The Prairie Astronomer

June, 2026 Volume 67, Issue #6

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THE NEWSLETTER OF THE PRAIRIE ASTRONOMY CLUB

The Prairie Astronomer

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

Next regular meeting: Tuesday July 28th 7:30pm at Hyde Observatory

NEXT MEETING

Instead of our June meeting we will have our annual "Nearest Star" Party to do some solar observing. Join us at 6pm on June 30th at Hyde Observatory. Please bring your telescopes and solar filters!

The next regular meeting will be on July 28th at 7:30pm. We will show photos taken at the Nebraska Star Party.

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Cover: The Moon by Jim White

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

June PAC Meeting
Tuesday, June 30th, 6:00pm, Hyde Observatory
Nearest Star Party

Nebraska Star Party
July 12-17, Merritt Reservoir, Valentine, NE

July PAC Meeting
Tuesday, July 28th, 7:30pm, Hyde Observatory
Program: NSP Review

August PAC Meeting
Tuesday, August 25th, 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

President	Jason O'Flaherty jflaher@gmail.com
Vice President	Brett Boller proboller86@yahoo.com
2nd VP (Program Chair)	Open
Secretary	Jim White jrwhite2188@gmail.com
Treasurer	John Reinert jr6@aol.com
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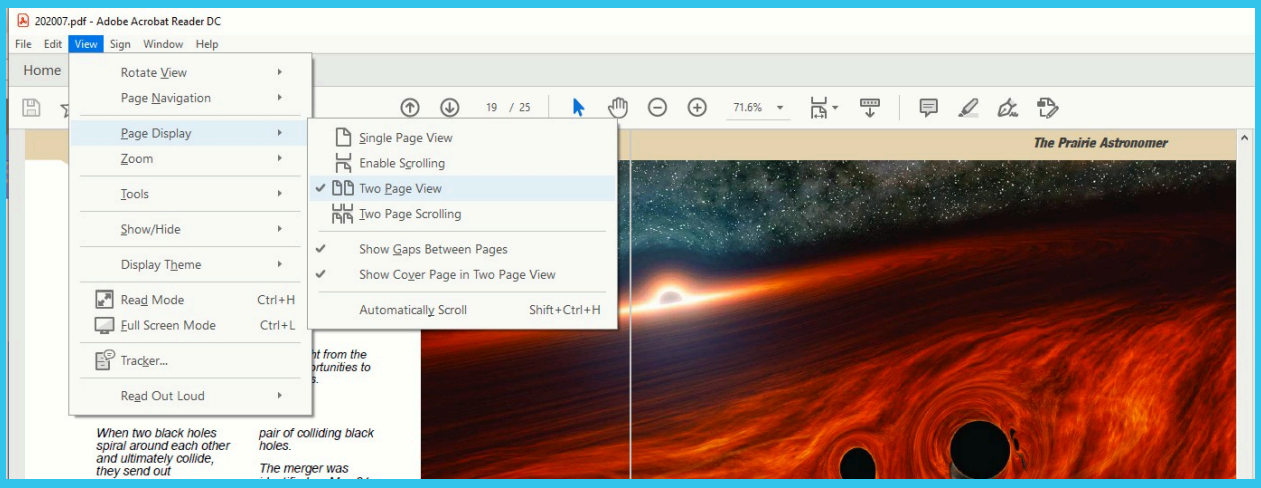
Outreach Coordinator	Don Hain dhain00@gmail.com
Website and Newsletter Editor	Mark Dahmke mark@dahmke.com

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,

I hope this letter finds you well and enjoying the start of summer.

I want to begin by thanking Mark Dahmke for connecting us with Sue Hsu from Dwarflab. Sue's presentation at our May meeting offered a unique look into the world of smart telescope design and gave us a better understanding of the thought and technology behind Dwarflab's telescopes.

Dwarflab also generously donated a Dwarf Mini smart telescope for the club to use at star parties and other outreach events. In addition, they sent us some merchandise that we will give away at the upcoming Nebraska Star Party. I have received both shipments and greatly appreciate Dwarflab's support of our club and its outreach efforts.

I plan to bring the Dwarf Mini to our next PAC gathering, which will be our Solar Observing Event on Tuesday, June 30th, at 6:00 p.m. Please take note of the earlier start time, as we need to meet while the Sun is still up. The Dwarf Mini includes a solar filter, so this will be a perfect opportunity to put it to use.

Please bring any solar-observing equipment you have so that we can provide plenty of opportunities for everyone to safely view the Sun. We will also have ice cream available for all attendees. There will not be a formal club meeting that evening, and no Zoom invitation will be provided.

I will not be able to attend our July meeting because I will be traveling outside the country. However, I will try to prepare my usual slideshow featuring photographs and short videos from the Nebraska Star Party. Please send your photos to me as soon as you can following the event. They may include anything captured at the Star Party, whether astronomical images, activities, scenery, or candid moments. Please include a very short description and identify anyone pictured when possible. Photos can be sent to jason@oflaherty.contact.

I hope everyone has a wonderful summer filled with good friends, memorable adventures, and plenty of clear nights.

Clear skies,
Jason O'Flaherty

Meeting Minutes

Jim White

Jason O'Flaherty, PAC President, started the meeting at 7:34 pm. Tonight's meeting is being held in person at Hyde Observatory and online via Zoom. Jason started the meeting by asking if we had any guests present, there was one guest, Travis.

AT 7:35 Jason turned the meeting over to Jim Kvasnicka, PAC Observing Chair, for Jims monthly observing report. Star parties for the month of June will be on Friday, June 5th and Friday, June 12th. The star parties will be held, weather permitting, at the Clatonia Recreation Area which is located 1 ½ miles north of Clatonia Nebraska on the west side of SW 100th. Planets for the month of June, Mercury is an evening planet, Venus is an evening planet, Saturn is a morning planet, Jupiter is an evening planet, Neptune and Uranus are not visible in June, Mars is a morning planet. Jim's complete observing report can be found in the monthly newsletter.

At 7:40 Jim turned the meeting over to Jason and Jason turned the meeting over to John Reinert, PAC Treasurer, for his monthly treasurer's report. The total of all PAC accounts for this month is $40,135.35 which is up slightly from last month. John is talking with Mark Dahmke about the dues notice that gets sent out and they believe that they can get the script adjusted to where John won't have to send out a blast. Expenses have been largely for Facebook ads over the last couple of months which is probably going to be cut back to mainly public outreach. We recently paid our $35 donation to DarkSky International. The club's CDs come due on 5/27/2026 and we will have 10 days to do something with them before they automatically renew. John has been checking on interest rates with BMO, where they currently reside and with U.S. Bank, Union Bank and others. John is going to send a list of options out to the Board Members so we can decide what to do with the two CDs.

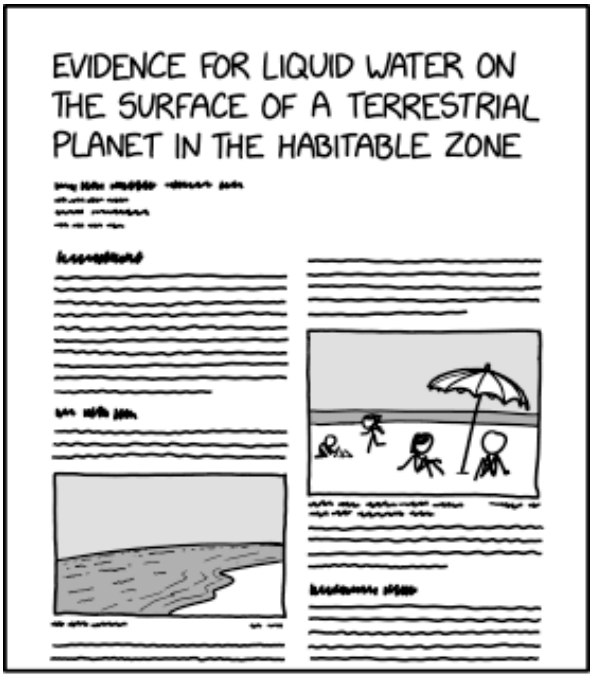
At 7:46 John turned the meeting back over to Jason. Jason went over dues options for joining the club. Individual membership for a year is $30, family membership is $36 and student membership is $12. Club business, our next meeting is June 30th at 6:00 PM and is our annual solar viewing event which is held outside on the lawn at Hyde Observatory and there will not be a regular meeting and ice cream will be provided. Please bring your solar gear, last year we only had one scope for solar viewing. Calendar

Meeting Minutes, continued

events this month, June 9th there will be a conjunction with Venus and Jupiter and they will appear about 1.5 degrees apart which is approximately the width across three full moons. June 21st is the summer solstice. June 30th is asteroid day and there are some cool ideas for things to do at asteroidday.org.

There are no new volunteer opportunities at this time. NSP (The Nebraska Star Party) is coming up on July 12th to July 17th. If you want the best rate for registration, please register before June 15th and if you want to order a T-Shirt you need to do that by June 15th. Tonight's meeting ended at 8:00 pm. For anyone that would like some conversation after the presentation there will be some members getting together at Culvers on south 70th.

Tonight's program is being presented online by Sue Hsu from Dwarf Labs showing us Dwarf Labs line of smart telescopes and their uses and differences between different models.



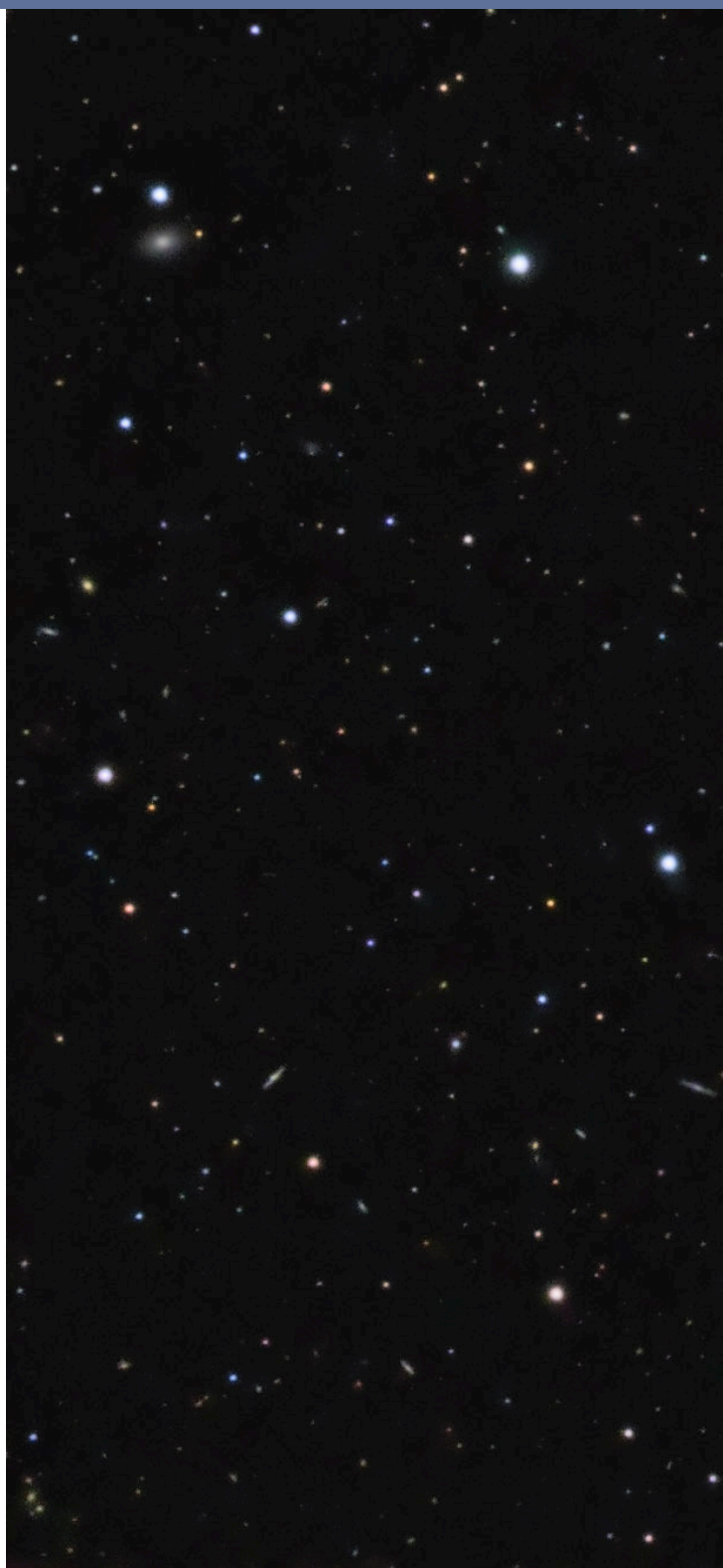
PLANETARY SCIENCE JOURNALS HAVE ASKED ASTRONOMERS TO PLEASE STOP SUBMITTING THEIR VACATION PHOTOS.

xkcd.com

ARP 94

The Mantrap Skies Image Catalog

Arp 94 is listed under Arp's category for spiral galaxies with elliptical galaxies on a arm. It is located less than a degree east of Gamma Leonis so is very easy to find and is about 68 million light-years away. It consists of two "big and bright" interacting galaxies; NGC 3226 to the north and 3227 to the south. The pair is quite easily seen in my 10" scope and likely a 6" should so them as well. Besides being in Arp's list they are also in the Herschel 400 list, another list I'm slowly trying to image so this one kills two birds with one image.



William Herschel found them on February 14, 1784. My log from April 15, 1985 on a night reduced to fair by humidity using my 10" f/5 scope at up to 150x reads for NGC 3226: "Small, round galaxy with little detail and poorly defined nucleus, nearly overlapped by NGC 3227." My entry for NGC 3227 reads: "Larger oval (than 3226), nearly featureless galaxy with somewhat central region. Seems to extend into 3226 as already mentioned." Apparently, I didn't realize I was looking at plumes caused by their interaction. Arp's

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 94, continued

comment reads:" Comp. on edge of large, very faint loop extending opposite galaxy. Light line E-W is plate defect."

There are several other galaxies in the image at about the same distance as Arp 94. All are far smaller, however. NGC 3226 is classed as E2 pec by NED and simply E by the NGC project. It has an AGN at its heart and is classed as both a LINER and Seyfert 3 galaxy. NGC 3227 is classed SAB(s) pec by NED and simply Sb by the NGC project. It is a Seyfert 1.5 galaxy so also has an AGN at its core. So one sees it as a barred spiral and the other as having no bar. I see it as a mess. The motor oil colored dust patch on its west side would seem to indicate a lot of its dust and gas is being ripped from it by the interaction. If they merge a large elliptical galaxy will likely result.

This is a reshoot. I'd hoped to pick up more of its plumes but didn't go much deeper this time than before. This one needs a far better night than I had the two nights I shot it this time. I wasn't happy with the first round and wanted a lot more time on it. But the skies were rather uncooperative. I only got twice the data under poor skies. Still, I think it came out better than the first time with half the data but not by a lot. The difference may be more in improved processing skills as the stacked FITS look very similar. Unfortunately, they were framed rather differently and I'd lose too much of the field if I combined the data so just used the new data.

Edit: With my skills of today I could redo this using the best of both images. Not having time for that right now I'm just including both versions. The later version has more detail in the core of the galaxies but loses the plume detail.

In the annotated image there is one other NGC galaxy, NGC 3222. It too has very different classifications. NED says SB0 while the NGC project says E-S0. It is located 4 times further away than Arp 94. It was discovered by August Winnecke in March of 1855. Below it is a group of galaxies at 540-550 million light-years. It contains two other interacting galaxies that Arp missed at the lower right: NPM1G +20.0234 is on the right and seems rather normal while SDSS J102247.38+194730.2 on the left has a huge plume. Quite a few galaxies are in the area that have no redshift data. I presume at least some of these are also members of this group. While the group seems obvious NED shows no group at this location. There are 5 groups in the image that NED does mention, however. All

ARP 94, continued

much further away.

GMBCG J155.93619+19.80272 has 11 members and is 4.4 billion light-years away.
GMBCG J155.72679+19.85862 has 10 members at a distance of 4.2 billion light-years.
GMBCG J156.04999+19.79241 has 9 members at 3.2 billion light-years.
GMBCG J155.61002+19.91511 has 9 members at 4.5 billion light-years.
All of the above have an anchoring galaxy at the same location and distance as the cluster.
WHL J102402.5+194501 with 7 members at 5.2 billion light-years has a position one second of arc below that of what may be its BCG. No redshift is provided for that galaxy however.

There are two asteroids in the image but 4 asteroid trails. This is because the image was taken over two nights, March 27 and March 28, 2011. The asteroids were slow moving and far enough from the edge to be in frame both nights. They are:
(32073) 2000 JT61 at magnitude 18.4 and (157849) 1998 SH96 at magnitude 19.4 as estimated by the minor planet center. On the second night (157849) 1998 SH96 moved into the glow of NGC 3222 but can still be seen. Brighter (32073) 2000 JT61 was on the east side of Arp 94 the first night and moving out of its glow on the west side the second night. Thanks to the background glow of the galaxies the color frames show up somewhat. Usually, those are against such a dark sky there is nothing there in the luminance image and they are not seen.

You will see a quasar marked with a question mark southeast of Arp 94. NED says it is a star or a galaxy but shows it as a point source with a redshift of 11.6 billion light-years light travel time. There's no way I'd pick up a star or galaxy at that distance. So I went against authority and marked it as a quasar but added the question mark to indicate there's a question about this one.

There are some other objects marked with a question mark as well but no identification. I'm certain all are galaxies as I looked at each one on the Sloan Survey images to verify they were real. I did this because NED doesn't list them. Likely many others deserve a question mark, these are just the ones I looked at to find redshift data and found not only no redshift data but no galaxy either! About 21% of those I checked were missing yet NED shows over 3000 objects in this image. I don't know why these were omitted. I'm used to finding one and one time 2 missing from NED this way but 4 is a

ARP 94, continued

record. There are likely more as my sample size was only 19. The one due west of NGC 3226 is one of a pair of galaxies. The fainter one is listed but with no redshift. The brighter is totally missing. Below it and a bit east is another pair, a bit further apart. Again the faint one made NED the brighter did not. There was another pair in which the fainter member wasn't listed but even after consulting the Sloan image I was uncertain if it was a star or galaxy. It is among a group of 6 galaxies (5 if it is a star) all overlapping making identification difficult. Look for the galaxy at 2.4 billion light-years southeast of NGC 3222. It is orange with a small object beside it on the east. In the Sloan image, it is several galaxies plus this object. A couple of the galaxies are seen in my image but most just add to the fuzz around it.

Bulge Fossil Fragment Terzan 5

Terzan 5 is a stellar system orbiting within the Milky Way galaxy's bulge, which is an incredibly bright, crowded central region of the galaxy. Not only are stars within the bulge tightly packed together — every bit of this region is laced with thick clouds of gas and dust. NASA's James Webb and Hubble Space Telescopes joined forces to study Terzan 5. Astronomers already knew that this star cluster was unusual in that it contained two stellar populations of very different ages. New research found strong evidence for two more stellar populations, one that formed 3.8 billion years ago and another only 2.5 billion years ago. The research team also was able to determine the ages of the previously known stellar populations with unprecedented precision, finding that they formed 12.5 billion and 4.7 billion years ago. This finding proved that Terzan 5 is not a globular star cluster, as originally classified. Instead, Terzan 5 belongs to a new category, known as a bulge fossil fragment — a self-contained, self-enriching stellar system with multiple star populations of different ages and with different iron abundances. Terzan 5 is 22,000 light-years away in the constellation Sagittarius. It contains about 2 million times the Sun's mass packed into a stellar system only a few tens of light-years across, making it one of the most massive and densely populated globular-cluster-like systems in the Milky Way. Credit: NASA, ESA, CSA, STScI, Giorgia Zullo (University of Bologna), Francesco Ferraro (University of Bologna); Image Processing: Alyssa Pagan (STScI)

Focus on Constellations: Ophiuchus

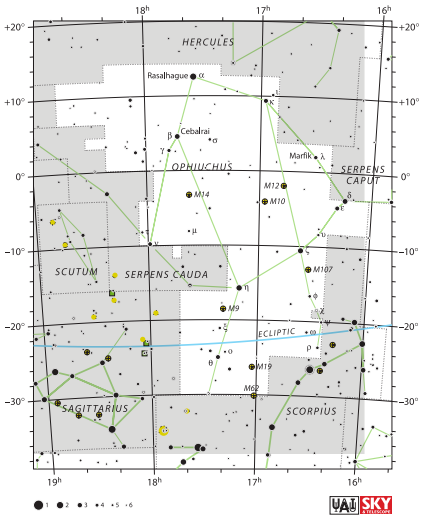
Jim Kvasnicka

Ophiuchus, the Serpent Bearer, is a large constellation covering 948 square degrees making it the eleventh largest constellation. Most of it lies just NW of the southern part of the summer Milky Way. The SE wing of the constellation extends into the Milky Way almost to the direction toward the Galactic Center. Because most of our Galaxy's globular clusters are distributed around the direction toward the Galactic Center, Ophiuchus is rich in globular clusters, which make up most of its showpiece objects. The constellation Ophiuchus is best seen in July.

Showpiece Objects
Globular Clusters: M9, M10, M12, M14, M19, M62, M107
Planetary Nebulae: NGC 6309, NGC 6369 (Little Ghost Nebula), NGC 6572
Open Clusters: NGC 6633
Dark Nebulae: B57, B60, B61, B62, B63, B64, B59/65-7/78 (Pipe Nebula), B72 (Snake Nebula)
Multiple Stars: Rho Ophiuchi, Lambda Ophiuchi, 24 Ophiuchi, 36 Ophiuchi, Omicron Ophiuchi

Mythology
Ophiuchus represented the god of medicine Aesculapius, son of Apollo. Aesculapius/Ophiuchus was taught the art of healing by Chiron, the Centaur in the constellation Centaurus. According to one story, when Aesculapius once killed a snake another came along with a medicinal herb in its mouth that revived the first snake. Aesculapius took some of the herb and gained the power to restore life. Hence the symbol of Aesculapius and medicine in general, is the staff of two intertwined serpents. Aesculapius was so successful that the kingdom of Pluto, god of the Nether World, was threatened. Pluto appealed to Zeus, who killed Aesculapius with a thunderbolt. Apollo interceded on his dead son's behalf with Zeus, who relented and immortalized Aesculapius in the heavens as the constellation Ophiuchus.

Number of Objects Magnitude 12.0 and Brighter
Galaxies: 1
Globular Clusters: 17
Open Clusters: 4
Planetary Nebulae: 8
Dark Nebulae: 19



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July Observing

Jim Kvasnicka

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

Planets
Mercury: Inferior conjunction on July 13.
Venus: Sets two hours after the Sun to start July.
Mars: Morning planet at +1.3 magnitude.
Jupiter: Too close to the Sun to view.
Saturn: Morning planet in Pisces at magnitude +0.8.
Uranus: Not positioned well to view.
Neptune: Morning planet in Pisces at magnitude +7.9.

Messier List
M3: Class VI globular cluster in Canes Venatici.
M4: Class IX globular cluster in Scorpius.
M5: Class V globular cluster in Serpens Caput.
M53: Class V globular cluster in Coma Berenices.
M68: Class X globular cluster in Hydra.
M80: Class II globular cluster in Scorpius.
M83: Galaxy in Hydra.

Last Month: M58, M59, M60, M84, M86, M87, M88, M89, M90, M91, M98, M99, M100
Next Month: M6, M7, M8, M9, M10, M12, M19, M20, M21, M23, M62, M107

NGC and other Deep Sky Objects
NGC 6210: Blue colored planetary nebula in Hercules.
NGC 6229: Class IV globular cluster in Hercules.
NGC 6302: The Bug Nebula in Scorpius.
NGC 6309: Planetary nebula in Ophiuchus.
NGC 6369: The Little Ghost Nebula in Ophiuchus.
NGC 6543: The Cat's Eye Nebula in Draco.
IC 4703: The Eagle Nebula in Serpens, M16 is the open cluster embedded in the nebula.

Double Star Program List
Nu Draconis: Equal pair of white stars.
Psi Draconis: Pair of light-yellow stars.
40/41 Draconis: Equal pair of light-yellow stars.
Xi Scorpii: Yellow primary with a light blue secondary.
Struve 1999: Two yellow-orange stars.
Beta Scorpii: Bluish white primary with a light blue secondary.
Nu Scorpii: Yellow and light blue pair.
Delta Serpentis: Light yellow stars.
Theta Serpentis: Two blue-white stars.

Challenge Object
NGC 6144: Faint Class XI globular cluster just 40' NW of Antares.

Club Outreach

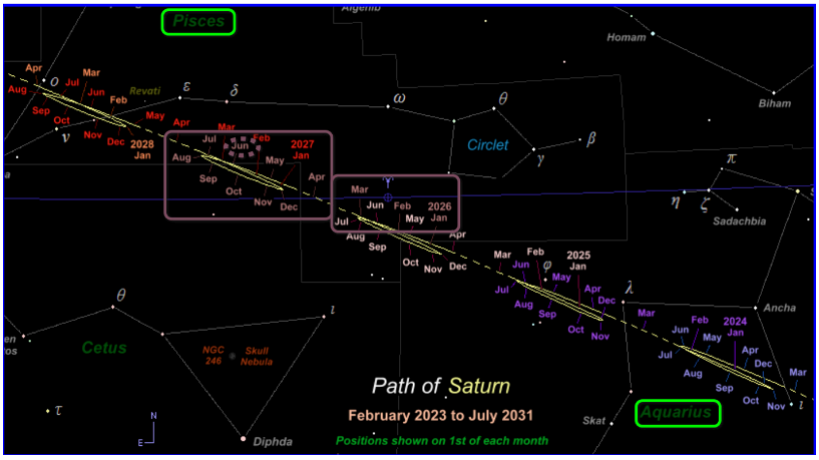
Don Hain
dhain00@gmail.com
402-440-5318

Jupiter and its four moons have been a joy to contemplate, but they are moving from view, making way for discussions of other night time wonders. We don't want to forget that giant of a planet though. It will be back later in the year. In particular, on October 6, 2026 most of us in North America will have the best chance for several years to come to see a lunar occultation of that massive planet.

Saturn is rising and moving into our nighttime skies as Jupiter "moves into the Sun." 2025 saw Saturn be about as edge-on as possible for the bulk of the year. In 2026 we will be able to see Saturn continuing to open up as we move towards the most "face-on" views possible for the planet and its rings in 2032. That is when Saturn's southern pole will be tipped more and more toward earth, moving 27° from the 2025 "on-edge"/equatorial view we had last year. More on this can be found at Sky and Telescope.

As mentioned in the May newsletter, the planets put on quite a "dance" in the sky. You can see information about the dance Saturn is putting on currently (2023 to 2031) at Naked Eye Planets. I have enlarged the portion of Saturn's path in a screen shot.

Shown there is where Saturn has been and will be during 2026. Cancer is beginning to set with the Sun. As darkness comes upon us, any nighttime objects in the vicinity of Cancer are visible for only a short time in the west, before moving below the horizon soon after sunset. To the east in the evening however we are seeing objects counter posed basically 7/12ths of the way around the celestial sphere. Those are the stars and other objects in the vicinity of Aquarius. As evening progresses, objects in and around Pisces make their appearance. Saturn is also heading that direction, and will be in Pisces in mid-2027 and on into 2028.



Club Outreach

Upcoming event(s):

Hyde Observatory: OPEN

When: Saturday nights … and other nights for groups per request
Where: Hyde Observatory
Sponsored by: Lincoln Parks and Rec / Hyde Board of Directors
Special Group nights: per requests to Pioneers Park Nature Center at 4024417895 or naturecenter@lincoln.ne.gov
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.

Stargazing on Mauna Loa

Mark Dahmke

On June 14th I was invited along on a trip up to Mauna Loa for a small star party and potluck dinner that was organized by my friends Eric and Julie Ziemelis, founders of the 365 Hawaii Youtube channel.

The access road up to Mauna Kea is just a 35 minute drive from my house in Waikoloa.

The road up to the summit of Mauna Loa starts just east of the Mauna Kea access road and is definitely the route less traveled. It's a well-maintained one-lane road that winds through 10+ miles of old lava flows and jagged outcrops of rock. Twenty minutes of slow driving brought our car caravan to a T-intersection where a couple of microwave towers are located. We stopped to look at the remains of a lava tube. From there we drove another five minutes to the end of the pavement, where a 2022 lava flow covered the road leading up to the Mauna Loa Observatory (now reopened but not paved). We set up some tables and chairs for a quick meal while waiting for sunset.

It was sprinkling down on Saddle Road at about 6000' and it rained most of the afternoon where I live in Waikoloa, but by sunset the clouds disappeared up at 9000' and we were left with a stunning view of Mauna Kea.

The seeing was excellent, although there was a bit of volcanic haze. From this location it is often possible to see the glow of the Kilauea eruptions, but the current fountain event had ended earlier in the day and I couldn't see any evidence of reddish glow to the southeast.

The temperature dropped to about 49 after sunset but it was calm for most of the evening, with the wind picking up a bit about an hour after sunset.

I brought my two Panasonic Lumix cameras and two tripods, so kept alternating between the two,

Mauna Loa, continued

capturing telephoto views of Mauna Kea with the Lumix G9II and 21mm wide angle views with my Lumix GH5s and Voigtlander 10.5mm f/0.95 lens.

Most of the wide angle shots were taken with exposure times of 6-10 seconds at ISO 1600/3200.

Being at latitude 19°34' I got some nice shots of the Southern Cross right at the horizon—which in this case was looking up toward the summit of Mauna Loa.

I got a nice shot of Venus, Jupiter and the Beehive cluster plus Zodiacal light (see page 20).

Through the telephoto lens I could see several of the observatories and the lights of cars heading down Mauna Kea from the visitor center.

When we decided to pack up and head for home, it started to sprinkle again, even though the sky was mostly clear.

Overall, it was a nice little expedition to a place seldom visited and very near the geographic center of the Big Island.

Dashcam view of Mauna Loa Access Road

Mauna Loa, continued

Eric wanted to show us the path of a lava "river" and lava tube from a recent eruption Right: a few ferns have taken root among the boulders

Mauna Kea in twilight. Lumix GH5s, HDR, ISO 400, 1/1000 sec, 10.5mm f/1

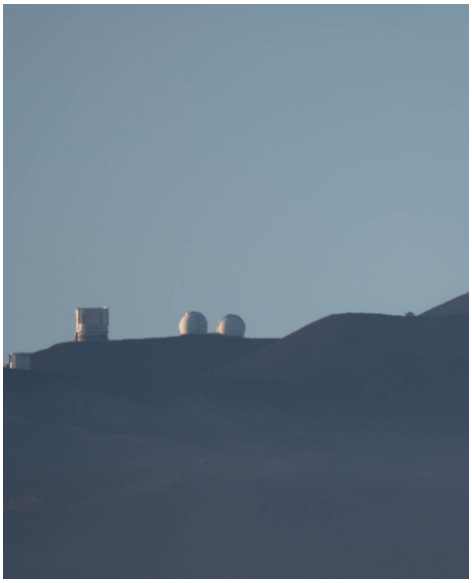
Eric Ziemelis and our star party group (photo by Eric)

Potluck picnic with Mauna Kea in the distance

Mauna Loa Observatory Road

Mauna Loa, continued

Venus, Jupiter, the Beehive Cluster and Zodiacal light are clearly visible in this 8 second exposure at 8:22pm (ISO 3200, 10.5mm, Lumix GH5s)



Subaru and Keck

Ursa Major over Mauna Kea. ISO 1600, 13 seconds, 20mm f/1 Lumix GH5s
Car headlights visible coming down from the visitor center.

Mauna Loa, continued

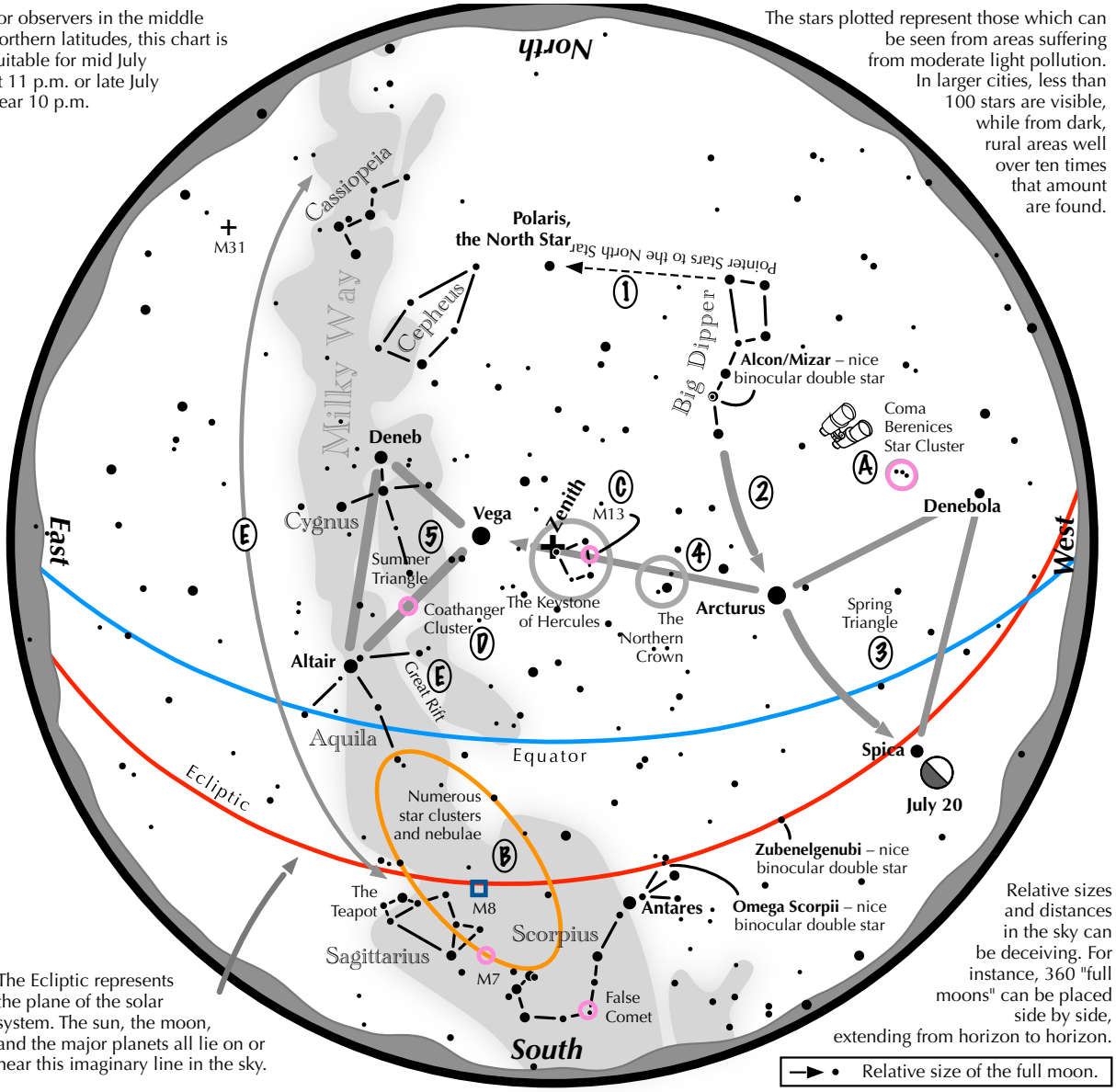
The Southern Cross (lower right). Lumix GH5s, 8 seconds, ISO 1600, 10.5mm f/1

Scorpius to Centaurus, Lumix GH5s, 15 seconds, ISO 3200, 10.5mm f/1

Navigating the July Night Sky

For observers in the middle northern latitudes, this chart is suitable for mid July at 11 p.m. or late July 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 mid July 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. Follow the arc of the Dipper's handle. It first intersects Arcturus, the brightest star in the July evening sky, then continues to Spica.
3. Arcturus, Spica, and Denebola form the Spring Triangle, a large equilateral triangle.
4. To the northeast of Arcturus shines another star of similar 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.
5. High in the East lies the Summer Triangle stars of 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 Antares and Altair, hides an area containing many star clusters and nebulae.
C: On the western side of the Keystone glows the Great Hercules Cluster, containing nearly 1 million stars.
D: 40% of the way between Altair and Vega, twinkles the "Coathanger," a group of stars outlining a coathanger.
E: Sweep along the Milky Way for an astounding number of faint glows and dark bays, including the Great Rift.

Astronomical League Outreach

The Astronomical League OC Open Cluster Program

M6 & M7

When these two big, bright, and beautiful open star clusters appear in the early evening in early July, summer is upon us.

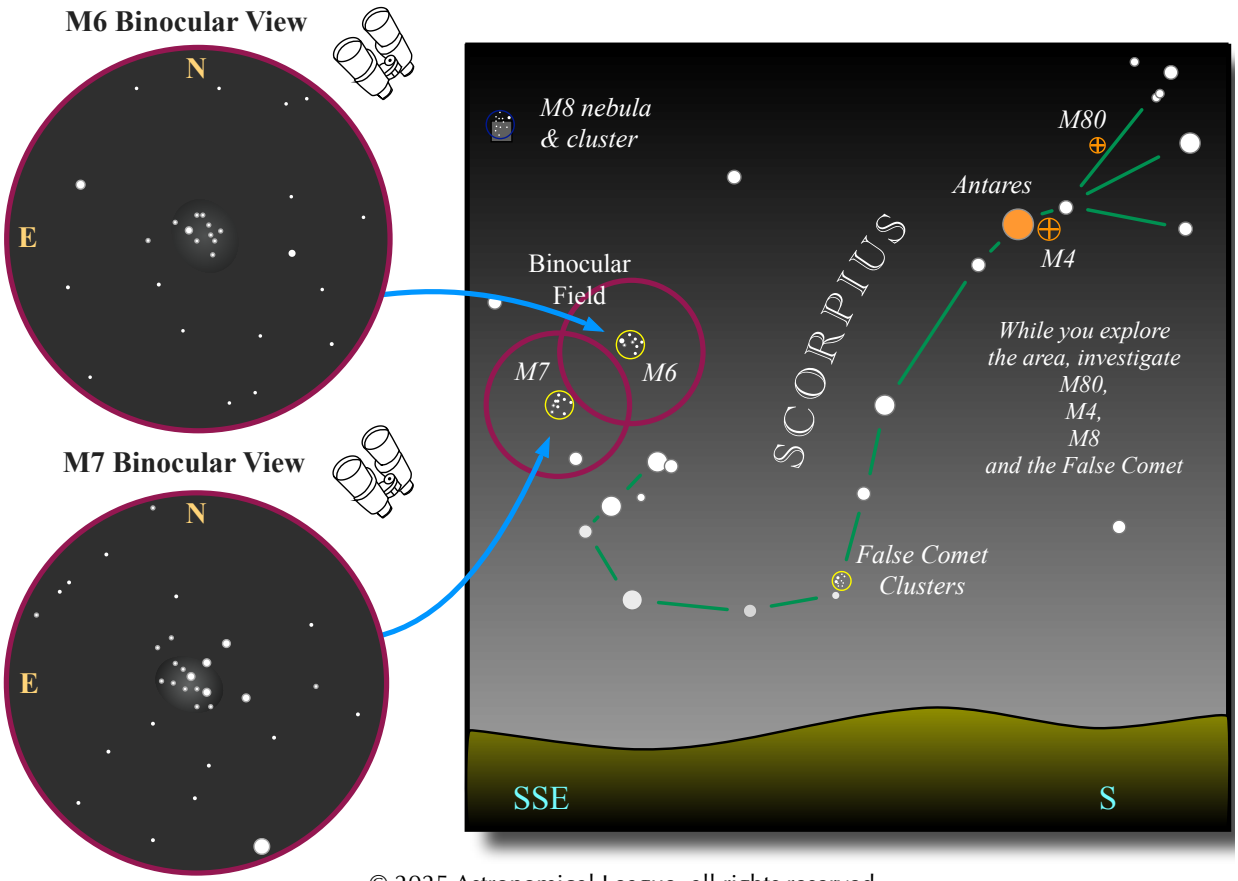
If you have recently begun your journey under the stars, why not whet your appetite by exploring southeastern Scorpius and its two wonderful open star clusters, M6 & M7. You will return to them year after year!

While they are visible to the unaided eye from a dark location, binoculars help greatly.

1. Identify Scorpius standing low in the south-southeast on an early summer evening. As summer progresses, it is ascends low in the south, then swings low in the southwest in the early fall.
2. From red Antares, direct your gaze southward down the scorpion's back, then turn eastward.
3. When its tail hooks northward, continue the length of that hook.
4. M6 and M7 should be plainly visible in the binocular field.

M6:
A faint hazy glow is seen by the unaided eye from a dark, clear site. Two dozen stellar lights can be discerned with 10x50 binoculars.
- Integrated Magnitude: 4.2
- Size: 33 minutes

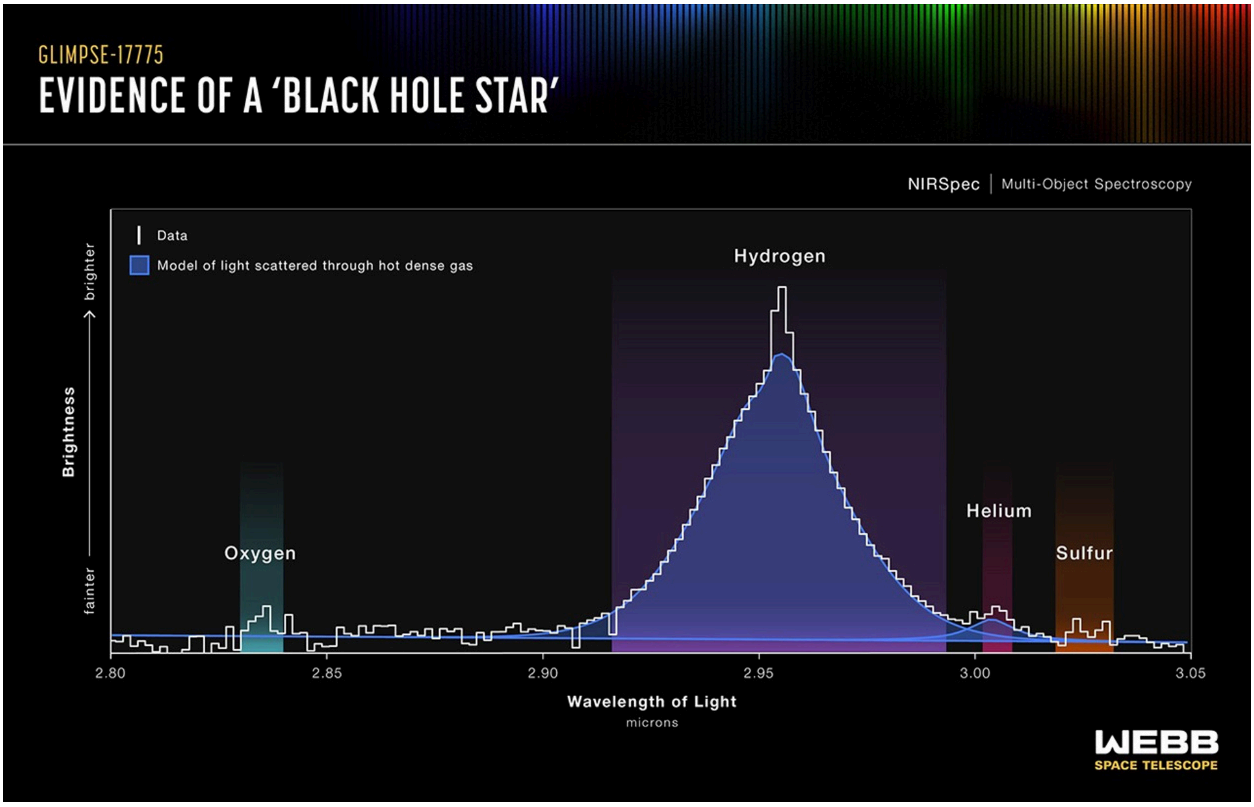
M7:
A glittery glow is easily spotted off the scorpion's tail by the unaided eye. Binoculars reveal many faint stars.
- Integrated Magnitude: 3.3
- Size: 80 minutes



NASA Webb Finds Strongest Evidence Yet for 'Black Hole Stars'

The complex puzzle known as little red dots has become more complete since their initial discovery by NASA's James Webb Space Telescope in 2022. Now a particular little red dot's spectrum is helping connect many of the pieces.

A team of astronomers led by Vasily Kokorev at the University of Texas at Austin identified the lucky dot in question: GLIMPSE-17775. By carefully analyzing the dot's spectrum captured by Webb — the deepest spectrum to date of a little red dot — the research team has identified multiple lines of evidence, all of which support the interpretation that GLIMPSE-17775 is a supermassive black hole enveloped in a dense cocoon of partially ionized gas, a model referred to as the BH*



NASA's James Webb Space Telescope captured the deepest spectrum to date of a little red dot. More than 40 spectral lines have been discerned from the data, many of which independently support the theory that GLIMPSE-17775 is a black hole enshrouded by a hot, dense gas cocoon. Illustration: NASA, ESA, CSA, Vasily Kokorev (UT Austin); Designer: Leah Hustak (STScI)

Webb, continued

(black hole star) scenario. A paper describing the results was published today in The Astrophysical Journal.

"I think part of the scientific community is converging on a singular picture — that little red dots can be explained by black hole star models. But none of the previous little red dots have all of the pieces of evidence in the same place," said Kokorev, lead author of the study. "With GLIMPSE-17775 we can test these models because of how deep and amazing this source's spectrum is."

Connecting puzzle pieces

Soon after Webb first began science operations, it discovered a new, mysterious type of object in the very early universe – abundant red objects that emerged about 600 million years after the big bang.

Scientists have explored multiple explanations for these little red dots, including the black hole star scenario.

A set of fortunate circumstances brought about this new, elaborate spectrum of a little red dot. The little red dot that would come to be known as GLIMPSE-17775 was fortunately included in Webb's imaging and spectroscopy efforts for a project that sought to look for Population III stars and faint galaxies in galaxy cluster Abell S1063. This little red dot is more distant than the galaxy cluster and magnified by gravitational lensing. (GLIMPSE-17775 has a cosmological redshift of 3.5, meaning it existed about 1.8 billion years after the big bang.)

While Webb provided a 30-hour spectrum of the little red dot, the effect of gravitational lensing made it equivalent to 80 hours of telescope time.

This combination of Webb's infrared sensitivity and nature's own "magnifying glass" amplified the amount of detail that could be gleaned from GLIMPSE-17775. The result was more than 40 spectral lines from this small, red source, which is the most detailed little red dot spectrum to date.

"When we saw the spectrum for the first time, it was like having all the pieces of a puzzle scattered on the floor," said Kokorev. "We picked up each piece of the puzzle, measured the lines, and started combining the different pieces into a mosaic. Maybe a few pieces looked like nothing at first, but then a couple of them came together, and we realized that there was something there."

The spectroscopic data collected by Webb contains multiple lines of evidence that support the interpretation that

Webb, continued

little red dot GLIMPSE-17775 is a black hole star: a rapidly accreting, or growing, black hole enveloped in a dense gas cocoon, which is reprocessing the light emitted from near the black hole and producing the features seen in the spectrum.

Lines of evidence

Among the 40-plus lines that the team detected in GLIMPSE-17775's spectrum were various independent indicators that all align with the BH* scenario. For example, the team found that many of the spectral lines, such as hydrogen, oxygen, and helium, do not fit a simple model of a rotating gas cloud. Instead, the best fit model includes a broadening effect known as electron scattering, a telltale sign that a dense, layered gas cocoon is enshrouding this source.

The strength and ratios of certain lines to each other, most notably the 16 iron lines that compose what the team has dubbed an "iron forest" and certain oxygen lines, require a high-energy source to produce them, like a rapidly accreting black hole. Additionally, astronomers noted the fluorescence and absorption of helium in the spectrum, both of which individually suggest that there is a dense medium enveloping a powerful source.

The BH* scenario not only fits GLIMPSE-17775; it also accounts for why most little red dots are faint in X-rays, since any such emission is likely absorbed by the dense gas cocoon.

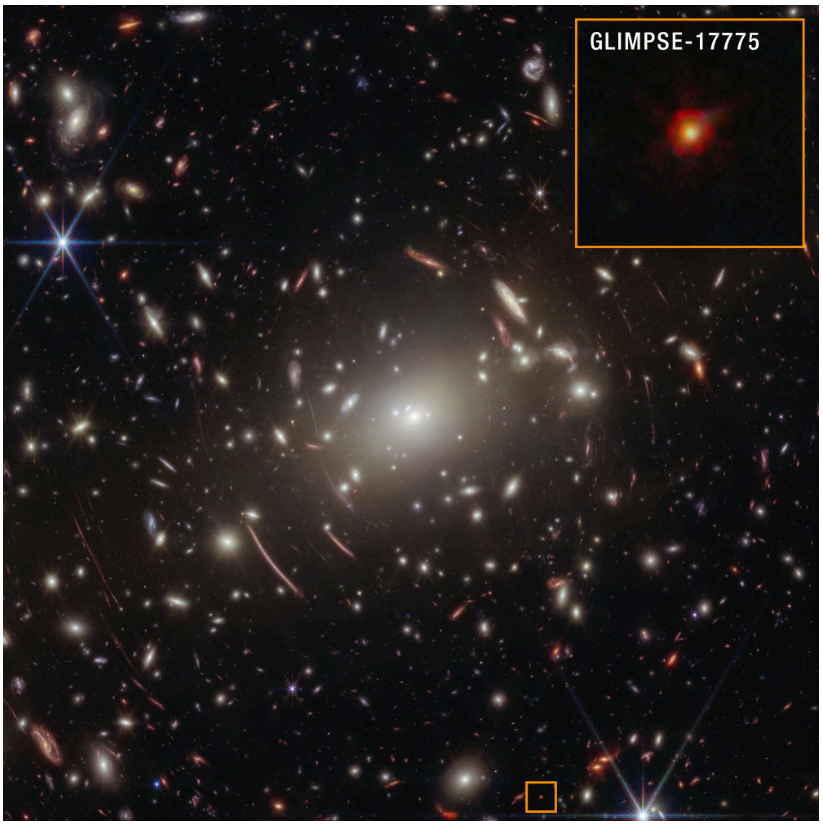
One missing element of the GLIMPSE-17775 puzzle piece is the part of the spectrum that would reveal what's known as a Balmer break, or a strong dip in the emitted light that's a signature characteristic of little red dots. To build a more comprehensive understanding of this little red dot, the team incorporated ancillary data from two observing programs that used NASA's Hubble Space Telescope: the Frontier Fields and BUFFALO (Beyond Ultra-deep Frontier Fields And Legacy Observations) programs.

The Webb and Hubble data together help explain why the Balmer break is weaker than what typically is found in other little red dots: A giant host galaxy is surrounding GLIMPSE-17775. Although a little red dot's host galaxy is not something that has been usually seen at such scale before, it isn't inconsistent with the dense gas cocoon model. The black hole star model of little red dots attributes excess blue light to stars in the host galaxy.

Webb, continued

When Webb first discovered little red dots, some researchers thought these objects had "broken cosmology," unsure how galaxies could have grown so big so quickly in the early universe to account for all this light coming from their stars. However, the team believes the GLIMPSE-17775 puzzle piece fits nicely in the existing framework of the universe's evolutionary history, because black hole masses don't need to be as high in order to explain the broad emission lines.

"Everything fits, nothing is broken, and I think that makes the puzzle that is our universe even better," said Kokorev. "Looking ahead, I'm eager to dive deeper and learn about what is powering the central engines of little red dots. While we think it's a black hole, there are some other interesting theories being proposed, which is exciting. Maybe in a year or two, we'll have the final answer to what powers these sources."



The little red dot that would come to be known as GLIMPSE-17775 was fortunately included in NASA's James Webb Space Telescope's field of view as it was observing galaxy cluster Abell S1063 for a different scientific purpose. GLIMPSE-17775 is located behind the galaxy cluster and has a cosmological redshift of 3.5, meaning it existed about 1.8 billion years after the big bang. Image: NASA, ESA, CSA, Vasily Kokorev (UT Austin); Image Processing: Alyssa Pagan (STScI)

Astrophotography

Moon by Jim White
Taken 4/24/2026, Best 12 of 17 exposures
Exposure time .000032 seconds each, Scope Celestron 925 EdgeHD,
Mount Celestron CGX, Camera ASI 2400MC Pro
Mount and Camera control software N.I.N.A.
Processing Software - Stacked and processed in PixInsight

Astrophotography

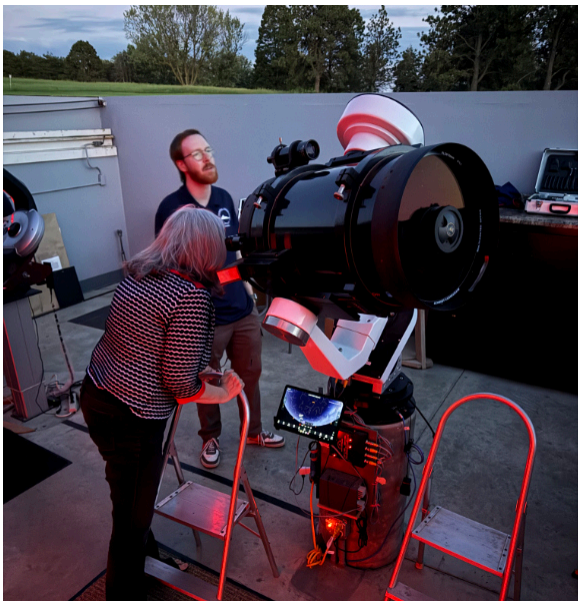
Venus Moon Occultation 6-17-26
By Brett Boller
Friend Ne
Handheld from Samsung S26 Ultra

Astrophotography

Pelican Nebula by Brett Boller
Taken 6/11/2026 from Friend NE
146 - 3 min subs, 100 Flats, Dark Flats, Darks.
Askar FRA600 600mm @ F5.9 / ZWO ASI2600 Duo
Processed in Pixinsight and Photoshop

Photos from Hyde Observatory

John Reinert



Saturday night June 13th at Hyde.

Caelum Hubl and patron get a fix on Mercury using the 14" Celestron.

Above: John Reinert looking at Mercury.

Venus, Jupiter, and Mercury at the tree line, 9:42pm. 12MP iPhone 24mm camera f1.78 ISO 800, 1/20th second exposure.

Mercury as captured through 10x50 binocular. iPhone, 12 MP 24mm f1.78 ISO 1000, 0.8sec exposure.

From the Archives, June, 1994

It looks like everything is in order for the 1st Annual Nebraska Star Party, which will be held at Merritt Reservoir, July 7-10. Get ready for DARK skies!

TEE SHIRTS
At the May meeting, we presented three designs for tee-shirts. The club voted on the designs and the winner was a design by Brian Schaaf. After the meeting, due to popular demand, it was decided that we would also place an order for the second most popular design. The orders have now been placed. The color will be royal blue with black printing. Orders may be picked up at the June meeting or at the star party (see Dave Scherping). Make checks payable to Prairie Astronomy Club. The cost of the teeshirts is $8.50 each. This is more than the $5.90 quoted at the meeting because the original estimate was for a white shirt and we failed to include setup and screen costs. If we were unable to contact you and you wish to purchase a tee-shirt, a few extras were ordered and will be available at the star party and at the July meeting (Extras will not be sold at the June meeting except to NSP attendees).

PROGRAMS
Due to lack of participation, there will not be any presentations given at the star party. Perhaps next year. Since we won't need to rent the meeting tent, we will apply the allocated money toward door prizes.

DOOR PRIZES...
I've had a great response to the letters I sent requesting door prizes for the star party.

We've also received some from members and, during an executive committee meeting, the club officers voted to have the club donate two door prizes. To date, door prizes include: "The Sky" for Windows donated by Bisque Software "A View Of The Universe" by D. Malin donated by Sky Publishing 3 subscriptions to "Clear Skies" donated by Sky Bear Publishing $35 gift certificate & NGT 18 Video donated by JMI Free coating on a 20" or smaller mirror donated by QSP 7.4 mm Plossl Eyepiece donated by Tele·Vue 1 pair of electric socks donated by Tom Miller Tele-Vue eyepiece case donated by Tom Miller Observing Log for Messier Objects donated by Dave Scherping CCD Atlas donated by PAC Deluxe Sky Atlas 2000 donated by PAC Also, along with the gift certificate, QSP is offering a 5% discount on mirror coating to all members of the Prairie Astronomy Club!

BE SURE TO SIGN UP FOR DOOR PRIZE DRAWINGS (before 7:00pm Saturday). A sign-up sheet will be located at

Archives, continued

the observing area. Please write each attending family member's name on a separate line, as each is eligible to win.

SPECIAL ASSIGNMENT.. Jason Stahl has volunteered to be the official NSP Clear Skies Coordinator. If by small chance clouds are encountered, please see Jason immediately so he can promptly remedy the situation!

DAY ACTIVITIES... There's plenty to do at Merritt during the daytime hours, including: Fishing - Inquire at Merritt Trading Post Boat Rentals - Inquire at Merritt Trading Post Pontoon: $110/day $35/ hour 16ft boat w/ motor $65/day $15/hour 14 ft boat w/o motor $25/day $5/hour

Canoeing/Tubing - Bob Leavitt has agreed to organize a canoe trip on the Niobrara for Friday. Tentative time is 10:00 am - 2:00 pm. Cost is approximately $25/ canoe & $10/tube. Contact Bob at 488-5335 if you are interested. Bob needs to know headcount for reservations, so contact him ASAP. Swimming — Merritt Resort or state park. Solar Observing - At the observing site. Dining - Smith Falls Canyon Restaurant - 3 miles N of Merritt Trading Post. Snake River Falls - 3 miles N of Merritt Trading Post (behind Restaurant) Fort Falls - 14 miles NE of Valentine Smith Falls - Somewhere up near Valentine. Hiking

NSP AGENDA... Thursday July 7: Check-in, set-up camp, etc. Sunset OBSERVING Friday July 8: 10am-2pm Canoeing! tubing on the Niabrara (contact Bob Leavitt ASAP if interested) 6:00 pm BBQ (location to be announced at NSP) Sunset OBSERVING Saturday July 9 7:00 pm Door Prizes (at the Observing Area) 1,000,000 B.C. Award Gaseous Nebula Award Sunset OBSERVING Sunday July 10 Depart in Awe A map of the Merritt Reservoir area is enclosed. The observing area is located on the south side of the lake and is within walking distance of the Snake Campground. Suggested camping area is Snake Campground or observing site. Obtain part permit at the Merritt Resort. Late arrivals (after dark) are requested to park at the Snake Campground and walk to the observing area. If necessary, another member can then guide you to the observing area with your parking lights on. If anyone needs directions or any other information pertaining to NSP, contact: Dave Scherping, Tom Miller

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.

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.