

Event Horizon

Volume 30, Number 2
December 2022



From The Editor

First of all, it is with great sadness to learn of Michael Jefferson's passing. He was a great friend, he was a founding member of the HAA, as well as a frequent contributor to this newsletter, and he was our unofficial Event Horizon "archivist". A short obituary is on page 2 as part of the Chair's Report.

In this E.H. is a gallery of last month's total lunar eclipse, as well as the 2021-2022 club Financials.

Rest in peace, Mike! You will be missed!

Bob Christmas,
Editor
editor 'AT' amateurastronomy.org



Chair's Report by Bernie Venasse

Sudden Changes

Sudden changes occur at any time. They can seem to follow a schedule in life. This time of year, the weather seems to catch us unawares as it seems to suddenly change to winter. Remember to be prepared ... in your viewing habits and in your lifestyles. Dew heaters, handwarmers, thermal underwear and heated clothing are only a few items of necessity for winter viewing. Resolutions for the new year are being considered as well. Is this the year that you undertake a new viewing program? Messiers? Caldwell's? A list of binaries? Is this the year that you might take a mentoring role? Volunteer in some capacity? Whatever it is, just do it!

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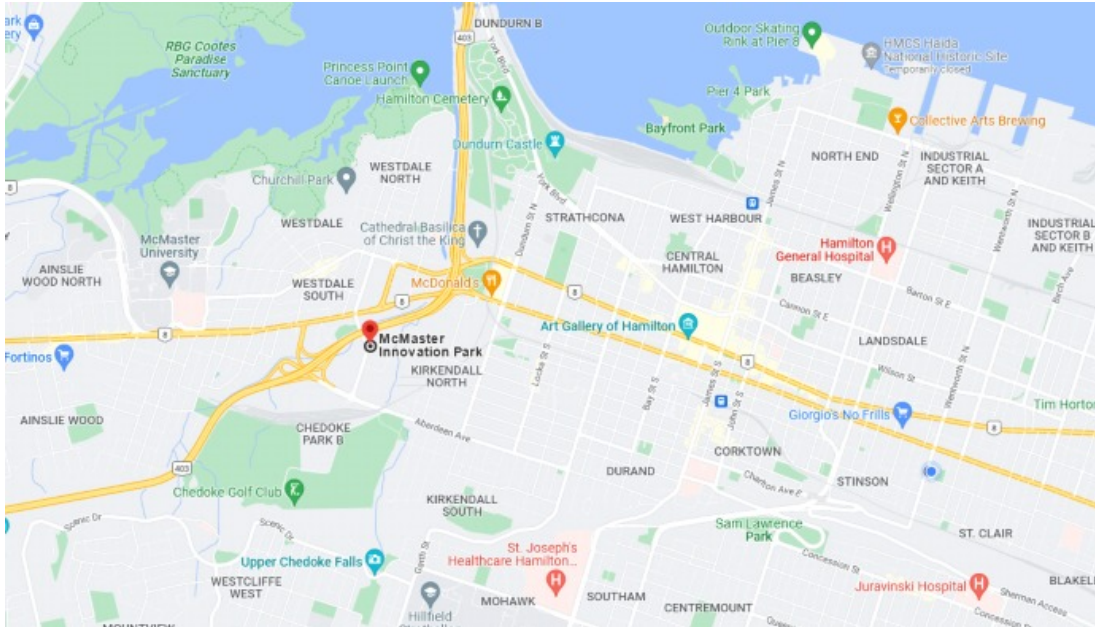
- HAA Explorers
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Chair's Report (continued)

A Thank You goes out to Doug Turner for presenting the 2023 Calendar overview at our November meeting. And thank you to all the contributors.

A BIG Thank You goes to Chris Strejch who handled the on-site media controls and to Sue MacLachlin for moderating the ZOOM aspect of the meeting. Yes, we are still working on getting the audio systems working better... please bear with us!



Our Next Meeting is scheduled for December 9, 2022, at McMaster Innovation Park. MIP is located at 175 Longwood Rd. S. in Hamilton. This will be a hybrid meeting combining a live audience with a Zoom presence. Doors open at 7:00 and the meeting begins promptly at 7:30.

The agenda is a short one. There will not be a featured speaker so that we can go straight into Steve Germann's Sky This Month after the regular preliminaries. We will then award the door prizes and adjourn to the atrium for a social event.

The Passing of Michael Jefferson



We have some very sad news to share with the HAA community.

Michael Jefferson passed away on November 22, 2022.

Mike was a founding member of the Hamilton Amateur Astronomers, and a familiar face on our council over the years. His contributions to the club have been many. More importantly, he was a treasured friend. We are going to feel his loss keenly.

Mike's funeral/celebration of life will be held at Ryerson United Church, 265 Wilson St E, Ancaster, at 2:00pm on Sunday, December 11th.

(Continued on [page 3](#))

Masthead Photo: *The Total Lunar Eclipse of November 8, 2022, by John Gauvreau.*

See more images of the November 8, 2022 total lunar eclipse in our eclipse gallery on pages 22, 23 & 24.

Chair's Report (continued)

Inreach and Outreach events

November 26, 2022, Grimsby Welcome Centre... Saturday was a windy, rather chilly evening. Passers-by were invited to enjoy the views of the Moon, Saturn, Jupiter, and Mars through the scopes of about a dozen members. When the traffic slowed down we retired indoors to the Tim's for some warm-me-ups and good conversation.

What's happening around the club?

The Loaner Scope program is very active. If you would like to partake in this program, please contact Paula via loanerscope@amateurastronomy.org. A list of the available equipment can be found on the club web page at amateurastronomy.org.

Membership growth... new members list... Welcome!!

We would like to take this opportunity to welcome new and/or returning members (Oct 30 - Nov 25).

Eugenia Anton, Stoney Creek. Individual Membership.
Howard Williamson, Dundas. Individual Membership. Rejoined
Pedro Toito, Hamilton. Individual Membership.
Dr. Serge Puksa, Hamilton. Individual Membership. Rejoined
Rod Crawford, Oakville, Family Membership.
Melissa Kenyon, Hamilton. Individual Membership.
Ivan Gerginov, Oakville, Individual Membership.

Current membership:	61 Individual memberships	= 61
	32 Family memberships (x2)	= 64
	<u>1</u> Honorary membership	= <u>1</u>
	94 memberships	126

2021-22 Memberships to renew...	71
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HAA's Loaner Scope Program

We at the HAA are proud of our Loaner Scope Program. It allows members who don't own a telescope to get more up close with the night sky, and it allows members to explore different types of telescopes! Paid members are welcome to borrow a telescope for one month.



We have telescopes of varying expertise levels, a MallinCam, a spotter scope and various eyepieces.

Please visit the HAA website for more

information!

If you are interested in borrowing a scope, please contact Paula Owen at loanerscope@amateurastronomy.org.

Telescopes are loaned out on a first come basis.

HAA Helps Hamilton

Hey, guess what? We're coming back in person! The H.A.A. is once again 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](http://HamiltonFoodShare.org).

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





Hamilton Amateur Astronomers

**December Cold Moon Social
Friday December 9, 2022
McMaster Innovation Park
General Meeting 7:30 pm**

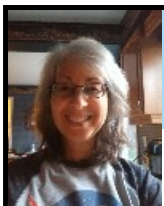
The regular meeting will include the opening announcements and the Sky this Month to allow for a longer break so members and guests can mingle over coffee and potluck treats. If you are able to contribute an item to the treat table such as seasonal baking/sweets, Timbits, a small tray of fruit or veggies, etc. please contact

Sue MacLachlan at
smaclach@teksavvy.com

Coffee, tea, and water will be provided.



As always the HAA will be accepting non-perishable food items or cash donations for the Hamilton Food Share.



...A column for young astronomers - and those young at heart!

Welcome back! In the April HAA Explorers article, we explored space “rocks” which are objects in our solar system made of rock, metal and ice. They are the leftovers from the creation of the solar system. They range in size from dust particles to over 900 kms! There are two basic types: Asteroids and Comets. Let’s explore asteroids in more detail!

Asteroids on the Move!

Last month we explored Mars. Between Mars and the next planet, Jupiter, lies the Main Asteroid Belt, where 90% of the asteroids in our solar system exist. The gap between Mars and Jupiter is large enough for a planet. Perhaps the asteroids are the leftovers of a planet that never formed!? There are millions of asteroids made up of rock and metals. They come in all shapes, sizes and materials, but are all smaller than planets. Even if all of the asteroids were squeezed together, they would form an object only 3% the size of Earth’s Moon...not big enough to be a planet.

Asteroids are hard to see from Earth with your eyes. They are dim and can look like a star. In fact, the word “Asteroid” means “star-like”. They can be seen through telescopes with the help of star maps from one night to the next. The stars on the map don’t move, but the asteroids do! They actually orbit the Sun just as the planets do, but they all take different amounts of time. Some orbit the Sun in as little as 3 years and some in 6 years, and some even longer. About 30,000 asteroids have been catalogued and 12,000 of them have been named. Four of them have been named after the Beatles - John, Paul, George and Ringo! And did you know that more than 150 asteroids have their own Moons?!

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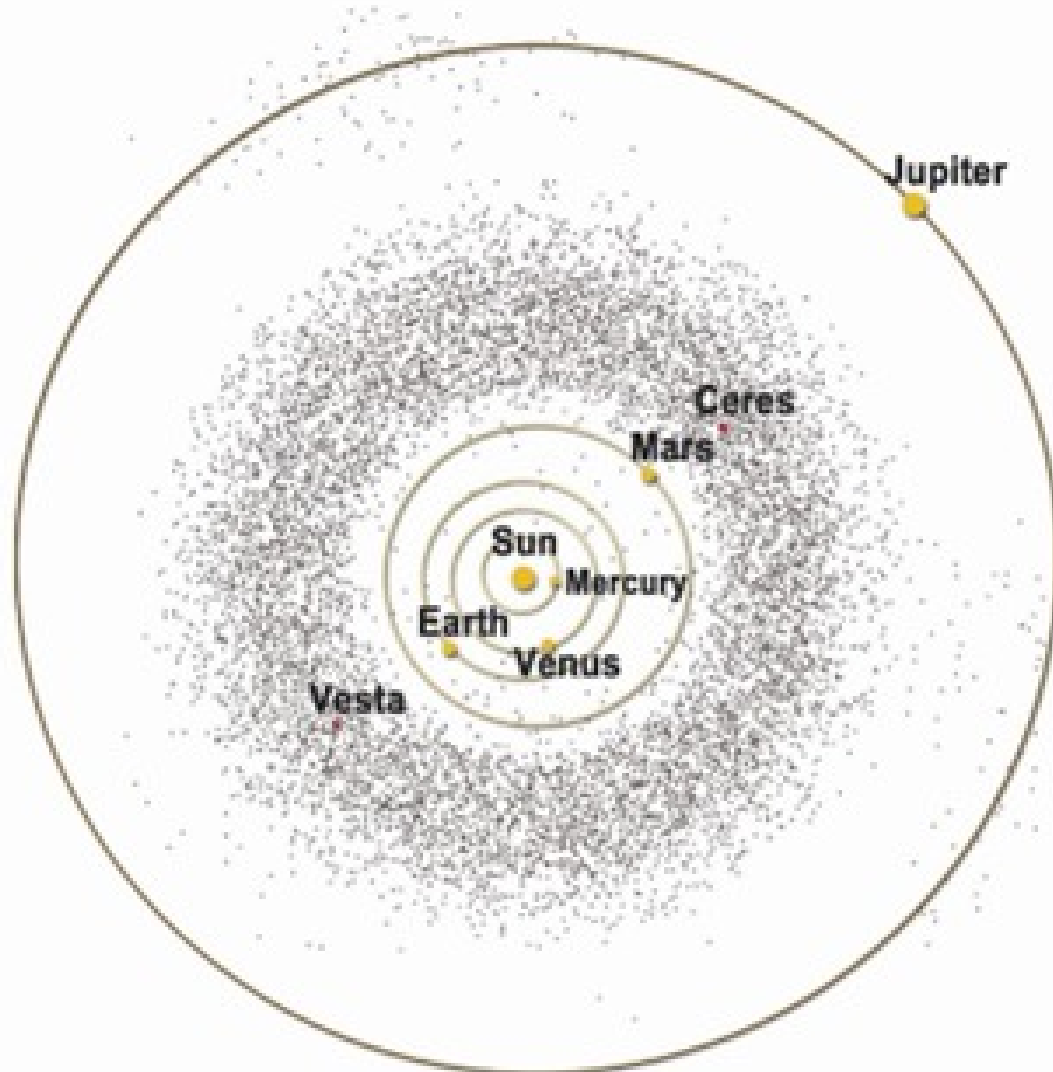


Image Credit: NASA

HAA Explorers (continued)



Mathilde

Gaspra

Ida

Mathilde, Gaspra, and Ida are three asteroids that have been imaged by NASA spacecraft. In this image, you can see that asteroids come in a variety of shapes and sizes.

Image Credit: NASA/JPL



Vesta: With the 3 craters nicknamed “Snowman” at the top left, and the largest mountain Rheasilvia at the bottom

Credit: NASA/JPL-Caltech/UCAL/MPS/DLR/IDA

Not all asteroids are found in the main asteroid belt. For example, there are asteroids that travel in Jupiter’s orbit, both ahead of and behind it, and they are called Trojan Asteroids. And then there are asteroids found closer to Earth. They are called NEO (Near Earth Objects) and PHO (Potentially Hazardous Objects). Over 20,000 asteroids have been named as NEOs. NASA and other space agencies around the world are exploring these objects to learn more about how they can be deflected from Earth’s orbit if that is ever necessary. The recent DART mission is an example of that!

Ceres is the largest object in the asteroid belt and was named after the Roman goddess of harvest. In the year 2006, when Pluto was named a dwarf planet, Ceres was also named a dwarf planet. Vesta is the second largest object in the asteroid belt and *is* an asteroid! It is bright and has the tallest mountain in the solar system at 16 miles high and is called Rheasilvia. It also has a series of craters that look like a snowman!

There have been missions to explore asteroids. The Dawn mission successfully mapped out Vesta, seen in the photo above, as well as Ceres. A more recent mission called OSIRIS-REx, is underway and on September 24, 2023, it will land back on Earth with samples it took from the asteroid named Bennu. Mark your calendars!



*OSIRIS-REx
Credit: NASA.gov*

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Search for Asteroids!

I	N	D	W	A	R	F	P	L	A	N	E	T	C
M	I	E	R	H	E	A	S	I	L	V	I	A	R
M	A	L	O	O	M	G	A	S	P	R	A	A	A
E	T	C	I	R	C	I	B	A	E	C	V	S	T
T	N	E	D	B	S	C	S	R	D	R	E	T	E
A	U	R	R	I	T	N	A	S	L	I	S	E	R
L	O	E	V	T	A	I	T	L	I	S	T	R	S
R	M	S	U	N	N	E	B	T	H	O	A	O	E
T	R	O	J	A	N	S	T	S	T	E	N	I	D
S	A	D	A	V	A	K	S	I	A	I	I	D	L
N	L	E	A	A	S	B	E	I	M	B	E	L	T
N	L	N	S	W	R	A	D	I	A	L	T	O	S
E	R	T	W	S	N	K	C	O	R	R	R	E	S
O	C	R	X	E	R	S	I	R	I	S	O	R	T

MISSION
BENNU
ROCK
TROJAN
IDA
DWARF PLANET
CRATERS
CERES
BELT
OSIRISREX
NEO
VESTA
MATHILDE
GASPRA
ORBIT
ASTEROID
RHEASILVIA
METAL
DAWN
MOUNTAIN

The WordSearch.com

Answers on page 9.

Things to do until next time **:

** Check with your parents or caregivers before checking out websites.

- 1. Visit this website to learn more about Asteroids: <https://spaceplace.nasa.gov/asteroid/en/>
- 2. Visit this website to learn more about Exploration of Asteroids, Comets and Meteors: https://solarsystem.nasa.gov/asteroids-comets-and-meteors/asteroids/exploration/?page=0&per_page=10&order=launch_date+desc%2Ctitle+asc&search=&tags=Asteroids&category=33#otp_missions
- 3. Make asteroids you can eat! (With the help of an adult!): <https://spaceplace.nasa.gov/asteroid-potatoes/en/>

(Continued on [page 8](#))

HAA Explorers (continued)

During December, check out:

1. On December 8th around 8pm, check out the Full Moon with Mars to its upper right. Mars is at opposition tonight! (See the November HAA Explorers article!) You will need a clear view of the Eastern horizon:



*Image generated
using Stellarium*

2. On December 29th around 7 pm, check out the Waxing Crescent Moon, Jupiter and Saturn in the Southern sky:



*Image generated
using Stellarium*

(Continued on [page 9](#))

HAA Explorers (continued)

Finally:

How do planets hold up their pants? Answer below!

If you have a question that you would like answered in the newsletter, please send it to education@amateurastronomy.org

Answer: With the Asteroid Belt!

Thank you to Ro for reviewing this article! 😊

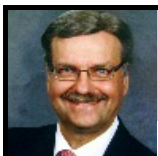
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Answers to Search for Asteroids:



The WordSearch.com



This December marks a culmination of many things astronomical. The winter solstice, when the sun is as far south compared to us, as it can get, and the days are shortest, means that the nighttime moon is higher, the nights start sooner and last longer, with stars out at 7 PM.

That will prove advantageous to us as it will make the Mars occultation on the 7th visible in darker skies, and the cold weather means no bugs and clearer skies.

In addition to those events, we can look forward to a world-class meteor shower, and a chance to give an astronomy - themed gift that makes a difference for you or your friends.

Meteor Showers

December 14 and January 3 feature two of the best Meteor showers of the year: the *Geminids* and the *Quadrantids*. Both feature zenithal hourly rates (ZHR) of 120, which means you will probably see about one meteor every 2 minutes under unobstructed dark skies. (You can only observe about a quarter of the sky by yourself.) These meteors are medium speed, so unlike the Perseids, will be slower and easier to see.

Astronomy gadgets

Our club is devoted to the advancement and enjoyment of astronomy, so it's my role to find enjoyable things to observe, as much as it is to find 'new' or 'advanced' things to observe. We can have both. Being comfortable while observing and ensuring your equipment is working and easy to use, are a big factors for your enjoyment.



This device allows most binoculars to be securely attached to a standard tripod. This makes it a lot easier to look through them at the night sky. In use, it goes here.

The key advice when using binoculars is, don't try to use them to look near the zenith - straight up. It will cause too much neck strain. Wait 2 or 3 hours until your target is closer to the western horizon.



Nothing stops an observing session faster than dew on the optics. If you don't have a hair dryer and 115v power tank handy, your optics will have to be put away for the night, at the first sign of dew.

Not so if you have 'dew protection'. Another excellent thing to have and use in the winter is hand warmers. I am not saying you need them for your hands, but you can wrap them around the telescope and hold them in place with rubber bands. They will prevent dew and work for many hours without fuss.

(Continued on [page 11](#))

The Sky for December 2022 (continued)



These hand warmers have a very fine iron powder dust, which on contact with the air, slowly oxidizes (rusts), providing gradual low intensity heat. To prevent price matching, the big box stores don't have such items at the same time. These (left) are available now at Canadian Tire.

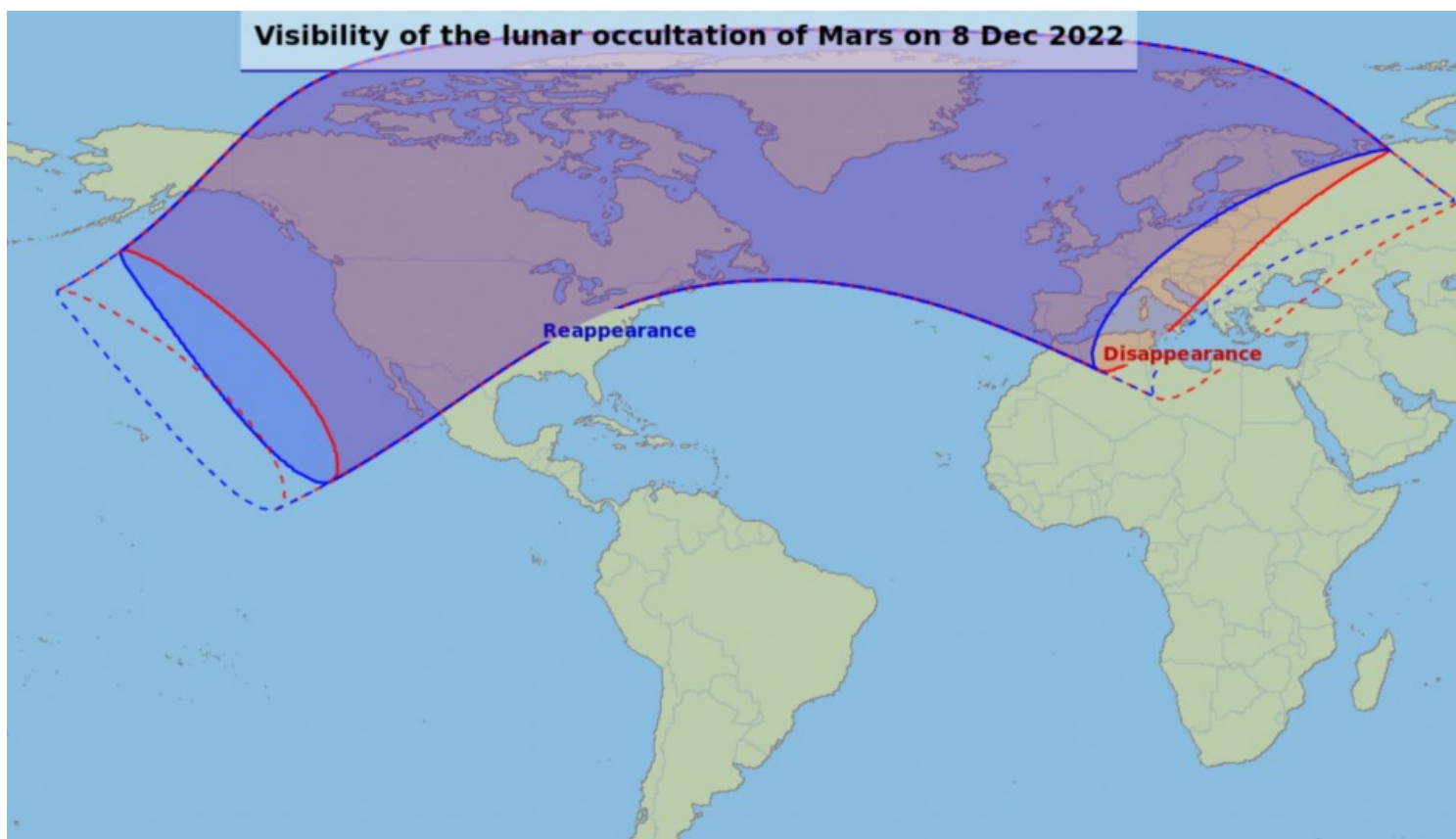
And the ones on the right are the ones I use, Little Hotties.

Mars - the star of the show and our monthly armchair astronomer feature.

Mars will be in *opposition*, and that's the middle of the best time to view Mars through a telescope. Because Mars' orbit is just outside Earth's orbit, there is a 6 to 1 difference in distance depending on the orbital positions. Mars only stays this easy to see for a few more weeks, so if you can get a telescope pointed at it, take the opportunity. In fact you don't even need to go to a dark location to do this, as long as there's no glare right in your face, or primary mirror of your telescope, Mars will be easily viewable with a telescope, from anywhere in town.

Mars is in opposition about every 26 months. Some of those times, there is a Full Moon. Some of those Full Moons, the orbit of the moon is such that Mars can be obscured, or *occulted*. On the evening of December 7, this is one of those rare triple conditions being met.

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The Sky for December 2022 (continued)

This is my call to you for action. These conditions won't happen again for at least 37 years. Check this off your bucket list now to eliminate distraction later.

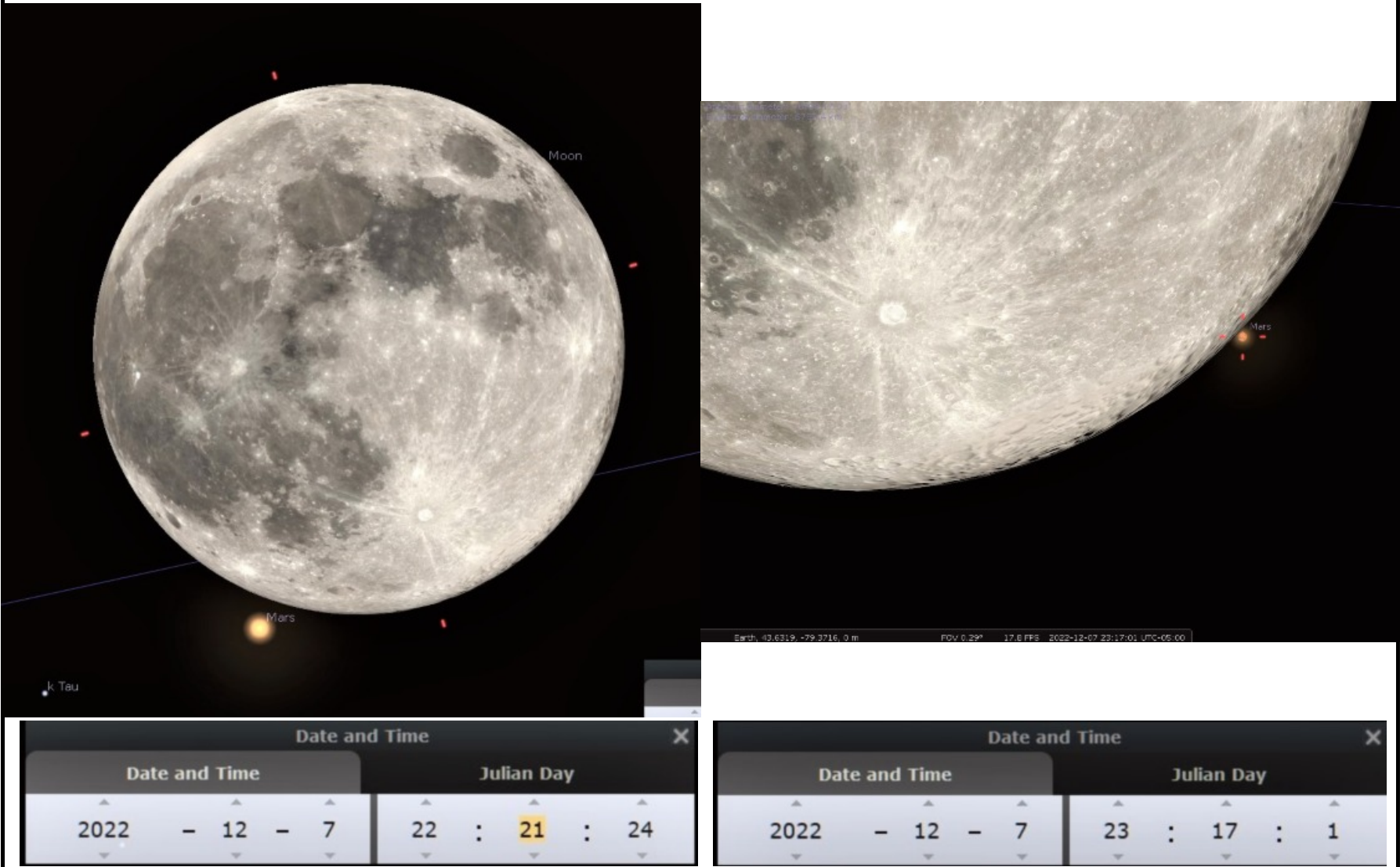
The true opposition time of Mars, occurs early on December 8th for us. The occultation looks better in binoculars, but you can observe it unaided. Just be there. The occultation looks better in binoculars, but you can observe it unaided. Just be there. In other words, the moon will cover Mars when Mars is as large as it ever gets, viewed from earth.

The map on page 11 shows how close we came to needing to travel in order to this event. Hamilton is not far from the southern edge of the shaded region in the map. Although the diagram reads Dec 8, that is *UTC* which is *5 hours later than us*. The actual occultation happens on December 7, 2022, 10 PM Eastern time.

Dotted regions indicate where the Moon and Mars will be too close to the horizon to see reliably. On the right side, the red line indicates that by the time the Moon rises, when viewed from those map locations, Mars will already be obscured. The blue region on the left shows that for observers looking from that part of Earth, Mars will be seen to become occulted, but will not emerge until the Moon has set.

Seen on the map, we in Hamilton are close to the south edge of the visibility area, and Mars will be close to the southern edge of the Moon when the Moon moves in front of Mars. These two screenshots below show that from our area, all the action is between 10:20 PM and 11:18 PM, but if you plan to use a telescope, you will need to be out there at least 30 minutes in advance to be sure you have a safe stable position to see the moon from and your scope is set up and ready to use.

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Images generated using Stellarium

The Sky for December 2022 (continued)

Good advice is, once set up, to cover the scope with part of a cardboard box to prevent it from dewing over before you can use it. You can also specifically observe Mars itself, or the Moon, as the Moon catches up to Mars. During the time of full Moon, you won't see many stars in the sky though.

So this Month, be sure to get outside on the 7th at about 10 PM to see Mars covered up by the Moon and be revealed again about 40 minutes later.

It will be an experience and an impression you can share with fellow members at the December meeting.

If you want to see how hard amateur astronomy advocacy is, try to convince a friend to observe with you. (It will help to bring some excellent munchies to bribe them.)

I am always on the lookout for astronomy related news in social and even on mainstream media. Feel free to forward interesting things you notice, and I will research them and add something to my monthly presentation.

In this vein, I received a note about a recent fireball meteor over Brantford.

Here is a screen shot showing some information about it.

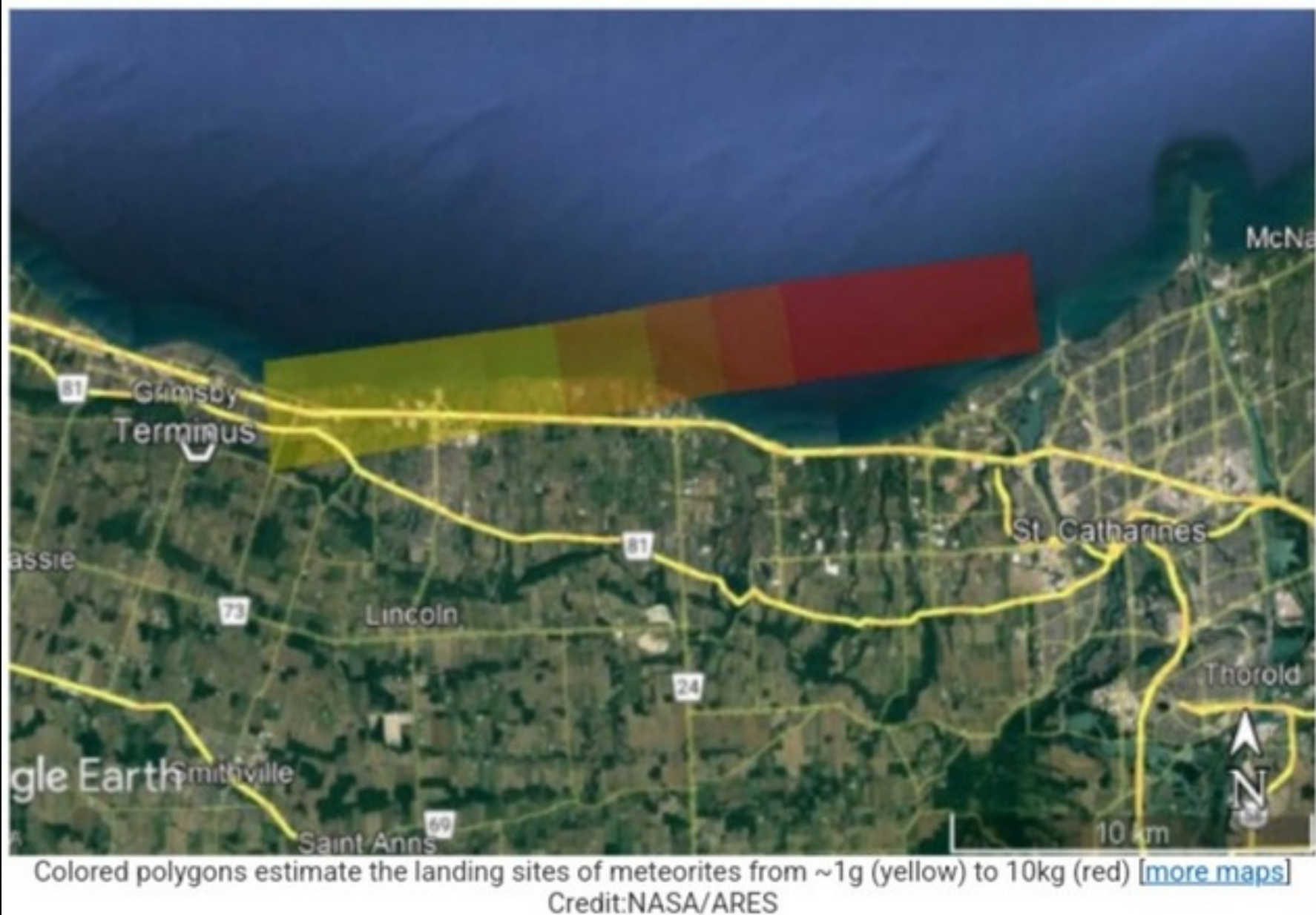
(Continued on [page 14](#))

SMALL ASTEROID DISINTEGRATES OVER CANADA: This morning, a small asteroid, which had been discovered only hours earlier, struck Earth's atmosphere and completely disintegrated over Canada. An [automated camera](#) at the CN Tower in Toronto captured the fireball:



Astronomer David Rankin found the space rock in survey images taken at Mt. Lemmon, Arizona. The observations triggered a warning of [an imminent impact](#). Seven observatories were able to photograph the sub-meter object before it impacted the Earth's atmosphere on Nov. 19th at approximately 08:27 UTC over Brantford, Ontario, Canada.

The Sky for December 2022 (continued)



This particular fireball was special because it was spotted on a collision course with Earth just 6 hours before it burned up in the atmosphere.

Above is the predicted location of the debris.

This is the second time that parts of a meteoroid have rained down on the area near Grimsby.

If you happen to find a piece, they are generally worth about 1 dollar a gram. The original meteor probably weighed about a metric tonne, so that was a million dollars falling from the sky. Alas, it has broken into pieces and some burned up. The rest is probably in Lake Ontario.

For more experienced observers, or those seeking a longer list of targets, consult the excellent list of timely observation targets in the 'What's up in Awards' article in this edition of the Event Horizon.

I wish you clear skies for these and other observations this month.



Contents:

What's up in awards?

Rising Star Program: December-January

Pathways Observing Program targets... December-January

Messier Observing Program: December-January... Including target hints!!

The Planets, Comets, Upcoming Meteor showers, Award Programs

What's Up in Awards?

The Hamilton Amateur Astronomers Observing Programs are designed to provide direction for amateur astronomer's observations and to reward their accomplishments. A certificate is awarded when the goals of the observing program are met. The HAA offer various certificates based upon achieving specific observing goals. There is no time limit for completing the required observing but good record keeping is required. Each observer must perform all the requirements of each Observing Program themselves. However, observers are able to receive help from (an)other observer(s) as they learn to find and identify different objects. Each observer will then need to locate and observe the object on their own to meet the goals of the program. Observing logs will be submitted to and examined by the HAA Observing Programs Project Coordinator to confirm all observations before a certificate is granted.

This column tells you which objects are visible this next month for the HAA Observing Programs and other sights of interest.

HAA Rising Star Observing Award

December

Constellations: Taurus, Perseus

Stars: Hamal

Double Stars: Alcyone

Object Pairs: NGC 1325/NGC 1332

Messier Objects: M45

January

Constellations: Auriga, Orion, Taurus

Stars: Aldebaran, Betelgeuse, Capella, Rigel

Double Stars: gamma Leporis

Object Pairs: M42 / M43

Messier Objects: M35, M42, M45

Pathways Observing Program

Group C

Observable in December

Autumn Constellations: Find, observe, sketch: *Lyra*.

Stars: Find, observe, sketch: *Fomalhaut*.

Asterisms: Find, observe, sketch: *Circlet*.

Planet: Any one planet that is remaining in the list.

Group A

Observable in January, February, March

Winter Constellations: Find, observe, sketch: *Taurus, Orion, Gemini*.

Stars: Find, observe, sketch: *Capella, Sirius, Betelgeuse*.

Asterisms: Find, observe, sketch: *Head of the Whale, Winter Triangle, Winter Hexagon*

Planet: Any one planet that is remaining in the list.

(Continued on [page 16](#))

What's Up in Awards? December'22-January'23 (continued)

HAA Messier Objects Observing Award

December Messier targets

- M2** This is a small, bright globular cluster in Aquarius. A low power telescope field will show a round fuzzy patch, brighter in the center and fading to the edge, in a field with no other bright objects.
- M15** This globular cluster in Pegasus is very similar to M2 in size and brightness, except it is surrounded by several bright stars. Best view is through a telescope at medium to high power.
- M29** This galactic cluster is a small, sparse group of stars in Cygnus. A telescope will easily resolve the members of this cluster.
- M39** Dark skies will allow this large, bright cluster in Cygnus to be seen with the naked eye as a hazy patch of light. Binoculars easily resolve this cluster into its bright and widely scattered members and provide a better view than can be seen with most telescopes.
- M31** This is the famous Andromeda Galaxy, our closest galactic neighbor, and the largest, brightest galaxy to be seen in the northern sky. The ability to see M31 with the naked eye provides a good test of the darkness of your skies. M31 is so large that binoculars provide the best view, allowing the entire galaxy to be seen in one field of view. Look for an elongated patch of light, with a bright, round central core.
- M32** This is an elliptical companion galaxy to M31. Through a telescope look for a slightly oval ball of fuzz in the same low power field as the core of M31.
- M110** Another elliptical companion galaxy to M31, lying on the opposite side of the core as M32. Through a telescope look for a large, oval patch of light. Although M110 is as bright as M32 it is much larger and thus has a lower surface brightness making it a difficult object in light polluted skies.

January Messier targets

- M33** This is a very large (about the size of the full moon) face on spiral galaxy in the constellation Triangulum. The best and easiest views of M33 can be found with a pair of binoculars. Look for a large, round hazy patch of light with little detail at first glance. M33 can be glimpsed with the naked eye in dark clear skies. Finding M33 in a telescope can be a challenge because of its size. Use the widest field eyepiece you have and look for a change in light level to identify the galaxy.
- M103** This is a small, sparse open cluster in Cassiopeia. Through a telescope the cluster is very sparse, four bright stars amidst the slight glow of much fainter companions.
- M52** A small to mid-aperture telescope will begin to resolve this cluster. Look for a triangular patch of light with some stars clearly resolved, but most of the cluster members provide only a hint of graininess.
- M76** Known as the Little Dumbbell, this planetary nebula in Perseus is one of the dimmest objects in the catalogue. Look for a small, faint, oblong patch of light. Not an obvious object, if you don't see it at first try varying magnifications to bring it out. Fortunately, M76 is located near a bright star which aids in locating the correct field to search.
- M34** This is a large and bright, but sparse open cluster located in Perseus. Visible as a faint patch of light to the naked eye, it is obvious and easy to resolve in binoculars. In fact, binoculars provide a better view of this cluster than most telescopes.

(Continued on [page 17](#))

What's Up in Awards? December'22-January'23 (continued)

M74 This galaxy in Pisces is a smaller and fainter version of M33, a face on spiral galaxy with low surface brightness. M74 is arguably the most difficult object to find in the Catalog. You will need very dark, clear skies to easily see it, anything less than perfect conditions will make M74 nearly impossible to find. Look for a very faint fuzzy star, which is the bright central condensation, surrounded by a very faint glow. Try all your tricks on this one; star hop to the correct field, try varying magnification, tap the scope to detect the galaxy through its motion. If all of the above fail, try again another night or seek darker skies.

M77 This is a small faint galaxy in Cetus. Through a telescope look for a fuzzy, oval shaped patch of light, bright in the center, fading towards the edges.

The Planets... December 2022 via (BBC) Sky at Night Magazine

Mercury: Poor positioning at start of December, improving through the month, jostling with Venus in the evening twilight.

Venus: Evening planet. Near Mercury in the latter half of December, when it sets 70 minutes after sunset.

Mars: Bright planet reaching opposition 8 December (06h UTC). Occulted by the full Moon in the evening of 7 December (Approx 22:30 - 23:15 EST; see diagrams on page 12 in The Sky for December).

Jupiter: Bright evening planet. Waxing Moon nearby on the evenings of 1 and 29 December.

Saturn: Evening planet but past its best. 15%-lit waxing crescent Moon nearby on the evening of 26 December.

Uranus: Well placed evening planet. Occulted by the almost full Moon on the afternoon of 5 December.

Neptune: Best at the start of December. Jupiter lies 8° east at the end of December.

The Planets... January 2023 via (BBC) Sky at Night Magazine

Mercury: A great planet for evening viewing. Mercury nears Venus on 1 January, after that it is hard to see. Poorly placed at the end of the month.

Venus: A brilliant planet for evening viewing. Venus is near Mercury on 1 January and Saturn on 22 January. Best at the end of the month.

Mars: Well-positioned evening planet, reaching 60° altitude. Shrinks from 14-10 arcseconds over the month.

Jupiter: Evening planet best at the start of the month, then losing altitude. Moon close on 25 and 26 January.

Saturn: Best viewing at the start of the month. Near Venus on 21 and 22 January and the Moon on 23 Jan.

Uranus: Well-placed evening planet shining at mag. +5.7. Occulted by the Moon on 1 January.

Neptune: Deteriorating evening planet, close to Jupiter. Losing altitude by the end of the month.

Comets December 2022-January 2023 via Seiichi Yoshida – Click here:

<http://www.aerith.net/comet/future-n.html>

Meteor Showers via American Meteor Society

Geminids

Period of activity: November 19th, 2022, to December 24th, 2022

Peak Night: Dec 13-14, 2022

The Geminids are usually the strongest meteor shower of the year and meteor enthusiasts are certain to circle December 13 and 14 on their calendars. This is the one major shower that provides good activity prior to midnight as the constellation of Gemini is well placed from 22:00 onward. The Geminids are often bright and intensely colored. Due to their medium-slow velocity, persistent trains are not usually seen.

(Continued on [page 18](#))

What's Up in Awards? December'22-January'23 (continued)

These meteors are also seen in the southern hemisphere, but only during the middle of the night and at a reduced rate.

Shower details - Radiant: 07:24 +32.3° - **ZHR:** 150 - **Velocity:** 21 miles/sec (medium - 34km/sec)

Parent Object: 3200 Phaethon (asteroid)

Next Peak - The Geminids will next peak on the night of Dec 13-14, 2022. On this night, the moon will be 72% full.

Ursids

Period of activity: December 13th, 2022, to December 24th, 2022

Peak Night: Dec 21-22, 2022

The Ursids are often neglected due to the fact it peaks just before Christmas and the rates are much less than the Geminids, which peaks just a week before the Ursids. Observers will normally see 5-10 Ursids per hour during the late morning hours on the date of maximum activity. There have been occasional outbursts when rates have exceeded 25 per hour. These outbursts appear unrelated to the perihelion dates of comet 8P/Tuttle. This shower is strictly a northern hemisphere event as the radiant fails to clear the horizon or does so simultaneously with the start of morning twilight as seen from the southern tropics.

Shower details - Radiant: 14:36 +75.3° - **ZHR:** 10 - **Velocity:** 20.5 miles/sec (medium - 33km/sec)

Parent Object: 8P/Tuttle

Next Peak - The Ursids will next peak on night of Dec 21-22, 2022. On this night, the moon will be 3% full.

Quadrantids

Period of activity: December 26th, 2022, to January 16th, 2023

Peak Night: Jan 3-4, 2023

The Quadrantids have the potential to be the strongest shower of the year but usually fall short due to the short length of maximum activity (6 hours) and the poor weather experienced during early January. The average hourly rates one can expect under dark skies is 25. These meteors usually lack persistent trains but often produce bright fireballs. Due to the high northerly declination (celestial latitude) these meteors are not well seen from the southern hemisphere.

Shower details - Radiant: 15:20 +49.7° - **ZHR:** 120 - **Velocity:** 25 miles/sec (medium - 40.2km/sec)

Parent Object: 2003 EH (Asteroid)

Next Peak - The Quadrantids will next peak on the Jan 3-4, 2023, night. On this night, the moon will be 92% full.

Observing Award Recipients

(Continued on [page 19](#))

We would like to give recognition and congratulations to any member who completes an award program regardless of the sponsoring organization. Congratulations to the following:

HAA Pathfinder

A01 Anastasia Morissette

HAA Rising Star Awards

001 Jean Jefferson

002 Kevin Salwach

003 Jo Ann Salci (November 2021)

RASC

Jo Ann Salci

Exploring Exoplanets (on-line course)

Swapna Shrivastava

Explore the Moon

Explore the Universe

Bernie Venasse

Explore the Universe

What's Up in Awards? December'22-January'23 (continued)

Astronomical League

Bernie Venasse

Binocular Double Star Observing Program 143
Binocular Variable Star Observing Program 051
Binocular Solar System Observing Award 183-B
Sketching Observing Program 052
Meteor Observing Program 207
Galileo (Binocular) Observing Award 75-B
Variable Star Observing Program 54
Open Cluster Observing Program (Advanced) 106
Advanced Observer Award 61
Sunspotter Certificate 220 (pictured)



Please feel free to contact me with any questions or comments at chair@amateurastronomy.org

— Bernie

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.

“HAA Presents”

Members of the public of any age in the GTHA can now request an in-person (once it is safe to do so) 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.



Home About Newsletters Gallery Club Events Resources **Contact** Q

HAA Presents

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.



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

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

Binoculars: A Great First Telescope

David Prosper

Do you want to peer deeper into the night sky? Are you feeling the urge to buy a telescope? There are so many options for budding astronomers that choosing one can be overwhelming. A first telescope should be easy to use and provide good quality views while being affordable. As it turns out, those requirements make the first telescope of choice for many stargazers something unexpected: a good pair of binoculars!

Binoculars are an excellent first instrument because they are generally easy to use and more versatile than most telescopes. Binoculars can be used for activities like stargazing and birdwatching, and work great in the field at a star party, along the hiking trail, and anywhere else where you can see the sky. Binoculars also travel well, since they easily fit into carry-on luggage – a difficult feat for most telescopes! A good pair of binoculars, ranging in specifications from 7x35 to 10x50, will give you great views of the Moon, large open star clusters like the Pleiades (M45), and, from dark skies, larger bright galaxies like the Andromeda Galaxy (M31) and large nebulae like the Orion Nebula (M42). While you likely won't be able to see Saturn's rings, as you practice your observing skills you may be able to spot Jupiter's moons, along with some globular clusters and fainter nebulae from dark sites, too.

(Continued on [page 21](#))



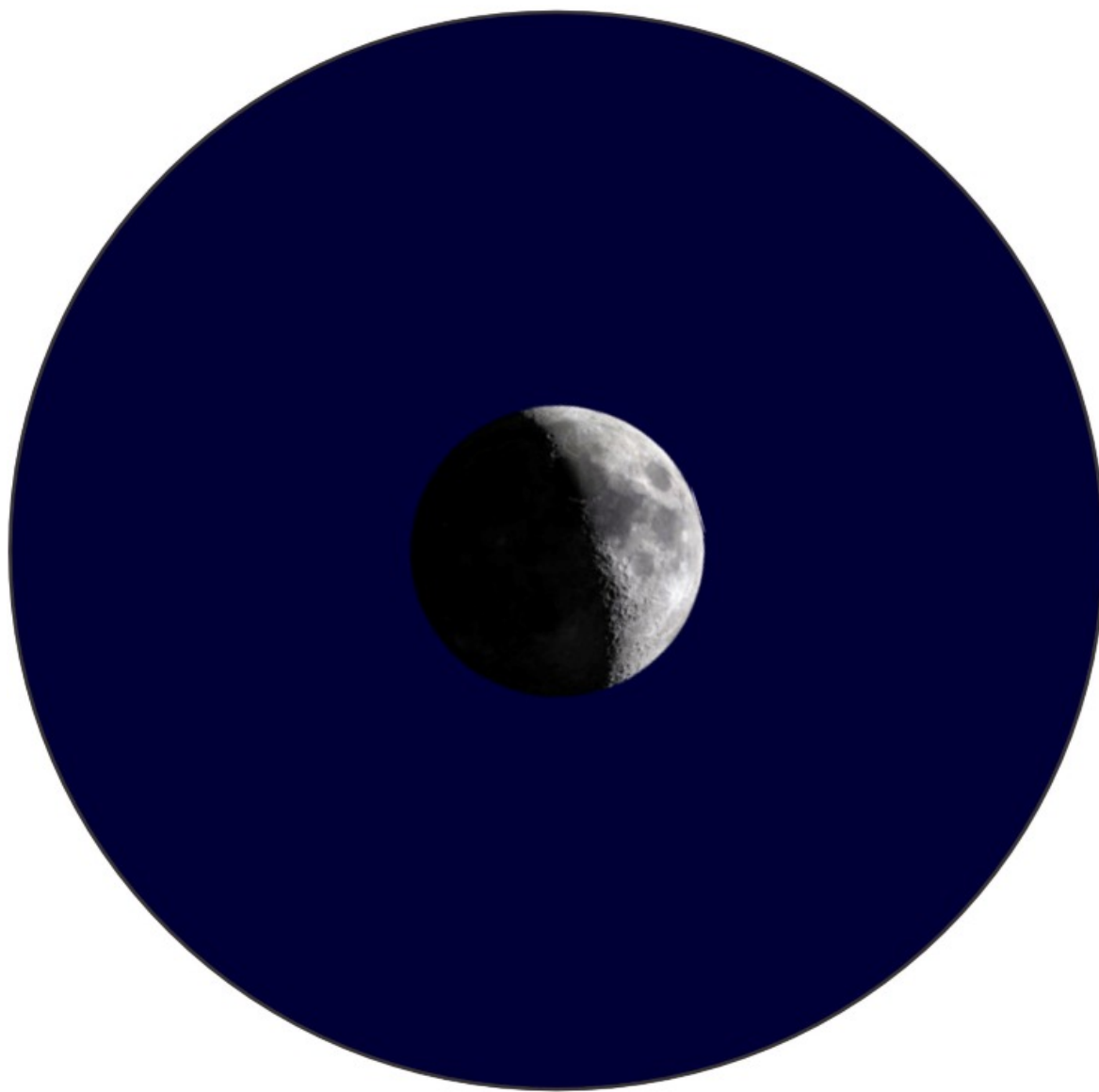
*The two most popular types of binocular designs are shown here: **roof-prism** binoculars (left) and **porro-prism** binoculars (right). Roof prisms tend to be more compact, lighter, and a bit more portable, while porro-prisms tend to be heavier but often offer wider views and greater magnification. What should you choose? Many birders and frequent fliers often choose roof-prism models for their portability. Many observers who prefer to observe fainter deep-sky objects or who use a tripod with their observing choose larger porro-prism designs. There is no right answer, so if you can, try out both designs and see which works better for you.*

NASA Night Sky Notes (continued)

What do the numbers on those binocular specs actually mean? The first number is the magnification, while the second number is the size in millimeters (mm) of the lenses. So, a 7x35 pair of binoculars means that they will magnify 7 times using lenses 35 mm in diameter. It can be tempting to get the biggest binoculars you can find, but try not to get anything much more powerful than a 10x50 pair at first. Larger binoculars with more power often have narrower fields of vision and are heavier; while technically more powerful, they are also more difficult to hold steadily in your hands and "jiggle" quite a bit unless you buy much more expensive binoculars with image stabilization, or mount them to a tripod.

Would it surprise you that amazing views of some astronomical objects can be found not just from giant telescopes, but also from seemingly humble binoculars? Binoculars are able to show a much larger field of view of the sky compared to most telescopes. For example, most telescopes are unable to keep the entirety of the Pleiades or Andromeda Galaxy entirely inside the view of most eyepieces. Binoculars are also a great investment for more advanced observing, as later on they are useful for hunting down objects to then observe in more detail with a telescope.

If you are able to do so, real-world advice and experience is still the best for something you will be spending a lot of time with! Going to an in-person star party hosted by a local club is a great way to get familiar with telescopes and binoculars of all kinds – just ask permission before taking a closer look! You can find clubs and star parties near you on the Night Sky Network's Clubs & Events page at bit.ly/nsnclubsandevents, and inspire your binocular stargazing sessions with NASA's latest discoveries at nasa.gov.



A pair of good binoculars can show craters on the Moon around 6 miles (10 km) across and larger. How large is that? It would take you about two hours to hike across a similar-sized crater on Earth. The “Can You See the Flag On the Moon?” handout showcases the levels of detail that different instruments can typically observe on the Moon, available at bit.ly/flagmoon.

Moon image courtesy Jay Tanner

Lunar Eclipse November 8, 2022 Members' Gallery



above:

The Moon Entering Earth's Umbral Shadow
by Matthew Mannering

right:

The Eclipsed Moon and Uranus
by Chris White



Jo Ann Salci. Taken with her phone!

Lunar Eclipse November 8, 2022 Members' Gallery



Uranus

The Eclipsed Moon Closing in on Uranus!!

top: The Eclipsed Moon at 5:27am November 8, 2022, by **Bob Christmas**
bottom: The Eclipsed Moon at 6:10am November 8, 2022, by **Janice Mannering**

Lunar Eclipse November 8, 2022 Members' Gallery

Ann Tekatch



The Eclipsed Moon with Orion, Taurus and the Pleiades, by Janice Mannering



The Moon Emerging from Totality close to Moonset

by Matthew Mannering





2021-2022 Financial Statements by Ann Tekatch

Here are our club's financial statements for the year ending October 31, 2022. We were fortunate to end the year with a healthy surplus and a vibrant and growing membership base.

We donate \$700.00 annually to the Bay Area Science & Engineering Fair; \$200.00 to the Binbrook Conservation Area; and \$100 to the Clear Sky Chart to sponsor the charts for Hamilton and the Binbrook Conservation Area.

Our equipment assets increased this year with the purchase of a used C8 Schmidt-Cassegrain telescope and computerized mount for the loaner scope program and a new club banner.

The expenses do not include the cost of our annual Zoom subscription (\$226.00). This will be added to next year's expenses.

PayPal fees for membership dues are included under Miscellaneous expenses and totalled \$182.28. Any PayPal fees for calendar sales or the star party were expensed under those items.

Any compliments or questions can be sent to treasurer@amateurastronomy.org. Complaints will earn you the title of 'our next treasurer'.

Ann Tekatch, Treasurer

CASH FLOW

Income	31-Oct 2022	31-Oct 2021
Memberships	\$5,560.00	\$4,905.00
HAA Calendars	\$1,790.00	\$2,035.00
50/50	\$80.00	\$0.00
Cash Donations	\$0.00	\$80.00
Star Party Revenue	\$765.04	\$0.00
Total Income	\$8,195.04	\$7,020.00
Expenses	31-Oct 2022	31-Oct 2021
Insurance	\$1,205.28	\$975.08
HAA Calendars	\$1,751.25	\$1,803.35
Donations Outgoing	\$1,000.00	\$1,000.00
Depreciation Expense	\$581.99	\$424.53
PO Box Rental	\$195.49	\$190.97
Speakers Allowance	\$50.00	\$115.68
Office Supplies	\$73.11	\$24.86
Postage	\$166.19	\$140.63
Star Party Costs	\$649.56	\$0.00
Public Education	\$144.67	\$764.40

(Continued on [page 26](#))

2021-2022 Financial Statements (continued)

Hall Rental	\$494.26	\$0.00
Miscellaneous	\$182.28	\$712.09
Website	\$237.42	\$240.58
Total Expenses	\$6,731.50	\$6,392.17
Surplus/Deficit	\$1,463.54	\$627.83

BALANCE SHEET

Assets	31-Oct 2022	31-Oct 2021
Bank	\$11,374.67	\$11,999.50
Cash	\$0.00	\$0.00
Inventory	\$0.00	\$0.00
Prepaid PO Box Rental	\$200.01	\$195.49
Prepaid Mailing Expense	\$0.00	\$0.00
Prepaid Liability Insurance	\$0.00	\$0.00
Accounts Receivable	\$0.00	\$0.00
Total Current Assets	\$11,574.68	\$12,194.99
Fixed Assets	\$0.00	\$0.00
Equipment	\$3,205.88	\$2,032.03
Total Fixed Assets	\$3,205.88	\$2,032.03
Total Assets	\$14,780.56	\$14,227.02
Liabilities	31-Oct 2022	31-Oct 2021
Deferred Membership Revenue	\$2,000.00	\$2,910.00
Accounts Payable	\$0.00	\$0.00
Total Liabilities	\$2,000.00	\$2,910.00
Equity		
Opening Balance	\$11,317.02	\$10,689.19
Adjustments	\$0.00	\$0.00
Donated Equipment (Book Value)	\$0.00	\$0.00

(Continued on [page 27](#))

2021-2022 Financial Statements (continued)

Current Year	\$1,463.54	\$627.83
Closing Balance	\$12,780.56	\$11,317.02

Total Liabilities and Equity	\$14,780.56	\$14,227.02
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PROFIT & LOSS

Revenue (Net)	31-Oct 2022	31-Oct 2021
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Membership	\$5,560.00	\$4,905.00
Calendars	\$38.75	\$231.65
Cash Donations	\$0.00	\$80.00
50/50 Draw	\$80.00	\$0.00
RASC Handbook Sales	\$0.00	\$0.00
Donations in Kind	\$0.00	\$0.00
Intangible Donations	\$0.00	\$0.00
Star Party	\$115.48	\$0.00
Clothing Sales	\$0.00	\$0.00

Net Revenue	\$5,794.23	\$5,216.65
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Depreciation Table	31-Oct 2022	31-Oct 2021
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Opening Balance	\$2,032.03	\$1,788.74
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Depreciation Full Year	\$406.41	\$357.75
Donated Equipment	\$0.00	\$0.00
Additions	\$1,755.84	\$667.82
Sales	\$0.00	\$0.00
Net	\$1,755.84	\$667.82
Depreciation Part Year	\$175.58	\$66.78

Total Depreciation	\$581.99	\$424.53
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Closing Balance	\$3,205.88	\$2,032.03
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Complete Celestron 8" Telescope For SALE!

**Everything you need
for years of observing!**



Includes the following;

Celestron C8 Schmidt-Cassegrain Telescope
Includes following upgrades;
Feathertouch focuser (price for new \$450)
Bob's knobs
2" visual back
Dewcap
Original 1.25" visual back
50mm finder scope
StarSense Auto align with updated hand controller (price for new \$620)
Original hand controller
GPS module (CN16)
CG-5 mount with tripod
2x 11lb counterweights
5 lb counterweight

Original hand controller
DC power cord
AC power supply
GPS module
Flexible Celestron dew shield
Heated dew shield (with power cord)
Celestron f6.3 focal reducer/field flattener
Complete Dew control System including;

- Thousand Oaks 4 channel dew controller
- 2 separate Dew straps for 8" telescope
- Dew strap for finder scope
- Dew strap for 2" eyepiece
- Dew strap for 1.25" eyepiece

Complete Celestron 2" eyepiece kit (price for new \$540) including;

- 2" diagonal with 1.25" adapter
- Celestron E-lux 40mm eyepiece
- Celestron E-lux 32mm eyepiece
- Celestron E-lux 26mm eyepiece
- Celestron E-lux Barlow
- 5 piece 2" colour filter set
- Case

Shroud to cover entire assembled telescope
Pelican case for easy transport



More pictures available or come see it in person!

Asking \$1850

Contact Jim Wamsley

289-439-6795

UPCOMING EVENTS

December 9, 2022 - 7:30 pm — H.A.A. Meeting at McMaster Innovation Park. This is our “December Cold Moon Social”, our first since December 2019! **This will be a “hybrid” meeting, with the attendance option of in-person or online via [Facebook](#) and [Zoom](#).**

January 13, 2023 - 7:30 pm — H.A.A. Meeting at McMaster Innovation Park.

2022-2023 Council

Chair	Bernie Venasse
Second Chair	Sue MacLachlan
Treasurer	Ann Tekatch
Digital Platforms Director	Christopher Strejch
Membership Director	Paula Owen
Observing Director	Steve Germann
Education Director	Jo Ann Salci
Event Horizon Editor	Bob Christmas
Recorder	Brenda Frederick
Secretary	Denise White
Publicity Director	Mario Carr
Councillor at Large	Matthew Mannering

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

Follow us!



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membership@amateurastronomy.org

Meeting Inquiries:
chair@amateurastronomy.org

Public Events:
publicity@amateurastronomy.org

Observing Inquiries:
observing@amateurastronomy.org

Education:
education@amateurastronomy.org

Newsletter:
editor@amateurastronomy.org

Digital Platforms Director:
webmaster@amateurastronomy.org

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