NIGHTFALL

A PUBLICATION OF THE HUACHUCA ASTRONOMY CLUB

JANUARY 2023

JAN 2023 PRESIDENT'S NOTE

Jan 2023, it seems strange to write 2023. It does not seem like we had much of 2022 because the time has flown by so quickly almost like the comet that is passing by right now. It seems to go so slow when you are looking at it but against the background stars it is really traveling.

We enjoyed seeing all of the planets in the night sky Dec 24th. If you did not glance up, you will enjoy the photo by Mark Orvek of the event that was posted to the HAC Group. Besides seeing all of the planets we are also have a comet (C/2022 E3 ZTF) that is gracing our night sky. (I loved receiving Vince Sempronio's explanation of naming conventions for comets and asteroids.) These are just a few astronomy teasers that helped us finish out 2022 in style.

According to the Space Tourism guide in January 2023 there are several double viewings occultation events however the guide is not specific to So. Arizona. Since I am not traveling to the far reaches of the globe, I will have to be content watching the Lunar Occultation of Mars on Jan 31st from our backyard observatory. There are several meteor showers: on Jan 4 is the Quadrantids' (the expectation is a maximum of 80 meteors per hour radiating from a point in the northern sky) and on Jan 19 is the Ursae Minor meteor shower (with about 3 meteors per hour).

I hope you all have reset your calendars for the HAC General meetings. The calendar was published in last month's newsletter. This is due to the timing of the full moons in 2023. I make mention of it again to be sure that you remember, our meetings will be in the first week of the month. Our next general meeting for the next 6 months will be Jan 6, Feb 3, Mar 3, Apr 7, May 5 and Jun 2. However, Public nights are later in the month: Jan 26, Feb 23, Mar 23, Apr 27 and so on. To keep this in your mind, we are going to work to get the Nightfall newsletter to you the last week of the month instead of the 1st week of the month.

JANUARY SPEAKER BIO

Zane Landers is a 19-year-old science communicator from Tucson, AZ. Zane has been building telescopes and manufacturing optics in his living room for 7 years, and is currently working on a 32" ladder-free telescope. Zane enjoys a mix of deep-sky and planetary observing and regularly conducts sidewalk astronomy outreach on the University of Arizona campus with John Dobson's 8" telescope. Zane also writes reviews for a number of websites such as TelescopicWatch.com and Cloudy Nights.

Outline of the talk: This talk will detail some of the ethos and methods of conducting astronomy outreach and encourage you to get out there with your own telescope, even if you only just got started in the hobby yourself.

A REQUEST FROM KAREN MADTES

I would like to see more of our HAC members support the public outreach events. They are almost always booked to capacity so that is like 50 people to provide with views. The dome seats 12 comfortably which leaves 38 people for the patio scopes. When we only have 3 scopes...you do the math. Not everyone comes at the same time but it's still a stretch to keep an object in each telescope. If any of the scopes has an issue and needs to reboot or realign, it makes it really tight to give everyone a chance to look in the eyepiece for a sufficient time to enjoy the full spectrum of the image. There is such a diversity in the participants who come to "see the stars" that although you feel your knowledge may be limited, it's still new to them. For the most part, participants have tended to be courteous, curious and appreciative. Other than the little boys who were "riding" my Dob tube trying to see the red Telrad target, people are considerate and respectful for the most part.

If you are the fortunate owner of a larger, awkward to transport scope, the club has several different telescopes for you to use. I realize some members may be reluctant to drive at night so there are opportunities to serve on the second Saturday of each month with the Solar Saturdays.

I love this chance to make myself get out and view, sometimes in spite of less than favorable conditions, but you never know -sometimes the weather will pleasantly surprise you! In searching for different targets and listening to discussions around me, I learn a lot just by being there. It's a win-win, you get to view and learn something new:) Please

come and join us at the January 26th HAC Public Night. You will be glad you did!!

Ways To Help If You Don't Run a Scope

- Watch a scope when an operator needs a break
- Bring a drink to a scope operator - it's important to stay hydrated!
- Take guests to the Sign-In Book (may need a brighter red light for this)
- Help direct traffic on the stairs ("Please watch your step")
- Point out items of interest in the display area
- Pass out our HAC Business Cards and tell the ways to contact us
- Dust, sweep, clean glass showcases
- Let them know about upcoming events
- Remind people to breathe - seriously! (deep breaths bring oxygen to your eyes so you can SEE better!)

Welcome our new members

Lola Watts and Daniel Ribbentrop of Sierra Vista joined the club as a family on Christmas Day. Welcome, we are glad you joined.

Dues for 2023

Most HAC memberships are up for renewal each December. If you haven't paid your 2023 dues yet, there are several ways to do so:

1. You can pay your dues in person by cash or check made out to Huachuca Astronomy Club. See the treasurer, Ted Forte, at a meeting or event.
2. You can mail your dues check to the Huachuca Astronomy Club PO Box 922, Sierra Vista AZ 85636
3. You can pay online by visiting www.hacastronomy .org and pulling down the membership menu. You'll be directed to Pay Pal where you can use your Pay Pal account OR your credit card.
4. If you have a Pay Pal account, you can use PayPal Direct to send your payment to paypal@hacastronomy.org
5. If you have a Zelle account with your bank, you can make a dues payment by transferring funds to twforte@powerc.net

Thank you to everyone that have paid their 2023 dues! If you are unsure of your dues status, please contact the treasurer, Ted Forte (tedforte511 at gmail dot com).

If you have decided not to renew your HAC membership, please contact Ted so we can remove you from our roster.

Langrenus Ignored

By Rik Hill

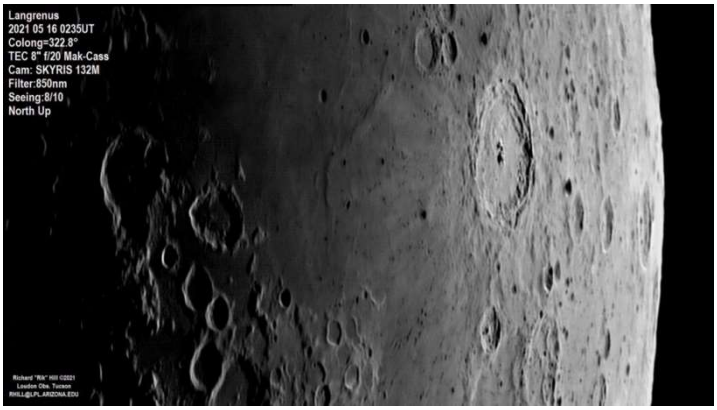
Early in every lunation the spectacular crater Langrenus is seen on the eastern shore of Mare Fecunditatis. Here it is only a little more than 4 days past new moon and the great crater Langrenus (138km diameter) is clearly seen even in binoculars! Unfortunately it is usually overshadowed by its bigger brother Petavius (182km) to the south, with the huge rima, and often overlooked. To the west (left) of Langrenus are several large wrinkle ridges or dorsae. Dorsa Mawson is the northern branch that points to two craters on the upper edge of this image, Bilharz (44km) on the left and Atwood (31km) on the right it makes a sudden angle heading due south. Notice the shadow filled crater west of Langrenus. This is Al-Marrakushi (8km) and it's surrounded by 1-5km secondary craters formed from the Langrenus impact. Take some time to look up this region on LROC Quick Map and look at all the odd shape of these craters formed from low velocity impacts! You can see some of that if you expand this image to 100% on your browser.

Moving east from Langrenus, heading for the limb, we see three craters in a row. The first is Barkla (40km) followed by the larger Kapteyn (48km) and the last, largest one, very foreshortened and very near the limb is La Pérouse (80km). The isolated crater due south of Langrenus is a nicely terraced Lohse (43km). A small crater with a clear central peak.

On the western shore of Mare Fecunditatis is a collection of craters just coming into the sunlight. The pear-shaped crater farthest west (left) is Gutenberg (70km) with Gutenberg C (45km) being the appendage to the south. The very odd looking crater to the right of it is Gloclenius (73km) with Magelhaens (37km) and Magelhaens A (19km) just below. Watch these as the sun rises on them over the course of an evening.

This image was made from portions of two 1800 frame AVIs stacked with AVIStack 2 (IDL), assembled with MS-Ice and final processed with GIMP and IrfanView.

Best wishes for a Happy New Year!



The Bucket List -January 2023

by Vince Sempronio

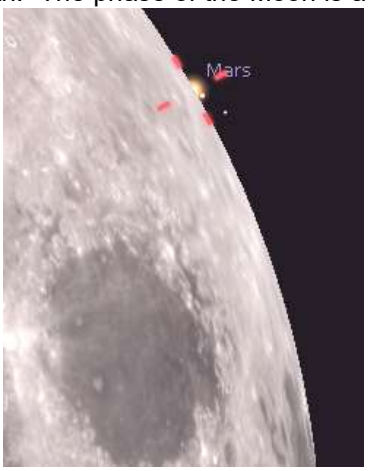
This is the first in a series of columns that introduces interesting non-seasonal nighttime, and sometimes daytime sky events that the reader may not be aware of and may wish to observer. I'll cover one-off events that are rare or

uncommon. Seasonal events, such as meteor showers will not be included.

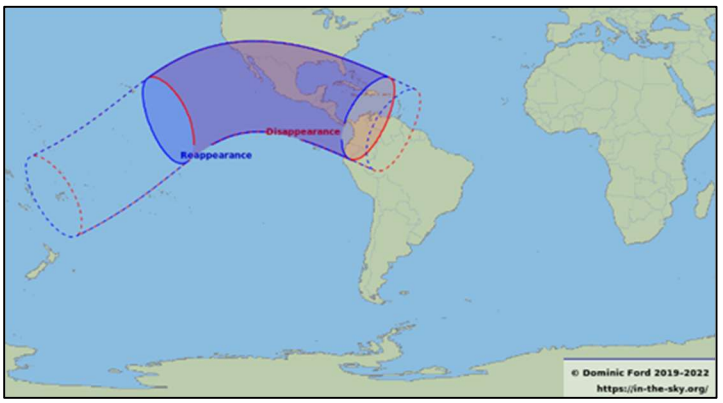
CONJUNCTION: Our first event, a conjunction of Venus and Saturn occurs on the evening of Sunday the 22nd. This naked eye event is visible in the Southwest sky, just after sunset, very near the horizon. Shown here is a view though a 5" SCT with a 32mm Plossl eyepiece at 6:30pm. At that time, Venus is only 11 degrees above the horizon. Venus and Saturn are separated by 24', slightly less than the diameter of the Moon. The two planets are closest to each other about 10 hours later, well after they have both set.

OCCULTATION: Our second offering occurs during the evening hours on Monday, January 30th. The event is well placed high in the Southwest sky.

The Moon once again passes in front of the more distant Mars. Last month, on December 7th, the Moon was full and Mars both disappeared and reappeared against the Moon's bright limbs, making it difficult to observe, but not so this month. The phase of the Moon is a waxing gibbous, so Mars disappears behind the dark limb near the northern edge of the moon as shown in the Stellarium simulation screenshot. Mars should start to disappear around 9:43pm, but you should start to observe it prior to this time. Mars reappears from behind the bright limb near Mare Cirsium around 10:53pm as shown in the close-up view. This is more difficult to catch since the bright limb interferes.



Here is a map showing the areas of Earth where the event is visible and luckily, we are in the sweet spot, meaning we can observe both the disappearance and reappearance.



Mars is also occulted in February as well, but it is only visible from the extreme artic polar regions.

HOW TO OBSERVE: For this event, you only need your eyes, especially for the disappearance. Mars does not disappear suddenly; it takes many seconds. Far better is to use a telescope. With enough magnification, you'll see the small (10 arc second) disc of Mars slowly slip behind the dark limb. Most modern smart phones should be able to capture the event, though Mars only appears as a dot. Point and shoot cameras have a lot of zoom, but a tripod is a must. Last month, Richard Lighthill and I used the 20" R/C scope in the Patterson to record the event. We might just have to try it again!

NASA Night Sky Notes January 2023

This article is distributed by NASA Night Sky Network

The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.org to find local clubs, events, and more!

Spot the Messenger: Observe Mercury

David Prosper

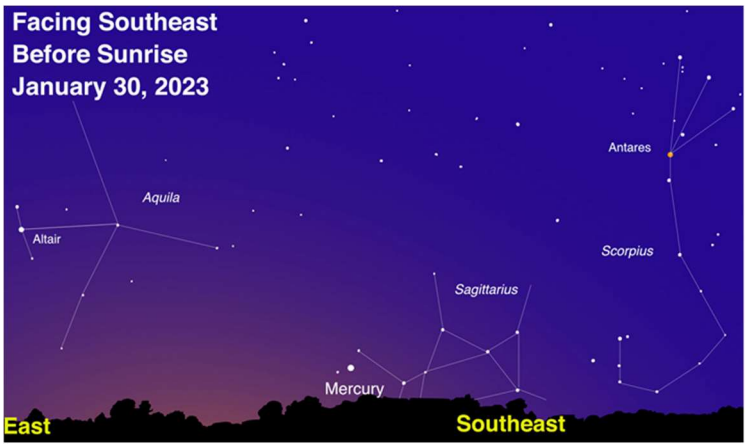
Most planets are easy to spot in the night sky, but have you spotted Mercury? Nicknamed the Messenger for its speed across the sky, Mercury is also the closest planet to the Sun. Its swift movements close to our Sun accorded it special importance to ancient observers, while also making detailed study difficult. However, recent missions to Mercury have resulted in amazing discoveries, with more to come.

Mercury can be one of the brightest planets in the sky – but also easy to miss! Why is that? Since it orbits so close to the Sun, observing Mercury is trickier than the rest of the "bright

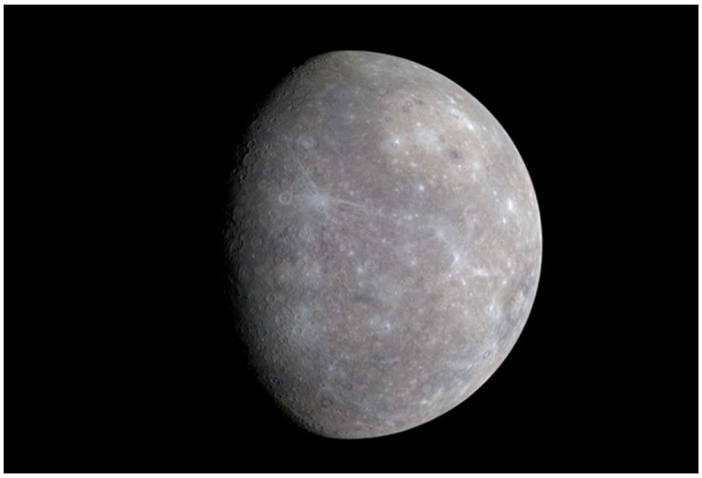
planets" in our solar system: Venus, Mars, Jupiter, and Saturn. Mercury always appears near our Sun from our Earth-bound point of view, making it easy to miss in the glare of the Sun or behind small obstructions along the horizon. That's why prime Mercury viewing happens either right before sunrise or right after sunset; when the Sun is blocked by the horizon, Mercury's shine can then briefly pierce the glow of twilight. Mercury often appears similar to a "tiny Moon" in a telescope since, like fellow inner planet Venus, it shows distinct phases when viewed from Earth! Mercury's small size means a telescope is needed to observe its phases since they can't be discerned with your unaided eye. Safety warning: If you want to observe Mercury with your telescope during daytime or before sunrise, be extremely careful: you don't want the Sun to accidentally enter your telescope's field of view. As you may already well understand, this is extremely dangerous and can not only destroy your equipment, but permanently blind you as well! That risk is why NASA does not allow space telescopes like Hubble or the JWST to view Mercury or other objects close to the Sun, since even the tiniest error could destroy billions of dollars of irreplaceable equipment.

Despite being a small and seemingly barren world, Mercury is full of interesting features. It's one of the four rocky (or terrestrial) planets in our solar system, along with Earth, Venus, and Mars. Mercury is the smallest planet in our solar system and also possesses the most eccentric, or non-circular, orbit of any planet as well: during a Mercurian year of 88 Earth days, the planet orbits between 29 million and 43 million miles from our Sun – a 14-million-mile difference! Surprisingly, Mercury is not the hottest planet in our solar system, despite being closest to the Sun; that honor goes to Venus, courtesy its thick greenhouse shroud of carbon dioxide. Since Mercury lacks a substantial atmosphere and the insulating properties a layer of thick air brings to a planet, its temperature swings wildly between a daytime temperature of 800 degrees Fahrenheit (427 degrees Celsius) and -290 degrees Fahrenheit (-179 degrees Celsius) at night. Similar to our Moon, evidence of water ice is present at Mercury's poles, possibly hiding in the frigid permanent shadows cast inside a few craters. Evidence for ice on Mercury was first detected by radar observations from Earth, and followup observations from NASA's MESSENGER mission added additional strong evidence for its presence. Mercury sports a comet-like tail made primarily of sodium which has been photographed by skilled astrophotographers. The tail results from neutral atoms in its thin atmosphere being pushed away from Mercury by pressure from the nearby Sun's radiation.

NASA's Mariner 10 was Mercury's first robotic explorer, flying by three times between 1974-1975. Decades later, NASA's MESSENGER first visited Mercury in 2008, flying by three times before settling into an orbit in 2011. MESSENGER thoroughly studied and mapped the planet before smashing into Mercury at mission's end in 2015. Since MESSENGER, Mercury was briefly visited by BepiColombo, a joint ESA/JAXA probe, which first flew by in 2021 and is expected to enter orbit in 2025 - after completing six flybys. Need more Mercury in your life? Check out NASA's discoveries and science about Mercury at solarsystem.nasa.gov/mercury/, and visit the rest of the universe at nasa.gov.



Mercury reaches maximum western elongation on the morning of January 30, which means that your best chance to spot it is right before sunrise that day! Look for Mercury towards the southeast and find the clearest horizon you can. Observers located in more southern latitudes of the Northern Hemisphere have an advantage when observing Mercury as it will be a bit higher in the sky from their location, but it's worth a try no matter where you live. Binoculars will help pick out Mercury's elusive light from the pre-dawn glow of the Sun. Image created with assistance from Stellarium

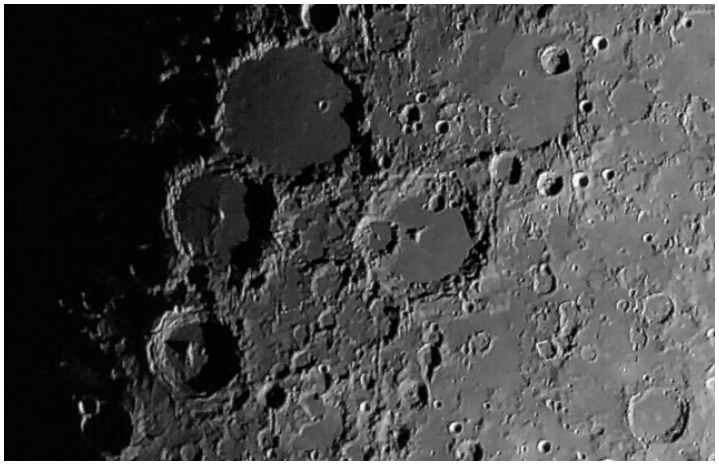


Mercury is hot, small, and heavily cratered across its gray surface, as seen in this image from NASA MESSENGER. Mercury is the most heavily cratered planet in our solar system, since it lacks either a substantial atmosphere or geologic activity to erode surface features like craters - similar in certain aspects to the surface of our own Moon.

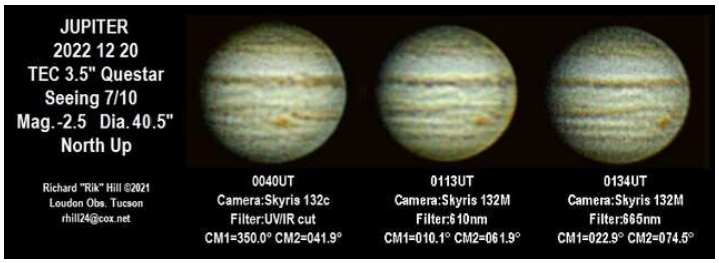
Credit: NASA/Johns Hopkins University Applied Physics Laboratory/Carnegie
Source:
https://solarsystem.nasa.gov/resources/439/mercurys-subtle-colors/

Pictures from HAC Astro

Lunar Craters by Rik Lighthill



Jupiter by Rik Lighthill



C/2022 E3 (ZTF) by David Roemer

C/2022 E3 (ZTF) by JD Maddy

All the planets in the Night Sky by Mark Orvek

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HAC Jan – Feb 2023 Calendar of Events

SU	MO	TU	WE	TH	FR	SA
1 Jan 2023 **HAPPY NEW YEAR**	**2**	**3** Mars/Moon .5°	**4** Outreach event Village Meadows Elementary Quadrantid Meteors	**5**	**6** **4:08 PM** **HAC Meeting Room A102 7PM**	**7**
8 Pallas Opposition	**9**	**10**	**11**	**12**	**13**	**14** **7:10 PM** Solar Saturday 9-11AM Patterson
15	**16** 	**17**	**18**	**19**	**20**	**21** **1:53 PM**
22 Venus/Saturn 0.4° Conjunction	**23** Saturn/Moon/ Venus Conj.	**24**	**25** Jupiter/Moon 1.8°	**26** Patterson Public Night 6:30 PM	**27**	**28** **9:19 AM**
29	**30** Mars occulted by the moon 9:44 PM	**31**	**Feb 1**	**2**	**3** **HAC Meeting Room A102 7PM**	**4**
5 **11:29 AM**	**6**	**7**	**8**	**9** 4-H Club at Patterson 6:30PM	**10**	**11** Solar Saturday 9-11AM Patterson
12	**13** **9:01 AM**	**14** 	**15** Venus and Neptune 0.01 degrees	**16**	**17**	**18**
19	**20** **12:06 AM** 	**21**	**22** Venus/Jupiter Moon Conjucntion	**23** Patterson Public Night 7:00 PM	**24**	

All times local MST
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