

THE PRAIRIE ASTRONOMER

The Official Newsletter Of The Prairie Astronomy Club, Inc.

December 2004

Volume 45 Issue #12

Internet Addresses

PAC Web Page: www.prairieastronomyclub.org
 PAC E-Mail: info@prairieastronomyclub.org
 NSP Web Page: www.nebraskastarparty.org
 NSP E-Mail: nsp@4w.com
 OAS Web Page: www.OmahaAstro.com
 Hyde Observatory www.hydeobservatory.info
 NEB-STAR www.neb-star.org

PROGRAM

December program:

Larry Stepp will present:
“Launching a Thirty Meter Telescope Project”

Starting a major telescope-building project involves challenges both technical and organizational. Larry will provide a look at the activities involved in launching the Thirty Meter Telescope (TMT) Project from an insider's point of view.

PAC-LIST: You may subscribe to the PAC listserv by sending an e-mail message to:
mailsrv@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 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, December 28, 2004

Club Star Party
 Friday, January 07, 2005

PAC Meeting 7:30pm
 Tuesday, January 25, 2005
 Program: How to Use Your Telescope

Club Star Party
 Friday, February 11, 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 was one new visitor - Earl Moser's grandson.

Ron Veys spoke about his goals and plans for the club. Ron's comments:

- We need to recharge the club and attract new members, particularly younger people.
- Club meetings should be mostly for enjoyment and good fellowship.
- We will try to keep the business meeting short.
- The business meetings will have a new format. To speed things along an agenda will be prepared on PowerPoint.
- We will try to end the programs by 9:00 PM to allow time for people to visit after the meeting.
- Some topics will be discussed and decided upon at Executive Board meetings, rather than at monthly club meetings.
- Ron encouraged everyone to get involved in club activities. Our involvement will determine what the club can accomplish in the next year.

Ron presented some additional PowerPoint slides on PAC and NSP. This material will be used to introduce visitors and new members to our club activities. Ron thanked Mark Dahmke for preparing the PowerPoint presentation.

Jack Dunn mentioned that National Astronomy Day is Saturday, April 16, 2005, which is also the date for the Husker spring game. We are tentatively looking at Sunday, April 17 for our Astronomy day. The SAC Museum is running a Mars Quest exhibition from February 5 through May 1, 2005. David Levy is a featured speaker. We may be able to combine some of our activities with this exhibition.

Lee Taylor reported that he and John Lammers participated in an event at Homestead National Monument on Oct. 30. The event went very well and everyone had a good time looking through the scopes. In appreciation for their efforts, Homestead donated \$100 to the club.

The next PAC star party is scheduled for Friday, December 10, 2004 at Olive Creek. The next PAC meeting will be Tuesday, Dec. 28, 2004 at Hyde Observatory. The program will be provided by Larry Stepp, who will give a talk on his involvement in the design of the next generation of very large telescopes.

Lee Taylor has put together a tentative schedule of programs for 2005. There are still some holes in the schedule and new ideas for programs are always welcome. If you have an idea for a program, please contact Lee.

The Astronomical League has several awards for observing accomplishments, including the well-known Messier award. If you're interested in starting a project, or have completed some, contact Club Observing Chair, Jeff King.

Treasurer's Report: The Royal Astronomical Society of Canada's (RASC) Observer's Handbook and Ottwell Calendars have been ordered and should be here by the December meeting.

Hyde news: Hyde Observatory will be closed for the holidays - December 25 and January 1 - reopening January 8, 2005. If you'd like to help at Hyde, contact volunteer coordinator, Dave Churilla. Volunteers are needed. It is an enjoyable activity and training is provided, so you don't need to be knowledgeable in astronomy to volunteer.

There was no new business and the meeting was adjourned to the programs. November's programs: "Whats Up In December" by Bob Leavitt, and "The NexStar GOTO System" by Dave Knisely.

Submitted by,
Bob Leavitt

Hyde Observatory Volunteer Schedule

Date	Team Leader	Operators		Supervisor	Events
December					
12/25/04	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
January					
1/1/05	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
1/8/05	Jeff King	Bob Kacvinsky	Joey Churilla	Dave Churilla	
1/15/05	Dan Delzell	Cece Hedrick	Jared Delzell	Dave Hamilton	
1/22/05	Bob Leavitt	Josh Machacek	Steve Lloyd	Rick Johnson	
1/29/05	Bill Wells	Erica Block	Dave Brokofsky	Erik Hubl	
February					
2/5/05	Jeff King	AJ Benker	Steve Lloyd	Jack Dunn	
2/12/05	Brian Sivill	Bob Kacvinsky	Erica Block	Dave Hamilton	
2/19/05	Bob Leavitt	Joey Churilla	Jim Kvasnicka	Dave Churilla	
2/26/05	Dan Delzell	Dave Brokofsky	Josh Machacek	Rick Johnson	
Summer Hours: April through September (Sundown to 11:00 PM)					
Winter Hours: October through March (7:00 PM to 10:00 PM)					

Nearest Star Party –Dave Churilla (and Bob Leavitt)

The week after Thanksgiving, Dave Knisely talked to Dave and Joey Churilla about the possibility of getting together to do some solar observing. They were eager to give it a try, and settled on Saturday, December 4th at Hyde Observatory for the "Nearest Star Party." Dave C. then emailed a number of people to see if they wanted to join the group. Dave and Joey arrived at 11:30 and set up on the front lawn. The rest of the group (sixteen in all) began arriving around noon. It was warm and clear with very little wind - a perfect day for taking in the solar sights. The following are Dave Churilla's comments. Photos are by Bob Leavitt.

Dave Knisely had his Coronado PST set up and Joey and I set up our Dob with the DayStar T-Scanner, both H-Alpha filters. Joining us with scopes were Neale Monks & Dave Brokofsky with their refractors and white light filters. I think the Nearest Star Party was a hit, and also joining us were: my sister in law, Angela Reiling and her daughter Hannah, Lee Taylor, Josh Machacek, Jim Kvasnicka, Bob Kacvinsky & his son Carl, Erica Block, Bill Lohrberg and his brother in law Scott, and Bob Leavitt.

We were treated to sites of some spectacular prominences on the limb of the sun, one in particular was huge and kept changing shape about every 30 minutes or so, but there were some others nearly the same size below it and as the afternoon wore on some fingerlike ones. However, they proved to be parts of a large quiescent prominence rolling towards us. The surface showed some nice detail around the few sunspots that were there, with a few Ellerman Bombs going off, and a couple of nicely placed filaments that showed 3-dimensionally as the day went on. I also brought out my TV/VCR with my Orion Video Imager. We got some nice shots through Dave's PST, and some spectacular ones through our scope of the large prominence. However, Dave had to hold the scope at just the right place to see it, or the brightness of the sun would wash it out. But the video imager did give some great shots of surface granulation.



We had a great time - setting up around 11:30 am and finally calling it quits around 3:30 or 4:00 PM. Some of us hit Village Inn for some much needed nourishment (had to recharge my GOTO). In between we enjoyed the detail the H-Alpha's gave us of our nearest star, and each other's company. Neale, Erica and Joey used Neale's TeleVue refractor to spy on some people. They SAID they were looking at joggers, but we didn't believe it for a moment. As for the video, most of you will have to suffer through it in April when Dave K and I give a presentation on Solar Observing....sorry...don't you just HATE home movies...I promise, not too many of Joey as a baby :) But seriously, I think you'll all enjoy some of the video we shot Saturday, plus what Joey and I shot earlier at our house.

While we were enjoying the sun, and each other's company, we talked about trying to get together for a Lunar Party. That may have to wait until after the holidays.

These types of activities are good for the club, they allow those members without scopes, or the specialized equipment to enjoy some of these wonders, and quite frankly Joey and I really enjoy seeing and observing with everyone. Plus we always learn a lot.

For additional photos and commentary on the observing session see the [Nearest Star Party](#) article on the PAC website.

A Clear Cold December Night at Rockford S.R.A – Dave Knisely

DATE: December 15th, 2004, 0530 to 0702 hrs UTC.

LOCATION: Rockford Lake, Nebraska 40.227N 96.580W, 1375 ft (419m) elev.

INSTRUMENTS: Celestron NexStar 9.25GPS 9.25inch SCT: 78x, 98x, 235x. Orion Skyview Pro 100mm f/6 refractor: 20x, 25x.

CONDITIONS: Clear, Temp. 23F (-5C), wind S. at 5-15 mph

UNAIDED-EYE ZENITH LIMITING MAGNITUDE: 6.6

SEEING (above 45 deg. altitude): 1" arc (Antonaidd II).

OBJECTS OBSERVED: M31, M32, M33, NGC 1502, NGC 1360, M42/43, IC 434/Barnard33 (Horsehead Nebula), IC 418, Comet Machholz, Sh2-276 (Barnard's Loop), Lambda Orionis nebular complex, NGC 2237/8 (Rosette Nebula), NGC 2264 (Christmas Tree Cluster/Cone Nebula), IC 443 M41, M46, NGC 2438, Saturn, NGC 2403, NGC 2903, M81, M82.

OBSERVATIONS: I am not a cold weather observer, as I tend to stay close to home if the outside temperature falls much below 25F. All day, it had been clear but remained rather cold, so I waited until later in the evening to see whether I would go out or not. The temperature seemed to stabilize at around 24 degrees with no wind, so I pulled my equipment together and climbed into my jump suit to head out to Rockford Lake. Unfortunately, when I got there, the wind had decided to show me what wind chill really means, as it was gusting as high as 15 miles per hour. I pulled down the road to a slightly sheltered spot near some trees, but the occasional icy gusts in my face made it obvious that I should probably have stayed home. My insulated jumpsuit keeps me nice and warm, but it has no hood, and my heavy winter coat does not fit well over the suit. I managed to pull the coat on and get the hood in place with its ties, but my face was still fairly exposed to the cold. I was seriously considering going back home, but looking up at Orion and the glittering expanse of the winter Milky Way (along with a few leftover Geminids streaking across the sky) made me decide to unload things at least for a little while. I got the NexStar set up and aligning itself as I next set up the 100mm refractor. Again, I lamented the fact that I only have one 2" star diagonal so I would have to constantly move it from one instrument to the other when I wanted the widest field possible in each telescope. I was so cold that I didn't even break out the laptop or its cables to control the telescope. I would have to use the NexStar's internal database and my "organic software" (my memory) to look at things tonight.

I had the NexStar stop at M31 to check the alignment with the 24mm Panoptic in the scope. I was instantly convinced that I had made the right decision to stay out when I looked in and saw the two dark lanes of the galaxy with a fair

amount of contrast. Indeed, some very vague patchiness was visible even beyond the outer lane. Slewing around brought various parts of the galaxy into the field, and I had fun looking at some of the brighter but diffuse star clouds in the arms. In particular, the brightest cloud (NGC 206) was showing up quite well at the 98x of the 24mm Pan. The galaxy's star-like nucleus was buried in the bright slightly oval glow of the core region, which was over 20 arc minutes in length. I could even see some of the core glow of the galaxy extending almost right up to M32. On the northeastern end of the core region was a large arc-like part of the glow, which on images appears to be caused by a few patches of dark nebulosity. Much farther out, the dim narrow curving band of the northeastern spiral arm was visible. A quick slew to M33 confirmed that this night was indeed a dark one. Although the field of view with the 24mm Panoptic was only 40 arc minutes, the field was loaded with faint but intricate detail in the very patchy spiral arm structure. Both main arms were fairly easy to trace, along with a number of large irregular patches, with the most notable one southwest of the core region. It almost looked like part of a rudimentary third spiral arm. Dropping to about 78x with my 2" Widescan III eyepiece revealed a little more of the outer haze, but the power was still a bit on the high side for the best view of the larger mottled halo, which surrounds the inner arm region. Still, I could just make out the vague glow of the connection of the emission nebula NGC 604 with the northern spiral arm.

My next target was a follow-up to my first view of Kemble's Cascade in Camelopardalis. This interesting line of stars looks like the lights of an airliner's windows in binoculars and finder scopes, but the southeastern end is marked by the open cluster NGC 1502. The last time I had viewed the cascade, I had ignored the cluster, so I punched in the number and sent the NexStar slowly crawling in the cold to this interesting object. My 8x50 finder showed the cascade well as a string of 10 to 15 stars which branches on the southeast end like the tail section of an aircraft. One patch on the upper branch was NGC 1502, and a look through the NexStar showed it as a very nice group of 30 to 40 stars mostly in the 9th to 13th magnitude range with a bright pair of 7th magnitude stars blazing out from near its center. I may have to put this one on my "best of" listing, as its a good follow-up to Kemble's Cascade.

With the cold wind getting to me more and more, I pressed on to a large planetary nebula NGC 1360 in Fornax. I took an inadvertent stop at NGC 1362, (a tiny 12th magnitude fuzzy spot of a galaxy) when I hit the wrong key with my gloved hand, but soon, I was at my quarry. It was visible as a large elongated diffuse glow about 7' arc long by 4.5' arc wide around an 11th magnitude central star. However, use of the Lumicon OIII filter dramatically increased the contrast, revealing some interesting light and dark detail. A darker area appeared around and to the south of the central star, while a darker arc was noted in the northeastern half. It almost looked like a rather diffuse spiral galaxy.

While looking up at the area, I noted an extra "star" in Eridanus that looked just a bit fuzzy. One look in the finder and it was obvious that this was no star, but Comet Machholz. The comet appeared slightly brighter than 54 Eri (mag. 4.3) and a tad fainter than 53 Eri (mag. 3.9), so I would give the comet a magnitude estimate of 4.1. It was visible to the unaided eye even with direct vision, and was obviously non-stellar. Through my 100mm f/6 refractor, the comet showed its nice large coma and small brighter core with just a hint of two very faint tails: a diffuse short dust tail and a very narrow almost spike like plasma tail pointing almost straight up at a high angle to the glow of the dust tail. The dust tail was more of an outer glow than a well-defined feature, but the plasma tail was fairly easy to see, being between one and two degrees in total length. In the NexStar 9.25" SCT, the coma was fairly large, being perhaps 25 arc minutes in width. The core was quite bright with a tiny nearly stellar nuclear condensation at its center. The faint spike of the ion tail was visible at 78x, but I could only trace just over a degree of it in the SCT.

I attempted to see the "Witchhead Nebula" IC 2118 with my 100mm f/6 refractor at 20x. It was only visible as a vague elongated brightening which was perhaps nearly 2 degrees in length running between the stars Lambda and Psi Eridani. The southern portion did seem just a bit brighter and broader than the northern part. Here, nebula filters did not seem to help very much (other than perhaps the Lumicon Deep Sky filter).

I paid my obligatory visit to M42, and with the OIII filter in, was repaid with a spectacular sight. The nebula filled the field of the NexStar, with the huge southern arc easily visible as it looped south and past Iota Orionis before arcing back north to rejoin the nebula. The detail appeared sharper with higher contrast in the OIII filter than it did in the UHC, although the UHC showed a larger area of nebulosity at a slightly higher brightness level. I took the filters out and tried for the Horsehead Nebula (Barnard 33 in IC 434) near Zeta Orionis, and at 78x, I could just barely see a hint of the darkening in the glow of the background nebulosity. I put in the UHC filter and the Horsehead began to reveal itself better, but with the H-Beta filter, things really improved. The background glow was quite dim, but the contrast was higher. At 98x, with averted vision, I could just see a bit of the "snout" of the Horsehead against the very dim glow of the nebula. With the H-Beta filter still in my 24mm Panoptic, I put that eyepiece into my 100mm f/6 refractor to see what could be seen around Zeta. To my surprise (and delight) the faint band of IC 434 was visible, along with the tiny "notch" of Barnard 33 halfway down the eastern side! This is by far the smallest aperture that I have ever even glimpsed the Horsehead in.

In Lepus, I took a quick look at the planetary nebula IC 418 with the NexStar at 78x. It was a small slightly bluish disk with a concentrated center, but around the edges, the nebula showed flashes of red. At 98x, the nebula appears more pinkish than blue, with a tiny bright central star.

Farther to the east, I had the NexStar slew to the Rosette Nebula. At 78x with the OIII filter in, what I saw in the eyepiece was more like the Veil Nebula than the more diffuse Rosette that the UHC showed. Fine filamentary detail spread throughout the field, and I had to slew around a lot to pick it all up. Small dark patches were seen in various places, but it was hard to get an idea of the overall shape of the nebula without the wider field view provided in the 100mm f/6. With the UHC in the 100mm f/6, the nebula fills much of the 2.6 degree field of the 24mm Panoptic. In the OIII filter, the nebula seems slightly smaller although again, the contrast in the OIII filter is noticeably higher. Being this close to the holidays, I slewed to "the Christmas Tree Cluster", NGC 2264. It is large and not well concentrated, involved with some faint diffuse nebulosity, brightest near its brightest star, S Monocerotis. However, farther south is a pair of stars with a darker band extending south known as "the Cone Nebula". With the UHC filter, a vague darkening was visible south of these two stars, although the emission nebula in the background is not a lot brighter than the sky background. Just for fun, I held up the H-Beta filter to my eye and was able to see the dim arc of Barnard's Loop in Orion as it swept around the region of Orion's belt. I also noted the dim glow of the large nebula around the group of stars near Lambda Orionis. Through my 4 inch refractor, I could see segments of Barnard's loop with the H-Beta filter, but the Lambda Orionis nebula complex appeared as more of a diffuse brightening with little structure, other than a some patchiness near Lambda itself.

Moving south, I hit a few open star clusters. M41 south of Sirius is large and fairly rich with a number of blue, yellowish and even orangeish stars visible, although it is best at lower power. Farther east, M46 was a rich roughly round group of perhaps 100 faint stars in a rich Milky Way background. The planetary nebula NGC 2438 was also visible as a miniature version of the Ring Nebula in the northern edge of the cluster.

For a challenge, I sent the Nexstar to the supernova remnant IC 443 not far from Eta Geminorum. With the OIII filter, the nebula appeared as a short very dim arc of light with a little irregularity along its length. With Saturn high in the sky, it seemed a logical target. However, the wind began to increase, and seeing was not all that great, although six moons were visible. With things getting more uncomfortable by the minute, I decided to hit a few galaxies to end the night's observing. NGC 2403 in Camelopardalis was a nice fairly bright but diffuse oval of considerable size, with some vague light and dark patches in the outer haze. There were a number of stars visible on the face of the galaxy and one near the center I thought might have been the nucleus, but images show it to be just another faint field star. NGC 2903 in Leo was a bit more impressive, showing a bar-like line of brightness near its middle and extensive mottling in the outer haze. M81 and M82 were fairly high, so I took a last look at both galaxies. M81 was the real surprise, as I had left in the 24mm Panoptic (98x). The scope put the galaxy almost dead center in the field, and the faint arcs of the northern and southern spiral arms were visible out towards the edges of the object as I manually slewed the scope. M82 took high power well, showing its usual wealth of dark patchy detail along its length. However, seeing was not all that hot, so the galaxy seemed to lack some of its usual sharpness. With the gusty wind now hitting me squarely in the face, it was time to finally call it quits after a cold but fairly productive observing session.

European Space Agency's Huygens Probe Set to Detach From Cassini Orbiter

The highlights of the first year of the Cassini-Huygens mission to Saturn can be broken into two chapters: first, the arrival of the Cassini orbiter at Saturn in June, and second, the release of the Huygens probe on Dec. 24, 2004, on a path toward Titan.

The Huygens probe, built and managed by the European Space Agency (ESA), is bolted to Cassini and fed electrical power through an umbilical cable. It has been riding along during the nearly seven-year journey to Saturn largely in a "sleep" mode, awakened every six months for three-hour instrument and engineering checkups. In three days, it will be cut loose from its mother ship and will coast toward Saturn's moon Titan, arriving on Jan. 14, 2005.

"As partners with ESA, one of our obligations was to carry the Huygens probe to Saturn and drop it off at Titan," said Robert T. Mitchell, Cassini program manager at NASA's Jet Propulsion Laboratory, Pasadena, Calif. "We've done the first part, and on Christmas Eve we will release Huygens and tension-loaded springs will gently push it away from Cassini onto a ballistic free-fall path to Titan."

Once freed from Cassini, the Huygens probe will remain dormant until the onboard timer wakes it up shortly before the probe reaches Titan's upper atmosphere on Jan. 14. Then it will begin a dramatic plunge through Titan's murky atmosphere, tasting the chemical makeup and composition as it descends to touch down on its surface. The data gathered during this 2-1/2 hour descent will be transmitted from the probe to the Cassini orbiter. Afterward, Cassini will point its antenna to Earth and relay the data through NASA's Deep Space Network to JPL and on to ESA's Space

Operations Center in Darmstadt, Germany, which serves as the operations center for the Huygens probe mission. From this control center, ESA engineers will be tracking the probe and scientists will be standing by to process the data from the probe's six instruments.

Currently, both the orbiter and the probe are on an impact trajectory with Titan. This is the only way to ensure that Cassini delivers the probe in the right location. A confirmation of successful release is expected to be received from NASA's Deep Space Network tracking stations at Madrid, Spain and Goldstone, Calif., shortly before 8:00 p.m. PST on Dec. 24. A team of JPL engineers and ESA mission managers will be monitoring spacecraft activities at JPL during the release phase of the mission.

On Dec. 27, the Cassini orbiter will perform a deflection maneuver to keep it from following Huygens into Titan's atmosphere. This maneuver will also establish the required geometry between the probe and the orbiter for radio communications during the probe descent.

Two of the instruments on ESA's Huygens probe, the descent imager and spectral radiometer camera and the gas chromatograph-mass spectrometer, are contributions from NASA and American academia.

The imaging camera will take advantage of the Huygens probe's rotation, using two imagers to observe the surface of Titan during the late stages of descent for a view of the regions around the impact site. A side-looking imager will view the horizon and the underside of any cloud deck. More than just a camera, the instrument is designed to measure concentrations of argon and methane in the atmosphere and determine the size and density of particles. The instrument will also determine if the local surface is a solid or liquid, and if solid, its topography. The principal investigator is Dr. Martin G. Tomasko of the University of Arizona, Tucson, Ariz.

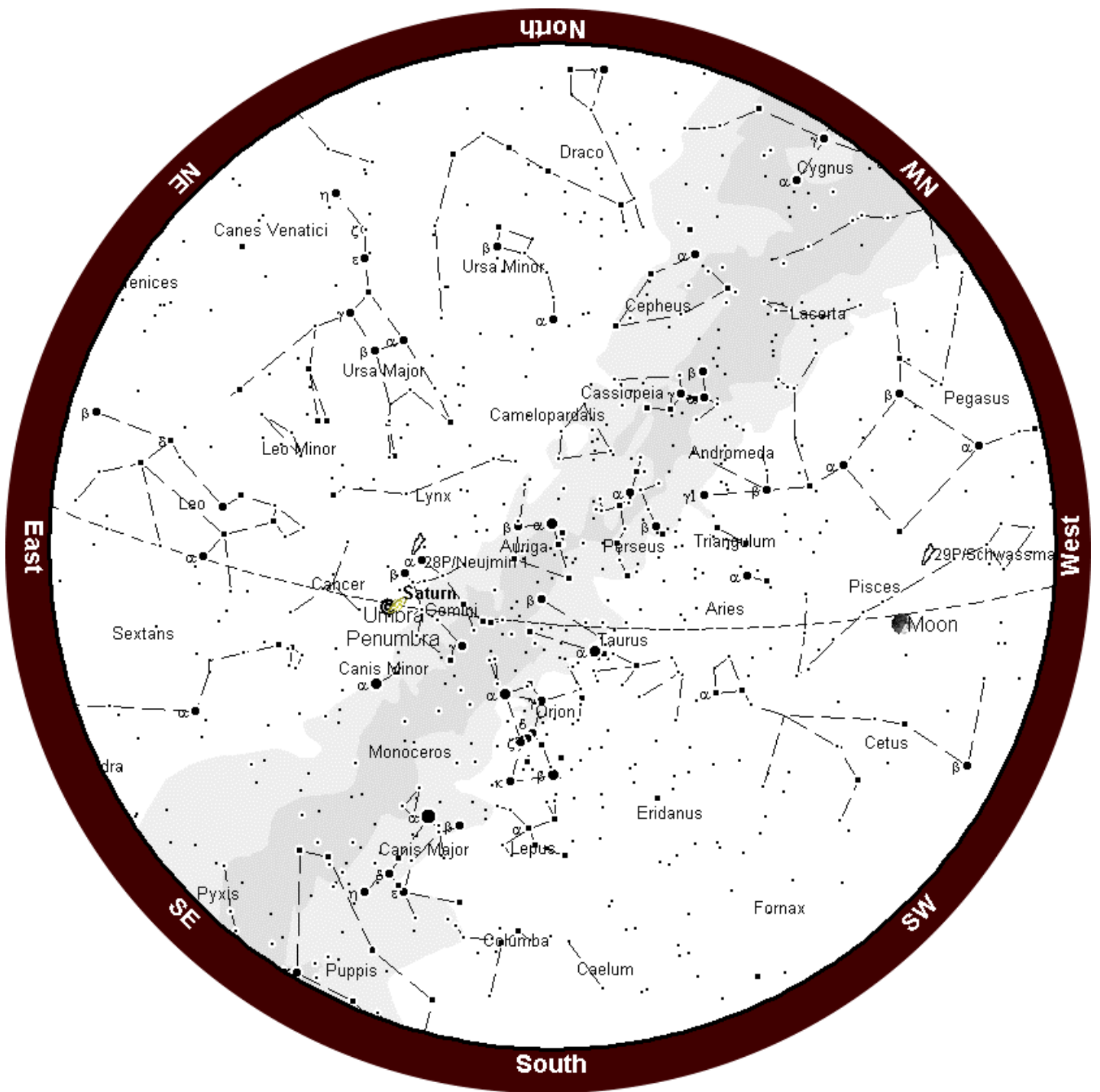
Although Titan's atmosphere is primarily nitrogen and methane, scientists believe it contains many other gases that are present only in small amounts. These trace gases can reveal critical details about the origin and evolution of Titan's atmosphere. Because trace gases are rare, they are difficult or impossible to observe remotely, so direct measurements must be made.

The gas chromatograph-mass spectrometer instrument will sample gas directly from Titan's atmosphere as the Huygens probe descends by parachute. Data from the instrument will allow researchers to investigate the chemical composition, origin and evolution of the atmosphere of Titan. The instrument was designed and built by NASA's Goddard Space Flight Center, Greenbelt, Md., and is led by the principal investigator, Dr. Hasso Niemann.

Updates on the Huygens probe release will be available at: <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. JPL, a division of the California Institute of Technology in Pasadena, manages the Cassini mission for NASA's Science Mission Directorate, Washington, D.C. JPL designed, developed and assembled the Cassini orbiter. The European Space Agency built and managed the development of the Huygens probe and is in charge of the probe operations. The Italian Space Agency provided the high-gain antenna, much of the radio system and elements of several of Cassini's science instruments.

January Star Chart



Events Calendar

January 2005						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1  Sun: 07:50 - 17:09 Hyde Observatory open to the public
2  Sun: 07:50 - 17:10	3  Sun: 07:50 - 17:11	4  Sun: 07:50 - 17:12 Quadrantids	5  Sun: 07:50 - 17:13	6  Sun: 07:50 - 17:14	7  Sun: 07:50 - 17:15 January Bootids; Club Star Party	8  Sun: 07:50 - 17:16 Mars near Antares; Hyde Observatory open to the public
9  Sun: 07:50 - 17:17	10  Sun: 07:50 - 17:18	11  Sun: 07:49 - 17:19	12  Sun: 07:49 - 17:20	13  Sun: 07:49 - 17:21 Mercury near Venus 19' sep	14  Sun: 07:48 - 17:22	15  Sun: 07:48 - 17:24 Hyde Observatory open to the public
16  Sun: 07:48 - 17:25	17  Sun: 07:47 - 17:26	18  Sun: 07:47 - 17:27	19  Sun: 07:46 - 17:28 Moon close to SAO 75810 Zeta Arietis	20  Sun: 07:46 - 17:29	21  Sun: 07:45 - 17:30	22  Sun: 07:44 - 17:32 Hyde Observatory open to the public
23  Sun: 07:44 - 17:33	24  Sun: 07:43 - 17:34	25  Sun: 07:42 - 17:35 PAC Meeting 7:30pm	26  Sun: 07:41 - 17:37	27  Sun: 07:40 - 17:38 Moon close to SAO 98955 Eta Leonis	28  Sun: 07:40 - 17:39	29  Sun: 07:39 - 17:40 Hyde Observatory open to the public
30  Sun: 07:38 - 17:41 Orionids	31  Sun: 07:37 - 17:43 Moon close to Jupiter					

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**

PRESIDENT: Ron Veys
(402) 486-1449
RVeys@southeast.edu

VICE PRESIDENT: Mark Dahmke
(402) 475-3150
Mark.Dahmke@4w.com

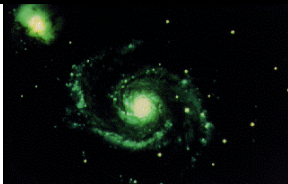
2nd VICE PRESIDENT Lee Taylor
(PROGRAM CHAIR): (402) 327-0804
otaylor89@hotmail.com

SECRETARY: Bob Leavitt
(402) 488-5335
bob.leavitt@alltel.net

TREASURER: Lee Thomas
lthomas@navix.net

Club Observing Chair Jeff King
483-0599

Hyde Volunteer Coordinator: Dave Churilla
(402) 467-1514
weber2@inebraska.com



The Prairie Astronomer
c/o The Prairie Astronomy Club, Inc.
P.O. Box 5585
Lincoln, NE 68505-0585

First Class Mail

Next PAC Meeting
December 28, 2004
7:30 PM
Hyde Observatory