

The *Prairie Astronomer*

The Official Newsletter Of The Prairie Astronomy Club, Inc.

March 1999

Volume 40 Issue #3

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MEETINGS & EVENTS

PAC MEETING

TUESDAY, MARCH 30, 1999, 7:30 PM
at Hyde Memorial Observatory

NSP PLANNING COMMITTEE MEETING
THURSDAY, APRIL 8, 1999, 7:30 PM
At Mahoney State Park Lodge

CLUB STAR PARTY
FRIDAY, APRIL 9, 1999, Sunset 'till ?
Olive Creek SRA (see Page 12 for directions)

UNL STUDENT OBSERVATORY
FRIDAY, APRIL 16, 1999, 7:00 PM to 10:00 PM
Open to the public

PAC MEETING
TUESDAY, APRIL 27, 1999, 7:30 PM
at Hyde Memorial Observatory

MARCH'S PROGRAM:

Rebecca Lindell Adrian

The program for March will be a video tape of a talk given by Rebecca Lindell Adrian to Hyde Observatory volunteers at their March training session. Rebecca Lindell Adrian is a UNL graduate student currently working at Purdue University. Her talk dealt with common misconceptions among non-science college majors about celestial motions. This topic is very timely and relevant for anyone in science education or public outreach dealing with astronomy. We are showing this video to help us prepare for Astronomy Day, which is coming up in May.

1998 HYDE VOLUNTEERS OF THE YEAR:

Travis Miller and Don Gasparetti were named the 1998 Volunteers of the Year at Hyde Memorial Observatory during the Hyde Volunteer Appreciation Night on February 16. Travis volunteered for 42 Saturdays and Don volunteered for 47. If you would like to volunteer, please see Mark Fairchild, Hyde Volunteer Coordinator.

FALL BANQUET: Larry Hancock, our very own Vice President, is organizing a joint PAC/OAS dinner for Friday, October 8, at Mahoney State Park Lodge. It will be at 7:30 p.m. and a buffet dinner for \$7.00 is planned. He is also planning door prizes and a short program. An observing session is planned after the program. Please contact Larry if you would like to help with this event.

PAC-LIST: Mark Dahmke maintains an e-mail list server for PAC. 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.

ASTRONOMY CLASS AT SCC: Southeast Community College, Lincoln Campus, is offering a *Backyard Astronomy* class this semester. Classes begin Monday, April 5th, for 4 sessions. Tuition is \$39.00 and class is from 7:15 p.m.-10:00 p.m. Mark Fairchild is the instructor. Please contact the college for more information. Their phone number is (402) 437-2700. Mention course number LBX90353.

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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: **Jeff King, 4018 South 83rd Street, Lincoln, NE 68506-5973 or jeffrey892@aol.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

By: Willa Penney

Photos courtesy: Mark Fairchild

Dave Knisely opened the meeting. He reported that the sun continues to be very active. There was a major flare and accompanying northern lights last week; however, it was during the snow storm! Dave said to watch about every 28 days for a similar flare-up.

The next PAC Star Party will be March 12 at Olive Creek State Recreation Area.

Dave reported that the Homestead National Monument in Beatrice is holding a "Stars of the Prairie" night, 7:30 p.m., Friday, March 19. If you can help with this event, please let Dave know, as they need people with scopes. It will be located northeast of the visitors center on Highway 4, in the "Freeman School".

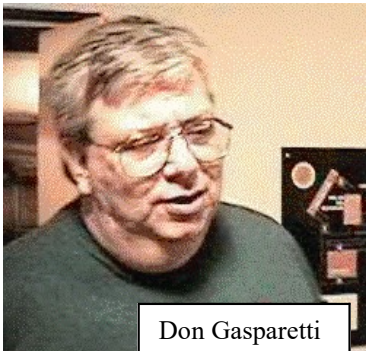
Jack Dunn will be making up a handout about the Cosmosphere trip, April 17-18. He will have a sign-up sheet next month, for those who would like to carpool. He reported that the IMAX films that will be shown that weekend are Alaska and a T-Rex film. Jack will also have info on nearby motels.

Astronomy Day is scheduled for May 15; Jack said that there are lots of sponsors, including radio and TV, signed up. There will be two B-2 pilots on hand, and a model of the B-2 which they will try to get into the lobby. Set-up will begin at 8:30 a.m. There will be a Star Station I model and demonstrations. Two days of activities are planned. Besides an astronaut, the Air Force Association is attempting to get at least one Tuskegee Airman (WWII black aviators). Friday activities at the Air Guard will be for school students; they are expecting about 3,000 students and teachers. The "Bear in the Air" refueling squadron, which communicates back to the schools, will be represented.

A Friday night reception at UNL with the astronaut and other guests will not be open to the public; however, OAS and PAC members will be invited.

Dave complimented Jeff King on the good job that he is doing with the newsletter; please submit articles for the newsletter to Jeff.

Dave also complimented Mark Dahmke for the great job in creating and updating our web site.



Don Gasparetti

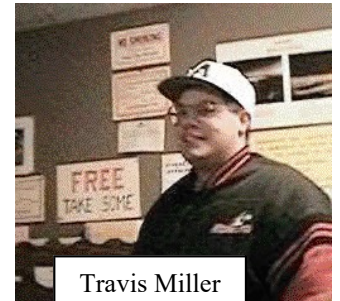
Larry reported that there are still a few club T-shirts left.

The NSP committee can always use more help. Tom Miller will be glad to register you for the event. Dave reminded everyone that you need to get motel reservations soon!

Mark Fairchild, the Hyde volunteer coordinator, handed out sign-up sheets. He will be holding a training session for volunteers.

The Hyde Volunteer Appreciation Night was held February 16. There were 27 different people who volunteered last year; 23 were at the dinner. The 1998

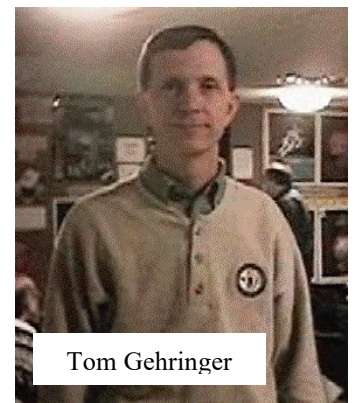
Volunteers of the Year were Don Gasparetti and Travis Miller.



Travis Miller

Larry is organizing a joint PAC/OAS dinner on Friday, October 8, at Mahoney State Park Lodge. It will be at 7:30 p.m. and feature a buffet dinner for \$7.00. He is planning door prizes and a short program. We will either have later viewing at the Park or set up a star party at Weeping Water. Please let Larry know if you would like to help with this event.

Mark Fairchild introduced our speaker, Tom Gehringer from Omaha Burke High School. Tom is also the Vice-President of the Omaha Astronomical Society. Tom told about the many projects that his Astronomy class is involved in. Wouldn't it have been great to have had the same opportunities when we were in school!!!



Tom Gehringer

Deep-Sky Observations



DS031899

DEEP-SKY OBSERVATIONS

by David Knisely

DATE: March 18th, 1999, 0300 to 0600 hrs UTC.

LOCATION: Rockford Lake, Nebr. 40.227N, 96.581W, 1400 ft. elevation.

INSTRUMENT: 10 inch f/5.6 Newtonian, 47x, 59x, 94x, 141x, 220x, 282x, 310x

CONDITIONS: Clear, Temp. 35 deg. F. Wind N. at 5 mph.

UNAIDED EYE LIMITING MAGNITUDE: +6.6

SEEING: 0.8 arcseconds (variable).

OBSERVATIONS: With a beautifully clear sky mocking the weather forecasters, I once again headed out into the country to continue some Herschel II object hunting, after having a very successful session on the morning of the 15th.

Rather than persuing things like Messier marathons, I prefer to take the more scenic routes, stopping to "smell the roses" and eek out every last photon from my scope at a variety of powers to pick up the faint Deep-Sky details.

Some discussions on sci.astro.amateur made me want to revisit previously observed objects recently mentioned on that newsgroup. My first target was "Thor's Helmet", NGC 2359 in Canis Major. Even without a filter, this object was fairly obvious, appearing as a large diffuse oval area of nebulosity elongated slightly north-south, with a bar-like band on its southern end which projected to the west. With the UHC filter, the object changed appearance, becoming a well defined annular structure with a brighter spot near the north side and several faint tendrils off the ends. The bar became a longer broad filament-like structure extending to the southwest, with a second fainter one extending to the east from the northern end of the main oval. The eastern sides also showed hints of at least one more filament extending to the northeast. With the OIII filter, the annular portion of the nebula gained considerable contrast, showing at least two narrow arc-like segments on one side and a darker center.

After this little diversion, I went back to observing galaxies. One person had asked about the galaxies near M101, so I went back and re-observed two of them. NGC 5474 lay south of M101, and looked somewhat different than I had recorded it many years ago when I was going for my first Herschel award. At low power, it looked like it was probably a spiral, appearing as a moderate to small diffuse fuzzy disk. It did seem like the north end was somewhat brighter than the rest of the galaxy, so I increased the power to 141x for a closer look. What I found was suprising to say the least. The north edge is where the nucleus is! The galaxy has an roughly circular brighter nuclear spot which is sitting near the north edge of the galaxy! 220x confirmed that there is a very faint star or star-like nucleus near the middle of this off-center nuclear core region, so things are definitely a little skewed with this object. There is a darker arc just south of this roughly circular spot, followed by a broad slightly brighter arc-like band, which presumably is the

main segment of spiral arms. The whole thing looks like an Sb or Sc spiral with the north half the galaxy missing! Later, I looked the darn thing up on the DSS image, and sure enough, it looks like the north side of this galaxy is rather stunted (maybe somebody forgot to finish it? :-). I think a name like "THE PIE-SLICE GALAXY" might be a good one for NGC 5754! I also looked up the little bright elliptical galaxy NGC 4573 nearby, and found it has a very small bright core. I guess a person would do well to revisit objects several times after first locating them.

After this little diversion, I decided to check out the galaxy cluster Abell 1060 in Hydra. It was not very difficult to locate, as its center sits between two fairly bright stars. It is fairly rich, although none of the galaxies is very large or bright. At 59x, only the four brightest central members were easily seen (NGC's 3511, 3512, 3509, and 3308). However, 94x and 141x revealed quite a number of objects within 30 arc minutes of the center of the cluster. The brightest galaxy in the group is NGC 3511, an 11th magnitude elliptical with small core and extensive diffuse outer haze. Just to its west is the slightly smaller but a bit more noticable elliptical galaxy NGC 3509, and to its southeast is the tilted spiral NGC 3512. NGC 3512 is probably the second largest galaxy in the group but is faint, showing a small slightly brighter core with elongated outer haze (north to south). To the northwest of NGC 3309 was the similar sized NGC 3308. Both were merely rather faint fuzzy spots with little detail other than shape. I also picked up ESO501-49 and NGC 3316 to the east of the tilted spiral NGC 3512. Both were tiny and faint. To the south, NGC 3314A was a small cigar shaped faint fuzzy patch, while to its immediate north was the nearly stellar NGC 3314B. To the north of the cluster center, I picked up more faint galaxies, including NGC 3305, NGC 3315, IC 2597, and the very faint Hickson48B. A few others were glimpsed, but with time pressing and my Herschel II search awaiting, I went on to other things.

In Leo, I observed NGC 3338, a faint elongated fuzzy patch with a small brighter core and hints of spiral structure at high power, consisting of dim curved patches east and west of the nucleus. NGC 3359 in Ursa Major was a "near" winner, showing a faint curved central bar, small oval core,

and hints of the arms off each end of the faint bar. Indeed, 220x made it look a bit like the letter "S". In Leo Minor, I
Continued on Page 4

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found a small group of interesting galaxies. NGC 3430 was a small oval fuzzy patch with a small brighter core, but 141x once again revealed a small nucleus and mottled outer haze. Nearby was the small faint cigar-shaped NGC 3424, which also showed a few brightness variations along its length. NGC 3413's tiny faint fuzz spot was also visible to the southwest of NGC 3424. Well to the west was a nice pair of interacting galaxies NGC 3395-6. These two sat almost on top of each other, reminding me of the "Siamese Twins" pair of galaxies. Neither showed much detail, but together they made an interesting sight. I located the pair NGC's 3507 and 3501, but they showed little detail. In fact, NGC 3507 has a rather annoying bright star just barely off of its center, making viewing that galaxy rather difficult.

As I approached the end of my night, I continued my Herschel hunting in Crater with the pair of galaxies NGC 3511 and 3513. NGC 3511 showed up at 59x as a moderate-sized elongated fuzzy patch with low surface brightness, but at 141x, it just exploded in mottled detail. It had a small brighter middle, but most of the outer haze showed patchy detail. A faint star on the face of the galaxy just east of its center made observations a little harder. NGC 3513 was smaller and fainter, just showing up as a roughly round fuzzy spot with a small slightly brighter core and irregular outer haze.

To end my night, I went back into the Realm of the Galaxies to study the Markarian Chain at higher power. Many of the galaxies showed brighter almost star-like nuclei which I had not noticed before, showing the value of kicking the power up a little. M88 showed hints of its spiral structure at only 59x, but showed the arms more clearly at 141x. M64 was wonderful as well, with its smooth outer spiral form being hinted at especially on its western side at 94x. 141x and 220x showed its tiny dark "black-eye" arc hugging the north side of the nucleus. As it approached local midnight, I decided that rather than kill my night vision so I could change the station on my van's radio (Art Bell was about to come on with his pseudoscience and paranoia), I would just call it a night and be satisfied with all that I had been privileged to see in three good hours of observing. Clear skies to you.

Day Time

April Celestial Events

PAC's Cosmosphere Trip Information



COSMOSPHERE
KANSAS COSMOSPHERE
AND SPACE CENTER

Programs:

T-REX BACK TO THE CRETACEOUS: What did dinosaurs really look like? How did they become extinct? Travel back in time with 16-year-old Ally Hayden on a remarkable pre-historic adventure as she is magically transported back 65 million years to the Cretaceous period when pterodactyls soared through the skies and footsteps of mammoth reptiles rumbled through mist-shrouded valleys.

Monday - Friday: 1, 3 and 7 pm

Saturday: 11 am, 1, 3, 5 and 7 pm

Sunday: 1, 3, 5 and 7 pm

Schedule is valid through May 27, 1999

Alaska: Fish with brown bears, dodge crashing glaciers and watch as the aurora borealis curls and flows above the Alaska horizon in the Academy Award nominated film narrated by Charlton Heston.

Monday - Friday: 2, 4 and 8 pm

Saturday: noon, 2, 4 and 8 pm

Sunday: 2, 4 and 8 pm

Schedule is valid through May 27, 1999

IMAX® DOME ADMISSION

Adults: \$5.50 Senior Citizens: \$5.00 Children: 12 and under \$4.50

316.662.2305 or 800.397.0330

Open:

9:00 am to 9:00 pm Monday - Saturday

noon to 9:00 pm Sunday

11th and Plum, Hutchinson, KS

Lake Afton Observatory Information

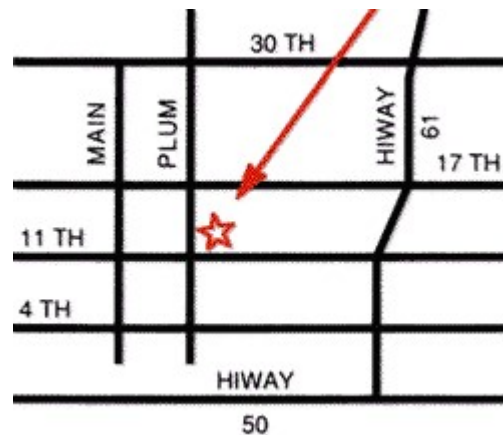
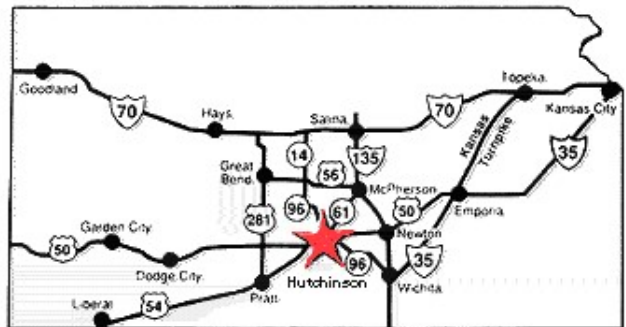
April 9-10, 16-17

In April the Observatory is open Friday and Saturday evenings from 8:30 - 10:30 p.m.

Admission:

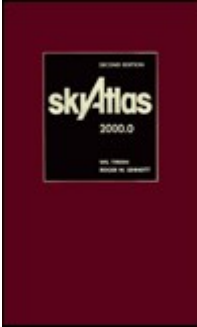
- \$2.00 \$1.00 ages 6 - 12
- Under six admitted free

Directions:



SKY ATLAS 2000.0

Deluxe Version, 2nd Edition
Wil Tirion and Roger W. Sinnott
c.1999, Sky Publishing
\$49.95



Review by Dave Krisely

Ever since 1981, when it supplanted Becvar's ATLAS OF THE HEAVENS 1950, SKY ATLAS 2000.0 has been truly one of the "standard" wide-field atlases for the amateur astronomer interested in locating and observing deep-sky objects. However, even with its expanded list of objects, better plotting, and fainter limiting magnitude, there was still some room for improvement in the work. I am pleased to say that those improvements have indeed been made with the 2nd edition of SKY ATLAS 2000.0. Although not pushing into the extreme reaches of the deep-sky covered by the narrower-field atlases like Uranometria or the Millennium Star Atlas, this new version is a well-crafted intermediate work which has plenty to offer. The old features have been beefed up and a few new ones have been added, which once again should set this new edition among the best sources of charting information for the amateur.

The new Deluxe version is an attractive 31 page bound publication, with a flexible Lexan cover over front and back. It is slightly larger in scale than the old first edition, with pages being 21.5" x 16.5", rather than the older 20.5" x 15.5". Like the original edition, this one has spiral-bound charts which fold out from about half size to their full length, so laminating is probably somewhat impractical. The paper is a rather smooth grade of very white material which may be a little more difficult for those attempting to turn the pages with gloves on. The chart scale is about 8.2 millimeters per degree on the sky, compared to the 7.8mm/deg. of the original version (and the field and desk versions of the new edition), although the areas of sky covered by each chart remain about the same in both editions. In addition to the 26 main skycharts covering the entire celestial sphere, two appendix charts ("A" and "B"), have been added for expanded-scale (2.5x) coverage of seven specialized regions; the North and South Celestial Poles, Barnard's Star and Promixia Centauri, the Pleiades, the central part of the Virgo Galaxy Cluster, and the central portion of Orion. The magnitude limit for the Second Edition's main 26 charts is now 8.5, meaning that, counting multiple and variable stars, this atlas has 81,312 stars (compared with only 43,000 in the first edition). The appendix larger-scale charts have a magnitude limit of 10.5 and a scale which makes navigating in the "Realm of the Galaxies" a good deal easier. The wider-scale chart key (showing the areas of chart coverage and all stars to 5th magnitude), as well as the new more comprehensive index (containing constellations, the named

stars, and even the Messier Objects), make locating the chart of interest quite easy.

One major improvement is in the way the stars are depicted. The new version has taken advantage of new more accurate databases and computer graphics to allow a continuous range of star-dot sizes to depict each star brightness level, rather than the old 1-magnitude star binning which irritated some observers. This makes a very noticeable difference over the old version, as the charts now seem cleaner, with a less "busy" and much more natural or realistic starfield. Indeed, directly comparing the new edition with the old makes the first edition often look a little crude! Any small differences in magnitude between neighboring stars are now much easier to see, making star-patterns much closer to their appearance as seen on the sky. In some areas, the fainter stars no longer tend to dominate some fields, as they actually "look" fainter, lessening the confusion between star patterns. The printing and object labels are from 10 to 20 percent larger, and are easier to read in dim light (the Deluxe Edition uses black stars on a white background, which is often best for field use). The Milky-Way is now plotted with four brightness-level "isophotes" of differing shades of blue, making the depiction correspond closer to reality. Dark Nebulae are plotted as white with a dotted outline, and many are labeled with their Barnard designations or proper names. Objects with sizes greater than 10 arc minutes are shown to scale, with nebulae outlined in shape and all galaxies shown with the correct aspect ratio and position angle. The standard DSO symbols used in the first edition are still used in the second (circles for clusters and planetaries, boxes or outlines for nebulae, and ovals for galaxies). For the really small objects, the slightly smaller symbol size, while more realistic, does tend to make some of the galaxies a bit less noticeable. Nebulae outlines are filled in green, clusters in yellow, and galaxies in red. One nice feature is the on-chart printing of the names of 192 "named" stars, as opposed to the mere 28 named on the old edition. The common names of a number of deep-sky objects (ie: Barnard's Loop, The California Nebula, Hubble's Variable Nebula, The Great Orion Nebula, etc.), are also printed on the new charts. The catalogs for the various DSO's have also been expanded to include 23 different label designations.

The charts plot about 2700 of the more prominent deep-sky objects (open and globular clusters, diffuse nebulae (light and dark), planetary nebulae, and galaxies), as compared with only 2500 in the first edition. The authors thought a modest increase in the number of objects would be best. I agree with this judgement, considering many amateurs might be using the new version for their initial forays into the realm of the Deep-sky. Too many objects would tend to make the atlas too cluttered for easy use, increasing the confusion and needlessly duplicating the efforts of the deeper atlases like Uranometria. The list of objects plotted has been reviewed and revised using more current data, so a few of the faintest objects which were on the old edition have been eliminated from the new one. The limits on object coverage are now more codified, as the old version had some notable

Continued on Page 7

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inconsistencies in which objects were plotted and which were not. The 2nd Edition plots open clusters with total integrated magnitudes of 8.5 or brighter, globulars to 11.0, galaxies with a blue-light magnitude to 13.0, and Planetary Nebulae to a blue light magnitude of 14.0. The variable stars which are plotted have also been limited to those with a maximum magnitude of 8.5 and which have a range of 0.5 magnitudes or larger (past historic Novae and Supernovae which have risen to 6th magnitude or brighter are also shown). Some people may miss things like constellation lines, but I feel that they only add to the clutter (besides, on the *real* sky, they aren't really there).

Those engaged in the Messier and Herschel 400 observing programs should find the Second Edition of the Deluxe version a welcome addition to their observing arsenal. The atlas comes with a new slightly thicker clear plastic celestial grid overlay marked to 10 arc minutes in declination and one minute of Right Ascension at the Celestial equator (it even includes the circles of the Telrad reticle!). This will allow the user to determine the location of objects by their celestial coordinates alone. I particularly enjoyed seeing things plotted like the Medusa Nebula and "the Fingers" nebula (Sh-2-157) on the new version, as both were missing from the first edition. Even a number of the objects on the Herschel II list made it into the Atlas, although for that more challenging observing project, it would still be better to have something like Uranometria on hand for the fainter ones.

So, how does this atlas work in the field under a dim red light? Pretty well, actually. The continuous star dot sizes made for a much better comparison to the patterns I saw visually on the night sky, and the Telrad reticle on the plastic overlay was a really nice addition. The larger labels were easier to read than in the first edition, and the Milky-Way isophotes still showed their intensity variations and boundaries. The borders of the constellations were a bit harder to see (fine dotted lines instead of the more coarse dashed ones of the old edition), but otherwise, most of the features plotted were quite viewable under my red LED flashlight. In particular, the dark nebulae (plotted in white) stood out like sore thumbs! The bright nebulae depictions also stood out well under the red light, and even the tiny ovals of the galaxies were clearly filled with darker red color even under the LED light. The smooth paper of the pages was almost glossy in feel, making it necessary to take my

gloves off to open the charts sometimes, but I am uncertain as to how dew will affect this new surface. I usually keep my books and atlases in the open back of my minivan when observing, so dew is never really much of a problem. As with most atlases used at night, I do recommend a large-scale magnifier, possibly with internal illumination, to help prevent eyestrain.

On the whole, I find the new Second Edition of SKY ATLAS 2000.0 Deluxe to be a work of high quality and usability, which will easily serve the needs of many amateur astronomers for years to come.

AAVSO Alert Notice

Submitted by Dave Hamilton

AAVSO ALERT NOTICE 255 (February 25, 1999)

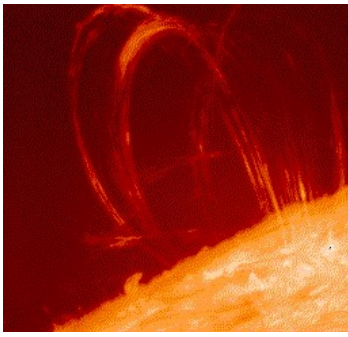
OUTBURST OF THE RECURRENT NOVA 1616-17 U SCORPII

We have been informed by Patrick Schmeer, Bischmisheim, Germany, that the recurrent nova U Scorpii has gone into outburst at visual magnitude 9.5 on February 25.194 UT. Visual confirmation was obtained by Lance Shaw, Pinole, California, at magnitude 7.6 on Feb 25.5625, and by Michael Mattiazzo, Wallaroo, South Australia, at magnitude 8.0 on Feb 25.625. This outburst has also been reported by the Central Bureau for Astronomical Telegrams in IAU Circular 7113. Other outbursts of U Sco have occurred in 1863, 1906, 1936, 1979 (see AAVSO Alert Notice 31), and 1987 (see AAVSO Alert Notice 93). In the 1979 outburst, U Sco, which is V magnitude 17.9 at minimum, was reported in outburst on June 24 at visual magnitude 9.4 and faded to <13.6 by July 4. In 1987, U Sco was reported in outburst on May 15 at visual magnitude 10.8 and faded to <15.0 by May 29; it is believed that the beginning of this outburst may not have been observed. U Sco is also an eclipsing binary. The ephemeris for eclipses given by B. Schaefer and F. Ringwald in *Astrophys. Journ.* 447, L45 (1995) is: Min HJD = 2447717.6061 + 1.2305631 E ñ0.0032 ñ0.0000030



WIRE Mission Out of Gas

NASA announced that the Wide Field Infrared Explorer (WIRE) will be unable to complete its scientific mission, which was intended to last four months. Although the \$46 million satellite was successfully launched on March 4th, shortly thereafter it began to spin out of control. Engineers believe that the telescope's cover opened too soon allowing sunlight to warm a container of solid hydrogen that was to cool the spacecraft's instruments to a few degrees above absolute zero. Escaping gas caused the satellite to spin at more than one revolution per second. Controllers are attempting to bridle WIRE so they can perform a full analysis of what happened.



H-alpha SOLAR ACTIVITY REPORT

SR030999

March 9th, 1999, at 2100 UTC
from Beatrice, Nebr. USA (40.29N, 96.75W)
by David Knisely

DISCLAIMER: This report is intended only to give readers a rough idea of what is happening on the sun in H-alpha. The directions noted in the report are relative to the sky and NOT to the actual solar coordinates (ie: north is towards the North Celestial Pole and not to the true solar north pole). West is also termed "preceeding", while east will be sometimes be termed "following". For accurate solar coordinates and group numbers of the features described here, check out the Space Environment Center home page: <http://www.sel.noaa.gov/> for images and further information.

For additional information about amateur observation of the sun in H-alpha, read the article: OBSERVING THE SUN IN H-ALPHA, by David W. Knisely, on the website of the Prairie Astronomy Club: <http://www.4w.com/pac>

INSTRUMENT: 10" f/5.6 Newtonian (stopped to 3.5" and barlowed to f/32) with DayStar T-Scanner 0.7 Angstrom H-alpha filter (104x, 150x).

CONDITIONS: Partly Cloudy (high haze), Temp. 38 deg. F. Wind calm.

SEEING: 0.8 to 1.3 arc seconds (fairly steady).

TOTAL NUMBER OF SPOTS SEEN: 33 in 4 active regions.

LIMB DESCRIPTION: Little large limb activity was noted today. The southwest limb had a dim moderate-sized plume-like quiescent without a firm connection to the surface. Slightly farther south from this were two or three small flame or fan-like quiescents. The east-southeastern limb had what appeared to be a floating arch with a dim or missing center, and the northeastern limb showed a series of small prominences which may have been part of a low broken hedgerow. On the west-northwestern limb was a low but fairly bright prominences which looked like a truncated flame. The spicule fringe was resolvable into some of the larger individual spicules during moments of excellent seeing.

DISK DESCRIPTION: Very few Quiescent filaments were noted on disk. A long but very faint and broken series of puffs were noted in the western half of the northern polar crown region (possibly part of one prominence structure), and a few others in a line were seen in the southern polar regions. Four active regions containing sunspots were noted on the disk.

FIRST ACTIVE REGION: Located in the southwestern solar quadrant approaching the limb area, this group appeared to be a small bipolar cluster. The leader was small with rudimentary penumbra, and was preceded by a small brush-like filament which extended to the west. The leader was followed by a pair of somewhat smaller spots with a few satellite umbrae. Some plage was noted around the trailing portion of this group, along with a small filament which ran through the area and to the east in a short slightly curved arc. The leading spot appeared to have a faint ring of plage or moat around it.

SECOND ACTIVE REGION: This sunspot group immediately trailed the first active region and was also in the southwestern solar quadrant closer to the solar meridian.

It appeared to be an inverted group, with smaller leading spots, an irregular curved central arc of broken spots, and a large trailing spot with a well-developed umbra and irregular penumbra containing a moderate-sized satellite umbra in its southern half. Very bright plage was noted in the leading half of the group, with 3 or 4 dark arch filaments running from the leading spots to the central cluster. It appears that the leading cluster is the anchor of an emerging flux region. The large dominant trailing spot also had some plage around it, and had a small patch of plage with a single arch filament inside it just to the east of the large spot.

THIRD ACTIVE REGION: This group was seen near the northeastern solar limb, and also appeared to be inverted, with smaller leading spots and a large trailing spot dominating the back half. The two leading spots appeared to be somewhat broken, with brilliant following plage and a few arch filaments. The middle of the group also contained a couple of small spots. Several very bright Ellerman bombs were noted in the middle of this group, and the plage achieved near-flare brightness several times in the space of a few minutes. The large trailing spot was a single umbra with irregular penumbra and a couple of umbrae touching it on one side. Well off the main axis of the group to the southeast was a single lone spot of small size with either rudimentary or no penumbra. A large but narrow sinuous filament was also seen to the north of this group.

FOURTH ACTIVE REGION: Located just inside the east limb just south of the east-west line, this group appeared to be a small but rather tilted bipolar group, with a larger leader and a slightly smaller trailer, both with penumbrae. Some plage was noted in this group in a lane between the spots which seemed to be connected to a ring of plage around the leader.



New Ballpark Lighting Proposed

By Erik Hubl

recreational lighting they would like to install at the Holmes Park softball diamonds.

Steve Hiller and Lynn Johnson from Parks & Recreation and Ken Fairchild from Olsson Associates explained their vision for improving the quality of lighting on the playing surface while at the same time being cautious about any adverse effects stray light would have on the observatory.

The proposal adheres to the regulations that Carroll Moore and Erik Hubl helped create and that was eventually adopted as Recreational Lighting Policy. Ken Fairchild was also on the Mayor's Task force in 1994 and as lighting engineer for this project, he is determined to make it work under the specifications called out in the lighting ordinance.

The new lights will be installed on poles that are higher than the existing poles in order to get the proper angle down onto the playing surface. There will be more poles than are presently in place. No portion of the light filament will cast out above an 80% cut off angle as measured from nadir (the opposite of zenith). The playing surface will have a more uniform lighting pattern and will most likely appear brighter.

April Planetary Events

There is some concern about reflected light from the surface, but our studies in 1994 showed this to be minimal especially when compared with direct uplight from a source.

Ken has taken light readings with the existing lights turned on. He selected several dozen locations away from the playing surface. This was done to establish a base-line observation to compare when the new lights are installed. At our request, he agreed to also occupy those same locations when the lights are off in order to get a 'dark-sky' reading. After the new lights are installed we will have 3 sets of numbers to know what it is like when the lights are off, what the existing lights produce, and what the new lights will produce. These are all readings off and away from the surface and will show us how much light trespass occurs in the area. The lighting ordinance clearly states how much light can stray from a source.

The Parks Department has also asked the Hyde Board of Supervisors permission to use the lobby area of the observatory at some future point. They would like to invite the area neighbors, business owners and interested public for an open house meeting on the project. The supervisors felt this would be a good idea to help get the word out, and to help us in our task to raise awareness of lighting concerns. We are pleased that both Parks & Recreation and Olsson Associates have sought us out in the planning stages and have involved us in this project. Projected completion would be later this fall, after the playing season is over.

by Martin Ratcliffe and Alister Ling

A dazzling array of planets is on view during April evenings with Venus, Saturn, and Mars dominating the sky. Add to this trio one of the year's regular meteor showers and a fine occultation of Aldebaran by the moon and you've got an exciting spring for observers.

Start your evening with the ringed planet. Because Saturn is in conjunction with the sun on April 27, it sets early and by mid-month is lost in the solar glare.

Venus remains the brightest planet in the sky. It stands high above Saturn early in the evening. These two objects had a dramatic conjunction last month. On April 11, Venus meets another beautiful object as it passes less than 3° south of the Pleiades (M45) star cluster in Taurus. This event provides a spectacular opportunity for astro-imagers to fire off a roll of color film. For the best results, vary the exposures from 5 to 30 seconds.

On April 18 a slender crescent moon crosses the Hyades just south of Venus, creating another wonderful photographic opportunity. The moon also occults Aldebaran shortly after 9 p.m. CST for most observers in the northwestern and north-central regions of the United States.

During the month, Venus continues moving north of the Hyades and lies 7° north of Aldebaran on April 21. Through a telescope, Venus exhibits a shrinking phase -- changing from an illumination of 80 percent to 69 percent over the course of the month. Its apparent diameter, although growing in size as Venus and Earth move closer to one another, remains tiny and only reaches 16" by April 30.

Mars is at its best this month. The Red Planet rises in the east two hours after sunset and shines at a brilliant magnitude -1.1 on April 1. On April 24, Mars reaches opposition (opposite the sun in our sky) and will rise as the sun sets. By midnight the Red Planet is high in the southern sky and wandering through the stars in the constellation Virgo the Maiden.

Mars shines at a bright -1.7 magnitude at opposition, brighter than the star Sirius. Its red color is unmistakable in the evening sky. Watch Mars nightly as it wanders westward in its retrograde path against the stars of Virgo.

At this opposition, Mars will be within 54 million miles of Earth. The closest Mars can approach is 35 million miles. The next time such a close opposition happens will be in 2003.

As Mars and Earth move closer to one another, the Red Planet's tiny disk grows in apparent size -- from 14" on April 1 to 16" at opposition on April 24 (similar in apparent size to Venus on that same date). While this is large by martian standards, it represents a tiny disk through any telescope.

Found at: www.stic.net/users/merlin/humor.htm

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Chip Off The Moon

By: Jeff Hecht

A chunk of rock some 50 metres across has been found circling the Sun in an orbit close to Earth's. The object, which was discovered on 10 February by an automated asteroid-hunting telescope in New Mexico called Linear, is probably a chip off the Moon, say astronomers.

After six nights of observations, Gareth Williams of the Harvard-Smithsonian Center for Astrophysics in Cambridge, Massachusetts, calculated that it circles the Sun every 1.09 years. Its nearly circular orbit is just nine million kilometres farther from the Sun than the Earth's.

The object's orbit is extremely unusual. Comets and asteroids that cross the Earth's orbit normally have eccentric orbits. There is only one asteroid-like object, called 1991 VG, that has a similar orbit to that of the Earth. When it was discovered, eight years ago, astronomers thought it might be a spacecraft that had escaped the Earth's gravity.

The new object, designated 1999 CG9, is considerably brighter than 1991 VG, indicating that it is much larger. Brian Marsden of Harvard-Smithsonian estimates it to be between 30 and 50 metres across, too big to be the final stage of a rocket. "The most likely explanation is that it's a chip off the Moon," he says.

Although the Moon is small, its low gravity makes it easy to blast debris into orbit. "We have seen there are chips off the Moon," says Marsden. "Twelve small lunar meteorites have been found on the Earth."

"If you can shoot things off the Moon, they would continue to go around the Sun in an orbit not too different from the Moon," Marsden adds. So far, astronomers do not know the object's composition, which could cast light on its origins. However, the astronomers hope to analyse the rock's spectrum to see how it compares with that of the Moon.



THE PRAIRIE ASTRONOMY CLUB CALENDAR

For April 1999

Sun

Mon





Tue

Wed

Thu

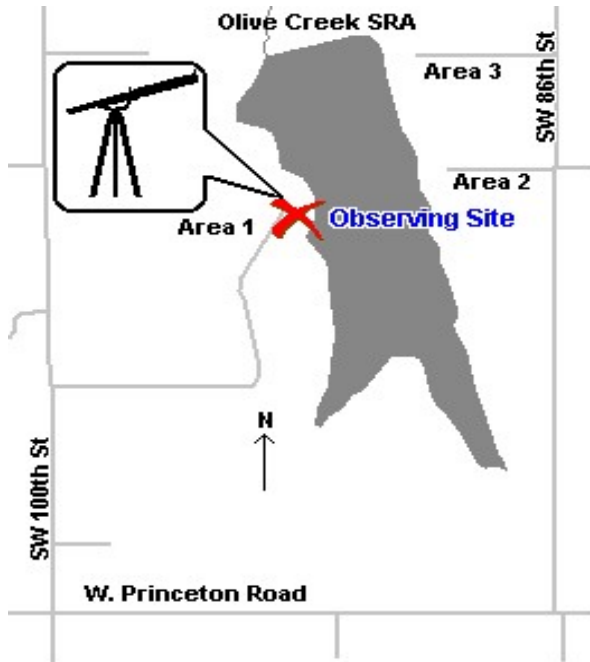
Fri

Sat

<p>The Lyrids are typically visible between April 16 and 25. Maximum occurs during April 21-22 (Solar Longitude=32.1 deg), from an average radiant of RA=272 deg, DECL=+33 deg. Although the maximum ZHR is about 10, there have been instances during the last 200 years when rates were near or over 100 per hour. The average magnitude of the meteors is near 2.4 and the speed is described as rapid. About 15% of the meteors leave persistent trains.</p>				1	2 OAS Meeting	3 Hyde Observatory open to the public sunset-11 PM
4	5	6	7	8 NSP Planning Meeting 7:30 PM 3 RD QUARTER 	9 Observing at Olive Creek SRA	10 Hyde Observatory open to the public sunset-11 PM
11	12	13	14	15 NEW MOON 	16 Constellation Program @ Pioneers Park	17 Hyde Observatory open to the public sunset-11 PM Club trip to the Kansas Cosmospere
18 Club trip to the Kansas Cosmospere Aldebaran occultation this evening	19	20	21 Lyrid Meteor Peak Eta Aquarids Meteor Shower begins	22 1 ST QUARTER  Lyrid Meteor Peak	23	24 Hyde Observatory open to the public sunset-11 PM
25	26	27 PAC Meeting 7:30 PM Hyde Observatory	28	29	30 FULL MOON 	<u>1999 MAHONEY STAR PARTY</u> DATES: FRIDAY, MAY 21 FRIDAY, JUNE 18 FRIDAY, JULY 16 FRIDAY, SEPT 10 FRIDAY, OCT 8

DIRECTIONS TO OLIVE CREEK SRA

From Lincoln, take Hwy 77 south to Hwy 33. Take Hwy 33 west (toward Crete) for 9 miles to SW 114th St. Take SW 114th Street south 4 miles (almost to Kramer). Go east 1 mile on W. Panama Rd, then south 1.5 miles on SW 100th. We set up in area 1 on the west side of the lake.



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First Class Mail

Next PAC Meeting
March 30, 1999
7:30 PM
Hyde Observatory

NSP 6 Countdown
Less Than 120 days
August 7-14, 1999
Merritt Reservoir