



The *Prairie Astronomer*

The Official Newsletter Of The Prairie Astronomy Club, Inc.

January 2000

Volume 41 Issue #1

Internet Addresses:

PAC Web Page: www.4w.com/pac/
 PAC E-Mail: pac@4w.com
 NSP Web Page: www.4w.com/nsp/
 NSP E-Mail: nsp@4w.com
 OAS Web Page: www.OmahaAstro.com
 Astronomy in NE: www.blackstarpress.com/ar/in/
 Hyde Observatory: www.blackstarpress.com/ar/in/hyde/

JANUARY'S PROGRAM:

No program has been announced at the time of publication. For last minute updates, be sure to visit the club web site listed to the left.

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.

GETTING TO KNOW OUR CLUB OFFICERS: This issue includes an article on our club Program Chair, Mr. Mark Fairchild. To learn more about Mark, read the article on page 6.

CLUB SURVEY FORM: Be sure to fill out and hand in your club survey sheet before or at the next club meeting. As soon as we get a majority amount of them handed in, we'll have a drawing for a door prize. At present, only 5 people have completed the forms. It has been reprinted in this issue.

NSP 7 SPEAKERS NEEDED: Dave Hamilton is still looking for 2 more speakers for NSP7. The speakers are on Friday at the Valentine high school. A speaker gets their registration paid, an NSP6 t-shirt and a \$75 honorarium (thank you check).



MEETINGS & EVENTS

PAC MEETING

TUESDAY, JANUARY 25, 2000, 7:30 PM
at Hyde Memorial Observatory

CLUB STAR PARTY

FRIDAY, FEBRUARY 4, 2000
OAS Observing Site
(see map on back page)

NSP 7 PLANNING MEETING

THURSDAY, FEBRUARY 10, 2000
Mahoney State Park

UNL STUDENT OBSERVATORY OPEN HOUSE

FRIDAY, FEBRUARY 11, 2000
Mahoney State Park

HYDE VOLUNTEER MEETING

SUNDAY, FEBRUARY 13, 2000, 7:00 P.M.
At Hyde Memorial Observatory

PAC YOUTH GROUP MEETING

SUNDAY, FEBRUARY 13, 2000, 7:00 P.M.
At Hyde Memorial Observatory

PAC MEETING

TUESDAY, FEBRUARY 29, 2000, 7:30 PM
at Hyde Memorial Observatory

CONTENTS:

| | |
|---|----------|
| Secretary's Report - By Willa Penney | Page 2 |
| SETI@home - Searching For ET on Your Home Computer | Page 3/4 |
| Billboard Update and Astronomy News | Page 5 |
| Getting To Know Your PAC Officers - By Jeff King | Page 6 |
| Telescope Making marathon Part IV - By Martin Gaskell | Page 7 |
| Club Survey | Page 8 |
| PAC Calendar | Page 9 |
| OAS Viewing Site Directions and List of Club Officers | Page 10 |

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

Prairie Astronomy Club
December 28, 1999

President Dave Knisely called the meeting to order. There were no guests. Dave reported that the sun continues to be very active with many solar flares.

Erik Hubl handed out information about the billboard ordinance status. He urged everyone to write or call their Council Representative before the final vote is taken on January 10. The ordinance would apply only to new billboards, not to existing ones unless they were being renovated.

The next Nebraska Star Party planning meeting will be January 13 at Mahoney State Park Lodge. Anyone is welcome to attend and help with the planning. Flyers for NSP are being mailed.

The next Club Star Party will be January 7 at the OAS site. The total lunar eclipse will be Thursday, January 20-Friday January 21. Totality will be at 10:05 p.m. January 20. Hyde will be open that evening.

Mark Fairchild, Hyde Volunteer Coordinator, noted that the next Hyde Youth and Hyde Volunteer meeting is Sunday, January 9 at 7:30 p.m.

Mark also reported on a statewide group being organized. The ARIN website has a link to every observatory in the state. A new club, Platte Valley Astronomical Observers, is being formed. They will meet at Crane Meadows Nature Center.

Mark Dahmke stated that the buyers guide on the club website has been updated.

Erik handed out the copies of the Ottewell Astronomical Calendar and the RASC handbook. He does not have any extras.

Larry Hancock asked for interest in ordering club shirts, hats, jackets, etc. Minimum order amount is one dozen.

Please turn in the survey that has been in the past two newsletters. Mark Fairchild said that, so far, the most interest has been in using telescopes and binoculars and in deep sky observing.

Brent Kasl showed us the Lunar Club certificate that he recently was awarded.

Meeting was adjourned to our program: Larry Stepp updated us on the progress of the Gemini Project.

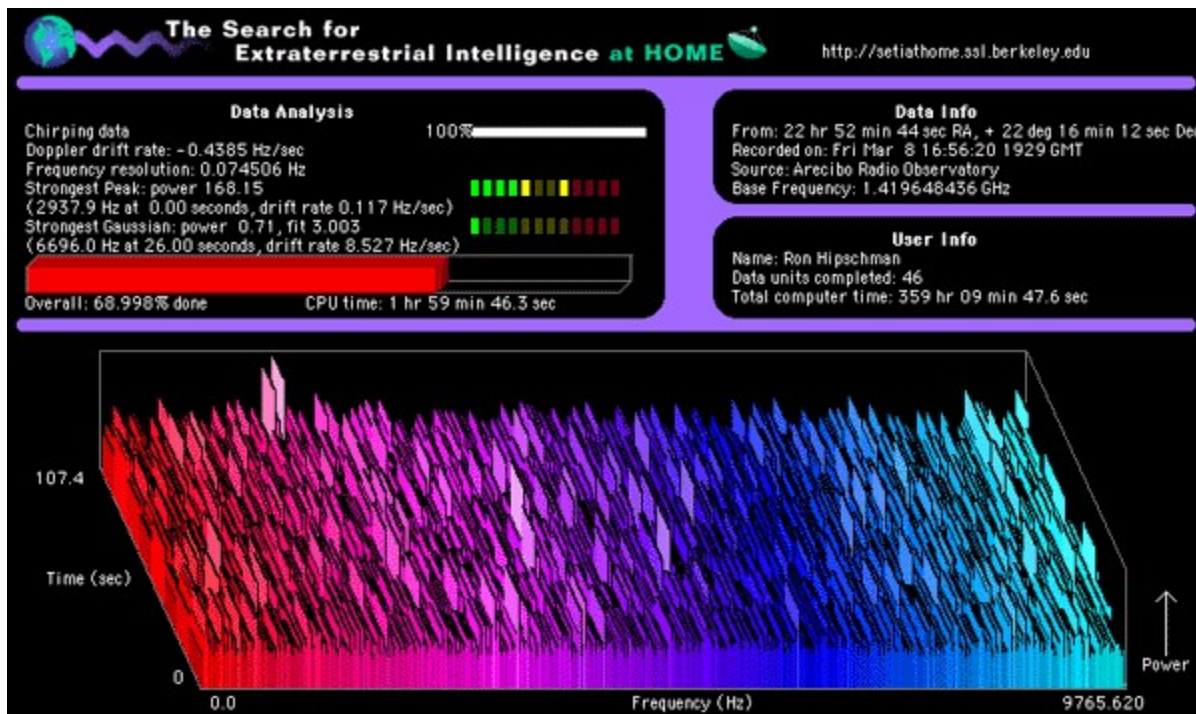


If you're interested in getting some really neat use out of your PC, you might consider joining the search for extraterrestrial intelligence. Read on and if interested, join some of your club members in the search. Their results are at the end of this article.

What do I need to participate in SETI@home?

For Windows systems (95/98/NT) you'll need a computer with at least 32 MB of RAM, the ability to display 8-bit graphics in 800x600 resolution, 10 MB of disk space, and an Internet connection (dialup is OK). For Macintosh systems you'll need the above, as well as a PowerPC processor and Mac OS 7.5.5 or later. You can use SETI@home on a laptop that is connected sporadically. We also support many versions of UNIX, including Linux on various CPUs. There are no CPU speed or modem speed requirements.

SETI@home is a scientific experiment that harnesses the power of hundreds of thousands of Internet-connected computers in the Search for Extraterrestrial Intelligence (SETI). You can participate by running a free program that downloads and analyzes radio telescope data. There's a small but captivating possibility that your computer will detect the faint murmur of a civilization beyond Earth.



Story by Ron Hipschman

The SETI@home screen saver is a complicated piece of scientific analytical software. It performs a large set of mathematical operations on the data that you are downloading from the Berkeley SETI program. What you see on the screen gives you only a glimpse of what is happening inside your computer. The SETI@home screensaver display is broken into four main sections:

- User Info
- Data Info
- Data Analysis
- Frequency-Time-Power graph

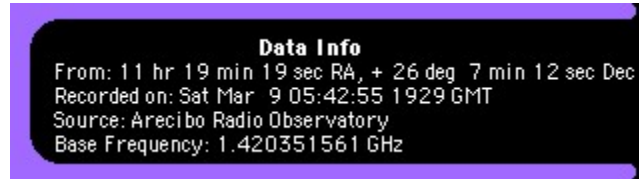
User Info:

This section gives information about the person running the current block of data. Here is displayed the name of the user who is getting credit for this work, the total number of "work-units" this user has completed, and the total computer time that the user's computer has spent analyzing data. Note that this is only time spent within the screensaver, not the total time the computer has been powered on.



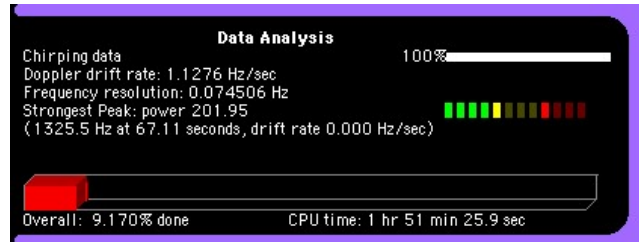
Data Info:

This section contains information about the block of data currently being worked on. It's very important for us to know exact details about this data so we can keep track of it in our database. If a signal is found this information will allow us to go back to that place in the sky and re-examine the correct part of the radio spectrum to check our results.



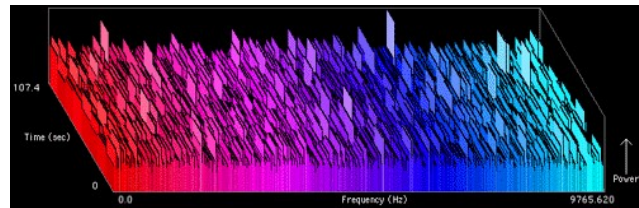
Data Analysis

This is where all the action takes place. whereas the other two text panes remain fixed while the data is processed, this section is dynamically updated as your computer works. This section of the screen contains a wealth of information about what your computer is doing at any given moment during the analysis of your work-unit. Keeping a watchful eye on this pane will help you understand what SETI@home is doing with all the data.



Frequency Power Time Graph

Here is where you can observe the graphical representation of the fast fourier transforms as they are calculated. Frequency runs along the horizontal x-axis, power along the vertical y-axis and time along the in/out z-axis. Here you may note the difference between the different frequency resolution FFT's. For a resolution of 0.075 Hz you will notice that we only do 8 FFT's to cover our 107 seconds of data.



This will look different than the 0.14 Hz resolution where we do 16 FFT's. Everytime we reduce the frequency resolution by 1/2 (doubling the bandwidth) we get twice the time resolution (we do twice the number of FFT's). At the final resolution of 1200 Hz, we get a time resolution of 0.008192 seconds which also means that we do a total of 131,072 FFT's just for this one graph! This allows detection of fairly short pulses, but the frequency measurement cannot be as precise, and the sensitivity to find continuous signals is reduced.

The colors you see in the graph signify absolutely nothing. They were used only for aesthetic purposes. We hope you enjoy them as much as we do.

A significant extraterrestrial signal may not be visible in this graph as it may be masked by all the natural noise around it. So, if you see something, don't get overly excited, it's probably just a strong source somewhere local, or a satellite passing overhead. On the average we look at the same part of the sky every 3 to 6 months, so it will get re-checked at that time for the same strong signal.

Prairie Astronomy Club SETI@home Stats as of 01/18/00:

| Name (and URL) | | Results received | Total CPU time | Average CPU time per work unit |
|----------------|----------------|------------------|-------------------------|--------------------------------|
| 1) | mbauer | 728 | 2.53 years | 30 hr 26 min 04.1 sec |
| 2) | Mark Dahmke | 254 | 2937 hr 42 min 41.6 sec | 11 hr 33 min 56.9 sec |
| 3) | Don Gasparetti | 62 | 1709 hr 58 min 30.5 sec | 27 hr 34 min 48.9 sec |
| 4) | GT EXHAUST | 54 | 1787 hr 58 min 02.8 sec | 33 hr 06 min 37.8 sec |
| 5) | Rick Johnson | 41 | 473 hr 34 min 39.5 sec | 11 hr 33 min 02.4 sec |
| 6) | | 31 | 3091 hr 39 min 15.1 sec | 99 hr 43 min 50.8 sec |
| 7) | Jeff King | 13 | 173 hr 31 min 10.2 sec | 13 hr 20 min 51.6 sec |

Astronomy News

SWIFT

Well the Council finally voted today (January 10) on the Billboard Issue. In amazing feat of 'slight of hand', a NEW ordinance called "Substitute A Ordinance" was inserted into the place of the original ordinance. It was a compromise on a lot of different angles and attempted to smooth out concerns on both sides.

Our letter writing must have paid off because we got 'most' of what we wanted. The illumination paragraph now reads as follows:

"Lighting. Illumination of off-premises signs shall not be allowed from midnight to 5:00 a.m. If off-premises signs are illuminated, the lighting shall be provided by down lighting methods, until such time as sign illumination standards are adopted by resolution of the City Council and thereafter it shall (missing word?) in accordance with design standards. The lighting shall be controlled by an automatic timing device."

Furthermore, the ordinance will come under a review in one years time to test its effectiveness. The council voted for this substitute ordinance 7-0.

Design Standards???? You might ask...there may be an effort on the citys part to organize a group to develop design standards. The Mayor has received some complaints about some car dealer lots. Imagine that.

I thank all of you for your support in this effort.
Erik Hubl

NSP 7 Update

There are still 6 cabins available for this year's star party at Merritt Resort, July 29th thru Aug. 5th. Please contact me if you're interested.

The reservations and deposit checks need to be forwarded to Merritt Resort no later than Feb. 1st. After Feb. 1 reservations must be made through the Resort. Available cabin rates are as follows, including taxes:

XL- \$118.80 per night (4 doubles): one left
M- \$ 82.08 per night (2 doubles): five left

Cabins must be reserved for the full week of the star party. Deposit is 2 nights rate. You may be able to reserve a cabin for less than the full week after Feb. 1st through Merritt.

We do, however, have (in addition to above) 1 XL cabin available Fri. July 29th thru Tues. July 2nd.

John Lawler

Mark Fairchild, Our 2nd Vice-President/Program Chair

Mark's first memories of stargazing are from his youth in Rock Island, Illinois: seeing a fireball, seeing Sputnik and viewing Jupiter and Saturn through a 60 mm telescope that his brother won on his paper-route.

Mark first became interested in "astronomy," as such, after moving to a farmstead near Marquette Nebraska around 1965. He built a 4 inch reflector out of purchased optics and aluminum heating duct. Being alone in his interest, Mark's observational skills did not grow much, but he did study a lot and tried to learn the sky.

In 1970, while in high school, Mark moved to Lincoln on his own where he lived virtually "on campus" at UNL. While going to high school in the day, he was active with graduate students in theater and anthropology at night. When he eventually began college, he did take some astronomy courses, but his focus was turned more towards the arts and humanities.

By the mid '70s, Mark was a postulant in a "monastery" in central France (Taizé Communauté.) Obviously, he returned to Lincoln, but it was not until the mid '80s when he was married and had bought a house away from the light pollution of downtown Lincoln that he became involved in astronomy again to any appreciable degree. And then that involvement was primarily through volunteering at Hyde Observatory.

When asked about his views on astronomy, Mark says "I guess that the main points I would make about my views on astronomy are:

- 1.) While the telescope is sort of an icon of the hobby, and the profession, I do not see the telescope as addressing the essence of the science. Most of my observing over these many years has been conducted with either binoculars or nothing at all. I hope we can help people see the other aspects of astronomy — i.e. in addition to telescopic observing.

- 2.) I see more to "astronomy" than just the science. I believe that the social and cultural dimensions to what we do that should not be ignored. If seriously funded astronomy and space exploration (or even just dark skies!) are to have a future, we need to engender an interest not just in the science of astronomy, but perhaps more importantly in stargazing. We also need to appreciate what the skies have meant to peoples in the past, and to other cultures today!
- 3.) Amateurs have a major role in astronomy as public educators. Even if we do not "do science" we can help the public appreciate the science that others do.
- 4.) Even given that last point, I still feel we should try to "do" more science as amateurs. Amateur science may not have as much impact as it once did, but it is not without value both to the science of astronomy and, perhaps more importantly, to the amateur's appreciation of the science.
- 5.) Finally, we can do a lot of good by reaching out to the astronomy community around us. PAC is a very valuable resource in this geographic area. But we are not the only resource. Thus far I have tried, through the monthly programs, to introduce PAC members to other local people who are involved in astronomy in one way or another... and to introduce them to PAC!

The Prairie Astronomy Club can be a great place for us to learn, define ourselves as amateurs and to grow. I agree with the philosophy that PAC is a social organization. But it is also an organization directed towards astronomy, and if the socialization does not strengthen members astronomy skills, understanding and self confidence then something is lacking.

Hence one of my major goals is to understand what members (and potential members) want to get out of their association with PAC and see if we cannot help support them in their needs.

A secondary goal is to see what community needs are, and to try and help in addressing those needs."

Mark is currently our Vice President/Program Chair, Hyde Volunteer Coordinator, Hyde Supervisor, Hyde Youth Group Organizer, and President of ARiN, or

Astronomy Resources in Nebraska. And I'm sure I've missed a few! Next time you see Mark, be sure to thank him for such wonderful programs he has arranged for our monthly meetings.

Telescope Making Marathon Part IV: "Are We There Yet?"

Martin Gaskell

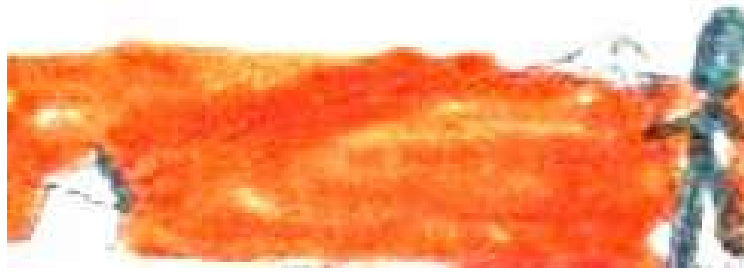
"How do you know when you're got to the right focal length?" is a very common question people ask me about making a mirror. There are several ways of checking. You can check the radius of curvature (twice the focal length) or the focal length itself. If you check the radius of curvature you can either do it optically by finding where you need to place a light source so that it reflects back to the same distance or you can do it mechanically by measuring the depth of the curve on the mirror. Since we were working

outside on a bright sunny day the obvious thing to do was to use the sun (a convenient source at "infinity") to make an image and measure the focal length. A rough-ground piece of glass does not reflect like a mirror on its own so, you need to wet the surface with water to make it smooth and reflective. The sun is so bright that even with no aluminum coating on the mirror the image is very bright. The quality of the image made by the wet rough-ground surface is very poor but even at this stage you can tell to the nearest inch what the focal length is.



Above Left: Liz Klimek holds the mirror blank while John Dowd wets the surface with water from a squirt bottle.

Above Right: Michael and Margaret Fairchild measure the distance from the wet mirror to the image of the sun on a piece of paper held by Martin Gaskell.



Drawing by Daniel Gaskell of how we measured the focal length.





Club Interests Survey

Please take a moment to convey your interests by filling out the form below. If you filled out the one concerning club programs, please take the time to fill this one out as its aim is to determine the direction the club needs to take to meet the interests of its members. Return it to a club officer at any club meeting. Those who return their survey will be eligible for a prize! Here's the small print: You will have to give your name if you want to be eligible.

| Name: _____ | I would like to: | | | | | | |
|--|--------------------------|--------------------------|--------------------------|----------------------------|---|---|-------|
| Areas of Interest | Hear a talk | Give a talk | Do a project | Elaborate (If you wish) | | | |
| Astrophotography | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ | | | |
| Instrumentation | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ | | | |
| • Amateur Telescope Making | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ | | | |
| • Telescope use | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ | | | |
| • Binoculars | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ | | | |
| Developing a personal observing program | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ | | | |
| History of astronomy | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ | | | |
| Local astronomy activities | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ | | | |
| Deep Sky Observing (General) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ | | | |
| • Double Stars | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ | | | |
| • Planetary Nebulae | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ | | | |
| • Open Clusters | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ | | | |
| • Globular Clusters | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ | | | |
| • Novae | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ | | | |
| • Galaxies | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ | | | |
| • Other: _____ | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ | | | |
| Solar System Observing (General) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ | | | |
| • Sun | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ | | | |
| • Planet: _____ | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ | | | |
| • Moon | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ | | | |
| • Asteroids | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ | | | |
| • Comets | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ | | | |
| • Aurora | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ | | | |
| • Other: _____ | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ | | | |
| Light Pollution: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ | | | |
| Which of the following club activities do you participate in and enjoy the most? Rate it from 1 to 5 with 1 the best. | | | | | | | |
| | Best | 1 | 2 | 2 | 4 | 5 | Least |
| Nebraska Star Party | | | | | | | |
| Mahoney Star Party | | | | | | | |
| Monthly Club Star Party | | | | | | | |
| Hyde Observatory Public Nights | | | | | | | |
| Astronomy Day | | | | | | | |
| Other Public Outreach Opportunities | | | | | | | |
| Monthly Meetings | | | | | | | |
| Meteor Watches | | | | | | | |
| Other (<i>Please specify</i>) | | | | | | | |
| What other areas of interest would you like to see the club become involved? | | | | | | | |

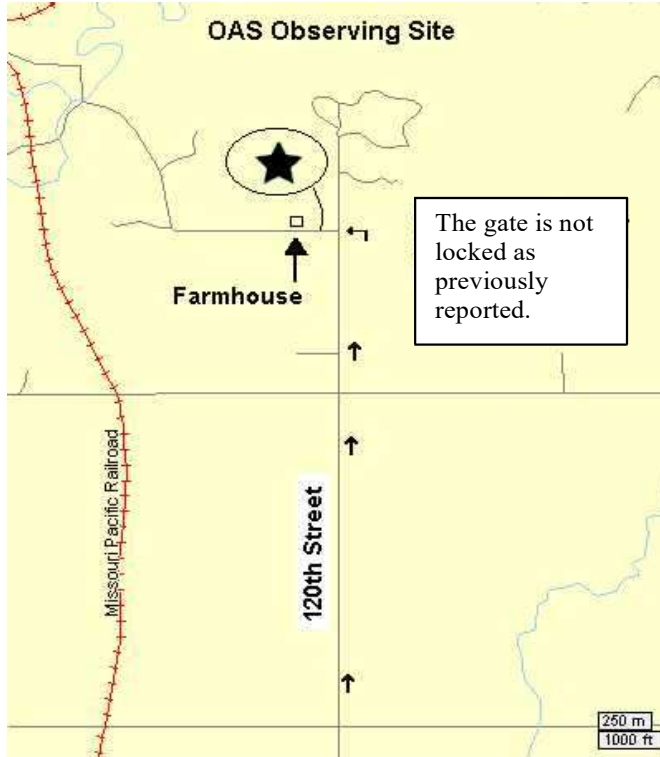
THE PRAIRIE ASTRONOMY CLUB CALENDAR

For February 2000

| <i>Sun</i> | <i>Mon</i> | <i>Tue</i> | <i>Wed</i> | <i>Thu</i> | <i>Fri</i> | <i>Sat</i> |
|--|------------|---|---|--|--|--|
| | | 1 | 2 | 3 | 4 | 5 NEW MOON  Hyde Observatory open to the public 7-10 PM |
| 6 | 7 | 8 | 9 | 10 NSP 7 Planning Meeting, 7:30 @ Mahoney State Park | 11 Club Star Party at the OAS Viewing Site | 12 1 ST QUARTER  Hyde Observatory open to the public 7-10 PM |
| 13 Volunteer Practice Night; 7 p.m. to 10 p.m. @ Hyde <i>PAC Youth Group 7-8:30 p.m. @ Hyde</i> | 14 | 15 | 16 | 17 | 18 | 19 FULL MOON  Hyde Observatory open to the public 7-10 PM |
| 20 | 21 | 22 | 23 | 24 | 25 | 26 3RD QUARTER  Hyde Observatory open to the public 7-10 PM |
| 27 | 28 | 29 PAC Meeting 7:30 PM Hyde Observatory | Hyde Volunteer Schedule for February 2000: 02/05/2000 02 Harve Deogun, Mark Fairchild, Michael Fairchild, Don Gasparetti, Ben Rush 02/12/2000 03 Elaine Klaege, Lee Taylor, Jim Woodson, Laura Woods 02/29/2000 04 Dave Churilla, Don Gasparetti, Travis Miller, Lee Taylor 02/26/2000 05 Doug Bedell, Dave Churilla, Joey Churilla, Brendon Go | | | |

Directions to OAS Observing Site

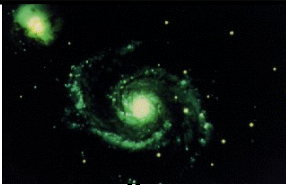
From Lincoln, take Highway 34 East approximately 29 miles to 120th street. Then go North about 2 ½ miles.



OFFICERS OF THE PRAIRIE ASTRONOMY CLUB

| | |
|--|---|
| PRESIDENT: | Dave Knisely (402) 223-3968 KA0CZC@navix.net |
| VICE PRESIDENT: | Larry Hancock (402) 421-2827 hancock@unlnotes.unl.edu |
| 2nd VICE PRESIDENT (PROGRAM CHAIR): | Mark Fairchild (402) 488-8681 mark@blackstarpress.com |
| SECRETARY: | Willa Penney (402) 476-3962 |
| TREASURER: | Liz Bergstrom (402) 464-2038 |

Please send all submissions for The Prairie Astronomer to
Jeff King
4018 S. 83rd Street, Lincoln, NE 68506-5973
(402) 483-0599
jeffrey892@aol.com



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

Next PAC Meeting
January 25, 2000
7:30 PM
Hyde Observatory

First Class Mail