The Prairie Astronomer

September 2022 Volume 63, Issue #9

SPECIAL PRESENTATION BY PETE SCHULTZ ON SEPTEMBER 26TH

IN THIS ISSUE: Webb Captures Tarantula Nebula
Merritt SRA Certified as Dark Sky Park

The Newsletter of the Prairie Astronomy Club

The Prairie Astronomer

NEXT MEETING AND PROGRAM

The next meeting is September 27th at 7:30pm at Hyde Observatory

The program will be a review of the Nebraska Star Party - photos, video and astrophotography. Please send your photos to Brett Boller. Also nominations of club officers for next year.

On Monday, September 26th, we will have a special guest speaker – Dr. Peter Schultz: "Planetary Impacts and Asteroid / Comet Risks to Earth" Pete was a founding member of the Prairie Astronomy Club.

The program starts at 5:15 PM. At 6:15 PM we will break to watch a live feed of the DART (Double Asteroid Redirection Test) space mission as it impacts Dimorphos, followed by Q&A.

FUTURE PROGRAMS

October: Club Viewing Night
November: How To Buy a Telescope
December: Holiday Gathering

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Cover: In this mosaic image stretching 340 light-years across, Webb's Near-Infrared Camera (NIRCam) displays the Tarantula Nebula star-forming region in a new light, including tens of thousands of never-before-seen young stars that were previously shrouded in cosmic dust. The most active region appears to sparkle with massive young stars, appearing pale blue. Credits: NASA, ESA, CSA, STScI, Webb ERO Production Team

CALENDAR

Branched Oak Observatory Fall StarBQ
September 24, 5-11pm

September 26, 5:15pm at Hyde Observatory
Pete Schultz

PAC Meeting
September 27, 7:30pm at Hyde Observatory
NSP photos and astrophotos

Observe the Moon Night at Hyde Observatory
October 1, 7:30-10:30pm

October 14
Lazy Horse Brewery Star Party

Audubon Star Party at Spring Creek Prairie
October 22, 6:30-10:30pm

2022 STAR PARTY DATES

	Date	Date
January	**28**	2/5
February	25	**3/4**
March	25	**4/1**
April	22	**29**
May	20	**27**
June	17	**24**
July	22	**29**
NSP	**7/24**	**7/29**
August	19	**26**
September	**23**	30
October	21	**28**
November	18	**25**
December	16	**23**

Dates in BOLD are closest to the New Moon.

CLUB OFFICERS

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Night Sky Network

www.prairieastronomyclub.org

Meeting Minutes

Jim White

Our normal monthly meeting was started at a later time this month as we had a public presentation featuring NASA Ambassador Kevin Gallagher discussing newly released images from the James Webb Space Telescope.

Bob Kacvinsky started tonight's meeting at 8:36 pm. October first will be Observe the Moon Night. October first is a Saturday so PAC will be setting up additional telescopes on the lawn outside Hyde Observatory to help with the normal Saturday night viewing at Hyde. We will have someone outside doing a constellation talk in support of the Hyde program.

September's meeting will feature programming on NSP with a with an emphasis on astrophotography pictures taken by PAC members throughout the summer and at NSP, Brett Boller will be coordinating the presentation.

The newest issue of The Reflector is out from the Astronomical League and there were some PAC members mentioned in this addition. Mike Kearns was listed for receiving an award recently for completing the Messier Observing Program, the last time a PAC member received this award was in 2009. Six other club members were listed in The Reflector for receiving their Mentorship award.

Through the Astronomical League there was a galaxy observing program and a few PAC members completed the program and will receive their awards tonight. Members receiving awards are Jenny, Joy, and Gideon Johnson, Dan Delzell, Starla Schleicher, Jim Kvasnicka., Dave Dickinson, Brett Boller, Katelyn Farneth and Bob Kacvinsky.

At 8:44 Bob turned the meeting over to Jim Kvasnicka for his monthly observing report. Club star parties are scheduled for the 23rd and 30th of September. October 1st is international observe the moon night. Jupiter is at opposition later in September and will appear larger in your telescope because of this. The Astronomical League is doing a Globular Cluster Challenge that needs to be completed by the end of September. Jim's complete observing report appears in this month's newsletter. Jim turned the meeting over to Bob at 8:49 pm.

September 8th Bob will be doing a program similar to tonight's program for home schoolers with help from Jenny Jo Johnson.

September 9th you can go on the internet to see an expert panel talking about the James Webb Telescope.

September 16th is an outreach event at Lazy Horse Brewery in Ohiowa, NE and the club could use one more volunteer to bring along a telescope.

September 17th is an outreach event at the Filley Stone Barn in Filley, NE east of Beatrice.

September 23rd and 30th are club star parties.

Hyde Observatory will be open on October 1st for international observe the moon night and PAC members will also have some telescopes setup on the lawn outside of Hyde.

The Audubon Society at Denton wants to have four telescopes for their event. Currently they have two so the club could use a couple more volunteers.

The next PAC meeting is Tuesday, September 27th. The October meeting will be at the Branched Oak Observatory and will also be the election of new officers. John Reinert didn't have a lot to add for the treasury report, keeping track of all the membership dues, records to keep this month and a report goes out to pay the clubs insurance. Bob mentioned that they need to discuss insurance to cover the clubs new shed that is located at Branched Oak Observatory but they could do that outside of the meeting. We have 63 members according to the clubs roster. No new business was brought forward so Bob adjourned the meeting at 9:56 pm.

Members receiving AL Galaxy Observing Program awards are Dave Dickinson, Jenny, Joy, and Gideon Johnson, Jim Kvasnicka, Starla Schleicher, and Bob Kacvinski. Not pictured: Dan Delzell, Brett Boller and Kate Farneth.

The President's Message

Bob Kacvinsky

Heat is slowly subsiding, fall colors are beginning to develop and nighttime length is rapidly increasing. It is nice to finally be able to start observing before typical bedtime. Cooler temps should begin to bring times of better seeing and transparency.

James Webb Space Telescope has captured most all Astronomy headlines over the past couple of months. Our August PAC Meeting featured Kevin Gallagher, NASA Solar System Ambassador, sharing the latest updates from JWST. Images continue to be posted to the Webb and NASA web sites. It seems like every 3-4 days a new image is released with "never before seen" features.

PAC will have a special guest visit from Pete Schultz, a founding member of PAC and Astronomy Professor Emeritus at Brown University who has worked on numerous planetary and solar system projects. Pete is a member of the working team of the DART mission. DART's, Double Asteroid Redirection Test, mission is to determine if a space craft collision can affect the orbit of a planetary body. DART will collide with Didymos, the small asteroid of a pair.

Pete Schultz will be in Lincoln on the evening of September 26th when DART is scheduled to complete its mission and has invited PAC Members to join him in watching. PAC will open Hyde Observatory at 5:15 PM, Monday, Sept 26th, where Pete will provide a brief background presentation followed by a live feed of the 6:15 PM CDT collision. Pete will also provide a review of several planetary projects he has been involved. Please plan to stop by Hyde for this special program.

The next PAC meeting is scheduled for Tuesday, Sept 27th. The program for the month will be featured Astro Photos from PAC members focusing on NSP and images over the past several months. If you have been taking Astro Photos this summer, please plan to provide a copy to Brett Boller or bring to the meeting on a thumb drive for sharing.

Our members have been taking some fantastic photos that match those in publications. Please plan to attend this meeting.

September and October we have public observing night requests to set up telescopes for public viewing. PAC will continue to provide latest updates via the NSN. Please consider your own circumstances and help where you can with these public events. We want to share our love of the night sky but also want you to feel safe doing so. If you have any concerns or issues, please let me know.

October 1st has been selected for the AL's Astronomy Day and has been designated as a Lunar Observing Night. Please mark your calendars as we are planning to have a Lunar night observing at Hyde Observatory. We will plan to set up our telescopes on the lawn to help supplement the deck scopes. I hope you can come and join in on the evening.

Merritt Reservoir State Recreation Area Named IDA's 200th Certified Dark Sky Place

Nebraska Tourism, Nebraska Game and Parks Commission, and the International Dark-Sky Association (IDA) proudly announce Merritt Reservoir State Recreation Area (SRA) is certified as an International Dark Sky Park. Merritt Reservoir State Recreation Area marks a significant milestone in the International Dark Sky Places Program by becoming the 200th certified Place.

Andromeda Galaxy captured from Snake River Campground. Photo credit: Brett Boller.

The International Dark Sky Places (IDSP) Program is a conservation-based program rooted in grassroots advocacy to protect dark skies and the nocturnal environment. The Program, which has been in place for over 20 years, is structured around a rigorous set of guidelines to ensure each certified Place participates in actions and stewardship that improve the quality of the nightscape environment. Certified Places maintain and extend protection to the night sky through quality outdoor lighting, effective policies, and ongoing stewardship practices that improve the caliber of the nightscape environment. International Dark Sky Places are not just markers for visiting sites and viewing the night sky. They represent an incredible experience that is brought by balancing the view of the universe with sustainable lighting, or put simply – "Stars up, Lights down."

"This recreational area provides a wonderful opportunity to recognize the importance of conserving natural darkness for the local ecosystem, encourages its neighbors to follow its example with quality outdoor lighting, while also providing a place to connect visitors with a quality dark sky experience where the Milky Way is visible to the naked eye – the core elements of what makes an esteemed International Dark Sky Park," remarked Ashley Wilson, IDA's Director of Conservation. "IDA is pleased to recognize Merritt Reservoir SRA as our 200th certified Place as it indicates the success of this Program, as well as the continued growth, engagement, and inspiration it promises."

As the first International Dark Sky Place to be

Merritt Reservoir, continued.

recognized in the state of Nebraska, this achievement is a major first step in conserving Nebraska's nightscape and an opportunity to highlight it as an astrotourism destination. "The Dark Sky Park will attract people to experience the awe and splendor of our night skies, adding yet another excellent, unique experience to visiting Nebraska," said Executive Director of Nebraska Tourism John Ricks.

Located in northwestern Nebraska, Merritt Reservoir SRA spans 729 acres and is known for its excellent fishing, boating, and camping opportunities situated in what is arguably the state's most fascinating ecosystem: the Sandhills. The scenic reservoir offers 44 miles of shoreline, with nine designated camping areas along the eastern and southeastern shores. The Park is surrounded by a wildlife management area, land maintained as native Nebraska habitat.

The Sandhills are the largest sand dune formation in the Western Hemisphere and one of the largest grass-stabilized dune regions in the world. The expansive, undisturbed land tracts provide breathtaking vistas; spectacular bird populations inhabiting the hundreds of lakes and wetlands throughout the lowlands make for excellent wildlife viewing; and the small towns bespeckling the region are known for their charm and hospitality.

Due to its rural nature and lack of light pollution, Merritt Reservoir SRA has been an ideal host location for the annual Nebraska Star Party for 29 years. The state's premier, weeklong astronomy event offers both beginner and advanced astronomy field schools, observing challenges, an astrophotography contest, and a day of educational presentations. Through combined efforts with Nebraska Tourism Commission and Nebraska Game and Parks Commission over the past three years, the aspiration of receiving the International Dark Sky Park certification is finally realized.

The certification required Merritt Reservoir SRA to survey and retrofit exterior light fixtures throughout the park and implement a Lighting Management Plan to maintain outdoor lighting to be dark-sky friendly into the future. The Nebraska Game and Parks board of commissioners passed a resolution in support of the International Dark Sky Park designation stating that "the night sky represents an important natural resource that contributes to the quality of life for residents and visitors and is necessary for the health of many native wildlife species."

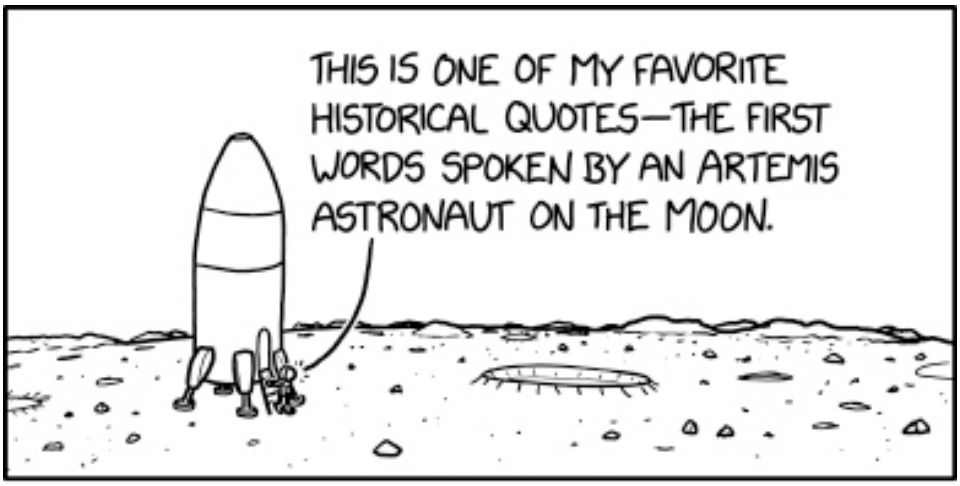
"We're thrilled and honored to have Merritt Reservoir State Recreation Area awarded this prestigious distinction," Nebraska Game and Parks Director Tim McCoy said.

The Bauer family, who own and operate Merritt Trading Post, share in the excitement over the IDSP certification. "I've been fortunate to experience Merritt's dark skies for the last 17 years and there is something incredibly humbling about seeing the depth of the universe with such clarity," says Stacy Ann Bauer, "My astrophotography has allowed me to share and bring awareness to this brilliant natural resource. This designation will

illuminate the beauty of the night skies while protecting the park from future light pollution. We cannot wait to share our radiant skies with even more future astronomers."

To help foster this connection, Nebraska Game and Parks has implemented a suite of educational programming focused on nocturnal wildlife, unique nighttime phenomena, and the myriad threats of light pollution. In the coming years, they plan to develop self-guided tours and install educational signage throughout the park.

The closest town of Valentine, Nebraska, also is doing its part to keep the Sandhills dark. With guidance from Nebraska Star Party planners, the city council selected dark-sky friendly fixtures for its downtown beautification project currently underway.

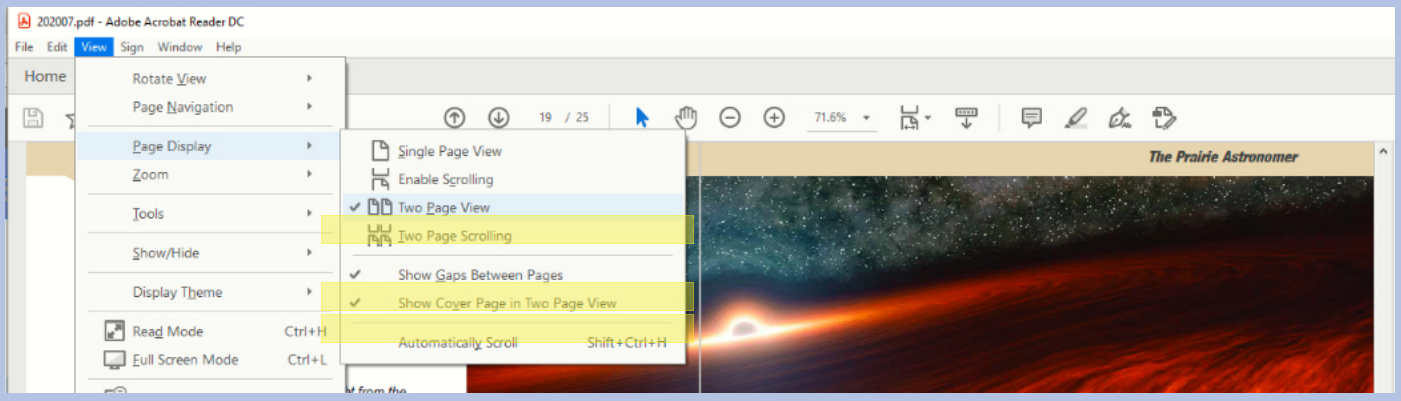


xkcd.com

Notices

New Newsletter Format

How to Adjust Adobe Acrobat Settings for Two Page View



To view this newsletter in magazine spread format in Acrobat, select View ->Page Display->Two Page View. Acrobat will then show two pages side by side. Also make sure the checkboxes “Show Cover Page in Two Page View” and “Show Gaps Between Pages” are checked. If you have it setup correctly, the cover page will be displayed by itself and subsequent pages will be side by side with the odd numbered pages on the left.

PAC Newsletter Archive

Back issues of the Prairie Astronomer from 1962 to present are now available online:

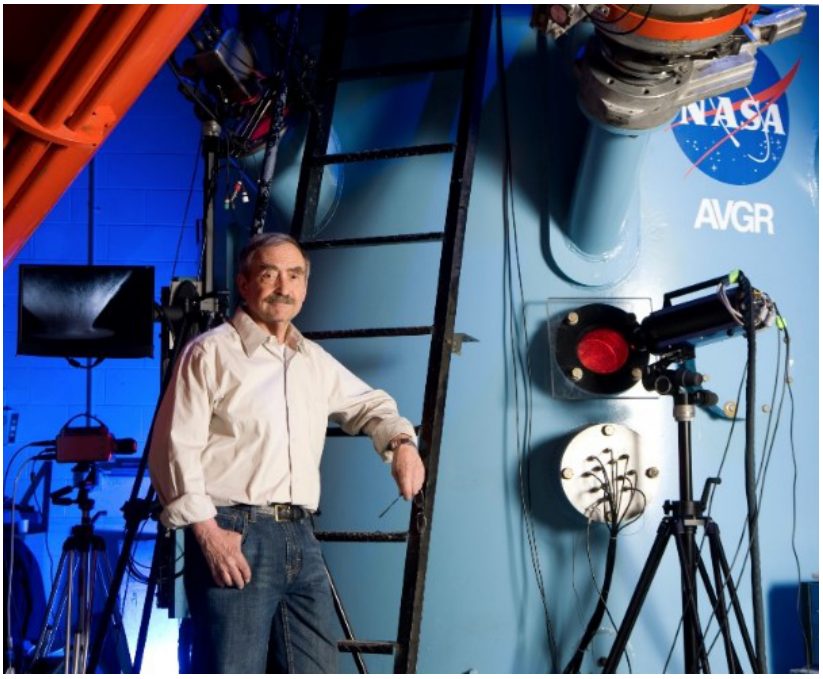
https://www.prairieastronomyclub.org/newsletters

PAC-LIST

Subscribe through GoogleGroups or contact Mark Dahmke to be added to the list. You’ll need a Google/gmail account, but if you want to use a different email address, just associate that address with your google account to access Google Groups. Once subscribed, you can view message history through the GoogleGroups website.

To post messages to the list, send to this address: pac-list@googlegroups.com

Dr. Pete Schultz Special Guest Speaker in September



On Monday, September 26th, we will have a special guest speaker – Dr. Peter Schultz: "Planetary Impacts and Asteroid / Comet Risks to Earth"

The program starts at 5:15 PM. At 6:15 PM we will break to watch a live feed of the DART (Double Asteroid Redirection Test) space mission as it impacts Dimorphos, followed by Q&A. Location: Hyde Memorial Observatory, South of Holmes Lake, off 70th Street. This meeting is open to the public.

Pete was a co-founder of the Prairie Astronomy Club while at Lincoln Southeast High School and is currently Professor Emeritus at Brown University. His long career emphasizes the processes that shape planetary surfaces, especially the role of impacts.

Contributions include: discovered that lunar volcanism lasted much longer than previously believed (from 4 Byr to only 800 Myr); explained the concentration of lunar volcanism on the nearside by fracturing created by the collision forming the giant South-Pole-Aitken Basin on the nearside; found that the flow-like ejecta patterns around craters on Mars and Venus could develop from atmospheric interactions, rather than buried water; proposed a cometary origin for lunar swirls; recognized eight different impact layers in Argentina; and recognized the role of ice-rich impacts in delivering volatiles to the lunar poles.

Most recently, he presented evidence that the widespread glasses on the Atacama Desert were generated by a cometary fireball (see review in November 2022 issue of Sky & Telescope). He was also a Co-Investigator on several NASA planetary missions including Magellan, Deep Impact, Stardust-NExT, EPOXI, and LCROSS, as well as a team member on the upcoming DART mission. In addition to his various international awards, he received the Distinguished Alumni Award from Lincoln Southeast High School.

ARP 47

The Mantrap Skies Image Catalog

Rick Johnson

Rick Johnson, a founding member of the Prairie Astronomy Club, passed away in January, 2019. His legacy lives on through his comprehensive catalog of over 1600 images at www.mantrapskies.com.

ARP 328/Hickson 72/UGC 09532. This is a chain of galaxies located in Bootes. All but one of the galaxies are about 600 million light-years distant, the other nearly twice as distant and thus not a member. Before going further and looking only at the full or cropped image, see if you can determine which is the odd galaxy out. It may not be the one you think. Arp put this group his class for galaxy chains and had this comment: “6 galaxies more or less in line; center one has semi-stellar companion.” There are 7 in the chain including the sneaky interloper. Hickson also includes only 6 but one he includes is the “fraud.” NED shows 7 galaxies for Arp 328 while Arp himself limits it to 6 as does Hickson. Both leave out the most southern. Yet one note at NED reads: With respect to the original Hickson list we have included the amorphous object g which clearly interacts with galaxy c. This is the one I've marked as VV164g. G is blue and does seem to have a bulge toward c but I'm not sure this is sufficient for it to be clearly interacting. This brings us to the semi-stellar companion I assume he is speaking of D. While in my image it may appear to have two cores of about the same brightness the SDSS image clearly shows the southern one to be a star. There is a slight brightening north of the core but it isn't semi-stellar. Nor can I see much of anything in the burned-out core of Arp's image as it is on the website. But E does show what appears to be a distant galaxy through its disk on the east side. Could this be what Arp refers to? It does show in his image. If the possible 7th galaxy is included then E would be in the center. I've found nothing to decide this issue.

Below and left of component g is yet another compact golden elliptical like galaxy, SDSS J144759.73+190202.0 at 18th magnitude. No one considers it part of the group. Nor is any redshift data available for it. There are several small galaxies about component A as

well. Are they satellites of A or distant line of sight galaxies? Probably the latter though a note at NED considers this possible.

Arp 47/MCG +03-38-014 is classed by Arp under Spirals with low surface brightness companions on arms. I suppose that refers to the little galaxy off the north arm that curves back sharply. That galaxy is 20th magnitude SDSS J144715.24+185134.8. No redshift is given so it's unknown if it is truly a companion. There is the very obvious galaxy to the west of MCG +03-38-014. It is 16.6 magnitude NPM1G +19.0402. NED and other catalogs consider these two a pair. In fact, NED lists these to under Arp 47. Seems way too bright to be the companion on the arm Arp refers to. So which is it? I still think it the one that definitely appears to be on the arm and certainly is faint. Unfortunately, NPM1G +19.0402 doesn't have a redshift value either which doesn't help us any. NED makes no attempt to classify this obvious spiral or either companion.

Arp's image is one of his poorest. This isn't Arp's normal work. Makes me wonder if some night assistant took this data rather than Arp himself. He may have had quirky ideas bordering on crackpot in later years but his telescope work was very precise. One possibility is Arp did, like I did, and took both of these with one image. This would have pushed the Winn Corrector to its limits and maybe beyond. Arp 48 may have been right at the edge of the image where the Winn Corrector couldn't quite handle the prime focus distortions. The stars radiate away from the position of Arp 328 like it was centered and this one just too far away for full correction. The elongation of the star in the lower right corner seems greater which fits this idea. I can't see Arp guiding this poorly.

There's no redshift data on anything in the field other than these two objects. NED lists several thousand galaxies in my field but except for these two Arp's, there's nothing on it. Note however that both are at the same approximate redshift distance and thus quite likely part of the same group.

A Brief Stay at Comstock Lodge

Mark Dahmke

I always enjoy the annual Nebraska Star Party road trips, but I've also wanted to find suitable dark sky locations a bit closer to home. My criteria is simple: I want to be able to do astrophotography from a rural location with no bright pole lights or nearby city sky glow, and where I can set up my tripod within a few feet of my hotel room. When I'm done for the evening, I want to be able to carry the gear inside and go to bed without having to drive anywhere. Also, I'd prefer that the venue be within about three hours of Lincoln.

Last year I stopped at Uncle Buck's Lodge in Brewster for one night on my way out to NSP. This year I decided to check out Comstock Premier Lodge on the way home from NSP.

Comstock Lodge is located a few miles from Sargent, Nebraska. The owners are aware of the needs of amateur astronomers and have kept the amount of stray light to a minimum.

On the night of July 27th it was partly cloudy, but I was able to get a good feel for seeing before the clouds rolled in. There's a small amount of sky glow to the north from Taylor (7 miles) and Burwell (10 miles) and Sargent to the south (4 miles).

The 8500 sq ft three story lodge was built in 2000. It's very upscale and modern with all the comforts of home, including complementary breakfast and wifi. It's also a bit pricey - in the $165/night range, but comparable to rates in other area hotels such as the Niobrara Lodge in Valentine.

Knowing that I'm an amateur astronomer and photographer, they gave

Comstock Lodge, continued.

Aerial view of Comstock Lodge. My car is in the foreground near the lower level walk-out. I had the entire north side to myself with no lights other than from the top floor windows.

me the Whitetail Room on the lower level with a private exit to the deck. I was also the only person staying on the lower level that night, so I didn't have to worry about waking anyone up when I went out at 4am.

Another advantage of the lower level is that I could park right next to the patio which was very convenient - I could setup my gear right next to the car.

On the north side of the building the only source of light was from the scene lighting coming from the top floor kitchen/dining room area. There were some lights aimed at the ceiling but they weren't very bright, and on request they'd probably have dimmed them or turned them off.

If you're also interested in hunting, they can arrange excursions for you - see their website for details.

The nearest restaurant is in Sargent and others can be found in Burwell, Ord and Comstock.

I'd originally planned to stay there on the 25th on my way to Valentine, but changed my reservation to the 28th at the last minute after checking the weather forecast. Roxanne was very responsive and called me right after I emailed her.

Overall, I was very impressed with the lodge and the location, and plan to stay there again, hopefully with clear skies.

More views of Comstock Lodge.

Below: the owners of the lodge have a small herd of bison and also some elk on the property.

Focus on Constellations: Pegasus

Jim Kvasnicka

Pegasus the Winged Horse is upside down with only the front half of the horse appearing in the sky. The body of Pegasus is marked by the four stars of the Great Square of Pegasus making the constellation easy to find. The NE star of the Great Square, Alpheratz, is shared by Andromeda. Pegasus contains 1,121 square degrees making it the seventh largest constellation. Even though it is big it is rather poor in objects because it is off the Milky Way. Pegasus contains one Messier object in M15, a bright globular cluster. Like most off the Milky sway constellations Pegasus has quite a few galaxies. Most of the galaxies are small and faint; requiring dark skies and moderate aperture to see. The constellation Pegasus is best seen in October.

Showpiece Objects

Globular Clusters: M15

Galaxies: NGC 7331, NGC 7332, NGC 7479, NGC 7814

Mythology

Pegasus was the winged horse of Greek Mythology. When Perseus cut the head off of the Medusa some of the blood fell into the sea and mixed with the sea foam. From this mixture sprang Pegasus the Winged Horse. Because sea foam is always white Pegasus is always shown as being white. Perseus mounted the mighty Pegasus and was riding the winged horse when he rescued the princess Andromeda from the Sea Monster Cetus.

Number of Objects Magnitude 12.0 and Brighter

Galaxies: 18
Globular Clusters: 1
Open Clusters: 3
Planetary Nebulae: 2
Dark Nebulae: 0
Bright Nebulae: 0
SNREM: 0

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October Observing

Jim Kvasnicka

This is a partial list of objects visible for the upcoming month.

Planets

Mars: In Taurus at magnitude -0.9 with a disk 13.3" wide.

Jupiter: Shines at magnitude -2.9 with a disk 49" wide in Pisces.

Saturn: Magnitude +0.6 with a disk 17.7" wide in Capricornus.

Uranus and Neptune: Look for Uranus in Aries and Neptune in Aquarius.

Mercury: Visible just before sunrise.

Venus: Visible early in the month, reaches superior conjunction on October 22nd.

Meteor Showers

Orionids: Peaks the morning of October 21st. Expect 10-20 meteors per hour.

Messier List

M11: The Wild Duck Cluster in Scutum.

M16: Open cluster in the Eagle Nebula.

M17: Omega or Swan Nebula in Sagittarius.

M18: Open cluster in Sagittarius.

M24: Small Sagittarius Star Cloud.

M25/M26: Open clusters in Sagittarius.

M55: Class XI globular cluster in Sagittarius.

M75: Class I globular cluster in Sagittarius.

Last Month: M13, M14, M22, M28, M54, M69, M70, M92

Next Month: M27, M30, M56, M57, M71, M72, M73

NGC and other Deep Sky Objects

NGC 7009: The Saturn Nebula in Aquarius.

NGC 7293: The Helix Nebula in Aquarius.

NGC 7331: Galaxy in Pegasus.

NGC 7479: Galaxy in Pegasus.

NGC 7510: Bright open cluster in Cepheus.

NGC 7606: Galaxy in Aquarius.

Double Star Program List

8 Lacerta: Four white stars.

Beta Cephei: White and blue stars.

Struve 2816: White primary with 2 blue stars.

Xi Cephei: Pair of yellow stars.

Delta Cephei: Yellow primary with a pale blue secondary.

Eta Persei: Yellow and blue stars.

Struve 331: White primary with a light blue secondary.

Epsilon Pegasi: Yellow primary with a white secondary.

Challenge Object

NGC 7769 / 7770 / 7771: Galaxy NGC 7769 is the brightest in this trio in Pegasus.

Club Member Profile: Rick Brown

Rick joined PAC in 2012

I'm currently employed at the Foundation for Educational Services in Lincoln, where I've worked as a software engineer for the past 9 years. My wife Sandy & I moved from Los Angeles to Lincoln with our kids Josh & Carrie in 1993, so I could take on a computer programming job at Cliffs Notes. Josh still lives in Lincoln with his wife and 2 boys; Carrie now lives in New York City with her husband.

I brought my telescope to Hyde during the 2012 Transit of Venus, met a few of the members there, and joined shortly thereafter.

My college degree is in physics, so a lot of my interest is from a scientific viewpoint. I joined the club to socialize with others with similar interests and to learn more about what's in the sky.

For many years I got by with a 90 mm refractor (with a nice equatorial mount, believe it or not); and then graduated to a 6-inch Newtonian which I still use.

I've been to NSP only once, but I'd sure like to go again! I was amazed at what I could see under those dark skies, even with my little 6-inch Newtonian. It also gave me a chance to peek through some of the largest-aperture scopes I've ever seen. NSP is also a great vacation destination; Sandy & I had a lot of fun in the sun as well.

I haven't completed any observing clubs yet, but I intend to get around to it!

I really enjoy volunteering at the observatory on Saturday nights. It's great seeing how enthusiastic people get about seeing Jupiter or Saturn for the first time through a telescope — especially the kids, who will get in line 2 or 3 times, and who always ask the most incisive questions!

JWST Presentation at August Meeting

The presentation at the August meeting featured NASA Ambassador Kevin Gallagher discussing newly released images from the James Webb Space Telescope. Fifty two people (35 at Hyde Observatory plus 17 via Zoom) watched this presentation.

Club Offices and Duties

Nominations for next year's officers will begin at the September meeting, and remain open until election at the October meeting.

Club officer nominations are made in September and elections are held in October. The following is a list of responsibilities of each of the officers and what is required to maintain a functioning club.

As stated in the bylaws, the club has five officers: President, Vice President, Secretary, Treasurer and Second Vice President. The business of the club is managed by a Board of Directors. The Board consists of the five elected officers. Each decision of the Board requires an affirmative vote by at least three Board members. The Board can also create additional non-elected offices as required and can initiate impeachment proceedings against officers who have been negligent in performing their duties.

The Prairie Astronomy Club has a fifty year history of service to club members and the community. Potential club officers should have a good understanding of the history of the club, its formation and mission, its relationship with Hyde Observatory and the types of events, activities and outreach that is part of the tradition of the club. The most complete resource is the book *The Prairie Astronomy Club: Fifty Years of Amateur Astronomy*, which is in the club library or available as a PDF document.

President

The President organizes and directs the regular monthly meetings and all other club activities. The President also prepares the meeting agenda and PowerPoint for the meeting.

The President also officially represents the club at meetings at the regional and national level where he/she is in attendance or delegates this authority. The President has the authority to call meetings of the Board and to appoint non-elected officers.

The President should have good communication skills and be comfortable interacting with the media and public, be a good public speaker, be available to do radio and TV interviews and to deliver prepared introductions and remarks at club-sponsored events.

Another duty of the President is the annual club audit. Within 10 days of assuming office, the President must appoint a committee of three club members to perform the audit. The audit must be completed within 45 days of the close of the fiscal year which is October 31.

When assuming office, the President should hold a meeting of the Board to present his/her direction and ideas for the club for the coming year, and appoint any unfilled non-elected positions.

Vice President

The Vice President is responsible for running club meetings and other events in the absence of the President. The VP is also to be the mediator in cases of procedural dispute and must be available to assume the duties of any officer at the direction of the President. The VP also maintains control of the current inventory of all club property.

Secretary

The Secretary handles all Club correspondence, is responsible for the distribution of information received through official club correspondence and is in charge of Club publicity (often the job of Publicity or Outreach Coordinator is delegated to a non-elected member). The Secretary also sends out membership renewal notices and delivers

meeting minutes to the newsletter editor. The Secretary is responsible for maintaining an accurate club membership roster. The master copy of the roster is currently maintained on the Night Sky Network website. The bylaws also require publication of the complete roster in the newsletter on an annual basis.

Treasurer

The Treasurer is responsible for all Club funds and for keeping accurate records of all monetary transactions. The Treasurer must submit a written report of the club's monetary status at the request of the President or give a verbal report at the request of any member during regular meetings. He/she also prepares an annual financial report in November for publication in the newsletter and presentation at the November meeting. The Treasurer is also responsible for all tax filings and reporting requirements, to maintain the club's 501c3 status.

Second Vice President (and Program Chair)

The Second Vice President is responsible for the formation and presentation of the monthly club programs. Ideally the 2nd VP should try to plan ahead six months to one year to build a list of potential presenters or programs. The 2nd VP also sends out email announcements of upcoming programs to the membership, and sends a program description to the newsletter/website editors.

The club usually has several appointed positions:

The **Publications Chairperson** (or Newsletter Editor) is responsible for editing and publishing the Prairie Astronomer. The newsletter editor may also be the website manager/editor. The newsletter editor should have a good working knowledge of desktop publishing software (and computers in general), graphics, photo editing, some design and layout experience and some experience with social networking and Internet marketing. The Website editor needs to be familiar with WordPress (or similar CMS software) and graphics and word processing applications. Ideally the newsletter and website editor(s) should have prior experience with the publication of a newsletter or website, or demonstrated skills. The publications chairperson is also responsible for social networking for the club - posting Facebook and Twitter announcements for club meetings and events (or this responsibility might be delegated to another officer or someone appointed by the President).

If the club has an appointed **Outreach Coordinator**, the coordinator takes on some of the roles performed by other officers – organizes outreach events, shares in media communications tasks, puts together flyers, etc.

The **Club Librarian** (often the Vice President) manages the club library. He/she keeps a current bibliographic listing of all Club library material including the archive of all back issues of The Prairie Astronomer. The Club Librarian and Secretary work together to maintain a record of club activities and regularly update the official club history.

The **Observing Chairperson** presents a monthly report at Club meetings and/or in the Prairie Astronomer. He/she keeps members informed of upcoming celestial events, sky objects of special interest and star parties.

The **Recording Secretary** (often the Club's elected Secretary) is responsible for keeping the minutes of the club meetings and filing a copy with the Club Secretary. Minutes need to be kept in a systematic fashion as they record the history and life of the club and need to be published in the Prairie Astronomer on a monthly basis.

The **Site Chairperson** (if one is appointed) is responsible for establishing a site committee to oversee the maintenance and security of the club observing site.

While not a requirement of the bylaws, all club officers and appointees should have good computer and social media skills, should be accessible and responsive via email and phone. §

A Cosmic Tarantula, Caught by NASA's Webb

Once upon a space-time, a cosmic creation story unfolded: Thousands of never-before-seen young stars spotted in a stellar nursery called 30 Doradus, captured by NASA's James Webb Space Telescope. Nicknamed the Tarantula Nebula for the appearance of its dusty filaments in previous telescope images, the nebula has long been a favorite for astronomers studying star formation. In addition to young stars, Webb reveals distant background galaxies, as well as the detailed structure and composition of the nebula's gas and dust.

At only 161,000 light-years away in the Large Magellanic Cloud galaxy, the Tarantula Nebula is the largest and brightest star-forming region in the Local Group, the galaxies nearest our Milky Way. It is home to the hottest, most massive stars known. Astronomers focused three of Webb's high-resolution infrared instruments on the Tarantula. Viewed with Webb's Near-Infrared Camera (NIRCam), the region resembles a burrowing tarantula's home, lined with its silk.

Webb, continued.

The nebula's cavity centered in the NIRCam image has been hollowed out by blistering radiation from a cluster of massive young stars, which sparkle pale blue in the image. Only the densest surrounding areas of the nebula resist erosion by these stars' powerful stellar winds, forming pillars that appear to point back toward the cluster. These pillars contain forming protostars, which will eventually emerge from their dusty cocoons and take their turn shaping the nebula.

Webb's Near-Infrared Spectrograph (NIRSpec) caught one very young star doing just that. Astronomers previously thought this star might be a bit older and already in the process of clearing out a bubble around itself. However, NIRSpec showed that the star was only just beginning to emerge from its pillar and still maintained an insulating cloud of dust around itself. Without Webb's high-resolution spectra at infrared wavelengths, this episode of star formation-in-action could not have been revealed.

The region takes on a different appearance when viewed in the longer infrared wavelengths detected by Webb's Mid-infrared Instrument (MIRI). The hot stars fade, and the cooler gas and dust glow. Within the stellar nursery clouds, points of light indicate embedded protostars, still gaining mass. While shorter wavelengths of light are absorbed or scattered by dust grains in the nebula, and therefore never reach Webb to be detected, longer mid-infrared wavelengths penetrate that dust, ultimately revealing a previously unseen cosmic environment.

One of the reasons the Tarantula Nebula is interesting to astronomers is that the nebula has a similar type of chemical composition as the gigantic star-forming regions observed at the universe's "cosmic noon," when the cosmos was only a few billion years old and star formation was at its peak. Star-forming regions in our Milky Way galaxy are not producing stars at the same furious rate as the Tarantula Nebula, and have a different chemical composition. This makes the Tarantula the closest (i.e., easiest to see in detail) example of what was happening in the universe as it reached its brilliant high noon. Webb will provide astronomers the opportunity to compare and contrast observations of star formation in the Tarantula Nebula with the telescope's deep observations of distant galaxies from the actual era of cosmic noon.

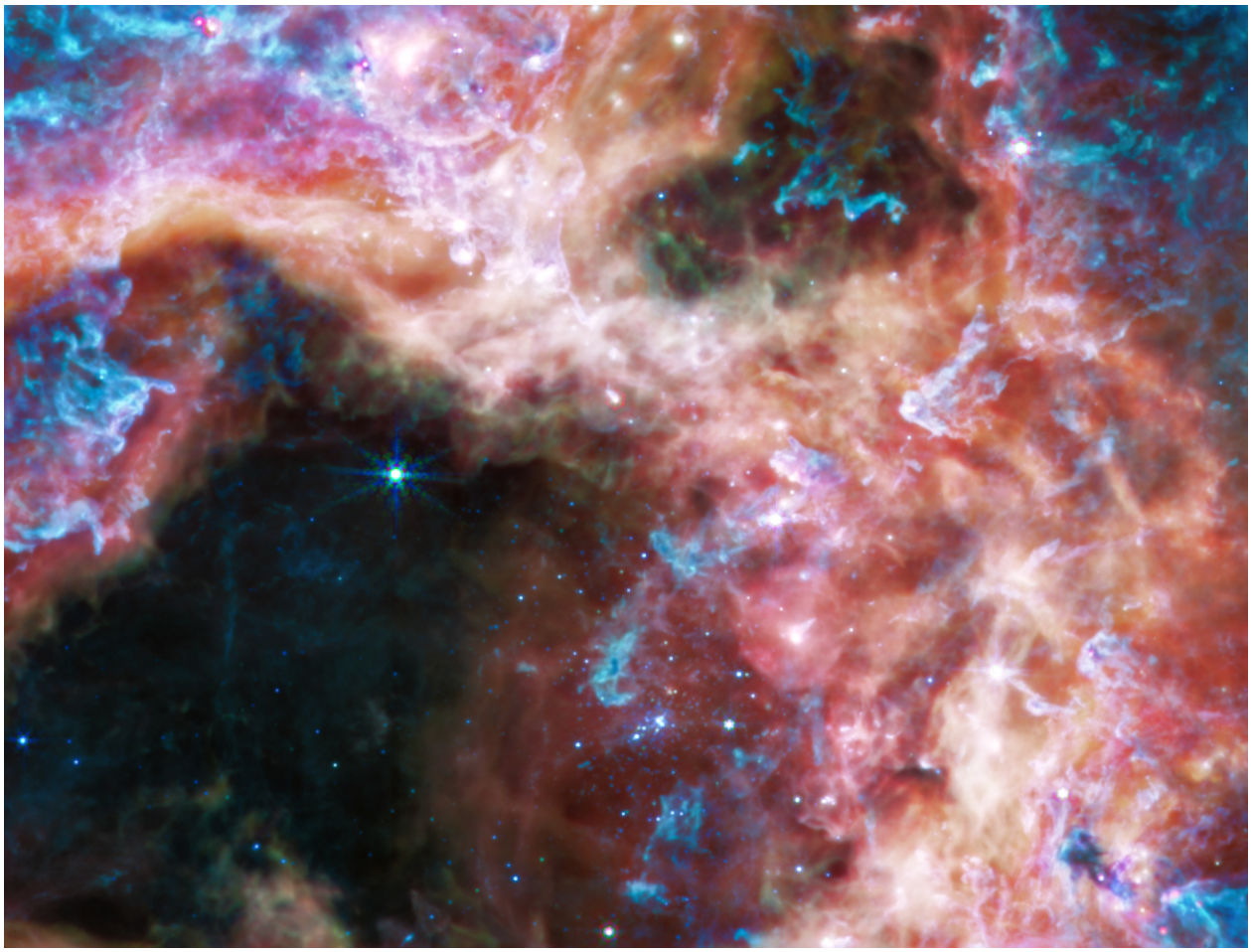
Despite humanity's thousands of years of stargazing, the star-formation process still holds many mysteries – many of them due to our previous inability to get crisp images of what was

Previous page: In this mosaic image stretching 340 light-years across, Webb's Near-Infrared Camera (NIRCam) displays the Tarantula Nebula star-forming region in a new light, including tens of thousands of never-before-seen young stars that were previously shrouded in cosmic dust. The most active region appears to sparkle with massive young stars, appearing pale blue. Credits: NASA, ESA, CSA, STScI, Webb ERO Production Team

Webb, continued.

happening behind the thick clouds of stellar nurseries. Webb has already begun revealing a universe never seen before, and is only getting started on rewriting the stellar creation story.

The James Webb Space Telescope is the world's premier space science observatory. Webb will solve mysteries in our solar system, look beyond to distant worlds around other stars, and probe the mysterious structures and origins of our universe and our place in it. Webb is an international program led by NASA with its partners, ESA (European Space Agency) and the Canadian Space Agency.



At the longer wavelengths of light captured by its Mid-Infrared Instrument (MIRI), Webb focuses on the area surrounding the central star cluster and unveils a very different view of the Tarantula Nebula. In this light, the young hot stars of the cluster fade in brilliance, and glowing gas and dust come forward. Abundant hydrocarbons light up the surfaces of the dust clouds, shown in blue and purple.

Credits: NASA, ESA, CSA, STScI, Webb ERO Production Team

Astrophotography

David Dickinson

Astrophotography

David Dickinson

Astrophotography

David Dickinson

Astrophotography

Rho Ophiuchi by Brett Boller

Canon t7i, Williams Optics Red 51mm Apo, Celestron CGE Pro, 30 minutes total time, Dob Row, Merritt Reservoir, DSS, Photoshop

Astrophotography

North America Nebula and Pelican by Brett Boller

Canon t7i, Williams Optics Red 51mm Apo, Celestron CGE Pro, 30 minutes total time, Dob Row, Merritt Reservoir, DSS, Photoshop

From the Archives

August, 1982

Star Party Splosh!

As the clouds thickened over Lincoln on Saturday night, August 14, and the second consecutive Annual Picnic & Star Party dissolved in torrential rains at Wagontrain Lake (or, was it in Wagontrain Lake— the shoreline was rising, threatening to gobble up the entire park) one could only conjure up the exciting mental image of Ron Veys utilizing his revolutionary CLIR to view unobstructed skies. Convincingly demonstrated at the last club meeting, the Coherent Light Image Regenerator, employing well-known, but largely overlooked Sound Scientific Principles, makes use of simple, everyday materials to totally eliminate the effects of clouds on astronomical viewing. Word has it that Veys is in serious consultation with his patent attorney.

Meantime, I could visualize him there at Wagontrain,bedecked in scuba gear to offset the effects of the sheetlike waves of rain sloshing onto his upturned noggin, peering through the Dixie cups with the bottoms removed, at what were, to him, undoubtedly, perfectly clear skies punctuated by an occasional spectacular Perseid.

I almost went out to the lake to verify his presence, but it would have meant inflating my waterwings, which is a 20 minute job, not worth the effort.

Then, Rick Johnson's letter arrived from the Northland with the following irritating comments about clear Minnesota skies: “have the Northern Lights been down there? Several times here they went aII the way to the Southern horizon! Another night it appeared the sky was on fire as the 'flames' (blue in color) rose rapidly to the zenith.

The most spectacular flames were in the Aquila—Scutum—Scorpio area! They flickered far too fast to attempt any photographs. Steve and Holly Myatt were here that night and we sat for hours feeding the Minnesota State Bird (the one with 6 legs and a built-in oil derrick) , and watching the show. Mira (Steve & Holly's) daughter) may be named for a star, but as yet she's no astronomer! She cried through the whole show! See you in September - Rick."

Now, long-range forecasters are speculating about the probabilities of early Fail, unusually wet, in Nebraska. Amateurs here will undoubtedly have the best—adjusted telescopes, with the cleanest mirrors, tightest screws, and most precisely collimated optics in the world - we have plenty of time for all that; observing opportunities never get in the way!

(The preceding is from your disgruntled Editor, who is 20 Autumn and Winter objects away from completing his Messier sincerely hopes to do so before reaching his 80th birthday!)

Book Review: The Day We Found the Universe

Don Hain

I recently read "The Day We Found the Universe" by Marcia Bartusiak. If you're interested in how it is we got to where we figured that not only are all those points of light NOT just stars, this book may be of interest. It was not that long ago scientists concluded not just that they're galaxies of stars, but that they are OUTSIDE the Milky Way. It was not that long ago the debate was ongoing about whether the universe was essentially the Milky Way, or if there was more out there beyond it.

Eventually, it was agreed that the clusters of stars being observed were indeed outside the Milky Way. The universe was now seen as more than just basically the Milky Way. What had yet not been decided was whether the universe was in a steady state, or was something much more. Was it a system, the entire structure of which was undergoing changes at the system level? Were the galaxies themselves moving as entire structures?

Much data had been gathered with Edwin Hubble and his associate Milton Humason being major contributors to that effort. The data indicated that not only were the arms of galaxies spinning, but the entire constructs were moving away from us. They were moving away from not only our galaxy, but all of them away from each other, outward. For some time, there was not agreement on that conclusion. Should we go so far as to conclude that the universe was not steady?

Georges Lemaitre was a cleric astronomer who, even prior to data pointing toward an expanding universe, saw in quantum mechanics the possibility that the relationship between energy and matter had immense implications. Lemaitre looked backwards in time looking toward what seemed to him a real possibility of what an expanding universe implied. "The Day We Found the Universe" by Marcia Bartusiak includes a quote from a short note to the journal Nature Lemaitre had titled "The Beginning of the World from the Point of View of Quantum Theory": "If we go back in the course of time, ... we find all the energy of the universe packed in a few or even in a unique quantum... If this suggestion is correct, the beginning of the world happened a little before the beginning of space and time." Bartusiak goes on to say that "From Lemaitre's poetic scenario arose today's vision of the Big Bang."

The poetic scenario of Lemaitre's she refers to is also stated in the book:

"The evolution of the world can be compared to a display of fireworks that has just ended: some few red wisps, ashes and smoke, ... Standing on a well-chilled cinder, we see the slow fading of the suns, and try to recall the vanished brilliance of the origin of the worlds."

A Celebration of the Astronomy of William Herschel

This event will be held **online** and at Queen Square in Bath on October 1st from 3:30am CT to Noon.

There is a fee of ₤ 25.00 for non-members for the online event.

For more information and to register: https://www.brlsi.org/whatson/a-celebration-of-the-astronomy-of-william-herschel/

Information about this event was forwarded to us by Graham Winstanley of the Lincoln Astronomical Society in Lincoln, UK.

This all-day conference is the centerpiece of the Herschel Society's celebration of William Herschel's achievements on the 200th anniversary of his death in 1822.

William is famous as the discoverer of the planet Uranus in 1781, but his importance to astronomy rests much more on his pioneering deep sky work over the subsequent decades.

We will explore William's telescope making, observing methods, ground-breaking deductions, unique collaboration with Caroline in cataloging the deep sky, his speculative views on life on other worlds and William's and Caroline's own words. We will show what this has led to today in the latest astronomical survey work by the GAIA space observatory. We will also illustrate his achievements in other ways.

CLUB MEMBERSHIP INFO

REGULAR MEMBER - $30.00 per year. Includes club newsletter, and 1 vote at club meetings, plus all other standard club privileges.

FAMILY MEMBER - $35.00 per year. Same as regular member except gets 2 votes at club meetings.

STUDENT MEMBER - $10.00 per year with volunteer requirement.

If you renew your membership prior to your annual renewal date, you will receive a 10% discount.

Club members are also eligible for special subscription discounts on Sky & Telescope Magazine.

ADDRESS

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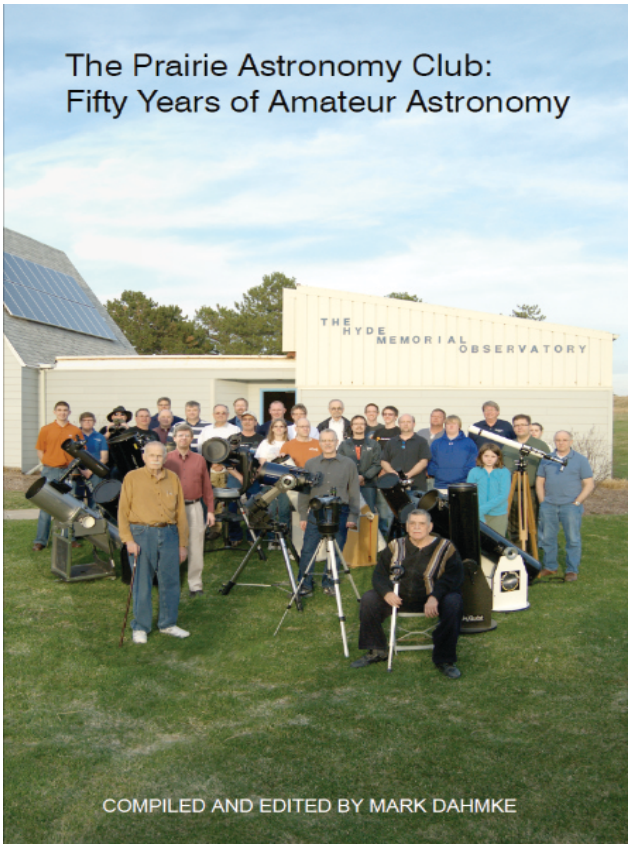
The Prairie Astronomer is published monthly by the Prairie Astronomy Club, Inc. Membership expiration date is listed on the mailing label. Membership dues are: Regular $30/yr, Family $35/yr. Address all new memberships and renewals to: The Prairie Astronomy Club, Inc., PO Box 5585, Lincoln, NE 68505-0585. For other club information, please contact one of the club officers listed to the right. Newsletter comments and articles should be submitted to: Mark Dahmke, P. O. Box 5585, Lincoln, NE 68505 or mark@dahmke.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.

CLUB TELESCOPES

To check out one of the club telescopes, please contact a club officer. Scopes can be checked out at a regular club meeting and kept for one month. Checkout can be extended for another month if there are no other requests for the telescope, but you must notify a club officer in advance.

100mm Orion refractor: Available
10 inch Meade Starfinder Dobsonian: Available
13 inch Truss Dobsonian: Needs repair
10 inch Zhumell: Needs mount



Buy the book! The Prairie Astronomy Club: Fifty Years of Amateur Astronomy. Order online from Amazon or lulu.com.