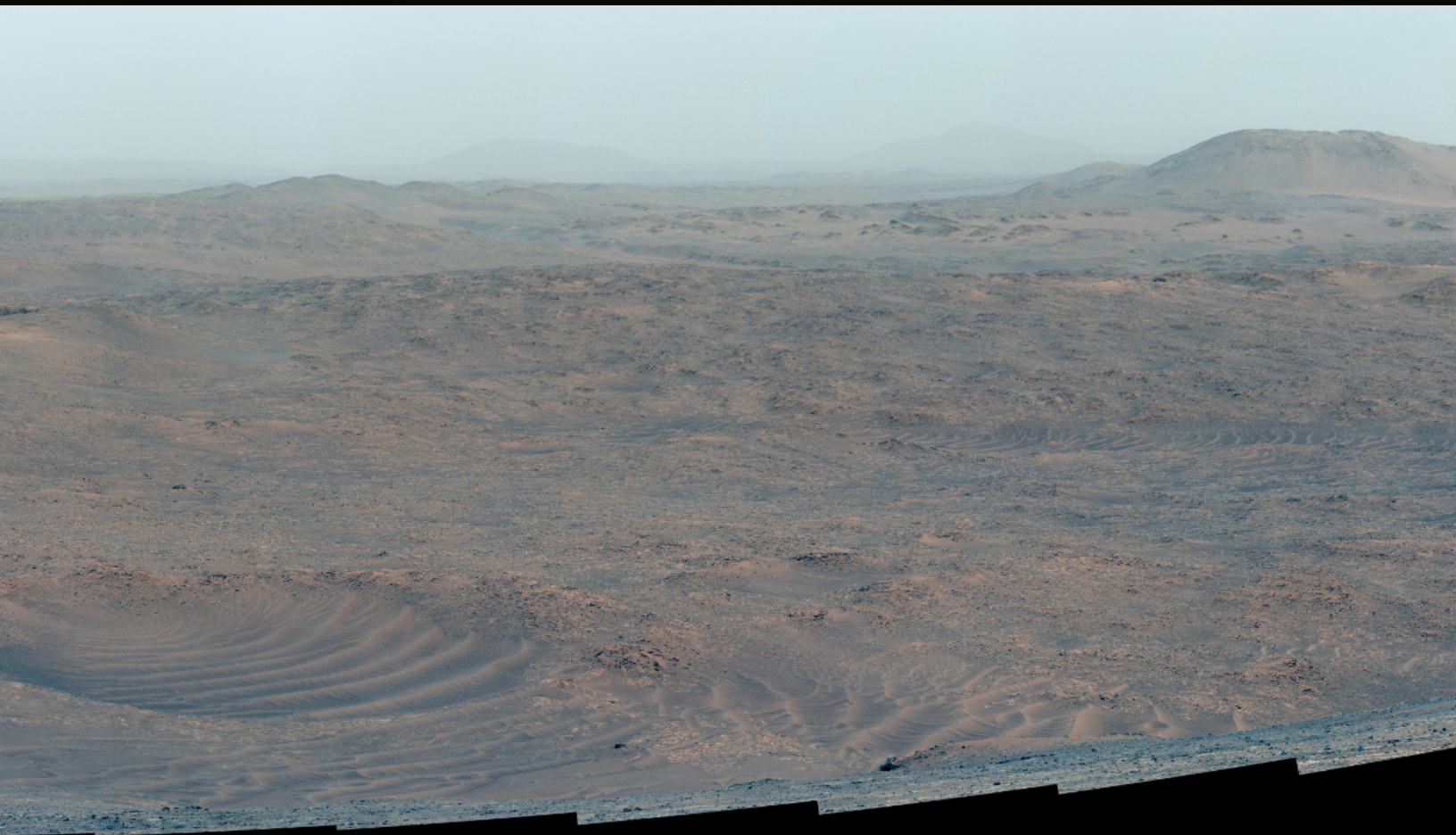


The Prairie Astronomer

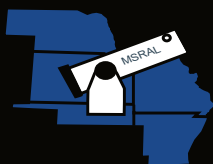
April 2025 Volume 66, Issue #4



CHRISTMAS AT CRATER RIM: ENHANCED COLOR MOSAIC AT JEZERO

IN THIS ISSUE:

Hyde Observatory Reopening
Catch the Waves!
Astronomy Night at Morrill Hall
Webb's Autopsy of Planet Swallowed by Star Yields Surprise



Night Sky Network



The Newsletter of the Prairie Astronomy Club

The Prairie Astronomer



The next club meeting is April 29th at 7:30pm - AT HYDE OBSERVATORY

NEXT MEETING AND PROGRAM

Europa Clipper

For this month's program, we'll watch a video chronicling NASA's Europa Clipper mission—from early concept to current development. The video highlights the spacecraft's design, scientific goals, and planned journey to Jupiter's icy moon Europa, where it will search for signs of habitability.

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UPCOMING PROGRAMS

June: Nearest Star Party

Cover: This enhanced-color mosaic showing the Martian surface outside of Jezero Crater was taken by NASA's Perseverance from the crater rim at a location where the rover collected a sample dubbed "Silver Mountain." Taken December 25, 2024. Credit: NASA/JPL-Caltech/ASU/MSSS



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.

April PAC Meeting

Tuesday, April 29th, 7:30pm, Hyde Observatory

Program: Europa Clipper Mission

May PAC Meeting

Tuesday, May 27, 7:30pm, Hyde Observatory

June PAC Meeting

Tuesday, 24, 7:30pm, Hyde Observatory

Nearest Star Party

Nebraska Star Party

July 20-25, Merritt Reservoir

July PAC Meeting

Tuesday July 29th, Hyde Observatory

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

Night Sky Network



www.prairieastronomyclub.org

2025 STAR PARTY DATES

	Date	Date
January	24	31
February	21	28
March	21	28
April	3/18	25
May	16	23
June	20	27
July	18	25
NSP	7/20	7/25
August	15	22
September	19	26
October	17	24
November	14	21
December	12	19

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

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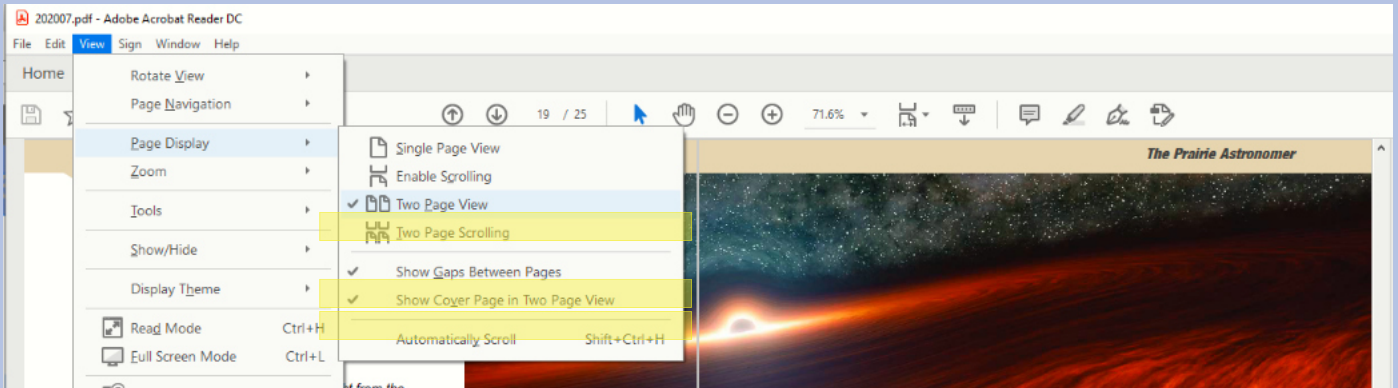
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Notices

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/dues/>

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,

Thank you to everyone who helped coordinate the viewing of the first episode of Cosmos, presented by Carl Sagan, and to those who volunteered to speak on the panel. The enthusiasm in the room led to a great general discussion that extended well beyond the episode. The upscaled DVD looked fantastic and had the feel of a modern production. I enjoyed it so much that I ordered the complete 13-part series. If there's enough interest, I'd be happy to find a way to make the full series available for others to watch. Let me know if that's something you'd be interested in.

A special thank you as well to Don Hain for volunteering at the Astronomy Night at Morrill Hall on UNL's campus. His ongoing support of our outreach efforts is greatly appreciated.

Hyde Observatory has officially reopened following its remodel! The grand reopening on Saturday, April 5th, drew around 50 guests. Congratulations to everyone involved in bringing this project to completion. Our next meeting on Tuesday, April 29th, will return to Hyde Observatory. I haven't seen the remodel yet and am excited to experience the new and improved space, a true



gem for our city's astronomy community.

We're still looking for a presenter for April. Lee Taylor has a few ideas in progress, but if you have a suggestion, please email him. We're always open to new topics and guest speakers for upcoming meetings.

I am looking forward to seeing everyone on April 29th.

Clear skies,

Jason O'Flaherty

Meeting Minutes

Jim White

Tonight's meeting is being held at BOO (Branched Oak Observatory) and online via Zoom, Hyde Observatory is currently closed for renovations. Jason O'Flaherty started the meeting at 7:35 PM. There are no new members or guests at tonight's meeting. Jason mentioned that two days ago Earth crossed through Saturn's ring plane but it is currently difficult to observe because it is located close to the Sun but you might be able to catch it just before Sunrise.

At 7:38 Jason turned the meeting over to Jim Kvasnicka, PAC's Observing Chair, for his monthly observing report. Upcoming star parties are scheduled for 3/28, 4/18 and 4/25 at the Clatonia Recreation Area. Planets for the month of April, Mercury is not visible, Venus is a morning planet, Mars is in Gemini, Jupiter is in Taurus, Saturn is a morning planet but is difficult to see due to its

proximity to the Sun, Uranus is in Taurus and Neptune is not visible. There is one meteor shower coming up in April 21-22, the Lyrids, which is the result of Earth passing through the tail of comet Thatcher and the moon will not be up so it won't interfere with viewing opportunities. Jim's complete observing report can be found in this newsletter. At 7:42 Jim turned the meeting back over to Jason.

Jason mentioned that if you have been following the newsletter Mark Dahmke has been chronicling the Hyde renovation with a section titled This Old Observatory. John Reinert was not available tonight so we don't have a treasurer's report for this month. Jason went over membership options that are available for students, individuals and families. Astro party's that are coming up are The Texas Star Party, MSRAL, Rocky Mountain Star Stare and

the 32nd Annual Nebraska Star Party. BOO is planning on having a Messier marathon this upcoming Saturday, weather permitting, and April 4th BOO is planning on having a volunteer pizza party for those who might be interested in becoming a volunteer at BOO. Tonight's meeting adjourned at 7:47 PM.

Tonight's program is a viewing of The Cosmos Episode 1 with Carl Sagan provided by Jack Dunn with a discussion following the showing.

NSP 2025

Step Into the Darkness

A stylized map of Nebraska is centered in the image. Inside the map's outline is a vibrant, swirling vortex of light, transitioning from deep purple and blue on the outside to bright orange and yellow in the center. The background is a dark, starry night sky with some nebulae. At the bottom of the image, the dark silhouettes of evergreen trees are visible against the starry sky.

32nd Annual Nebraska Star Party
July 20th - 25th, 2025 - Merritt Reservoir

www.nebraskastarparty.org

ARP 79

The Mantrap Skies Image Catalog

This is a reprocess of an image taken back in 2009. My processing toolkit was limited as was my ability to use what tools I had. So it was time to redo it after I looked at it and got an instant yuck reaction in my stomach. I cheated by starting with a partly processed TIFF luminance image and since the color data looked good but for color balance I used it as I had processed it the first time except to adjust color balance some, mainly to remove airglow that tends to be strong at my latitude. Also, I wasn't doing annotated images back then. There was enough else going on I needed to go into that I had skipped in the original post 6 years ago.

This is a two for one Arp image that contains both Arp 79 and Arp 117. Arp 79 is listed by Arp under the category for spiral galaxies with high surface brightness companions. But there's no such companion. Arp's only comment on the object refers to the two star knots in the southern arm saying;



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.



ARP79, continued

"Small separation between two knots in arm." There is an orange field star in the other arm but I don't see how that looks anything like a companion galaxy either. Some have said he is referring to the brightening of the arm where those two star knots are located but since he refers to them and the brightening looks nothing like a companion I can't imagine that was his intent. It does have a strange feature, a straight bar of blue stars that appears separate from the galaxy seen below the two star knots. It's far from being of high surface brightness but could be considered a companion I suppose. I find nothing on it.

The right of two star knots in the arm is SDSS J141007.08+173647.6 which NED does call a galaxy rather than part of a galaxy but I've seen many such star knots listed this way so I don't put a lot of credence into that classification. The other star knot isn't listed at NED at all nor is the bar. Seems there's lots of

mystery to this one. While it looks like a small spiral it is actually pretty normal sized at 70,000 light-years. It's just its distance that makes it seem small. It is sometimes known as NGC 5490C (NGC 5490 is at the bottom of my image) and is classified as SB(s)bc.

Arp 117 is listed by Arp under his classification for elliptical-like galaxies close to and perturbing spirals. Thus by his classification, the small galaxy is perturbing the big one. Arp apparently sees this as a warping of the spiral for which he notes: "Flattening of spiral's nucleus appears to be in a different plane than the arms." I'm not so sure I see what he is talking about. The core is very bright with a bright but short bar. Does he see this as a spiral seen edge on inside a face on set of arms? Other than this I don't see what he is talking about. While both galaxies have the same redshift and thus likely about the same distance from us it also could be their relative motions are actually quite different

but their distance difference covers this up. I'd think there'd be distortions in the smaller companion as well as the spiral. I don't see that the companion is anything but very normal looking. It is IC 982, a SA0+ galaxy and the spiral is IC 983 an SB(r)bc galaxy. Note that except for the pseudo ring structure its classification is the same as that of Arp 79 even though they appear very different.

Arp 117 (both galaxies) was discovered by Stephane Javelle on May 27, 1891. IC 982 is about 80,000 light-years across while the spiral IC 983 is absolutely huge at over 325,000 light-years dwarfing everything around it.

Note in the annotated image there are many dwarf galaxies with a redshift indicating they are part of the same group. Many having almost exactly the same redshift in fact.

The other major galaxy in the image is NGC 5490 that for some reason I didn't get entirely on the frame. It is listed simply

ARP79, continued

as an Elliptical galaxy and has a very similar redshift to the two Arp systems. Indicating it is likely part of the same group. It was discovered by William Herschel on March 14, 1784. It is in the second Herschel 400 observing program. I

can't directly measure its size on my image since it is partly out of the frame. Using NED's diameter it would be about 125,000 light years in size using a distance of 250,000 million light-years determined by mostly type 1A supernova

measurements though redshift places it a bit closer and thus smaller. It may be its own group as there are other galaxies around it with redshifts a bit less than that of the two Arp systems.



Focus on Constellations

Jim Kvasnicka

Virgo

Virgo, The Virgin, is well away from the dust of the Milky Way and contains a super abundance of galaxies. Eleven of them are Messier objects. Virgo is in the heart of the Coma-Virgo supercluster. In the central $12^\circ \times 10^\circ$ area some 3,000 galaxies can be counted, and those are just the brightest members. Virgo covers 1,294 square degrees and is best seen in May.

Showpiece Objects

Galaxies: M49, M58, M59, M60, M61, M84, M86, M87, M89, M90, M104

Mythology

Virgo is named for the Greek goddess Demeter, the Earth goddess, and is associated with the arrival of spring and the growing season. Hades, the god of the Underworld, fell in love with Demeter's daughter, Persephone and carried her back to the Underworld. Demeter became worried and went to look for her. Zeus pleaded with Demeter to return. Demeter refused and continued to search for her daughter. People everywhere were starving and could not understand how the Earth goddess could be so cruel. Zeus sent Hermes to Hades telling him

that Persephone must return home to Olympus. Demeter was happy but her Persephone told her mother she was in love with Hades. Zeus solved the problem saying that Persephone would spend half of her time with Hades in the Underworld and half of her time with her mother in Olympus. Winter comes when Persephone goes to the Underworld and spring begins when she returns to Olympus.

Number of Objects Magnitude 12.0 and Brighter

Galaxies: 69

Globular Clusters: 1

Open Clusters: 0

Planetary Nebulae: 0

Dark Nebulae: 0

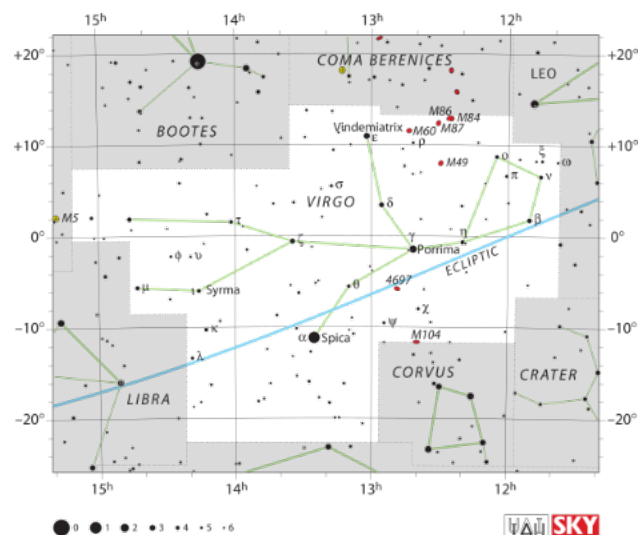
Bright Nebulae: 0

SNREM: 0

IAU Virgo Chart

Credit: IAU and Sky & Telescope magazine (Roger Sinnott & Rick Fienberg), CC BY 3.0

<https://creativecommons.org/licenses/by/3.0/>, via Wikimedia Commons



May Observing

Jim Kvasnicka

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

Planets

Mercury: Morning planet, too low to be seen.

Venus: Morning planet, low and hard to see.

Mars: Evening planet. Crosses the Beehive Cluster on May 4th.

Jupiter: Evening planet in Taurus, Compromised by twilight mid-month.

Saturn: Morning planet, difficult to see.

Uranus and Neptune: Not visible.

Messier List

M49: Galaxy in Virgo.

M51: The Whirlpool Galaxy in Canes Venatici.

M61: Galaxy in Virgo.

M63: The Sunflower Galaxy in Canes Venatici.

M64: The Black Eye Galaxy in Coma Berenices.

M85: Galaxy in Coma Berenices.

M94: Galaxy in Canes Venatici.

M101: The Pinwheel Galaxy in Ursa Major.

M102: Galaxy in Draco.

M104: The Sombrero Galaxy in Virgo.

Last Month: M40, M65, M66, M95, M96, M105, M106, M108, M109

Next Month: M58, M59, M60, M84, M86, M87, M88, M89, M90, M91, M98,



M99, M100

NGC and other Deep Sky Objects

NGC 4244: The Silver Needle Galaxy in Canes Venatici.

NGC 4651/4656: The Whale Galaxy and Hockey Stick galaxies in Canes Venatici.

NGC 4666: Elongated galaxy in Virgo.

NGC 4754/4762: Galaxy pair in Virgo.

NGC 4866: Elongated galaxy in Virgo.

Double Star Program List

Kappa Bootis: Yellow and blue stars.

Iota Bootis: Yellow and dim blue pair.

Pi Bootis: Pair of white stars.

Epsilon Bootis: Yellow and greenish yellow stars.

Xi Bootis: Yellow pair.

Delta Bootis: Yellow primary with a blue-white secondary.

Mu Bootis: Two yellow stars.

Zeta Corona Borealis: Light blue and greenish yellow stars.

Challenge Object

Markarian's Chain: Galaxy group along the Virgo and Coma Berenices border. How many can you fit in your FOV?

Outreach Calendar

Don Hain
dhain00@gmail.com, 402 440 5318

The [Crete Public Library](#) opportunity mentioned in the March newsletter will probably occur in early November once Daylight Savings Time is over. I'm not sure if the fact that Crete is fairly

close to the [Clatonia Recreation Area](#) where PAC holds our star parties will add a bigger potential for attracting folks to those events or not, but I plan to bring up those gatherings as

part of the chat when it gets held. If you have a possible interest in bringing a scope out for the public to use at the library for that event please email me at dhain00@gmail.com.

Scheduled events to be aware of:

Camp Erin - Youth Overnight Camp

When: September 27-29, 2025 (exact night still to be determined)

Where: Carol Joy Holling Center- 27416 Ranch Rd, Ashland, NE 68003

Sponsored by: Mourning Hope

Needs: 5 or more volunteers are hoped for

Hoot 'n Howl - Spring Creek Prairie

When: usually in October (date won't be set until sometime in May or June)

Where: Spring Creek Prairie Audubon Center - 11700 SW 100th St Denton, NE 68339

Sponsored by: Spring Creek Prairie

Needs: 2 or more volunteers are hoped for

Hyde Observatory: OPEN

When: Saturday nights

Where: Hyde Observatory

Sponsored by: Lincoln Parks and Rec / Hyde Board of Directors

Needs: volunteers willing to work out on the deck or manage the shows in the classroom about one Saturday per month

see <https://www.hydeobservatory.info/volunteer/> for more information

see <https://forms.gle/ZKr4ivapvUhfejwL6> for the volunteer form to get paperwork with the city started. Since Hyde offers the activity through city government a background check is needed. Submission of this form will get that going.

Outreach Coordinator contact information:

Don Hain dhain00@gmail.com
phone: 402 440 5318

A Lego View of the Sun-Earth-Moon System

Don Hain

I partook in the 2025 Astronomy Night held by the Nebraska State Museum and Planetarium this year. It was held on Saturday night, April 12th, from 5:00 to 9:00PM. There were several handouts available from our Prairie Astronomy Club tables that included links to various astronomy related web sites. The principal activity was to have participants in the event turn the crank on a Lego orrery of the Sun-Earth-Moon system so they could see how the earth orbits the sun. It also provided a good model to point out how darkness points us to different sets of stars in the summer than in the winter, as well as the fact that circumpolar stars are visible no matter what season we are in. My grandson and I had built the orrery back in

March when I was up in Madison WI where our kids and their families live. It is Lego kit 42179 Planet Earth and Moon in Orbit if anyone else thinks they would have fun owning one.

The display included both a DK Night Sky Night poster and a Celestron Sky Map (of which the cover is a planisphere). The planisphere was not referred to as often as the sun-earth-moon orrery got used, but it did get a fair share of attention.

There were several children, one in particular, who felt a pretty dire need to eventually get their hands on their own Lego orrery!

The night was a success. While I've not heard the official word yet, Rachel Scheet believed a good number of folks from the

public took advantage of the event. She and the crew at the state museum did a wonderful job of getting things organized and ready. I once again gave out a set of "googly 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 does a good job of presenting videos about constellations(<https://www.learnthesky.com/>).

If you are interested in helping out next year please reach out to me via email at dhain0@gmail.com and I will try to contact you as spring rolls in 2026 and the next Astronomy Night nears.

April's Night Sky Notes: Catch the Waves!



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!

Kat Troche

The Electromagnetic Spectrum

If you've ever heard the term "radio waves," used a microwave or a television remote, or had an X-ray, you have experienced a broad range of the electromagnetic spectrum! But what is the electromagnetic

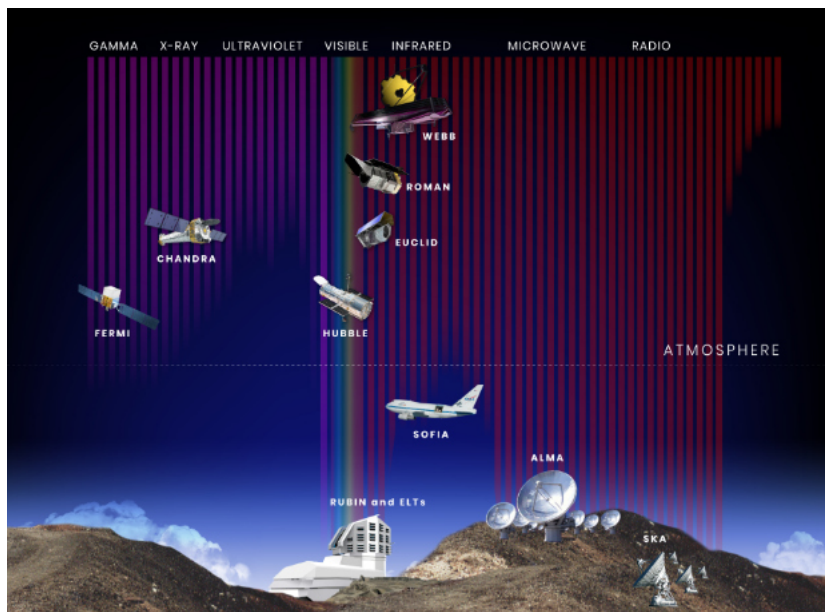
spectrum? According to Merriam-Webster, this spectrum is "the entire range of wavelengths or frequencies of electromagnetic radiation extending from gamma rays to the longest radio waves and including visible light." But what does that mean? Scientists think of the entire

electromagnetic spectrum as many types of light, only some that we can see with our eyes. We can detect others with our bodies, like infrared light, which we feel as heat, and ultraviolet light, which can give us sunburns. Astronomers have created many detectors that can "see" in the full spectrum of wavelengths.

Telescope Types

While multiple types of telescopes operate across the electromagnetic spectrum, here are some of the largest, based on the wavelength they primarily work in:

- Radio: probably the most famous radio telescope observatory would be the Very Large Array (VLA) in Socorro County, New Mexico. This set of 25-meter radio telescopes was featured in the 1997 movie Contact. Astronomers use these telescopes to observe



This illustration shows the wavelength sensitivity of a number of current and future space- and ground-based observatories, along with their position relative to the ground and to Earth's atmosphere. The wavelength bands are arranged from shortest (gamma rays) to longest (radio waves). The vertical color bars show the relative penetration of each band of light through Earth's atmosphere. Credit: NASA, STScI

Waves, continued

protoplanetary disks and black holes. Another famous set of radio telescopes would be the Atacama Large Millimeter Array (ALMA) located in the Atacama Desert in Chile. ALMA was one of eight radio observatories that helped produce the first image of supermassive black holes at the center of M87 and Sagittarius A* at the center of our galaxy. Radio telescopes have also been used to study the microwave



The Crab Nebula, located in the Taurus constellation, is the result of a bright supernova explosion in the year 1054, 6,500 light-years from Earth. Credit: X-ray: NASA/CXC/SAO; Optical: NASA/STScI; Infrared: NASA/JPL/Caltech; Radio: NSF/NRAO/VLA; Ultraviolet: ESA/XMM-Newton



NASA's Hubble Telescope captured the Pillars of Creation in 1995 and revisited them in 2014 with a sharper view. Webb's infrared image reveals more stars by penetrating dust. Hubble highlights thick dust layers, while Webb shows hydrogen atoms and emerging stars. You can find this and other parts of the Eagle Nebula in the Serpens constellation. Credit: NASA, ESA, CSA, STScI, Hubble Heritage Project (STScI, AURA)

portion of the electromagnetic spectrum.

- **Infrared:** The James Webb Space Telescope (JWST) operates in the infrared, allowing astronomers to see some of the earliest galaxies formed nearly 300 million years after the Big Bang. Infrared light allows astronomers to study galaxies and nebulae, which dense dust clouds would otherwise obscure. An excellent example is the Pillars of Creation located in the Eagle Nebula. With the side-by-side image

comparison below, you can see the differences between what JWST and the Hubble Space Telescope (HST) were able to capture with their respective instruments.

- **Visible:** While it does have some near-infrared and ultraviolet capabilities, the Hubble Space Telescope (HST) has primarily operated in the visible light spectrum for the last 35 years. With over 1.6 million observations made, HST has played an integral role in how we view the universe. Review Hubble's Highlights [here](#).

Waves, continued

• X-ray: Chandra X-ray Observatory was designed to detect emissions from the hottest parts of our universe, like exploding stars. X-rays help us better understand the composition of deep space objects, highlighting areas unseen by visible light and infrared telescopes. This image of the Crab Nebula combines data from five different telescopes: The VLA

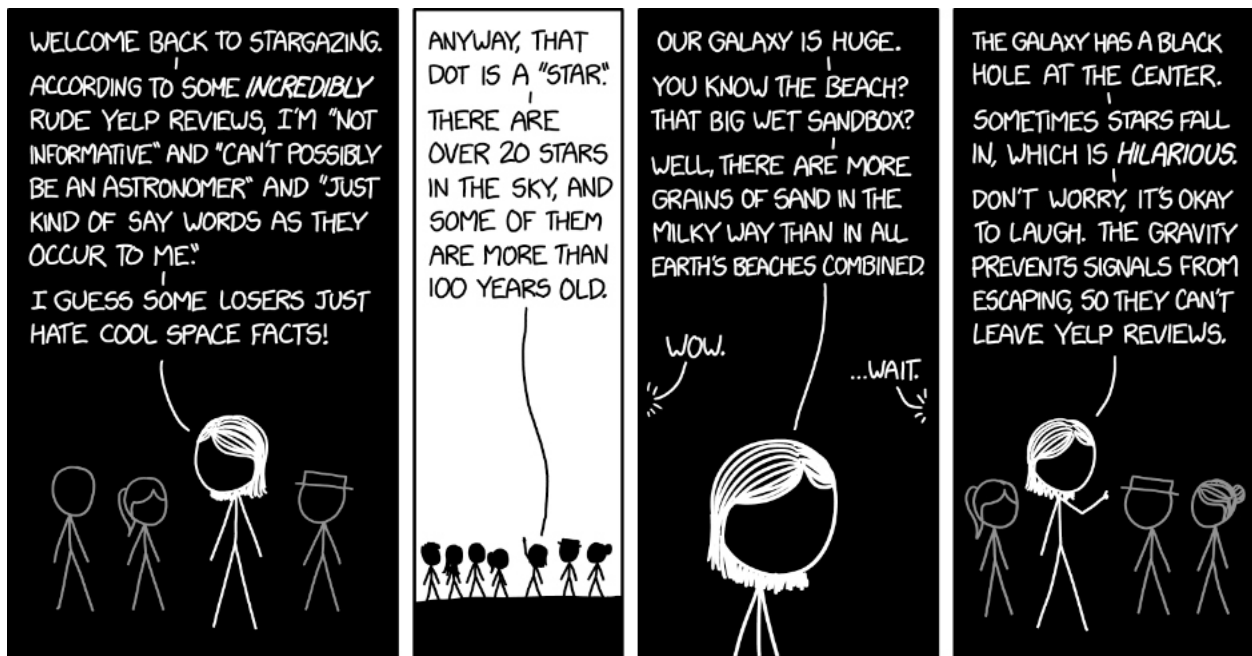
(radio) in red; Spitzer Space Telescope (infrared) in yellow; Hubble Space Telescope (visible) in green; XMM-Newton (ultraviolet) in blue; and Chandra X-ray Observatory (X-ray) in purple. You can view the breakdown of this multiwavelength image here.

Try This At Home

Even though we can't see these other wavelengths

with our eyes, learn how to create multiwavelength images with the Cosmic Coloring Compositor activity and explore how astronomers use representational color to show light that our eyes cannot see with our Clues to the Cosmos activity.

Stargazing 4



Hyde Observatory Needs You!



Volunteer at Hyde

Our crew of unpaid volunteers share an interest in Astronomy and they enjoy passing on that interest to the public.



You don't need to be an expert in astronomy or telescopes. **We'll teach you what you need to know.**



Volunteers start as telescope operators on the observing deck, which involves keeping one of the three telescopes focused on the sky objects we are showing and explaining them to our visitors. Experienced volunteers can become Deck Leaders who determine what objects to train the telescopes on, and answer the really difficult questions.

For more information, [visit our website](#)

NASA Webb's Autopsy of Planet Swallowed by Star Yields Surprise

Managed by NASA JPL through launch, Webb's MIRI instrument has made observations that suggest the planet plunged into the star, rather than the star expanding and engulfing it.

Observations from NASA's James Webb Space Telescope have provided a surprising twist in the narrative surrounding what is believed to be the first star observed in the act of swallowing a planet. The new findings suggest that the star actually did not swell to envelop a planet as previously hypothesized. Instead, Webb's observations show the planet's orbit shrank over time, slowly bringing the planet closer to its demise until it was engulfed in full.

"Because this is such a novel event, we didn't quite know what to expect when we decided to point this telescope in its direction," said Ryan Lau, lead author of the new paper and astronomer at NSF NOIRLab (National Science Foundation National Optical-Infrared Astronomy Research Laboratory) in Tucson, Arizona. "With its high-resolution look in the infrared, we are learning valuable insights about the final

fates of planetary systems, possibly including our own."

Two instruments aboard Webb conducted the postmortem of the scene — Webb's MIRI (Mid-Infrared Instrument) and NIRSpec (Near-Infrared Spectrograph). The researchers were able to come to their conclusion using a two-pronged investigative approach.

Constraining the How

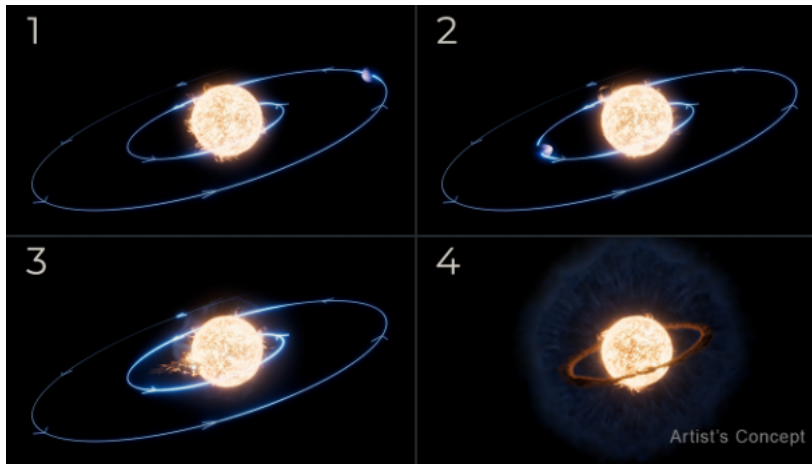
The star at the center of this scene is located in the Milky Way galaxy about 12,000 light-years away from Earth.

The brightening event, formally called ZTF SLRN-2020, was originally spotted as a flash of optical light using the Zwicky Transient Facility at Caltech's Palomar Observatory in San Diego, California. Data from NASA's NEOWISE (Near-Earth Object Wide-field Infrared Survey Explorer) showed the star actually brightened in the infrared a year before the



An artist's concept depicts one of NASA's Voyager probes. The NASA's Webb telescope has followed up on what is thought to be the first known observations of a star engulfing a planet. This artist's concept depicts a ring of hot gas left by the event around the star. Webb observed such a ring and also found an expanding cloud of cooler dust enveloping the scene. Credit: NASA, ESA, CSA, Ralf Crawford (STScI) spacecraft launched in 1977. Credit: NASA/JPL-Caltech

Autopsy, continued



This artist's concept depicts a Jupiter-sized planet falling into a star over millions of years. As the planet passes through the star's atmosphere, it slows down and its orbit shrinks; it eventually collides with the star and ejects material that forms a ring and a faint blue cloud. Credit: NASA, ESA, CSA, Ralf Crawford (STScI)

exhausted its hydrogen fuel.

However, Webb's MIRI told a different story. With powerful sensitivity and spatial resolution, Webb was able to precisely measure the hidden emission from the star and its immediate surroundings, which lie in a very crowded region of space. The researchers found the star was not as bright as it should have been if it had evolved into a red giant, indicating there was no swelling to engulf the planet as once thought. Reconstructing the

consequence.

"The planet eventually started to graze the star's atmosphere. Then it was a runaway process of falling in faster from that moment," said team member Morgan MacLeod of the Harvard-Smithsonian Center for Astrophysics and the Massachusetts Institute of Technology in Cambridge, Massachusetts. "The planet, as it's falling in, started to sort of smear around the star."

In its final splashdown, the planet would have blasted gas away from the outer layers of the

star. As it expanded and cooled off, the heavy elements in this gas condensed into cold dust over the next year.

Inspecting the Leftovers

While the researchers did expect an expanding cloud of cooler dust around the star, a look with the powerful NIRSpec revealed a hot circumstellar disk of molecular gas closer in. Furthermore, Webb's high spectral resolution was able to detect certain molecules in this accretion disk, including carbon monoxide.

"With such a transformative telescope like Webb, it was hard for me to have any expectations of what we'd find in the immediate surroundings of the star," said Colette Salyk of Vassar College in Poughkeepsie, New York, an exoplanet researcher and co-author on the new paper. "I will say, I could not have expected seeing what has the characteristics of a planet-forming region, even though planets are not forming here, in the aftermath of an engulfment."

The ability to

Autopsy, continued

characterize this gas opens more questions for researchers about what actually happened once the planet was fully swallowed by the star.

“This is truly the precipice of studying these events. This is the only one we’ve observed in action, and this is the best detection of the aftermath after things have settled back down,” Lau said. “We hope this is just the start of our sample.”

These observations, taken under Guaranteed Time Observation program 1240, which was specifically designed to investigate a family of mysterious, sudden, infrared brightening events, were among the first Target of Opportunity programs performed by Webb. These types of study are reserved for events, like supernova explosions, that are expected to occur, but researchers don’t exactly know when or where. NASA’s space telescopes are part of a growing, international

network that stands ready to witness these fleeting changes, to help us understand how the universe works.

Researchers expect to add to their sample and identify future events like this using the upcoming Vera C. Rubin Observatory and NASA’s Nancy Grace Roman Space Telescope, which will survey large areas of the sky repeatedly to look for changes over time.

The team’s findings appear Thursday, April 10, in *The Astrophysical Journal*.

More About JWST and MIRI

The James Webb Space Telescope is the world’s premier space science observatory. Webb is solving mysteries in our solar system, looking beyond to distant worlds around other stars, and probing 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 CSA (Canadian Space Agency).

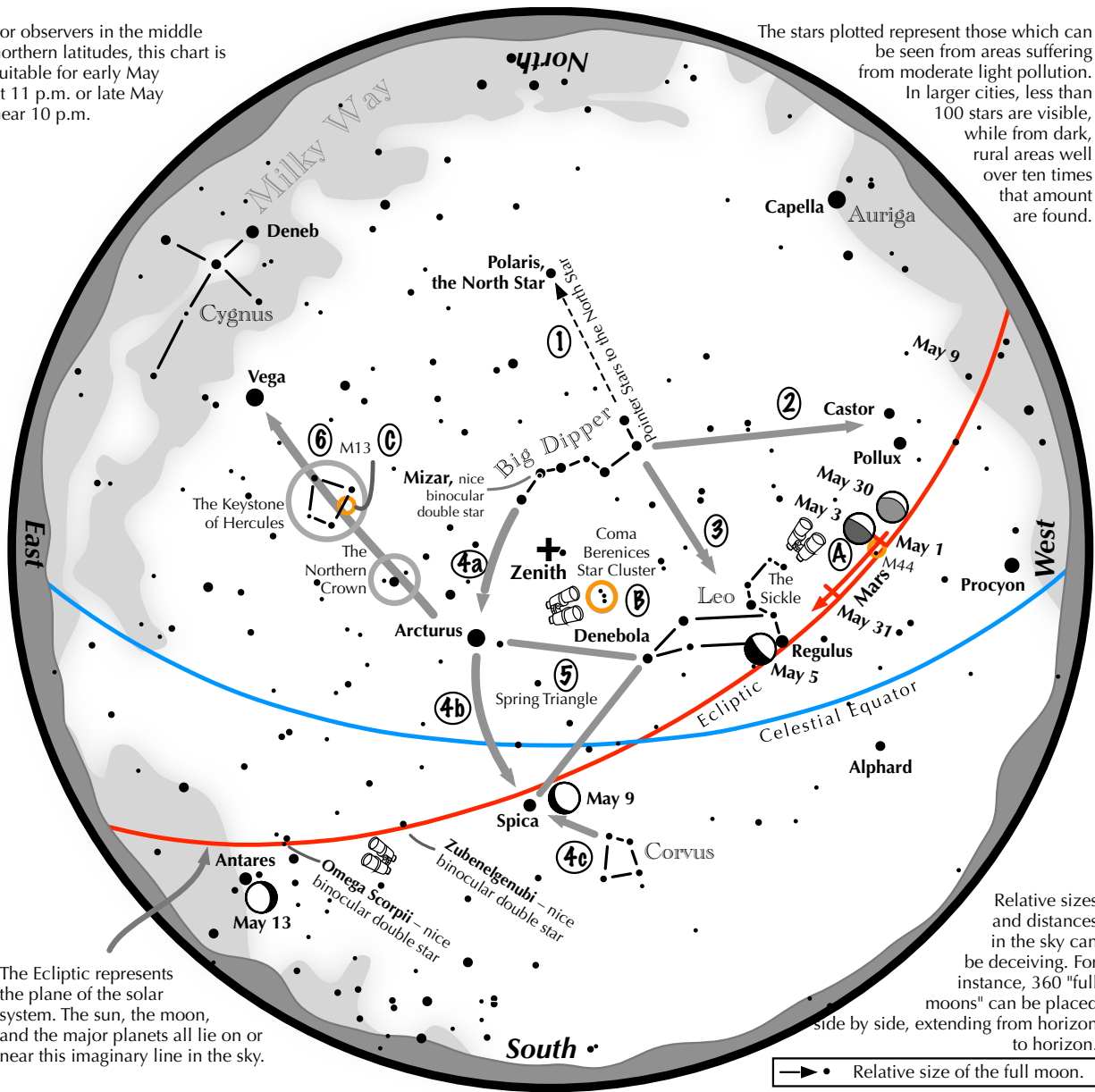
MIRI was developed through a 50-50 partnership between NASA and ESA. A division of Caltech in Pasadena, California, the Jet Propulsion Laboratory led the U.S. efforts for MIRI, and a multinational consortium of European astronomical institutes contributes for ESA. George Rieke with the University of Arizona is the MIRI science team lead. Gillian Wright is the MIRI European principal investigator.

The MIRI cryocooler development was led and managed by JPL, in collaboration with Northrop Grumman in Redondo Beach, California, and NASA’s Goddard Space Flight Center in Greenbelt, Maryland.

Navigating the mid-May Night Sky

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



The Ecliptic represents the plane of the solar system. The sun, the moon, and the major planets all lie on or near this imaginary line in the sky.

Relative sizes and distances in the sky can be deceiving. For instance, 360 "full moons" can be placed side by side, extending from horizon to horizon.

→ • Relative size of the full moon.

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

- 1 Extend a line northward from the two stars at the tip of the Big Dipper's bowl. It passes by Polaris, the North Star.
- 2 Through the two diagonal stars of the Dipper's bowl, draw a line pointing to the twin stars of Castor and Pollux in Gemini.
- 3 Directly below the Dipper's bowl reclines the constellation Leo with its primary star, Regulus.
- 4 Follow the arc of the Dipper's handle. It first intersects Arcturus, then continues to Spica.
Confirm Spica by noting that two moderately bright stars just to its southwest form a straight line with it.
- 5 Arcturus, Spica, and Denebola form the Spring Triangle, a large equilateral triangle.
- 6 Draw a line from Arcturus to Vega. One-third of the way sits "The Northern Crown." Two-thirds of the way hides the "Keystone of Hercules." A dark sky is needed to see these two dim stellar configurations.

Binocular Highlights

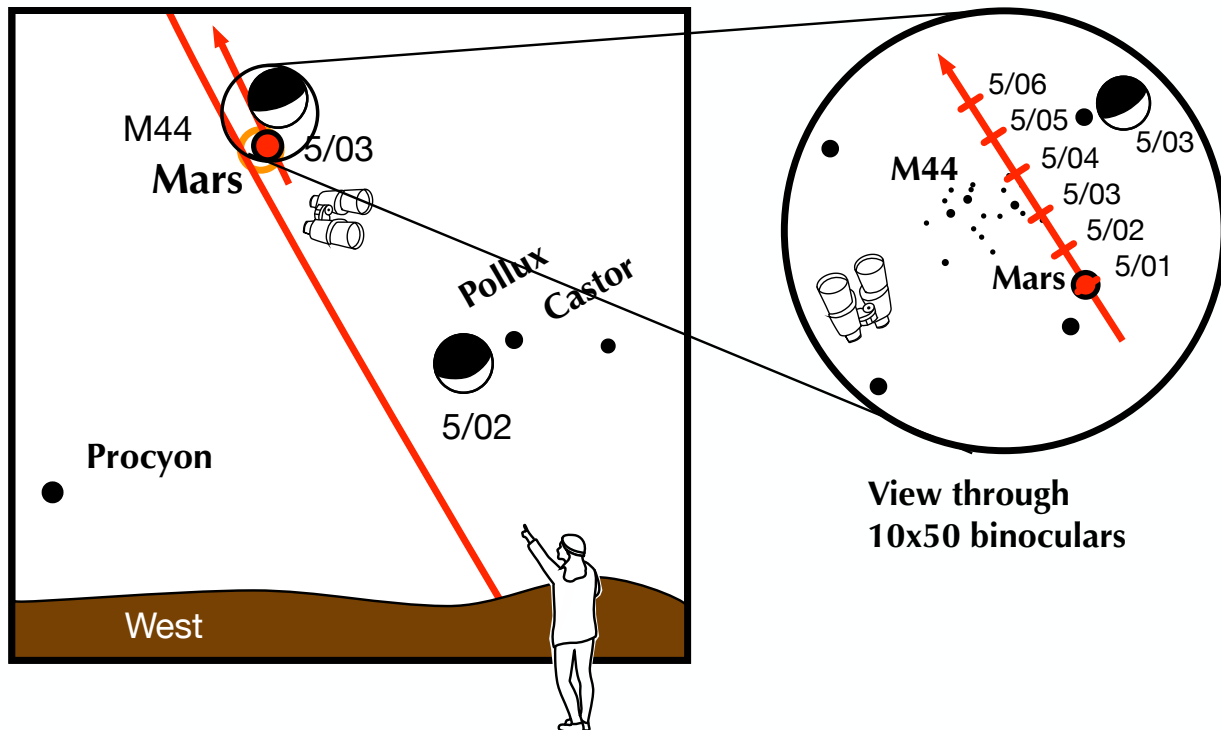
A: M44, a star cluster barely visible to the naked eye, lies to the southeast of Pollux. B: Look near the zenith for the loose star cluster of Coma Berenices. C: M13, a round glow from a cluster of over 500,000 stars.



Astronomical League Outreach

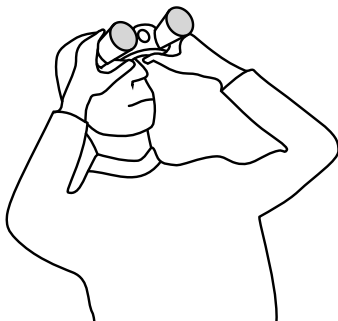


If you can see only one celestial event this month, see this one.

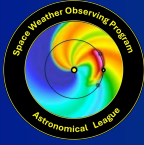


Beginning on May 1, look to the west-northwest 90 minutes after sunset.

- The twin stars of Gemini, Castor and Pollux, will be found forming a horizontal bar low above the horizon.
- On the following evening, the crescent moon moves near Pollux, almost forming a straight line with it and Castor.
- Red Mars slides toward M44, aka the Beehive Star cluster. Use binoculars to find Mars inching closer to the many stellar bees.
- On May 3, the thick crescent moon joins Mars sitting to the upper left of the red planet and above the bees.
- Over the next few evenings, the Red Planet moves past M44, leaving it on May 5.



Astronomical League Outreach



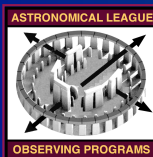
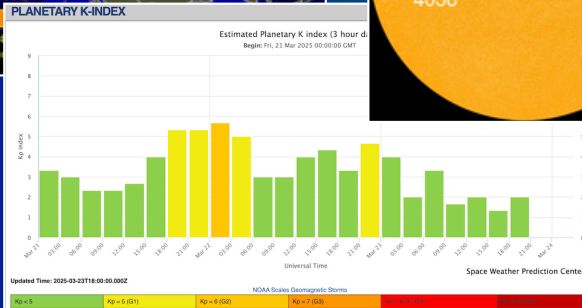
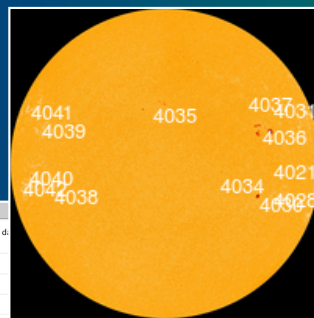
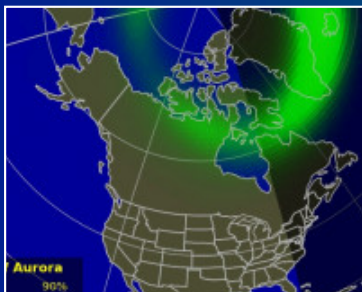
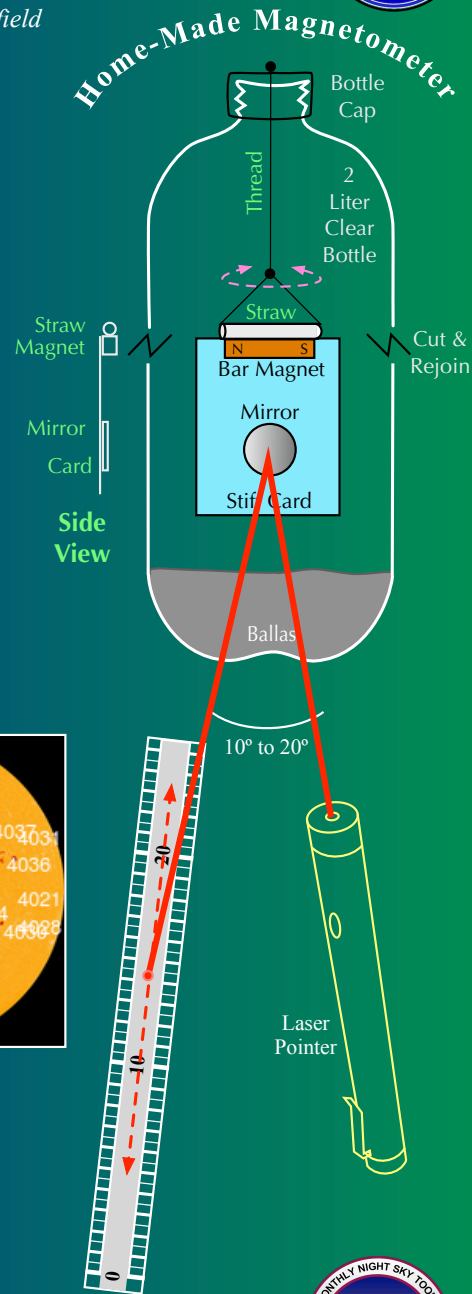
Space Weather Observing Program



The solar wind greatly affects Earth's magnetic field and those effects can be measured using an inexpensive home-made magnetometer.

Space Weather Observing Program

- Construct and use your own magnetometer.
- Do a minimum of 100 observations on at least 100 different days.
- Note the location on the meter (or yard) stick where the reflected laser spot is located.
- The 2 liter magnetometer, the laser, and the measuring stick must be located where they will not be disturbed during the program.
- Compare your data with NASA's Planetary K-Index.
- Note sunspot activity as found on Spaceweather.com.
- Note auroral activity as found on Spaceweather.com.



For complete details on this fascinating program:
<https://www.astroleague.org/space-weather-observing-program/>





Mare Orientale

... this most astounding impact basin is only partially seen

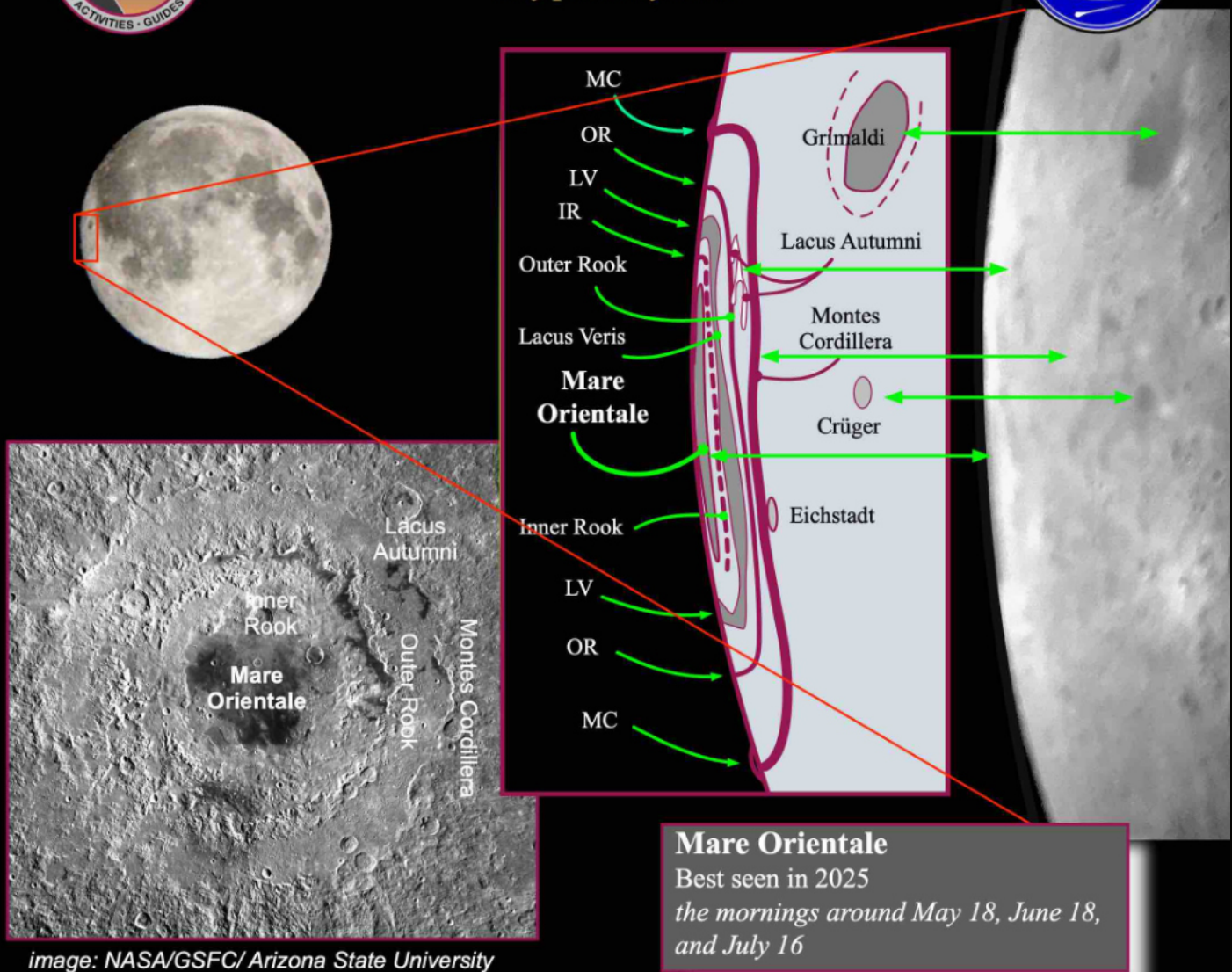


image: NASA/GSFC/ Arizona State University

A good viewing of Mare Orientale requires that the Moon be at or near maximum western libration. This happens on three, four, or five days in some, but not all months. Of course, it should not hide in the lunar night, which immediately eliminates fifteen days each month. The three mornings leading up to new Moon are also poor times because the waning thin crescent lies too close to the horizon to give a sharp enough image for a clear, meaningful view.

As a result, opportunities for studying Mare Orientale are infrequent, occurring on fewer than twenty days each year. Generally, four months running present three, four, or five good opportunities each, followed by a string of nine or ten months that present no suitable occasions for viewing it. And then there is the weather!

Identifying Orientale's fascinating features demands steady seeing and moderate magnification.

This Old Observatory

Episode 4: Reopening



April: New posters printed, A/V touch screen and media player installed, programmable dimmers added

Hyde reopened on Saturday April 5th. Approximately 50 guests visited the observatory and watched the two new programs “Explore Mars” and “Lincoln’s Spring Sky” - written and produced by Lee

Thomas. In the two weeks leading up to reopening, programmable dimmers were installed and the LED touch screen A/V controller code was updated to automate lighting and media

player control. A few small issues remain with the dimmers and audio amplifier but these problems did not delay Hyde reopening.

Hyde Observatory Renovation, continued



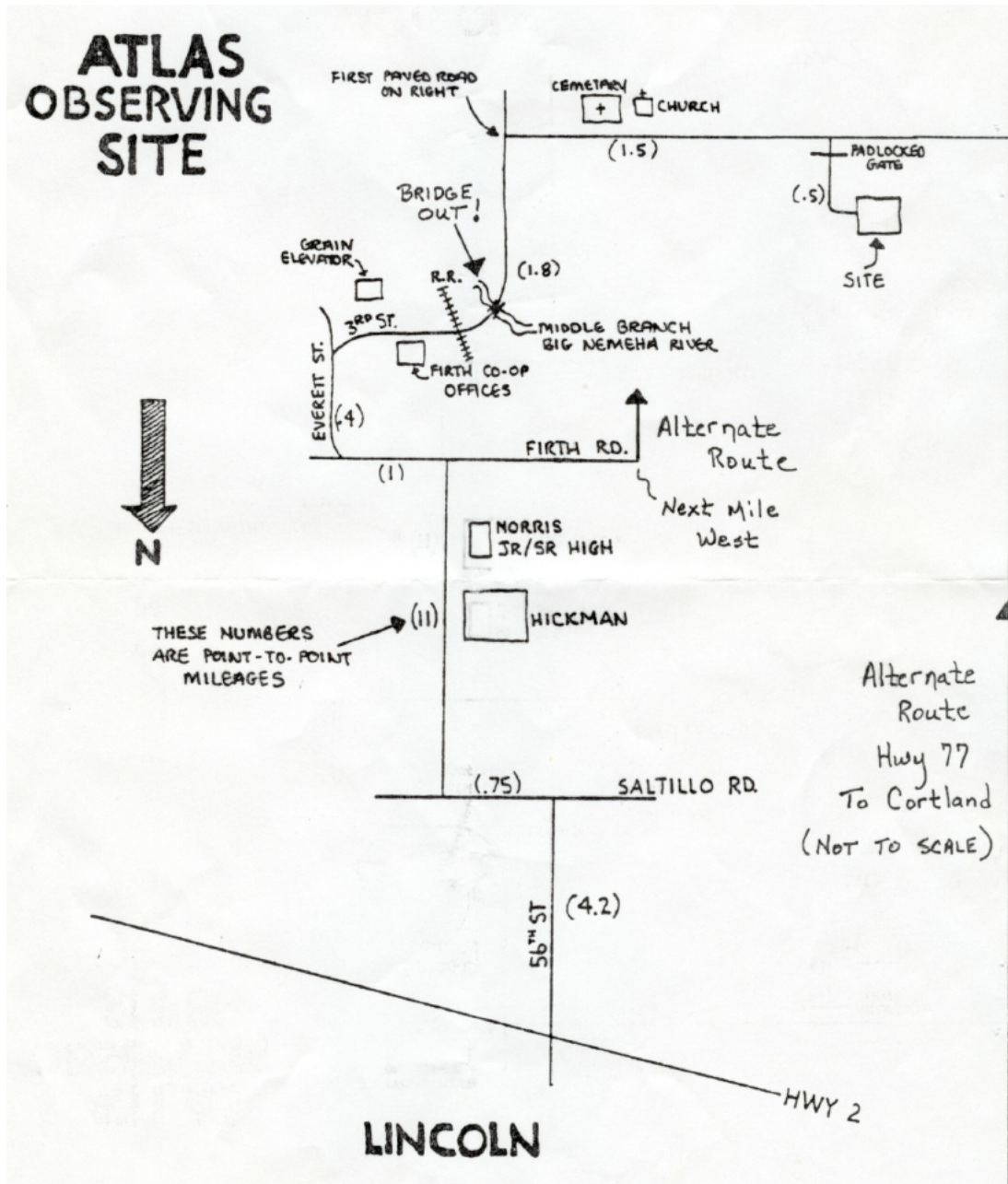
Visitors check out the new posters and 65" media player. The media player rotates still images (mostly NASA posters and infographics), displaying each image for about one minute.



Lee Thomas introduces his new program "Explore Mars"

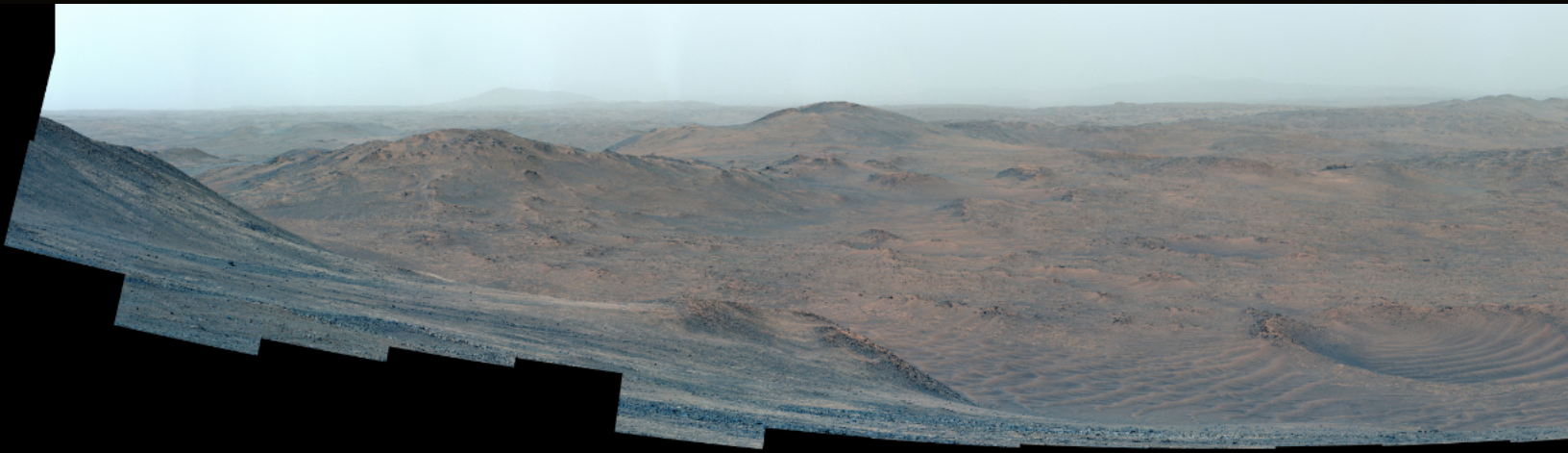
From the Archives April, 1990

A Map to the Atlas Observing Site



The Prairie Astronomy Club used to own a decommissioned Atlas missile site near Cortland. It was purchased on March 24, 1987. It was a great dark sky site that was easily accessible from Lincoln. In later years, homes were built around the property and the light pollution got worse, so it was sold in May, 1997 to a buyer who had plans to develop it.

Christmas at Crater Rim



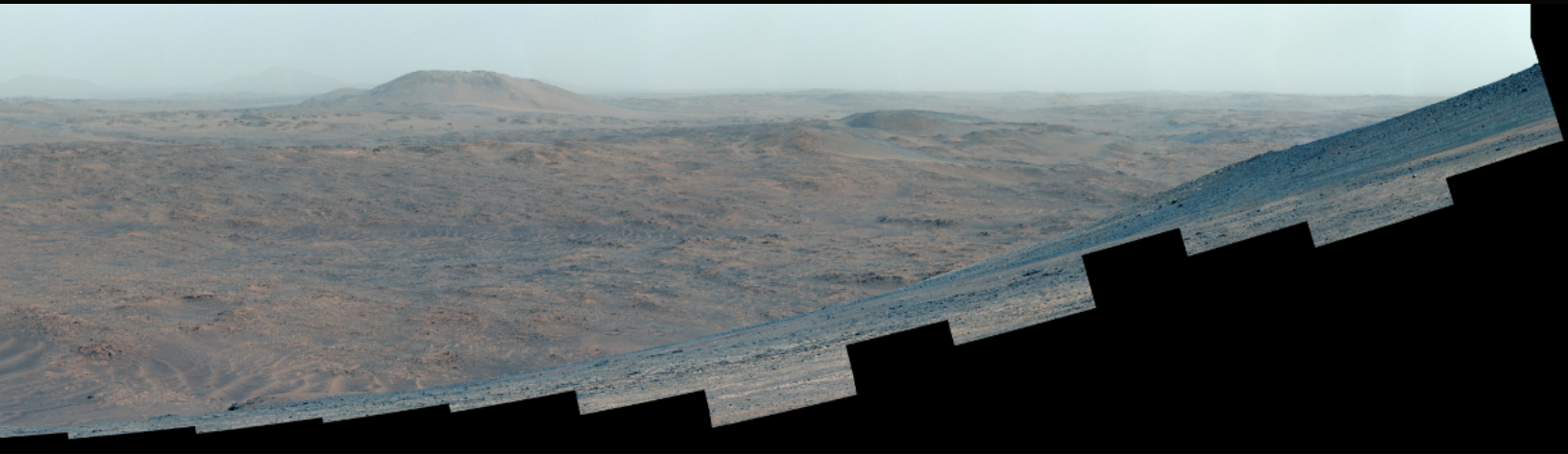
This enhanced-color mosaic showing the Martian surface outside of Jezero Crater was taken by NASA's Perseverance from the crater rim at a location where the rover collected a sample dubbed "Silver Mountain."

The 83 frames used to generate the mosaic were acquired by the rover's Mastcam-Z instrument on Dec. 25, 2024, the 1,368th Martian day, or sol, of Perseverance's mission. Enhanced-color images have their color bands processed to improve visual contrast and accentuate color differences.

Arizona State University leads the operations of the Mastcam-Z instrument,

working in collaboration with Malin Space Science Systems in San Diego, on the design, fabrication, testing, and operation of the cameras, and in collaboration with the Niels Bohr Institute of the University of Copenhagen on the design, fabrication, and testing of the calibration targets.

A key objective for Perseverance's mission on Mars is astrobiology, including the search for signs of ancient microbial life. The rover will characterize the planet's geology and past climate, pave the way for human exploration of the Red Planet, and be the first mission to collect and cache Martian rock and regolith (broken rock and dust).



Subsequent NASA missions, in cooperation with ESA (European Space Agency), would send spacecraft to Mars to collect these sealed samples from the surface and return them to Earth for in-depth analysis.

The Mars 2020 Perseverance mission is part of NASA's Mars Exploration Program (MEP) portfolio and the agency's Moon to Mars exploration approach, which includes Artemis missions to the Moon that will help prepare for human exploration of the Red Planet.

NASA's Jet Propulsion Laboratory, which is managed for the agency by Caltech, built and manages operations of the Perseverance rover.

For more about Perseverance: science.nasa.gov/mission/mars-2020-perseverance/

Image credit:

NASA/JPL-Caltech/ASU/MSSS

Astrophotography



Photo by Leona Barratt

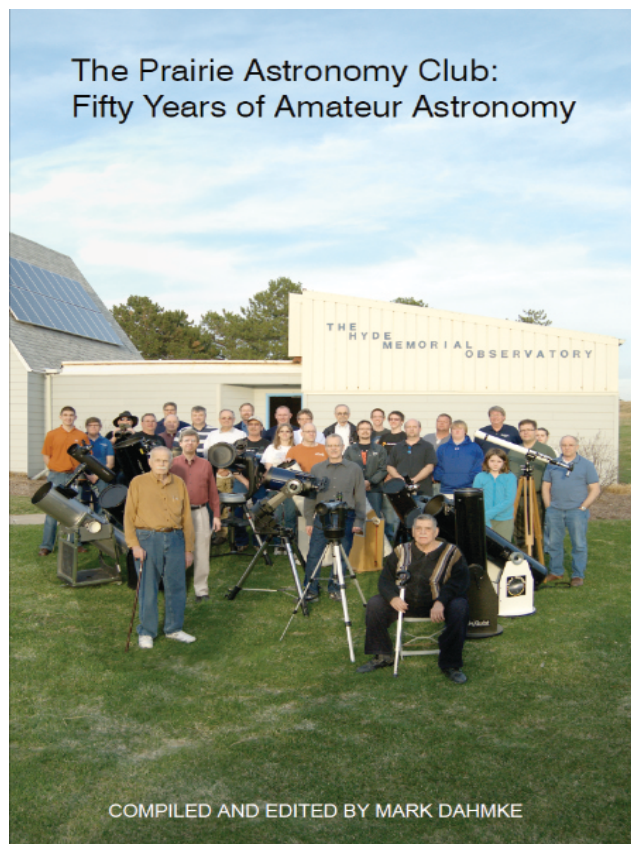
Pleiades - Vespera Classic - 11.5 hours over several nights

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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 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](https://www.amazon.com) or [lulu.com](https://www.lulu.com).