

THE PRAIRIE ASTRONOMER

THE OFFICIAL NEWSLETTER OF THE PRAIRIE ASTRONOMY CLUB, INC.

JULY 2000

VOLUME 41 ISSUE #7

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JULY'S PROGRAM:

Dr. Tom Geballe

Dr. Tom Geballe, a staff astronomer from the Gemini Observatory on Mauna Kea, will give a presentation titled "The Coolest Brown Dwarfs."

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.

PAC SHIRTS AND HATS: The club order of shirts & hats for members can be picked up at the July meeting. Larry has ordered a few extra shirts & hats so we should be able to take care of everybody.

JUPITER AND SATURN: Stay up late to observe the gas giant planets Jupiter and Saturn. Rising near midnight, the pair swapped places since we last saw them in spring. On August 21, the moon forms a nice line with Saturn and Jupiter. The moon then slides below Saturn on the next night and below Jupiter on the 23rd. Saturn's rings have tilted 24° toward us, almost as much as they can, providing an exceptional 3-D view.

PERSEID METEOR SHOWER: The fine annual Perseid meteor shower peaks on August 11-12. Despite the bright moon, it's well worth the effort to head out to a dark site and take sleeping bags and drinks. Bright and swift shooting stars every few minutes are sure to elicit "oohs" and "aahs" from the whole family. More on the Perseids inside.

CLUB EVENTS



PAC MEETING
TUESDAY, JULY 25, 2000, 7:30 PM
at Hyde Memorial Observatory

CLUB STAR PARTY
FRIDAY, JULY 28, 2000
Wagon Train Lake
(see map on back page)

NSP 7
JULY 29TH THROUGH AUGUST 5TH
Merritt Reservoir

MAHONEY STAR PARTY
NO MSP FOR AUGUST DUE TO NSP 7
Mahoney State Park

PAC YOUTH GROUP/HYDE VOLUNTEER MEETING
FRIDAY, AUGUST 4, 2000, BEGINNING @ SUNSET
At Hyde Memorial Observatory

PAC MEETING
TUESDAY, AUGUST 29, 2000, 7:30 PM
at Hyde Memorial Observatory

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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

Prairie Astronomy Club
June 27, 2000

The meeting was opened by President Dave Knisely.

Bill Wells, Club Observing Chairman, reported on his observations of Comet Linear. It is now visible at 4:00 a.m., and should still be visible at the end of July at NSP about 11:00 p.m.

The next club star parties at Wagon Train will be June 30 and July 28. The next Star Party at Mahoney State Park will be July 7.

Dave reported on the MidStates Region Astronomical League 2000 Convention in Kansas City June 9-11. There were 5 members from the Lincoln club and one from Omaha. Dave said that the programs, which were very good, included a video showing meteors impacting on the moon. Next year's meeting will be in Arkansas.

The next NSP planning meeting will be July 6 – to stuff packets. On July 20, there will be another meeting to package the T-shirts. Doug Bell has fliers for NSP; he reported that registrations are running about the same as this time last year.

Del Motycka is donating a 3-volume Handbook as a door prize for NSP. Del made a motion, seconded by Lee Taylor, for the club to purchase a \$100 item from one of the vendors at NSP to also be used as a prize.

The Hyde Volunteer meetings have been changed to the 1st Friday of each month; in July they will be meeting July 7, from sundown to 11:00 p.m. The Youth meeting will be the first hour of that time.

Martin Gaskell reported that the UNL observatory will not be open until August, after school is in session.

Jeff King needs articles for the newsletter; please send anything of interest to him.

Jack Dunn announced that the dates have been set for next year's Air and Space Day. It will be held April 6-7, 2001.

We voted by acclamation to elect the proposed officers for the Astronomical League: Chuck Allen – President, Bob Gent – Vice President, and Joanne Hailey, Treasurer. There were 3 by-law changes voted on; all were approved. The first extended membership privileges to clubs outside the United States; the second provided for the League Treasurer to be bonded at League expense, and the third dealt with council members being allowed to send proxies, with some restrictions.

Dave invited everyone to Village Inn after the meeting.

Our meeting was adjourned to the program; Dr. Stephen R. Platt and his experiences with the PYTHON project in Antarctica.



Deep Sky Observations



DS062900
by David Knisely

DATE: June 29th, 2000, 0320 to 0730 hrs UTC.
LOCATION: Rockford Lake, Nebr. 40.227N, 96.581W, 1400 ft elevation.
INSTRUMENT: 10 inch f/5.6 Newtonian, 59x, 101x, 141x, 220x, 352x, 550x.
CONDITIONS: Clear, Temp. 62 deg. F, Wind calm.
UNAIDED EYE LIMITING MAGNITUDE: 6.8 SEEING: 0.5 to 0.8" arc, Antoniadi II.

OBSERVATIONS: Beautifully clear skies and excellent seeing made for a nice and productive evening of deep-sky observing. I started with a few double stars during deep twilight. A quick look at Epsilon Lyrae showed that the seeing was superb. Both pairs showed the 4 stars even at 59x, and at 220x, diffraction disks and rings were visible. I stopped the scope down to only 50mm, and even then, I could still see the 4 components, although there was a slight overlap of the Airy disks. I went over to Gamma Coronae Borealis to try to pick up the companion to this star. At 550x, I could see a persistent brightening of an area on or a bit inside the first diffraction ring on the following side of the star, but seeing frequently distorted the ring to form several other spot-like segments on the first ring. I moved the scope over to Alpha to check on this, and while the spot-like distortion of the inner rings was visible, a persistent one on the following side was not seen. Going back to Gamma again showed this brightening on the following side, but it could have been a tube current. I have not found current data on this object, so I am uncertain whether the star is showing its companion.

After a few more double star checks, I decided to look at M13 with the scope stopped down and the power high. Surprisingly, at 220x and with only a 50mm aperture, I could still see at least some stars in the cluster, although much of it remained unresolved. Dropping to 141x, I continued to see some stars on the face of the cluster, although again, the cluster was not well resolved. Going to 94mm revealed many hundreds of stars, and with the full 10 inches, the cluster was absolutely glorious, with the arm like arcs of stars being obvious. With seeing this good, I checked up on M57, and at 550x, the central star was there faintly, doing its "on-and-off" blinking behavior.

Seeing was so good that I decided to take a look at M27, but I forgot and left my 6.4mm eyepiece and 2.5x Powermate (550x) in the scope. At that high power, the dumbbell overflowed the field, but did show some remarkable light and dark detail that I had not noticed before. I dropped the power back to 353x to catch all the object and continued to be amazed. The amount of light and even dark detail visible in the ten inch was remarkable. The southwestern half showed a roughly triangular shaped patch which pointed back at the central star, with some very faint mottled detail to its east. The northern half looked distinctly mottled with a brighter almost linear band running from the central star northeast towards the outer edge arc. The arc along the northeastern edge of the dumbbell was sharp, flowing into a dimming segment of the eastern wing. The rest of the northern edge arc was somewhat patchy, but the filamentary edges of both the north and south ends which flow into the outer "wings" were visible. The wings did show up to some degree, but not

nearly as well as at lower power using a filter, where they become loop-like features connecting the two ends of the dumbbell. For those faint outer features, I still like between 59x and 101x with the Lumicon UHC filter, but below 141x, the inner detail became more or less lost in the bright interior glow of the nebula. In short, when looking for detail in many DSOs, don't be afraid to kick up the power!

I then went galaxy hopping, starting in Canes Venatici. I hadn't looked at M94 for many years (perhaps never in the ten inch), so I went back to this bright galaxy. Boy, did that thing ever look bright! (especially when compared to all the small faint fuzzies I usually hunt for). At 59x, it appeared as a relatively bright oval fuzzy patch (E-W elongation) with a MUCH brighter core region, looking a bit like an unresolved globular. There was a faint oval diffuse outer haze visible which appeared to contain hints of very vague detail. 101x confirmed this, as two very diffuse arc-like arm segments appeared in this outer haze, with the one on the east being easier to see. These arcs were seen for perhaps 100 to 120 degrees around the galaxy, with a bit of darkening inside of the arcs. Inside of this was the bright inner portion, which was oval and showed a more distinct outer edge. The inner portion brightened rapidly to a pip at the center, but even 220x did not really show a true star-like nucleus. 220x and 352x did show hints of mottling in this oval away from the central pip, as if a ring-like structure were present around the nuclear core. I would like to see an underexposed image of this galaxy, as most of the shots I have in my books really overexpose the core region.

My next targets were nearby, NGC 4485 and 4490, located near Beta CVn. Again, they were both somewhat of a surprise, as they made a nice pair which seemed almost to be in contact or interacting. NGC 4485 to the south was the larger of the two, appearing as a somewhat elongated patch with noticeably curved ends, one of which seemed to point directly at NGC 4490. 141x revealed indications of two mottled arc-like features on the northwest and southeast sides of a somewhat brighter middle.

The northern patch arced northwest and then north, extending towards NGC 4490, while the other patch extended southeast, eventually curving to the south. 220x showed some patchy mottled detail around the core, with the core showing a faint star-like nucleus. NGC 4490 was considerably smaller and somewhat fainter than NGC 4485, appearing as a small oval patch with a brighter middle. While in the area, I looked at another close pair of somewhat fainter galaxies, NGC 4618 and 4625. NGC 4618 was the larger of the two and showed a slightly brighter elongated core and hints of mottling, while NGC 4625 was merely an oval fuzzy patch.

Moving somewhat to the north, I took a quick look at M63. Once again, high power revealed some mottled detail in this rather oval galaxy, but clear spiral structure was not apparent. The galaxy had a faint but fairly easy star-like nucleus however. After that, I went up into Draco to pick up a pretty group of small galaxies I like to call "Draco's Triplet", NGC's 5981, 5982, and 5985. These three line up roughly east to west in a tight group, with NGC 5982 the brightest in the group and NGC 5981 being the largest. NGC 5982 appears as a slightly oval fuzzy patch with a noticeably brighter core, and may be an elliptical galaxy. NGC 5985 seemed almost twice as big as 5981, appearing as a faint oval fuzzy patch with diffuse irregular edges and a small brighter core. 141x revealed a very dim mottled outer haze with hints of arc-like detail, along with a small oval core. NGC 5985 was a nice narrow dim sliver of light to the west of NGC 5982, which was not easily seen at 59x, but was obvious at 101x. I also looked at the galaxy pair NGC 5963 and NGC 5965, NGC 5965 appeared as a rather elongated fuzzy patch with a small brighter core, possibly a near edge-on spiral, while NGC 5963 appeared as slightly brighter oval patch with a brighter middle. Neither were very bright or large, but they do make a nice pair.

I picked up a few more faint galaxies in Draco before going back to an old favorite: NGC 5907, which I like to call "Draco's Needle". This one really stands out even at low power, appearing as a narrow sliver of light with a brighter middle

and very sharply pointed ends. 101x and 141x showed irregularity on the ends, along with what appeared to be a patchy dark lane (or at least a somewhat mottled western side) along the western side of the core. The core itself is small and brighter, but appears quite elongated even at high power. I also picked up the bright galaxy NGC 5866, sometimes referred to as "M102". It almost looked like M104 does in a small refractor (minus the dark lane), appearing as a spindle-shaped fuzzy patch with a star-like nucleus in a brighter core. Even at 220x, there was no sign of any narrow dark lane.

To conclude the night, I hunted up a few summer Milky-Way showpieces then tried a few somewhat obscure but interesting globulars. I looked at the globular NGC 6453 located on the northwestern edge of M7. It was tiny and rather faint, but fairly easy to locate even at 59x. At 220x, a few faint stars appeared on its somewhat granular-looking face, although it is unclear whether these are field stars or members of the cluster itself. All the starfields in this area were rich, so globulars might be easily be "gaining" a few false members. Down south right next to the bright orange star G Sco was the tiny but bright globular NGC 6441. This one stood out like a sore thumb! It was small, but had an unusually high surface brightness, easily competing with the bright star G. Seeing down this close to the horizon was not all that good, so 220x failed to show anything but faint hints of granularity. I also took a look at NGC 6544 southeast of M8. It was easy to see and did show a number of stars at 220x, looking a bit like a small rich open cluster with a central concentration (perhaps 20 to 30 stars seen with hints of others). A better cluster was NGC 6553, which was obvious at low power, standing out well from the glittering Milky-Way background. 220x doesn't show a high degree of resolution, but the cluster does appear somewhat granular with a scattering of perhaps 30 to 40 stars on its face. I will have to devote more of my time to these objects at the Nebraska Star Party next month.
Clear skies to you.

David Knisely

STAR PARTIES AND COMET REPORTS

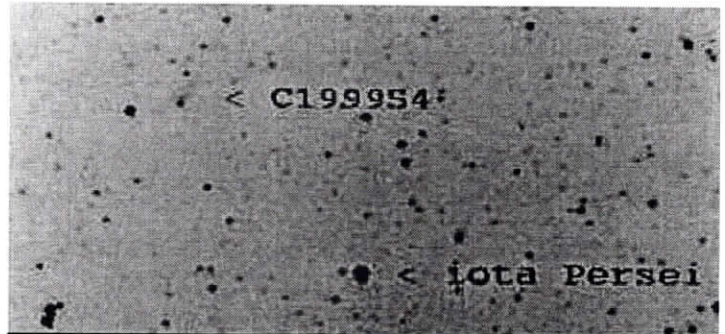
July 1, 2000 Club Star Party

For those of you who missed it (where were you Larry?, I needed your big scope :-)), we had a fine night out at Wagontrain Lake. Skies were clear and we had 20 people and 11 telescopes. Dewing put an end to things around 3 a.m., but most still had a lot of fun. I hope we can keep up this kind of participation (next stop, NSP!). Clear skies to you (and see you all at the next club meeting July 25th).
Dave Knisely

July 7, 2000 Comet C199S4 Linear

I observed comet C1999S4 Linear tonight from about 2:00 a.m. to 3:15a.m. from the Nine Mile Prairie parking area. The comet is in Perseus and is just now beginning to be circumpolar, though very close to the horizon until after 1:00 a.m. Tonight it appeared to be about magnitude 8.5 with the tail (in the best viewing I got) about 15' long. If you knew right where to look, the comet was visible in 10x50 binoculars. I think it would be a pretty nice object from a decently dark site (like Valentine). Most impressive tonight was how far the comet moved in an hour of observation. I almost felt it could see it moving at 165X, though it helped that it was going through a nice star pattern, which made the movement obvious. The comet was brighter than most of the field stars at 60X tonight.

Bill Wells



Comet C1999S4 Linear, 08:00 U.T. 7/08/2000 210mm F3.5 10 min exposure on Fugicolor Superia X-TRA ISO 800 from Nine Mile Prairie, Lincoln ,NE USA by Bill Wells

July 8, 2000 Comet C1999S4 Linear and MSP

After finally finding comet C1999S4 Linear at the Mahoney Star Party (sometime after midnight when it came up out of the murk), I packed up and returned to Lincoln and went to Nine Mile Prairie to observe the comet. I came up with a magnitude of 8, diameter 3', tail 17'. Again I came up with a pretty low magnitude using comparison stars. There was one 7th magnitude star close, but the rest were all 9th magnitude or less. I did get a picture of the comet, and the 8th magnitude is based more on the picture as all of my estimates seem to be about .5 magnitude low.

The star party was pretty well attended again, with at least 4 telescopes from Lincoln and six or more from Omaha. Seeing conditions were pretty murky and there was about a first quarter moon, but I think we all had a pretty good time. It sure would have been nice to put one of the big telescopes on the comet, but the sky-glo was way too bright unless you wanted to wait around until 4:00 a.m.
Bill Wells

July 9, 2000 Comet C1999S4 Linear

Dave Churilla and I went out to Wagon Train Lake early this morning to catch a glimpse of Bills comet. We started watching for it around midnight and finally saw it rise out of the haze around 12:30. We watched it for about an hour or so, the last 15 minutes with the moon behind a bank of clouds in the West. You really noticed it then and could make out the tail.
Jeff King

July 12, 2000 Comet C1999 S4 Linear

I observed comet C1999S4 Linear from Nine Mile Prairie from around 4:00 A.M. to after 5:00 on July 12, 2000. It has now brightened to magnitude 7.2 and the tail is at least 25' long. The nucleus now appears as a bright point with a definite coma. It was still fairly easy to make out after 5:00 A.M. even though the sky was starting to get fairly bright, however, I waited too late to be sure I found it in binoculars.

Jupiter and Saturn were very nice also, with 4 satellites visible around both, (maybe more around Saturn if I had known where to look at the time). Some of the belts on Jupiter seemed very dark. Aldeberan was down below the Planets and seemed exceptionally bright, but I guess it was still dimmer than Capella.
Bill Wells

THE ROMANTIC ASTRONOMER

By Dave Churilla

All day I struggled with the decision. It was 94 degrees as I stepped onto my deck to grill something for dinner. I had 3 hours to wrestle with the decision to pack my gear and the telescope and head for the Park. I knew the moon would be up making the sky even brighter than the glow from Omaha and Lincoln.

Nah ... I just didn't feel like going out in this heat and humidity to Mahoney State Park.

I went to get an old copy of Sky & Telescope to review as I ate dinner and found a folder. I took the folder instead, a wry smile on my face (Romantics do that a lot you know....wry smiles that is). It contained thank you cards from my son's class for taking them to Hyde Observatory one spring night.

I read the cards while eating my supper and came to one that made me think (well, as close to it as I ever come anyway). A smile came to my face (not a wry one this time)....and I felt a little guilty at the same time. It was from a 10 year old girl from Joey's class who was thanking me, my wife Julie, Joey, Mark, Jeff, Travis and some of my friends who had let them into Hyde to see such wonderful sights as M42, M3, Jupiter and Saturn. She said she'd never imagined how wonderful Astronomy could be. Her Dad had bought her a beginners book and a pair of binoculars (on Mark's advice of how to begin, I remembered him talking to her and her Dad) and she was learning all she could.

Well, that made up my mind. Heat and humidity notwithstanding I packed my stuff and headed for Mahoney State Park.

I was talking to a few friendly and familiar faces after setting up when a man walked up and asked about all the equipment. When I explained that we were here to allow the public to view through the telescopes, he said he thought that was fantastic of us to do. He was from Canada, camping for the night, and would definitely be back with his wife and kids when it got dark.

People trickled through the area all evening. A few were checking out telescopes as they were thinking of purchasing one of their own. At one point, a woman brought about a dozen Junior High aged girls by. I had been showing a newer member of OAS the Veil Nebula with my O-III filter and still had it in the scope. It was very faint and difficult to see to the untrained eye. I was concerned about letting this be their first view into a telescope. But I let them look anyway. I explained what it was, how big it was, and how far away it was. To my surprise all but one saw it. They moved to Jeff King's scope (don't remember what he had, but it certainly wasn't as good as mine...oops, my astronomy snobbism showing...sorry).

For the next 20 minutes or so they bounced back and forth between Jeff's and my telescope, admiring such amazing sights as M27, M13, the Lagoon and Swan Nebulae, Albereio and the ET or Dragonfly Cluster, just to name a few things we showed them, occasionally making forays into the cluster of telescopes gathered to see what was in them. As they were gathering to leave, I finally found M81 and M82, and they loved the idea of looking at 2 distant galaxies.

Several of them talked to me about how they could get started in amateur astronomy - was it hard, was it expensive, etc. I think I talked to them and their adult leader for about 20 minutes. They were very surprised by what they could see and wanted to know more about the hobby.

My son Joey and I were in their shoes about 2 years ago when we first visited Behlen's Open house in the fall. Until then our Astronomical experience had been through a cheap K-Mart special (and we all know how good they are!) Joey was beside himself talking to the amateur astronomers behind Behlen until closing. I'm sure most of them were PAC members I didn't know at the time. To them I owe a debt of gratitude as they planted the seed of curiosity and knowledge in my son's mind that has led him to pursue and enjoy this great hobby

(currently his goal is to become an astronomer).

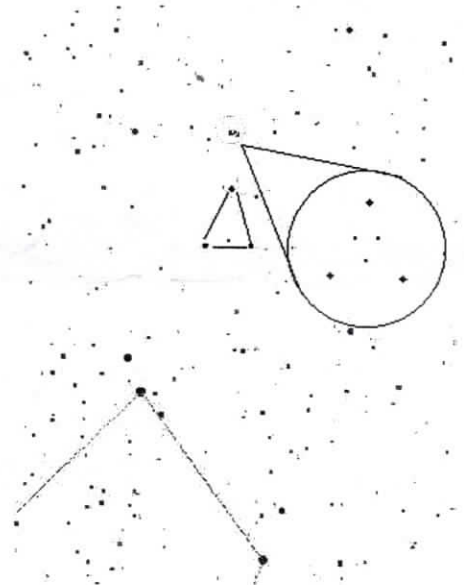
While some of us may be more comfortable talking to the public, I think the point of my long winded story (sorry - I'm a frustrated writer) is the value of promoting the hobby. I have found several ways to do this myself - volunteering at Hyde Observatory on the occasional Saturday night, attending the Mahoney State Parties, and just inviting friends and relatives to go stargazing with me now and again. As a hopeless romantic (a very ancient curse, I assure you, that isn't to be trifled with) I thoroughly enjoy sharing the stars with people. I won't go so far as to say we have a responsibility to expose people to Astronomy (although I feel that

way myself). But I would encourage all to occasionally take advantage of the opportunities when they present themselves. It's a great feeling watching a child (young and old!) gasp in wonder or ask how they can enjoy these things for themselves. Who knows, maybe you'll be influencing the next Galeleo, or Messier, or Dave Knisely (oops....how'd that get in there?). Trust me, you meet some wonderful people, and I have to admit to a very good feeling sharing the universe with them.

See you at the next star party.

*"Biohazard Asterism"
(named by Bill Wells) above
Corvus, one of the many objects
viewed at the Club Star Party.
Follow the triangle of stars to
find it.*

The Asterism is circled, the larger circle indicating a 100x look through a 10" scope.



2000 PERSEID METEOR SHOWER

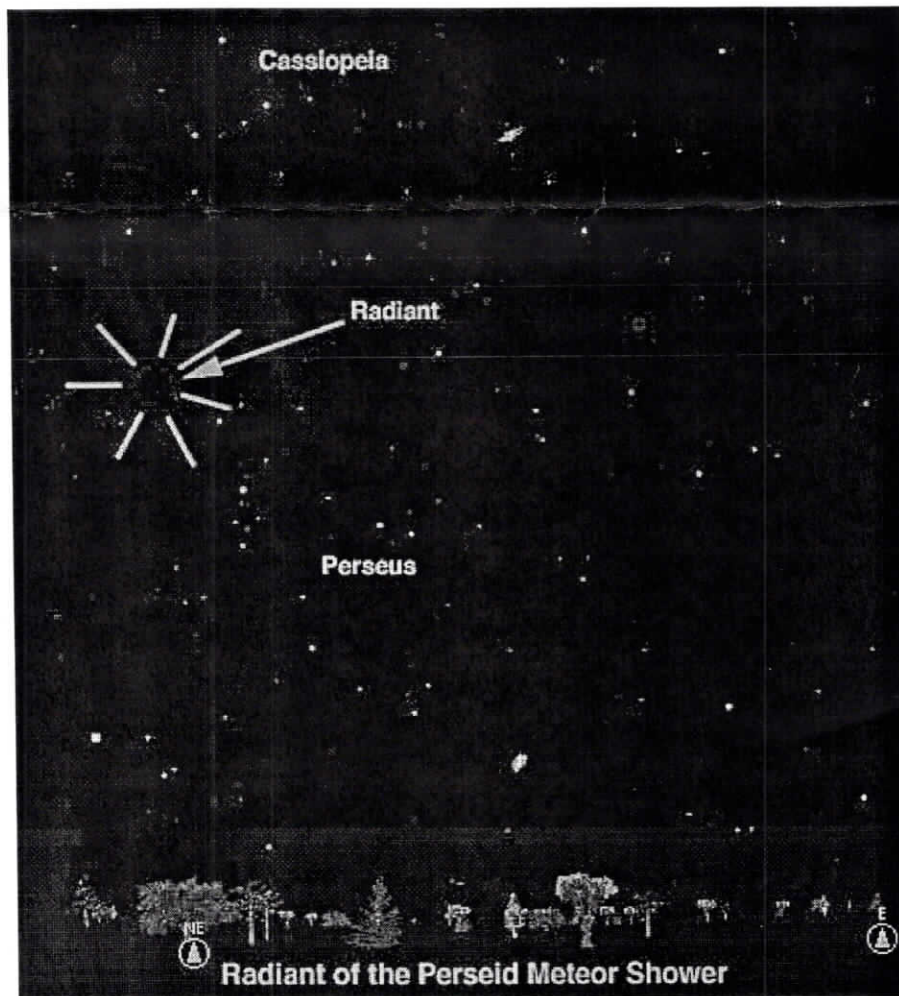
Activity from this meteor shower is visible from about July 23 until August 22. At the time of Maximum on August 12/13 (J2000 solar longitude=139.7 deg), the radiant is located at RA=47 deg, DECL=+57 deg. The hourly rate typically reaches 80, although some years have been as low as 4 and as high as 200. The meteors tend to be very fast, with an average magnitude of 2.3, and about 45% leave persistent trains. The radiant advances by a rate of 1.40 deg/day in RA and 0.25 deg/day in DECL.

How to Observe

The point from where the Perseid meteors appear to radiate is located within the constellation Perseus and is referred to as the radiant.





(Image produced by the Author using Starry Night 2.0 and Adobe Photoshop 5.0. It represents the view from mid-northern latitudes at about midnight local time around August 12.)

To best observe the Perseids wear appropriate clothing for the weather. Lay outside in a reclining lawn chair with your feet pointing southward and look straight up. Do not look directly at the radiant, because meteors directly in front of you will not move much and fainter ones might be missed. Decent numbers of Perseids can be seen beginning around 10 p.m. local time, but the best show picks up after midnight and continues until dawn. When you see a meteor mentally trace it backwards and if you arrive at Perseus it is probably a Perseid.



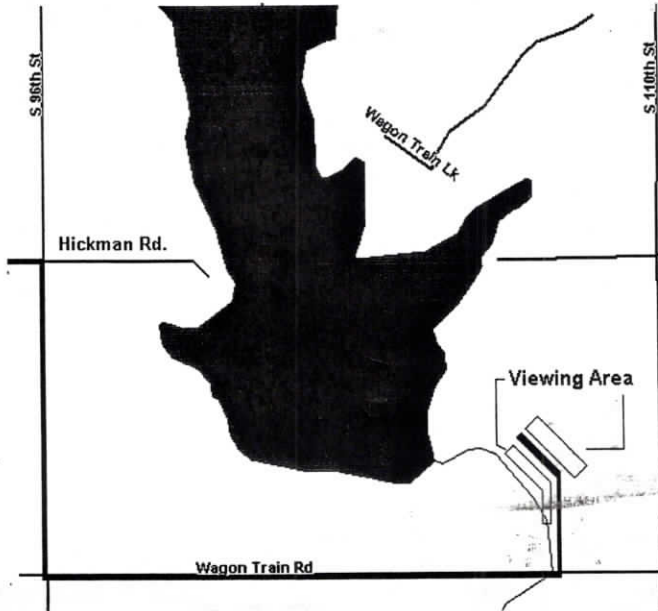
THE PRAIRIE ASTRONOMY CLUB CALENDAR

For August 2000

<i>Sun</i>	<i>Mon</i>	<i>Tue</i>	<i>Wed</i>	<i>Thu</i>	<i>Fri</i>	<i>Sat</i>
July 30	July 31	1	2	3	4 Volunteer Practice/Youth Group Night	5 Hyde Observatory open to the public Sunset-11 PM
NSP 7 July 29th - August 5th						
6	7	8 1 ST QUARTER 	9	10	11	12 Hyde Observatory open to the public Sunset-11 PM
13 Volunteer Practice Night; 7 p.m. to 10 p.m. @ Hyde <i>PAC Youth Group</i> 7-8:30 p.m. @ Hyde	14	15 FULL MOON 	16	17 NSP planning committee meeting	18	19 Hyde Observatory open to the public Sunset-11 PM
20	21	22 3 RD QUARTER 	23	24	25	26 Hyde Observatory open to the public Sunset-11 PM
27	28	29 PAC Meeting 7:30 PM Hyde Observatory NEW MOON 	30	31		

**Directions to Wagon Train Lake
Observing Site**

From Hickman, NE, turn East on Hickman Road. Go until you reach 96th Street, then turn RIGHT. Drive until you reach Wagon Train Road, then turn LEFT. Area 6 is about 3/4 of a mile East. Turn LEFT into Area 6.



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OF THE PRAIRIE ASTRONOMY CLUB**

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

**The Prairie Astronomer
c/o The Prairie Astronomy Club, Inc.
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First Class Mail

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