



THE PRAIRIE ASTRONOMER

The Official Newsletter Of The Prairie Astronomy Club, Inc.

March 2007

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Club Events

PAC Club Meeting

Tuesday, March 27, 2007 7:30pm @ Hyde Obsv.

Club Star Party

Friday, April 13, 2007

PAC Club Meeting

Tuesday, April 24, 2007 7:30pm
@ Hyde Obsv.

Club Star Party

Friday, May 11, 2007

Mahoney Star Party

Friday, May 18, 2007

**Club star parties: April 13, May 11, June 15, July 6,
August 10, Sept 7, Oct 12, Nov 9, Dec 7.**

**Mahoney star parties: May 18, June 15, July 13,
August 10, Sept 14.**

NSP: July 15-20

Program

March Meeting: "Previewing Astronomy Day 2007" – Jack Dunn

We will go over all the possible stations and activities that we are working on for Astronomy Day. We will solicit volunteers to fill the roles we need for that day. And, since it is an all-day event, we need to provide for relief so people can go and get lunch - take breaks, etc. I will have the Night Sky Network materials and other activities on hand so PAC members can see what they are.

Also Jack will do an update of a number of projects from JPL including MER and the STEREO mission.

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

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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

Ron Veys called the meeting to order. Attendance: 25 PAC members and no visitors. Ron discussed upcoming club events:

- The next club star party will be held Friday, March 16 at the farm.
- The next club meeting will be Tuesday, March 27.
- Hyde Observatory is open from 7:00 – 10:00 pm on Saturdays.
- A training session for new Hyde volunteers will be held on March 7 at Hyde.
- Volunteer appreciation night will be Tuesday, April 10 at Mueller Planetarium.
- Astronomy Day will be Saturday, April 21. Jack Dunn will send out information and a request for volunteers on the PAC List.

Treasurer's report: no report this month.

The 14th annual Nebraska Star Party will take place July 15 – 20, 2007. Most of the activities will be in Valentine this year. One catered meal will be held at the Snake River campground.

Ron reminded PAC members that the club offers a 10% discount on membership renewals for those who renew prior to their annual renewal date.

Contact Jack Dunn if you have any ideas for PAC programs.

Dave Churilla has been designated the PAC Outreach Coordinator. Dave gave a presentation on his ideas for astronomy classes this year. He is proposing two types of classes – field schools and classroom sessions. Each class would take place on a single night. As Dave organizes these activities he will provide more information on the PAC List.

Ron reviewed upcoming observing highlights for the month of March.

The meeting was adjourned to the program. Dave Knisely presented "How to Clean Telescope Optics." Then Jack Dunn gave a talk on the MirrorDome full-dome projection system that he plans to install at the planetarium.

Submitted by,
Bob Leavitt

Club Telescopes – Checkout Policy

To check out one of the club telescopes, contact Brian Sivill or nanoamps@windstream.net. If you keep a scope for more than a week, please check in with Brian once a week, to verify the location of the telescope and how long you 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.

Hyde Observatory Volunteer Schedule

| Date | Team Leader | Operators | | Supervisor | Events |
|---|----------------|---------------|---------------|----------------|--------|
| 3/24/2007 | Steve Lloyd | Jim Kvasnicka | Bob Leavitt | Jack Dunn | |
| 3/31/2007 | Dave Hamilton | Josh Machacek | Mitch Paine | Dave Brokofsky | |
| 4/7/2007 | Josh Machacek | Mitch Paine | Bill Wells | Erik Hubl | |
| 4/14/2007 | Dave Brokofsky | Dan Detzel | Bob Kacvinski | Steve Lloyd | |
| | | | | | |
| 4/21/2007 | | | | Dave Knisely | |
| Summer Hours: March through September (Sundown to 11:00 PM) | | | | | |
| Winter Hours: October through February (7:00 PM to 10:00 PM) | | | | | |

Recent Observations—Dave Knisely

DATE: February 21st, 2007, 0417 to 0710 hrs UTC.

LOCATION: Rockford Lake, Nebraska 40.227N, 96.580W, elev. 1400 ft (427m).

INSTRUMENTS: NexStar 9.25 inch f/10 SCT: 59x, 87x, 98x, 168x, 235x, 297x, 447x

FILTERS: Lumicon:(UHC, OIII, H-Beta, Deep-sky), DGM Optics:(NPB, GCE).

CONDITIONS: Clear, Temp 32F (0C), wind SSW at 3 mph.UNAIDED-EYE ZENITH LIMITING

MAGNITUDE: 6.6 SEEING (above 45 deg. altitude): 1 arc second (Antoniadi II)

OBJECTS OBSERVED: M42/43, M51, M61, M64, M65, M66, M81, M82, M84, M86, M91, M96, M100, M101, M104, M106, M108, NGC 1893/IC 410, NGC 1975, NGC 2024, NGC 2261, NGC 2264, NGC 2403, NGC 2903, NGC 3115, NGC 4236, NGC 4388, NGC 4402, NGC 4435, NGC 4438, NGC 4565, NGC 4631, NGC 4656, NGC 4489/AGC 1656, IC 405, IC 434/B33, IC 443, Saturn.

I had intended to do just a bit of observing from my driveway, to do some field measurements and a quick look at the crescent moon and Saturn but when the neighbor turned on her light and left it on, I got frustrated and threw everything into the minivan for a trip out to the dark skies of Rockford Lake. The sky turned out to be quite nice, as the high clouds that had shown up near sunset were gone. I had run my Lymax "Cat Cooler" before I left, so the scope was at perfect operating temperature and ready to do battle with the faint fuzzies of the winter sky. I had intended to finish my survey of galaxies with the DGM Optics GCE, or "Galaxy Contrast Enhancement" filter which I am reviewing, but with Orion high in the south, I just couldn't resist doing a lot of "sight seeing" first. My first stop was good old M42, and the NexStar didn't disappoint me. Even without filters the object showed its usual wealth of fine detail filling the one degree field provided by my 40mm Mk-70 Konig eyepiece (59x). With the DGM Optics NPB filter, the view was even more glorious, with lots of fine faint filamentary detail being easy to see. The area to the east of M43 and the "fish's mouth" showed numerous fine slightly sinuous filaments running eastward from the "usual" edges of the eastern "wing" of the nebula, and the great southern loop was quite easy to follow all the way through Iota Orionis. In fact, most of the detail shown in the large color image of the sword taken by David Malin was visible with only a little study. I went to the north to visit the "Running Man" nebula NGC 1975, and could really see the dark inclusion along its southern edge, as well as a hint of the interior sinuous lane which gives the object its name.

I went over to the "Flame" nebula NGC 2024, and it was visible even without filters, although the NPB did bring out the contrast fairly effectively. From there, it was on to the Horsehead. Surprisingly, once Zeta was moved out of the field, I was able to see the slightly darker inclusion of the Horsehead into that faint background glow of IC

434 even without a filter, although it was fairly marginal. When I put in the NPB filter, BOOM! the Horsehead came out a lot better, although again, the dim background nebulosity was still fairly faint. The H-Beta filter improved the contrast to some degree over the view in the NPB, making the "snout" begin to come out. However, the NPB filter still provided a good view of the object which compared favorably to the H-Beta's.

A quick slew brought me to "Hubble's Variable Nebula" NGC 2261 in Monoceros. It was easy to see as a small triangular puff at 59x and did not require the use of a filter (it is mostly a reflection nebula). Just for fun, I tried 235x and was surprised at the level of detail that power revealed. There, the object appeared as a large broad fan-shaped area of nebulosity with noticeable light and dark features within the fan. Its southern end was a small fuzzy blob with a star-like point in it (the variable star R Monocerotis), and the broad northern-pointing fan showed a long brighter flowing arc-like filament along the eastern edge looking a bit like the tail of a comet. Two or three adjacent irregular patches were also glimpsed in the central part of the fan closer to the star with a bit of a darker area on their northern edges. This object is definitely worth using a lot of power on it.

My next stop was the "Christmas Tree" cluster NGC 2264 and its associated faint nebulosity Sh2-273. The cluster is quite large and a bit scattered, anchored at its northern end by the magnitude 4.7 star S (15) Monocerotis. There is a bit of faint haze involved with the group and extending to the south and the northwest, with the brightest patch about eight arc minutes southwest of 15 Mon around a few eighth and ninth magnitude stars. With the NPB filter, the nebulosity became far more extensive, covering almost the entire cluster in a diffuse faint patchy glow, with a little dark detail visible. Nearly half a degree to the south of 15 Mon is a small narrow triangle of 7th and 9th magnitude stars with a dim haze around it. This is roughly the location of the northern end of the "Cone" Nebula. I could just catch it as a darker void running roughly south of the brightest star in the triangle for about six arc minutes, although to really see it, you had to know what you were looking for. It is somewhat less obvious than something like the Horsehead, but it still wasn't exactly difficult to see. I could also see the void with both the OIII and the H-Beta filters, with the OIII providing just a bit more contrast. However, at 59x, overall, the Cone seemed to be best seen in the NPB filter. Without a filter, no trace of the "Cone" was visible. The NPB filter continues to surprise me as to just how well it performs on a variety of nebulae which I have previously considered better only in line filters.

I took a side trip to the small planetary nebula IC 418 in Lepus, which is sometimes known as "the Raspberry Nebula". In larger scopes, it has a reddish outer edge, but in the NexStar, the 12 arc second disk looked only vaguely pinkish at 59x. At 98x with the NPB filter, I could occasionally see flashes of faint red around the edges, but higher powers made the more bluish core region dominate the color of the object. To see the red color well requires a bit more aperture than I had, but at least I caught a few glimpses of it.

I had wanted to check out the faint supernova remnant IC 443 in Gemini for a long time with the NPB filter, as it has always been marginal when I had glimpsed it previously. I slewed the scope to it with the NPB filter in the scope, and was pretty much stunned with what I saw: THERE WAS ACTUALLY SOMETHING THERE!! A very faint ghostly ribbon of nebulosity was seen running roughly northwest to southeast, perhaps no more than 20 to 25 arc minutes long. It was a lot narrower than some of the long-exposure images show it and only slightly curved overall, but with the NPB filter, it was certainly no more difficult than something like the galaxy NGC 891 is in my scope. It kind of reminded me a bit of the Veil as seen through a pair of 20x80 binoculars without a filter. There were hints of filamentary detail visible as well as a bit of an increase in the curvature towards the southern end. With the OIII filter, the contrast increased a bit, but the faintest portions were tough to see, so at 59x at least, the NPB filter seemed to provide the best overall view.

My final sight to see before getting "serious" was the nebulous open cluster NGC 1893/IC410 in Auriga. This group is roughly triangular in shape but is not exactly a rich cluster (maybe 40 to 60 stars total). The faint nebulosity involved with the cluster responds fairly well to narrowband and line filters, so I wanted to see what the NPB would do. I was rather pleasantly surprised. The cluster is embedded in a rich Milky Way background, and in the NexStar at 59x, that background with the NPB filter came out unusually well. The whole area was littered with fine faint stars almost like sugar crystals spread on a dark cloth, with the brighter stars dominating the cluster and acting as "anchors" for the glowing irregular patches of nebulosity that weave their way through the group. The

nebula has a huge dark irregular inclusion from the southwest that is fairly detailed, including a few smaller "lanes" that went through the glow. Indeed, a dark roundish "lump" of dark nebulosity extends right into the group, with two other darker spots next to it. I tried the OIII filter on it, and while the contrast of the nebulosity was somewhat higher, overall, I still liked the view in the NPB a bit better.

I went into a sort of "galaxy marathon" using the NexStar's Go-To ability to survey a large number of galaxies to test comparatively the DGM Optics GCE filter against the Lumicon Deep-Sky. I managed to look at over 30 individual galaxies in a little under two hours, so in this case, the scope's Go-To was worth its weight in gold. I used the Lumicon Multi-filter Selector to do instant comparisons, but for the specific results, I'm afraid you will all just have to wait until the review of the GCE filter is done. For a few cases, the filters did help bring out a bit more contrast at lower powers on some galaxies than without a filter. I noted this especially for M51 and M100, where the spiral structure came out better at 59x with the GCE filter, although increasing the power also seemed to result in an increase in apparent contrast and perhaps somewhat more detail. The filter often seemed to just act as the "trigger" to noticing a bit more detail when it was first brought into play, although once that detail was noted, I could often also still see much of it when I went back to using no filter at all. All in all, it was an interesting experience.

Once I finished with the "work", I pulled out by Burgess Binoviewer and sent the NexStar to Saturn. What I saw at 235x was simply beyond words! The seeing had become PERFECT, with a stunning almost 3-D effect. The rings were razor-sharp, as was Cassini's division and the detail in the bands on the disk of the planet. Adding to the effect was the presence of a number of Saturn's moons in the field, making it look like I was standing on some distant asteroid that happened to be passing near that ringed wonder. I tried 447x, and while the image still was fairly impressive, it lacked some of the clarity and sharpness I had seen at somewhat lower power. I have been waiting a long time for the seeing to finally let me employ the little binoviewer effectively on Saturn, so that view capped off a wonderful night under the late winter sky.

Mars' South Pole Ice Deep and Wide

Pasadena, Calif. -- New measurements of Mars' south polar region indicate extensive frozen water. The polar region contains enough frozen water to cover the whole planet in a liquid layer approximately 11 meters (36 feet) deep. A joint NASA-Italian Space Agency instrument on the European Space Agency's Mars Express spacecraft provided these data.

This new estimate comes from mapping the thickness of the ice. The Mars Express orbiter's radar instrument has made more than 300 virtual slices through layered deposits covering the pole to map the ice. The radar sees through icy layers to the lower boundary, which is as deep as 3.7 kilometers (2.3 miles) below the surface.

"The south polar layered deposits of Mars cover an area bigger than Texas. The amount of water they contain has been estimated before, but never with the level of confidence this radar makes possible," said Jeffrey Plaut of NASA's Jet Propulsion Laboratory, Pasadena Calif. Plaut is co-principal investigator for the radar and lead author of a new report on these findings published in the March 15 online edition of the journal Science.

The instrument, named the Mars Advanced Radar for Subsurface and Ionospheric Sounding (MARSIS), also is mapping the thickness of similar layered deposits at the north pole of Mars.

"Our radar is doing its job extremely well," said Giovanni Picardi, a professor at the University of Rome "La Sapienza," and principal investigator for the instrument.

"MARSIS is showing itself to be a very powerful tool to probe underneath the Martian surface, and it's showing how our team's goals, such as probing the polar layered deposits, are being successfully achieved," Picardi said. "Not only is MARSIS providing us with the first-ever views of Mars subsurface at those depths, but the details we

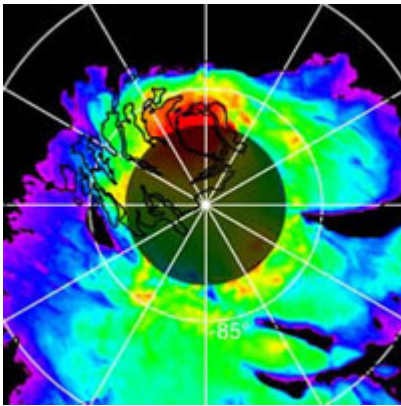
are seeing are truly amazing. We expect even greater results when we have concluded an ongoing, sophisticated fine-tuning of our data processing methods. These should enable us to understand even better the surface and subsurface composition."

Polar layered deposits hold most of the known water on modern Mars, though other areas of the planet appear to have been very wet at times in the past. Understanding the history and fate of water on Mars is a key to studying whether Mars has ever supported life, since all known life depends on liquid water.

The polar layered deposits extend beyond and beneath a polar cap of bright-white frozen carbon dioxide and water at Mars' south pole. Dust darkens many of the layers. However, the strength of the echo that the radar receives from the rocky surface underneath the layered deposits suggests the composition of the layered deposits is at least 90 percent frozen water. One area with an especially bright reflection from the base of the deposits puzzles researchers. It resembles what a thin layer of liquid water might look like to the radar instrument, but the conditions are so cold that the presence of melted water is deemed highly unlikely.

Detecting the shape of the ground surface beneath the ice deposits provides information about even deeper structures of Mars. "We didn't really know where the bottom of the deposit was," Plaut said. "Now we can see that the crust has not been depressed by the weight of the ice as it would be on the Earth. The crust and upper mantle of Mars are stiffer than the Earth's, probably because the interior of Mars is so much colder."

The MARSIS instrument on the European Space Agency's Mars Express orbiter was developed jointly by the Italian Space Agency and NASA, under the scientific supervision of the University of Rome "La Sapienza," in partnership with JPL and the University of Iowa, Iowa City. JPL manages NASA's roles in Mars Express for the NASA Science Mission Directorate, Washington.



This map shows the thickness of the south polar layered deposits of Mars, an ice-rich geologic unit that was probed by the Mars Advanced Radar for Subsurface and Ionospheric Sounding (MARSIS). Image credit: NASA/JPL/ASI/ESA/Univ. of Rome/MOLA Science Team/USGS

Events Calendar

| April 2007 | | | | | | |
|--|--|---|--|--|---|--|
| Sun | Mon | Tue | Wed | Thu | Fri | Sat |
| 1  Sun: 19:11 - 07:50 | 2  Sun: 19:09 - 07:51 | 3  Sun: 19:08 - 07:52 | 4  Sun: 19:06 - 07:53 | 5  Sun: 19:04 - 07:54 | 6  Sun: 19:03 - 07:55 | 7  Sun: 19:01 - 07:56 Hyde Observatory Open to the Public |
| 8  Sun: 18:58 - 07:57 | 9  Sun: 18:56 - 07:58 | 10  Sun: 18:55 - 08:00 Hyde Volunteer Appreciation Night | 11  Sun: 18:53 - 08:01 | 12  Sun: 18:52 - 08:02 | 13  Sun: 18:50 - 08:03 Club Star Party | 14  Sun: 18:48 - 08:04 Hyde Observatory Open to the Public |
| 15  Sun: 18:47 - 08:05 | 16  Sun: 18:45 - 08:06 | 17  Sun: 18:44 - 08:07 | 18  Sun: 18:42 - 08:08 | 19  Sun: 18:41 - 08:09 | 20  Sun: 18:39 - 08:10 | 21  Sun: 18:38 - 08:11 Astronomy Day; Hyde Observatory Open to the Public |
| 22  Sun: 18:36 - 08:12 | 23  Sun: 18:35 - 08:13 | 24  Sun: 18:34 - 08:14 PAG Club Meeting | 25  Sun: 18:32 - 08:15 | 26  Sun: 18:31 - 08:16 | 27  Sun: 18:30 - 08:17 | 28  Sun: 18:28 - 08:18 Hyde Observatory Open to the Public |
| 29  Sun: 18:27 - 08:19 | 30  Sun: 18:26 - 08:21 | | | | | |

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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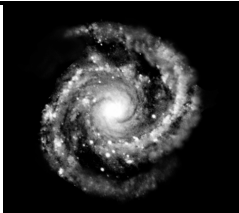
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First Class Mail

**Next PAC Meeting
March. 27, 2007
7:30 PM
Hyde Observatory**

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«ADDRESS2»
«CITY», «STATE» «ZIP»