

The Newsletter of the Popular Astronomy Club ESTABLISHED 1936

0

#### **REFLECTIONS from the President**



Our last Niabi Zoo observing session of the year was in November, ending a successful season of public outreach sessions.

Although there were five postponements or cancellations due snow, rain, wind and thunderstorms, the zoo was able to offer rain dates for most months, enabling us to have sessions in seven months during the nine-month season.

During this year, we have conducted 19 public observing sessions, including those at Niabi Zoo, with others hosted by local libraries, schools, and campgrounds. In addition, we have provided 16 semi -public observing sessions for groups such as school classes, scout troops and church groups.

Members had another 17 observing sessions at Paul Castle Observatory, some of which included guests of members. We're updating the observatory user manual and hope to get more members to make use of this first-class facility. Another 20 activities were held during the year, including our monthly meetings, members' attendance at regional conventions, and other educational and planning meetings.

That resulted in a total of 72 activities during the year, not including an additional 17 postponements or cancellations, mostly because of weather.

Plan to attend the December 11 meeting at Butterworth for a review by Roy Gustafson of our accomplishments during this year. This meeting will also be important, because we will have a business meeting and elect the officers to take us through the next two years.

If you have not yet renewed your membership, now is the time to do so. If you know someone with an interest in astronomy, invite them to join – everyone is welcome!

We already have several interesting programs planned for our meetings in 2024, along with several scheduled and requested public observing sessions, all reasons to keep looking up as we approach the New Year.

From my family to yours, I wish you and yours Happy Holidays and good health and happiness in 2024.

#### December 2023



## Page / Topic

- 2 Online course offers intro to astronomy
- 3 November meeting held
- 5 Star naming: Buyer beware
- 6 'Season of Light' show at Augie
- 7 Geminids peak in December
- 8 Orion is a winter wonder
- 15 99 eclipses and counting
- 16 Navigating the December sky
- 17 How to observe Jupiter's moons
- 18 PACMO ready for winter

## Online lectures offer intro to amateur astronomy

Our friends from the Kalamazoo (Michigan) Astronomical Society will present a free online series of lectures titled "Introduction to Amateur Astronomy" beginning on January 13.

The five-part series will be broadcast live via Zoom every other Saturday beginning at noon Central time. Each lecture will last about two hours.

The lectures will be recorded and broadcast later on the KAS YouTube channel. However, you must attend all five lectures "live" in order to receive a certificate of completion.

The dates and subjects of the lectures are as follows:

- January 13: "Our Place Among the Infinities."
- January 27: "Discovering the Night Sky."
- February 10: "Binocular Basics."
- February 24: "Telescope Tutorial."
- March 9: "The Art of Astrophotography."

To register, and for more information, go to this link: <u>https://www.kasonline.org/</u> <u>amastro.html</u>

Submissions to *Reflections* are always welcome! Send your photos, articles and other items to: levesgue5562@att.net

## **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 3/4inch 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?

eteob

weather 🌣 close to you



Astronomy Club Officers

Popular



**PRESIDENT** - Dale Hachtel 1617 Elm Shore Drive, Port Byron IL, 61275 Phone: (614) 935-5748

VICE PRESIDENT – Dino Milani 2317 29 1/2 Street, Rock Island, IL, 61201 Phone: (309) 269-4735

SECRETARY - Paul Levesque 5002 26th Avenue A Court, Moline, IL 61265 Phone: (309) 236-1726

**TREASURER** – Michael Haney 564 36th Avenue, East Moline, IL, 61244 Phone: (309) 755-7935

ALCOR – Roy E. Gustafson 11 Deer Run Road, Orion, IL, 61273 Phone: (309)526-3592

#### **DIRECTOR OF OBSERVATORIES** -

Rusty Case 2123 W. 16th Street, Davenport, IA, 52804 Phone: (563) 349-2444

PAST PRESIDENT - Alan Sheidler 3528 56th Street Court, Moline, IL, 61265 Phone: (309) 797-3120

#### **NEWSLETTER EDITOR -**

Paul Levesque Email: levesque5562@att.net Phone: (309) 236-1726

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

## SUMMARY OF NOVEMBER PAC MEETING

The Popular Astronomy Club held a general membership meeting at the Butterworth Center in Moline on November 13 at 7 p.m.

The meeting was attended in person by 23 PAC members and guests – the most for a membership meeting so far this year – with another 12 joining the meeting via Zoom, including guests and members of other astronomy clubs in the region.

PAC President Dale Hachtel called the meeting to order, and then introduced the guest speaker for the evening: Val Germann of the Central Missouri Amateur Astronomers, who joined the meeting via Zoom.

Val's presentation was titled "Astronomy on the Oregon and Santa Fe Trails," and showed how as-

tronomy played an important role in the exploration and settling of the American West.

Val began by noting that he was born and raised in a town in Missouri not far from the starting point of the Santa Fe Trail, and also near an observatory that sparked his early interest in astronomy.

His interest in the connection between westward-leading trails and astronomy really didn't begin until 2013, when he attended the Okie-Tex Star Party, where he heard that explorers packed astronomical instruments on western expeditions. He later visited a museum in La Junta, Colorado, where he saw a refracting telescope owned by Zebulon Pike, noted explorer, soldier, and namesake of a famous mountain.

Val explained that Pike and another noted explorer, John C. Fremont, took telescopes and other instruments with them in order to help survey and map areas of the West that were being opened to settlers.



During his presentation, Val Germann showed the scientific instruments that were carried by explorers of the American West. Al Sheidler (left) was presented an Astronomical League certificate from Roy Gustafson for completing the Advanced Imaging Open Cluster observing program.

> The Louisiana Purchase of 1803 considerably expanded the land area of the United

States; however, Val said, the maps that existed at the time were crude and did not accurately depict the borders between American territory and land then claimed by France, Spain and Great Britain.

To help better determine the borders, explorers such as Pike and Fremont took a number of scientific instruments with them, including telescopes, chronometers, sextants, compasses and barometers. These instruments were used to determine latitude, longitude and altitude at points along the trail.

One method used to determine exact location, Val said, was to observe the moons of Jupiter as they passed by the planet. The pathfinders also observed eclipses and other astronomical phenomena, and often invited members of native tribes to share in the

# November meeting

### **Continued from Page 3**

observations.

These observations were noted in journals kept by Pike and Fremont, which are still available and in print today. While it was first thought that Pike didn't keep a journal, owing to the fact that he was illiterate, Val noted that the journal was later discovered about 100 years after his expedition.

Those accompanying Pike sometimes became impatient with the frequent stops to perform observations, Val said. He also remarked on how amazed he was that the explorers were able to carry these delicate instruments over very rough terrain.

Val concluded by stating that he remained fascinated with this topic and that he was continuing to perform research on how astronomy helped settle the American West.

Following the presentation, Roy Gustafson presented Al Sheidler with the Astronomical League's Advanced Imaging Open Cluster Certificate. The certificate is available to amateur astronomers who document the observation of at least 125 open clusters; Al is credited with observing 140 clusters to date.

Member observations were then shown, including images taken by Al and by Byron Davies. In response to a question, Al explained how the free program Stellarium could be used to pinpoint galaxies and other objects present in an image.

Dale concluded the meeting by noting that a Skywatch column on Pleasant Valley teacher, and PAC member, Ian Spangenberg had appeared in that day's local newspaper. He encouraged submissions for Skywatch, and also encouraged members who had not yet renewed their memberships to please do so.

Dale also presented reminders of upcoming public outreach events, including the last public observing session of the year at Niabi Zoo on November 18, and of future membership meetings.

The meeting adjourned at 8:40 p.m. A recording of the meeting is available on YouTube via the following link: <u>https://</u> youtu.be/TWR1UJb BtU.



## Other Suns: Eta Tauri (Alcyone)

#### How to find Eta Tauri on a December evening

Face east. Look for the Pleiades star cluster. Eta Tauri is the cluster's brightest member. It is a quadruple star.

#### Eta Tauri

A-B separation: 118 sec A magnitude: 2.8 B magnitude: 6.3 Position Angle: 290°

A-C separation: 182 sec C magnitude: 8.2 Position Angle: 313°

A-D separation: 192 sec D magnitude: 8.7 Position Angle: 296°





# Let the buyer beware You really can't give the gift of a star name

Ah, the joys – and pains – of holiday gift giving!

It is indeed that time of year again, when we'd all like to give – and, perhaps more importantly, receive – gifts that are useful, meaningful, special and unique.

The older you get, the more challenging this becomes. What, exactly, do you give someone who already seems to have everything they could ever want or need, and what do you desire that you don't already have? How do you find a gift which that hard-toshop-for loved one will be delighted to find under the Christmas tree?

Here's an idea: Why not name a star after that person? Google it, and you'll find all kinds of online sites claiming that they can do just that. The individual receiving such a gift will be sent a certificate, suitable for framing, showing the coordinates of the star named for them, along with a promise that the star name will be entered in a catalogue with an official-sounding name, such as the "International Star Registry."

Pretty cool, right? And it makes sense that this could be done, since our home galaxy, the Milky Way, contains up to 400 billion stars. That's way more than enough to name a star for everyone who's alive today and who has ever lived.

Well, sorry to burst your bubble, but you really can't name a star for Grandpa or Aunt Carol. No working astronomer will ever refer to a star by such a name, nor consult the registries maintained by these sites. No one doing real astronomical research will point a telescope toward the star "Captain Awesome" or "BossLady," actual names found in "official" star name registries.

An online search will reveal what seem to



Star names are assigned by the International Astronomical Union, not by the numerous websites which claim to do so.

be dozens of these star naming sites, all with different names and prices, all with different registries where the star names are catalogued. That alone should make it obvious that the star name chosen by you has no legitimacy within the astronomical community.

One site claims that it will only assign names to stars "visible with the naked eye" within the boundaries of the United States. While it's true that there are billions and billions of stars out there, the number we can see without the assistance of magnification is much smaller. Even under optimal sky conditions, and even among those with excellent eyesight and night vision, the number of individual stars that can be seen is estimated at about 5,000. This means that the star you think you've given a unique name to has probably already been named several times over.

The job of assigning names to stars, and other celestial objects, that will actually be used by astronomers falls to the International Astronomical Union. The IAU website has a page on "Buying Stars and Star Names" which states that the names purchased

## Star naming

#### **Continued from Page 5**

from star-naming commercial enterprises "have no formal or official validity whatsoever." (www.iau.org/public/themes/ buying star names) It then goes on to explain how stars really are named, and how the names assigned by the IAU are "are recognized (*sic*) and used by scientists, space agencies, authors of astronomical literature, and other authorities worldwide."

So, Virginia, while there may be a Santa Claus, even he can't name a star for you, at least not one that any astronomer will ever use. But he can deliver gifts that could delight anyone with an interest in astronomy, including books, star guides and maps, and clothing, games and puzzles with astronomical themes.

Here's another suggestion: Give someone a gift membership to the Popular Astronomy Club. Each membership comes with a t-shirt – and who doesn't want another one of those? – and, more importantly, the opportunity to be part of a community devoted to learning about astronomy and sharing this knowledge with the public.

Membership in PAC is open to anyone and everyone. You don't need to own a telescope or have any education or background in astronomy. All you need is an interest in the night sky.

If you're interested, you'll find more information on our website: <u>popularastronomy-</u> <u>club.org</u>. The membership form can be found by clicking on "Articles and Documents," then "Club Documents," then "Enrollment Form." You can also find us on Facebook, under "Popular Astronomy Club – Quad Cities."

No matter what you give or receive, we at the Popular Astronomy Club wish all of you a happy, healthy and safe holiday season, and we hope that you keep looking up!

Paul Levesque

## Planetarium presents 'Season of Light' show

The John Deere Planetarium at Augustana College will present its annual "Season of Light" show from December 9 through 15. The event is free and open to the public, but advance registration is required.

The planetarium show will begin at 2 p.m. on Saturday and Sunday, and on 7 p.m. on weekday evenings. Doors will open 15 minutes before the show begins; latecomers cannot be admitted. The show is not recommended for children seven and younger.

"Season of Light" tells the story of how our holiday traditions are connected to the sky through a multimedia show that uses the planetarium sky projector, astronomical images, and music and narration, all projected onto a 30-foot dome.

"December is the darkest month of the year, and people all over the world have held festivals, lit candles and tried to bring light to the darkness of the winter sky," said Dr. Lee Carkner, Director of John Deere Planetarium. " 'Season of Light' also explains the seasons, the winter constellations and speculates about the Star of Bethlehem."

Visitors to the planetarium can also view full-color images from the Hubble Space Telescope, along with a quarter-ton piece of the Canyon Diablo meteorite on display with interpretive information.

Adjacent to the planetarium, Augustana's Fryxell Geology Museum will be open to visitors on December 9 and 10 from 1 to 4 p.m., and from 7:30 to 8:30 p.m. December 11 to 14.

You can make reservations for the show via the following link:

seasonoflight2023.eventbrite.com.

## Geminid meteor shower peaks in December

December will be a special month in the sky. One of these events is the annual return of the Geminid meteor shower, which will peak after midnight local time on December 14.

At the peak, there should be about a meteor each minute, with nearly as many late in the evening of the 13th and throughout the night of December 14-15. This is one of the best meteor showers of the year.

Meteors should be seen all over the sky, but will seem to have come

from near the bright twin stars of Gemini (the Twins), a constellation that will be unmistakable high in the southern sky. While out, look to the lower right of Gemini for the iconic Orion (the Hunter).

The planets also will be interesting during December. Venus will still be dazzling in the eastern predawn sky, and early in the month Mercury will be at its highest, but still low the southwestern sky. Saturn will be higher in the southwest but drifting lower each night. It will set at about 10 p.m. early in December and at about 8 p.m. late in the month.

Finally, bright Jupiter will end its retrograde, or western, motion in Aries (the Ram). According to ancient astrology, the planet – referred to as the "King Star" – would have been most powerful at this time.

Astronomer Michael Molnar theorizes that, since Jupiter was related to the activities of kings and since Aries was the sign for Judea, it would have confirmed to the Magi, who were astrologers, that a king of the Jews had been born. Since this was only confirmation, Molnar then looked for a significant event involving Jupiter in Aries.

By using a planetarium program, Molnar found that a very significant astrological event had taken place on the morning of April



During the Geminid meteor show, 'shooting stars' will appear to radiate from the constellation Gemini.

17, 6 B.C. On this morning, Jupiter had its heliacal rising. This is when a star or planet is first seen rising before the Sun.

Astrologers usually referred to this as "its rising," and it was considered to be another time when a planet or star was most powerful. Molnar believes that, since this happened in Aries, it is the event referred to in Matthew 2:2 as "his star at its rising."

Although this is an important astrological event, it is not rare, so other events must also have happened on this day. Molnar found that the Sun and Saturn also were in Aries, the sign where they were most powerful.

Furthermore, Jupiter and Saturn were in a position where they attended the Sun, while Mars and Mercury (both unseen) followed close behind and attended the Moon. Also, Venus was nearby in Pisces (the Fishes), where it was most powerful.

Finally, at about noon that day the Moon, which was also in Aries, moved over and hid Jupiter. This added great significance. Though they couldn't see this occultation, the Magi would have known it happened.

Molnar believes that this extremely important and very rare event could have sent the Magi to find the new king of the Jews.

Some observing highlights for December:

# Orion: A winter wonder in the night sky

It's that time of year again: Winter! Here in the Northern Hemisphere, the cold, crisp sky offers spectacular views of various objects, the most famous of all perhaps being the constellation Orion the Hunter.

Orion is a great way to test your sky darkness (*link*). With your naked eye, you can easily spot this hourglass-shaped constellation.

Known as an epic hunter in Greco-Roman mythology, Orion and all its parts have had many names and meanings across many cultures. In Egyptian mythology, this constellation represented the god Sah. The Babylonians referred to it as "The Heavenly Shepherd."

In most cultures, it is Orion's Belt that has many stories: "Shen" in Chinese folklore, or "Tayamnicankhu" in Lakota storytelling. But the Maya of Mesoamerica believed that part of Orion contained "The Cosmic Hearth" – the fire of creation.

The crown jewel of Orion is Messier 42 (M42), the Orion Nebula, a star-forming region located about 1,500 light-years away from Earth. Part of the "sword" of Orion, this cloud of dust and gas sits below the first star in Orion's belt, Alnitak, and can easily be spotted with the naked eye under moderate dark skies.

You may also use binoculars or a telescope to resolve even more details, like the Trapezium: Four stars in the shape of a baseball diamond. These young stars make up the core of this magnificent object.

Of course, it's not just for looking at! M42 is easily one of the most photographed nebulae around, by astrophotographers here on the ground, large ground-based observatories, and space telescopes. M42 has long been a place of interest for the Hubble, Spitzer, and Chandra X-ray space telescopes, with James Webb Space Telescope joining the



list in February 2023.

Earlier this year, NASA and the European Space Agency released a new photo (*link*) of the Orion Nebula taken from JWST's NIRCam (Near-Infrared Camera), allowing scientists to image this region in both short and long wavelengths.

But stars aren't the only items photographed here. In June 2023, JWST's NIRCam and MIRI (mid-infrared instrument) imaged a developing star system with a planetary disk forming around it. That's right – a solar system happening in real time – located within the edges of a section called the Orion Bar.

Scientists have named this planet-forming disk d203-506, where they found a carbon compound molecule that could be a precursor of life (<u>link</u>). By capturing these objects in multiple wavelengths of light, we now have even greater insight into what other objects

## Orion: A winter wonder

#### **Continued from Page 8**

may be hiding within these hazy hydrogen regions of our night sky.

In addition to our Dark Sky Wheel, a fun presentation you can share with your astronomy club would be NASA's "Universe Discovery Guide: Orion Nebula, Nursery of Newborn Stars" activity (<u>link</u>). This will allow you to explain to audiences how infrared astronomy, like JWST, helps to reveal the secrets of nebulae such as those found in Orion.

#### Kat Troche

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

# December sky

#### Continued from Page 7

**December 1**: The Moon will rise at about 9 p.m. below Pollux with Castor above, the twin stars of Gemini.

**December 3**: The Moon will rise at about 11 p.m. close to the left of Regulus, the brightest star in Leo (the Lion).

**December 4**: Mercury will be at its farthest from the Sun for this appearance, but still low in southwest. After the 10th, it will fade and retreat back toward the Sun. Look about 45 minutes after sunset. Binoculars will help.

**December 9**: The Moon will be to the left of Venus after they rise at about 3 a.m.





The James Webb Space detected a carbon compound that could be a precursor of life in the 'Orion Bar,' in an area where a planetforming disk was also found.

**December 14**: The Geminid meteor shower will peak after midnight local time.

**December 17**: The Moon will be below Saturn and to the upper right of Fomalhaut in Piscis Austrinus (the Southern Fish).

**December 21**: Day of the solstice: Winter arrives in the Northern Hemisphere. Stargazers celebrate this as the longest night of the year. After this day, the Sun will move northward.

**December 21**: The Moon will be close to the right of bright Jupiter. It will move it its orbit and be to Jupiter's left on the 22nd.

December 24: The Moon will be to the upper left of Aldebaran, the bright eye

of Taurus (the Bull). **December 27**: The Moon will be to the upper right of Pollux and the lower right of Castor, the twin stars of Gemini.

**December 30**: The Moon will be to the upper left of Regulus after they rise at about 9 p.m.

David Voigts, Black Hawk Astronomy Club



This group of PAC members and guests shown above gathered at Runner's Park in downtown East Moline on October 30 for an outreach event sponsored by the East Moline Public Library. About 25 visitors showed up in all, along with members Paul Levesque, Rolando Gamino, Dale Hachtel, Al Sheidler and Mike Haney. Four telescopes plus the PACMO were set up for observing on a clear night; many objects were visible despite the artificial light bathing the park. With Halloween just a day away, the objects observed eerily included Sheliak / Beta Lyrae (above left) - also known as the 'Vampire Star' because it draws mass and energy from a nearby companion star - and Erakis (above right), the 'Garnet Star,' shining like a jack-o-lantern. Images of Saturn and its moon, Triton, and the M15 star cluster were also captured.



Al Sheidler went out in the predawn hours on November 9 and captured these images of a conjunction of the crescent Moon and Venus.



Rob McDonald, Megan Warren, Dale Hachtel and Al Sheidler met up at Paul Castle Observatory on November 10 for an observing session, during which Megan observed all 27 objects on NCRAL's Fall Messier list. Two telescopes recently donated to PAC were also set up for looks at planets and other objects.





Rolando Gamino (left) and Al Sheidler met up at Castle Observatory on November 2, where Rolando set up his 130mm refractor and Al used his 10-inch LX200. The images captured that night included Jupiter (top left), with the moons Europa, Ganymede and Io on one side and Callisto on the other; the 'Deer Lick' group of galaxies (middle left); the 'Coathanger' cluster (bottom left); the 'Witch's Broom' nebula (top right); and 'Stephan's Quintet.

NGC7318



PAC held its last public observing session of the year at Niabi Zoo on November 18, an event that attracted nearly 30 visitors, including Scouts and students from Scott Community College. PAC members attending were Rolando Gamino, Megan Warren, Rusty Case, Pam Kollar, Eva Davison, Dino Milani, Dale Hachtel, and Mary, Alex, and Hugh Holt. Four telescopes were set up along with the PACMO, allowing those who braved the chill to enjoy views of objects such as Jupiter, Saturn, the Moon, the Andromeda Galaxy, and the Ring and Dumbbell Nebulas. As happens often, observing was interrupted briefly by a procession of StarLink satellites passing overhead.





Dale Hachtel is shown setting up a school telescope at John Deere Middle School in Moline on November 14, an event that was coordinated by JDMS teacher Chad Potter and attracted about 30 visitors. Al Sheidler was also there to assist in observing objects such as the planets Saturn, Jupiter and Neptune, the stars Polaris and Albeiro, and NGC457 (the 'ET Cluster').



'Twas the night before Thanksgiving, when Rob McDonald and Al Sheidler met at Castle Observatory for an observing session, using both the observatory's telescope and the 12-inch LX200 scope that had been removed from the PACMO the day before (see page 18). Several nice images were captured that night, including one of Jupiter taken with the observatory scope and these images of Saturn, the Moon and Uranus, showing several of the distant planet's moons.







As promised, here are more awesome astrophotos sent by Byron Davies. Shown are (A) IC1805 (Heart Nebula); IC342 (Caldwell 5; known as the 'Hidden Galaxy,' because it's difficult to observe / photograph); (C) NGC281 (PacMan Nebula); (D) SH2-129 (Squid Nebula).

Roy Gustafson used Stellina to capture these images of the Sun, taken on November 22 and 23 (Thanksgiving Day). The sunspot activity shown was expected to create solar flares that could cause minor disruptions to communication systems on Earth.





December 2023

## My 99th Eclipse

On October 14, I witnessed my 99th eclipse. This tally includes everything from barely noticeable penumbral eclipses of the Moon, where one can occasionally distinguish a slight shading of one side of the Moon as it wanders past the Earth's outer shadow, to dramatic and life-affirming total eclipses of the Sun.

The October eclipse was actually an annular or "ring" eclipse. An annular eclipse occurs when the entire Moon covers the Sun; because the Moon is near its apogee, or farthest point from the Earth in its orbit, the Moon is surrounded by a ring of sunlight.

I was all set to join a group heading to southern Texas to see the annular eclipse, but then I was invited to be the keynote speaker at the homecoming festival at the State University of New York at Plattsburgh. This invitation meant so much to me that I was not about to pass it up. So, I took a big chance, and it paid off.

The night of my lecture was clear and starry. I began the lecture with my own definition of what a university can be.

The world is as it is; we can try but, in the end, it is difficult, if not impossible, to change it. However, a university, at its best, represents the world as it can be.

For me, this represents the ideal of what a university can accomplish. The case of SUNY-Plattsburgh is a specific example of that possibility. The not-too-large student population, understandable relationships among students and faculty, careful and interesting course offerings, and even the Plattsburgh Cardinals sports program, all help to promote this goal. But this university offers one thing more. About 40 miles to the south, in the ancient Adirondack Mountains, lies their rural campsite called Twin Valleys.

As a youngster, I attended the Adirondack Science Camp there in what were three of the happiest summers of my life. For the past 20 years, the Adirondack Astronomy Retreat has been held at this magnificent place.

On the eve of the eclipse, my friend Ed Guenther and I led a small group of people to observe at our Adirondack Astronomy Retreat site. During this time, I did a little comet hunting.

The following morning, the sky was cloudy, but there were plenty of breaks in the clouds so we got a magnificent view of the partial eclipse. We were excited; the crowd was excited, and we thoroughly enjoyed the partial eclipse that lasted about two hours.

During this excitement, the solar system continued its inexorable motions, as the Earth, the Moon, and the planets slowly wended their way through space and time.



David Levy's 'little telescope,' nicknamed 'Cupid,' is set up for annular eclipse viewing at SUNY-Plattsburgh.





## An "Oh! Wow!" moment through your telescope

Imagine seeing a world emerge in the darkness, taking several minutes to fully appear. Such a body is Io, Europa, or Ganymede on multiple occasions this December.

Aim a telescope at Jupiter shining in the south a few minutes before the event is predicted to take place. Look away from the planet's bright disk, about one planet diameter from its eastern edge. At the designated time, a faint speck can be discerned. As the seconds pass, that speck grows brighter and brighter.

This is one of the large Galilean moons, slowly leaving Jupiter's shadow while orbiting the giant planet. December is a good month this year to witness an event like this in the evening sky, because Jupiter's shadow angles to the east of the planet, putting the emerging moon relatively far from the planet's glare. Each moon takes a different time to fully emerge, because of its diameter and of its orbital velocity around the planet.

Note: December 12 and 19 have Ganymede disappearing into the shadow and reappearing. December 21 and 28 have Io and Europa both disappearing near the same time.

> Make sure that Jupiter is sufficiently above the horizon at your location and that the evening twilight has sufficiently darkened. Begin viewing a few minutes before the listed times.

#### Event commencement: (all times CST)

lo	Dec 5, 11:34 pm	
lo	Dec 7, 6:04 pm	
Ganymede	Dec 12, disappearance 5:41 pm, re	appearance 7:48 pm
lo	Dec 13, 1:30 am	
Europa	Dec 14, 6:24 pm	
lo	Dec 14, 7:58 pm	
Ganymede	Dec 19, disappearance 9:45 pm, reappearance 11:49 pm	
Europa	Dec 21, 9:03 pm	
lo	Dec 21, 9:53 pm	
Europa	Dec 28, 11:42 pm	llog a "bigh"
lo	Dec 28, 11:48 pm	Use a "nigh"
lo	Dec 30, 6:18 pm	magnification!

# UPCOMING EVENTS

# Date: December 11, 2023

Event: Membership meeting @ 7 p.m. Location: Butterworth Center / Zoom Program: Year in Review / Business Meeting All these events, dates and times are tentative and subject to change! Please check your emails for any updates and changes!

## **UPCOMING EVENTS**

- January 8: PAC meeting, Butterworth Center; "The Tunguska Event" by Andy Bruno, Associate Professor of History and Environmental Studies at Northern Illinois University
- February 12: PAC meeting, Butterworth Center; ""Discarded Worlds: Astronomical Ideas That Were Almost Correct " by Brother Guy Consolmagno, Director of the Vatican Observatory
- March 11: PAC meeting, Butterworth Center; business meeting / smorgasbord of member presentations

