

Reflections The Newsletter of the Popular Astronomy Club ESTABLISHED 1936

REFLECTIONS from the President



Spring this year has not been very good to amateur astronomers, with most evenings having significant cloud cover. We did have two reasonably good ob-

serving nights for our Niabi Zoo public outreach programs.

With meeting restrictions being relaxed, many of the organizations for which we provided amateur astronomy observing programs before COVID have requested programs this year. Several additional organizations have also requested our programs.

We will need to provide programs on most weekends and several weekdays this season, and will need more members to help with this function. A list of confirmed activities is in this issue, and several more are being considered. Participation in these public outreach programs is an interesting and enjoyable activity, so please consider helping at these events.

For our monthly meeting in May we have Matt Dieterich, Technical Services Manager at PlaneWave Instruments, to talk about PlaneWave technology and astrophotography.

In June, we have planned Geoff Chester of the U.S. Naval Observatory to present "Sky With Ocean Joined: Scaling the Stars at the U.S. Naval Observatory, 1830 to the Present"

In July, we have planned an "Update on the OSIRIS-Rex Mission" by Delores Hill of the University of Arizona's Lunar & Planetary Laboratory.

It's time for the Birdies for Charity donations again. The most effective way to make a charitable donation to the Popular Astronomy Club is to give through Birdies for Charity, associated with the John Deere Classic golf tournament. That's because donations made through Birdies for Charity will be matched with a bonus donation of up to 10 percent.

Note that the tournament starts earlier than usual this year, and the deadline to guess the number of birdies in the tournament with your donation – and have your name entered in a prize drawing – is June 10. Donations only, without the birdies guess, can still be made up until the tournament begins on June 29.

It's time to start observing again. The Paul Castle Memorial Observatory has a fine new telescope and is waiting for additional members to make use of its capabilities. Watch your email for announcements of observing sessions at the observatory, or see one of the officers to schedule time at an observing session to learn how to best use our telescope capabilities. Keep looking up! May 2022

EAGUE



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MSRAL convention set for June 3-4



Amateur astronomers from across the Midwest, the U.S. and the world are invited to

meet in St. Louis the weekend of June 3-5 for the 2022 Convention of the Mid-States Region of the Astronomical League.

The MSRAL convention is being hosted by the St. Louis Astronomical Society, with most events held on the campus of Washington University. The opening event will be the "Star B-Q," held Friday evening at the Jefferson College Observatory in Hillsboro, south of St. Louis. A banquet featuring a buffet will be held on Saturday night.

Lodging at a group rate is available at the Knight Center on Washington University's campus; please mention "MSRAL" when making a reservation to get the discounted rate. To reserve a room, call the Knight Center at (314) 933-9400, toll-free (866) 933-9400.

The registration fee is \$40, with additional fees charged for any meals purchased. May 27 is the deadline for meals and advance registration.

To register for the convention, and for more information, go to this link: <u>https://</u> www.slasonline.org/events/ <u>msral</u>.

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

HOW'S THE WEATHER?



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

Birdies for Charity donations can benefit PAC



The Popular Astronomy Club is again soliciting and accepting donations through Birdies for Charity, the annual effort to support local charitable organizations associated with the annual John Deere Classic golf tournament.

"Chipping in" for PAC through Birdies for Charity is one of the most effective ways to give to the club, because a bonus of at least 5 percent – and possibly as much as 10 percent – is added to all donations. Last year, PAC received more than \$700 in donations through

Birdies for Charity.

The tournament begins on June 27, about one week earlier than the traditional date, so the deadline for giving has also moved up. Though donations are accepted right up to the start of the tournament, you must submit your donation and entry no later than June 10 to be entered in a random drawing.

To enter the drawing, guess the number of birdies that will be shot by the golf pros competing in the tournament; last year's total was 1,905. The grand prize is a two-year lease on a Lexus RS350; other prizes will also be awarded.

Birdies for Charity donations can be made by going to <u>birdiesforcharity.com</u>, then clicking on the "DONATE" button. Note that the minimum online donation is \$20. PAC's "Bird" number, under "Your Charities," is 2046. A mail-in form is also available at <u>birdiesforcharity.com/</u><u>about/pledge-forms</u>.

Dufek family sends donation, thanks PAC

In memory of Terry Dufek, the former PAC secretary and "Reflections" editor who died in March, his siblings and members of the Dufek family sent a very generous donation of \$7,000 to the Popular Astronomy Club. The donation was accompanied by this note:

From Terry's siblings:

We wish to thank you for being the wonderful friends you were to Terry for the many years through the club.

We've read all the wonderful tributes to him by way of computer and smartphone e-mails. You are all very kind to speak of him in very glowing terms. Terry's interest in anything "stars" began in his very young years, with the first "Star Trek" TV series.

Terry's brother, Steve, bunked with him in Illinois for three years in the 1970s. His interest just grew, as did his "Star Trek" paperback book collection. And then "Star Wars" came to be, but he had no telescope.

One Christmas shopping season, Steve wondered if a telescope might be the right gift. Needless to say, it was the perfect thing for Terry. My gosh, what a fire for astronomy was lit from his first telescope!

It is wonderful to hear about all he did for the club, and did in sparking the interest of many children and other Quad Cities residents in the cosmos.

Terry and siblings wish to donate this memorial gift to PAC, that his work and devotion may carry on, and grow and glow.

May features a 'Blood Flower Moon'

I have to admit to always having been interested in speed. How fast things move has always fascinated me.

How fast is a jet airliner, an automobile, a galloping horse, a garden snail or a horsefly? Certainly a jet airliner is faster than a garden snail on a miles per hour (or kilometers per hour) basis – but is this the best way to compare their speeds? What if we consider

the size of the object, and compare how long it takes for the speeding object to move its own length?

For example, let's say a Boeing 747 (which is 70.6 meters in length) is cruising at 900 kilometers per hour. If you divide the length of that airliner by its speed, you find that it takes slightly less than three-tenths of a second to travel its own length. That sounds pretty fast to me.

But compare the 747 to a horse. I won't bore you with the math, but a galloping horse can traverse its own length in under twotenths of a second. Therefore, a horse is actually faster than the 747 when you factor speed by size.

What about a horsefly? I was surprised to learn that a male horsefly pursuing a female has actually been measured zipping along at 145 km/hr! On an absolute basis, that's fast. But factoring in his diminutive size (1 inch or 25 millimeters), that male horsefly moves his own length in an amazingly quick 0.00063 seconds. Now that's really fast!

So now consider the lowly garden snail. We've all seen one of these little guys cruising along at a breakneck one-one-hundredth (.01) km/hr. This is indeed slow on an absolute basis, but considering the average size of



GRAPHIC BY ALAN SHEIDLER

a snail is perhaps 1.2 inches, and dividing its length by its speed, we see that a garden snail moves its own length in just under 11 seconds, which is faster than I thought.

Now let's consider an object that is moving really fast – the Moon. The actual speed of the Moon varies a little bit because its orbit is slightly elliptical. But its average speed as it orbits the Earth is approximately 3,660 km/hr – more than 2,200 miles per hour.

Everyone would agree that this is fast, right? But now consider that the Moon is 3,475 kilometers in diameter. Adjusting the Moon's speed for its size, we find that it travels its own diameter in just under 1 hour – about 57 minutes, to be exact. Compared to a garden snail, the Moon is downright leisurely. In fact, the Moon is one of the very few objects which moves its own diameter in about one hour.

We'll get an opportunity on Sunday, May 15, to actually see the Moon's motion in real time. A lunar eclipse will begin that evening at about 9:28 p.m. Central time.

At that moment – assuming the sky is clear – we'll see the Moon entering into the darkest part of the earth's shadow, called the umbra. By 9:45 p.m. or so, you should see a

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Blood moon

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"bite" out of one side of the Moon's disk and watch it gradually grow in size as the eclipse progresses.

This partial eclipse phase will continue as the Moon dives ever deeper into the Earth's umbra for about an hour. By 10:29 p.m., the Moon will be completely within the umbra, and continue to be totally eclipsed for approximately 85 minutes as it gradually traverses the Earth's dark shadow.

The Moon will be deepest into the umbra at 11:12 p.m. Totality will end at 11:54 p.m. when the Moon begins to reemerge from the umbra. The remaining partial phase of the eclipse will continue until 12:56 a.m. Monday morning as the Moon leaves the umbra and is gradually reilluminated by sunlight.

During the partial eclipse phases, the Moon will move its own diameter from the light to shadow and then back again. The time required to do this is a little more than one hour because the Moon's path is slightly offset from hitting the center of the earth's shadow. This means the Moon will have to travel slightly farther to transition from light to dark and vice versa.

Nevertheless, a lunar eclipse is a good opportunity to witness the motion of the Moon in real time, and prove to yourself that the Moon does indeed move its own diameter in about one hour.

This month's lunar eclipse will also be an excellent opportunity for anyone wanting to enjoy one of nature's most interesting and beautiful astronomical events. As lunar eclipses go, this will be one of the best in a long time.

During the eclipse, the earth's dark umbra shadow will cover the Moon's surface for 85 minutes, during which there will be no direct sunlight on the Moon's surface. Theoretically,



This 'blood moon' photo was taken in November 2021 by Alan Sheidler during the last lunar eclipse.

the Moon should be invisibly dark during the time it is within the umbra; however, there will still be some light refracted from the earth's atmosphere finding its way to the lunar surface.

As a result, we will see a dimly illuminated Moon which may take on a very interesting color – a shade of a dull red, brick red, orange, copper, or even gray. We won't know the colors we will actually see until the eclipse happens.

Imagine you're an astronaut standing on the surface of the Moon and looking up in the sky during the eclipse. What you see would be something beautiful and miraculous.

As you watch the Earth pass in front of the Sun, you would still see the Earth's atmosphere glowing like a reddish halo as sunlight is refracted or bent around the Earth. This reddish halo is caused in the same way we have red sunsets or sunrises on Earth.

The refracted sunlight from the Earth's atmospheric halo dimly illuminates the Moon's *Continued on Page 6*

Constellations that didn't make the cut



In 1922, the International Astronomical Union announced the names of 88 constellations that would be used to form the boundaries of sky maps going forward. To mark the centennial of adoption of the modern constellation list, Reflections is looking back at some constellations that were once found on some sky maps, but didn't make the final cut.

You may snicker like a middle schooler when I say "Turdus," but it's simply the Latin word for thrush, a common bird of several species. *Turdus Solitarius* means "solitary thrush" and was the name given to a constellation drawn by French astronomer Pierre Charles Le Monnier in a catalog published in 1776. Le Monnier located it at the end of Hydra's tail, just below Libra.

The star pattern was apparently meant to represent the Rodrigues solitaire, a nowextinct flightless bird related to the dodo once found on Rodrigues Island in the Indian Ocean. British astronomer Alexander Jamieson replaced Turdus Solitarius with another bird – Noctua, the owl – in his star atlas published in 1822. The same area of the sky was later given over to the hermit bird by another British astronomer, John Flamsteed.

No birds occupy the area of the night sky once occupied by these feathered friends, and the stars of Turdus Solitarius are now counted as part of Hydra and Libra.

Blood moon

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surface. So even though there is no direct sunlight falling on the portion of the Moon lying within the umbra, it will still be visible to us as a dim reddish color.

The colors seen on the Moon may be very different depending on if there have been recent volcanic eruptions, thick clouds, or thunderstorms on Earth prior to the eclipse. Dust particles and clouds can filter the sunlight, causing dramatic shades of red.

Total lunar eclipses are referred to as a "Blood Moon" because they can look almost blood red. The May full moon is sometimes called a "Flower Moon" because May is the month when flowers bloom.

This month's lunar eclipse could be called the "Blood Flower Moon" but, regardless of what we call it, it should be a good one. Seek a location with a clear view of the southwestern sky and bring a pair of binoculars or a small telescope.

Often when we hear or read the word "eclipse," it's followed by some kind of warning to protect your eyes. This warning, however, only applies to a solar eclipses. During a lunar eclipse, there is no danger to your eyes, so you can safely look at it without any eye protection and use binoculars or a telescope without a filter.

As you may have gathered, a lunar eclipse is only possible when the Moon is full. Because the full moon is very bright, its light drowns out dimmer, deep sky objects.

As the lunar eclipse proceeds, however, the Moon will dim way down and allow other nearby objects to shine through. Watch as the Moon dims and the other stars nearby pop into view.

You will not want to miss this event. Let's hope for clear skies and keep looking up.

Alan Sheidler

SUMMARY OF PAC APRIL MEETING

The Popular Astronomy Club held its regular monthly meeting on April 11 at 7 p.m. at the Butterworth Center in Moline. Five PAC members attended the meeting "live," with another 20 joining via Zoom, including members of other astronomy clubs in the region.

After calling the meeting to order, PAC president Dale Hachtel noted that Terry Dufek had passed away one month ago today and presented a tribute to Terry that appeared in "Northern Lights," the newsletter of the North Central Region of the Astronomical League. It was also noted that an article about Terry had appeared that day in both the Quad City Times and Rock Island Argus, as part of the monthly "Skywatch" series.

Later in the meeting, Rusty Case showed a mock-up of what a display honoring Terry would look like, and asked for suggestions on a quote that could be placed on the display below a photo of Mars taken by Terry.

The meeting proceeded with a feature presentation by Jim Kovac of the Chicago Society for Space Studies, whose topic was "Fantastic Space Discoveries: Theories of Solar System Formation."

In his Zoom presentation, Jim noted that astronomers had long accepted the "classical theory" of the formation of the Solar System. According to this theory, the Solar System evolved from a cloud of gas and dust rotating around the Sun, with the planets forming in approximately the orbits they now occupy.

But after the discovery of the first exoplanet in 1992, astronomers soon realized that the Solar System occupied by Earth was an "outlier" with characteristics not found in other planetary systems. This raised questions about the classical theory of Solar System formation, and to alternate theories about how it came to be in its present form.

Mercury is the closest planet to our Sun, Jim said, yet most other systems that have



During his presentation, Jim Kovac explained how recent discoveries have disrupted the classic theory of how the Solar System was formed.

been discovered have planets and other objects in much closer orbits in relation to their central star. Many systems also have a planet which Jim described as a "hot Jupiter," a massive planet which orbits very close to its star when compared to our own Jupiter, in some cases as close as Earth is to our own Sun.

Distant planetary systems also typically have "super Earths," rocky planets that are up to ten times as large as Earth. In addition, the fact that Mars is both much older and much smaller than Earth, yet orbits further away from the Sun, is an anomaly when compared to other systems.

Based on these discoveries, many astronomers now believe that, instead of forming in their present orbits, the planets we now know migrated toward and away from the Sun. Specifically, Jupiter moved toward the Sun, into a position similar to the "hot Jupiters" found elsewhere. The gravitational pull of Saturn, however, caused Jupiter to move away from the Sun. The process also cleared objects orbiting near the Sun, explaining why Mercury is now the closet planet.

The six-degree tilt of the Sun's axis in relation to the rest of the Solar System has also

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April PAC meeting

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led astronomers to question the classical theory of its formation. This tilt has led astronomers to search for a very large and very distant "Planet Nine" with a gravitational effect that could have caused the tilt and impacted the orbits of the other planets.

As a result of these discoveries, and the alternate theories that were developed as a result, Jim said that it's now thought by many that Earth is a "second generation planet"

Technology focus of May meeting

"Technology for the Astronomical Community & More" will be topic of the feature presentation at the next regular membership meeting of the Popular Astronomy Club. The meeting will be held on Monday, May 9, beginning at 7 p.m. at Moline's



Matt Dieterich of PlaneWave will speak at PAC's May meeting.

Butterworth Center and via Zoom.

The presentation will be made by Matt Dieterich, technical services manager at PlaneWave Instruments. As technical services manager, Dieterich oversees PlaneWave's observatory installations program and works on marketing and sales efforts by sharing the story behind PlaneWave.

From its headquarters in Adrian, Michigan, PlaneWave Instruments provides observatory-class instruments for serious professional and amateur astronomers. More information is available at the company's website, at <u>https://planewave.com.</u> that wasn't among the first planets formed in the Solar System. In addition, Mars may have survived the many violent collisions that occurred during Jupiter's back-and-forth migration, accounting for its advanced age and smaller size.

Jim concluded by noting that "Earth is in a sweet spot, and enjoy it while it lasts," since the Sun is expected to become a red giant within five billion years, expanding to a size that will envelop Earth's present orbit.

Following the feature presentation, some member observations were presented, including a recent photograph of the moon taken by Roy Gustafson and some sunset photos taken by Paul Levesque during a Caribbean cruise. Photos taken that day by Roy of the recently renovated planetarium at Augustana College were also shown.

Alan Sheidler then displayed photos he'd taken, along with Rusty Case, at the Paul Castle observatory on March 15, and also some that were taken on March 19 during PAC's first public outreach event of 2022 at Niabi Zoo.

Dale then noted that PAC would once again be accepting donations through Birdies For Charity and outlined how donations could be made. The deadline for donations is earlier than in past years, Dale said, because the John Deere Classic tournament has moved up one week on the professional golf schedule.

PAC's upcoming schedule was then presented by Dale, who noted that the upcoming spring and summer months included many public outreach events and that volunteers would be needed for these events.

The meeting adjourned at 8:45 p.m. (note that this meeting was not recorded). The next PAC membership meeting is scheduled for Monday, May 9, at 7 p.m. at the Butterworth Center and via Zoom.



public viewing at Niabi Zoo under a full moon on April 16. During the session, Dino Milani captured an image of the



M48 star cluster using his Canon D6 Mark II camera, and an image of the full moon at an exposure of 1/400 of a second; note the crater details on the northeast side.

Roy Gustafson took this image showing sunspots on April 27 using a Canon 200D camera. On April 10, Roy went out and attempted to image M1 and M78; though he fell short there, he did use Stellina to grab a photo of the first-quarter moon, which had a ring around it.





Dale Hachtel (left) and John Douglas went out on a clear, calm and chilly night on April 26 to do some observing at Paul Castle Observatory. Though they used the telescope to view objects such as the Beehive Cluster and some double stars, no images worth sharing were captured. Still, it was a good opportunity to use the observatory, become familiar with its operations, and prepare for future viewing sessions.



The lobby at Augustana College's John Deere Planetarium was renovated recently, and Roy and Jan Gustafson paid a visit there on April 11 and sent back these photos. To learn more about the renovation, click here: https://www.augustana.edu/about-us/news/ planetarium-lobby-makeover-out-world



Origins of the universe topic of free lecture

MEMBER OBSERVATIONS

& CLUB ACTIVITIES

"How our Universe was Made: All from Nothing" will be the topic of the next lecture in the Brinson Lecture series sponsored by the University of Chicago.

The lecture, which is free and open to the public, will take place on May 16 beginning at 6 p.m. The event will be livestreamed via Vimeo at <u>https://vimeo.com/</u>event/2000541/30853c70ce.

Carlos Frenk, who is director of Institute for Computational Cosmology at Durham University in the United Kingdom, will conduct the lecture. In that position, Professor Frenk leads a theoretical cosmology research group. The group collaborates with cosmologists from around the world in using supercomputers to build models that show how our universe could have evolved from simple beginnings to the complex structures found today.

The May 17 lecture will address fundamental questions about the origins of the universe and the formation of galaxies, and recent progress made in answering these questions.



April 2022

Pegasus

In the late summer of 1964, I was leaving the Observatory of the Royal Astronomical Society's Montreal Centre with some friends, one of whom was David Zackon. I asked the group if they would like to drop by my house to observe with a 3.5-inch reflector. Before they had a chance to answer, David upped the ante by asking if we'd like to come by his house to look through an 8-inch reflector.

When we arrived at his place, we found a very competent 8-inch reflector with a focal ratio of 7. It gave us wide field views of Jupiter and Saturn plus a few other nice things to see. It was rather pleasant.

Just a week later, David telephoned to invite me for a second look. As we used the telescope to view Saturn, David was adjusting one of the mount's large bolts. As I looked at Saturn, I remarked, "I think that's Titan," after seeing one of the planet's large moons. David looked up toward me and said, "No, it is still loose."

David told me that he was soon to leave for his university year, and each year he had a tradition of lending the 8-inch to someone who would use it. He then began asking me a few questions, and I told him that I had observed most of the planets, especially Jupiter.

"And the Moon, I suppose."

"Yes. And just a few weeks ago I completed the lunar training program."

"The whole program? All three hundred craters?"

"Yes, and the 26 (lettered A to Z) mountain to other fine Pegasus telescopes. One of ranges, valleys, and the Straight Wall." them is a large 20-inch belonging to Laric

"You did all this with a 3 ½-inch telescope?"





The original Pegasus telescope is shown at left; Lario Yerino is shown with another scope named Pegasus.

"Yes."

"David, you've just borrowed an 8-inch telescope."

It is difficult to describe the feeling of joy I felt as the new telescope and I returned home. I spent the rest of the night getting acquainted with it.

The following day, I decided to name it Pegasus, after the large satellites that NASA was launching at the time in on their new Saturn 1 rockets. When my grandfather found out about this a few days later, he was thrilled. "I am especially proud of David," he said, "for having the insight to know that you would put it to good use."

Over the next several months, Pegasus was used heavily. When David returned from school, Constantine Papacosmas, another good friend, suggested that my parents purchase the telescope for me. David agreed, and we settled on a \$400 price for it.

On December 17, 1965, I used Pegasus to begin my comet searching program. Twentytwo years later, on the evening of October 11, 1987, Pegasus and I discovered Comet C/1987Y1.

The name Pegasus has since been attached to other fine Pegasus telescopes. One of them is a large 20-inch belonging to Lario Yerino from Kansas City. I used this fine tele-

Night Lights Auroras, Noctilucent Clouds, and the Zodiacal Light

Have you spotted any "night lights?" These phenomena brighten dark skies with celestial light ranging from mild to dazzling: the subtle light pyramid of the zodiacal light, the eerie twilight glow of noctilucent clouds, and most famous of all, the wildly unpredictable and mesmerizing auroras.

Auroras, often referred to as the northern lights (aurora borealis) or southern lights (aurora australis), can indeed be a wonderful sight, but the beautiful photos and videos shared online are often misleading. For most observers not near polar latitudes, auroral displays are relatively rare and faint, and without much structure, more gray than colorful, and show up much better in photos.

However, geomagnetic storms can create auroras that dance and shift rapidly across the skies with several distinct colors and appear to observers much further away from the poles – on very rare occasions even down to the mid-latitudes of North America!

Geomagnetic storms are caused when a magnetic storm on our Sun creates a massive explosion that flings a mass of particles away from its surface, known as a coronal mass ejection (CME). If Earth is in the path of this CME, its particles interact with our planet's magnetic field and result in auroral displays high up in our ionosphere.



Comet Neowise flies above noctilucent clouds in this photo taken in July 2020.

As we enter the active period in the 11year solar cycle, CMEs become more common and increase the chance for dazzling displays! If you have seen any aurora, you can report your sighting to the Aurorasaurus citizen science program, at aurorasaurus.org.

Have you ever seen wispy clouds glowing an electric blue after sunset, possibly towards your west or northwest? That wasn't your imagination; those luminescent clouds are noctilucent clouds, also called polar mesospheric clouds.

PMCs are thought to form when water vapor condenses around "seeds" of dust from vaporized meteorites – along with other sources that include rocket launches and volcanic eruptions – around 50 miles high in the mesosphere. Their glow is caused by the Sun, whose light still shines at that altitude after sunset from the perspective of ground-based *Continued on Page 13*

Shown are some of the patterns created by auroras, as seen from Iceland in 2014. The top row photos were barely visible to the unaided eye and were exposed for 20 to 30 seconds; the bottom row photos were exposed for just four seconds, and were clearly visible to the photographer.



Night Lights

Continued from Page 12 observers.

Noctilucent clouds are increasing both in frequency and in how far south they are observed, a development that may be related to climate change. Keeping in mind that observers closer in latitude to the poles have a better chance of spotting them. Your best opportunity to spot noctilucent clouds occurs from about half an hour to two hours after



sunset during the summer months. NASA's AIM mission studies these clouds from its orbit high above the North Pole.

You may have seen the zodiacal light without even realizing it; there is a reason it's nicknamed the false dawn! Viewers under dark skies have their best chance of spotting this pyramid of ghostly light a couple of hours after sunset around the spring equinox, or a couple of hours before dawn around the autumnal equinox.

Unlike our previous two examples of night lights, observers closer to the equator are best positioned to view the zodiacal light. Long known to be reflected sunlight from interplanetary dust orbiting in the plane of our solar system, these fine particles were thought to originate from comets and asteroids.

However, scientists from NASA's Juno mission recently published a fascinating study indicating a possible alternative origin: dust from Mars! Read more about their serendipitous discovery at: go.nasa.gov/3Onf3kN

Curious about the latest research into these night lights? Find news of NASA's latest discoveries at nasa.gov.

This article is courtesy of NASA's Night Sky Network program, which supports astronomy clubs across the USA and is dedicated to astronomy outreach. Visit <u>nightsky.jpl.nasa.gov</u> to learn more.

Pegasus telescopes

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scope one autumn while attending the Heart of America Star Party.

The third Pegasus belongs to Carl Jorgensen, one of my closest friends and someone I have known since 1963. He brings it each year to our Adirondack Astronomy Retreat in the mountains near Lewis, N.Y.

Under the peaceful and beautiful Adirondack sky, when my left eye touches the eyepiece of this telescope, my mind wanders back to those earlier years when I began using my Pegasus during the springtime of my life.



Date: May 9, 2022

Event: Regular Meeting @ 7 p.m. Location: Zoom / Butterworth Center Program: "Technology for the Astronomical Community & More" by Matt Dieterich, Technical Services Manager, PlaneWave Instruments, Inc., Adrian, Michigan ZOOM LINK: <u>https://us06web.zoom.us/j/82345942515?</u> pwd=SVpvaXArZUg0VVhndUp0ckpBcHBEQT09

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

MONTH	NEWSPAPER ARTICLES	MEMBER PRESENTATION	MEETING / PROGRAM
JUNE 2022	AVAILABLE	AVAILABLE	June 13 - Presentation: "Sky With Ocean Joined: Scaling the Stars at the U.S. Naval Observatory, 1830 to the Pre- sent" by Geoff Chester, Public Affairs Officer, U.S. Naval Observatory, Washington D.C.
JULY 2022	AVAILABLE	AVAILABLE	July 11 - Presentation: "OSIRIS-REx Mission Update" by Dolores Hill, Senior Research Specialist, Lunar & Planetary Laboratory, University of Arizona, Tucson, Arizona

UPCOMING EVENTS

- NIABI ZOO PUBLIC VIEWING: May 21, sunset; third Saturday of the month through November
- May 3: John Deere Middle School, Moline
- May 7: Astronomy Day: Bettendorf High School / Menke Observatory
- May 13-14: NCRAL Convention, Port Washington, Wisconsin (info: https://ncsf.info/ncral-vision-2022/)
- May 21: Boy Scout STEM Event at Loud Thunder Forest Preserve (day event / solar viewing)
- May 28: Astronomy Night at the American Doll and Toy Museum, Rock Island
- June 3: LeClaire Public Library, Summer Reading Kickoff
- June 4: Giant Goose Recreation Area (day event / solar viewing)
- June 4: Girl Scout campout at Scott County Park (night event)
- June 25: Public viewing at Illiniwek Forest Preserve, sunset
- July 16: QCAS public viewing at Menke Observatory
- July 19: Moline Public Library, Children's Program
- July 20: Kewanee Public Library (day event / solar viewing)
- July 31: Perseid meteor show public viewing, Pleasant Valley Middle School (QCAS event)
- August 5: Davenport Public Library, Eastern Avenue Branch, 'Reading Beyond the Beaten Path'
- August 13: Annual PAC Picnic (no regular monthly meeting)
- September 23-24: Eastern Iowa Star Party
- October 8: Girl Scout campout at Camp Liberty
- October 22: Annual PAC Banquet (no regular monthly meeting)

Volunteers are needed for the upcoming events listed above, and to make presentations at future meetings. Contact any club officer if you're interested; your participation makes PAC go!