The Prairie Astronomer

December, 2025 Volume 66, Issue #12

IN THIS ISSUE:

THE NEWSLETTER OF THE PRAIRIE ASTRONOMY CLUB

David Woolf, Kalamazoo, MI at NSP 2018
Photo by Mark Dahmke

Next meeting: Tuesday January 27th 7:30pm at Hyde Observatory

NEXT MEETING

January Program:

'Funniest Moments and Pranks in Spaceflight History!' and 'So Funny Carl Sagan!! Billions and Billions of Laughs', a couple fun videos to start the New Year on a lighter note.

February Program:
How to Use Your Telescope

The Prairie Astronomy Club will offer its annual program: "How to Use Your Telescope" on February 24th at 7:30pm. Do you own a telescope and need help getting started using it? The Prairie Astronomy Club would like to help. If you own a telescope and need some hands-on assistance, or are just interested and want to learn more, stop by!

CONTENTS

Cover: Orion Nebula and Horsehead/Flame by Brett Boller

M31 by Brett Boller

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.

CALENDAR

January PAC Meeting
Tuesday, January 27th, 7:30pm Hyde Observatory
Program: Funniest Moments and Pranks in Spaceflight History

February PAC Meeting
Tuesday, February 24th, 7:30pm Hyde Observatory
Program: How to Use Your Telescope

March PAC Meeting
Tuesday, March 31st, Hyde Observatory

PAC Google calendar:
https://www.prairieastronomyclub.org/event-calendar/

2026 STAR PARTY DATES

	Date	Date
January	9	16
February	13	20
March	13	20
April	10	17
May	8	15
June	5	12
July	10	17
NSP	7/12-7/17	
August	7	14
September	4	11
October	2	9
November	6	13
December	4	11

Underlined dates are closest to the New Moon.

CLUB OFFICERS

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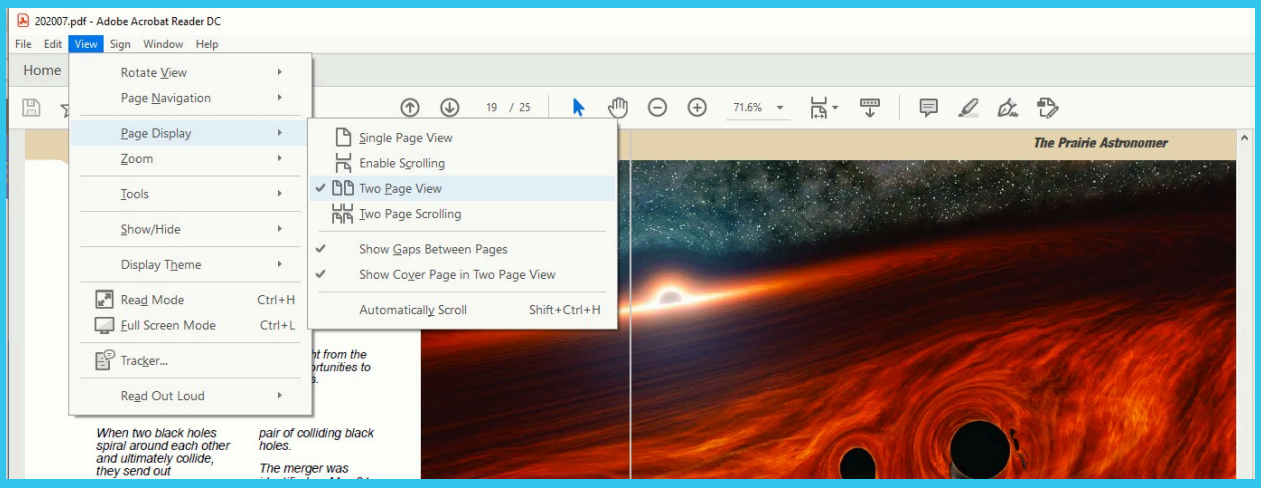
NOTICES

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.

Pay Dues

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

Dear PAC Members,

As we come to the end of the year, I wanted to take a moment to look back and reflect on everything we've shared together in 2025. It's been a full and rewarding year for the Prairie Astronomy Club, with a great balance of learning, observing, outreach, and time spent simply enjoying each other's company under the stars.

We began the year in January with a hands-on telescope observing night at Branched Oak Lake. This event focused on helping members, especially those newer to the hobby, learn how to set up and use their telescopes properly. From alignment and mounts to finderscopes and basic sky navigation, it was a practical way to start the year and help everyone feel more confident behind the eyepiece.

In February, we had a presentation on T Coronae Borealis, exploring what makes this system a recurring nova and what astronomers expect when it erupts again. The talk provided helpful context on the science behind novae and what observers can look forward to seeing in the future.

March gave us the chance to revisit one of astronomy's most influential works with a group viewing of the first episode of Carl Sagan's Cosmos. The screening led to a thoughtful discussion about astronomy, science communication, and the lasting impact the series has had on how we talk about the universe.

April featured a presentation on NASA's Europa Clipper mission, where we learned about the spacecraft's goals, the science behind studying Europa's subsurface ocean, and what the mission could reveal about habitability beyond Earth.

In May, we participated in a Messier Marathon at Branched Oak Lake, challenging ourselves to observe as many Messier objects as possible in a single night. We also enjoyed a webinar on the Psyche mission, which explored the science and objectives of visiting a metal-rich asteroid.

June emphasized outreach. A star party at Willard Elementary gave students and families the opportunity to view the Moon and planets through telescopes, continuing the club's commitment to sharing astronomy with the community.

July began with a solar

President's Message, continued

observing session, giving members the opportunity to observe the Sun and learn about its surface features safely. Later in the month, many members attended the Nebraska Star Party, taking advantage of dark skies in between storms for observing and imaging while reconnecting with astronomers from across the region.

August featured a presentation by Dave Knisely on the Cosmosphere and the history of space exploration. His talk connected hands-on astronomy with the broader human story of spaceflight and preservation of space history.

In September, we explored remote astronomy, learning how telescopes around the world can be operated remotely. The presentation covered how these systems work and how remote observing allows amateur astronomers to access exceptional skies regardless of location.

October brought a presentation about the Cartography of Extraterrestrial Objects teaching us how planets and moons are mapped, the techniques involved, and what these maps reveal about planetary processes. The month also included a social observing night at Branched Oak, giving us a relaxed evening to observe and spend time together.

November focused on education and outreach with our annual "How to Buy a Telescope" class, helping prospective astronomers understand different telescope types and make informed purchasing decisions ahead of the holidays. We also held public observing events, sharing views of Saturn, star clusters, and other night sky highlights with first-time observers.

We wrapped up the year in December with our holiday gathering, which had a great turnout of around 20 people. It was wonderful to have some relaxed social time, chatting and catching up with everyone as we reflected on the year together.

As we head into the holiday season, I want to thank all of you for being part of another great year with the Prairie Astronomy Club. I hope everyone has a happy and restful holiday season, and I wish you all a wonderful start to the new year. I look forward to everything we'll explore together in 2026.

Clear skies,

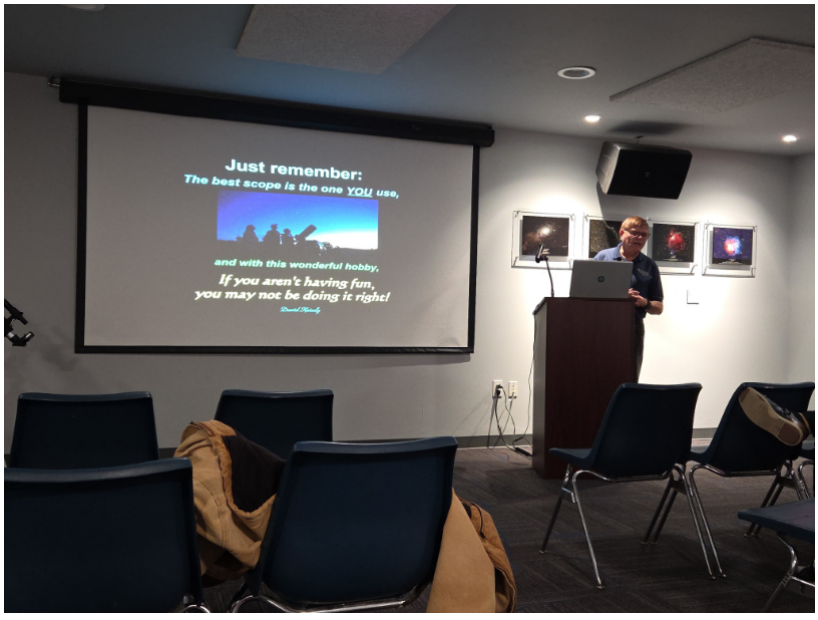
Jason O'Flaherty

Meeting Minutes

Jim White

We aren't having a regular meeting this month as this meeting time is set aside for our yearly "How to Buy a Telescope" program. Jason was unable to make tonight's meeting due to a work conflict so the only normal meeting feature tonight will be Jim Kvanicka's monthly observing report. Jim started his report at 7:35 PM. Star parties for the month of December are scheduled for the 12th and the 19th at the Clatonia Recreation Area, 1 ½ miles north of Clatonia. The planets for the month of December, Mercury is a morning planet you can see before the sun rises, Venus is not visible, Mars is too close to the sun to be viewed, Jupiter is in Gemini at a magnitude -2.4, Saturn is in Aquarius at a magnitude +1.4, Uranus and Neptune are visible in Taurus and Pisces. We do have a meteor shower in December, the Geminids peaks the nights of the 13th and 14th and the moon will not interfere. You can expect about 150 meteors per hour from a dark sky site. Branched Oak Observatory is planning on being open the night of the 13th for the Geminids meteor shower. Jim's complete observing report can be seen in the newsletter. Toward the end of October a group of club members went to Gracie Creek Cabin, near Calamus Reservoir to do some observing for four nights. Unfortunately there were only clear skies for about 5 hours the first night there but it was enough for Jim Kvasnicka to view a couple of comets which were enough for him to finish the comet observing program which he has been working on for a number of years. Jim finished his observing report at 7:40 PM.

Tonight's program on "How to Buy a Telescope" is being presented by club member Dave Knisely.



PAC Holiday Gathering at Big Red Restaurant & Sports Bar on December 16th

Hello fellow PAC members,

I need your input. Is there a subject related to astronomy that you would like to see or learn more about?

Is there a topic related to astronomy that you have experience in that you would like to share with the club?

No topic is too basic for us to cover. The Prairie Astronomy Club has a wide range of experience levels and interests. Send your suggestions to: asobotka64@gmail.com

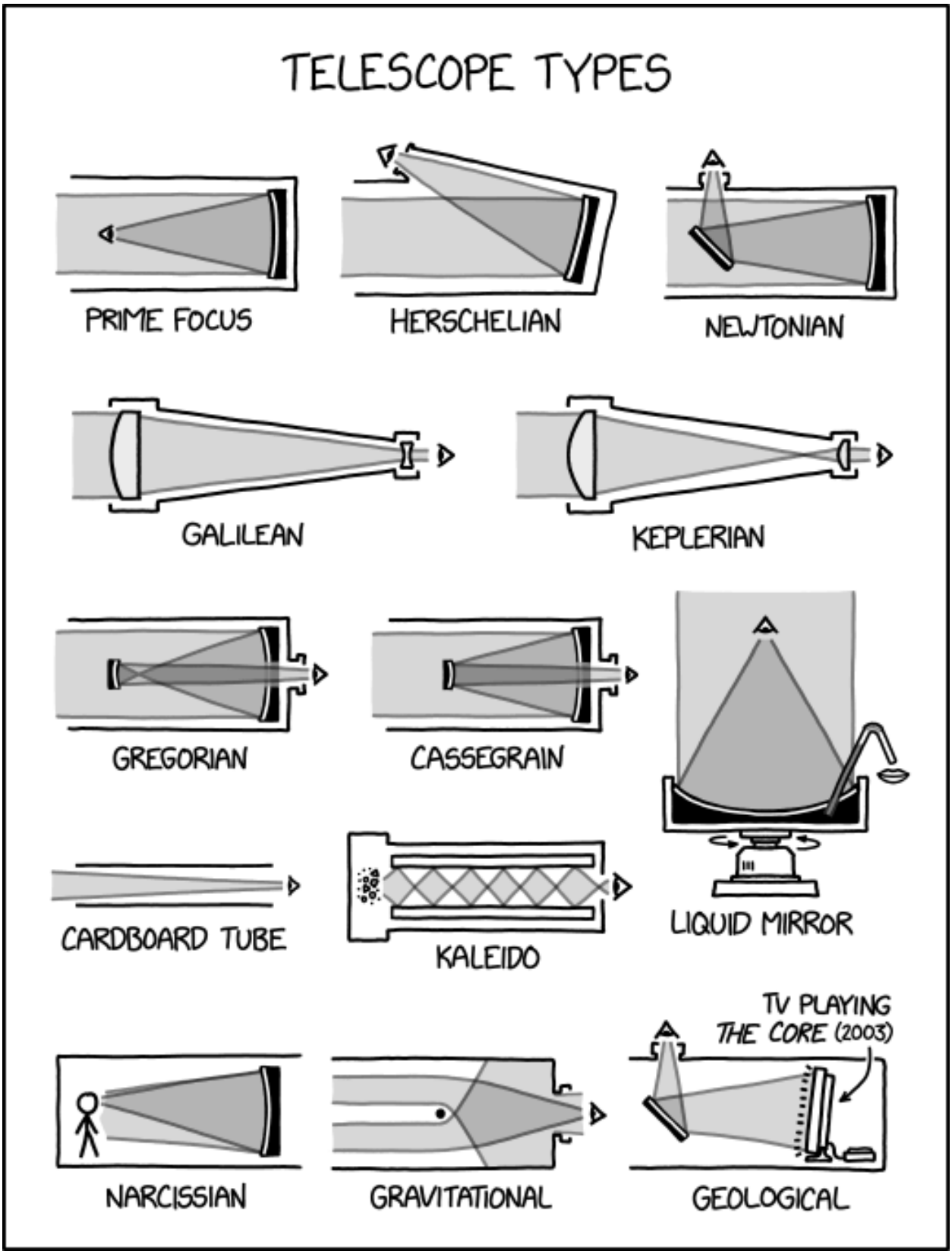
For January's meeting, I have a couple short videos lined up to help take our minds off the cold, 'Funniest Moments and Pranks in Spaceflight History!' and 'So Funny Carl Sagan!! Billions and Billions of Laughs.'

February's offering is the annual 'How to Use Your Telescope' program. Look for announcements soon in your inboxes and on social media!

Regards,

Your Newly Minted Second Vice-President,

Amos Sobotka


TELESCOPE TYPES
PRIME FOCUS
HERSCHELIAN
NEWTONIAN
GALILEAN
KEPLERIAN
GREGORIAN
CASSEGRAIN
LIQUID MIRROR
CARDBOARD TUBE
KALEIDO
NARCISSIAN
GRAVITATIONAL
TV PLAYING THE CORE (2003)
GEOLOGICAL

xkcd.com

ARP 87

The Mantrap Skies Image Catalog

Arp 87 is a pair of galaxies in northeast Leo about 335 to 340 million light-years away. Arp put it in this category of spirals with large high surface brightness companions on arms." His comment is more telling. It reads "Arm appears wrapped around cylindrical companion." His was a pure descriptive narrative. He left it to others to explain what was going on. In this case, we have a pretty good idea and it's quite interesting. This appears to be the formation of a polar ring galaxy caught in the act of formation. The companion is well underway of becoming a polar ring galaxy.

The two galaxies are known as NGC 3808A and B. B is the "companion." NED classes A as SAB(rs)c: pec and B as I0? pec. NGC 3808 was discovered by William Herschel on April 10, 1785. It isn't in either of the Herschel 400 observing programs.

A note at NED references an article about the strange velocity distribution of the companion galaxy's disk and forming a ring is at: http://adsabs.harvard.edu/cgi-bin/

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 87, continued

bib_query?1994A%26A...291...57R A summary at NED reads: "The gas radial velocities on the major axis of the galaxy give evidence of very peculiar kinematics: photometric and kinematic centers differ by about 0.3 kpc. Rotational velocities after the global maximum at r~3" (1.4 kpc) show a rapid decrease to zero velocity (!). The rotation curve of the forming polar ring represents almost a straight line ({sigma} = 9.3 km/s) with a gradient of 12.9 km/s/arcsec (28.7 km/s/kpc). The crude estimation of mass to B-luminosity ratio is 3 f_sun_."

This one has attracted the interest of enough astronomers that the HST was used to study it. The resulting image is at http://dic.academic.ru/pictures/wiki/files/65/Arp87full.jpg
This really shows the ring being wrapped around the galaxy quite clearly. Though to my eye, it seems to change the direction of its rotation. I can't quite wrap my mind around it.

Just beyond the "companion" is a nice near edge on spiral that shows a lot of detail in the Hubble image. I couldn't find any redshift data on it. In fact, I couldn't find it! NED has the faint 22.3 magnitude star just of the tip but not the galaxy itself. It's amazing what gets left out of these databases. Dennis Webb did a lot of work identifying galaxies in Arp fields but he couldn't find this one either. He does though draw a diagram of how the arm wraps around the companion. I can't quite see it however as mentioned above.

To the lower right of Arp 87 is a candidate galaxy cluster at about 1.5 billion light years. NED has no data on its size or galaxy count. Many possible galaxies are in the area of the label however which is centered over the location. It reads "GC 1.5". The candidate cluster is NSC J114001+221959.

Toward the upper left corner of my image is an interesting double galaxy. The lower one is a spiral, SDSS J114132.58+223351.3, at 1.1 billion light years. It has a possible companion on its northern arm, SDSS J114132.48+223402.8 distance unknown. So I can't verify if they are interacting or just line of sight.

Below and further left of these two is an obvious pair of spirals that do both have redshift distance and they are virtually identical at 1.2 billion light years. Though I see no hint of interaction as I may be seeing with the previous two. Between these two pairs is what may appear to be yet another pair but

ARP 87, continued

the rightmost object is just a foreground star in our galaxy. The distance to the galaxy is unknown.

A lot of galaxies I'd like to know the distance of, have yet to be measured. In the lower left corner, for instance, are several galaxies of about the same angular size and brightness. The two with known distances are widely separated, however. What about the others. Could the blue near and redder twice as distant? Color can be a good distance indicator but it can be a great way to go wrong with confidence as well.

Focus on Constellations: Orion

Jim Kvasnicka

Orion the Hunter is perhaps second only to the Big Dipper in Ursa Major as the most recognizable star pattern in the sky. It covers 1,231 square degrees. Orion is accompanied by his faithful dogs, Canis Major and Canis Minor. Together they hunt various celestial animals including Lepus the rabbit and Taurus, the Bull. The three bright stars Alnitak, Alnilam, and Mintaka make up Orion's belt. Betelgeuse forms Orion's left shoulder. Hanging down from Orion's belt is his sword. The central star of his sword is not really a star, but the Great Orion Nebula, M42, one of the most famous and observed objects in the sky. Besides M42 Orion has two additional Messier objects in bright nebulae M43 and M78. The constellation Orion is best observed in January.

Showpiece Objects

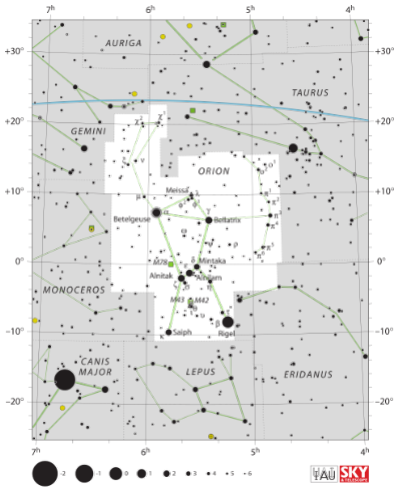
Open Clusters: NGC 1981, NGC 2169 (The 37 Cluster)
Bright Nebulae: M42 (The Orion Nebula), M43, M78, NGC 1977, NGC 1980
Multiple Stars: Beta Orionis (Rigel), Delta Orionis (Mintaka), Theta 1 Orionis (The Trapezium), Sigma Orionis
Dark Nebulae: B33 (The Horsehead Nebula)

Mythology

Orion, the son of Neptune, boasted that so great was his might and skill as a hunter that he could kill all the animals on Earth. Gaea, Goddess of Earth, was alarmed by such a boastful statement. Gaea was afraid that Orion might try to carry out his boast. Gaea sent a giant scorpion and ordered the beast to sting Orion. After a brief battle the scorpion stung Orion in the heel (the star Rigel) and he died. Both Orion and the scorpion were given honored places in the sky, but they were placed at opposite ends of the sky dome so they would never engage in battle again.

Number of Objects Magnitude 12.0 and Brighter

Galaxies: 0
Open Clusters: 11
Planetary Nebulae: 0
Bright Nebulae: 9
Dark Nebulae: 6



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January Observing

Jim Kvasnicka

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

Planets
Venus: Evening planet after superior conjunction on January 6, magnitude -3.9.
Mercury and Mars: Both are too close to the Sun to be seen.
Jupiter: At opposition on January 3-4 in Gemini. Magnitude -2.6, disk 46.5" wide.
Saturn: In Aquarius at magnitude +1.2 with a disk 17.1" wide.
Uranus: South of the Pleiades at magnitude +5.6, disk 3.7" wide.
Neptune: Evening planet near Saturn. Magnitude +7.9, disk 2.3" wide.

Meteor Showers
Quadrantids: January 3-4, the Full Moon will hamper your viewing.

Messier List
M33: The Pinwheel Galaxy in Triangulum.
M34: Open cluster in Perseus.
M52: Open cluster in Cassiopeia.
M74: Galaxy in Pisces.
M76: The Little Dumbbell in Perseus.
M77: Galaxy in Cetus.
M103: Open cluster in Cassiopeia.

Last Month: M2, M15, M29, M31, M32, M39, M110
Next Month: M1, M35, M36, M37, M38, M42, M43, M45, M78, M79

NGC and other Deep Sky Objects
NGC 1406: Galaxy in Fornax.
NGC 1425: Galaxy in Fornax.
NGC 1857: Open cluster in Auriga.
NGC 1907: Open cluster in Auriga.
NGC 1980: Emission nebula and open cluster in Orion just south of M42.
NGC 2169: The "37" Cluster in Orion.

Double Star Program List

Beta Orionis: Rigel, bright white and dim blue stars.
Delta Orionis: Mintaka, white and blue pair.
Struve 747: White pair of stars.
Lambda Orionis: White stars.
Theta 1 Orionis: The Trapezium.
Iota Orionis: White primary with a blue secondary.
Theta 2 Orionis: Three white stars.
Sigma Orionis: White primary with three pale blue stars.
Zeta Orionis: Bright white primary with two white secondary stars.

Challenge Object
B33: The Horsehead Nebula in Orion. Use a Hydrogen-Beta filter.

Club Outreach

Don Hain
dhain00@gmail.com
402-440-5318

Thanks to everyone who, in 2025, helped promote the excitement that comes from questioning how this universe we exist in was put together and how it is that we look to the skies for answers. The wonders in the skies have created divisions of thought for philosophers and scientists alike throughout the ages. We have come to agreements on profound truths that took persistent searching and sometimes centuries of hard work, diligent research, and intense discussions to reach. Controversies led to agreements on how man could best describe and visualize the world around us, then to more questions to further our knowledge of the unknown.

The new year will see PAC continue to work with the public through both outreach we initiate, as well as by co-operating with efforts initiated by others in Lincoln and throughout the state. Nebraska has a lot to offer in the way of dark skies. There is a continuing need to encourage preservation of views of our natural world that can teach and inspire us. We should not take for granted the dark skies that can be found not all that distant from our homes, but let us appreciate what we do have compared to areas with more dense populations.

May the holiday season be one of joy and peace for you and those close to you. PAC outreach looks to have another exciting year in 2026. You are part of that excitement by your membership in PAC and by your interest in the world around us.

Club Outreach

Upcoming event(s):

Cosmos and Cocktails: Animal Mating Rituals
When: Saturday, February 14, 2026, 6 to 9 PM
Where: Nebraska State Museum and Planetarium
Needs: we did not commit to this, but you are welcome to join in the festivities (there is a cost associated) - Perhaps we could discuss the mating of hydrogen atoms/nuclei … churning out young 'uns of helium to folks coming by a booth ???

Lied Lodge - Project Learning Tree
When: March 22-24, 2026 (which day is still unknown)
Where: Lied Lodge
Sponsored by: Project Learning Tree | Sustainable Forestry Initiative, Inc.
Needs: volunteers to help with a star walk or stargazing activity

see https://www.plt.org/ and https://www.forests.org

Astronomy Night
When: Saturday, April 11, 2026 5 to 9 PM
Where: Nebraska State Museum and Planetarium
Needs: volunteers at the PAC table(s) - displaying and talking with folks about an astronomy related topic

Hyde Observatory: OPEN

When: Saturday nights … and other nights for groups per request
Where: Hyde Observatory
Needs: volunteers willing to work out on the deck or manage the shows in the classroom about one Saturday per month, or nights scheduled by request of a group

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.

NASA's Mars Spacecraft Capture Images of Comet 3I/ATLAS

Two orbiters and a rover captured images of the interstellar object — from the closest location any of the agency's spacecraft may get — that could reveal new details.

At the start of October, three of NASA's Mars spacecraft had front row seats to view 3I/ATLAS, only the third interstellar object so far discovered in our solar system. The Mars Reconnaissance Orbiter (MRO) snapped a close-up of the comet, while the MAVEN (Mars Atmosphere and Volatile EvolutioN) orbiter captured ultraviolet images and the Perseverance rover caught a faint glimpse as well.

Imagery from MRO will allow scientists to better estimate the comet's size, and MAVEN's images are unique among all observations this year in determining the chemical makeup of the comet and how much water vapor is released as the Sun warms the comet. These details will help scientists better understand the past, present, and future of this object.

HiRISE

The comet will be at its closest approach to Earth on Friday, Dec. 19. On Oct. 2, MRO observed 3I/ATLAS from 19 million miles (30 million kilometers) away, with one of the closest views that any NASA spacecraft or Earth-based telescopes are expected to get.

The orbiter's team viewed the comet with a camera called HiRISE (the High Resolution Imaging Science Experiment), which normally points at the Martian surface. By rotating, MRO can point HiRISE at celestial objects as well — a technique used in 2014, when HiRISE joined MAVEN in studying another comet, called Siding Spring.

Captured at a scale of roughly 19 miles (30 kilometers) per pixel, 3I/ATLAS looks like a pixelated white ball on the HiRISE imagery. That ball is a cloud of dust and ice called the coma, which the comet shed as it continued its trajectory past Mars.

"Observations of interstellar objects are still rare enough that we learn something new on every occasion," said Shane Byrne, HiRISE principal investigator at the University of Arizona in Tucson. "We're fortunate that 3I/ATLAS passed this close to Mars."

Further study of the HiRISE imagery could help scientists estimate the size of the comet's nucleus, its central core of ice and dust. More study also may reveal the size and color of particles within its coma.

"One of MRO's biggest contributions to NASA's

3I/ATLAS, continued

work on Mars has been watching surface phenomena that only HiRISE can see," said MRO's project scientist Leslie Tamppari of NASA's Jet Propulsion Laboratory in Southern California. "This is one of those occasions where we get to study a passing space object as well."

MAVEN

Over the course of 10 days starting Sept. 27, MAVEN captured 3I/ATLAS in two unique ways with its Imaging Ultraviolet Spectrograph (IUVS) camera. First, IUVS took multiple images of the comet in several wavelengths, much like using various filters on a camera. Then it snapped high-resolution UV images to identify the hydrogen coming from 3I/ATLAS. Studying a combination of these images, scientists can identify a variety of molecules and better understand the comet's composition.

"The images MAVEN captured truly are incredible," said Shannon Curry, MAVEN's principal investigator and research scientist at the Laboratory for Atmospheric and Space Physics (LASP) at the University of Colorado Boulder. "The detections we are seeing are significant, and we have only scraped the surface of our analysis."

The IUVS data also offers an estimated upper limit of the comet's ratio of deuterium (a heavy isotope of hydrogen) to regular hydrogen, a tracer of the comet's origin and evolution. When the comet was at its closest to Mars, the team used more sensitive channels of IUVS to map different atoms and molecules in the comet's coma, such as hydrogen and hydroxyl. Further study of the comet's chemical makeup could reveal more about its origins and evolution.

"There was a lot of adrenaline when we saw what we'd captured," said MAVEN's deputy principal investigator, Justin Deighan, a LASP scientist and the lead on the mission's comet 3I/ATLAS observations. "Every measurement we make of this comet helps to open up a new understanding of interstellar objects."

Perseverance

Far below the orbiters, on the Martian surface, NASA's Perseverance rover also caught sight of 3I/ATLAS. On Oct. 4, the comet appeared as a faint smudge to the rover's Mastcam-Z camera. The exposure had to be exceptionally long to detect such a faint object. Unlike telescopes that track objects as they move, Mastcam-Z is fixed in place during long exposures. This technique produces star trails that appear as streaks in the sky, though the comet itself is barely perceptible.

3I/ATLAS, continued

More about MRO, MAVEN, Perseverance

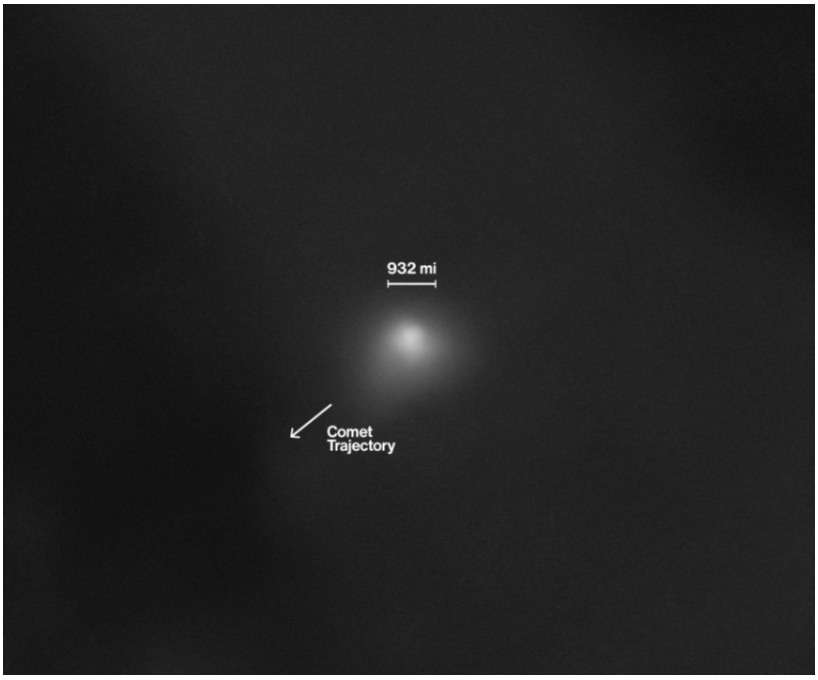
A division of Caltech in Pasadena, California, JPL manages MRO for NASA's Science Mission Directorate in Washington as part of NASA's Mars Exploration Program portfolio. The University of Arizona in Tucson operates MRO's HiRISE, which was built by BAE Systems in Boulder, Colorado. Lockheed Martin Space in Denver built MRO and supports its operations.

The MAVEN mission, also part of NASA's Mars Exploration Program portfolio, is led by the Laboratory for Atmospheric and Space Physics at the University of Colorado Boulder. It's managed by NASA's Goddard Space Flight Center in Greenbelt, Maryland. MAVEN was built and operated by Lockheed Martin Space in Littleton, Colorado, with navigation and network support from JPL.

JPL built and manages operations of the Perseverance rover on behalf of the agency's Science Mission Directorate as part of NASA's Mars Exploration Program portfolio.

To learn more about NASA's observations of comet 3I/ATLAS, visit:

https://go.nasa.gov/3I-ATLAS



An annotated version of the image of 3I/ATLAS captured by NASA's Mars Reconnaissance Orbiter shows the trajectory of the interstellar comet along with a scale bar. The image was captured by the spacecraft's High Resolution Imaging Science Experiment (... Credit: NASA/JPL-Caltech/ University of Arizona

Gemini North Color Images Reveal Greenish Glow of Comet 3I/ATLAS

Community observing program Shadow the Scientists took the public on a second tour of the famous interstellar visitor with live observations from the Gemini North telescope control room in Hawai'i

On 26 November 2025, scientists used the Gemini Multi-Object Spectrograph (GMOS) on Gemini North at Maunakea in Hawai'i to obtain images of the third-ever detected interstellar object, Comet 3I/ATLAS. The new observations reveal how the comet has changed after making its closest approach to the Sun. Gemini North is one half of the International Gemini Observatory, partly funded by the U.S. National Science Foundation (NSF) and operated by NSF NOIRLab.

After emerging from behind the Sun, 3I/ATLAS reappeared in the sky close to Zaniah, a triple-star system located in the constellation Virgo. These observations were taken as part of a public outreach initiative organized by NSF NOIRLab in collaboration with Shadow the Scientists, an initiative created to connect the public with scientists to engage in authentic scientific experiments, such as astronomy observing experiences on world-class telescopes [1]. The scientific program was led by Bryce Bolin, a research scientist from Eureka Scientific.

This image is composed of exposures taken through four filters — blue, green, orange, and red. As exposures are taken, the comet remains fixed in the center of the telescope's field of view. However, the positions of the background stars change relative to the comet, causing them to appear as colorful streaks in the final image.

In earlier images of the comet, captured during a Shadow the Scientists session hosted at Gemini South in Chile, it appears to have a red hue. However, in the new image released today, it appears to have a faint greenish glow. This is due to light emitted by gases in the comet's coma that are evaporating as the comet heats up, including diatomic carbon (C2), a highly reactive molecule of two carbon atoms that emits light at green wavelengths.

What remains unknown is how the comet will behave as it leaves the Sun's vicinity and cools down. Many comets have a delayed reaction in experiencing the Sun's heat due to the lag in time that it takes for heat to make its way through the interior of the comet. A delay can activate the evaporation of new

Greenish Glow, continued

chemicals or trigger a comet outburst. Gemini will continue to monitor the comet as it leaves the Solar System and detect changes in its gas composition and outburst behavior.

This collaboration with Shadow the Scientists builds on NOIRLab's tradition of combining cutting-edge science with public engagement, ensuring that remarkable cosmic events are shared as widely as possible. By involving learners directly in observing sessions and data collection [2], programs like this one not only advance knowledge but also inspire the next generation of explorers.

"Sharing an observing experience in some of the best conditions available gives the public a truly front-row view of our interstellar visitor," says Bolin. "Allowing the public to see what we do as astronomers and how we do it also helps demystify the scientific and data collection process, adding transparency to our study of this fascinating object."

More Information

NSF NOIRLab, the U.S. National Science Foundation center for ground-based optical-infrared astronomy, operates the International Gemini Observatory (a facility of NSF, NRC–Canada, ANID–Chile, MCTIC–Brazil, MINCyT–Argentina, and KASI–Republic of Korea), NSF Kitt Peak National Observatory (KPNO), NSF Cerro Tololo Inter-American Observatory (CTIO), the Community Science and Data Center (CSDC), and NSF–DOE Vera C. Rubin Observatory (in cooperation with DOE's SLAC National Accelerator Laboratory). It is managed by the Association of Universities for Research in Astronomy (AURA) under a cooperative agreement with NSF and is headquartered in Tucson, Arizona.

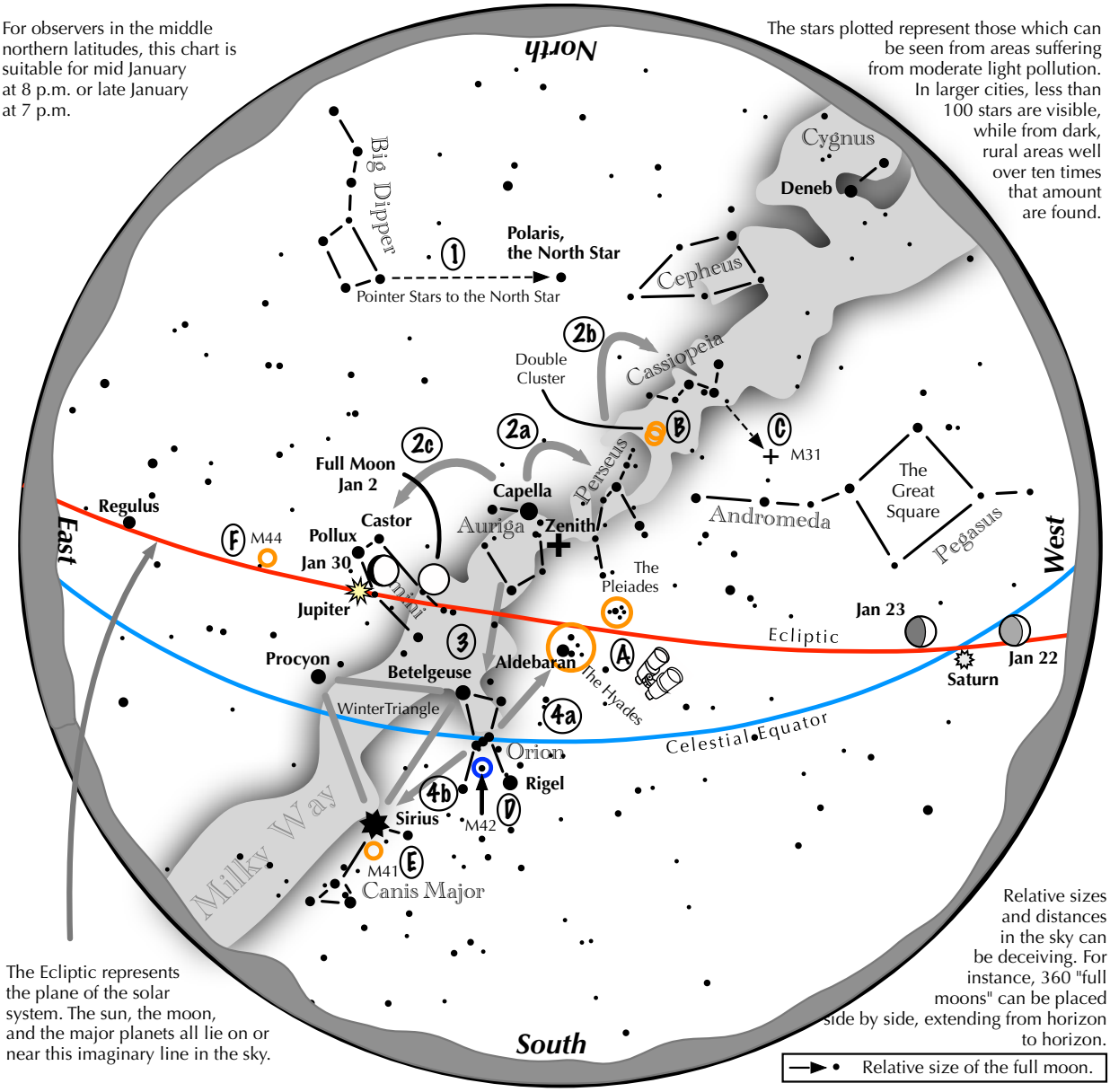
The scientific community is honored to have the opportunity to conduct astronomical research on I'oligam Du'ag (Kitt Peak) in Arizona, on Maunakea in Hawai'i, and on Cerro Tololo and Cerro Pachón in Chile. We recognize and acknowledge the very significant cultural role and reverence of I'oligam Du'ag to the Tohono O'odham Nation, and Maunakea to the Kanaka Maoli (Native Hawaiians) community.

Gemini North captured new images of Comet 3I/ATLAS after it reemerged from behind the Sun on its path out of the Solar System. The data were collected during a Shadow the Scientists session — a unique outreach initiative that invites students around the world to join researchers as they observe the Universe on the world's most advanced telescopes.

Navigating the January Night Sky

For observers in the middle northern latitudes, this chart is suitable for mid January at 8 p.m. or late January at 7 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.

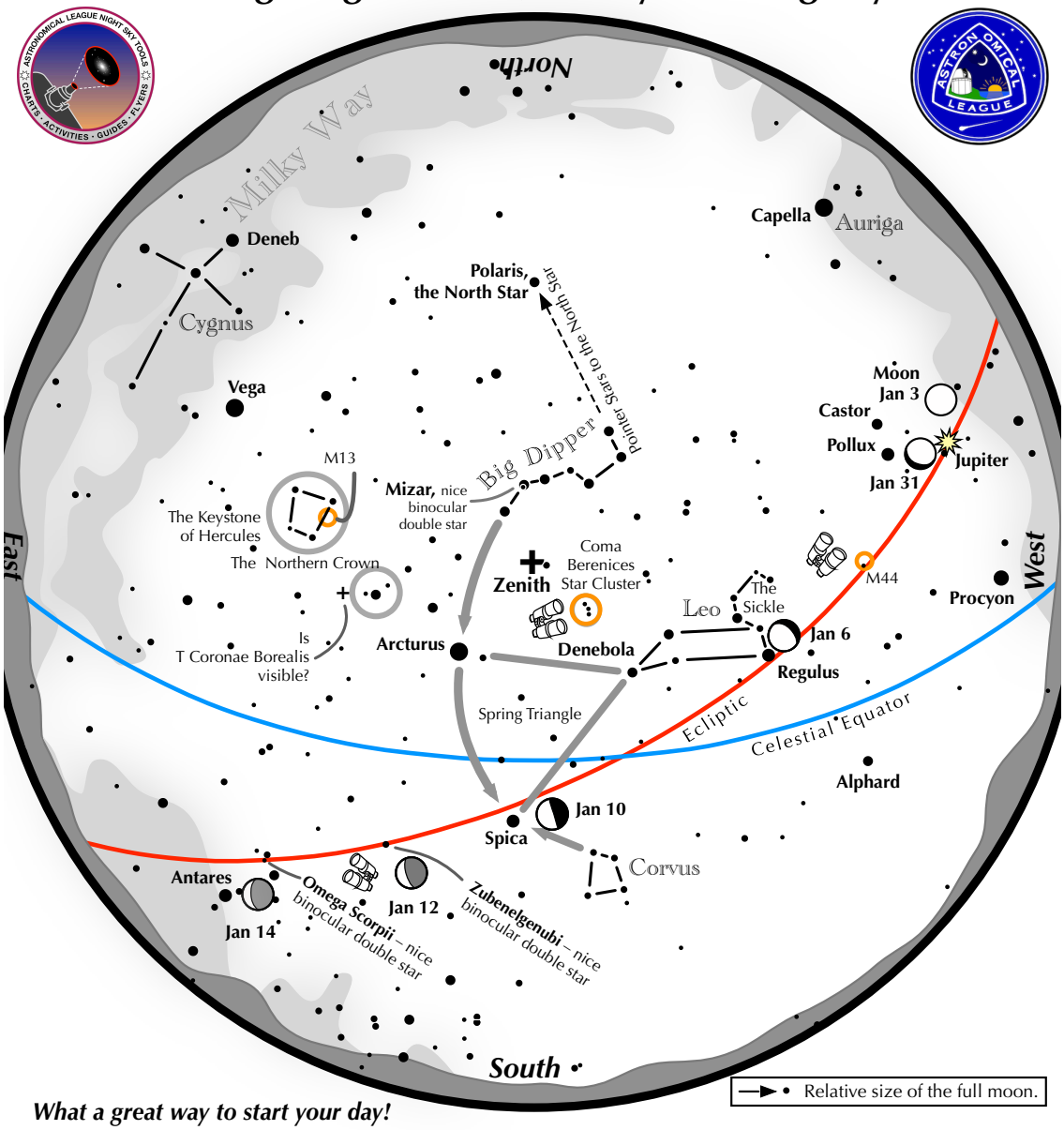
Navigating the winter night sky: Simply start with what you know or with what you can easily find.

1. Above the northeast horizon rises the Big Dipper. Draw a line from its two end bowl stars upwards to the North Star.
2. Face south. Overhead twinkles the bright star Capella in Auriga. Jump northwestward along the Milky Way first to Perseus, then to the "W" of Cassiopeia. Next Jump southeastward from Capella to the twin stars Castor and Pollux of Gemini.
3. Directly south of Capella stands the constellation of Orion with its three Belt Stars, its bright red star Betelgeuse, and its bright blue-white star, Rigel.
4. Use Orion's three Belt stars to point to the red star Aldebaran, then to the Hyades, and the Pleiades star clusters. Travel southeast from the Belt stars to the brightest star in the night sky, Sirius.

Binocular Highlights

A: Examine the stars of the Pleiades and Hyades, two naked eye star clusters. **B:** Between the "W" of Cassiopeia and Perseus lies the Double Cluster. **C:** The three westernmost stars of Cassiopeia's "W" point south to M31, the Andromeda Galaxy, a "fuzzy" oval. **D:** M42 in Orion is a star forming nebula. **E:** Look south of Sirius for the star cluster M41. **F:** M44, a star cluster barely visible to the naked eye, lies to the southeast of Pollux.

Astronomical League Outreach



What a great way to start your day!

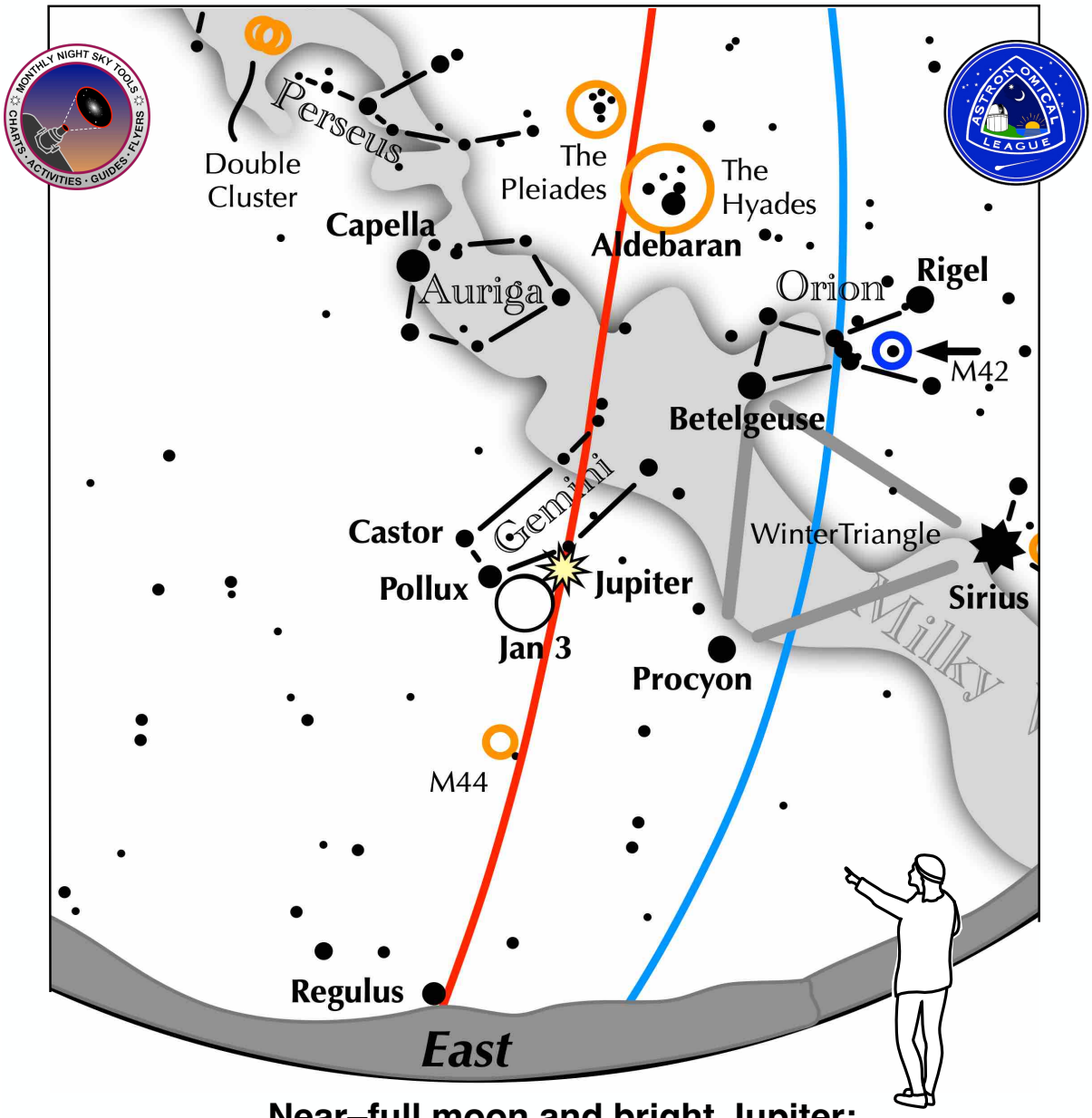
For observers in the middle northern latitudes, this chart is suitable for mid January at 5:30 a.m.

Late sunrises in January provide opportunities for early morning skywatching.

- Bright Jupiter shines in the west-northwest and moves below Pollux in Gemini.
- The third quarter moon floats near Spica on January 10.
- The waning crescent moon glows near Antares on January 14.
- Continue watching for a sudden and rapid brightening of T Coronae Borealis. When will it explode?
- A great time for viewing the Big Dipper, Leo, and Hercules. And it is time for galaxy viewing!

Astronomical League *www.astroleague.org/; duplication is allowed and encouraged for all free distribution.*

An Observing Activity for January 3rd



Near–full moon and bright Jupiter:
What can you see in the moon glow?

In the evening of January 3, look for Jupiter to the upper right of the moon.

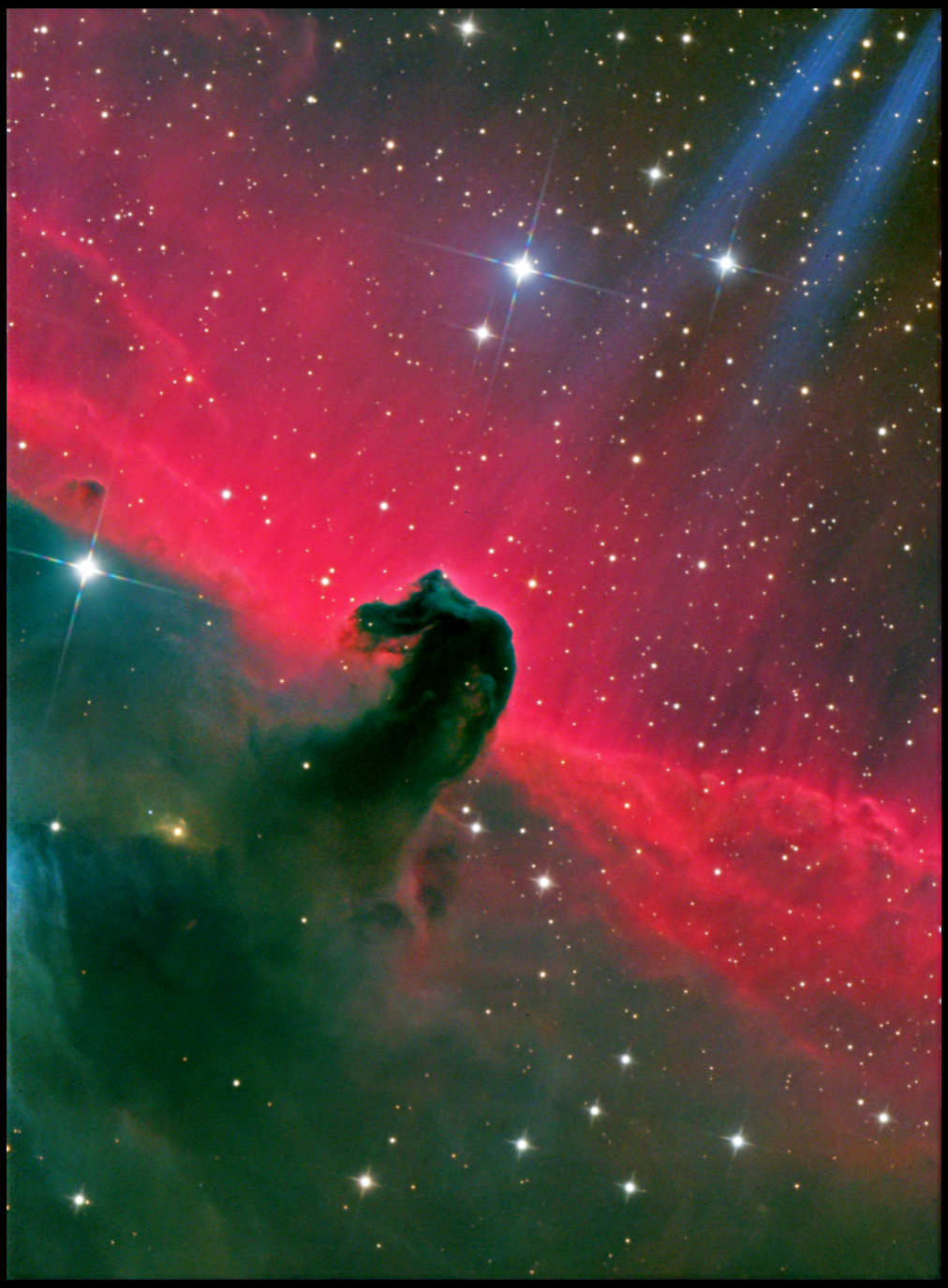
• How well can you see -2.7 magnitude Jupiter just 4° away from the moon?

Look at stars further from the moon.

• Can you spot these luminaries?

1.1 mag. Pollux, 3° away followed by 1.6 mag. Castor 7° away,
0.4 magnitude Procyon 20° away,
1.7 mag. Alnilam, Orion's middle Belt Star, 40° away,
and the much dimmer Pleiades, 55° away.

Astrophotography



Closeup of Horsehead by Brett Boller
Taken From BOO 11-23-25 with ZWO ASI2600MC Pro Duo
78 - 5 minute frames
Takahashi FRC 300mm @ 2348mm f/7.8 on Paramount ME
100 Darks, 100 Flats, 100 Flat Darks calibration frames

From the Archives, December, 1975

Club Telescope Project for Community Observatory is Outlined

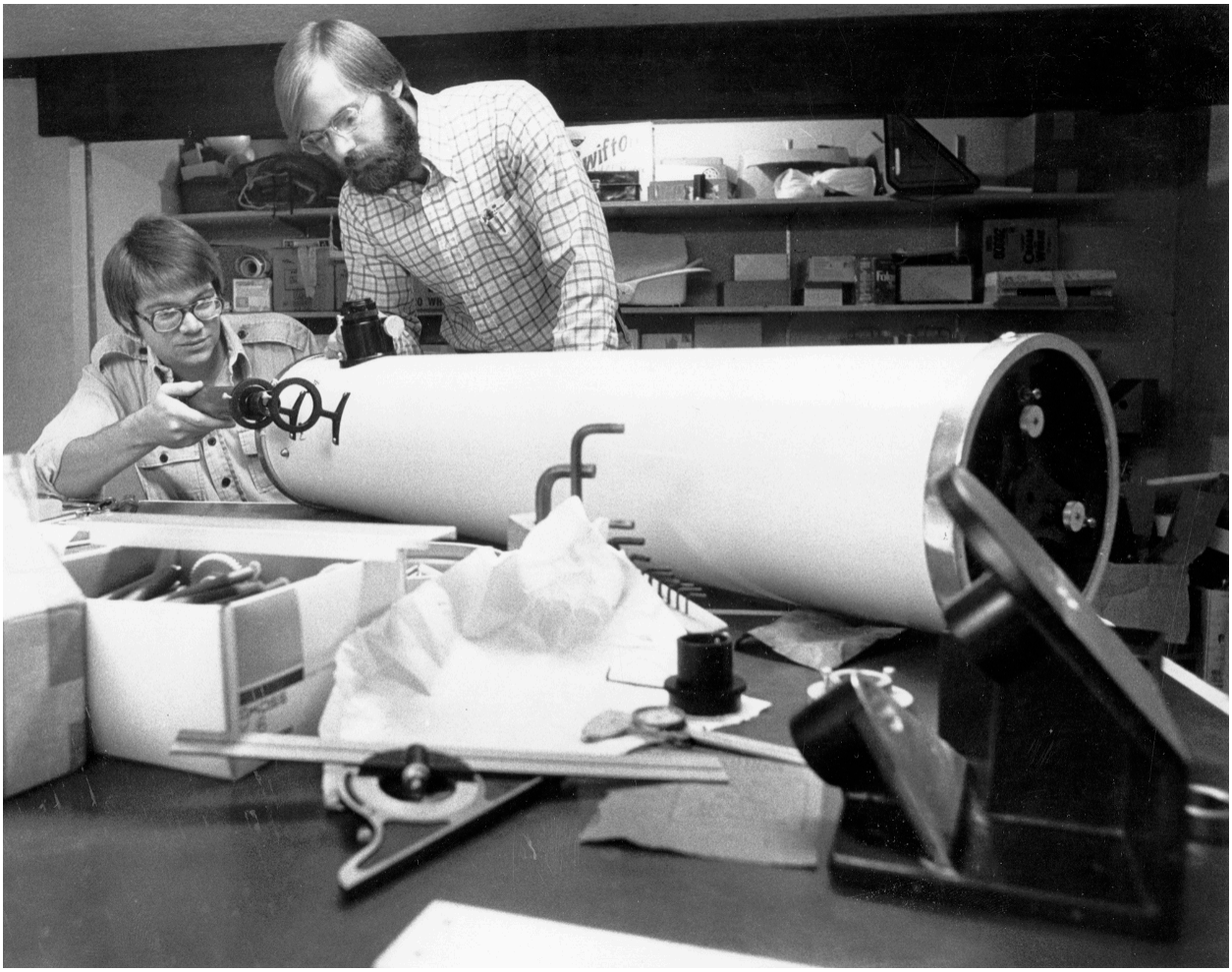
After the September club meeting Jess and I were talking, over cookies and grape drink, about the new observatory project. We agreed it would be a fine gesture if the Prairie Astronomy Club could help make the project a success, and in discussing ways to help we hit upon the idea of donating a telescope to the observatory-- not a commercial telescope, since we cannot afford to buy one of appropriate quality, and I think it would be a mistake anyway. Many individuals and groups can afford to donate more than we can, and any drop in the bucket we can spare is likely to be lost in the general splashing. We have something of value that many others lack however, in our knowledge of telescopes and astronomy. So at the October meeting I proposed we make a telescope from scratch to give away. Earl suggested we study the feasibility of such a project and asked me to investigate with a committee including Brad Binder, Don Baker, and Rick Johnson. After some discussion we decided a rich-field 8" telescope was the best option to investigate. The main instrument planned for the observatory has been a 14" Celestron, which has a long focal length, nice for planets but not too great for the Andromeda galaxy or the Pleiades. Telescopes of too short a focal ratio are much more difficult to build, so we hit upon f 6.25 as a compromise focal ratio (50" focal length). We chose an 8" mirror because a 10" is a lot more work, a 6" is a lot less telescope, and we had an 8" blank lying around anyway. For convenience in observing we decided on a fork mounting; for practicality we chose a Parks fiberglass tube; and we decided upon a permanent pedestal mounting if possible for stability. With these parameters chosen I worked on a preliminary design and investigated costs of materials, and at our last meeting Brad, Don, and I presented a report. The total cost of the project will be in the neighborhood of $150.00 which includes $50.00 for the tube, $16.50 for the diagonal, and about $16.00 for the mirror coatings. Jess has very graciously offered to donate a Jaegars clock drive which will save us at least $50.00. The project was put to a vote and was approved unanimously by the club members present. We will need some skilled help from club members to make this effort a success, and I have determined the following needs, for which we already have some volunteers:

Archives, continued

1 woodworker, 2 mirror grinders : Walt Bauman, Jeff Mallott, 1 welder: Dr. Manthey, 1 auto body worker: (Barry Magnass?), 2 machinists: ?, Larry Stepp, 1 collimator: Earl Moser, 1 draftsman: Don Baker.

If you are skilled at one of these, whether we have a volunteer for it or not, please contact me at 464-0140. We are shooting for April to have the project finished, and we will have reports each month of our progress on the parts of the assembly

--Larry Stepp



Ron Veys and Larry Stepp assemble the telescope they and other members of the club built for Hyde Observatory. This photo appeared in the November 4, 1977 Lincoln Journal. Copyright © 1977, Lincoln Journal Star. Reprinted with permission (from the PAC history book).

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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.