Event Horizon

Hamilton Amateur Astronomers

Volume 32, Number 3
January 2025

From The Editor

Here's 2025's first edition of the Event Horizon, which includes treasurer Marcus Freeman's first annual Financial Statement on page 14.

Happy Reading, Clear Skies, and Happy New Year everyone!

Bob Christmas,
Editor

editor 'AT'
amateurastronomy.org

Chair's Report by Sue MacLachlan

Happy New Year to all!

The Seasonal Social was a big success. There was lots of great food and the room was filled with conversations between old and new friends. Thanks to generous members $241 + food was donated to Hamilton Food Share. It was a very enjoyable evening.

In December, Council received and approved the cost of proceeding with incorporation from Big Charity Law. The total price is $2,473.80. This cost entitles the HAA to:

- Unlimited call/emails
- Articles of Incorporation (new or amendments)
- Business and tax ID Number
- Federal Business Registration
- Not-for-Profit By-laws
- Director Resolutions
- Member Resolutions
- Annual General Meeting (AGM) Template

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IN THIS ISSUE:

Chair's Report (continued)

- Membership Certificates
- Member, Director & Officer Registers
- Director & Officer Consents
- E-Minute Book
- Nuans Name Search and reservation.

At the December monthly meeting some concerns were raised about the cost of incorporation. Marcus Freeman, Treasurer, has reached out to two other law firms for additional quotes. Ross and McBride LLP provided a quote of $2,500 to $4,000 and George Street Law Group LLP provided a quote of $2,000 plus tax and disbursements. So, the Big Charity Law final cost, including tax, is not out of line. Chris Szaban and I have a meeting with Big Charity Law on Tuesday January 7, 2025. The HAA will be incorporated under the Canada Not for Profit Corporations Act. I will keep everyone updated on our progress. If you have any questions please don't hesitate to reach out to me.

Besides incorporation, Council has been working on the following items:

- fixing bugs with the new Google workspace platform
- review of HAA financial statement and budget
- undertaking a review of all of the HAA's online platforms
- development of a library policy and loaner scope policy
- development of a code of conduct
- loaner scope and other equipment inventory

If anyone has experience and/or is interested in working on the development of a code of conduct let me know. chair@amateurastronomy.org

The club is hoping to run an Astro 101 course starting in late January or early February. This online course is designed for those who are brand new to the hobby or those who are relatively new and are interested in learning more about various aspects of amateur astronomy. The course runs in the evening over Zoom. If you are interested and/or have questions please contact John Gauvreau at astro101@amateurastronomy.org.

On Friday January 10, Dr. Michael Richer will be joining us via Zoom from the Institute of Astronomy, at the National University of Mexico in Ensenada, Baja California, Mexico. Dr. Richer will talk to us about his research at the National Astronomical Observatory of San Pedro Mártir, Baja California.

Looking ahead to the February meeting on Friday the 14th Dr. Elizabeth Hays, Chief of the Astroparticle Physics Laboratory and a Project Scientist for the Fermi Gamma-ray Space Telescope at the NASA Goddard Space Flight Center will be joining us via Zoom. She will be talking about the T Coronae Borealis nova and share information about her research.

As always, I look forward to seeing everyone on Friday January 10th at St. Matthew's-on-the-Plains Anglican Church at 126 Plains Road E. Burlington and on Zoom for those who cannot attend in-person. For those on Zoom, please say "Hello" to Dan Copeland who will be taking over as our in-room Zoom monitor.

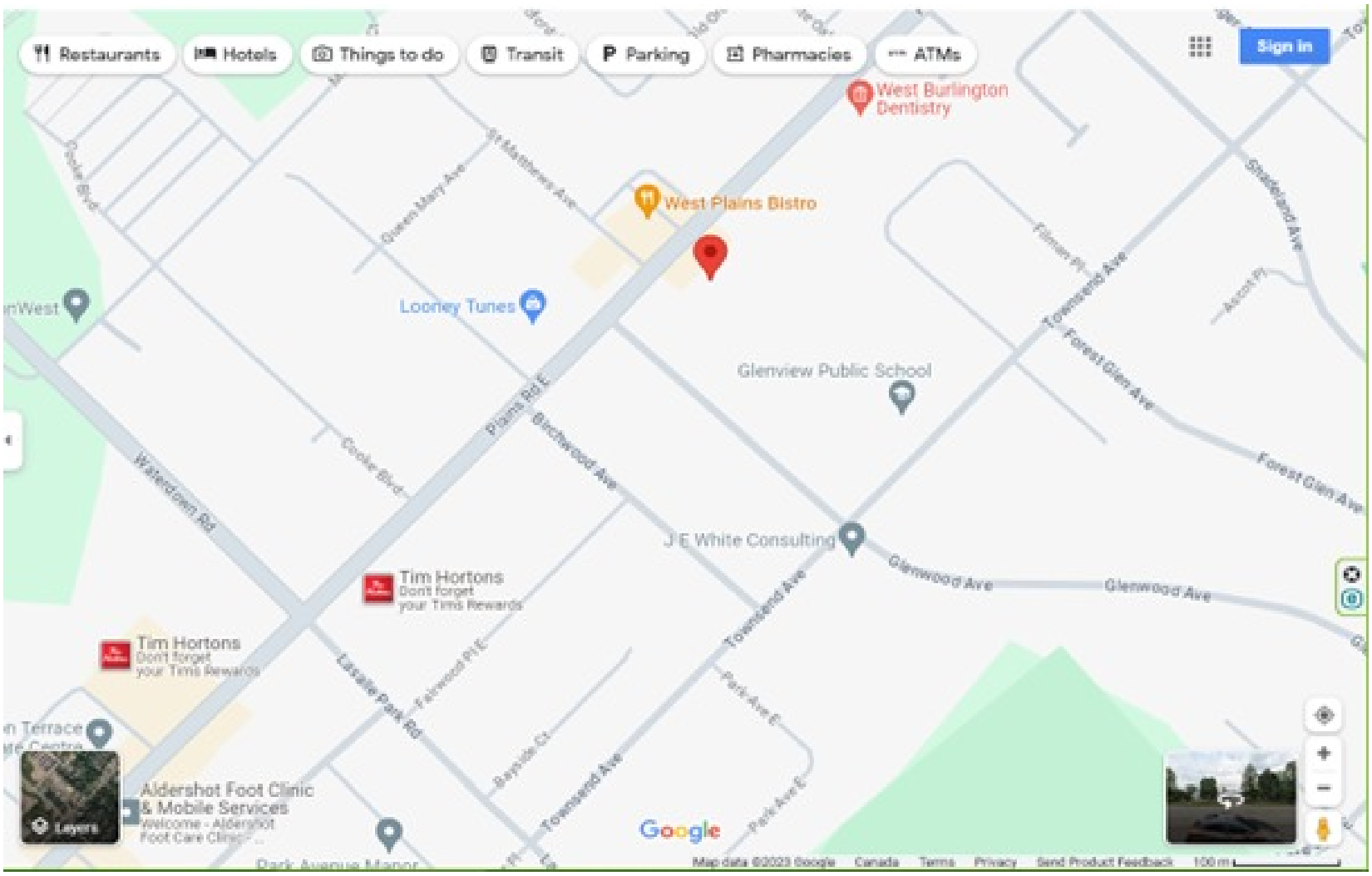
Clear Skies,

Sue MacLachlan
chair@amateurastronomy.org

Masthead Photo: *The Veil Nebula, part of eastern section (NGC 6992)*, by *Alex Kepic*.

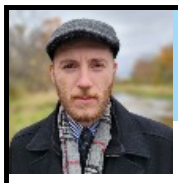
Meeting Location

Our upcoming meeting is scheduled for *January 10th, 2025*, at St. Matthew's-on-the-Plains Anglican Church. St. Matthew's is located at 126 Plains Road East, Burlington, Ontario. Doors open at 7:00 and the meeting begins at 7:30.



Speaker Schedule for 2024-2025 Season

Friday January 10	Dr. Micheal Richer from Senior Researcher at the National Astronomical Observatory, San Pedro Mártir, Baja California, Mexico: Topic to be determined
Friday February 14	TBA
Friday March 14	TBA
Friday April 11	Dr Samantha Lawler, University of Regina: The impact of low orbit satellites on astronomy
Friday May 9	TBA
Friday June 13	TBA



The Sky This Month for January 2025 by Kevin Salwach

Happy New Year everyone – I hope your Christmas and new year's celebrations were festive and fun, and I hope even though the weather has been less than favorable the last month or so, that you've made it out a few times over the holidays to take in the long nights of the winter sky. As we head into 2025, the days are still very short and the observing hours long – and January offers up plenty for an amateur astronomer to see.

Looking up into the naked eye sky, in the middle of the month a few hours after sunset, we see the fall constellations sinking low in the west. *Pegasus*, *Cetus*, *Pisces* and *Aries* are all set or washed out in the horizon muck by midnight while *Cassiopeia* and *Cephus* sink low in the north at the same time. Staring straight up at zenith, the winter constellations are on full display – *Gemini*, *Auriga*, *Taurus* and *Orion* are up high in the best part of the sky, primed for great views of all their deep sky objects. And over in the east, the first of the spring constellations are beginning to peek up above the horizon – *Leo*, *Cancer* and *Hydra* are crawling slowly up, with the rest of the spring constellations following them later in the night.

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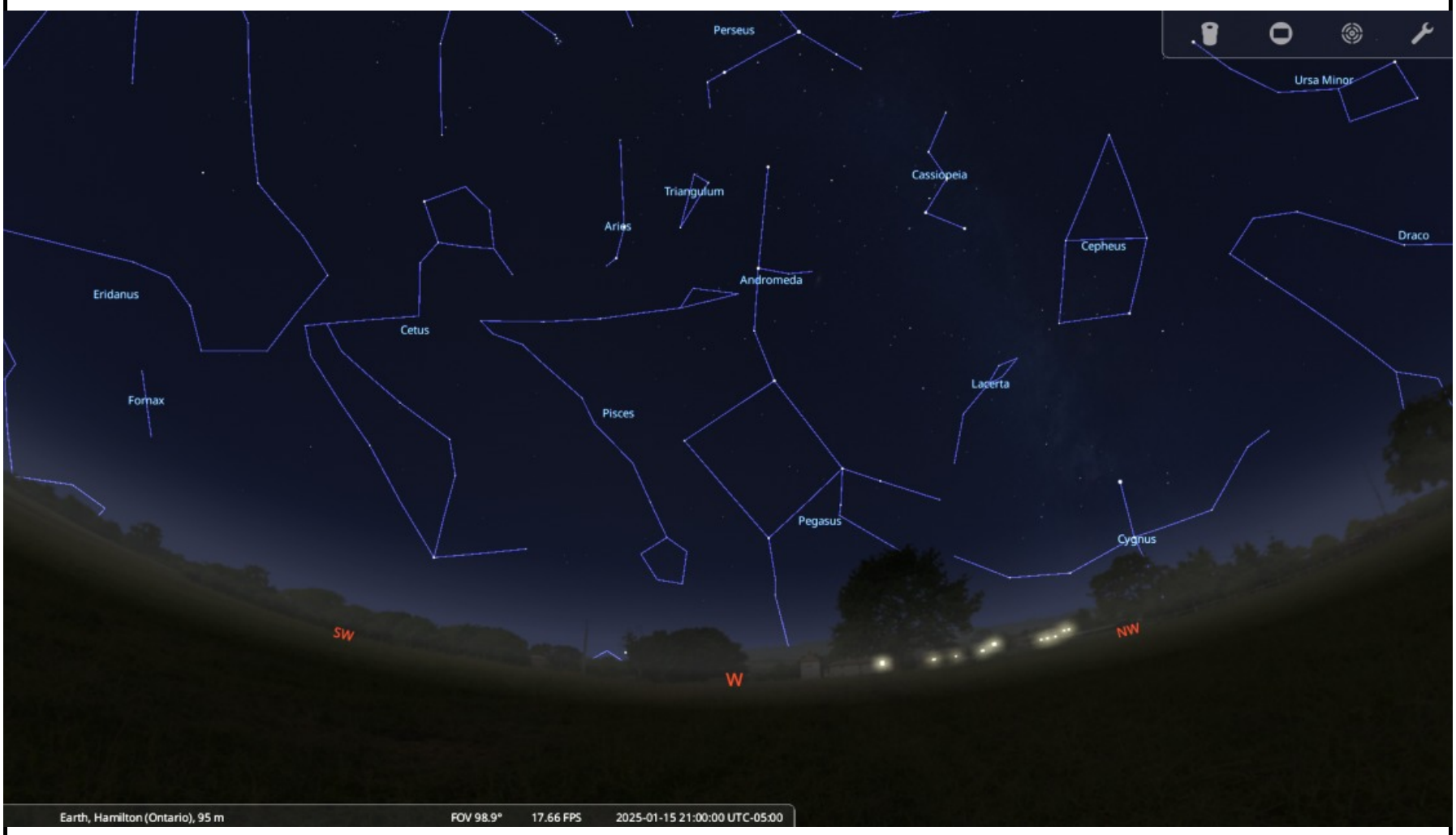
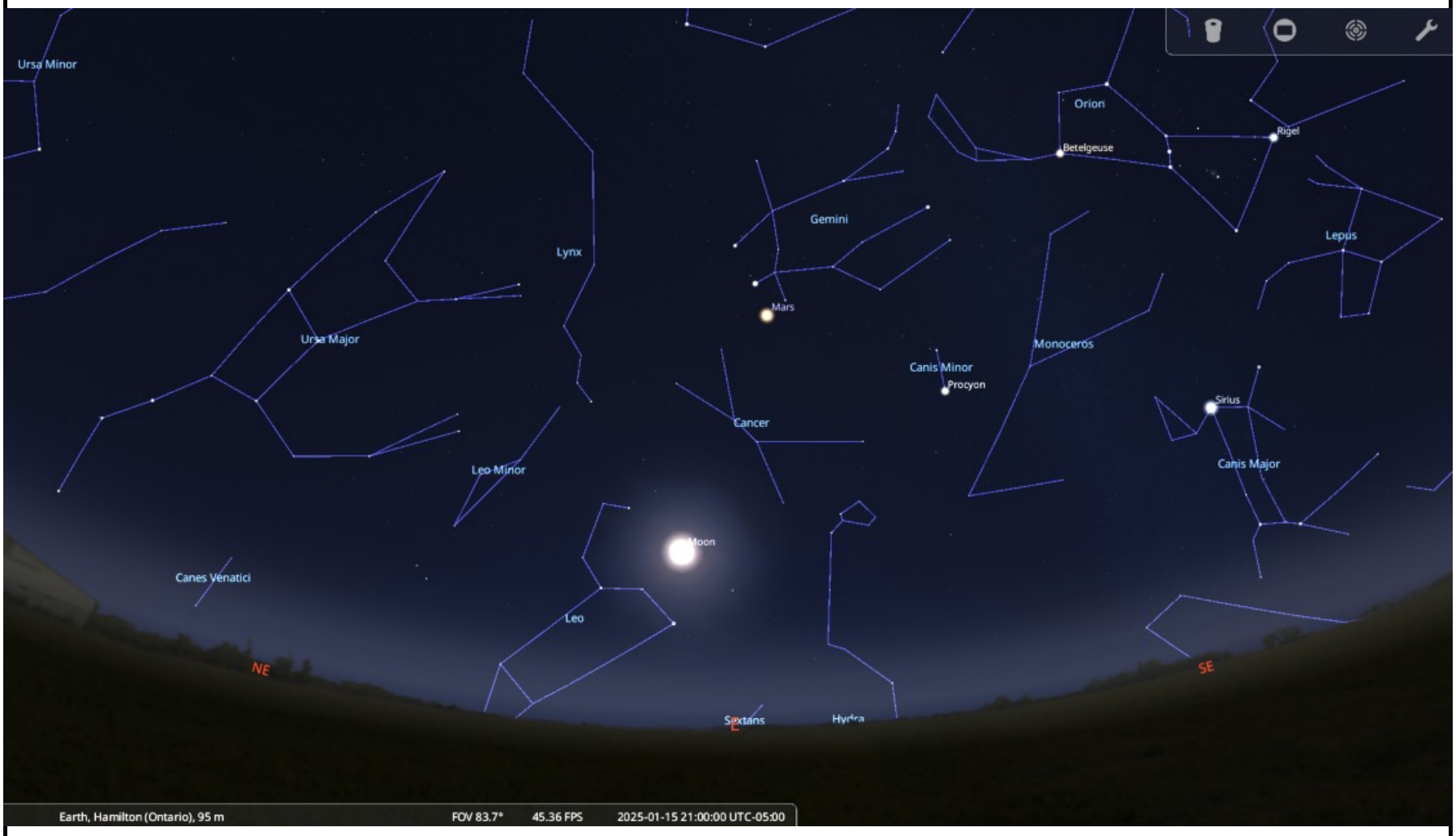


The sky looking west at 9PM on Wednesday, January 15, 2025

Image generated using Stellarium

The Sky This Month for January 2025 (continued)

The sky looking toward zenith at 9PM on Wednesday, January 15, 2025



The sky looking east on Wednesday, January 15, 2025
Images generated using Stellarium

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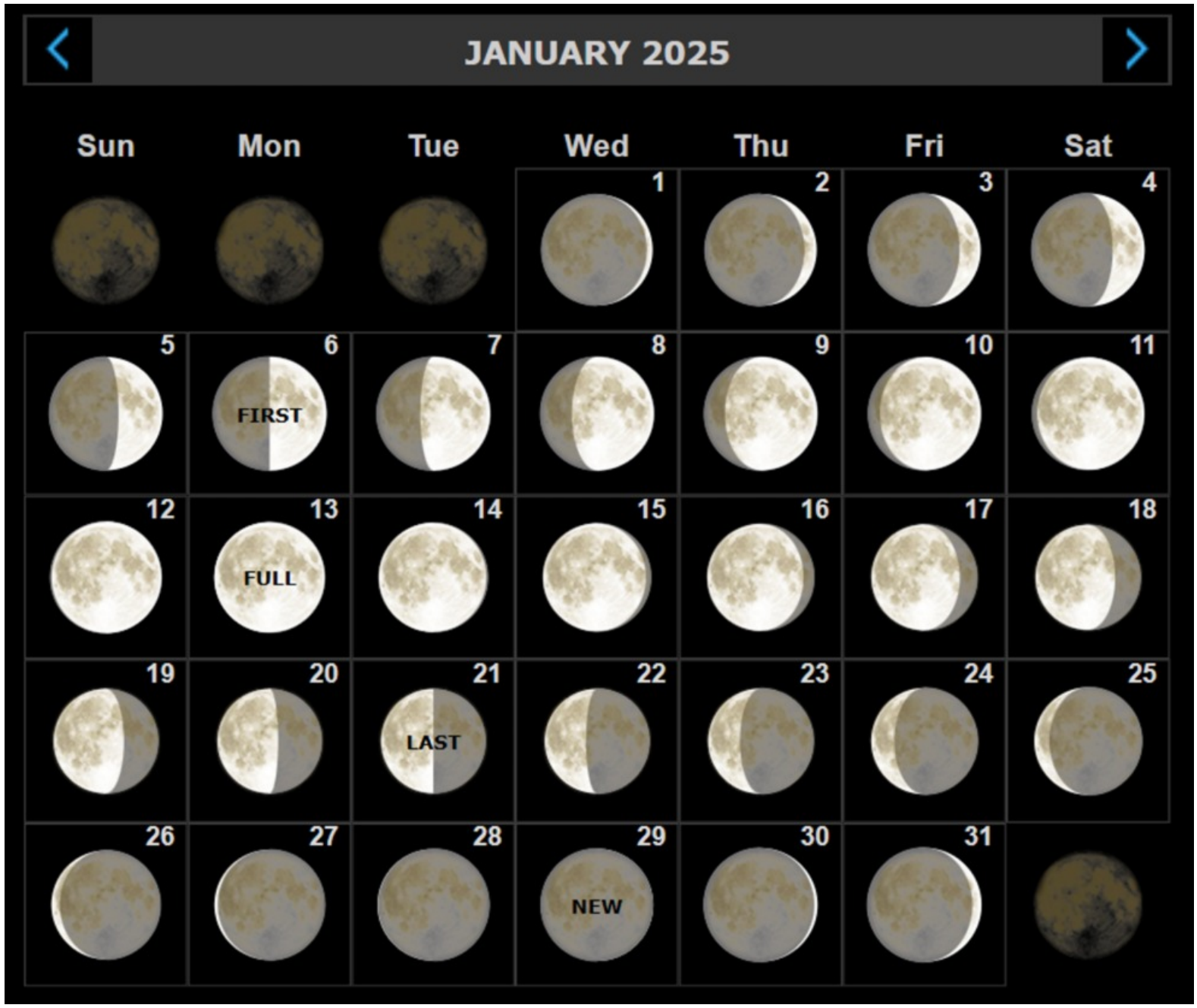
The Sky This Month for January 2025 (continued)

We begin the month with a slim waxing crescent Moon on the 1st, with Full Moon on Monday the 13th and New Moon on Wednesday the 29th. The first and last week of the month will give you nice, dark moonless skies, with the last weekend of the month being your best bet for some Friday and Saturday night late sky observing under a dark sky. Keep an eye out on the Moon on the night of the 9th – from about 7PM to 10PM it passes right in front of M45 – the Pleiades. It'll be a sight you don't want to miss, and will look great in any scope or any pair of binoculars.



Moving on to the planets – *Mercury* begins the month remaining visible in the early morning sky – but just barely. For the first few days of the year, you should be able to pick out Merucry just above the horizon about 45 minutes before sunset. However, it is moving back towards the Sun, and by the middle of the month is too close to the Sun to be seen. *Venus* on the other hand, is still placed prominently in the twilight evening sky all month long. Look towards the west immediately after sunset and for an hour or two after all month long to see her shining bright at magnitude -4.5 a good 25 degrees up as the Sun sets. Venus is the star of this month – bringing us three close conjunctions to enjoy. The first will be on the night of the 3rd when it joins the Moon only a few degrees away after sunset – the pair will be impossible to miss in the western sky as the Sun goes down. The second is on the nights of the 17th and 18th. You can watch Venus and Saturn close in on each other all month running up to this conjunction – and on those two nights Saturn passes within two degrees of Venus, making for a lovely pairing in binos from when the Sun sets until about 8:30 PM. And finally, on the night of February 1st, the Moon again passes within 2 degrees of Venus for yet another evening show. Also on the 31st and 1st, while not a conjunction per se – Venus passes within 5 degrees of Neptune to the southwest - a great month all around for the brightest planet.

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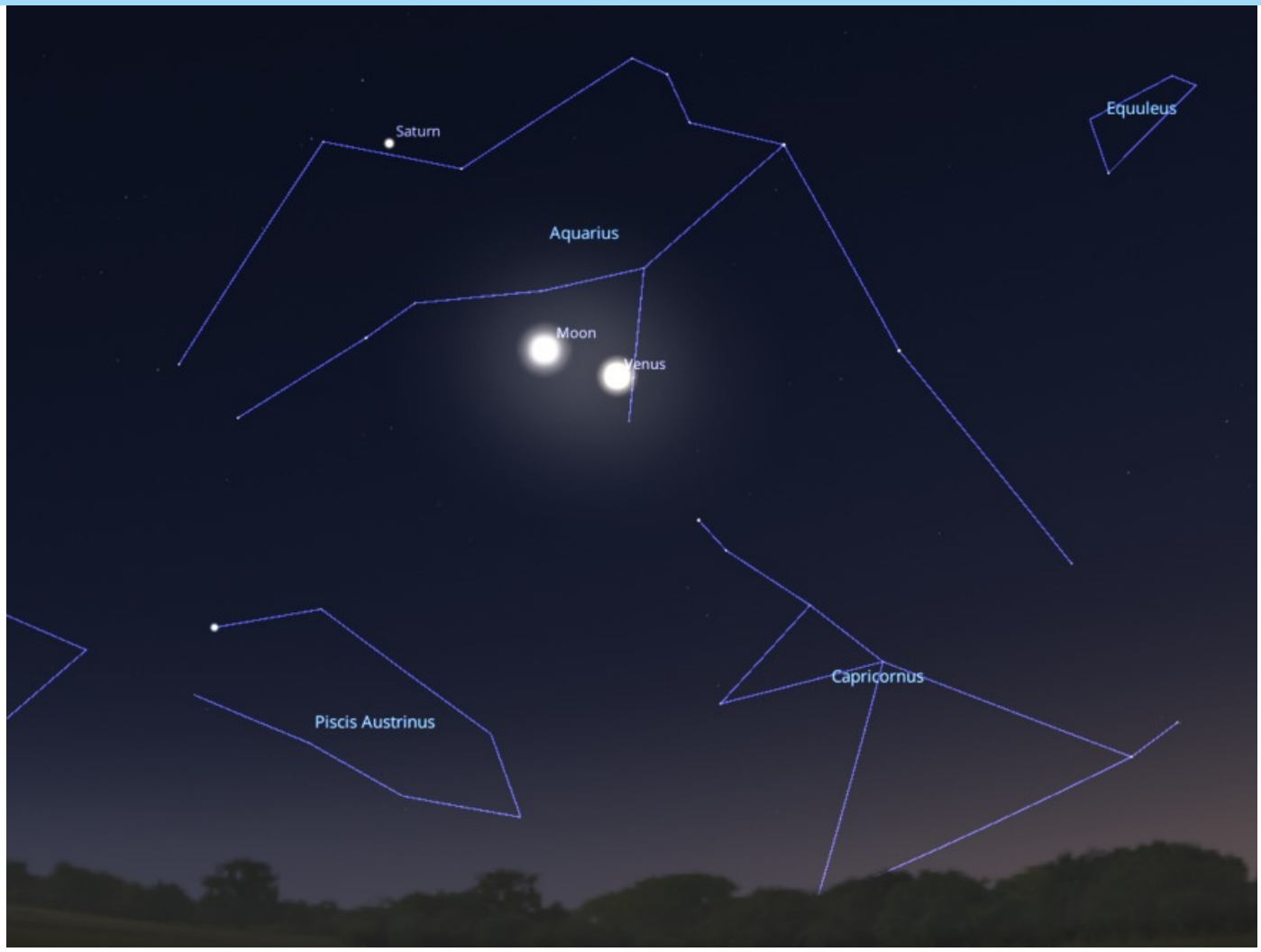
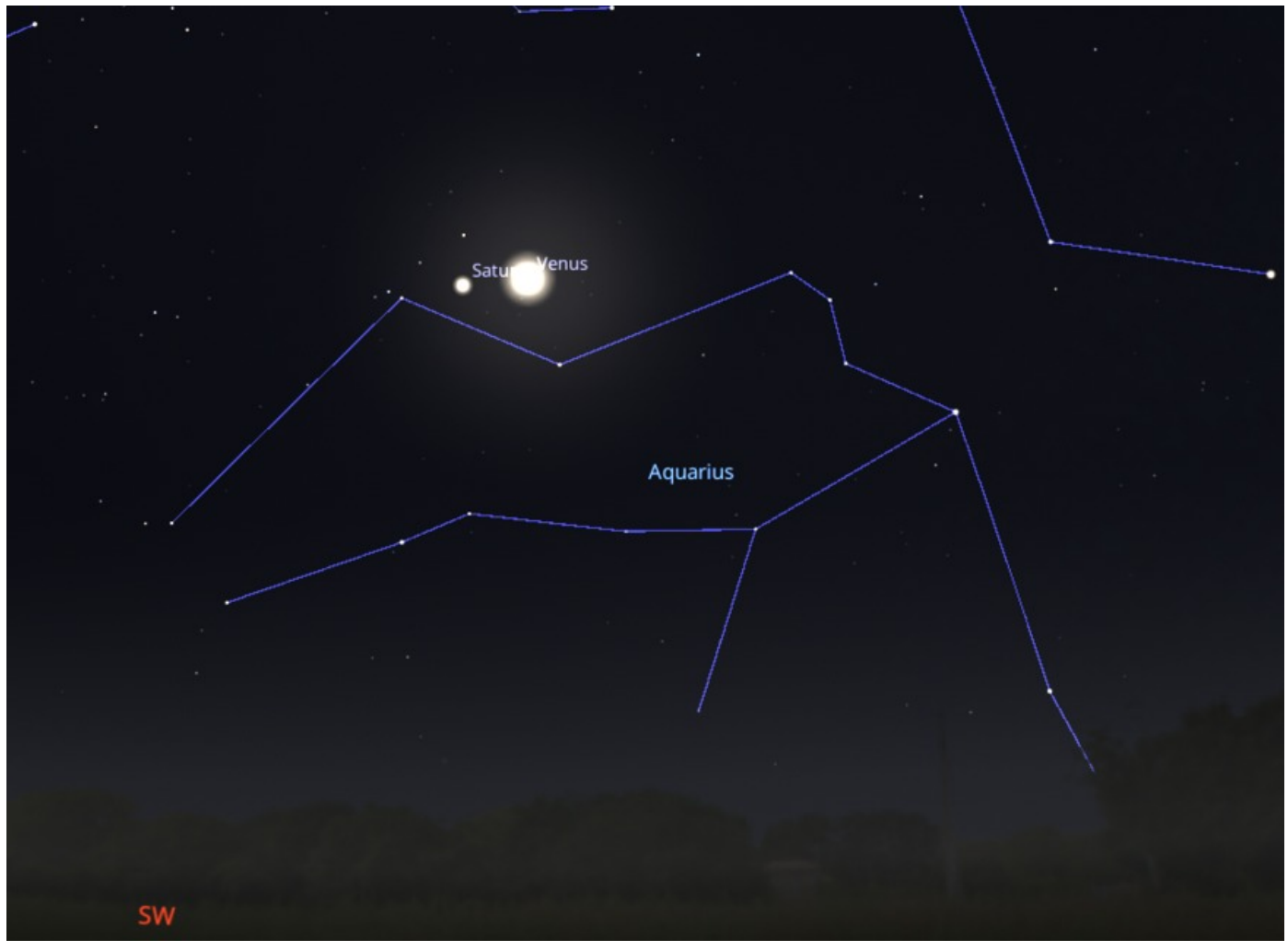
The Sky This Month for January 2025 (continued)



The Moon and Venus with Saturn nearby at 6:30 PM on Januart 3, 2025



Saturn and Venus at 7PM on the January 18, 2025
Images generated using Stellarium

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The Sky This Month for January 2025 (continued)

Yet again, *Mars* is also putting on a show for us this month – the red planet makes its closest approach to Earth on the 12th and reaches opposition on the 16th – meaning that all night long you will see it hanging high up in the sky in Cancer, slowing moving to Gemini, from sunset till sunrise. On the night of Monday the 13th we are in for a real treat – Mars joins the Moon in the high eastern sky – before being completely occulted just after 9PM. Train your scopes onto the Moon, and watch is slowly pass in front of Mars, and then come back just over an hour later and see Mars poke out the other side. It'll be a great show in a scope at high power. First contact is at 9:16, followed by last contact at 10:28. You definitely don't want to miss it.

The Moon and Mars at 10:30PM on January 13, 2025
Image generated using Stellarium

Jupiter remains high in the sky all month long again – setting around 3:30 AM towards the end of the month, affording you more views of its bands and moons. *Saturn* is putting on a show in January with two occultations by the Moon in one month – but unfortunately not for us. We will miss them from our location as Saturn is sinking very low in the western sky, setting by 9PM towards the middle of the month. On the 4th and the 31st however, the Moon does pass by within a few degrees just after sunset, while on the night of the 17th Venus passes by within 2 degrees. *Uranus* is still well placed in Aries all month long near M45, visible for most of the night, while *Neptune* is still visible in Pisces in the west, though by the end of the month it sets by 10PM.

The *Quadrantanid meteor shower* peaks on the nights of the 2nd, 3rd and 4th this January – and under a nice moonless sky after 9PM you might be able to see upwards of 100 meteors per hour.

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The Sky This Month for January 2025 (continued)

Finally hitting our deep sky objects, we'll move on this month from Gemini and Taurus to focus on a lesser known part of the sky – the late fall/early winter constellations of Cetus, Eridanus and Lepus. Though scant for bright, easy-to-bag deep sky objects, nonetheless this large, unfamiliar area of the winter sky still hosts plenty of sights to see – although most are small, dim and present a challenge even to experienced observers. These constellations are best viewed before 10PM, as they reach their highest (though still fairly low) altitude in the southwestern sky. Some objects of interest include:

- ***M77*** – Mag 8.9 – The lone Messier object in Cetus, this barred, nearly face on galaxy is probably the easiest to see in this region – with a good sized scope it should present itself as a somewhat diffuse fuzzy, with a noticeable galactic core.
- ***NGC 1055 – The Mini Sombrero*** – Mag 10.59 – This edge on galaxy is a binary with M77 and lies less than half a degree away. Despite its proximity to M77 however, it is notoriously hard to spot – you will need an 8" scope at the very least, and at least a 14" to see the dust lane bisecting its edge on galactic plane.
- ***NGC 246 – The Skull Nebula*** – Mag 10.90 – This planetary nebula will be a good challenge for a skilled observer – its faint magnitude aside, it is located on the western edge of Cetus, meaning it will set no later than 10PM, but even at 7PM just after sunset, it only reaches 30 degrees in the middle of the month. In an 8-10" scope, it shows as a diffuse, almost circular bubble shape – with several stars noticeable over the core of the nebula – with some luck you might be able to pick out some wispy details and even see its namesake skull shape.
- ***NGC 1097*** – Mag 9.48 – A barred spiral in Fornax, this galaxy was discovered by William Herschel. There is a slim window to find it before it sinks too low, so head out an hour after sunset and try and pick it out of the southwestern sky. In a 12" or larger scope, with a dark southern horizon, you might be able to even see its galactic bars.
- ***NGC 1360 – The Robin's Egg Nebula*** – Mag 9.4 – another planetary nebula in Fornax, this elliptical planetary is named for its shape and beautiful blue color that shows in long exposure photographs. At 6.4' and magnitude 9.4, it isn't overly difficult to spot as a faint fuzzy in a medium sized scope, but you'll need large aperture to bring out its shape.
- ***M79*** – Mag 7.7 – This bright Messier globular cluster in Lepus is an easier one to bag – it will show up in any sized scope.
- ***NGC 1535 – Cleopatra's Eye*** – Mag 9.6 – Another beautiful planetary in Eridanus, this tight, compact nebula is hard to find – there is very little around it in terms of landmarks for star hopping, it is just over halfway between Sceptrum and Zaurak (who doesn't know those two?), surrounded by 9th and 10th magnitude stars. But once you find it, you will notice it right away as a fuzzy, star like sphere ever so slightly elongated – and in a large dob, you will be able to see the dark spot in its core which gives it the creepy, eerie appearance of a celestial eye looking back at you.

Challenge Object: Fornax A (NGC 1316) – Mag 8.53 (see image on next page)

This may be one of the most difficult challenge objects I'll give you this year. This lenticular galaxy never rises above 9 degrees over the horizon – around 8:00 on the last weekend of the month will be your best window to see it. You'll need a clear southern horizon with minimal light pollution and rock solid seeing - looking south over Lake Erie from the north shore in Niagara may be a good spot. In an 8" scope, it will appear as an elliptical, diffuse galaxy, with a slightly brighter core.

Although you won't be able to pick out any detail in it, at higher magnification you might just be able to see its faint companions Fornax B (mag 11.02) and NGC 1310 (mag 12.08).

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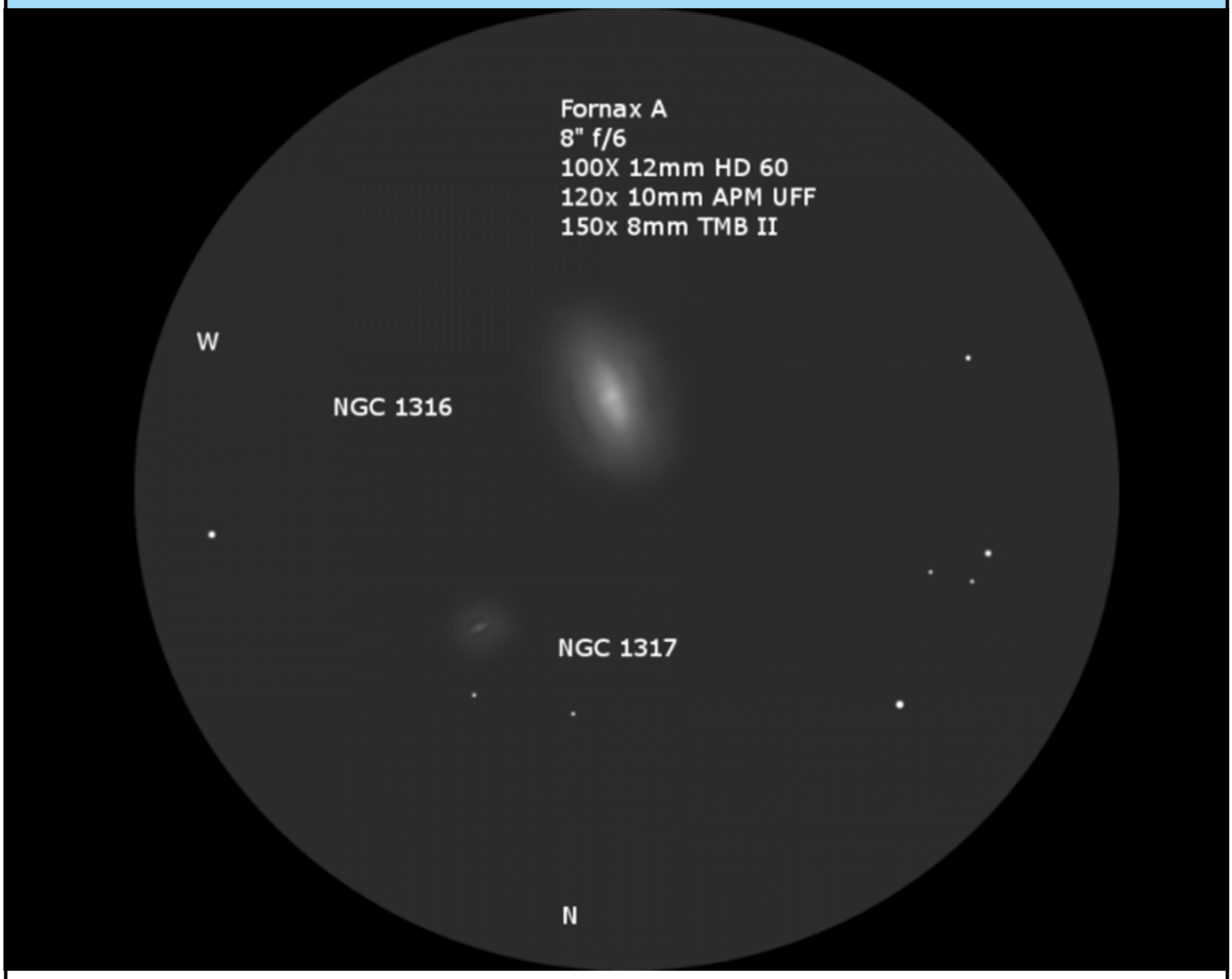

Fornax A and B through an 8" dob, from Absytec user on CloudyNights

Good luck, clear skies and happy observing!

HAA Helps Hamilton

The H.A.A. is accepting and collecting donations from our members and guests for local food banks at our general meetings. The H.A.A. has always valued its relationships with food banks in the community, particularly Hamilton Food Share.

If you can't make an in-person meeting, you can make a donation directly to your local food bank.

NASA Night Sky Notes

This article is distributed by NASA Night Sky Network (NSN).

Visit nightsky.jpl.nasa.gov to find local clubs, events, and more!

January's Night Sky Notes: The Red Planet

By Kat Troche

Have you looked up at the night sky this season and noticed a bright object sporting a reddish hue to the left of Orion? This is none other than the planet Mars! January will be an excellent opportunity to spot this planet and some of its details with a medium-sized telescope. Be sure to catch these three events this month.

Martian Retrograde

Mars entered retrograde (or backward movement relative to its usual direction) on December 7, 2024, and will continue throughout January into February 23, 2025. You can track the planet's progress by sketching

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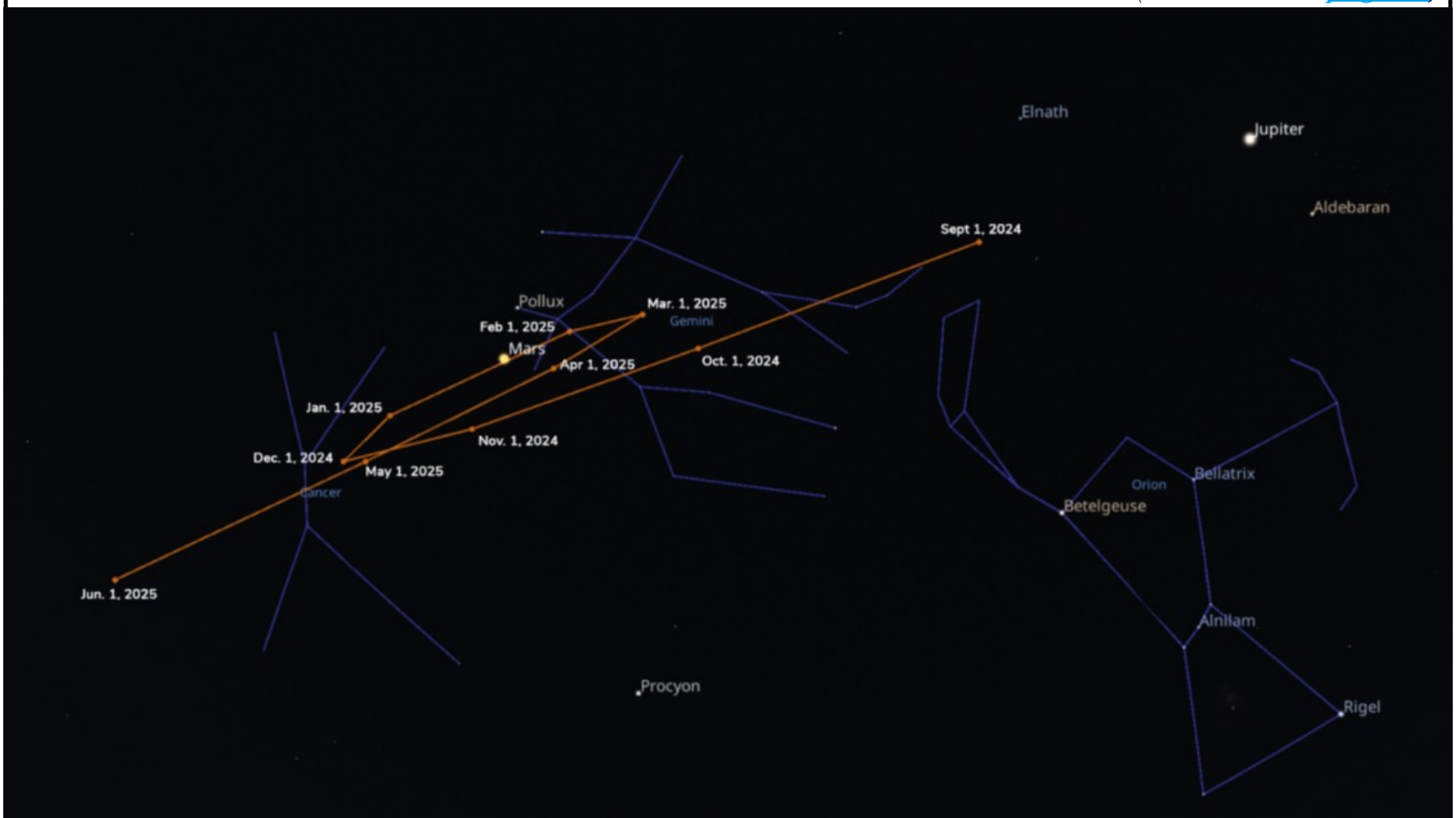

This mid-January chart shows the path of Mars from September 2024 to June 2025 as it enters and then exits in retrograde motion. Mars appears to change its direction of motion in the sky because Earth is passing the slower-moving Mars in its orbit. Credit: Stellarium

or photographing Mars' position relative to nearby stars. Be consistent with your observations, taking them every few nights or so as the weather permits. You can use free software like Stellarium or Stellarium Web (the browser version) to help you navigate the night as Mars treks around the sky. You can find Mars above the eastern horizon after 8:00 PM local time.

Hide and Seek

On the night of January 13th, you can watch Mars 'disappear' behind the Moon during an occultation. An occultation is when one celestial object passes directly in front of another, hiding the background object from view. This can happen with planets and stars in our night sky, depending on the orbit of an object and where you are on Earth, similar to eclipses.

A simulated view of the Moon as Mars begins its occultation on January 13, 2025.

Credit: Stellarium

Depending on where you are within the contiguous United States, you can watch this event with the naked eye, binoculars, or a small telescope. The occultation will happen for over an hour in some parts of the US. You can use websites like Stellarium Web or the Astronomical League's 'Moon Occults Mars' chart to calculate the best time to see this event.

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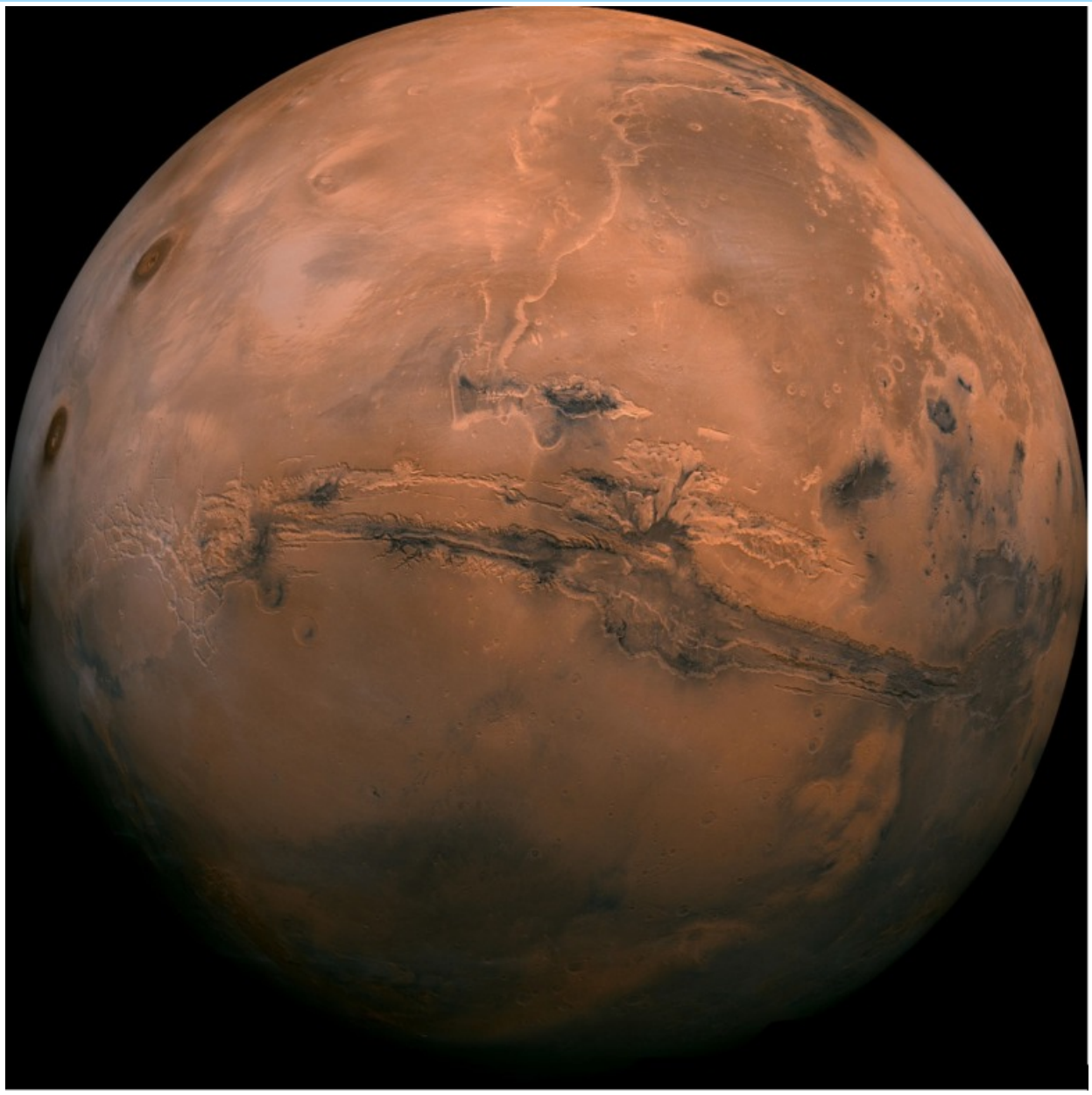

A mosaic of the Valles Marineris hemisphere of Mars projected into point perspective, a view similar to that which one would see from a spacecraft. The mosaic is composed of 102 Viking Orbiter images of Mars.

Credit: NASA/JPL-Caltech

Closer and Closer

As you observe Mars this month to track its retrograde movement, you will notice that it will increase in brightness. This is because Mars will reach opposition by the evening of January 18th. Opposition happens when a planet is directly opposite the Sun, as seen from Earth. You don't need to be in any specific city to observe this event; you only need clear skies to observe that it gets brighter. It's also when Mars is closest to Earth, so you'll see more details in a telescope.

Want a quick and easy way to illustrate what opposition is for Jupiter, Saturn, Mars, or other outer worlds? Follow the instructions on our Toolkit Hack: Illustrating Opposition with Exploring the Solar System page using our Exploring Our Solar System activity!

Mars has fascinated humanity for centuries, with its earliest recorded observations dating back to the Bronze Age. By the 17th century, astronomers were able to identify features of the Martian surface, such as its ice caps and darker regions. Since the 1960s, exploration of the Red Planet has intensified with robotic missions from various space organizations. Currently, NASA has five active missions, including rovers and orbiters, with the future focused on human exploration and habitation. Mars will always fill us with a sense of wonder and adventure as we reach for its soil through initiatives such as the Moon to Mars Architecture and the Mars Sample Return campaign.

2023-24 HAA Financial Statement by Marcus Freeman

This past fiscal year has been challenging for both Council and the club. We have had to negotiate relocating to a new venue, which required us to purchase new equipment, as well as transitioning software platforms for meetings, club business, and finance.

We had a couple of large one-time expenses this year: a projector and stand for a/v at our meetings, and a large number of planispheres for public outreach. We finish the year with a small deficit, due in part to these expenses.

Our financial records have been transferred from the spreadsheet Steve Germann produced (which has served the club well for many years) to an accounting package called GnuCash. Among its more admirable properties, it's free to use, and is well supported both by its developers and a large user base. It is well suited to our accounting needs and will simplify managing our finances as well as making it easier for future treasurers to step into the role. This transition would not have been possible without the wealth of support and advice I have received from Ann Tekatch and Doug Turner.

Despite two years of deficits, we are still in strong financial shape. We have a healthy bank balance and strong membership numbers. Going forward we will have lower overhead thanks to our new venue and transition to Google Workspace. Your council continues to strive to be fiscally prudent and spend your membership dollars wisely.

Marcus Freeman

Treasurer HAA

CASH FLOW

Income	**31-Oct 2024**	**31-Oct 2023**
Memberships	$5,220.00	$5,750.00
HAA Calendars	$1,750.00	$2,367.00
Cash Donations	$473.00	$130.00
Star Party Revenue	$682.11	$563.30
Total Income	**$8,125.11**	**$8,810.30**

Expenses	**31-Oct 2024**	**31-Oct 2023**
Insurance	$1,277.64	$1,251.72
Brochures	$152.55	$190.97
Printing	$36.16	$200.00
HAA Calendars	$1,582.00	$1,915.37
Donations Outgoing	$400.00	$1,000.00
Depreciation Expense	$773.64	$734.81
PO Box Rental	$205.66	$200.01
Speakers Allowance	$200.00	$75.00
Office Supplies	$34.53	$88.33
Sympathy Flowers		$100.57

(Continued on page 15)

2023-24 HAA Financial Statement (continued)

Library (book pockets)		$197.26
Postage	$36.80	$95.03
Star Party Costs	$387.97	$412.69
Public Education	$527.76	$111.24
Eclipse Glasses		$1,480.17
Hall Rental	$1,754.26	$2,590.29
PayPal Fees	$147.20	$129.64
Zoom Subscription	$242.84	$452.00
Christmas Coffee	$125.00	$77.48
Door Prize Books		$48.87
Website	$330.97	$299.51
Total Expenses	**$8,214.98**	**$11,650.96**
Surplus/Deficit	**-$89.87**	**-$2,840.66**

BALANCE SHEET

Assets	**31-Oct 2024**	**31-Oct 2023**
Bank	$9,052.70	$8,911.80
Cash	$50.00	$0.00
Prepaid PO Box Rental	$211.31	$205.66
Total Current Assets	**$9,314.01**	**$9,117.46**
Equipment	$3,555.29	$3,407.44
Total Fixed Assets	**$3,555.29**	**$3,407.44**
Total Assets	**$12,869.30**	**$12,524.90**

Liabilities	**31-Oct 2024**	**31-Oct 2023**
Deferred Membership Revenue	$2,230.00	$1,935.00
Total Liabilities	**$2,230.00**	**$1,935.00**

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2023-24 HAA Financial Statement (continued)

Equity

Opening Balance	$10,589.89	$12,780.56
Adjustments	$139.28	$0.00
Donated Equipment (Book Value)		$650.00
Current Year	-$89.87	-$2,840.66
Closing Balance	$10,639.30	$10,589.89
Total Liabilities and Equity	**$12,869.30**	**$12,524.89**

PROFIT & LOSS

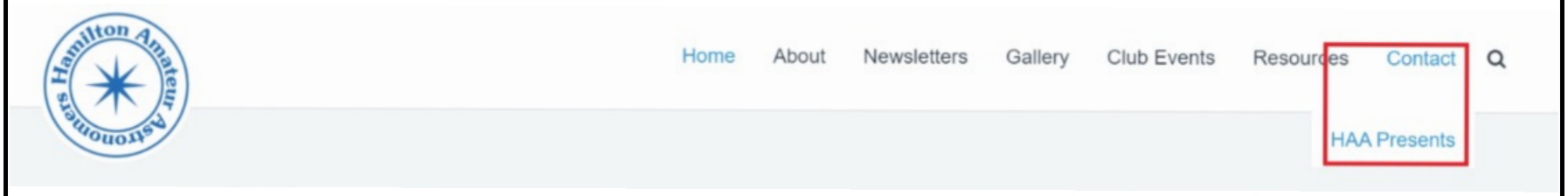
Revenue (Net)	**31-Oct 2024**	**31-Oct 2023**
Membership	$5,220.00	$5,750.00
Calendars	$168.00	$451.63
Cash Donations	$473.00	$130.00
Donations in Kind		$650.00
Banquet/Star Party	$294.14	$150.61
Net Revenue	**$6,155.14**	**$7,132.24**

Depreciation Table	**31-Oct 2024**	**31-Oct 2023**
Opening Balance	$3,407.44	$3,205.88
Depreciation Full Year	$681.49	$641.18
Donated Equipment		$650.00
Additions	$921.49	$286.37
Net	$921.49	$936.37
Depreciation Part Year	$92.15	$93.64
Total Depreciation	$773.64	$734.81
Closing Balance	**$3,555.29**	**$3,407.44**

“HAA Presents”

Members of the public of any age in the GTHA can now request an in-person or virtual presentation from the HAA directly on our website.

Simply navigate to www.amateurastronomy.org and select “Contact” from the top menu bar and then click on “HAA Presents” (see image below). You will be presented with a request form and once all required fields are entered, click on the “Submit” button and you will see a confirmation message that your request has been successfully submitted.



Once received, our Public Education Director, Jo Ann Salci, will respond to your request within 5 business days to discuss next steps. If you have any questions, feel free to send an email to: haapresents@amateurastronomy.org.

HAA Outreach Presentations with Vulnerable Sectors

The HAA executive has created a policy for any HAA member who wishes to do outreach presentations to vulnerable sectors, which includes children under 18 years of age and vulnerable adults. This does not include our general club outreach activities.

Presentations include in-person or virtual sessions where parents/guardians may not be present. **As it is not always possible to anticipate caregiver attendance at outreach activities for children under the age of 18, or vulnerable adults, it is therefore a requirement for HAA member-volunteers who work with these vulnerable populations to complete a Police Vulnerable Sector Check**.

These can be obtained only in your region of residency. Costs vary from one area to another. They will be kept on file by the HAA Education Director. No details regarding the findings of the check will be made in any way public or viewed beyond the HAA Education Director.

The HAA will reimburse any member who wishes to do outreach presentations to vulnerable individuals, provided a receipt is submitted.

Please contact Jo Ann Salci if you have any questions about this policy and/or if you wish to put your name forward to help with outreach activities to young people! This policy is effective immediately.

William J. McCallion Planetarium

McMASTER UNIVERSITY, HAMILTON, ONTARIO

- **Public transit available directly to McMaster campus**
- **Tickets $10 per person; private group shows $169.50**
- **Upcoming shows:**
  - **Jan 8: Introductory Astronomy for Kids — Solar System**
  - **Jan 15: Strange New Worlds: Planets Beyond Our Solar System**
  - **Jan 22: Lost at Sea**
  - **Jan 25: Introductory Astronomy for Kids — Galaxies**
  - **Jan 29: Moon Madness**
- **For show times and further details, visit www.physics.mcmaster.ca/planetarium**

UPCOMING EVENTS

January 10, 2025 - 7:30 pm — H.A.A. Meeting at St. Matthew's Anglican Church, Burlington. Our guest speaker will be *Dr. Michael Richer* of the National Astronomical Observatory, San Pedro Mártir, Baja California, Mexico. **There is the option of attending online via Zoom.** Past meetings can be viewed on our YouTube channel.

February 14, 2025 - 7:30 pm — H.A.A. Meeting at St. Matthew's Anglican Church.

2024-2025 Council

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Check out the H.A.A. **Website**
www.amateurastronomy.org

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All active HAA members have the privilege of access to an exclusive HAA members only dark sky location.

Be on the lookout for e-mails with dark sky observing details. Space is limited.

The Harvey Garden HAA Portable Library

Contact Information

E-mail: library@amateurastronomy.org