Reflections

The Newsletter of the Popular Astronomy Club

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August 2023

REFLECTIONS from the President

Dale Hachtel

After an active July for PAC public programs, we have slowed down somewhat in August. But there's still plenty going on, and plenty to see in the night sky.

This month, most planets are too close to the Sun to observe, or are rising late at night. While Saturn is up at about 9 p.m., Jupiter and Uranus don't show up until after midnight.

The Summer Triangle is still high in the evening sky, and the Great Square of Pegasus will be rising above the horizon in the east. There are many interesting double stars to observe, such as Albeiro, Mizar, Cor Caroli, Polaris, and the Garnet Star.

Though not nearly as bright as stars, galaxies and nebulas are often easy targets in the summer sky. The International Space Station can sometime be seen; check the schedule of when it might be overhead at spotthestation.nasa.gov. Other satellites can also be seen, whether you were looking for them or not.

All of these objects and more will be available to inspire our guests at our public observing sessions in August, weather permitting. And we have an opportunity in August for a special astronomical event.

That event is the Perseid meteor shower, which we will be able to observe while it is at its peak at the PAC Picnic at Paul Castle Observatory on Saturday, August 12. As a bonus, the waning Moon won't rise until about 3 a.m., assuring darker – along with, we hope, clear – skies.

On August 7, Carl Wenning, immediate past chair of the North Central Region of the Astronomical League (NCRAL), will make a presentation on image intensifiers at the Windmill Restaurant in East Moline. Weather permitting, we will head to the Castle Observatory afterwards to see how image intensifiers work on our observatory telescope.

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I'll close with a personal note. As many of you know, I was injured in a hiking accident in June. As a result, I am still wearing a neck collar and so find it very difficult to do daily activities such as eating, sleeping, walking, reading, and even using a computer to write this column.

It's been difficult to "keep looking up" with the neck collar, so using binoculars to look at objects on the horizon has been my only option. When I do this, the objects I'm trying to see are often blurred due to wildfire smoke in the atmosphere or haze brought on by high humidity. I am slowly getting better, though, and hope to be able to look up again soon.

I'd like to thank Dino Milani, PAC's Vice President, for stepping in and assuring that PAC activities would go on without interruption. Thanks also to Past President Al Sheidler for helping to keep things running smoothly, even while he's taken on additional responsibilities for NCRAL.

Thank you to all club members for your participation in PAC, and to all who've sent "get well soon" wishes. I wish all of you the best, and remind you to keep looking up!

ANNOUNCEMENTS / INFO

NCRAL Seasonal Messier Marathon Program

NCRAL's Seasonal Messier Marathon observing program is NOT designed to qualify observers for the Astronomical League's Messier Observing program; the two programs are unrelated and observing requirements are quite different. In the NCRAL program, the main requirement is to quickly observe and essentially check off items from one of four seasonal lists of Messier objects as noted in the section to follow.

NCRAL recognition will consist a suitable printed certificate and a 3⁄4-inch enameled star pin (a different color for each season). There will be no direct cost to the membership for participating in the award program; the cost of the program (pins, certificates, mailers, postage) will be borne by the Region as a benefit of affiliation. Relevant program documents are linked below

NCRAL Seasonal Messier Marathon Rules

NCRAL SPRING Seasonal Messier List

NCRAL SUMMER Seasonal Messier List

NCRAL AUTUMN Seasonal Messier List

NCRAL WINTER Seasonal Messier List

interruption. Thanks also to

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If you have questions or request, or want more information on PAC, send an e-mail to: popularastronomy-club@gmail.com

SUMMARY OF JULY PAC MEETING

The Popular Astronomy Club held a general membership meeting at the Butterworth Center in Moline on July 10 at 7 p.m.

Sixteen (16) PAC members and guests were present for the membership meeting, with another eight joining the meeting via Zoom, including guests and members of other astronomy clubs in the region.

PAC Vice President Dino Milani called the meeting to order; Dino led the meeting in place of PAC President Dale Hachtel, who was unable to attend in person due to health issues but did join via Zoom.

Dino began the meeting by greeting Michael Donatsch, a new PAC member, and welcoming him to the club.

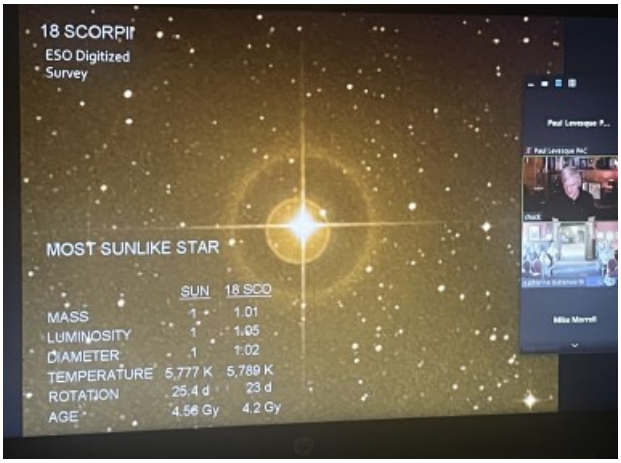
The minutes of the June meeting, posted as a story in the July issue of Reflections, were then approved by voice vote.

During the meeting, PAC member Pam Kollar was presented with the basic Outreach Award from the Astronomical League. The Outreach Award honors individuals who promote the hobby of astronomy and raise awareness of the night sky in the community. Pam was honored for her active participation at PAC's public events and her willingness to interact with visitors.

The meeting proceeded with presentation titled "Extreme Astronomy" by Chuck Allen, vice-president of the Astronomical League, who made the presentation via Zoom.

During the presentation, Chuck discussed telescopes, space travel, planets, moons, mountains, stars, galaxies, clusters and black holes. He outlined those that were currently known to be the largest, highest, closest, furthest, hottest, coldest, most massive, brightest, and darkest currently known.

Chuck also talked about many "firsts" among astronomical discoveries and manned and unmanned space missions. He presented



The presentation included a slide on 18 Scorpii, the most 'Sun-like' star known. (See page 8 for a photo of 18 Scorpii.)

information on some unique objects, including 18 Scorpii, a star in the constellation Scorpio that is very close in size to our own Sun and also shares other characteristics with the star at the center of our Solar System.

After the presentation, a few member observations were displayed. Those present were reminded to pick up their new t-shirts if they had not done so already.

Dino then reviewed upcoming club events, including meetings and public outreach. One of the highlights of these events will be a special presentation on image intensifiers by Carl Wenning, which will take place at the Windmill Restaurant in East Moline on August 7.

The meeting adjourned at 8 p.m. Before adjournment, members were reminded that there would be no regular monthly meeting in August, in lieu of the annual PAC Picnic at Paul Castle Observatory on August 12.

Note that there will also be no regular monthly meeting in October, when the annual PAC Banquet will be held.

The next membership meeting at the Butterworth Center will be held on September 11, and will feature a smorgasbord of presentations by PAC members.

Annual PAC picnic set for August 12

If you come to the picnic, remember to bring your own beverage and chair.

The Popular Astronomy Club will hold its annual picnic on Saturday, August 12, at the Paul Castle Observatory in Milan beginning at 6 p.m. All PAC members and their guests are welcome to attend.

Those attending are asked to bring a main menu item (e.g. something for the grille), a dish to pass, and non-alcoholic beverages. Also, bring your own chair.

An observing session will be held as the skies darken, so feel free to bring your telescope or binoculars. The night of the picnic coincides with the peak of the annual Perseid meteor shower, the views of which will not be hindered by moonlight since the crescent Moon will not rise until after 3 a.m.

Extra tables and charcoal for the grille are needed, as is help with setting up the tables and grille and with cleanup and hauling out waste after the picnic. If you're available to help in these and other ways, or would like more information, contact Wayland Bauer via email at bauerwp@gmail.com.

Because of the picnic, no regular membership meeting will be held at the Butterworth Center in August. October's monthly meeting will not be held due to the annual PAC Banquet on October 14; look for more information on the banquet in the next few issues of *Reflections*.

Presentation will focus on image intensifiers

Carl Wenning peers through the TCAA's PlaneWave telescope.

The Popular Astronomy Club will host a presentation titled "Telescopic Viewing with an Image Instensifier" that will be held at the Windmill Restaurant in East Moline on Monday, August 7.

The event will begin with a social hour and dinner beginning at 5:30 p.m., followed by the presentation. If the sky is clear, attendees are welcome to come out to the Paul Castle Observatory after the talk for a demonstration of the use of image intensifiers, using the observatory's Celestron telescope.

The demonstration will be given by Dr. Carl Wenning, immediate past president of the North Central Region of the Astronomical League. A member of Twin City Amateur Astronomers, Carl is editor of NCRAL's Northern Lights newsletter and is an Astronomical League Master Observer.

Carl taught physics at Illinois State University and was the school's observatory director from 1978 to 2000. He gave a talk at NCRAL's 2023 convention about innovations in amateur astronomy, which prompted a request that he visit PAC and make a presentation.

During the presentation, Carl will discuss the latest night vision technology available to amateur astronomers and explain the use of image intensifiers. He regularly uses white light night vision technology with the 20-inch PlaneWave telescope at TCAA's Sugar Grove Observatory, and so has many experiences and practical recommendations to share.

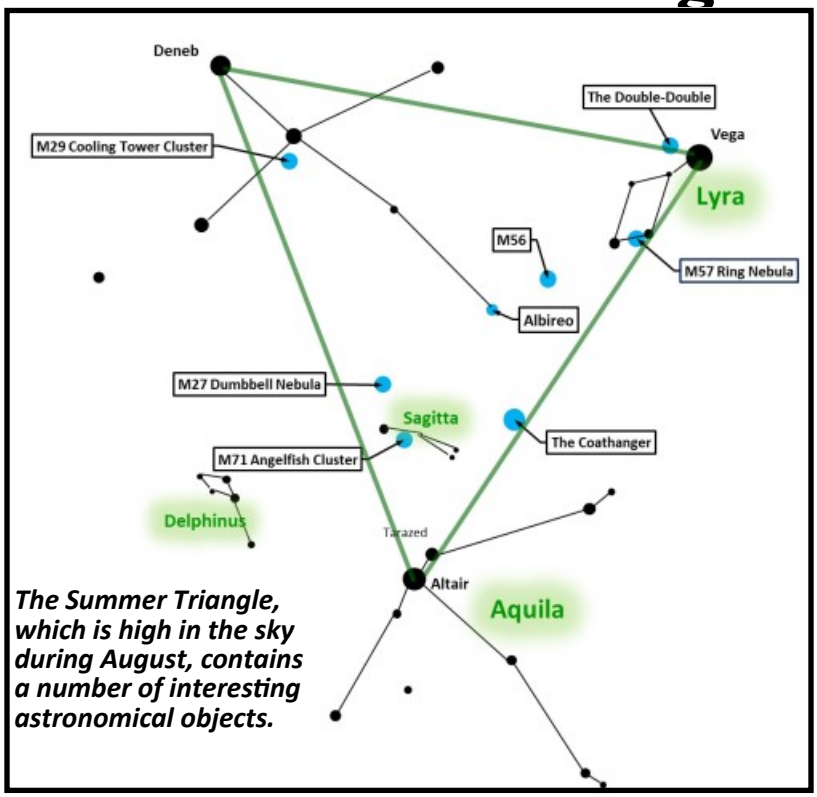
Carl will conclude his presentation with information and updates on NCRAL and the Astronomical League.

Take a look at the Summer Triangle

The movement of the Earth in its orbit causes different constellations to be visible at different times of the year. Every summer, there is a grouping of three very bright stars which form an easily recognizable triangle high in the sky.

The stars forming what is commonly called the Summer Triangle, are Vega, Altair and Deneb. These stars are so bright that they can be seen even from an urban environment.

During the late summer months, take an opportunity to view these stars about an hour after sunset. Once the sky darkens, the Summer Triangle will be directly overhead.



The Summer Triangle, which is high in the sky during August, contains a number of interesting astronomical objects.

Vega is the brightest and Deneb is the dimmest of the three stars forming the Summer Triangle, but all three should be visible even with a bit of light pollution. Vega resides in the constellation of Lyra and is one of the most luminous stars in the Sun's neighborhood. It radiates about 60 times as much energy as the Sun.

At a distance of about 25 light-years from earth, Vega is "relatively" close. Vega, a very hot bluish-white star, is three times the size and more than twice as massive as the sun, and is the fifth brightest star in the night sky, as well as the second brightest seen from the Northern Hemisphere.

Altair is the brightest star in the constellation of Aquila and is the 12th brightest star in our sky. At a distance of 16.7 light-years from Earth, Altair is one of the closest stars visible to the naked eye.

Altair is also a large star, weighing in at 1.8 times the mass of our Sun and 11 times as luminous. It is one of the fastest rotating stars, taking only nine hours to spin once on its axis. In comparison, the Earth requires 24 hours and the Sun nearly a month to make one rotation.

This means Altair's spin speed at its equator is roughly 600,000 miles per hour! As a result, Altair is squished way down by centrifugal force and would appear very oval shaped if viewed from a nearby planet.

Deneb is the brightest star in the constellation Cygnus, the Swan, and the 19th brightest star in the sky. It is a very large, blue-white supergiant star.

Deneb is probably the most distant star visible to the unaided eye. In fact, Deneb is so far away from us that it is difficult with existing technology to accurately measure its distance. It may be as much as 3,000 light-years or more from Earth; if so, it would be one of the largest and most luminous stars in

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Summer Triangle

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the Milky Way galaxy, roughly 300,000 times as luminous as our Sun!

To have this much radiative power, Deneb must be a stupendous leviathan so large that were it to be substituted for the Sun in our solar system, the Earth would be engulfed within it.

Within the boundaries of the Summer Triangle, you can find a number of other fascinating objects. About a third of the way between Altair and Vega is a small cluster of stars known as the "Coat Hanger." A pair of binoculars should reveal this grouping of stars, which most people agree does indeed look like a coat hanger. Give it a try and see what you see!

If you have access to a small telescope, use it to target Albireo in Cygnus. This star, which is visible to the unaided eye in a dark sky, is actually a splendid blue and gold colored double star. In my opinion, this is the most beautiful double star in the sky.

Another double star located very near Vega is the "Double-Double," which is in fact a quadruple star. Any small telescope reveals the double, but if you have access to a good quality scope and high magnification, you will notice that each of the doubles is in fact a double.

If you have access to a good telescope, use it to seek out two other very interesting residents of the Summer Triangle known as planetary nebulas. A planetary nebula actually has nothing to do with a planet.

Planetary nebulas are formed when average-sized stars, like the Sun, run out of nuclear fuel. When this happens, the star "burps" off stellar material in the form of wispy shells of gas which the expand out into space.

The Summer Triangle has two very fine examples of planetary nebulas: M27 (the Dumbbell Nebula), and M57 (the Ring Nebula). The Ring Nebula is just a little south of Vega and, in a good telescope, looks like a little gossamer bubble or smoke ring floating in space. The Dumbbell is somewhat larger and, depending on how active your imagination is, may appear like a two-lobed, fuzzy patch of light resembling a dumbbell.

The famous 'Double-Double' star, which is actually a pair of double stars that appear to be near one another, can be found in the Summer Triangle near the bright star Vega.

There are three noteworthy star clusters within the Summer Triangle. One of them, M29, is an open cluster also known as the "Cooling Tower" because it resembles the parabolic contours of a power plant cooling tower. The other two clusters in the vicinity are M56 and M71. They are classified as globular clusters, and look like tight globe-like groupings of stars.

These globular clusters are mini satellite galaxies of the Milky Way. Typically, they are about 100 light-years in diameter and consist of thousands of stars, all gravitationally involved with each other.

In a globular cluster, there are so many stars so tightly packed together that, on a planet orbiting one of the component stars, it would never be dark; there would be so many bright stars in the sky that there would be no night!

There is night on Earth, so when it does get dark and the skies are clear, take a good look at the Summer Triangle.

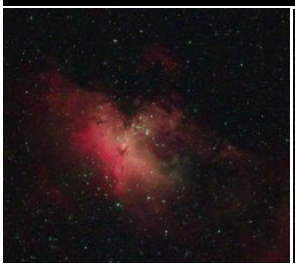
Alan Sheidler

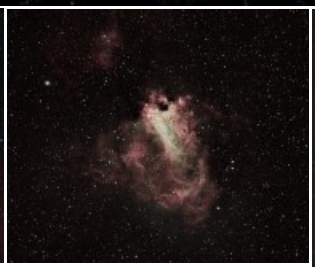
MEMBER OBSERVATIONS
& CLUB ACTIVITIES

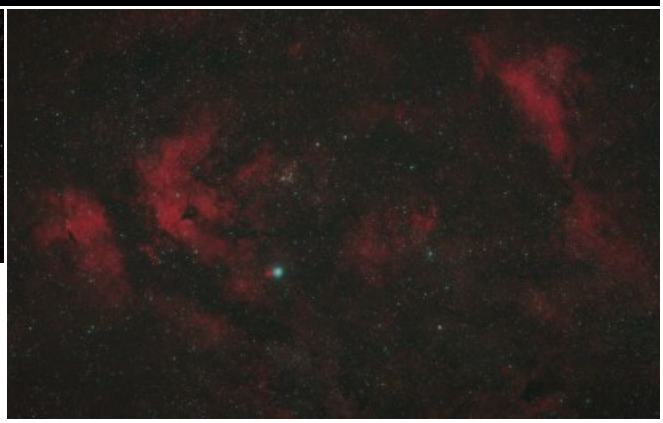
The weather was far from clear on July 7 at Silver Bell Hollow Alpaca Farm in Illinois City, where PAC held a public outreach event. Nevertheless, about 50 guests showed up for the event, which was 'hosted' by Galileo, an alpaca born on the farm. Kids who attended were able to create astronomical artwork, and everyone who came enjoyed a display of astrophotos by Rusty Case.

Haze and wildfire smoke in the air meant that conditions were not ideal for the monthly Niabi Zoo public observing event on July 15. Still, about 30 guests showed up, and were able to take a look at objects such as the double stars Albireo and 17 Cygni and the M29 'Cooling Tower' star cluster and the Coat Hanger cluster. Those attending also enjoyed a display of astro-photos and free astronomy literature. PAC members who were there include the Holt family (Tim, Mary, Alex and Hugh), Dino Milani, Wayland Bauer, Al and Sara Sheidler, Pam Kollar, Eva Davison, Rolando Gamino and Rusty Case.

MEMBER OBSERVATIONS
& CLUB ACTIVITIES



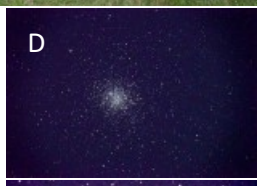


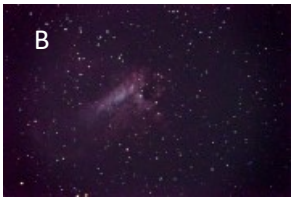


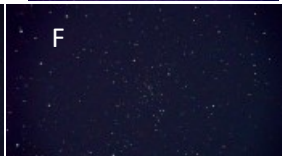
Here are more awesome images captured by Byron Davies in July. The photos of the Eagle Nebula (M16, left) and the Swan Nebula (M17, center) were taken July 9 at Castle Observatory, while the photo of the Butterfly Nebula (ICI 1318, right) was taken at Menke Observatory on July 6.

The weather actually cooperated on July 1 when PAC set up for some public observing at Illiniwek Campground. The event is usually one of the most popular of the year, and that was no exception this time as an enthusiastic crowd estimated at over 100 turned out to look through six telescopes set up by PAC members as well as the PACMO. When the sun went down, a number of images were captured, including one of 18 Scorpii (arrow), a star that is nearly a carbon copy of our Sun, meaning that our Sun would appear just like it from 18 Scorpii's perspective. PAC members who gathered for the group photo above were Rolando Gamino, Rusty Case, Dino Milani, Dan Cusack, Al and Sara Sheidler, Pam Kollar and Eva Davison; Dale and Joann Hachtel and John Douglas were also there.

MEMBER OBSERVATIONS
& CLUB ACTIVITIES





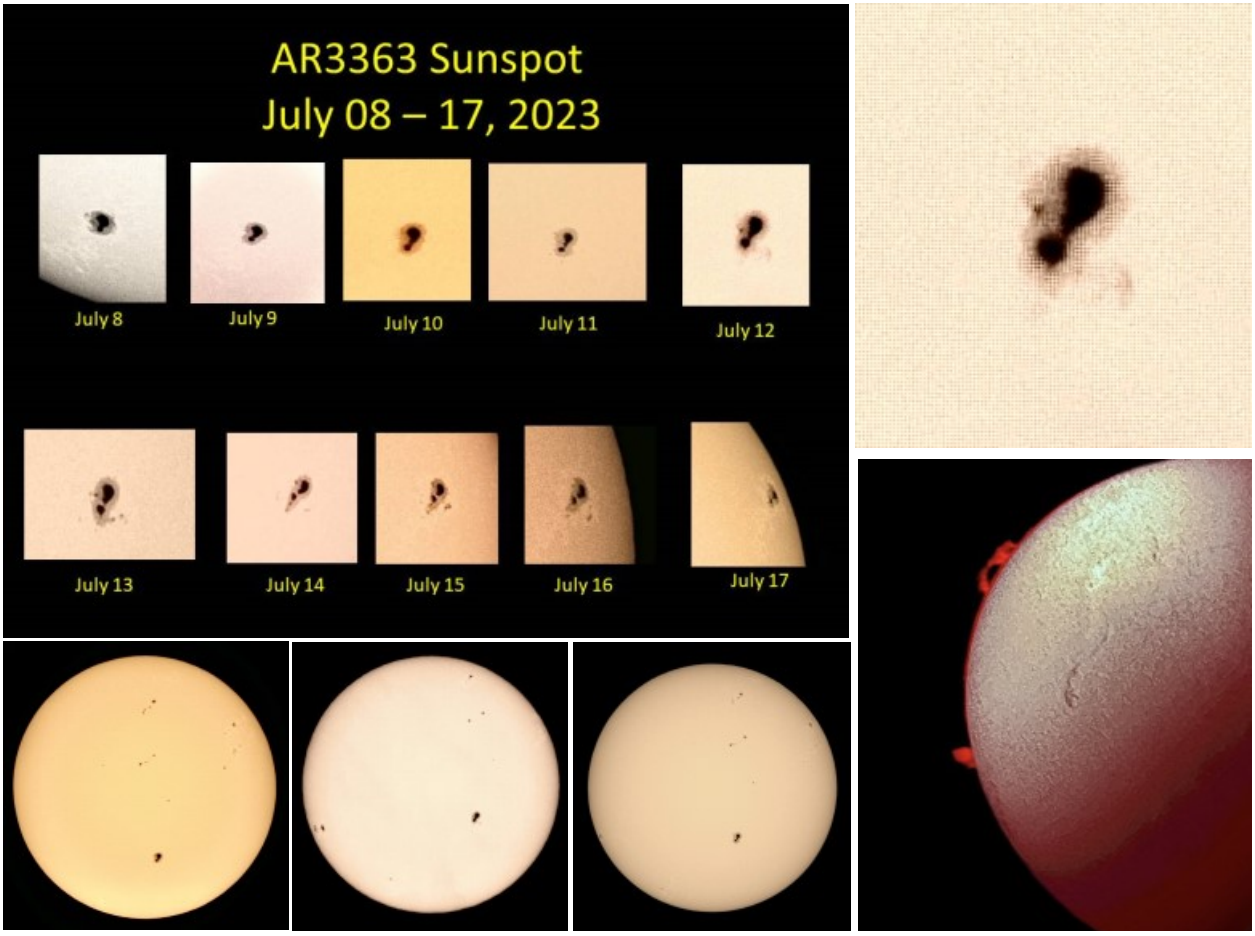


Byron Davies, Dan Cusack, Rolando Gamino and Al Sheidler, joined later by John Douglas (not pictured) gathered at Castle Observatory on July 9, a clear night when the Milky Way was distinct, as seen in these beautiful photos. Al aimed at open clusters, in pursuit of an Astronomical League certificate, and captured these images: M16 (A); M17 (B); Berkley 82 (C); M22 (D); M27 (E); Trumpler 16 (F).

PAC held a public outreach event on June 28 during the "Stellar!" Vacation Bible School at Salem Lutheran Church in Moline. The presentation was well received by kids in four different age groups and received plenty of positive feedback. Thanks to Al Sheidler, Anne Bauer and all the PAC members who made this outreach a great success!

MEMBER OBSERVATIONS
& CLUB ACTIVITIES

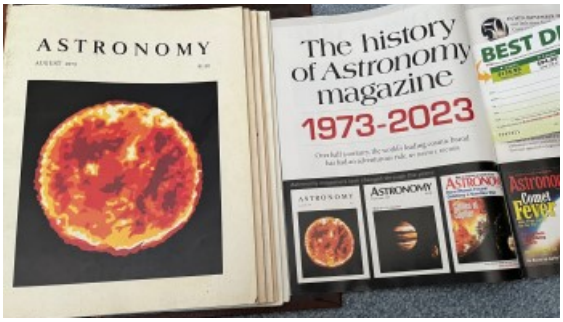
Al Sheidler broke out his LX200 10-inch telescope on July 17 and took these solar images, through a 60mm H-alpha filter borrowed from Wayland Bauer and a neutral density filter. As a bonus, he took a daytime photo of Venus in its crescent phase.



Roy Gustafson did a lot of solar observing and imaging in July, a month of high sunspot activity. Roy tracked a sunspot designated as AR3633 during the July 8-17 timeframe ; shown are a composite which he created plus a closeup of the sunspot taken on July 12. Above are three photos taken on July 10, 11 and 12 showing the movement of AR3633 and other sunspots; the closeup view of solar flares was taken on July 18.

MEMBER OBSERVATIONS
& CLUB ACTIVITIES

Al Sheidler, Rob McDonald and Rolando Gamino did some visual observing at Castle Observatory on July 18, using both the observatory's telescope and Rolando's recently acquired Explore Scientific 152mm triplet refractor. Though no images were taken, the three enjoyed a relaxing evening looking at a number of double stars and deep sky objects, comparing the view from the two different optical systems.

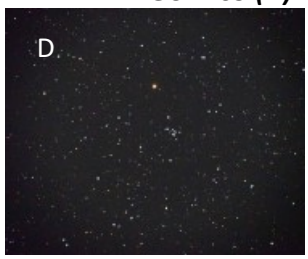


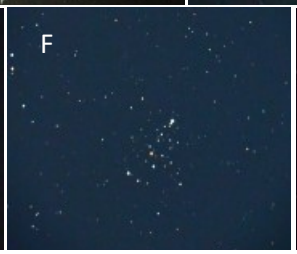
Astronomy ***magazine celebrates its 50th anniversary this year, and Roy Gustafson has accumulated a collection of most (but not all) copies published through the years.***

Al Sheidler and Dan Cusack met at Castle Observatory on July 21 for an observing session, during which Al tried to check off a few items on the Astronomical League's 'Two in the View' observing program. At bottom is a photo taking in both NGC 6826 (the Blinking Planetary Nebula) at left and the 16 Cygni double star; above are photos of the Ring Nebula and M71 (the Angelfish Cluster).

The **Astronomical League** offers more than 70 different observing programs, ranging alphabetically from "Active Galactic Nuclei" to "Youth Astronomer." The programs are designed to provide goals and directions for observations and cover a full range of observable objects and skill and experience levels. You can earns certificates and pins for completing the programs. Click on this link - Observing Programs - to view the list.

MEMBER OBSERVATIONS
& CLUB ACTIVITIES





Rolando Gamino and Al Sheidler stayed at Menke Observatory following the QCAS meeting on July 17 and did some observing and imaging on an cool night. Al was out for open clusters on the Astronomical League list. Some of the images captured include M13 (A); Berkley 58 (B); NGC 40 (C); M22 (D); NGC 7510 (E); M103 (F) IC 1396 (G); NGC 7209 (H).

NCRAL asks members to update email addresses

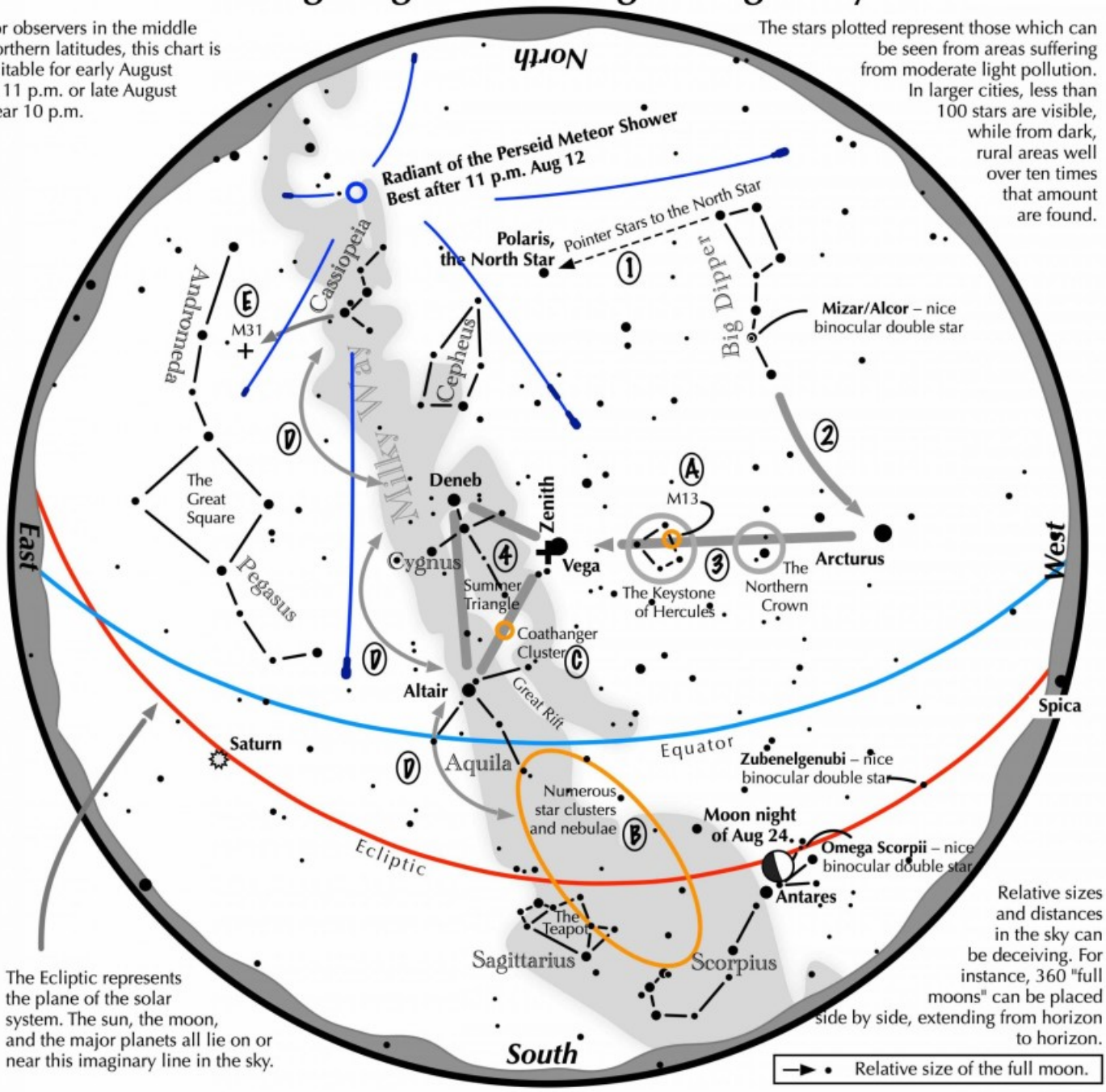
The North Central League of the Astronomical League has over 1,900 members, but only about 400 of them receive emails containing a link to Northern Lights, NCRAL's quarterly newsletter. That's because of the many NCRAL members with email addresses that are either missing or incorrect.

All PAC members are automatically members of the Astronomical League and its North Central affiliate. Individual members must enter and update their e-mail addresses in NCRAL's database; no one can do this for you.

Along with the newsletter, you'll receive messages about upcoming events and other timely announcements. Messages are blind-copied, meaning that your email address is not visible. In addition, NCRAL promises to never share or sell your contact information to outside entities.

To sign up, or to check if your email address is correct, go to this site: https://tinyurl.com/NCRAL.

Navigating the mid August Night Sky



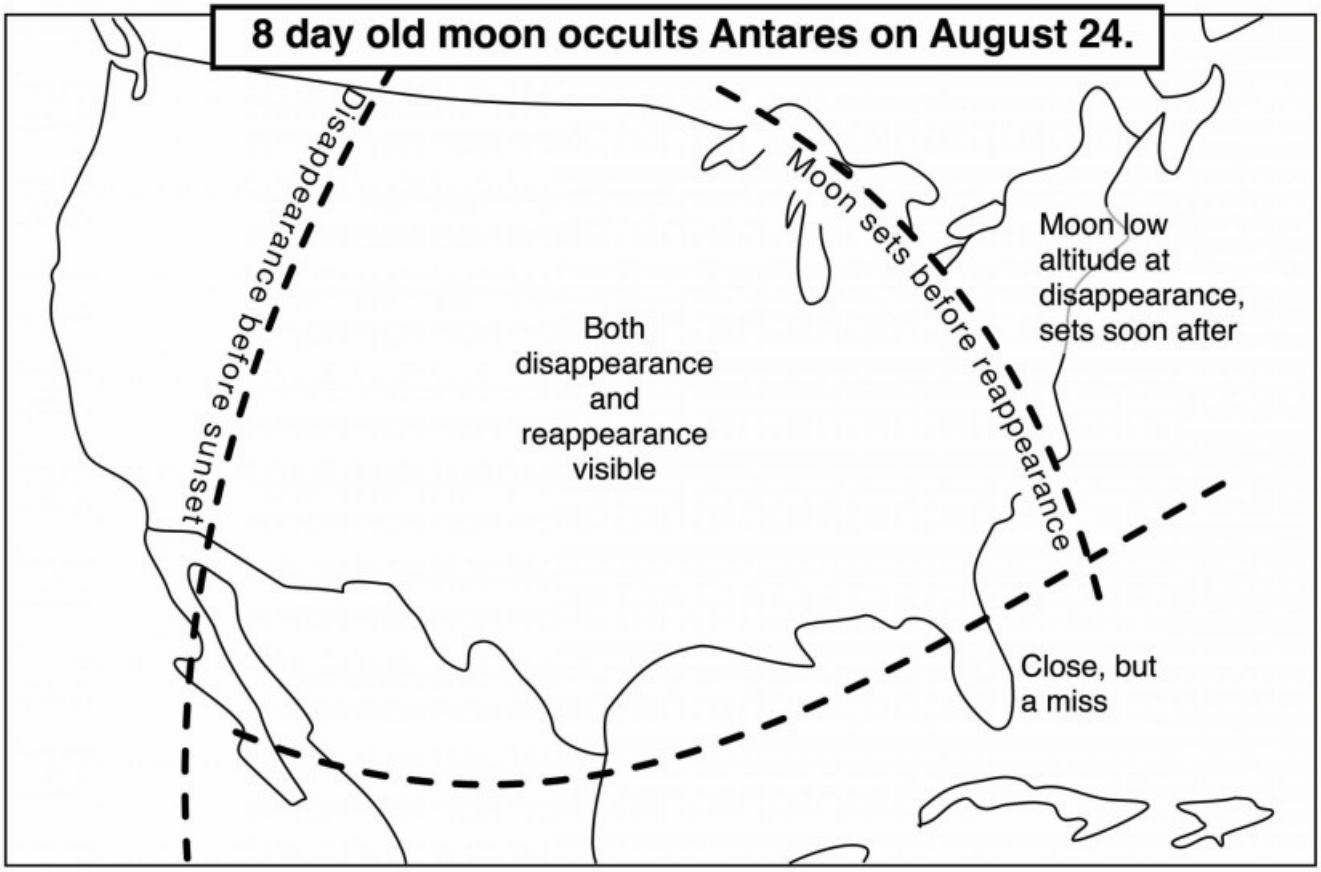
Navigating the mid August night sky: Simply start with what you know or with what you can easily find.

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 intersects Arcturus, the brightest star in the June evening sky.
3. To the northeast of Arcturus shines another star of the same brightness, Vega. Draw a line from Arcturus to Vega. It first meets "The Northern Crown," then the "Keystone of Hercules." A dark sky is needed to see these two dim stellar configurations.
4. High in the East lies the summer triangle stars of Vega, Altair, and Deneb.

Binocular Highlights

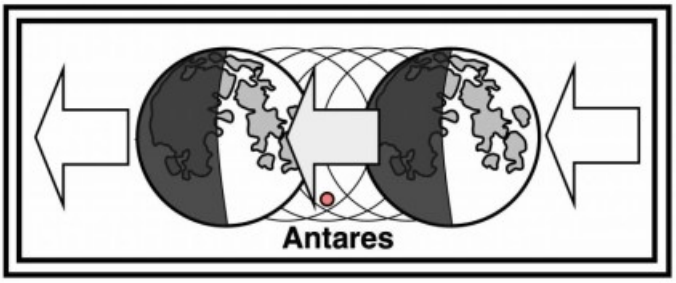
A: On the western side of the Keystone glows the Great Hercules Cluster.
B: Between the bright stars Antares and Altair, hides an area containing many star clusters and nebulae.
C: 40% of the way between Altair and Vega, twinkles the "Coathanger," a group of stars outlining a coathanger.
D: Sweep along the Milky Way for an astounding number of faint glows and dark bays, including the Great Rift.
E: The three westernmost stars of Cassiopeia's "W" point south to M31, the Andromeda Galaxy, a "fuzzy" oval.

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



The full occultation event on Aug. 24 of Antares by the moon occurs for the central part of the US. Both coasts will not see the complete event. For disappearance and reappearance times in your area, visit the International Occultation Timing Association webpage:
http://lunar-occultations.com/iota/bstar/0824zc2366.htm

Start looking in the southwest shortly after sunset on August 24. Watch the moon slowly approach Antares, then suddenly block it. Binoculars will give better view.



Occultations demonstrate the moon's eastward orbital motion as Earth's rotation causes it to move in a westward arc across the night sky.

August 2023

NGC 663 rediscovered

One of the first astronomy books I ever read was John Benson Sidgwick's "Introducing Astronomy." The book was published in 1959, a year after his death.

In this book was a large section in which each constellation was introduced, along with interesting things to see in each one. I particularly recall Cassiopeia, in which, between the two fainter stars Delta and Epsilon Cassiopeiae, lies the open cluster NGC 663.

I first saw that cluster during the late summer of 1962. All Sidgwick had to say about it was that it can be spotted through binoculars. It didn't look like much, but I did spot it and then promptly forgot about it for more than 60 years.

The other night, while conducting my search for comets, I encountered this star cluster again. This time, it was one of the loveliest things I have ever seen. It moved me to tears.

I have since learned that NGC 663 is a group of about 400 mostly big, bright, bluish suns. On a really dark night, it might even be visible with the naked eye.

An unusual feature of this cluster is that it happens to be positioned directly in front of a molecular cloud, which somehow blocks the background stars and allows the cluster to be even more beautiful. In a field of view already rich with stars in the Milky Way, the cluster stands out like a heavenly flower filled with diamonds.

I do have more to say about Sidgwick. In my youth I considered him a famous astronomer, but he is known mostly for the few books he wrote, especially "Introducing Astronomy."

Sidgwick enjoyed wide interests. He loved to hitchhike across the United States and Canada, and he edited a book of the shorter poems of Walter Savage Landor. Landor had an unusual life, getting expelled both from Rugby School and from Oxford, where he allegedly shot a gun in his dormitory room.

Reading about him led me to his delightful poem, "The Evening Star:"

Thy star O Venus! often changes
Its radiant seat above,
The chilling pole-star never ranges
'Tis thus with Hate and Love.

And 'tis thus I return to NGC 663, a cluster of stars that warms my heart. Where have I been for the last 60 years, religiously watching the sky, searching successfully for comets, enjoying many far-off stars and galaxies, but largely ignoring one of Nature's most wondrous splendors?

NGC 663, as imaged by Dominique Mackenzie

Coming soon: The Super Blue Sturgeon Moon

On August 1, catch a full Moon rising in the east just 30 minutes after sunset. We are seeing the entire sunlit side of the Moon as it is nearly (but not quite) in line with the Sun and Earth.

The Farmer's Almanac calls this month's Moon the "Sturgeon Moon", for the time of year when this giant fish was once abundant in the Great Lakes. Cultures around the world give full Moons special names, often related to growing seasons or celebrations.

As the Moon rises later and later each night, the bright sunlit part appears to get smaller or "wane" – we call this a waning gibbous Moon. About a week later, on August 8, we see only one half of the Moon alight. At this phase, the Moon rises around midnight and sets around noon.

Have you ever seen the Moon in the daytime? You may notice this phase towards the southwest in the morning sky. Hold up a ball or egg beside it and see how the Sun lights up the same part.

By August 16, the Moon has gone through its crescent phase and is now only showing its dark side towards the Earth. Did you know the dark side and the far side of the Moon are different? The Moon always shows the same face due to the gravitational pull of Earth, so the far side of the Moon was viewed by humans for the first time in 1968 during the Apollo 8 mission.

The Moon's dark side is pointed at us almost all the time. As the Moon orbits the Earth, the sunlit side changes slowly until the full dark side is facing us during a new Moon. When the Moon is just a small crescent, you can sometimes even see the light of "earthshine" reflecting off Earth and lighting up the dark side of the Moon faintly.

As the Moon reappears, it becomes a waxing (or growing) crescent Moon, best seen in the afternoon. By the time it reaches the first quarter on August 24, we see the other half of the Moon lit up.

On a sunny day, you can use a ball on a stick to duplicate the waning crescent Moon.

At this point, the Moon passes through Earth's orbit and marks the spot where the Earth was just three hours prior, the time it takes to move the distance between the Moon and Earth.

The full Moon on August 30 is referred to as a blue moon. Blue moons are not actually blue in color; the term refers to the second full Moon in any month.

Since it takes 29.5 days to complete the cycle from full to new and back to full, most months will see only one full Moon. But occasionally, you'll fit two full Moons into one month, hence the phrase "once in a blue moon."

We see a blue moon about once every three years on average, with the next occurring in May 2026. The full Moon in August appears larger in the sky than any other full Moon this year – an unofficial "supermoon."

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Blue Moon

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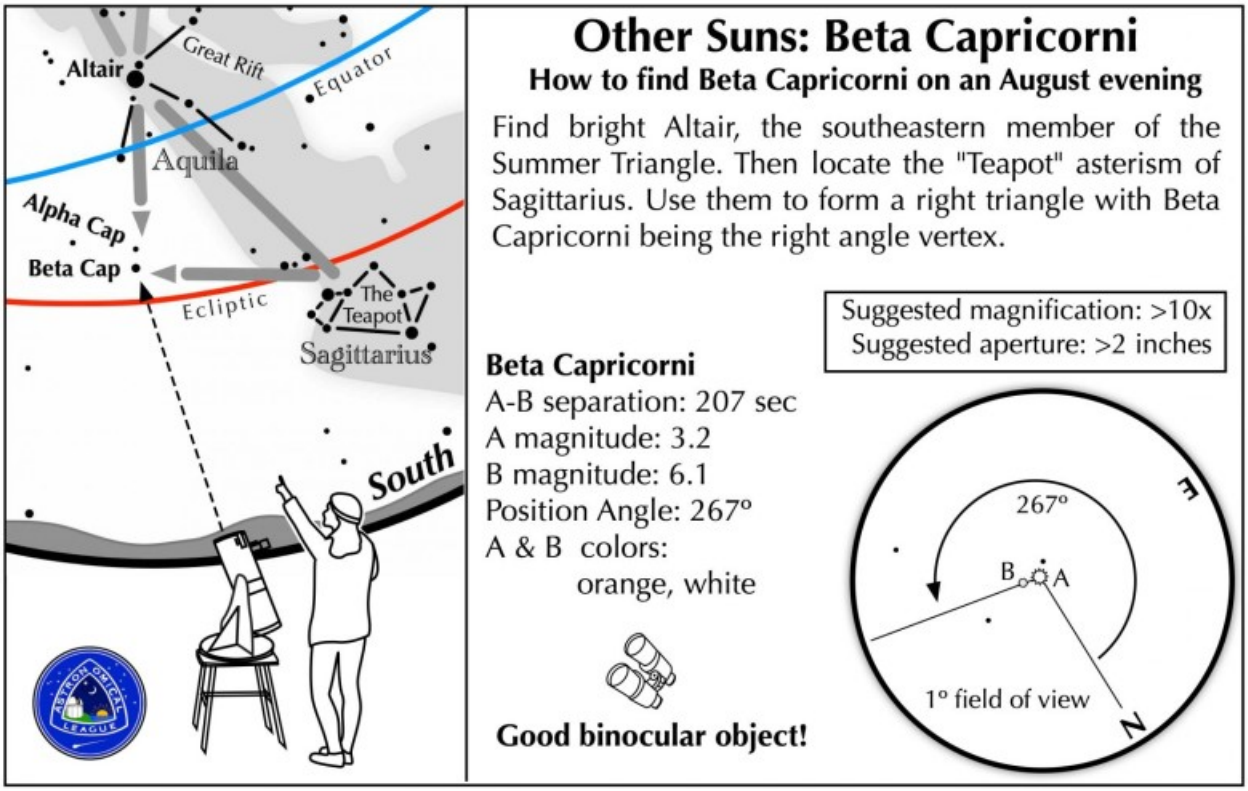
A supermoon appears larger than average because it is closer to Earth in its slightly elliptical orbit. The difference in apparent size between the smallest and largest full Moon is about the size difference between a quarter and a nickel. Even at its largest, you can always cover the whole Moon with your pinky extended at arm's length.

Follow the Moon with us this month and keep a Moon journal if you like; you may be surprised what you discover! Learn more here: moon.nasa.gov/moon-observation/daily-moon-guide.

Linda Shore

This article is courtesy of NASA's Night Sky Network program, which supports astronomy clubs and is dedicated to outreach. Visit night-sky.jpl.nasa.gov to learn more.

'Earthshine,' as it was seen from the International Space Station just after sunset on July 31, 2021.



PAST ISSUES OF REFLECTIONS AVAILABLE HERE ON PAC'S WEBSITE

UPCOMING EVENTS

Date: August 12, 2023

Event: ANNUAL PAC PICNIC
Location: Paul Castle Observatory
NO MONTHLY MEETING
AT THE BUTTERWORTH CENTER

All these events, dates and times are tentative and subject to change! Please check your emails for any updates and changes!

UPCOMING EVENTS

- **August 7:** Presentation on image intensifiers, Windmill Restaurant, East Moline
- **August 12:** Annual PAC Picnic *(no regular monthly meeting)*
- **August 12:** Meteor shower party, Pleasant Valley Junior High School *(QCAS event)*
- **August 19:** Public observing at Niabi Zoo
- **September 8:** Wondrous Day / Starry Night event, St. Mary's Monastery, Rock Island
- **September 11:** PAC meeting, Butterworth Center; smorgasbord of presentations
- **September 12:** Riverdale Astronomy Night, Riverdale Middle School, Port Byron
- **September 15-17:** Eastern Iowa Stary Party, Menke Observatory
- **September 16:** Public observing at Niabi Zoo *(September 23 rain date)*
- **September 17:** 'Porch Party' at Butterworth Center; PAC info table, activities
- **October 14:** Annual PAC Banquet, Riverfront Grille, Rock Island
- **October 21:** Public observing at Niabi Zoo *(October 28 rain date)*
- **October 30:** Public observing at Runners Park, East Moline *(November 3 rain date)*
- **November 18:** Public observing at Niabi Zoo *(no rain date)*

QCAS to host meteor shower party

The Quad Cities Astronomical Society, in cooperation with Pleasant Valley High School Astronomy Club, will host a meteor shower viewing party on Saturday, August 12, at Pleasant Valley Junior High School, located at 3501 Wisconsin Street in LeClaire.

The viewing party will begin at dusk, approximately 8:30 p.m., and will be held on the school's south parking lot. The event is free and open to the public. Those attending should park in the lot in front of the school, and then walk to where the meteors will be observed.

August 12 is the night when the annual Perseid meteor shower, usually one the year's best, is expected to peak. This year, moonlight will not hamper the view of any "shooting stars," as the waning crescent Moon will not rise until after 3 a.m.

QCAS members will also have telescopes set up so attendees can get a look at other astronomical objects visible that night. Updates on the event will be posted to the Facebook page of the Quad Cities Astronomical Society, at QCAS Facebook.

From Space.com: The Perseids are caused by Earth passing through debris (bits of ice and rock) left behind by Comet Swift-Tuttle, which last passed close to Earth in 1992. The Perseids peak when Earth passes through the densest and dustiest area. Years without moonlight, such as 2023, see higher rates of meteors per hour; in outburst years, such as in 2016, the rate can be up to 200 meteors an hour.