

The Prairie Astronomer

May 2024 Volume 65, Issue #5



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**AURORA PHOTOS
MSRAL 2024
SOLAR STORMS ON MARS
CIRCUMPOLAR CONSTELLATIONS**



Night Sky Network



The Newsletter of the Prairie Astronomy Club

The Prairie Astronomer



The next regular club meeting is May 28th at 7:30pm at Hyde Observatory

NEXT MEETING AND PROGRAM

An Overview of Observing Programs - by Jim Kvasnicka

Jim will present an overview of Astronomical League Observing Programs for new members and those who have not done an observing program. He will talk about how to start, what is needed, and how to select a program to do. He will review the different observing programs and the experience level required to do them. Jim will include a review of observing programs that have been completed by PAC members.

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UPCOMING PROGRAMS

June: Nearest Star Party

July: No meeting

August: Lunar Photogrammetry by Mark Dahmke, and NSP review

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Cover: The Aurora, by Leona Barratt. See Astrophotography for details.



CALENDAR



Most of our club meetings are held at Hyde Memorial Observatory in Holmes Park.

The Observatory is owned and maintained by the City of Lincoln Parks and Recreation Department, but is operated by volunteers, many of whom are also members of the Prairie Astronomy Club.

PAC Meeting
Tuesday, May 28th, 7:30pm at Hyde Observatory
Observing Programs

MSRAL 2024
June 7-9, Mahoney State Park Lodge
www.msral2024.org

PAC Meeting
Tuesday, June 25th, 6pm at Hyde Observatory
Nearest Star Party

Nebraska Star Party
July 28-August 2, Merritt Reservoir, Valentine, NE

<https://www.prairieastronomyclub.org/event-calendar/>

Night Sky Network



www.prairieastronomyclub.org

2024 STAR PARTY DATES

	Date	Date
January	5	12
February	2	9
March	1	8
April	3/29	5
May	4/26	3
June	5/31	7
July	6/28	5
NSP	7/28	8/2
August	7/26	2
September	8/30	6
October	9/26	4
November	11/22	29
December	20	27

Dates in **BOLD** are closest to the New Moon.

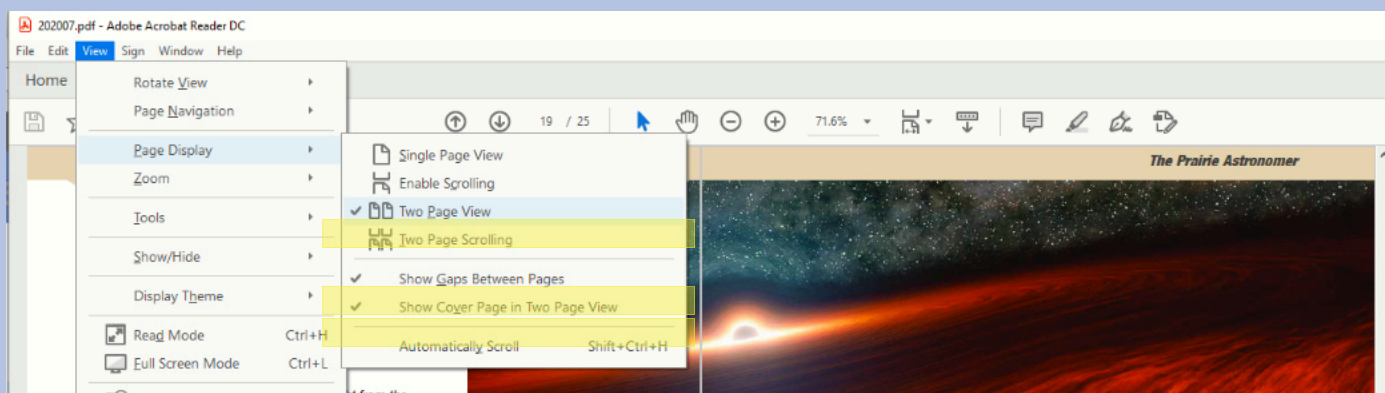
CLUB OFFICERS

President	Jason O'Flaherty jflaher@gmail.com
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Notices

Newsletter Page View 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 available online:
<https://newsletters.prairieastronomyclub.org/>

Pay Dues Online

<https://www.prairieastronomyclub.org/pay-dues-online/>

If you're already a member and are renewing within 30 days of your anniversary date, select the early renewal option for a discount.

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

The President's Message

Jason O'Flaherty

Dear PAC Members,

I hope this message finds you all well as we transition into the warmer days of May. Our April meeting was a great success, and I want to thank Robert Teeter Jr. for his engaging presentation on building Dobsonian telescopes. It was a treat to learn from his expertise, and I'm sure many of us left feeling inspired to improve our own telescope-related pursuits.

As we look forward to our upcoming activities, I'm excited to announce that our May meeting will feature a presentation by Jim Kvasnicka, our club's Observing Chairperson. Jim will explain how observing programs work, how to get started, and the types of programs that are available. Jim has been our Observing Chairperson for over a decade, and we greatly appreciate his dedication to this position. Please get in touch with me if

you are curious to learn more about what Jim does in this position. He is probably ready to train an apprentice to pass these duties on one day.

In administrative news, the link to the 2024 PAC Survey has been emailed to the club mailing list. Please take a few minutes to submit feedback before Sunday, May 26th. The board values this information and uses it throughout the year to help with decisions on the club's direction.

Our Outreach Coordinator, Christine Parkyn, has indicated she needs to step down from the position. I want to extend our earnest thanks to Christine for her two years of service in helping manage events and communications with the public. Don Hain has tentatively agreed to fill the position, and we will be meeting to finalize the change.

Our next meeting in June will be our annual solar meeting to observe our



nearest star. If the weather permits, it will be an informal meeting out on the lawn. Please bring any solar observing equipment you'd like to share with the club members. We'll also have some sweet snacks to munch on.

Thank you all for your continued support and enthusiasm. Our shared passion for the cosmos makes the Prairie Astronomy Club a vibrant community. I look forward to seeing you at our May meeting.

Wishing you clear skies and happy observing,

Jason O'Flaherty

Meeting Minutes

Jim White

Jason O'Flaherty started the meeting at 7:35 pm. Tonight's meeting is being held at Hyde Observatory and online via Zoom. Jason asked if we had any new members. Joining us tonight is John Painter, originally from California and has been in Nebraska since 2016. Russ Genzmer is a returning member to PAC who originally joined in 1977 and returned to astronomy 3 or 4 years ago after being out for 29 years. Brian Stork attended the meeting as a visitor and as of the writing of these meeting minutes he is now a member of PAC.

Jason turned the meeting over to our Observing Chairperson, Jim Kvasnicka for his monthly observing report at 7:38 pm. This month's star parties are scheduled for May 31st and June 7th, both of these are scheduled to be held at the Clatonia Recreation area about 1 ½ miles north of Clatonia. Planets for the month of May, Mars is a morning planet but will

be best seen toward the end of the month, Saturn is also a morning planet but is difficult to see. There are a number of planets that are not visible this month, those planets being Venus, Jupiter, Mercury, Uranus and Neptune. Jim's complete observing report can be found in this month's newsletter.

Jim turned the meeting over our Treasurer John Reinert at 7:42 pm for his monthly treasurer's report. John shared the club's account balances along with transactions that have occurred through PayPal and Stripe. The PayPal transactions accrue and then John has to move the money to the club account where the Stripe transactions are automatically moved to the club's account. John is "on the hook" for the yearly audit, he needs to bring the details together and the membership report and hopefully have things put together in the next 30 days. At some point we'll need to get the people together with John to do the audit,

usually the audit is done on a Saturday over lunch. John's report finished up at 7:44 pm and he turned the meeting back over to Jason.

Jason said that he had participated in the audit one year and it didn't take a lot of time to do and the food was good! If you're approached to help with the audit please consider doing so. Jason then went over the benefit's of being a club member and the different options for membership. Club business for the upcoming month is the May meeting which will take place at Hyde Observatory on the last Tuesday in May. It was announced that PAC was mentioned in a book that member Peter Schultz contributed to called "The Space Age Generation: Lives and Lessons from the Golden Age of Solar System Exploration". Peter is one of the founding members of PAC. The book is available on Amazon. There is also a book about PAC called

"The Prairie Astronomy Club: Fifty Years of Amateur Astronomy" which was compiled and edited by PAC member and newsletter editor Mark Dahmke. This book is also available on Amazon. MSRAL is coming up on June 7th - 9th and is being hosted by the Omaha Astronomical Society and will take place at Mahoney State Park. Here is a link to the

website for MSRAL for anyone that is interested, MSRAL Conference 2024 - Astronomical League (astroleague.org). ALCON is July 17th - 20th in Kansas City. Here is a link to the ALCon 2024 website, ALCON 2024 (astroleague.org). The 31st annual Nebraska Star Party (NSP) is taking place July 28th - August 2nd at Merritt Reservoir. Here is a link to the NSP

website, Nebraska Star Party. Tonight's meeting adjourned at 7:48 pm.

Tonight's program is "Optimizing Dobsonian Telescopes" by Robert Teeter of Teeter Telescopes. Robert started his business in 2002 and is in his final year of building Dobsonian telescopes. Several PAC members have telescopes that were built by Robert at Teeter Telescopes.

EVERY ECLIPSE PATH MAP



Xkcd.com

ARP 67

The Mantrap Skies Image Catalog

Arp 67/UGC 892 is located along the top right edge of the image. It is in his category for Spirals with high surface brightness companions on their arms. As I've mentioned before the majority of the galaxies he considered spirals made the atlas for companions of some sort on their arms. In most cases, it was unknown if the two were related.

Apparently, that didn't matter. The result is that some turned out to be related, some unrelated and some are still unknown like Arp 88 posted mid-September. In this case, there are two possible companions. Which was the companion Arp refers to?

Apparently, both as his comment reads: "Comps. lie on inner and outer spiral arms." Redshift puts Arp 67 at about 225 million light-years. The inner arm spiral has a redshift that puts it about 3 times further at 720 million light years. The one he refers to be on the outer arm has no redshift data but appears to be an unrelated background galaxy as well. Arp 67 is odd in that the "inner arm" seems to be a very odd spur. The main arms form an oval ring. At the northeastern end of the bar an



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.



ARP67, continued.

odd linear arm goes across the ring then curves around toward the distant reddish companion. The other lies more on the outer edge of the galaxy's disk rather than an arm. This arm, as well as the faint arms or plumes going out of my image at the top, may be the result of a merger with a small galaxy. This seems more reasonable than two apparently unrelated galaxies being the cause. The inner arm galaxy is SDSS

J012117.42-003311.7. For some reason, the outer arm galaxy never made it into any catalog at NED but the United Kingdom automatic plate survey. How everyone else missed it I can't fathom. It is listed in that catalog as APMUKS(BJ)

B011845.66-004851.5. In both cases, the name is just the J2000 position.

There are several galaxy clusters in the image. One at about 710 million light-years that covers a major portion of my image. Another is mostly in the northwestern quadrant at 1.2 million light-years. Another is centered on an orange galaxy in the

southeastern corner at a bit over 2 million light years. The anchor elliptical galaxy is located at the same position as the cluster though the two have two different listed redshifts.

More interesting are the large number of quasars and Ultraviolet Excess Sources which are likely quasars as well. Some are listed both ways, often in the Sloan survey listing. Several are over 10 billion light-years distance. One is listed as a quasar and galaxy and is only 2.5 billion light-years away. Some pure galaxies are more distant. The most distant galaxy is nearly 5 billion light-years distant. It is above center near the right edge.

4 bright asteroids are also in the image and noted on the annotated image. All are bright enough to have left colored trails as often seen in my image. So why aren't any seen? Seems this image is the product of three nights. The luminance was taken the first night. Clouds moved in ending imaging. Over two later nights, I collected the

color data, fighting clouds all the way. But by then the asteroids had moved on. New asteroids had moved into the field and sometimes did leave color trails but without a luminance trail I played God and edited them out. After 3 nights I still only had 2 red frames with the third unusable. But then the moon was in the way. I never did get a third red but one each of the green and blue was poor. With the ending signal to noise ratio about the same in all three colors, I quit trying for a third red.

Nebraska Star Party

July 28th - August 2nd, 2024



Just imagine

Merritt Reservoir • Nebraska • USA • Earth • Sol System • Orion-Cygnus Arm • Milky Way Galaxy

June Observing

Jim Kvasnicka

Planets

Mercury: Starts the month as a morning planet. Reaches superior conjunction on June 14 becoming an evening planet.

Mars: Morning planet.

Jupiter: Morning planet.

Saturn: Morning planets but difficult to see.

Uranus, Neptune, Venus: Not visible.

Messier List

M58: Galaxy in Virgo.

M59/M60: Galaxies in Virgo that fit in the same FOV.

M84/M86: Galaxies in Virgo that fit in the same FOV.

M87: Round galaxy in Virgo.

M88: Oval shaped galaxy in Coma Berenices.

M89/M90: Galaxies in Virgo that fit in the same FOV.

M91/M98: Galaxies in Coma Berenices.

M99/M100: Galaxies in Coma Berenices.

Last Month: M49, M51, M61, M63, M64, M85, M94, M101, M102, M104

Next Month: M3, M4, M5, M53, M68, M80, M83

NGC and other Deep Sky Objects

NGC 5172: Elongated galaxy in Coma



Berenices.

NGC 5248: Oval shaped galaxy in Bootes.

NGC 5676: Oval shaped galaxy in Bootes.

NGC 5689: Elongated galaxy in Bootes.

NGC 5927: Class VIII globular cluster in Lupus.

NGC 5986: Class VII globular cluster in Lupus.

Double Star Program List

Sigma Corona Borealis: Yellow stars.

16/17 Draconis: Equal pair of white stars.

Mu Draconis: Close pair of white stars.

Kappa Herculis: Pair of yellow stars.

Alpha Herculis: Orange primary with a greenish colored secondary.

Delta Herculis: White primary with a blue-purple secondary.

Rho Herculis: Two white stars.

95 Herculis: Light yellow pair.

Alpha Librae: Wide pair of yellow-white stars.

Challenge Object

NGC 5673 and IC 1029: Two galaxies in Bootes that fit in the same FOV.

Focus on Observing Programs

Jim Kvasnicka

Solar System Observing Program

The Solar System Observing Program consists of 27 selected observing projects designed to introduce you to the pleasures of planetary observing. With the increase in light pollution, the wonders of our own solar system may take on an increased importance among amateur astronomers. Dark skies and moonless nights are not required for any of the listed projects.

The 27 observing projects are divided into three categories:

- Sun and Moon Projects
- Inner Solar System Projects
- Outer Solar System Projects

The projects vary from simple observations to multiple observations over a period of months. They include special events such as solar and lunar eclipse.

To qualify for the Solar System Observing Program certificate you need to complete 25 of the 27 projects. Your observations need to include: name of

the project, start and completion date, seeing conditions, telescope size, telescope type, magnification, and your observing notes. For a complete list of the 27 projects you can go to the Astronomical League website under Observing Programs / Solar System Observing Program.

When you complete the Solar System Observing Program you will need to submit a copy of your observing logs to me for review. If your logs are accurate and complete I will submit your name to the Solar System Observing Program chair for approval. The chair will mail to me your certificate and pin which I will present to you at the next monthly PAC meeting.

If you have any questions regarding the Solar System Observing Program or any other observing program, or need help getting started please contact me and I will be glad to help.

New Members

Welcome to the club!

Brian Stork, Lincoln, NE

What Becomes of the Stars of Winter

Don Hain

I partook in the 2024 Astronomy Night held by the Nebraska State Museum and Planetarium again this year. It was held on Saturday night, April 6th, from 5:00 to 9:00PM. Available to participants was what I termed an "Astronomy Night Certification" from the Prairie Astronomy Club for younger participants for whom getting such a document might lend a sense of connectedness to the event. The principal activity I engaged folks in was to take them through the sequence of how the earth orbits the sun, and thus darkness points us to different sets of stars in the summer than in the winter when we turn our gaze upwards. The back of the certification contained a list of links to various astronomy related web sites, including to dark sky locations / parks in the state and around Lincoln. A 4"x6" photo showing both Orion and Sirius obtained from a NASA web site was also something folks could take home to remind

them of the experience.

The display included a stand on which a representation of the sun was positioned as well as one on which a small celestial globe was mounted to aid the visual presentation. On the south side of the display was a black foam board with representations of Orion (as well as Sirius). Opposite that was a foam board with the Big Dipper as well as Arcturus. Several pictures depicting various astronomical objects were also available for viewing. A small MAK-Cass spotting scope with right-angle correct-image finder attached was also available. I got to speak with several folks curious to look through and discuss telescopes. An OTA for a reflector like that used by the Library Telescope Program was also available as a visual for discussions about telescopes.

I felt the night was a success. Rachel Scheet did a wonderful job of getting things organized

again and pulled in 333 members of the community / state. Some attendees of the public were from communities a good distance away from Lincoln. I gave out a set of "eyes" to young kids to encourage them to "Keep Looking Up". That is a phrase used by Learn The Sky, an LLC run by Janine Bonham, a middle school teacher who I feel does a good job of presenting videos about constellations(<https://www.learnthesky.com/>). Some crocheted stars were also given to smaller children for whom the eyes would present a choking hazard.

Some interest was expressed by one or two Prairie Astronomy Club members in helping this year, but I was not able to reach them. Sorry about that. If you are interested in helping out next year please reach out to me (Don Hain) via email at dhain0@gmail.com or phone (402 440 5318).

MSRAL 2024



June 7th-9th | Omaha, NE

**Hosted by the
Omaha Astronomical Society**

Register Today at

MSRAL2024.org

Keynote Speaker



Kevin Schindler
Historian at Lowell Observatory

Featured Speakers

Dr. Bharat Ratra
Cosmologist at Kansas
State University

Allison Bair
Comet Researcher at
Lowell Observatory

**Dr. Diana
Hannikainen**
Observing Editor at Sky
& Telescope

**Michael and Dr.
Kendra Sibbersen**
Nationwide Eclipse
Ballooning Project

For more information email us at
info@omahaastro.com



Scientists Gear Up For Solar Storms at Mars

The Sun will be at peak activity this year, providing a rare opportunity to study how solar storms and radiation could affect future astronauts on the Red Planet.

In the months ahead, two of NASA's Mars spacecraft will have an unprecedented opportunity to study how solar flares — giant explosions on the Sun's surface — could affect robots and future astronauts on the Red Planet.

That's because the Sun is entering a period of peak activity called solar maximum, something

that occurs roughly every 11 years. During solar maximum, the Sun is especially prone to throwing fiery tantrums in a variety of forms — including solar flares and coronal mass ejections — that launch radiation deep into space. When a series of these solar events erupts, it's called a solar storm.

Earth's magnetic field largely shields our home

planet from the effects of these storms. But Mars lost its global magnetic field long ago, leaving the Red Planet more vulnerable to the Sun's energetic particles. Just how intense does solar activity get on Mars? Researchers hope the current solar maximum will give them a chance to find out. Before sending humans there, space agencies need to determine, among many



This coronal mass ejection, captured by NASA's Solar Dynamics Observatory, erupted on the Sun Aug. 31, 2012, traveling over 900 miles per second and sending radiation deep into space. Earth's magnetic field shields it from radiation produced by solar events like this one, while Mars lacks that kind of shielding.

Mars, continued.

other details, what kind of radiation protection astronauts would require.

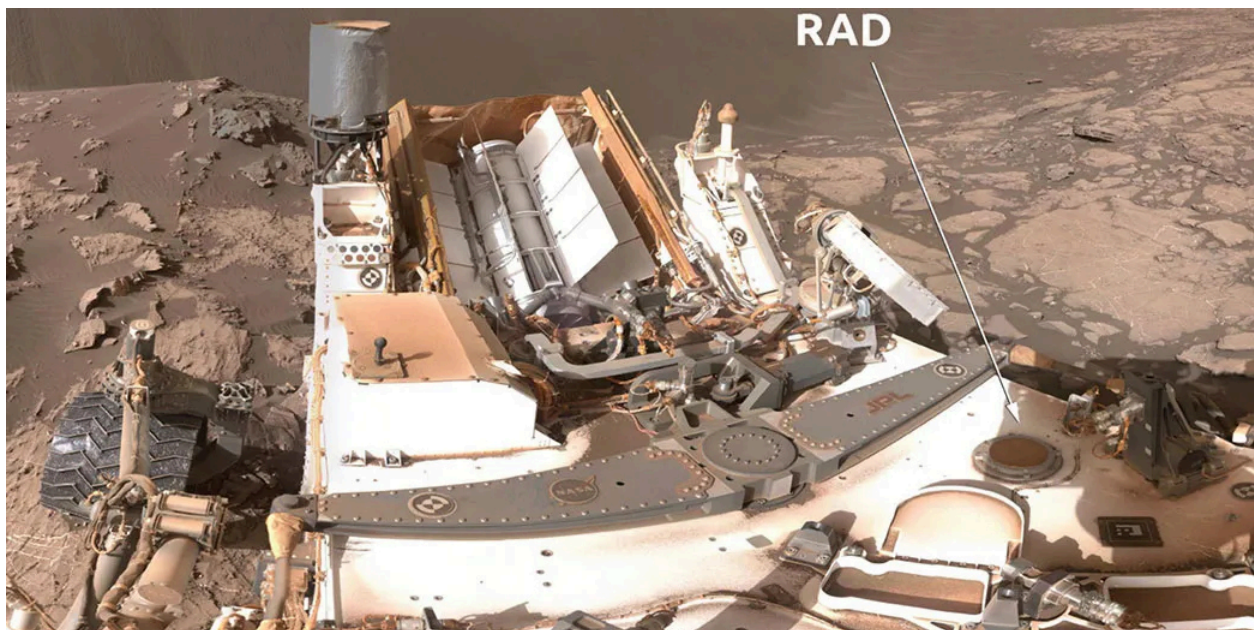
“For humans and assets on the Martian surface, we don’t have a solid handle on what the effect is from radiation during solar activity,” said Shannon Curry of the University of Colorado Boulder’s Laboratory for Atmospheric and Space Physics. Curry is principal investigator for NASA’s MAVEN (Mars Atmosphere and Volatile Evolution) orbiter,

which is managed by NASA’s Goddard Space Flight Center in Greenbelt, Maryland.

“I’d actually love to see the ‘big one’ at Mars this year — a large event that we can study to understand solar radiation better before astronauts go to Mars.”

Measuring High and Low MAVEN observes radiation, solar particles, and more from high above Mars. The planet’s thin atmosphere can affect the intensity of the

particles by the time they reach the surface, which is where NASA’s Curiosity rover comes in. Data from Curiosity’s Radiation Assessment Detector, or RAD, has helped scientists understand how radiation breaks down carbon-based molecules on the surface, a process that could affect whether signs of ancient microbial life are preserved there. The instrument has also provided NASA with an idea of how much



The Radiation Assessment Detector on NASA’s Curiosity is indicated in this annotated image from the rover’s Mastcam. RAD scientists are excited to use the instrument to study radiation on the Martian surface during solar maximum. Credit: NASA/JPL-Caltech/MSSS

Mars, continued.

shielding from radiation astronauts could expect by using caves, lava tubes, or cliff faces for protection.

When a solar event occurs, scientists look both at the quantity of solar particles and how energetic they are.

“You can have a million particles with low energy or 10 particles with extremely high energy,” said RAD’s principal investigator, Don Hassler of the Boulder, Colorado, office of the Southwest Research Institute.

“While MAVEN’s instruments are more sensitive to lower-energy ones, RAD is the only instrument capable of seeing the high-energy ones that make it through the atmosphere to the surface, where astronauts would be.”

When MAVEN detects a big solar flare, the orbiter’s team lets the Curiosity team know so they can watch for changes in RAD’s data. The two missions can even assemble a time series measuring changes down to the

half-second as particles arrive at the Martian atmosphere, interact with it, and eventually strike the surface.

The MAVEN mission also leads an early warning system that lets other Mars spacecraft teams know when radiation levels begin to rise. The heads-up enables missions to turn off instruments that could be vulnerable to solar flares, which can interfere with electronics and radio communication.

Lost Water

Beyond helping to keep astronauts and spacecraft safe, studying solar maximum could also lend insight into why Mars changed from being a warm, wet Earth-like world billions of years ago to the freezing desert it is today.

The planet is at a point in its orbit when it’s closest to the Sun, which heats up the atmosphere. That can cause billowing dust storms to blanket the surface. Sometimes the

storms merge, becoming global.

While there’s little water left on Mars — mostly ice under the surface and at the poles — some still circulates as vapor in the atmosphere. Scientists wonder whether global dust storms help to eject this water vapor, lofting it high above the planet, where the atmosphere gets stripped away during solar storms. One theory is that this process, repeated enough times over eons, might explain how Mars went from having lakes and rivers to virtually no water today.

If a global dust storm were to occur at the same time as a solar storm, it would provide an opportunity to test that theory. Scientists are especially excited because this particular solar maximum is occurring at the start of the dustiest season on Mars, but they also know that a global dust storm is a rare occurrence.

More About the Missions
NASA’s Goddard Space

Mars, Continued.

Flight Center in Greenbelt, Maryland, manages the MAVEN mission. Lockheed Martin Space built the spacecraft and is responsible for mission operations. JPL provides navigation and Deep Space Network support. The Laboratory for Atmospheric and Space

Physics at the University of Colorado Boulder is responsible for managing science operations and public outreach and communications.

Curiosity was built by NASA's Jet Propulsion Laboratory, which is managed by Caltech in Pasadena, California. JPL

leads the mission on behalf of NASA's Science Mission Directorate in Washington. The RAD investigation is supported by NASA's Heliophysics Division as part of NASA's Heliophysics System Observatory (HSO).



ALCON 2024

STARS AND ALL THAT JAZZ!

JULY 17-20, 2024




To register for ALCon, first click on the link, then choose "buy tickets."

<https://www.tickettailor.com/events/astronomicalsocietyofkansascity/1187693#>

It's ASKC's 100th anniversary! We are honored to be the official host for this year's Astronomical League Convention – ALCon 2024 – this July.

Held at the beautiful Overland Park DoubleTree Hotel

See you at ALCon!

Astronomical Society of Kansas City

Circumpolar Companions: Circumpolar Constellations, Part III

Kat Troche



This article is distributed by NASA's Night Sky Network (NSN). The NSN program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, and more!

In our final installment of the stars around the North Star, we look ahead to the summer months, where depending on your latitude, the items in these circumpolar constellations are nice and high. Today, we'll discuss Cepheus, Draco, and Ursa Major. These objects can all be spotted with a medium to large-sized telescope

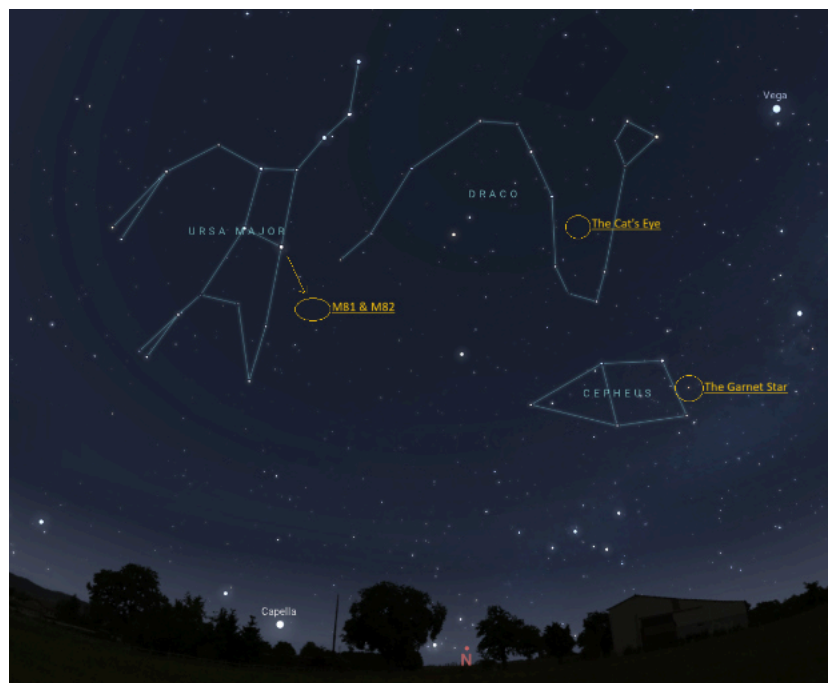
under dark skies.

- **Herschel's Garnet Star:** Mu Cephei is a deep-red hypergiant known as The Garnet Star, or Erakis. While the star is not part of the constellation pattern, it sits within the constellation boundary of Cepheus, and is more than 1,000 times the size of our Sun. Like its neighbor Delta Cephei,

this star is variable, but is not a reliable Cepheid variable. Rather, its brightness can vary anywhere between 3.4 to 5.1 in visible magnitude, over the course of 2-12 years.

- **The Cat's Eye Nebula:** Labeled a planetary nebula, there are no planets to be found at the center of this object. Observations taken with NASA's Chandra X-ray Observatory and Hubble Space Telescopes give astronomers a better understanding of this complex, potential binary star, and how its core ejected enough mass to produce the rings of dust. When searching for this object, look towards the 'belly' of Draco with a medium-sized telescope.

- **Bode's Galaxy and the Cigar Galaxy:** Using the arrow on the star map, look diagonal from the



Circumpolar Companions, continued.

star Dubhe in Ursa Major. There you will find Bode's Galaxy (Messier 81) and the Cigar Galaxy (Messier 82). Sometimes referred to as Bode's Nebula, these two galaxies can be spotted with a small to medium-sized telescope. Bode's Galaxy is a classic spiral shape, similar to our own Milky Way galaxy and our neighbor, Andromeda.

The Cigar Galaxy, however, is known as a starburst galaxy type, known to have a high star formation rate and incredible shapes. This image composite from 2006 combines the power of three great observatories: the Hubble Space Telescope imaged hydrogen in orange, and visible light in yellow

green; Chandra X-Ray Observatory portrayed X-ray in blue; Spitzer Space Telescope captured infrared light in red.

Up next, we celebrate the solstice with our upcoming mid-month article on the Night Sky Network page through NASA's website!



This composite of data from NASA's Chandra X-ray Observatory and Hubble Space Telescope gives astronomers a new look for NGC 6543, better known as the Cat's Eye nebula. This planetary nebula represents a phase of stellar evolution that our sun may well experience several billion years from now. Credit: X-ray: NASA/CXC/SAO; Optical: NASA/STScI

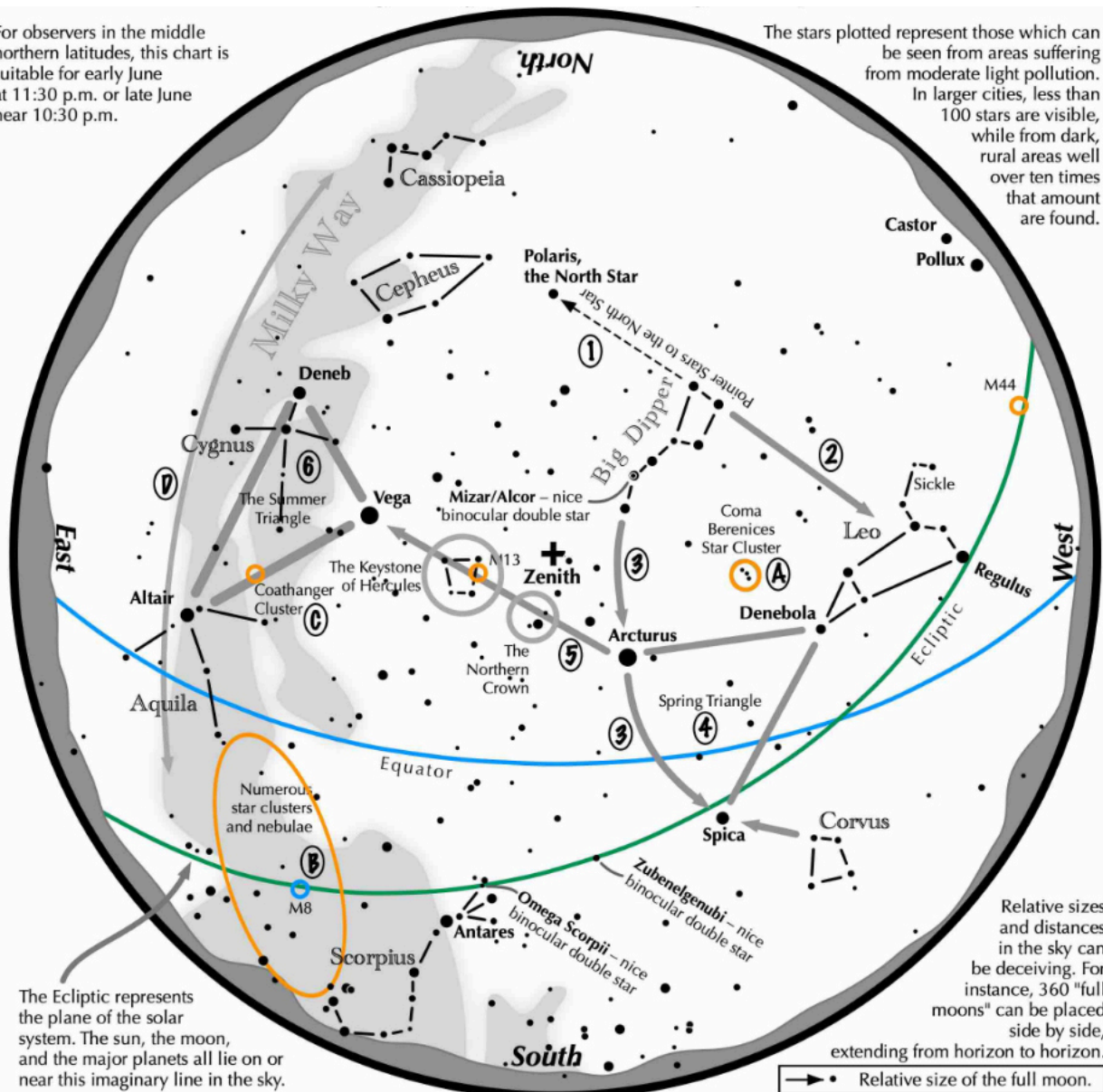


The Cigar Galaxy. Credit: NASA, ESA, CXC, and JPL-Caltech

Navigating the June Night Sky

For observers in the middle northern latitudes, this chart is suitable for early June at 11:30 p.m. or late June near 10:30 p.m.

The stars plotted represent those which can be seen from areas suffering from moderate light pollution. In larger cities, less than 100 stars are visible, while from dark, rural areas well over ten times that amount are found.



Navigating the June night sky: Simply start with what you know or with what you can easily find.

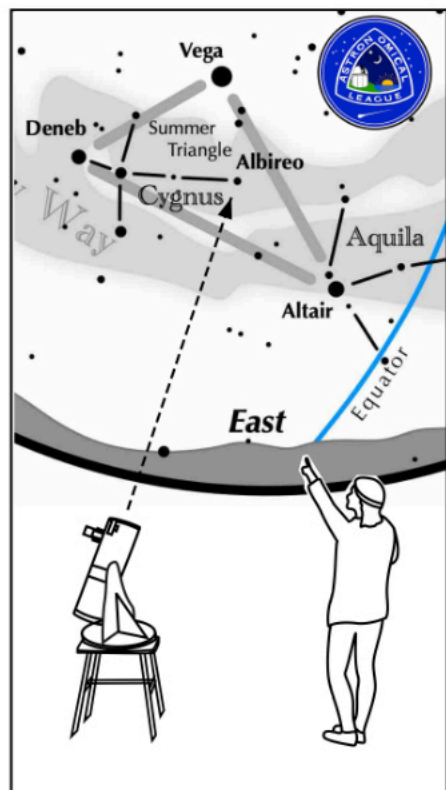
- 1 Extend a line north from the two stars at the tip of the Big Dipper's bowl. It passes by Polaris, the North Star.
- 2 Draw another line in the opposite direction. It strikes the constellation Leo high in the west.
- 3 Follow the arc of the Dipper's handle. It first intersects Arcturus, the brightest star in the June evening sky, then Spica.
- 4 Arcturus, Spica, and Denebola form the Spring Triangle, a large equilateral triangle.
- 5 To the northeast of Arcturus shines another star of the same brightness, Vega. Draw a line from Arcturus to Vega. It first meets "The Northern Crown," then the "Keystone of Hercules." A dark sky is needed to see these two dim stellar configurations.
- 6 High in the east are the three bright stars of the Summer Triangle: Vega, Altair, and Deneb.

Binocular Highlights

- A: Between Denebola and the tip of the Big Dipper's handle, lie the stars of the Coma Berenices Star Cluster.
- B: Between the bright stars of Antares and Altair, hides an area containing many star clusters and nebulae.
- C: 40% of the way between Altair and Vega, twinkles the "Coathanger," a group of stars outlining a coathanger.
- D: Sweep along the Milky Way for an astounding number of faint glows and dark bays.



Astronomical League Outreach



Other Suns: Beta Cygni (Albireo)

How to Beta Cygni on a June evening

Look in the east for the Milky Way and Cygnus. The Northern Cross shape of Cygnus lies in a horizontal position. The southernmost star of the Cross is Beta, also known as Albireo.

Beta Cygni

A-B separation: 35 sec

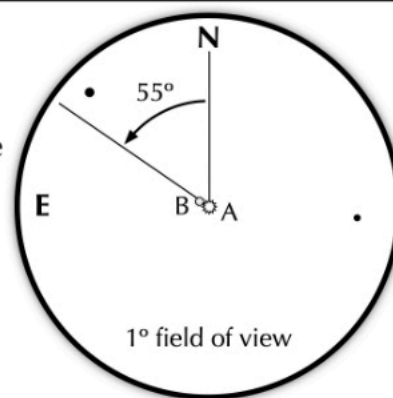
A magnitude: 3.4

B magnitude: 4.7

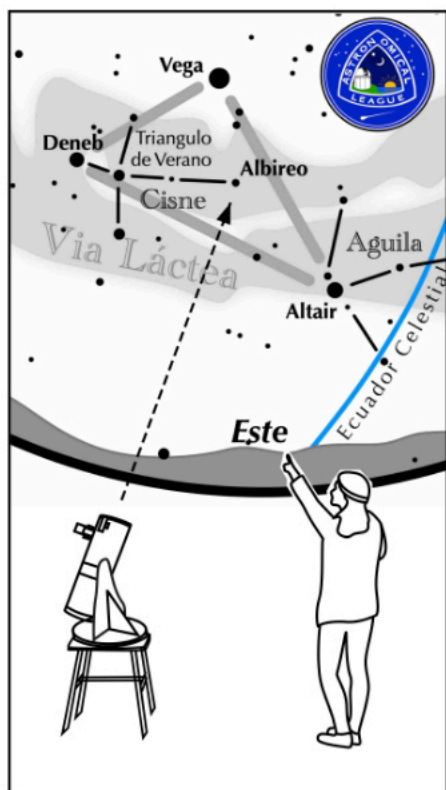
Position Angle: 55°

A & B colors: orange, blue

Suggested magnification: >30x
Suggested aperture: >2 inches



Try 10x50 binoculars to separate Albireo.



Otros Soles: Beta Cygni (Albireo)

Cómo encontrar a Beta Cygni en una tarde de junio

Mire hacia el este en busca de la Vía Láctea y el Cisne. La forma de Cruz del Norte de Cisne se encuentra en posición horizontal. La estrella más al sur de la Cruz es Beta, también conocida como Albireo.

Beta Cygni

A-B separación: 35 sec

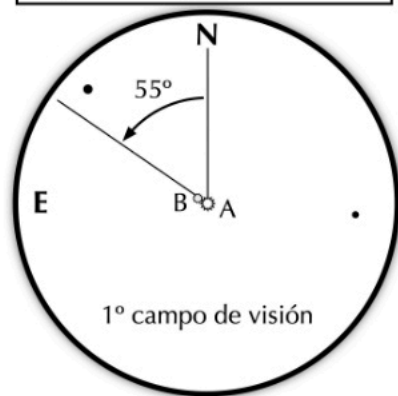
A magnitud: 3.4

B magnitud: 4.7

PA: 55°

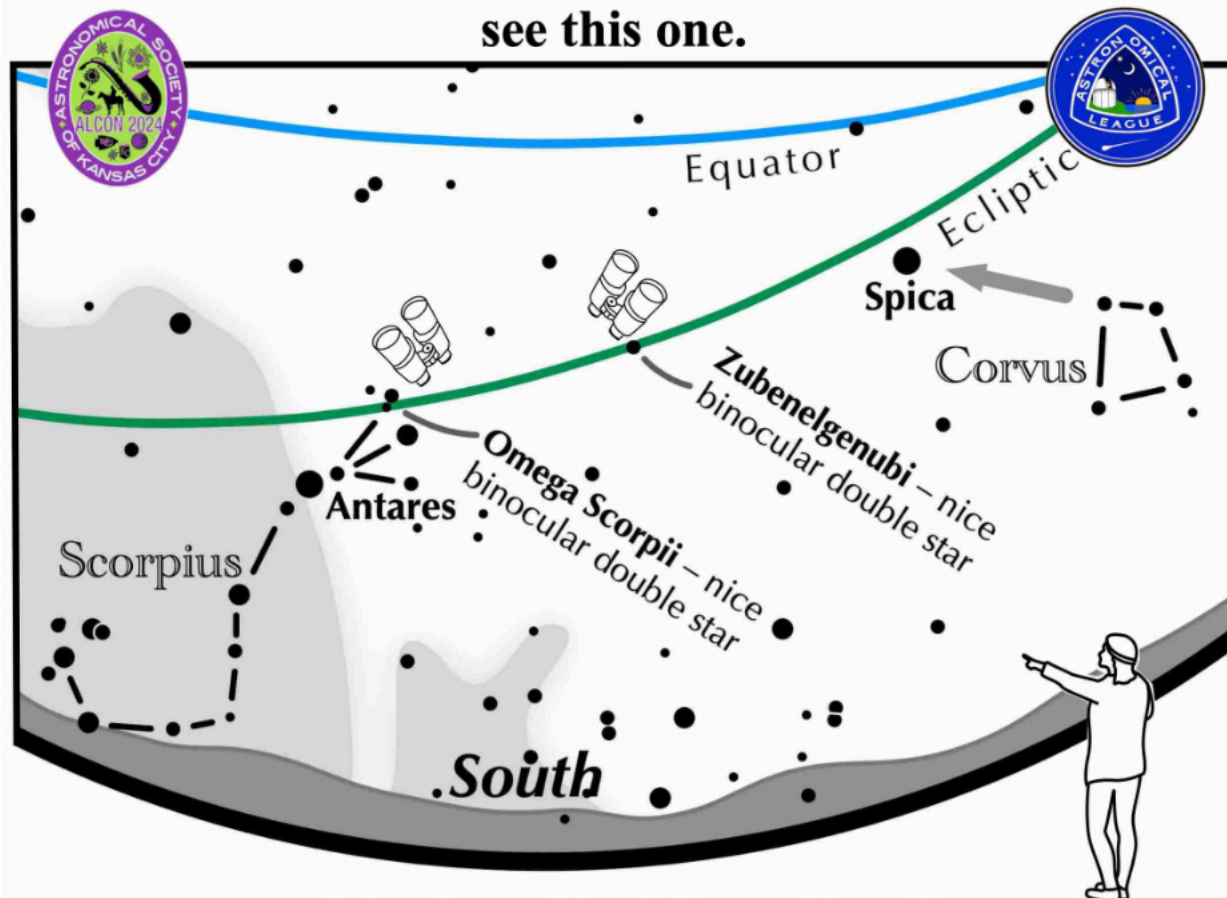
A & B color: naranja, azul

Ampliación sugerida: >30x,
Apertura sugerida: >50 mm

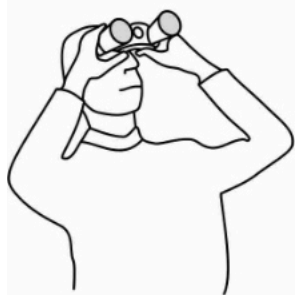


Usa 10x50 binoculares para separar Albireo.

**If you can see only one celestial event this June,
see this one.**



***Zubenelgenubi and Omega Scorpii,
two easy binocular double stars.***



**Enhance the scene –
use binoculars!**

Throughout June ninety minutes after sunset, look low in the south for the bright stars Spica and Antares.

- Almost mid-way between them shines the moderately bright star Alpha Librae, also called Zubenelgenubi.
- Aim binoculars at it and two stars will be seen.
- To Antares' right are the three "claw" stars of Scorpius. Directly below the uppermost claw, Graffias – or Beta Scorpii – is Omega Scorpii.
- Binoculars will easily show two 4th magnitude stars, Omega 1 and 2, separated by nearly a full moon width. The two Omega's are a chance line of sight pair. They are not gravitationally bound to each other.

***The keen-eyed skywatcher will discern two stars when
gazing at both Zuben and Omega.***

Astrophotography



*By Mark Dahmke
Aurora Borealis, May 10th, 112th & Havelock, Lincoln. Panorama from three
photos, Panasonic Lumix GH5s with Voigtlander Nokton 10.5mm f/1, ISO
1600, 6 seconds.*



*By David Dickinson
Looking northwest at 12:56 AM 5/11/24
at Branched Oak Observatory*

Astrophotography



By Leona Barratt

*North of York. 30 seconds - f4.0 - ISO 320
13mm Nikon Z 6*

Astrophotography



By Larry Stepp

This is a high dynamic range image of the April 8 solar eclipse created from 9 separate images, with exposures ranging from 1/8 to 1/2000 second at f5.5, ISO 100. There are many videos on YouTube about how to produce an HDR photo from solar eclipse images. I used the method in which the layers are stacked in Photoshop with the longest exposure on the bottom and the shortest on the top, and then the opacity of each layer is adjusted from 100% on the bottom layer, 90% on the second layer, etc., down to 30% for the top layer. Once the stack is flattened in Photoshop, you can then make further improvements using functions like contrast, texture and clarity. One more detail – I cheated and combined 1/2000 images from both the start and end of the eclipse in order to see prominences all around the sun, and used that for the top layer.

There are more extreme ways to make an HDR eclipse image, to bring out even more structure in the corona, but I like this method because I think it comes close to reproducing the appearance of the eclipse to the naked eye.

Astrophotography



By David Knisely

*Location: Beatrice. The camera was a Canon Rebel XT Model 350D,
18mm lens, 10 second exposure at ISO1600.*

Astrophotography



By John Reinert

iPhone 15 Pro Max, 24mm equivalent, f/ 1.78, 12MP, ISO 10000. It may have combined (3) 1 second exposures in the iPhone. Looking north while at Branched Oak Observatory, 11:35m.

Astrophotography



By John Reinert

iPhone 15 Pro Max, 24mm equivalent, f/ 1.78, 12MP, ISO 10000. It may have combined (3) 1 second exposures in the iPhone. I just had to hold still. Yes, I was looking toward the southeast, Izar is in the upper right of the image. S 148th and Pine Lake Road.

Astrophotography



By Rick Brown

iPhone 8 using the NightCap app: 4.1 s. exposure, ISO 4224

Astrophotography



By Jason O'Flaherty

*Aurora at Branched Oak Observatory, 4 Photo Panorama, 30 sec f/4.0 ISO200
24mm, Camera Nikon Z8, Lens Nikkor Z 24-120 f/4*

Astrophotography



By Brett Boller

*Branched Oak Observatory
Canon t7i with Rokinon 10mm t3.1
1:38 am
10 second exposure ISO 3200
Photoshop*

Astrophotography



By Brett Boller

*Branched Oak Observatory
Canon t7i with Rokinon 10mm t3.1*

Astrophotography



By Matthew Charron

Location: Eagle, NE Ball Fields looking northeast at 1:58AM

Exposure time: 6 seconds, ISO: 1000, F-stop: f/5.6

Nikon D5300, Rokinon f/1.8 14mm

Post-processed in Adobe Lightroom

From the Archives

May, 1974

There is a renewed effort underway to establish a community observatory for Lincoln. A committee has been formed and some basic ground work laid out. The committee has representatives from the Lincoln parks dept., the Southeast Community College, the Lincoln Public Schools, the University of Nebraska, the Junior League of Lincoln, the Lincoln Foundation, and Prof. Carroll Moore of Nebraska Wesleyan as

committee chairman. The proposed observatory would be of the domed roof type and a 14" Celestron as the main telescope. The basic cost would be approx. \$25,000.00 and the location of the observatory will be discussed at a later date.

Some of you may recall the efforts of our club, some years ago, to have a observatory for Lincoln. Our negotiations with the Park Dept. came to a impasse when the only

way to have an observatory in a city park was for our club to give our club's telescope to the city and that we wouldn't do.

Perhaps some of you that are still interested in an observatory for Lincoln, would want to help in this project. If so let Carroll Moore or myself know what, you feel about this project.

Earl Moser
President

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.

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.

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.

