Mid-States Convention Notice!

We have received registration information and forms on the 1991 Mid-States Regional convention. A supply will be available at the April meeting for those interested. The convention will be held June 13 - 15 at Friends University in Wichita, Kansas. ``Amateur Astronomy: Yesterday, Today, and Tomorrow'' is the theme.

Overnight lodging is available at the Friends University dormitories (2 persons/room at $13.50 per night, pillows, linen and towels NOT provided). Otherwise, nearby motels include Canterbury Inn ($33), Scotsman Inn ($27.95 - $31.95), Holiday Inn-West ($59) and Ridge Plaza Inn-Best Western ($39 - $43). All are within 10 minutes' drive of the campus, around 5500 - 5800 W. Kellogg in Wichita (if your pondering a map).

Registration Fees:

Individual (before May 15) $26
Family (before May 15) $35
(add $10 after May 15 to each above fee)
Banquet Ticket (per person) $10
Meal packages are also available at the Friends University Cafeteria (prices are on the registration form).

The program includes the usual paper sessions, swap meet, plus workshops on telescope making, observing methods and astrophotography. Also included: observing at Lake Afton Observatory Friday and Saturday nights, and solar observing Sunday morning. Banquet (Saturday night) includes the awards and Jose Olivarez speaking on the convention theme.

Victims of the Great Film-Eating OmniMax Projector at Hutchinson will, of course, be able to redeem their freebie passes at the Omnisphere in a PAC side-trip to Hutchinson (not to be confused with the Omnisphere and Science Center in Wichita, which is co-sponsoring the convention).

For families contemplating the trip, which would undoubtedly include non-Astronomical spouses, children, pets, relatives and almost total strangers, Wichita offers the Wichita Art Museum, Historical Museum, Sedgwick County Zoo, Cowtown, and two large shopping malls (!)

We'll probably be talking about a caravan or some such harebrained scheme at the April meeting, so come prepared if you entertain notions of attending.

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Next Meeting April 30, 1991

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THE Prairie Astronomer

A Brief History of the Prairie Astronomy Club, Part 1

[As mentioned in last month's newsletter, this month marks the 30th anniversary of the Prairie Astronomer, and the 30th (plus 5 months) of the Prairie Astronomy Club itself. It seems fitting at this time to present the history of the club, as originally told by Earl Moser (with the help of Lee Thomas) in the March 25, 1980 issue of the newsletter. The article will be presented in two parts, with part two appearing next month. ED.]

The Prairie Astronomy Club can trace its beginnings to the time of November 7, 1960, when Mercury transited the sun. An item in the newspaper prior to the event was noted by several interested people in the Lincoln area. Earl Moser was one of these people, and he recalls observing the transit from Hickman.

The news item mentioned that Professor Carroll Moore was going to observe the transit from Nebraska Wesleyan University. Several astronomy enthusiasts joined Professor Moore for the event, and afterwards decided to have a meeting sometime in the near future. Widespread publicity by the news media brought the attention of others interested in astronomy, and they gathered to discuss the possibility of forming a club. Informal meetings were first held in the basement of Van Fleet Hall of Science at Wesleyan.

In April, 1961, a constitution was adopted by the 14 charter members, and the Prairie Astronomy Club of Lincoln was formally established. The charter members were:

Walter Erbachh	Richard Johnson
Harlan Franeyh	Werner Klammer
Faun Fritz	Caroll Moore
Dick Hartley	Tom Pansing
Jim HoskinsP	Philo Prell
Phillip Johnson	Eugene Robertson
Pete Schultz	Jess Williams

without the connecting lines.

The projection methods are quite versatile. Gnomonic matches photographs quite well. You can chose Mercator with distortion on the E-W axis or on the N-S axis. Unfortunately, I couldn't get the N-S version to work. You can use polar projection to make a star wheel type chart. The default projection is stereographic (nothing to do with 3-D) which works well for constellation sized charts. It will even print out charts that when held at arm's length match the scale of the sky. You can even set it to match your arm's length. Unfortunately, few constellations entirely fit on one map at this surprisingly large scale. I did use this option to print out a chart to help a club member show her daughter the star she was named after. The chart was printed with her star in the exact center. You don't even have to know the star's coordinates to do this as you can look them up using the map quiry pointer then enter them as the center for the chart.

The program will print out charts using equatorial, ecliptic or galactic coordinates. Though since it doesn't print the related coordinate grid these can be a bit confusing.

While the program does do all it claims, I do have a lot of small gripes that add up quickly. I found by accident that when I make a comet ephemeris and have it put into the DOS default directory it goes there fine. The program can always find this file. But when it is selected the programs path will correctly display C: as the path to the file but when it goes to actually read the file the program assumed I'd entered C:\ instead. Since that was not the correct path the program just dumped me to DOS without telling me what happened. I had to use a professional debugging program to solve the mystery. If you use the configure option to enter all path names in full and never assume the default this won't happen to you. Still a program that says it is using the default directory and does use it to find the file names but then uses the root directory to read the file is buggy as far as I am concerned. I have been dumped to DOS by things I can't repeat. Everything is the same but one time it works the next time it doesn't and I am in DOS with a messed up screen.

When you abort a printout it leaves the printer in graphics mode. When you correct the mistake that caused you to abort in the first place it doesn't reset the printer. The text heading for the chart prints in graphics mode and is a jumble of gibberish. Or, if you quit the program and go to something else that is dumb enough not to reset the printer you are in trouble. Such an abort should reset things. Even when terminating normally the printer is only partially reset demanding the printer be turned off and on again for normal use. At least that is the result on my Epson LQ800 and Lee's related LQ1050.

When you print a star chart the default is that it NOT be in 3-D. Yet if you accept this you are next asked for the eye spacing for the 3-D view even though you aren't going to use it! This makes you think you asked for the 3-D view when you didn't.

When a screen says "Hit any key to continue or ESCAPE to quit" the escape key will be treated as any key and you continue on to the next step! When there is no message about the escape key you can usually use it to quit what you are doing.

The program comes with no instructions except for, a rather unhelpful, help file. The file explains the general concepts of the program but has little help in exactly how to carry the concepts out.

I could go on about how user unfriendly this program is but you get the drift. Still, once you have worked your way up the learning curve it can be a useful program. I can't say it is worth the $59 registration fee but you need not pay that to try it out. That is the beauty of shareware programs. The full registered program with all comet and star files and 3-D viewer is $200 which is the cost of the much more professionally done Dance of the Planets.

A Planetary Grand Tour

by Carolyn Collins Petersen

A STAR IS BORN

Imagine life without the Sun...

No sunrises.
No phases of the moon.
No seasons.
No people, or animals, or plants.
No Solar System.

That's right. No planets, moons, asteroids, or comets. Nothing, perhaps, except diffuse clouds of gas and dust, swirling around in space.

Come to think of it, though, that's a pretty fair description of the state of our Solar System around five billion years ago. It didn't exist as we know it. In its place was a cloud of interstellar 'stuff' that we'll call the 'solar nebula.'

What was this 'stuff' in the nebula? Well, since hydrogen is the most abundant element in the universe, it makes sense that there would be a great deal of it in the cloud. Along with the hydrogen was a smaller amount of helium gas, and probably very small amounts of other gases. Grains of dust -smaller than pinpoints -- mixed in with these gases to form a swirling mass of interstellar matter. The whole nebula -- in motion within itself -- rotated slowly. Imagine a toy top or a gyroscope in slow rotation around a center of gravity. This is what the motion of the solar nebula would have been like.

Because of this rotation, the cloud of gas and dust started to pull in on itself -- to contract into a thicker 'blob' or globule at the center where the gravity was strongest. The gravitational attraction at the center pulled more material into a steadily-thickening, dense ball of gas and dust. As the density increased, pressure on the gas and dust caused the temperature to rise. The heat tried to radiate away from the center, but it was trapped by the incoming gas and dust.

There was nowhere for heat to radiate except back into the center, and so the temperatures rose even higher. Material continued to fall into the center, increasing the pressure and temperature. Finally, the temperature was high enough -- 18 million degrees Fahrenheit -- that the center began to glow. Our star was shining for the first time.

Yet, if you had been able to observe this stellar 'lamplighting', you probably would not have seen anything for a few million years. The newly-born star was still contracting, surrounded by a cloud of incoming dust that blocked most of its light and heat. The star -- our Sun -- was not yet radiating *enough* heat to push away these outer regions of gas and dust. It was still shining from the action of gravitational contraction.

At some point, though, the Sun contracted far enough to allow nuclear reactions in its core. Under the tremendous heat and pressure, atoms of hydrogen began to fuse to form helium, and the heat of that reaction became the primary source of the Sun's energy. The infall of material slowed down. The pressure of heat escaping out was finally strong enough to evaporate the nearest parts of the original solar nebula. What remained was a young star, surrounded by a flat, rotating disk of gas and dust.

The birth of our Sun took place over millions of years of time. It was the first necessary step in the formation of the solar system. The Sun's creation made possible the formation of the planets in all of their beautiful diversity.

Of course, we had no way of being there when it happened. How did we formulate this theory of the sun's birth? We've been able to find other places in the universe where all stages of starbirth are taking place. By studying these places, we gain an understanding of how our own star was born.

Yet, we also study the birth of our sun for another reason: someday, we hope to understand the formation of the planets. And, if our theories about the creation of the solar system turn out to be correct, we'll have a handle on the births of other stars in the universe. Already we are beginning to seek out stars that appear to have disks of material around them, looking for all the universe like our Sun did, over 4 billion years ago. What will we find in those disks?? Planets??

And, if we do find planets, that discovery will probably raise more questions than it answers, for planets are the most interesting by-products of the birth of a star.

DEEP SKY 3-D

by Rick Johnson

The club recently received this program in its shareware version with the request that we distribute it FREE to all club members who have IBM computers with CGA, Hercules, EGA or VGA graphics. To use the 3-D features, you will need a printer that is Epson FX graphics compatible. Fortunately, most printers can be set for this compatibility mode. They have asked we publish a review of the program in our newsletter. If you wish a copy come to the April meeting with blank, unformatted, disks in hand. I will have made copies on 5 1/4" and 3.5" disks to exchange with you. It takes two 360K disks. It fits on one of any other size disk. Please call me (423-6726) before the meeting so I can be sure to have enough disks of your format with me. I'll be leaving for the summer soon after the meeting making the program unavailable for several months. If anyone in town can format all types of IBM disks and wants the job, I can get the master disks to you at the meeting.

Shareware isn't the same as public domain. You are expected to try out the program and, if you find it worth the cost, to remit the registration fee. A rather steep $59 in this case. In return they send you Star Data #0 (I don't know what this is) and a 3-D viewer. Only registered owners can expand the star and comet data base from what is supplied on the shareware version. Considering you get most periodic comets of interest along with Halley through the 2134 opposition as well as 3253 stars down to 5.5 magnitude on the shareware version I doubt many will need all 14 star disks or the other 1100 comets that are available. There are 14 disks of stars adding up to a hefty 5 meg of disk space and $91 more. All comets fit on one $15 disk. Many other things are available to registered owners such as better 3-D viewers at $35. All in all, you can spend more than the cost of Dance of the Planets upgrading it and still not have the thousands of asteroids or great color graphics Dance of the Planets has.

Once you learn what not to do, the program is fairly well behaved and does what it claims. You can, as the name suggests, look at the sky in 3-D. You can, for instance, select your favorite constellation and see what it would look like if your eyes were a half light year apart (or any other distance you wish). You can see a comet's path across the sky in 3-D. Since a comet is much closer than the stars the program defaults to a more appropriate .01 A.U. unit eye separation though this can be changed as well. You can even view the comet's tail in 3-D to see if it is pointed toward you or away from you or at right angles. Normal views can be made as well. When new comets are discovered you can enter in the orbital elements and print up your own ephemeris like those in SKY AND TELESCOPE but for the dates and times you choose. This can then be plotted on the star charts the program draws. While Dance of the Planets, demonstrated a couple meetings ago, can do the same thing it doesn't make printouts like this one does. Dance of the Planets allows you to see the comets and asteroids in 3-D on the screen using special red-green glasses but you can't do this with the stars or on printouts. DEEP SKY 3-D on the other hand does all the 3-D work on the printer. You can display two dimensional charts on the screen or printer but 3-D can only be done on paper.

Several times SKY and TELESCOPE has printed two side-by-side pictures that you could train your eyes to merge into a 3-D view. This is how this program works. I find that two paper towel tubes make a great aid in viewing the images. Just use them to isolate the correct image for each eye and presto -- a 3-D view. What their viewer is like I don't know.

This technique works well for the small scale 3-D views. They are only about 2 1/2 inches on a side. The program also prints out 8 x 10 inch maps. I find that by standing 5 feet back and using the tubes I can again view these in 3-D but the scale then is almost exactly the same as a close up view of the small scale maps! They do sell a $35 viewer for the large scale maps but again I have no idea how well it works.

The program will make charts in various ways. You can stand off from the sun 5 A.U. (user defined) and watch the comet and earth relationship. It isn't nearly as versatile in this regard as Dance of the Planets nor is it in color but it does work. Comets appear as a + with a line coming from it representing a .1 A.U. long tail, useful to estimate the tail's actual length.

Star charts may be drawn in many different ways. You can draw them map style down to any limiting magnitude (well down to 10 if you have purchased all additional star disks) and at any scale you desire. You can center the charts by coordinates you choose or by constellation. The latter is a great aid for those learning the constellations as you can print them both with and

The meeting place was moved from the basement to the upstairs lecture hall of the Van Fleet Building sometime in 1961. The club held its meetings for a wile in 1963 at the University of Nebraska museum. In 1964 and 1965 it met at Union Loan & Savings at 56th and O. In 1966, meetings returned to Van Fleet Hall until January 1969 when Wesleyan opened its new Olin Hall of Science. Meetings continued there until December, 1977 when Hyde Observatory was dedicated and the club, in exchange for its activities in running the Observatory for the Lincoln Parks & Recreation Department, was able to claim as its home an honest-to-goodness astronomical observatory facility.

The Prairie Astronomy Club was first affiliated with Sky and Telescope on October 16, 1962, and has offered its members the magazine as part of its membership privileges ever since.

The Prairie Astronomer, the club's official newsletter, was published first on April 6, 1962. The editor was Pete Schultz. p73 (Then Editor Lee Thomas' Note... I hate to dispute Earl's memory, but in perusing through the club's historical file, I came across an informal, 3-page newsletter that included the club's constitution and several articles by Jess Williams. This would indicate that The Prairie Astronomer, though not at that time carrying the name, had been founded at least one issue earlier, which would put it very early in 1961, about the time the constitution was adopted. By the way, dues then were $5, which gives you an idea of where inflation has taken us!)

In August, 1962, it was first suggested that the club join the Astronomical League.

Ok, I can't explain WHY this is Volume 32, issue 4. But as a side note, to find this article I had to pour through all of my back issues of the PA, dating back to the mid-70's. It was a fascinating journey into the past, and in doing so I found some excellent articles that I think deserve to be reprinted. You can expect to see some of these articles in upcoming issues. ED.

The Prairie Astronomer is published monthly by the Prairie Astronomy Club, Inc., and is free to all club members. Membership status and expiration date are listed on the mailing label. Membership dues are: Junior Members and Newsletter Only Subscribers...$10/yr; Regular Members...$26/yr; Family Memberships...$29/yr; Address all new memberships, 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: Dave Knisely (Pres)223-3968, Eric Hubl (V.Pres)423-6267, Ron Veys (Sec)486-1449, Lee Thomas(Tres)483-5639, Jack Dunn (2nd V. Pres)475-3013. All newsletter comments and articles should be sent to Newsletter Editor JOHN LORTZ, 12023 PARKER PLZ #105, OMAHA, NE 68154 no later than 10 days before monthly club meetings. Club meetings are held the last Tuesday

Observing Chairman's Report

by Dave Knisely

THE NEXT SCHEDULED STAR PARTY IS FRIDAY, MAY 10TH AT THE ATLAS SITE. Late Spring skies offer many distant galaxies and a scattering of other objects for your viewing pleasure. In Canes Venatici is one of the largest and brightest globular clusters, M3, located six degrees east of Beta Coma Berenices. A four inch will begin to show stars on the outer edges, while a six or eight inch aperture will reveal thousands of faint cluster members. The rest of the constellation is loaded with many faint galaxies, with a few being easy targets for small apertures. M94, located three degrees north and one west of Alpha Canum Venaticorum, is a tightly wound spiral which appears as a round fuzzy patch n a 2.4 inch refractor. Larger instruments brighten the center and enhance the outer haze, but add little detail. M63 is another bright spiral, located 1.25 degrees north of 19 Canum. Small instruments show it as a faint fuzzy oval with a brighter middle, while a ten inch reveals a star like nucleus and makes the outer haze appear slightly mottled. A somewhat fainter galaxy, NGC 4244, is located 1.25 degrees south and 1.25 west of 6 Canum, and appears as a faint slender streak in small instruments. A ten inch shows some vague patchiness near the ends of this nearly edge-on spiral galaxy. A larger edge-on spiral, NGC 4631, is located 5.75 degrees south and 2.5 west of Alpha Canum. It appears as a fat fuzzy cigar-shaped patch in moderate apertures, with larger ones revealing some patchy detail including a star cloud. An eight inch will sometimes reveal a small elliptical galaxy, NGC 4627, on the north-west side of NGC 4631. Another interesting galaxy, NGC 4656, lies less than a degree to the east-south-east of NGC 4631, and is visible in a four inch as a faint fuzzy streak. In an eight inch, a curved patch of light off one end makes the galaxy appear hook shaped.

In nearby Coma Berenices is the bright edge-on spiral galaxy NGC 4565, located 1.5 degrees east of the faint star 17 Coma. Small instruments will show it as a faint streak of light with a slightly fatter middle. A six inch will show the pronounced nuclear bulge and pointed ends, while an eight will occasionally show the dark lane across the nucleus. Also in Coma Berenices is the famous ``Black-Eye'' galaxy, M64, located about a degree east and a quarter north of 35 Comae. Although visible in a good pair of binoculars, this object's major feature (the dark spot) is difficult to see even in moderate sized apertures. It hugs the north side of the nucleus and is small, so it is quite easy to miss. A ten inch will show the spot as a dark curved arc and will hint at a soft spiral structure in the galaxy.

In Ursa Major are a pair of interesting objects, M97 and M108. M108 is a nearly edge-on spiral galaxy located 1.5 degrees east and 3/4 degree south of Beta Ursa Majoris, and is visible in a three inch as a faint cigar-shaped fuzzy patch. A ten inch at high power will show some vague dark detail in the galaxy, as well as a bright star near the center. M97, located 1.5 degrees south and two degrees east of Beta, is a moderate sized planetary nebula which is also known as the ``Owl'' nebula. It is visible in a three inch as a small puff of light, with larger instruments showing a dark spot off center. A ten inch equipped with a nebular filter will sometimes show both ``eyes'', although they are far from obvious.