

THE PRAIRIE ASTRONOMER

The Official Newsletter Of The Prairie Astronomy Club, Inc.

May 2005

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

PROGRAM

Meteorites and Tektites

Erik Hubl and Larry Hancock will display and discuss their meteorite and tektite collections at the May meeting of the Prairie Astronomy Club. Larry and Erik will talk about how to tell one type of meteorite from another and why they have some of what they call meteor-"wrongs."

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 Mark Dahmke. Mark will 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
Program: Meteorites and Tektites
 Tuesday, May 31, 2005

Club Star Party
 Friday, June 03, 2005

Mahoney Star Party
 Friday, June 10, 2005

PAC Meeting 7:30pm
Program: TBA
 Tuesday, June 28, 2005

Club Star Party
 Friday, July 08, 2005

Mahoney Star Party
 Friday, July 08, 2005

Nebraska Star Party
Valentine, NE
 July 31 – August 5, 2005

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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 \$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 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

President Ron Veys called the meeting to order. There were two visitors. Ron discussed upcoming club events:

- The next club star party will be May 6th at Olive Creek.
- The next club meeting will be May 31st. Larry Hancock and Erik Hubl will give a program on their meteorite collections.
- The dates for the Mahoney Star Parties in 2005 are May 13, June 10, July 8, August 12, and September 9.

The Omaha Astronomical Society has decided to go ahead with the handicapped star party. The date will be June 10. A volunteer is needed to work with OAS on the event. Contact Ron Veys if you would like to volunteer.

Two Astronomical League Observing Awards were presented to Dave Brokofsky. Dave received the Deep Sky Messier and Binocular Messier awards and was congratulated by PAC for his achievements.

Ron Veys reported that the Nexstar computer controlled telescope has been installed. Initial reports are that it is working very well. Training is underway to certify all the Hyde volunteers to operate the scope.

Hyde Observatory is now on its summer hours – sundown to 11:00 pm. If you'd like to help at Hyde, contact volunteer coordinator, Dave Churilla. The annual Volunteer Appreciation Dinner was held April 5 at Mueller Planetarium. Jeff King received the Volunteer of the Year Award.

Treasurer's report: Lee Thomas reported that the main club account is in good shape. We have about \$350 in this account. Lee Thomas, Mark Dahmke, Lee Taylor and Rick Littrell were appointed to conduct the annual audit. A meeting of the audit committee was held, and they will need at least one more meeting to complete the audit.

Jack Dunn reported that Astronomy Day was a big success. Attendance was around 600. Jack said that they are thinking of moving the event to Saturday next year to help alleviate the long lines of people waiting to get in. Morrill Hall is open longer hours on Saturdays and this should help spread the attendance throughout the day.

Website: Mark Dahmke is continuing to work on the new design for the member database and web interface.

Astronomy class: A beginning astronomy class will be offered by PAC through Lincoln Parks and Recreation. The three-session class will be offered on June 8, 15, and 22 from 8:00 – 10:30 pm at Hyde. Bob Leavitt reported that a team of volunteers (Dave Churilla, Erik Hubl, Steve Lloyd, Brian Sivill, Dave Knisely, Lee Taylor and Bob Leavitt) has begun working on the class. Dave Churilla and Dave Knisely are coordinating the observing sessions. They are seeking additional volunteers to help in this area.

NSP news: The dates for this year's NSP are July 31st – August 5th. NSP takes place at Merritt reservoir in the Nebraska Sandhills, about 27 miles southwest of Valentine

Ron reviewed a summary of observing highlights for what's up in the sky in April.

The meeting was adjourned to the program. Dave Churilla and Dave Knisely presented the April program: "Observing the Sun in H-Alpha and White Light".

Submitted by,
Bob Leavitt

Hyde Observatory Volunteer Schedule

Date	Team Leader	Operators		Supervisor	Events
May					
5/28/05	Jeff King	Jim Kvasnicka	Dave Brokofsky	Dave Hamilton	
June					
6/4/05	Brian Sivill	Jared Delzell	Erica Block	Erik H/Dave B	
6/11/05	Bill Wells	Jim Kvasnicka	Dave Brokofsky	Dave Hamilton	
6/18/05	Jeff King	Steve Lloyd	Joey Churilla	Dave Churilla	
6/25/05	Bob Leavitt	Bob Kacvinsky	Cece Hedrick	Martin Gaskell	
July					
7/2/05	Brian Sivill	Joey Churilla	Dave Brokofsky	Dave Churilla	
7/9/05	Bill Wells	Josh Machacek	Jim Kvasnicka		
7/16/05	Dave Hamilton	Bob Kacvinsky	Steve Lloyd		
7/23/05	Bob Leavitt	AJ Benker	Erica Block	Martin Gaskell	
7/30/05	Dan Delzell	Jared Delzell	Cece Hedrick	Martin Gaskell	
Summer Hours: April through September (Sundown to 11:00 PM)					
Winter Hours: October through March (7:00 PM to 10:00 PM)					

Club Telescopes – Checkout Policy Changed

Starting in June, when club members check out a club telescope, they will need to contact Mark Dahmke (475-3150) or mdahmke@4w.com once a week, to verify the location of the telescope and how long they 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.

“The History of PAC” DVDs Now Available – Mark Dahmke

I've digitized the video of Rick's program at the February PAC meeting, and produced a two DVD set that includes his talk plus Earl Moser's video clips (mortgage burning, Pete Schultz, Banquet for Earl, and Astronomy Day at Gateway Mall). Rick also gave me the JPEGs he used in his slide show, so I did an overlay using the audio track from the videotape, for better image quality.

The DVDs will be available through the club library, and if you want your own copies, let me know-- they're available for \$5, which covers the cost of media and duplication.

May 15th Auroral Display - By Dave Knisely

One of the advantages of working second shift (2:30 to 11 p.m.) is that when something goes off overhead, you have a good chance of seeing it first hand, which is what happened early this morning (May 15th). I had known of a solar flare and associated CME that had occurred a day or two ago, and I was watching the POES satellite display off and on to see where the auroral oval was, but it seemed stuck up in North Dakota. I had just gotten off-line and was about to go to bed around 3 a.m., when I thought, "You know, maybe I should just take one last look....." One glance from my driveway revealed a titanic bluish-green glow in the north with rays that were outdoing the glow from Walmart's lights! I ran back

into the house, grabbed my coat, and fired up the minivan to head out to darker and more expansive skies. What greeted me two minutes later was a massive auroral display covering almost the entire northern half of the sky, with a absolutely brilliant main arc made up of hundreds of razor-thin rays all packed together like the bristles on a toothbrush. The arc was sinuous and was in the process of going into a full curtain from the west-northwestern horizon to the eastern one, with the rays as much as 40 degrees long streaking above it. The rays were encased in a very faint glow, which got higher and higher as time went on. Whole sections of this display would seem to drift from left to right and then back to the left again as if somebody was moving a slide projector. The color was mostly the usual pale bluish-green, but what really intrigued me were the arc-like "flashes" of light propagating southward from the main arc. They looked like the diffuse blast waves from a nuclear bomb as they raced southward towards the zenith at an incredible speed. I would sometimes see two or more of these waves at the same time for perhaps less than a second, followed by a few moments with none, and then another big wave would zoom by. They didn't affect the larger and taller rays, so they must have been lower in the atmosphere. I thought I saw some high-altitude clouds overhead, but when one of these "blast waves" would fly out, they would instantly vanish! Obviously, they were some more diffuse sections of the aurora.

The display began to rise up and enlarge, and dozens of huge titanic blades of light began forming nearly overhead. About that time, the western and eastern ends of the arc apparently decided to have a "ray making" contest to see who could make the brightest and biggest one. The eastern end had the early lead, sending up razor-sharp and brilliant bands with fine structure within them. The western end then "replied" with some titans of its own, and "contest" this went back and forth for a while. Then, the middle of the arc decided to get into the act, producing its own set of rays and some interesting *downward* projections that looked like wall clouds! Finally, I guess the guys doing the eastern rays had to up the ante, as they threw in some brilliant red color. It was subtle at first, but it soon got noticed by the western end of the arc, and those guys began to send up red rays as well. These rays just kept getting bigger and bigger, with the glow passing the zenith and moving down as far south as Ophiuchus. The red and bluish-green contrast in the rays was about as stunning as I have seen for the past couple of years (with hints of other colors), and this went on for quite a while.

I was getting a rather sore neck by this time, as the rays were all now forming a huge trapezoidal wall of light. At times, it looked like a gigantic cathedral or a view of a tall rectangular church steeple as seen from the very bottom. The edges of this wall got incredibly bright as the display reached its peak. I then saw something I have never seen in an aurora: "UFOs" (Unidentified Flashing Occurrences). These would appear as very tiny bright greenish patches of light (less than half a degree across), which would then elongate somewhat, become diffuse, and then fade away, sometimes into a short-lived ray (this happened in the span of only a few seconds). For a while, I saw quite a few of these, but they soon stopped. I then turned to the south and saw something which I have seen pictures of but have never actually observed: an Auroral Corona. This is where all the rays seem to point to one spot in the sky, as if you were standing under a tall cone with rays making up the sides. In this case, a large bunch of the rays were pointing directly into Aquila! Some short ones were actually extending *south* from Aquila for as much as 10 to 15 degrees! Once this happened, the auroral arc seemed to diffuse into just a bright glow over much of the sky, so I suppose that I was about underneath at least part of the auroral oval.

I guess the guys on the west end of the display decided that color was needed, so they put up a brilliant ORANGE "Scimitar" of light about 30 degrees long from the west-northwestern horizon. The eastern side of the "wall" then turned red for a while, but soon began to dim a bit. As the time got close to 3:45 a.m., the display began to diffuse out, and a new low auroral arc began to form. The rays from this arc were somewhat shorter, but were still huge in number, and the display remained impressive for a while. As 4 a.m. approached, the red color was gone and things were quieting down, so to soothe my aching neck, I decided to call it quits for this evening. Still, this display has got to rank right up there with the big one last year, and is definitely one of my "top ten best auroral displays".

Cassini Radio Signals Decipher Saturn Ring Structure

The Cassini spacecraft has obtained the most detailed look ever at Saturn's rings, including the B ring, which has eluded previous robotic explorers. Its structure seems remarkably different from its two neighbors, rings A and C.

The origin of Saturn's rings is a mystery. The rings are an enormous, complex structure. From edge-to-edge, the ring system would not even fit in the distance between Earth and the Moon. The seven main rings are labeled in the order they were discovered. From the planet outward, they are D, C, B, A, F, G and E.

During a recent radio experiment, Cassini mapped this structure with clarity never before available. This is the first of many such observations Cassini will be conducting over the summer.

"The structure of those remarkable rings is a sight to behold. All ring features appear to be populated by a broad range of particle sizes that extend to many meters in diameter at the upper end," said Dr. Essam Marouf, Cassini radio science

team member and professor of electrical engineering, San Jose State University, San Jose, Calif.

Marouf said that at the lower end, particles of about 5 centimeters (roughly 2 inches) in diameter or less seem to be scarce in ring B and inner ring A. In rings C and outer ring A, particles of less than about 5 centimeters (2 inches) in diameter seem to be abundant.

Cassini found that the inner and outer parts of ring B contain rings that are hundreds of kilometers wide (hundreds of miles) and vary greatly in the amount of material they contain. A thick, 5,000-kilometer-wide (3,100-mile) core contains several bands with ring material that is nearly four times as dense as that of ring A and nearly 20 times as dense as that of ring C.

The dramatically varying structure of ring B is in sharp contrast to the relatively flat structure of ring A or the gentle, wavy structure of ring C, where many dense, narrow and sharp-edged ringlets permeate its outer part.

Cassini also detected more than 40 wavy features called "density waves" in ring A, many near its outer region, close to the moons orbiting just outside the ring. The density wave observations will tell more about the ring surface mass density, its vertical thickness and other physical properties.

"A marvelous array of waves, caused by gravitational interactions with nearby moons, has been uncovered throughout ring A," said Marouf. "We also see a major density wave in the dense ring B. Some of these waves have been seen in Voyager and other Cassini observations, but not in this large number and not with this exceptional clarity."

Cassini conducted this first radio occultation observation of Saturn's rings, atmosphere and ionosphere on May 3, 2005. An occultation means that if you watch Cassini from Earth, Cassini would appear occulted, or hidden, behind the rings. During a radio occultation, Cassini sends a radio signal from the spacecraft through the rings to Earth. Scientists then watch how the strength of the radio signal is affected as the signal passes through ring material. The denser a ring is, the weaker the signal received. The experiment helps scientists map the distribution of the amount of ring material and determine the ring particle sizes.

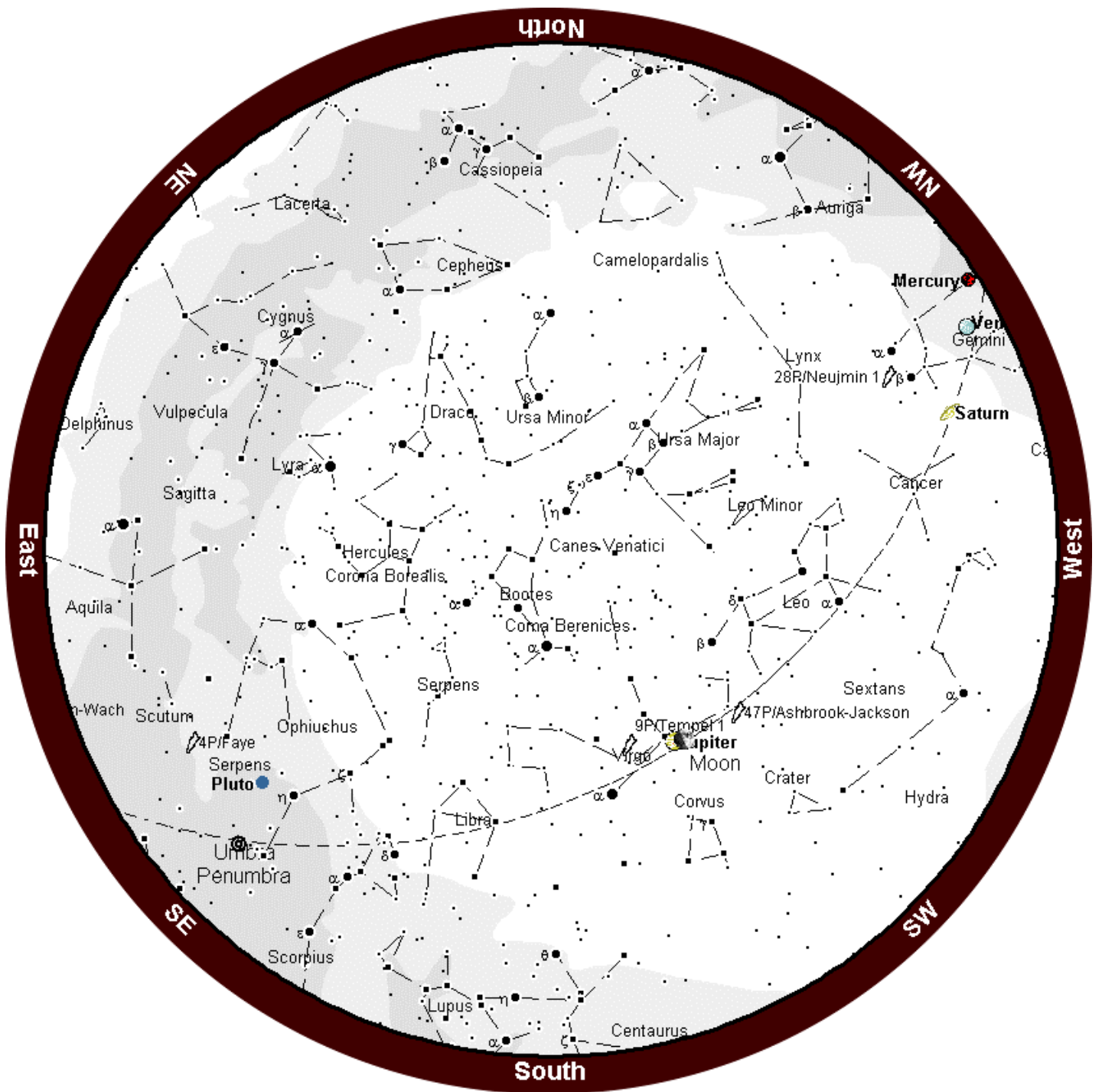
The occultation was the first ever to use three radio signals of different frequencies (called Ka, X and S) transmitted simultaneously from a spacecraft to Earth-receiving stations of NASA's Deep Space Network. Ring particles of different sizes affect each frequency differently.

The Cassini tour was specifically designed to optimize the geometry of the first radio occultation experiment and seven other occultations scheduled from May to September 2005. These observations are at the heart of Cassini's fundamental science objectives of characterizing and understanding Saturn and its ring system. During its lifetime, Cassini will obtain 20 radio occultations and 80 stellar occultations, providing far more detailed knowledge of the ring structures.

For images and information on the Cassini mission visit <http://saturn.jpl.nasa.gov> and <http://www.nasa.gov/cassini>.

The Cassini-Huygens mission is a cooperative project of NASA, the European Space Agency and the Italian Space Agency. The Jet Propulsion Laboratory, a division of the California Institute of Technology in Pasadena, manages the Cassini-Huygens mission for NASA's Science Mission Directorate, Washington, D.C. The Cassini orbiter was designed, developed and assembled at JPL.

June Star Chart



Events Calendar

June 2005						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1 	2 	3 	4 
			Sun: 17:57 - 08:51	Sun: 17:56 - 08:52	Sun: 17:56 - 08:52	Sun: 17:55 - 08:53
					Club Star Party	Hyde Observatory open to the public
5 	6 	7 	8 	9 	10 	11 
Sun: 17:55 - 08:54	Sun: 17:55 - 08:54	Sun: 17:55 - 08:55	Sun: 17:55 - 08:56	Sun: 17:54 - 08:56	Sun: 17:54 - 08:57	Sun: 17:54 - 08:57
		Arietids		Moon close to SAO 79774	Mahoney Star Party	Hyde Observatory open to the public
12 	13 	14 	15 	16 	17 	18 
Sun: 17:54 - 08:58	Sun: 17:54 - 08:58	Sun: 17:54 - 08:59	Sun: 17:54 - 08:59	Sun: 17:54 - 08:59	Sun: 17:54 - 09:00	Sun: 17:54 - 09:00
				Moon close to Jupiter		Hyde Observatory open to the public
19 	20 	21 	22 	23 	24 	25 
Sun: 17:55 - 09:00	Sun: 17:55 - 09:01	Sun: 17:55 - 09:01	Sun: 17:55 - 09:01	Sun: 17:55 - 09:01	Sun: 17:56 - 09:01	Sun: 17:56 - 09:01
Moon Immersion of SAO 183900	Moon close to Antares	Summer Solstice				Venus close to Saturn; Hyde Observatory open to the public
26 	27 	28 	29 	30 		
Sun: 17:56 - 09:02	Sun: 17:57 - 09:02	Sun: 17:57 - 09:02	Sun: 17:58 - 09:02	Sun: 17:58 - 09:01		
Mercury close to Saturn		PAC Meeting 7:30pm				

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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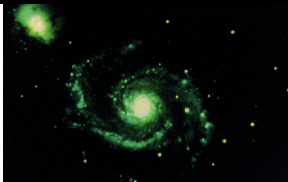
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First Class Mail

Next PAC Meeting
May 31, 2005
7:30 PM
Hyde Observatory

«Title» «FIRSTNAME» «MIDDLENAME» «LASTNAME» «RENEWALDATE»
«CAREOF»
«ADDRESS1»
«ADDRESS2»
«City», «State»
«Zip»