

1988 Club Elections Held At October Meeting

The 1988 Prairie Astronomy Club officers were elected at the October meeting, with quite a few changeovers taking place. The following PAC members were chosen to head up the club for 1988:

PRESIDENT: Del Motycka

V. PRESIDENT: Ron Veys

SECRETARY: Ellen Owen

TREASURER: Dan Neville

2ND V. PRES: Ron Debus

A Hearty "Congratulations" goes out to the corp of new officers. The club has a big year coming up in 1988, and without a doubt these fine members will lead the club to new and exciting adventures!

PRESIDENT'S MESSAGE

by Del Motycka

1987 was a momentous year for the members of the Prairie Astronomy Club. After years of dreaming, a dark sky viewing site became a reality. Now the question is: Where do we go from here?

I believe that the acquisition of the Firth Atlas Site has provided an opportunity to move to a new emphasis; i.e. self development and realization of the goals of the individual club members.

Membership in the Prairie Astronomy Club has increased rapidly in the last two to three years. I am asking every member this question: Why did you join the Prairie Astronomy Club? What did you hope to find there?

From remarks I've overheard, some members joined so they could enjoy the fine programs. Others joined so they could use the telescopes at Hyde to look at the sky after the meetings. How many joined with the hope of receiving guidance in constructing their own telescopes? How many joined with the hope of guidance in learning the constellations and how to find deep sky objects? How many had some other goal?

Let me or any other officer of the club know what you want to obtain through your membership in the club. Call or speak to any one of us. Let's take full advantage of the dark sky viewing site and realize your goals in astronomy.

The Prairie Astronomer is published monthly by the Prairie Astronomy Club, Inc., and is free to all club members. Membership status and expiration date is listed on the mailing label. Membership dues are: Junior Members and Newsletter Only Subscribers... \$8/yr; Regular Members... \$22/yr; Family Membership... \$25/yr. Address all membership renewals or questions to THE PRAIRIE ASTRONOMY CLUB, INC., P.O. BOX 80553, LINCOLN, NE 68501. For other club information contact one of the following officers: Del Motycka (Pres) 489-2520, Ron Veys (V.Pres) 464-1449, Ellen Owen (Sec) 423-7440, Dan Neville (Tres) 476-7772, Ron Debus (2nd V.Pres) 435-5688. All newsletter comments and articles should be sent to Newsletter Editor JOHN LORTZ, 9255 CADY AVE #14, OMAHA, NE 68134 no later than 6 days before monthly club meetings. Club meetings are held the last tuesday of each month.

Prairie Astronomer

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Observing Chairmans Report

by David Knisely



The next scheduled star party is on the night of December 18th at the Atlas observing site. December skies offer the best in nebulae and open star clusters. Start out your observing in Cassiopeia with the diffuse nebula NGC 281, located about one and a half degrees east of Alpha. It should just be visible in a six inch rich-field telescope as a large hazy area with a few stars involved. An eight inch with Lumicon's UHC or OIII filter will make the area look like M16 with much dark and light detail being visible. Just north-west of the faint star 34 Cassiopeiae is the rich and bright star cluster NGC 457. It is a beautiful group of both bright and faint stars that looks like a bird in flight when viewed in almost any telescope.

In Auriga are several spectacular open star clusters that are good targets for moderate apertures. M38 is a moderate sized rich group of stars located about one and one half degrees south and a bit east of Sigma. Those with six inch or larger apertures may also see the small tight cluster NGC 1907 just to the south of M38. It is very rich and reminds me of the companion to M35, NGC 2158, except that this cluster is brighter. About a degree and an half east of 16 Aurigae is the moderate sized open cluster NGC 1893. It is a "Y" shaped group of about 20 stars with some faint nebulosity involved. My ten inch only showed a hint of the nebula until I used the OIII filter. It then became rather obvious and showed some dark detail. Two degrees north-east of this object is the bright cluster M36. It is visible in binoculars but is not as rich

in stars as M38 is. Probably the richest star cluster in Auriga is M37, located just under four degrees east and a bit north of Chi. This object is also visible in binoculars but takes at least a 60mm refractor to show many stars. It is spectacular in a six inch and reminds me of M11.

Many beginners with small refractors try and fail to see M1, the Crab Nebula. This object can be found about a degree north-west of Zeta Tauri and is fairly difficult, although I have seen it in a 60mm refractor at about 25x as a dim fuzzy "L" shaped patch. Larger instruments brighten the nebula but add little detail to it. Under excellent conditions, eight or ten inch apertures will show some irregularities in the edges and some variations in brightness in the nebula. I have seen traces of the filaments of gas using the Lumicon filters and a ten or twelve inch telescope, but for the most part, this object is somewhat disappointing.

After you have had a nice long look at the Great Orion Nebula, those of you with large telescopes may want to try the challenging nebula NGC 2174-5, located in Orion's club less than a degree north-west of the faint star 68 Orionis. It is in a rich area of the milky way and is involved in a star cluster but is very faint. If you use Lumicon's OIII filter, the nebulosity stands out well as a large and detailed circular area of light. I found it to be a real winner in my ten inch with the filter and you probably will too!

Sky & Tel News:

FROM COMPUSERVE'S ASTRONOMY FORUM

NOVEMBER 16, 1987

NOVA IN VULPECULA

A nova was discovered in Vulpecula on Saturday night. Ken Beckmann of Louiston, Michigan, found the 7.0-magnitude new star 8 p.m. on the 14th. Two hours later it was independently discovered by Peter Collins of Phoenix, Arizona, using 10 x 50 binoculars, and by then it had already faded to magnitude 7.3. The star blazed into view less than half a degree north-east of 6th-magnitude LT Sagittarii, at the following equinox 2000 coordinates: right ascension 19 hours 4.3 minutes, declination +21 degrees 44 minutes.

On Sunday evening both discoverers reported the nova at at magnitude 7.4, though Beckmann says it fluctuated in brightness by as much as 0.3 magnitude over 2 hours. Beckmann and Collins have both made previous nova discoveries -- this is Beckmann's second, and Collins' third. The last nova to be discovered visually was by Collins in 1984.

NOVEMBER 6, 1987

CURRENT COMETS

Comet Bradfield is now in Ophiuchus and about 50 degrees from the Sun. Bradfield reaches perihelion tonight about 81 million miles from the Sun. The comet is well placed for observing in the southwestern sky right after dark, and with the Moon now waning its light should be less of a problem as the week

wears on. Johnny Horne in North Carolina has seen Bradfield with his naked eye. The latest reports put the comet at visual magnitude 5-1/2 with a 1-degree-long tail. Photographs show a 3-degree ion tail as well. Positions through the end of the year were given here on October 2nd.

Comet Rudenko is in the morning sky but moonlight will increasingly interfere, and the comet is heading south. See October 2nd for positions.

OCTOBER 30, 1987

COMET McNAUGHT (1987b1)

Improved orbital elements and ephemerides (epoch 1950.0, 0h Universal time) for this comet have been published by Daniel Green on IAU Circular 4475:

T = 1987 Dec. 11.977 ET q = 0.83536 a.u. e = 1
Peri. = 17.900 degrees) Node = 260.790 ")
1950.0 i = 97.049 ")
Date R.A. (1950) Decl. Mag.

Oct 30	15h 15.25m	-45d 17.9'		
Nov. 1	15 23.03	44 02.9	8.3	
	3 15 30.47	42 46.6		
	5 15 37.59	41 29.2	8.1	
	7 15 44.43	40 10.6		
	9 15 50.98	38 51.0	8.0	
	11 15 57.28	37 30.5		
	13 16 03.34	36 09.0	7.8	

OCTOBER 22, 1987

COMET McNAUGHT (1987b1)

On October 18th Ron H. McNaught of Siding Spring Observatory in Australia found the year's 28th comet -- 1987b1 -- using an 85-mm

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camera lens.

OCTOBER 16, 1987

COMETS, COMETS, COMETS

David Levy of Tucson, Arizona, discovered his second comet this year, 1987y. He first glimpsed it low in the west on the evening of the 10th. Levy describes it as diffuse with some central condensation, and having no tail. The few observations made so far put the comet's magnitude at between 9 and 9-1/2. The most recent position, determined October 13th in 1950 coordinates, was right ascension 14 hours 47 minutes, declination +17.1 degrees. Only a couple of accurate positions have been measured -- not enough for computing an orbit. However, the comet is apparently moving southeastward on the sky and away from the Sun in space.

Comet Bradfield, at 7th magnitude, continues its slow climb northeastward. With the Moon out of the sky, the comet should be easy to spot in binoculars. Observing last night from northern California, amateur Bill Smith says this comet has a stellar nucleus and a distinct hood on the sunward side of its coma. John Bortle also reports considerable structure in the inner coma. Positions for the comet are given in the entry here for October 2nd.

By now, Comet Rudenko should be moving away from the Sun in morning twilight, though we haven't heard any reports of sightings. It is now 30 degrees away from the Sun; positions are given here (see entry for October 2nd).

OCTOBER 2, 1987

EPHEMERIDES FOR COMETS RUDENKO

AND BRADFIELD

Here are epoch 2000 coordinates at 0 hours Universal time for COMET RUDENKO (1987u) until the end of the year:

	R. A. (2000)	Dec.	Mag.
Oct. 2	12h 26.9m	+18d 39'	7.5
	7 12 15.1	15 42	7.3
	12 12 03.6	12 07	7.3
	17 11 52.6	7 50	7.3
	22 11 42.4	+2 44	7.4
	27 11 32.7	-3 13	7.6
Nov. 1	11 23.2	10 05	7.8
	6 11 13.2	17 55	8.1
	11 11 02.0	26 39	8.3
	16 10 48.1	36 04	8.6
	21 10 29.6	45 45	8.9
	26 10 03.0	55 05	9.2
Dec. 1	9 22.5	63 19	9.6
	6 8 19.7	69 36	10.0
	11 6 51.8	73 01	10.4
	16 5 18.5	73 16	10.8
	21 4 07.1	71 17	11.2
	26 3 21.3	68 21	11.6
	31 2 52.8	-65 13	12.0

Here are epoch 2000 coordinates at 0 hours Universal time for COMET BRADFIELD (1987s) until the end of the year:

	R. A. (2000)	Dec.	Mag.
Oct. 2	15h 54.8m	-11d 15'	+7.0
	7 16 08.7	9 47	6.7
	12 16 23.3	8 12	6.5
	17 16 38.8	6 29	6.2
	22 16 55.1	4 37	6.0
	27 17 12.3	2 35	5.8
Nov. 1	17 30.5	-0 24	5.6
	6 17 49.9	+1 57	5.5
	11 18 10.6	4 27	5.4
	16 18 33.0	7 05	5.4
	21 18 57.4	9 50	5.4
	26 19 24.1	12 38	5.4

continued from page 5

Dec. 1	19	53.2	15	27	5.5
6	20	25.0	18	09	5.6
11	20	59.0	20	38	5.8
16	21	34.8	22	44	6.0
21	22	11.3	24	23	6.3
26	22	47.4	25	32	6.6
31	23	21.9	+26	11	6.9

AURORA ENCOUNTERS

This article is a bit dated, but I thought it offered some interesting insights into aurora's. It was downloaded from Compuserve's Astronomy News Forum.

SCIENTISTS DISCOVER NEW SOURCE OF NORTHERN LIGHTS

The long held view that the northern lights are part of the magnetic storms themselves is incorrect, according to two scientists from NASA's Jet Propulsion Laboratory, Pasadena Calif.

In a paper presented before the American Geophysical Union spring meeting in Baltimore, Md., Drs. Bruce Tsurutani and Walter Gonzalez described a more complex and continuous process as the source of the Aurora Borealis and the similar south pole phenomenon, the Aurora Australis.

It is well known that magnetic storms are caused by solar flares and other solar disturbances which blast out into the interplanetary medium. Tsurutani and Gonzalez have shown that the cause of major magnetic storms are intense interplanetary electric fields that last for more than 3 hours. The effects of these fields, however, are short-

lived, they said.

The northern and southern lights watched for days to weeks in the trailing portion of the storm are not part of the storm decay, as has been the long-held view of the scientific community, but are caused by waves, called Alfvén waves.

Tsurutani and Gonzalez, working with data provided for 500 consecutive days by the International Sun Earth Explorer-3 satellite (ISEE-3), have investigated the process causing the long-lasting auroras.

The process begins with wave action propagating through the plasma, the interplanetary medium, between the sun and Earth, Tsurutani said. The waves originate near the sun, but their cause is presently not known, he said.

The waves cause directional changes in the interplanetary magnetic field. When the wave field becomes opposite to the northward direction of Earth's magnetic field, a magnetic interaction occurs and the two fields are coupled.

"In short, the interplanetary magnetic field, which originates with the sun, connects with the Earth's magnetic field and pulls the field in the downstream direction away from the sun," Tsurutani said. "This magnetic field reconnects behind the Earth and causes charged atomic particles to slingshot toward the night side of Earth."

When the plasma gets close to the planet, an instability occurs and causes the particles to scatter. Then, the ions and electrons follow the magnetic field lines of Earth toward its surface at both poles. They strike atoms in the upper atmosphere and excite them to higher energy.

These excited atoms radiate this excess energy by emitting light which is characteristically seen as the wavy red and green lights of the auroras.

The scientists said that magnetic storms are a continuous process, but differ in intensity. Very large storms are rare and occur about once in every 3 or 4 years. Large storms occur once every month or two and substorms occur every 3 hours.

They said the solar wind, the constant stream of particles emitted by the sun, may be initially accelerated by Alfvén waves near the sun.

"What we may be seeing," Tsurutani said, "are the remnants of the solar wind acceleration process striking the Earth's magnetic field, causing injection of the solar wind energy into the Earth's atmosphere."

The ISEE-3 satellite, later named ICE for International Cometary Explorer to examine the comet Giacobini-Zinner in 1985, is under the control of NASA's Goddard Space Flight Center, Greenbelt, Md. It was in orbit about 850,000 miles from Earth when the data were acquired in 1978 and 1979 for the Tsurutani-Gonzalez study.

Tsurutani is a JPL scientist conducting research in magnetic fields. Gonzalez, a highly respected scientist, spent 1 year on leave from the Instituto de Pesquisas Espaciais in Sao Jose dos Campos, Brazil.

At The Last Meeting

The meeting was called to order at 7:30:02 p.m. on October 27, 1987. 29 members, 3 guests, and 1 witch (Ellen Owen) were present.

Orders were taken for the *Astronomical Calendar*, *RCAS Handbooks*, and the *1988 Wonders of the Universe Calendars*. It was noted that there would be a few *RCAS Handbooks* and *Wonders of the Universe Calendars* for about \$5.00 (retail \$7.95) to sell at the November meeting.

An update on the Atlas Site... the shaft has not been completely sealed by the contractor, but they promised to do it before winter. A new larger padlock for the gate was purchased and our present keys will work on it. It was also reported that a new insurance company will insure us for \$100/year LESS!

New officers for 1988 were elected. [See article, pg. 1. ED.]

The program featured a videotape of the 10th Anniversary of Hyde Observatory and Carroll Moore's 70th birthday party.

A Note From The 2nd Vice-President

by Ron Debus



To all pack members this is your newly elected second vice president. Now, that has a nice ring don't you think?? I want to thank all of you for the job. I've always enjoyed taking part when I can. Now let's get down to programs. First, I must warn you I will take no prisoners, and I will defiantly NOT take NO for an answer when you are called upon. Here's a sample of the coming months...

Nov 1987 -- Earl Moser / slide show

Dec -- Rick Johnson or Larry Stepp / slide show

Jan 1988 -- Binocular night featuring Steve Bornemeier

Doc Manthey, Donna Woodenberg, and Ellen Owen

Feb -- Rick Johnson (depending upon Decembers program)

Mar -- Lee Thomas / program on Atlas Site

Apr -- John Lortz / past Astronomy Days & picnics

May 1988, for the month we will leave our end of the galaxy and travel a few thousand light years possibly backwards to another group of aliens who also belong to another very interesting club. With a little persuasion, I think they will give a program and a display of what they are up to. I've also talked to a young man from Lincoln High School, and it seems they have started an Astronomy Club... it might be interesting to find out what they are doing. There's also the Omaha club and I plan to steal a program from them. Now, I'm just getting started.

I don't intend to forget Jack Dunn, we all know what a tremendous help he has been with the programs. We will be able to double up with Jack anytime a new program comes in.

REMEMBER, cooperation means we will have programs. That's all I have for now... I'm Ron Debus, 2nd V.P... I will call you.

Telescope Making and YOU!

While Gregg Beach is taking some time-off from the camera, I thought I'd introduce you to an interesting fella named Steve Dodson. Steve is nuts about telescope making, and he has provided CompuServe with some very interesting reading. We pass it along to you here in Steve's first article... [Ed.]

OVERVIEW OF ONLINE AMATEUR TELESCOPE MAKING

Steve Dodson, an award-winning telescope maker associated with Ontario's renowned Science North science learning center in Sudbury, Ontario, will be your guide here to a weekly series of informal online "lectures" on the subject of Amateur Telescope Making (ATM). You'll soon come to identify with Steve's boundless enthusiasm for this subject, and to appreciate the vast reservoir of know-how which he will be sharing with you here. Steve will be uploading a new ATM article roughly every week, so plan to add the ATM corner of CompuServe to your regular stops on the system! You can reach Steve on the Astronomy Forum (GO ASTROFORUM to get there), and he would love to hear

your feedback and questions. If you have suggestions for additional topics you would like to see him cover, please mention it! And Steve would be delighted to incorporate "guest lectures" from other members of the online ATM community who would be good enough to share their experience. This ATM feature is to be BY and FOR amateur telescope makers, so by all means let Steve hear from you!

-- Dick DeLoach
Astronomy Forum Administrator

AMATEUR TELESCOPE MAKING - AN INTRODUCTION

Welcome to what I hope you'll find to be an exciting new astronomy feature here on CompuServe! If you are just taking a glance out of curiosity, STOP: don't touch that keyboard! This probably IS for you even if you don't make telescopes. If you do, then you surely know that once the telescope-making bug has really bitten it is not long before you become a certified TN (see footnote at end of article). The TN condition never gets better -- sufferers can only get relief by sharing ideas and experiences with others in the same condition, or by seeking refuge in workshops liberally supplied with glass discs, bottles of grit, plywood, teflon, various forms of tubing and so on. The first remedy is perhaps what brings me here to the TN corner of CompuServe!

Seriously, I hope I have not scared off those of you who already got bitten by enough bugs during the last warm observing season. You will find lots of interesting ideas here that will enrich your observing experiences without turning your spouse/companion into a telescope widow/widower on cloudy nights too! We will also give you some of the low-down on TN victims that you won't read about

anywhere else. Did you know, for instance, that some telescope exhibitors at Stellafane actually finish their telescopes long after the convention gets into high gear? Well, one year on a Friday afternoon there was a high-school age TN still going at it with hammer, saw, and drill. On Saturday he was clearly visible on the hill trying to achieve balance by taping his tools to the back of his tube! And I thought I was cutting it close with first light in my 22-inch 54 hours before leaving on the 600 mile drive to Breezy Hill in 1981!

Experienced telescope makers will find in this space the opportunity to share new ideas and obtain more mutual support. I'll be reporting on new developments in Telescope Making and proposing ideas for projects, both quick and simple and as challenging as anyone could want.

I think we are all witnessing history in the making. In 1983, after a recently discovered comet had come and gone before anything in print had alerted us, I commented to our local professional astronomer that the technology existed for us to receive the needed data in hours by computer at far less expense than the slow-as-the-mail I.A.U. cards. "It'll never happen", he said, "not in a dozen years". Well, a year later we had those overnight bulletins and data, thanks to Sky & Telescope magazine's original uploads to the CompuServe PUBLIC ACCESS area (since moved to the Astronomy Forum) A year and a half later we were in touch with a network of skilled observers on the Space Forum, the predecessor to the Astronomy Forum, finding out what Comet Halley was doing two months before it would hit the mags!

It had to happen sooner or later for Telescope Making too. I believe the communications technology in our hands here will open up new and vast horizons to enrich us all. I feel

very privileged to be here and part of it. It will happen because Astronomy Forum type people and telescope makers are such a creative, resourceful, and forward-looking bunch that the benefits of new technological opportunity will not fail to speedily bear fruit. It will not be because of anything I do or write, but because of you and other TN's who give us the inside dope on their areas of expertise. I will be looking forward to hearing of your ideas, comments, and questions on the Forum. This is a fast turn-around medium. You won't have to wait months to see a response to your message. It may form the subject of next week's text!

NEXTWEEK: Portrait of a TN. (and meet this one!)

(Footnote: TN = Telescope Nut <grin>)

PORTRAIT OF A TELESCOPE MAKER (AND MEET THIS ONE!)

In this article I'm going to try to paint a composite portrait of a typical telescope maker, and also say a few words of introduction about myself. Of course there is no typical telescope maker. Every telescope maker stands out for some special reasons. To make a telescope you don't have to "join the ranks" in the conformist sense. But you will discover that you have a lot in common with other telescope makers. I hope you will recognize something of yourself in this "portrait" even if you haven't made a telescope.

A telescope maker might be a handyman or woman who doesn't have much experience with astronomy but would like to be able to go out with the children and do some more penetrating star-gazing using the productivity of their own hands as the basic resource instead of enough cash to buy a VCR. Or maybe a senior elementary or high school

student pursuing an interest in astronomy on a small budget. This illustrates two routes to telescope making: One is joining the pleasure of making things with one's own hands to the natural attraction of getting one's head up into the starry realms to drift through the local spiral arms of our galaxy. The other starts from a more focussed interest in astronomy and moves toward making things. For still others the fine art of creating incredibly precise and smooth optical surfaces is the main thing. I have a friend whose telescope-making activities lean that way. We kid him that his 10-inch telescope is going to take as many years to make as there are inches of aperture on his parabolic primary mirror! But that would be missing the point. The mirror's surface has remained within a few millionths of an inch of as precise a curve as anyone could want for at least the last couple of years. But time and time again he would reduce the overall degree of correction in order to go after this or that residual zonal area before once again pursuing the perfect paraboloid. You would have to travel many miles to find someone who has more practical knowledge of the techniques and pitfalls involved in figuring fine telescope objective mirrors.

Other telescope makers are motivated by a need for more convenient or more desirable telescope mountings and don't insist on making the optics. At one point I fit into this category. I had worked out a new way to make a big scope with equatorial tracking one-man-portable and I wanted to demonstrate the concept as quickly as possible, (see Telescope Making Magazine #13, #14, #21, and Sky & Telescope Magazine Aug. '84 pg. 167). I bought a well-known 22-inch mirror from the San Francisco Sidewalk Astronomers. Seven intense months of construction produced a highway-ready result just days before departure for Stellafane 1981, where the effort was rewarded by great observing and a prize

for mechanical design ingenuity.

You may say "this feature isn't for me because I don't make telescopes and I don't fit any of the above categories". Wait! Don't go away yet! Everybody who observes has felt at times the observing would be more enjoyable or more fruitful if the equipment were more flexible (or more solid), convenient, or more adapted to the specific purpose at hand. If your response at these times is ALWAYS "I just saved up and bought a Super -----", then read no further. If however you sometimes think for a while and then rig-up a solution for yourself then congratulations! You are an associate telescope maker, and this feature is for you.

Now I've said something about myself and one of my recent telescopes, but maybe I should go back a bit. My name is Steve Dodson. A grade two teacher in South Bend, Indiana launched me on an astronomical career by loaning me a book full of star scapes back in Truman's time. At 11 years old I sought to upgrade my instrumentation by building a 6-inch, which when completed a year later cost me only 33% more than my store-bought 3.5-inch reflector. Following completion of an M.Sc degree based on applied nuclear research with a room full of equipment I built myself, I taught high-school physics for 13 years. Now I teach university Astronomy and coordinate Physics and Astronomy programs at Science North, a new hands-on science museum in Northern Ontario. By enlisting the volunteer help of Greg Beach and other Sudbury Astronomy Club members I have been able to build a Solar Observatory and a star-party facility at Science North. With the 22-inch we had the first public viewing of Comet Halley in Canada on Oct. 11, 1985.

NEXT MONTH: "Why make a Telescope?"

Some Thoughts From the Editor....

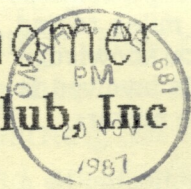
*Ok, so I needed a little bit of filler for the last page. But that's what newsletter editors are for; to fill in the gaps with profound thought and words of wisdom. Unfortunately I have neither of those to offer you here. I do, however have a plea to pass along to all you good and faithful PAC members. **HELP!***

*A new year is upon us and I just KNOW some of you are itching to put pen or keyboard in hand and grace these pages with **YOUR** wisdom. Anytime folks!!!*

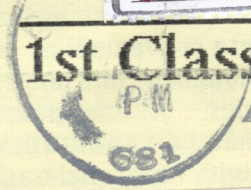
John Lortz

The Prairie Astronomer
c/o Prairie Astronomy Club, Inc

P.O. Box 80553
Lincoln, NE 68501



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Pac Meeting November 24th