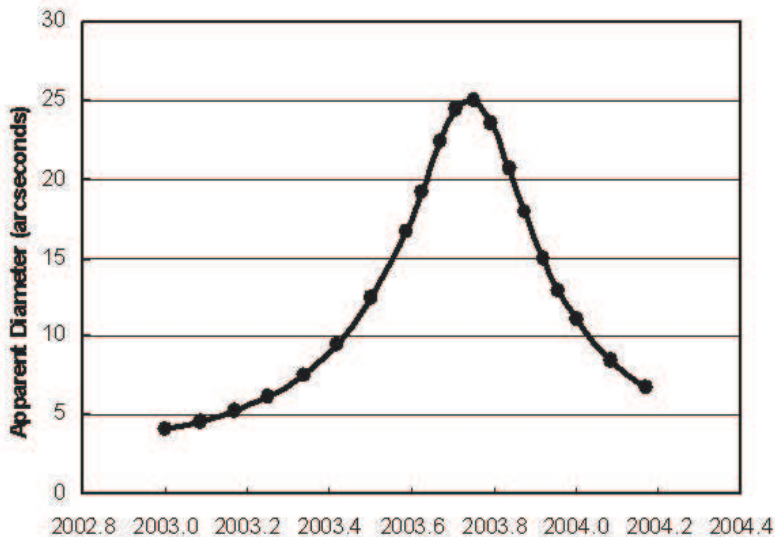


This sketch reveals more things. The first thing to notice is that in the months since the first sketch, the polar ice cap has shrunk considerably. Notice the bluish-white spot to the right of center of the disk. That's a large area of cloud that has formed over the Elysium volcano. You might notice a small bluish cloud on the evening limb on the right. That's another cloud over the Tharsis volcanoes.

For a few months every other year Mars gets much closer to the earth than usual. Because of the high eccentricity of Mars's orbit, every 16 years the oppositions are closer. This is shown by the open circles on the graph below. The fuss about Mars this summer has been because it has been the closest in recorded history, the closest in almost 60,000 years. For us in the northern hemisphere of the earth Mars is low in the sky however, and if instead of plotting the actual apparent size of Mars, we make allowance for the additional blurring by the extra atmosphere traveled through, and plot an effective angular diameter Mars would have if it were it were straight ahead (the solid black circles on the graph below), then we see that this last opposition of Mars was "OK" but unexceptional. The opposition I am really looking forward to is the one in 2005. Mars will be a full 30 degrees higher in the sky then and that makes a big difference for us.



Here is how the size of Mars has varied this apparition:



Although the public hype might be over, the great 2003 apparition isn't over yet! Notice that at the start of October Mars was still appearing to be larger than it will get for over a decade. Mars is going to be above 10 arcseconds until mid-December and still observable into January.

EQUIPMENT

To observe Mars at all one needs a telescope! The requirements for a telescope for viewing Mars are somewhat different than for a telescope for viewing deep sky objects. Here are things I think are very important, more important in fact than sheer aperture:

- The quality of the main mirror is the most important thing. If you are going to spend money, spend it on a high-quality mirror, not on accessories like eyepieces. The cheapest way to get a high-quality mirror is to make it yourself. It's not hard. Making a telescope is a great family project!
- The secondary should be small. To make this possible the eyepiece therefore needs to be close to the tube. I just use a simple 1 ¼-inch hole in a piece of wood.
- Eliminate tube seeing. The primary must get within a degree (Fahrenheit) of the ambient air temperature. To do this you need a very open mirror cell. Many telescopes can be greatly improved by cutting large holes in them around the primary. I set up a telescope outside about two hours before I plan to look through it at a planet. This lets the mirror and tube come into thermal equilibrium with the ambient air.
- Keep your body out of the light path. The upper part of the tube needs to be enclosed and it should be possible to rotate the tube so that you can place yourself "downwind" of the telescope. It is important to this even when there is little or no breeze.
- Accurate collimation.
- The right magnification. This is usually quite a high power. I routinely use 250-350X, sometimes 500X or more. You will need to vary the magnification according to the seeing conditions, and what you are trying to see. Diffuse features need a low magnification (150-200X), small high-contrast detail needs high power. The degree of magnification is more important than the quality of the eyepiece. You need to have a range of magnifications available. This year my main eyepiece for Mars has been a \$2 homemade Plossl used with a \$12 homemade Barlow lens. If you saw Mars through "Dowp" (our homemade 8-inch) at Hyde Observatory you were looking through a \$2 homemade eyepiece!
- Have a drive on your telescope. A high magnification means that you need to have a drive so that you can sit on Mars and wait for the moments of really good seeing. Dowp is driven by a small electric motor. The total cost of the homemade drive was about \$35, of which \$25 was for the motor. It tracks about as well as the average Schmidt-Cassegrain. Having a drive means having an equatorially mounted telescope, of course. My experience is that building an equatorial is no harder than building a alt-azimuth.

LEARN WHAT'S WHAT ON MARS

The fun of astronomy is in knowing what you're looking at! Without this knowledge looking at most deep sky objects is just looking at faint fuzzy blobs. Just as you might know the fields of your favorite Messiers, or know something about them, so it is much more interesting looking at Mars if you know the names of some of the features and something of what is going on. Mars is a changing world so if you know what Mars is "supposed" to look like, you will appreciate the changes. You can get a rough idea of what you are seeing on Mars by using the "Mars Previewer" program downloadable from the Sky & Telescope web site.

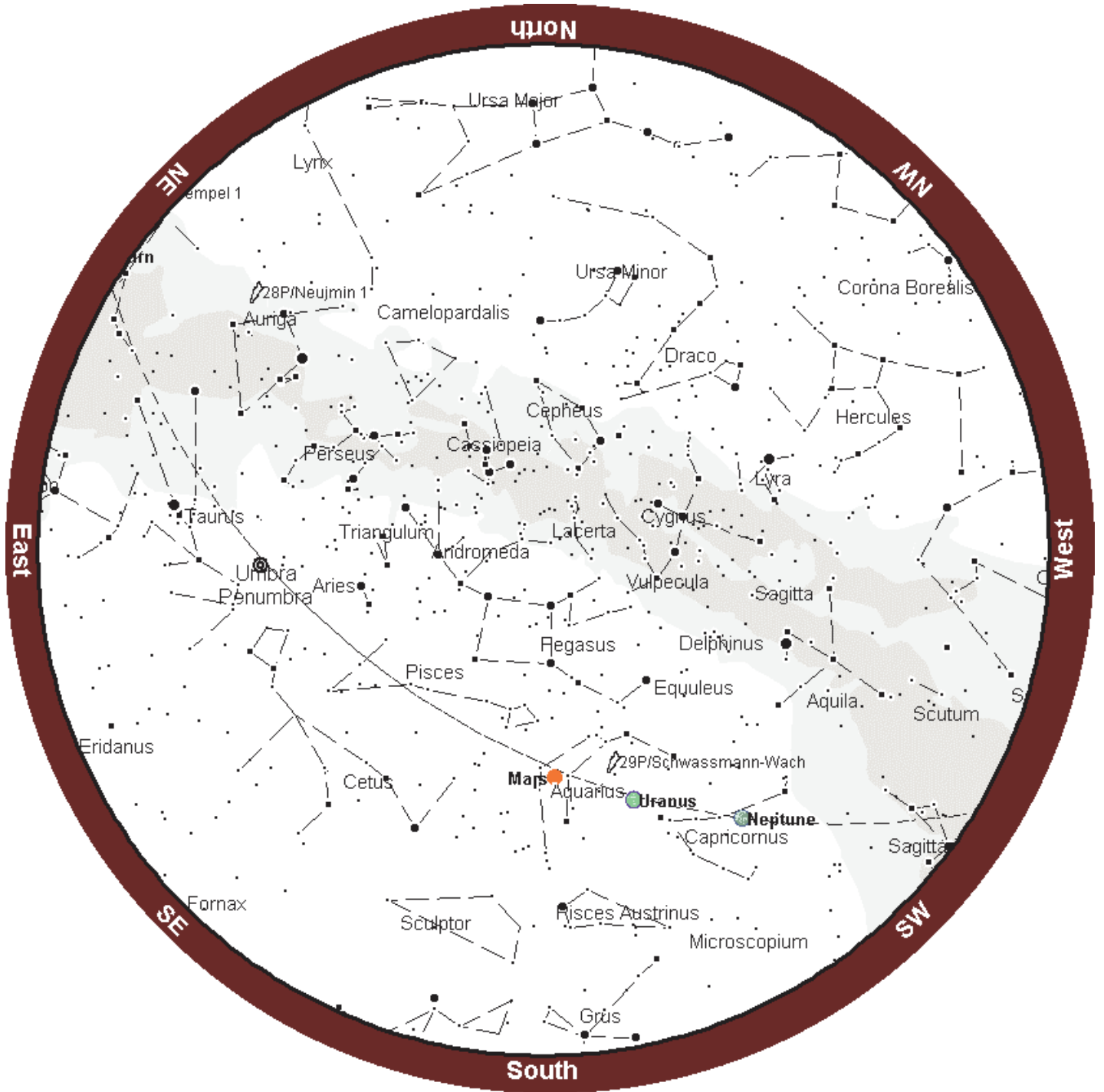
[Next planned installment: old and new techniques for observing Mars]

For Sale

SBIG ST-7 CCD camera. This is not the ST7-E version but can be upgraded. Comes with all original accessories (power supply, parallel cable, autoguider cable wired for LX200, case, manual) **PLUS my copy of CCDSoft V4.0 for Windows (a \$200 value).** This camera is in pristine condition, originally purchased from Astronomics at \$2600 in 1997

and has not been used very often. 768x510 pixels, 9 micron pixel size. Reason for sale: I don't have time to use it, and I'm planning to buy a Nikon D100. **Price: \$1,200.** Contact Mark Dahmke at 475-3150 or mdahmke@4w.com.

November Star Chart



Events Calendar

December 2003						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1  Sun: 07:31 - 16:59	2  Sun: 07:32 - 16:59	3  Sun: 07:33 - 16:59	4  Sun: 07:34 - 16:59	5  Sun: 07:35 - 16:58	6  Sun: 07:36 - 16:58 Hyde Observatory open to the public
7  Sun: 07:36 - 16:58	8  Sun: 07:37 - 16:58	9  Sun: 07:38 - 16:58	10  Sun: 07:39 - 16:58	11  Sun: 07:40 - 16:58	12  Sun: 07:41 - 16:59	13  Sun: 07:42 - 16:59 Hyde Observatory open to the public
14  Sun: 07:42 - 16:59	15  Sun: 07:43 - 16:59	16  Sun: 07:44 - 17:00	17  Sun: 07:44 - 17:00	18  Sun: 07:45 - 17:00	19  Sun: 07:46 - 17:01 Club Star Party	20  Sun: 07:46 - 17:01 Hyde Observatory open to the public
21  Sun: 07:47 - 17:02	22  Sun: 07:47 - 17:02	23  Sun: 07:48 - 17:03	24  Sun: 07:48 - 17:03	25  Sun: 07:48 - 17:04	26  Sun: 07:49 - 17:04	27  Sun: 07:49 - 17:05 Hyde Observatory open to the public
28  Sun: 07:49 - 17:06	29  Sun: 07:50 - 17:06	30  Sun: 07:50 - 17:07 PAC Meeting 7:30pm	31  Sun: 07:50 - 17:08			

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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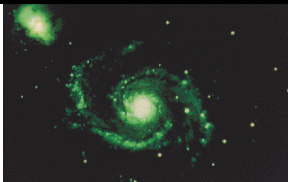
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**The Prairie Astronomer
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P.O. Box 5585
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First Class Mail

**Next PAC Meeting
November 25, 2003
7:30 PM
Hyde Observatory**