Event Horizon

Volume 29, Number 10
October 2022

From The Editor

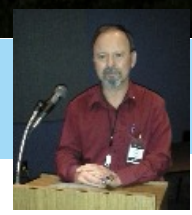
Enjoy the October 2022 Event Horizon!

As always, thanks to all who have contributed.

Clear Skies!

Bob Christmas,
Editor

editor 'AT' amateurastronomy.org



Chair's Report by Bernie Venasse

Direct from Hamilton… it's HAA LIVE!!!

Our September meeting was held live at MIP for the first time since the onset of COVID-19. Attendance was about what was expected. A BIG Thank You to Chris Strejch who handled the on-site media controls and to Sue MacLachlin for moderating the ZOOM aspect of the meeting. Yes, we had a few technical glitches, and we are working on eliminating the problems.

A big 'thank you' to John Gauvreau, our speaker in September, for his inspiring and entertaining views about *Knowing Galaxias*.

Our next meeting is scheduled for October 14, 2022, at McMaster Innovation Park. MIP is located at 175 Longwood Rd. S. in Hamilton.

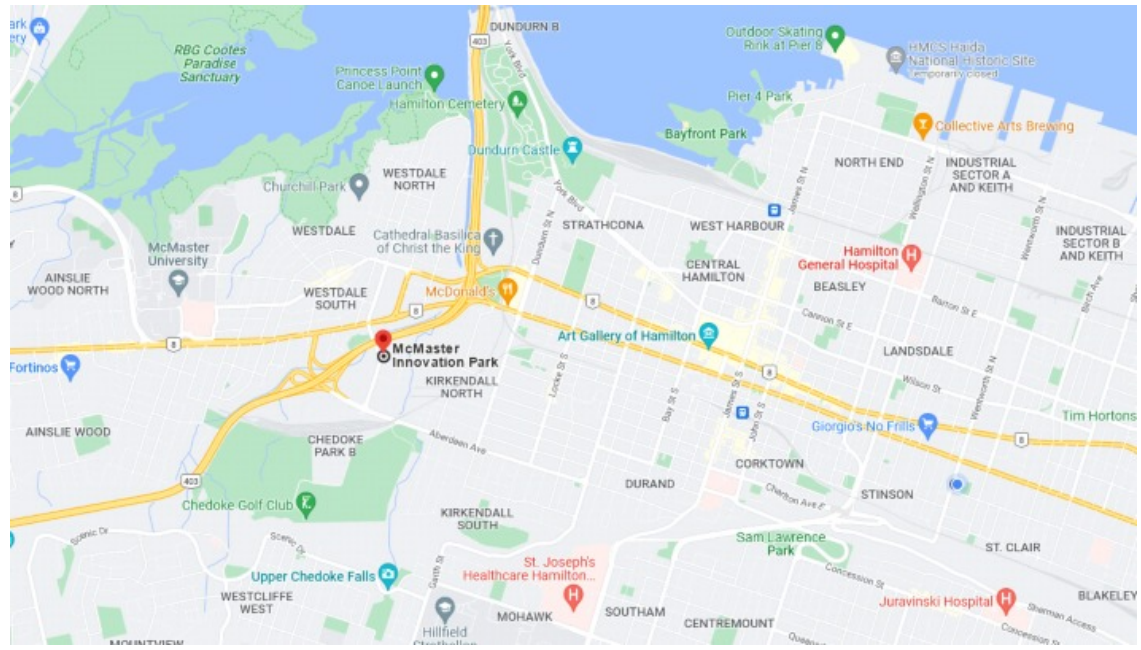
(Continued on page 2)

IN THIS ISSUE:

Chair's Report (continued)

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.

This meeting is our 2022 Annual General Meeting…



November 11 Meeting

Our speaker for this month will be *Parshati Patel*.

Parshati will share various interesting aspects of star formation, especially the massive stars. These stars have disks of dust and gas around them which are hubs for planets to form, making them interesting subjects to study and understand the planet formation process. She will discuss how telescopes such as the Hubble Telescope and James Webb Space Telescope help with understanding these processes.

In addition, Parshati will share the process of writing her first space-themed children's book 'My Book of Stars and Planets' which was published in 2021.

It's that time…. Membership renewals are due October 31st.

Inreach and Outreach Events

September 2, Binbrook. There were about 25 persons, kids to kids at heart, attending that night's event. Some were stargazing, some were actively pursuing observing goals while others attended to their astrophotography equipment. A good time was had by all involved.

Star Party, September 23-25, Wiarton, ON

"A brilliant starry sky on Friday in beautiful surroundings, an awesome observatory tour on Saturday, and a weekend of wonderful conversations made for a great star party! Many, many thanks to Doug and Sue, and Matthew and Janice for their unflagging enthusiasm, dedication, and hard work in the realization of this project! Well done! The Skelton's and the Cunningham's generosity will always be remembered and super-appreciated." — Chris and Denise White.

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.

(Continued on page 3)

Masthead Photo: *Star Trails around the North Celestial Pole,* by *Dan Copeland.* Taken with his Olympus DSLR with a 15mm lens; 30 minutes worth of 10-second images.

Chair's Report (continued)

Our library has acquired a pair of book carts from the Hamilton Public Library system. The carts were donated to the club courtesy of Dijia Qin, Manager, Central Information Service. A special thanks to Missy Denomme for approaching the library in this regard and getting the ball rolling.

Worth Repeating

A reminder that a new interactive page for members of the HAA is open on Facebook. The members page can be found at www.facebook.com/groups/hamiltonamateurastronomers. This is a group page for club members only. Please feel free to discuss anything astronomy related as well as post images of your gear or astronomy photos.

The new HAA Lunar Observing Program is active. You can find it and other programs on our website https://www.amateurastronomy.org/haa-observing-programs/.

We are now less than 18 months away from the total eclipse on April 8, 2024, and planning is under way. I invite each of our members to participate in the planning of events and activities related to the eclipse. We will soon be putting together a task group that will help coordinate some of the planning. Want to help? Get in touch. eclipse@amateurastronomers.org

Membership growth… new members list… Welcome!!

We would like to take this opportunity to welcome new and/or returning members (August 29-September 28).

Liliana Ortiz, Oakville. Family Membership.
Robert Smoke, Ohswekan. Individual Membership.
Dalton Fowler, Burlington, Family Membership.
Hans Gokhruwala, Hamilton, Individual Membership.
Jesse Black, Jerseyville. Individual Membership.

The membership now consists of 84 individual memberships and 66 family memberships.

Happy Hallowe'en !!!

Mum Show Tickets

Mum show open daily 9 am to 7 pm from October 14 to 23, 2022

https://www.hamilton.ca/things-do/festivals-events/fall-garden-mum-show

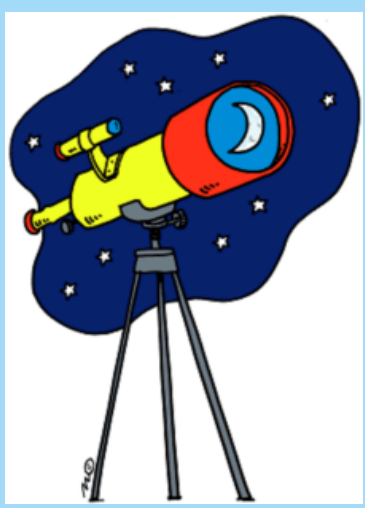
HAA Helps Hamilton

Hey, guess what? We're coming back in person! The H.A.A. will once again be 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.

H.A.A.'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 telescope, please contact Paula Owen at loanerscope@amateurastronomy.org.

Telescopes are loaned out on a first come basis.

we are made of stardust

JASON BAERG (CREE-MÉTIS), *KÎSIK PIMISKANAW* | ᑭᐢᓯᒃ ᐱᒥᐢᑲᓇᐤ | *SKY TRAIL*, 2014. ACRYLIC ON LASER CUT STEEL. MUSEUM OF ART COLLECTION TRUST, 2021.

The McMaster Museum of Art has invited the HAA to its current exhibition:

we are made of stardust explores our relationship with the cosmos. Rooted in Indigenous cosmologies and astronomy, the artworks included in this exhibition visually express how Indigenous peoples make sense of their place in the universe through relating to and reflecting on the sun, the moon, the stars, and all celestial beings in the night sky.

https://museum.mcmaster.ca/exhibition/we-are-made-of-stardust/

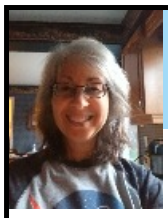
Curated by: Rhéanne Chartrand

August 16, 2022 – December 02, 2022

If you would like to book a free tour (self-guided or guided), please contact:

Teresa Gregorio, Education Officer at the McMaster Museum of Art
gregort@mcmaster.ca

Museum hours: T, W, F: 11am-5pm; Th: 11am-7pm



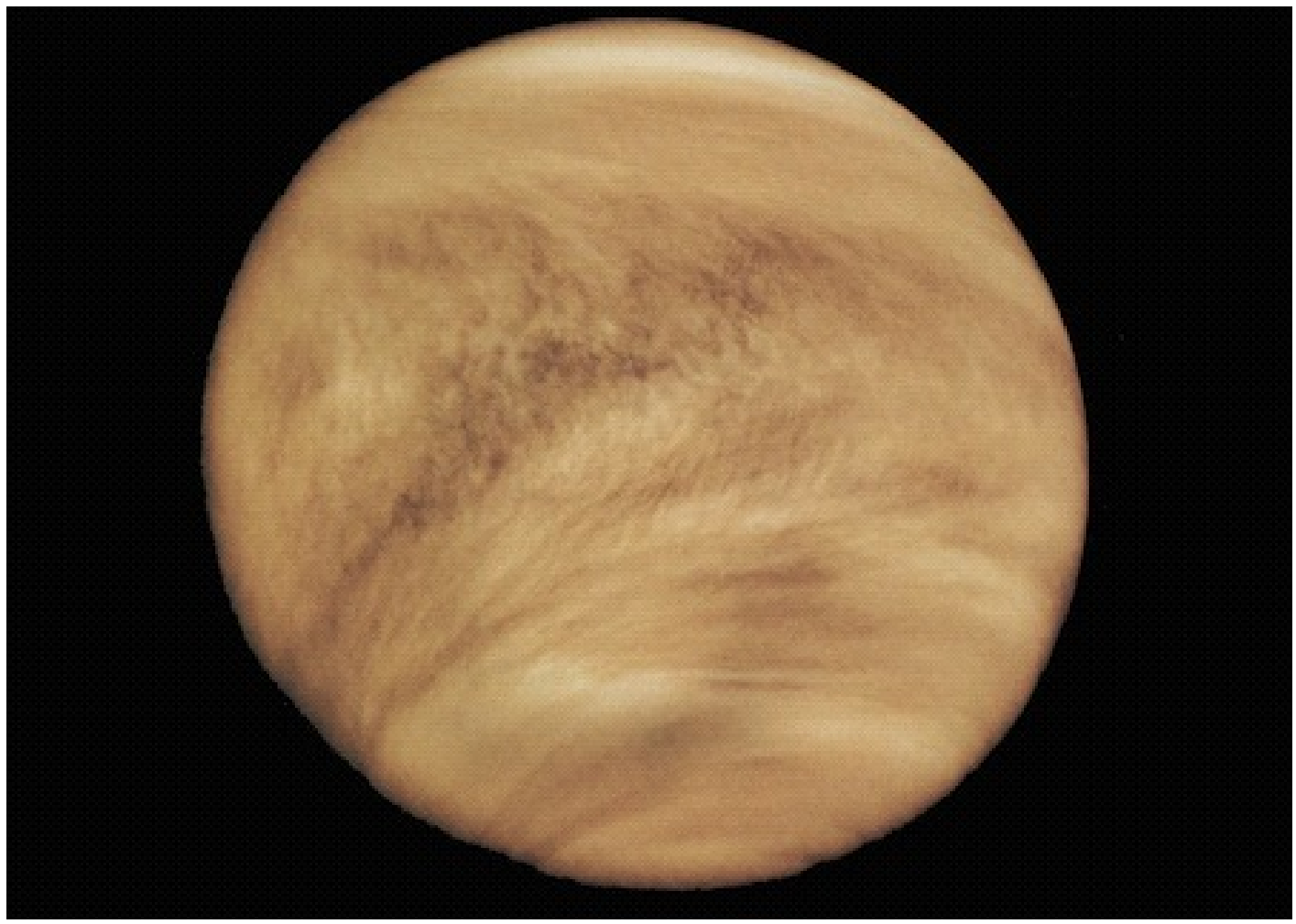
HAA Explorers by Jo Ann Salci

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

Continuing on in our Solar System, we will be exploring the planet Venus this month! Let's go!

Bright Venus! ♀

The planet Venus is the second planet from the Sun. It is named after the Roman goddess of love and beauty. It takes Venus 225 Earth days to go around the Sun once. And it takes about 243 Earth days to spin on its axis once, the longest day in our solar system. Which means that its day is longer than its year!! Like Mercury, its day is long! And very hot days they are at 460˚C on the side facing the Sun. That's even hotter than Mercury, even though Mercury is closer to the Sun than Venus. Venus is the hottest planet in our solar system! Why is that?? Unlike Mercury, Venus has an atmosphere. That atmosphere traps heat from the Sun, as well as gasses. The planet is covered with thick clouds, so the rocky, volcanic surface is hidden from view. And like Mercury, Venus has no moons. Unlike Mercury and the other planets in our solar system, Venus rotates clockwise, so the Sun rises in the West and sets in the East.



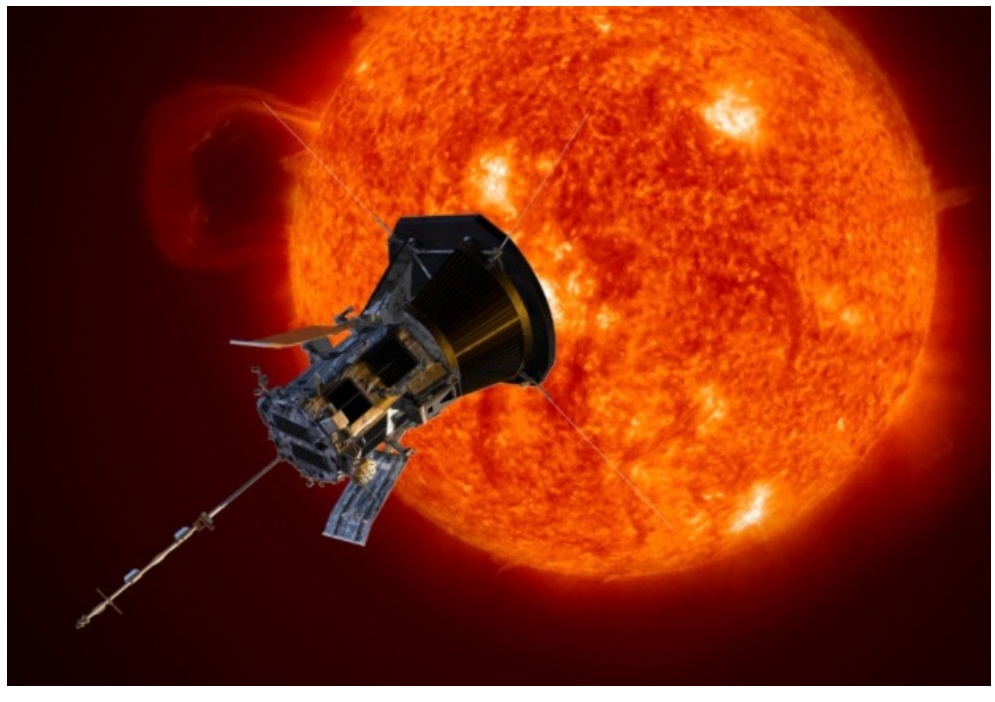
Venus

Image Credit: NASA Spaceplace

Venus has the most circular orbit (round-shaped) of all the planets. Because it's also close to the Sun, it can only be seen when its orbit takes it further away from the Sun. We can safely see Venus either in the morning before the Sun rises, or in the evening. In fact, it is sometimes called the *Morning Star* or *Evening Star*, because it is so bright. But we know that it's not a star! After the Sun and Moon, Venus is the brightest object in the sky, so it's very easy to see. Those thick clouds reflect the light from the Sun.

(Continued on page 7)

Venus low in the evening sky, just above the trees and clouds
Image Credit: Forbes



Parker Solar Probe
Image Credit: NASA Solar System Exploration

Venus is sometimes called Earth's twin because it has mountains and volcanoes and it's similar in size. Although Venus is a beautiful, bright planet, it is nothing like Earth! Its atmosphere is very acidic and the atmospheric pressure is crushing…it's like having 15 elephants standing on your shoulders! Because of this, humans cannot visit. Instead, we have sent spacecraft. Even spacecraft don't last very long on Venus. The longest time was just under 2 hours!

The BepiColombo Orbiter that is heading towards Mercury will also be doing flybys of Venus. The Parker Solar Probe which is studying the Sun is also doing flybys of Venus.

(Continued on page 8)

Venus Matchmaker!

The number of Earth days for Venus to orbit the Sun	Mercury
Venus is the _____ planet from the Sun	243
The number of Earth days for Venus to rotate once	Venus
Hottest planet in our solar system	Third
Venus is the _____brightest object in our sky	225
Orbiters will be passing Venus and _____	Second

Answers on page 12.

Things to do until next time **:

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

1. Visit this website to learn more about Venus:
https://spaceplace.nasa.gov/all-about-venus/en/

2. Visit this website to learn more about Volcanoes on Venus:
https://spaceplace.nasa.gov/volcanoes/en/#venus

3. Make your own Venus mask: https://spaceplace.nasa.gov/planet-masks/en/

During October, check out:

1. On October 7th around 6:30 am, check out Mercury in the early morning sky before the Sun rises!

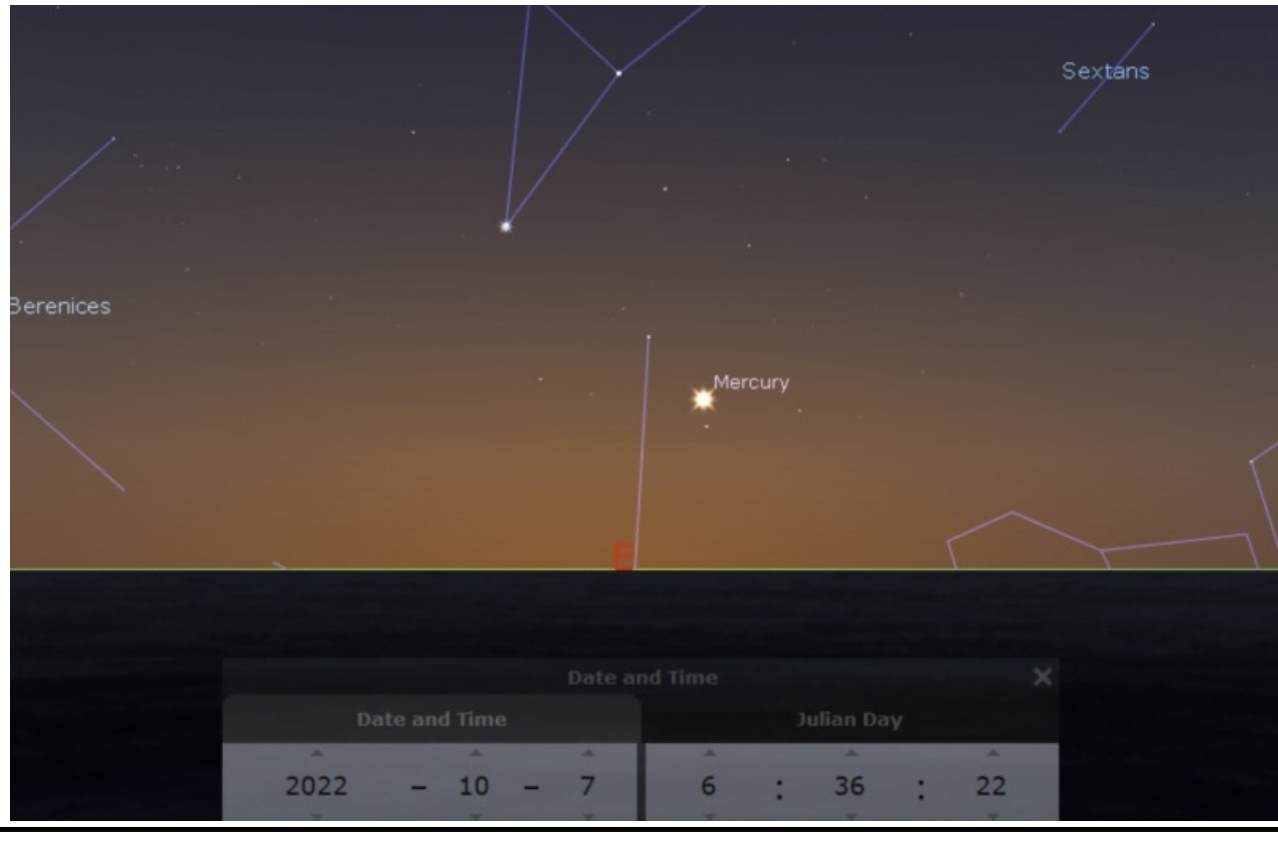


Image generated using Stellarium

(Continued on page 9)

2. On October 10th around 8:00 pm, check out the Full Moon with Jupiter and Saturn to its right.

Image generated using Stellarium

Finally:

What did one astronaut say to another about living on Venus? Answer below!

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

Answer: Sorry! I don't work well under pressure and I don't like toxic work environments!

Thank you to Mi and Ro for reviewing this article! 😊

References:

Astronomy for Kids. Astronomy Magazine. 2019.
The Backyard Astronomer's Guide. Dickenson and Dyer. 2021.
The Essential Guide to Space. Paul Sutherland. 2016.
How Space Works. DK Penguin Random House. 2021.
National Geographic Kids: Ultimate Explorer Field Guide: Night Sky. 2016.
National Geographic Kids: Ultimate Space Atlas, 2017.
RASC Observer's Handbook, 2022.

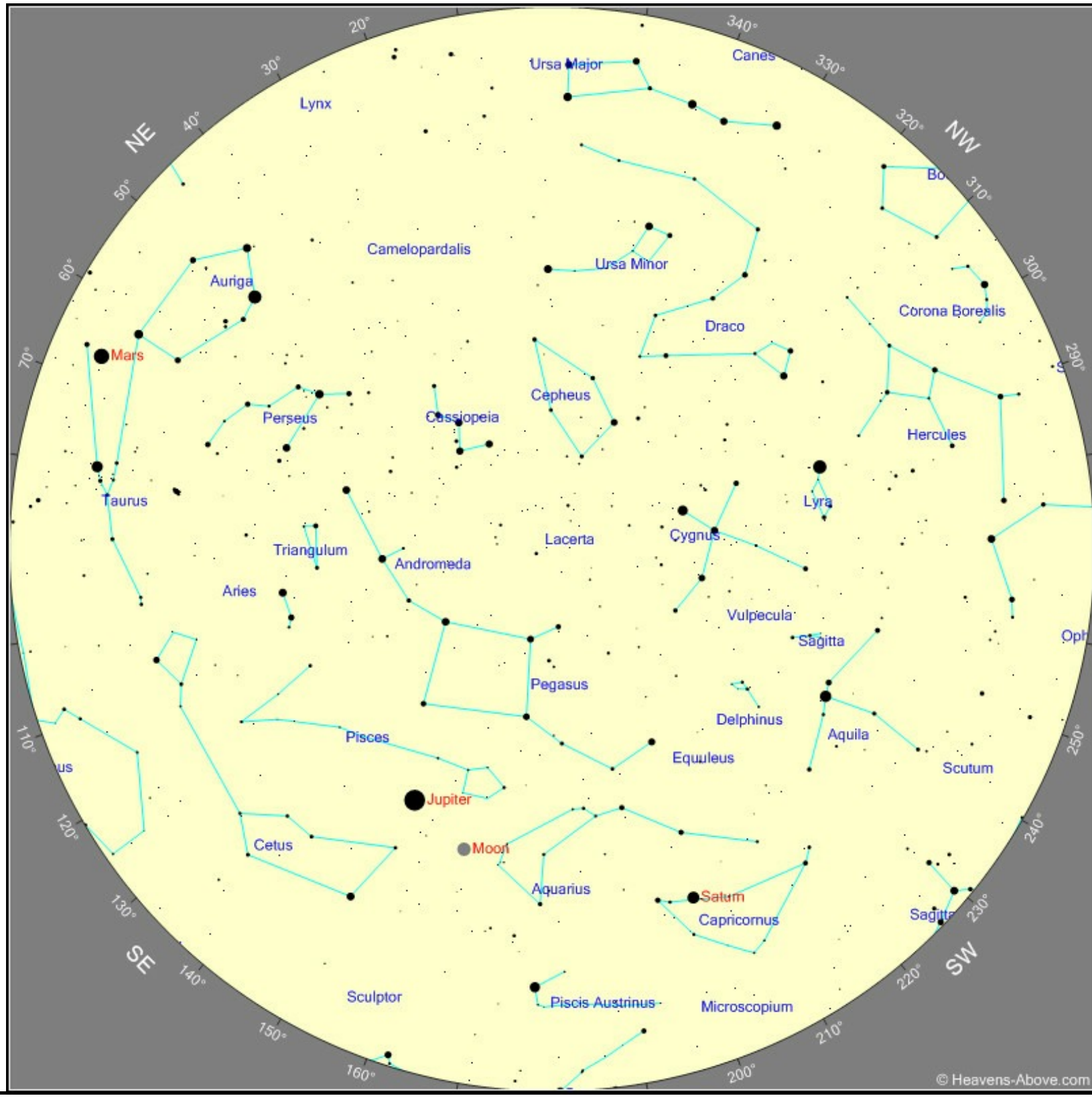
The Sky This Month for October 2022 by Bob Christmas

Matthew, unfortunately, was unable to compose and submit the TSTM article this month due to circumstances beyond his control. So I'm standing in. However, Matthew did send his list of observing targets for last month's Andromeda Meadows Star Party near Wiarton, ON, and I have included it here.

The Sky at a Glance

Here's an all-sky chart for *October 7, 2022, at 11:00 pm EDT* as seen from Binbrook, ON. This chart was generated using the Heavens Above website. By this time, the fall constellations are high up, including *Pisces*, *Aquarius*, *Cetus*, *Piscis Austrinus* and the *Square of Pegasus*. Jupiter and Saturn are prominent in the evening sky, Mars rises in the east, as do other constellations like *Auriga* and *Taurus*, including the *Pleiades*. The *Summer Triangle* of bright stars, Vega, Deneb and Altair, are a little lower in the west.

The stars in the sky rise and set an hour earlier every half month later. On October 23, this will be the sky at about 10:00 pm; on November 3, this will be the sky at about 9:00 pm, etc. *(Continued on page 11)*



The Sky This Month for October 2022 (continued)

The Moon

Phases this month:

- October 3 00:14 UT — 1st Quarter
- October 9 20:55 UT — Full Moon
- October 17 17:15 UT — Last Quarter
- October 25 10:49 UT — New Moon (partial Solar Eclipse visible in parts of Europe, Asia & Africa)

The Planets

I refer to the handy synopses of the Planets for October and November that Bernie included; see Page 15.

List of Targets

Here is Matthew's list of observing targets. Approximate scope required and relative difficulty:

D1: Binoculars or small scope (60-80mm)
D2-D3: Medium scope (90-150mm)
D4-D5: Large scope (200mm +)

Lyra:

- D2: Epsilon Lyrae, the Double-Double. Add magnification until you split both pairs.

Aquila:

- D1: Barnard's "E", dark nebula. 1.4°west of Tarazed. Binos or wide field, low power scope.
- D3: NGC 6781, planetary nebula. 2 arcmin. O3 filter will help.
- D4: Palomar 11, globular cluster. 10 arcmin. and very faint.

Sagittarius:

- D1: M20, the Trifid Nebula.
- D3: B85, the 3 dark lanes that divide the Trifid Nebula into lobes. Narrow band filters may help.
- D4: NGC 6822, Barnard's Galaxy (part of the local group). Use low magnification. Looks like a dim nebula.
- D3: Palomar 8, globular cluster.

Vulpecula:

- D1: Cr399 (Collinder object), Brocchi's cluster. Also known as the "coat hanger".

Pegasus:

- D2: M15, globular cluster. Big, bright and beautiful!
- D3: NGC 7331, a medium size galaxy with dark dust lane.
- D4: Look for the 4 "Fleas" (galaxies) in close proximity to 7331.
- D1-D2: Delphinus minor asterism. Looks just like the constellation Delphinus but much smaller. Approx. 1.1° diameter. Located between stars Scheat and Markab.
- D4: NGC 7814, a galaxy near the star Algenib. Very thin with dust lane.

Andromeda:

- D3: NGC 891, an edge on galaxy with thick dust lane.
- D2: The double star Almach. Beautiful. One of the best!
- D1: M31, the Andromeda galaxy. Binoculars work best.
- D3: M32 and M110, satellite galaxies of M31. One on each side of the M31 halo.

(Continued on page 12)

The Sky This Month for October 2022 (continued)

Perseus:

- D1+: M34, an open cluster.
- D2-D3: M76, the Little Dumbbell planetary nebula.
- D1: Mel 20 (Melotte object), the Perseus OB3 association of stars. Pretty with the star Merfak at the centre.
- D1+: NGC 869 and 884, the Double Cluster. Very nice in any instrument. Bigger scopes show more stars in each cluster.

Cassiopeia:

- D1+: The double star Eta Cas. The dimmer star is a red dwarf!
- D2: NGC 457, the Owl or ET cluster. Try medium magnification of less than 100X. What do you see?
- D3: van den Bergh 1, reflection nebula. Look ½° from the star Caph.
- D2: The double star WZ Cas. A variable carbon star paired with a bright blue/white star.

Pisces:

- D4: The double star Alpha Piscium (Alrescha). Very tight pairing at 1.8 arcsec. Use high magnification.

Aquarius:

- D1+: NGC 7293, the Helix nebula. Start by finding it with binoculars. Looks like a large smoke ring about ½ the size of a full Moon. Use low magnification. A narrow band filter may help bring out detail.

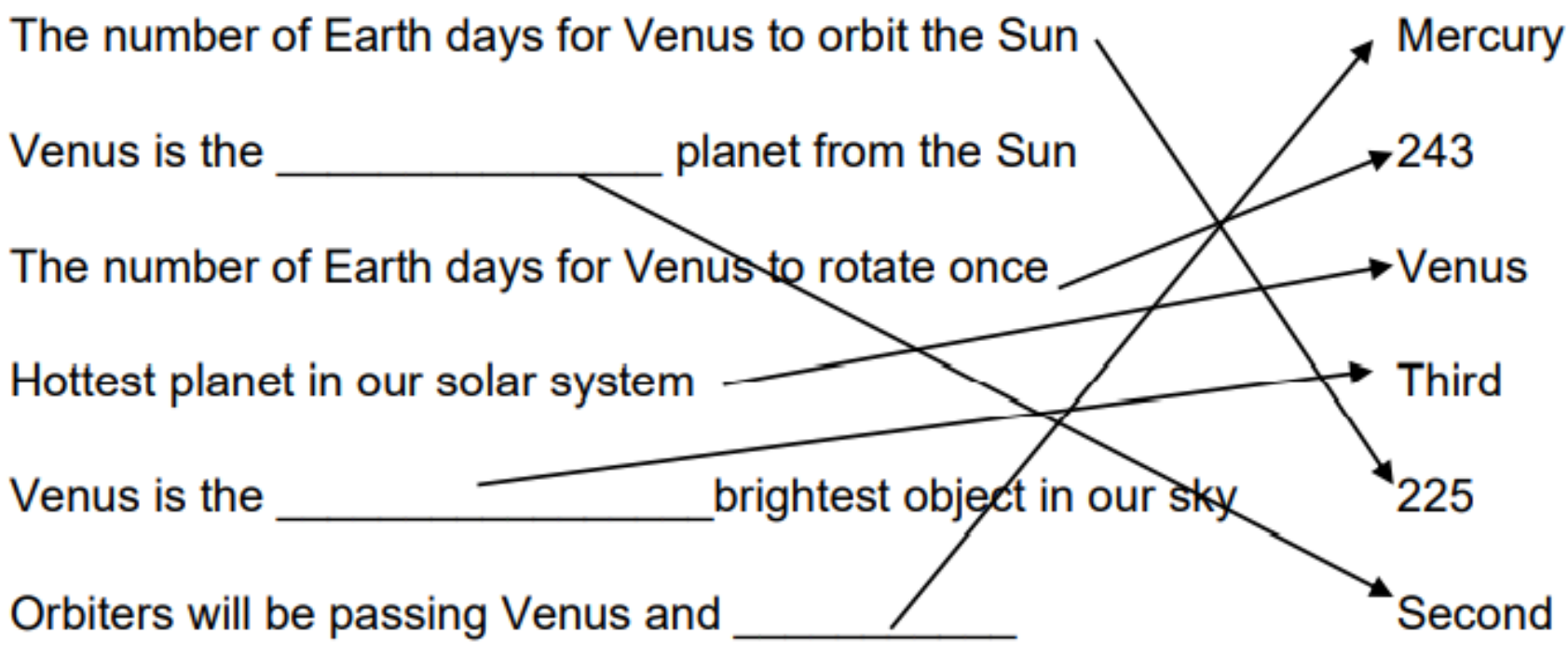
Cetus / Sculptor border:

- D3+: NGC 253 the Silver Dollar galaxy and NGC 288 a globular cluster less than 2° apart! Wait till midnight and look down from Jupiter, then 6° below the star Diphda in Cetus.

Neptune's moon Triton:

- D4+: Neptune is very blue and about 10° west of Jupiter. Triton is about 16 arcsec from Neptune. The bigger the scope on a tracking mount the better.

Page 8 Venus Matchmaker answers:



What's Up in Awards? October-November 2022 by Bernie Venasse

Contents:

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

October
Constellations: Pegasus
Stars: Alpheratz
Double Stars: delta Cephei
Object Pairs: NGC 7788/NGC 7790
Messier objects: M52

November
Constellations: Cassiopeia
Stars: Schedar
Double Stars: Almach, Mesarthim
Object Pairs: M31/M32, NGC 133-NGC 146, NGC 436/NGC 457
Messier objects: M33

Pathways Observing Program

Observable in October-November-December

Group C,
Autumn Constellations: Find, observe, sketch: *Perseus, Cygnus, Lyra*.
Stars: Find, observe, sketch: *Algol, Deneb, Fomalhaut*.
Asterisms: Find, observe, sketch: *Great Square, Northern Cross, Circlet*.
Planet: Any one planet that is remaining in the list.

HAA Messier Objects Observing Award

October Messier targets

M24 This "object" is actually a section of the Milky Way in Sagittarius. It is easily seen with the naked eye as a fuzzy, oval patch about four times the size of the full moon. The best views are through binoculars or rich field telescopes.

(Continued on page 14)

What's Up in Awards? October-November 2022 (continued)

M25 Just east of M24 in Sagittarius we find this open cluster. Visible to the naked eye, M25 lies in the same binocular field as M24. In binoculars it appears as a partially resolved star cluster buried in faint nebulosity. A view through a telescope shows the nebulosity is in fact many faint stars that are not resolved in small instruments.

M18 This is a small open cluster just north of M24 in Sagittarius. In binoculars M18 is easy to see as a small fuzzy patch of light in the same field of view as M24. Telescopes reveal this cluster for what it is, a small, sparse collection of fairly bright stars.

M17 Just north of M18 and in the same binocular field as M24 and M18 lies the Omega nebula. Possible to see with the naked eye and easy with binoculars, this nebula appears as a small faint patch of fuzz. A telescope will show the unique V shape nebulosity that gives the cluster its name. The shape reminds me of a swan with two bright stars that power the cluster embedded in the head and neck of the swan.

M16 Continuing north of M17 we find another nebula in Serpens. To the naked eye and binoculars, this small patch of haze is very similar in appearance to M17 which is in the same binocular field of view. Through a telescope the M16 looks like a sparse open cluster of stars surrounded by faint wisps of smoke.

M26 Continuing to head north through the Milky Way we find this open cluster in the constellation Scutum. This is a difficult object to find in binoculars, but possible as a faint patch of fuzz. Telescopes partially resolve this cluster and show several stars buried in a faint glow from the unresolved stars.

M11 Just north of M26 in Scutum lies the Wild Duck Cluster. Possible to see with the naked eye, binoculars show a small faint patch surrounding a bright star. Telescopes resolve many of the stars in this very rich cluster.

M55 Dipping back into Sagittarius we find two more globular clusters waiting for us. The first is one of the brightest and largest globulars in the catalogue. Possible to see naked eye, it is an easy binocular object appearing as a bright fuzzy ball of light. Telescopes show a round patch of light bright in the center and fading toward the edges. Large apertures are needed to resolve this globular.

M75 The last object of the month, and the last object to be visited in Sagittarius. In binoculars, M75 is not too hard to see, look for a small fuzzy star. A telescope will show a small fuzz ball with a bright center.

November Messier targets

M57 This smallest planetary nebula in the Messier Catalog is the famous Ring nebula in the constellation Lyra. Low power telescope views show a very small blue/green disk, not much bigger than a star. Medium to high power will magnify the size of the nebula while leaving the surrounding stars the same size, confirming you have found it.

M56 Look for a small round ball of light, slightly brighter in the center.

M27 Also known as the Dumbbell nebula, the largest planetary nebula in the Messier Catalog. This object lies in the constellation Vulpecula. In a small to medium sized telescope it appears as a rectangular patch of light. In large scopes It may even appear round with a bright rectangular, or dumbbell shaped core.

M71 Lying in Sagitta, this globular cluster appears as a faint oval hazy patch of light in a telescope.

(Continued on page 15)

What's Up in Awards? October-November 2022 (continued)

M30 Telescopes show a small fuzzy ball of light, bright in the center fading to the edges.

M72 This is a small faint globular cluster in Aquarius. Look for a faint oval patch of light, gradually brighter towards the middle.

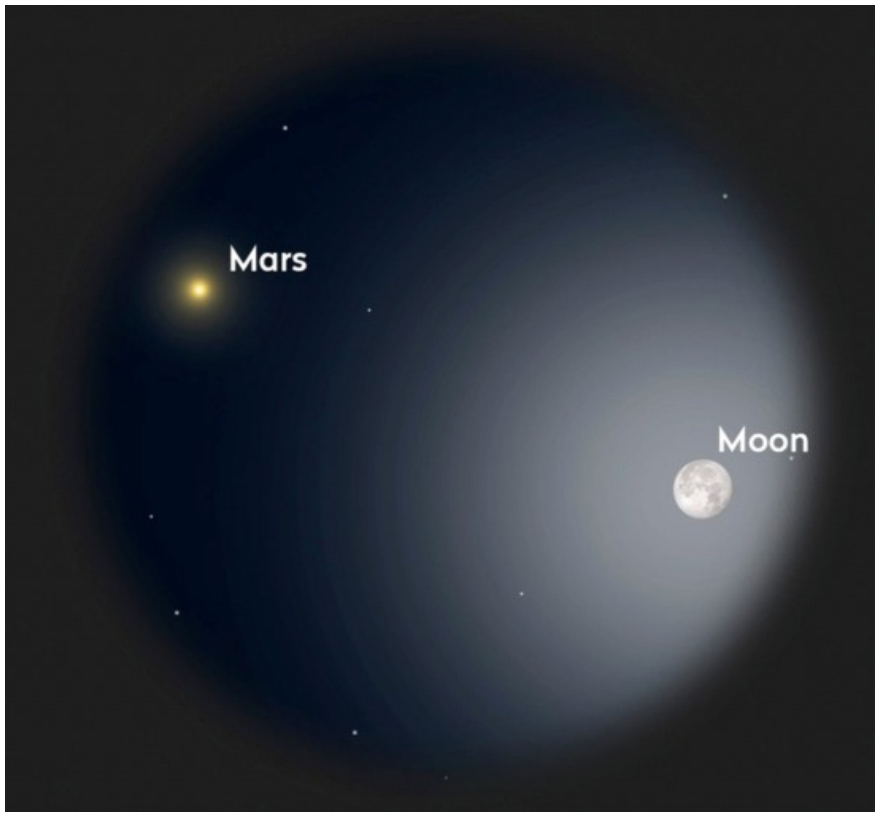
M73 This asterism is located near M72 in Aquarius. In a low power telescope view it looks like a very small fuzzy patch of light at first glance. When stared at it reveals itself as a small collection of stars. Medium to high power shows the view best described by Messier "cluster of three or four stars...containing very little nebulosity".

The Planets… October 2022 via (BBC) Sky at Night Magazine

Mercury: Good morning appearance for most of October.
Venus: Bright morning planet, rises 40 minutes before sunrise at start of October, lost soon thereafter. Superior conjunction 22 October.
Mars: Rises around 22:30 EDT at the start of October. Brightens throughout the month.
Jupiter: Bright and well placed. Almost full Moon nearby on evening of 8 October.
Saturn: Well positioned evening planet. Bright waxing gibbous Moon nearby on evening of 5 October.
Uranus: Well placed for viewing in southern Aries. Approaching opposition on 9 November.
Neptune: Well positioned binocular planet near Jupiter and below the Circlet asterism in Pisces.

The Planets… November 2022 via (BBC) Sky at Night Magazine

Mercury: Poorly placed morning planet at the start of November, poorly positioned evening planet at end.
Venus: Too close to the Sun in the evening sky to be seen safely.
Mars: Brilliant orange planet. Rises early evening, reaching 60° altitude in dark skies.



Magnitude -1.5 Mars and the Moon have a close encounter on the morning and evening of 11 November. This view simulates the view through 7x50 binoculars on 11 November, 05:30 UT.

Credit: Pete Lawrence

Jupiter: Bright evening planet. Waxing gibbous Moon near Jupiter on the night of 4/5 November.
Saturn: Well placed at the start of the month, losing altitude by the end. Waxing Moon nearby on 1 and 29 November.
Uranus: Reaches opposition on 9 November in southern Aries. Should be visible to naked eye.
Neptune: Well placed for observation. Mag. +7.9 Neptune and -2.5 Jupiter appear 6.2° apart mid-month.

(Continued on page 16)

What's Up in Awards? October-November 2022 (continued)

Future Visible Comets via Seiichi Yoshida — Click here for the chart:
http://www.aerith.net/comet/future-n.html

Meteor Showers via American Meteor Society

Orionids

Period of activity: September 26th, 2022 to November 22nd, 2022
Peak Night: Oct 20-21, 2022

The Orionids are a medium strength shower that sometimes reaches high strength activity. In a normal year the Orionids produce 10-20 shower members at maximum. In exceptional years, such as 2006-2009, the peak rates were on par with the Perseids (50-75 per hour). Recent displays have produced low to average displays of this shower.

Shower details - Radiant: 06:21 +15.6° - ***ZHR:*** 20 - ***Velocity:*** 41 miles/sec (swift - 66 km/sec)
Parent Object: 1P/Halley
Next Peak - The Orionids will next peak on the Oct 20-21, 2022 night. On this night, the moon will be 21% full.

Southern Taurids

Period of activity: September 28th, 2022 to December 2nd, 2022
Peak Night: Nov 4-5, 2022

The Southern Taurids are a long-lasting shower that several peaks during its activity period. The shower is active for more than two months but rarely produces more than five shower members per hour, even at maximum activity. The Taurids (both branches) are rich in fireballs and are often responsible for increased number of fireball reports from September through November.

Shower details - Radiant: 03:35 +14.4° - ***ZHR:*** 5 - ***Velocity:*** 17.2 miles/sec (slow - 27.7 km/sec)
Parent Object: 2P/Encke
Next Peak - The Southern Taurids will next peak on the Nov 4-5, 2022 night. On this night, the moon will be 87% full.

Northern Taurids

Period of activity: October 13th, 2022 to December 2nd, 2022
Peak Night: Nov 11-12, 2022

This shower is much like the Southern Taurids, just active a bit later in the year. When the two showers are active simultaneously in late October and early November, there is sometimes a notable increase in the fireball activity. There seems to be a seven year periodicity with these fireballs. 2008 and 2015 both produced remarkable fireball activity. 2022 may be the next opportunity.

Shower details - Radiant: 03:55 +22.8° - ***ZHR:*** 5 - ***Velocity:*** 18 miles/sec (slow - 30 km/sec)
Parent Object: 2P/Encke
Next Peak - The Northern Taurids will next peak on the Nov 11-12, 2022 night. On this night, the moon will be 88% full.

(Continued on page 17)

What's Up in Awards? October-November 2022 (continued)

Observing Award Recipients

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)

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

RASC

Jo Ann Salci
- Exploring Exoplanets (on-line course)

Swapna Shrivastrava
- Explore the Moon
- Explore the Universe

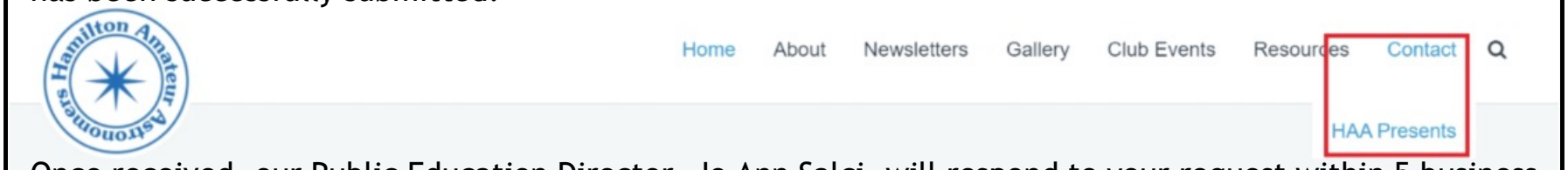
Bernie Venasse
- Explore the Universe

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

"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.



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.

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!

Fomalhaut: Not So Lonely After All

David Prosper

Fall evenings bring a prominent visitor to southern skies for Northern Hemisphere observers: the bright star **Fomalhaut**! Sometimes called "The Autumn Star," Fomalhaut appears unusually distant from other bright stars in its section of sky, leading to its other nickname: "The Loneliest Star." Since this star appears so low and lonely over the horizon for many observers, is so bright, and often wildly twinkles from atmospheric turbulence, Fomalhaut's brief but bright seasonal appearance often inspires a few startled UFO reports. While definitely out of this world – Fomalhaut is about 25 light years distant from us – it has been extensively studied and is a fascinating, and very identified, stellar object.

Fomalhaut appears solitary, but it does in fact have company. Fomalhaut's entourage includes two stellar companions, both of which keep their distance but are still gravitationally bound. Fomalhaut B (aka TW Piscis Austrini, not to be confused with former planetary candidate Fomalhaut b*), is an orange dwarf star almost a light year distant from its parent star (Fomalhaut A), and Fomalhaut C (aka LP 876-10), a red dwarf star located a little over 3 light years from Fomalhaut A! Surprisingly far from its parent star – even from our view on Earth, Fomalhaut C lies in the constellation Aquarius, while Fomalhaut A and B lie in Piscis Australis, another constellation! – studies of Fomalhaut C confirm it as the third stellar member of the Fomalhaut system, its immense distance still within Fomalhaut A's gravitational influence. So, while not truly "lonely," Fomalhaut A's companions do keep their distance.

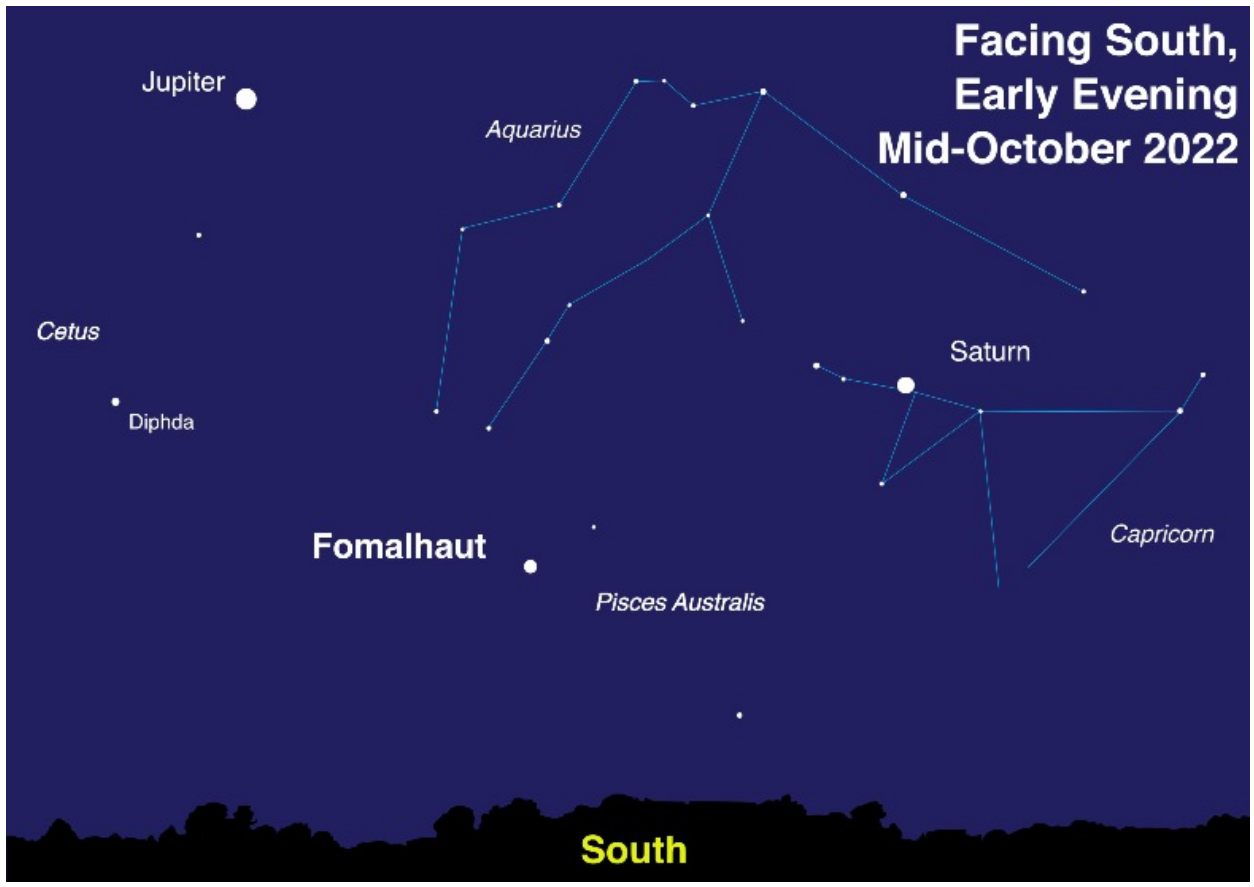
Fomalhaut's most famous feature is a massive and complex disc of debris spanning many billions of miles in diameter. This disc was first detected by NASA's IRAS space telescope in the 1980s, and first imaged in visible light by Hubble in 2004. Studies by additional advanced telescopes, based both on Earth's surface and in space, show the debris around Fomalhaut to be differentiated into several "rings" or "belts" of different sizes and types of materials. Complicating matters further, the disc is not centered on the star itself, but on a point approximately 1.4 billion miles away, or half a billion miles further from Fomalhaut than Saturn is from our own Sun! In the mid-2000s a candidate planetary body was imaged by Hubble and named Fomalhaut b. However, Fomalhaut b was observed to slowly fade over multiple years of observations, and its trajectory appeared to take it out of the system, which is curious behavior for a planet. Scientists now suspect that Hubble observed the shattered debris of a recent violent collision between two 125-mile wide bodies, their impact driving the remains of the now decidedly non-planetary Fomalhaut b out of the system! Interestingly enough, Fomalhaut A isn't the only star in its system to host a dusty disc; Fomalhaut C also hosts a disc, detected by the Herschel Space Observatory in 2013. Despite their distance, the two stars may be exchanging material between their discs - including comets! Their co-mingling may help to explain the elliptical nature of both of the stars' debris discs. The odd one out, Fomalhaut B does not possess a debris disc of its own, but may host at least one suspected planet.

(Continued on page 19)

**Astronomers use capital letters to label companion stars, while lowercase letters are used to label planets.*

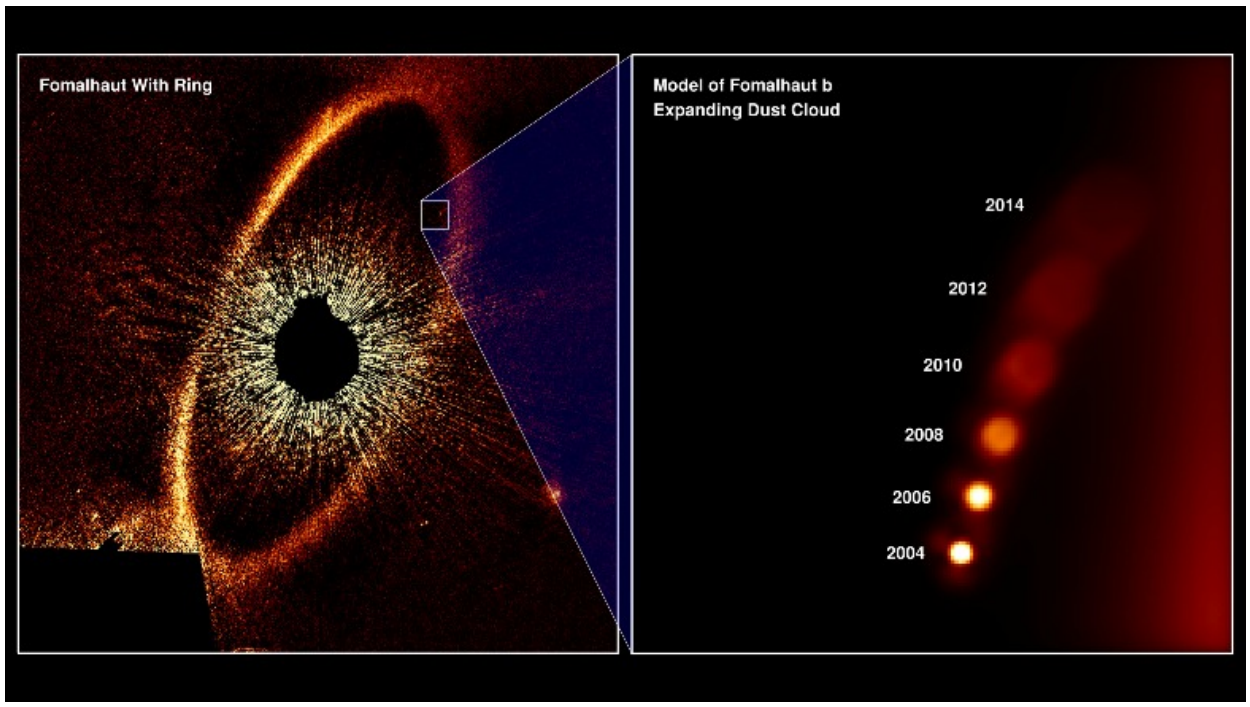
NASA Night Sky Notes (continued)

While Hubble imaged the infamous "imposter planet" of Fomalhaut b, very few planets have been directly imaged by powerful telescopes, but NASA's James Webb Space Telescope will soon change that. In fact, Webb will be imaging Fomalhaut and its famous disc in the near future, and its tremendous power is sure to tease out more amazing discoveries from its dusty grains. You can learn about the latest discoveries from Webb and NASA's other amazing missions at nasa.gov.



left: Sky map of the southern facing sky for mid-latitude Northern Hemisphere observers. With Fomalhaut lying so low for many observers, its fellow member stars in the constellation Piscis Australis won't be easily visible for many without aid due to a combination of light pollution and atmospheric extinction (thick air dimming the light from the stars). Fomalhaut is by far the brightest star in its constellation, and is one of the brightest stars in the night sky. While the dim constellations of Aquarius and Capricorn may also not be visible to many without aid, they are outlined here. While known as the "Loneliest Star," you can see that Fomalhaut has two relatively close and bright visitors this year: Jupiter and Saturn!

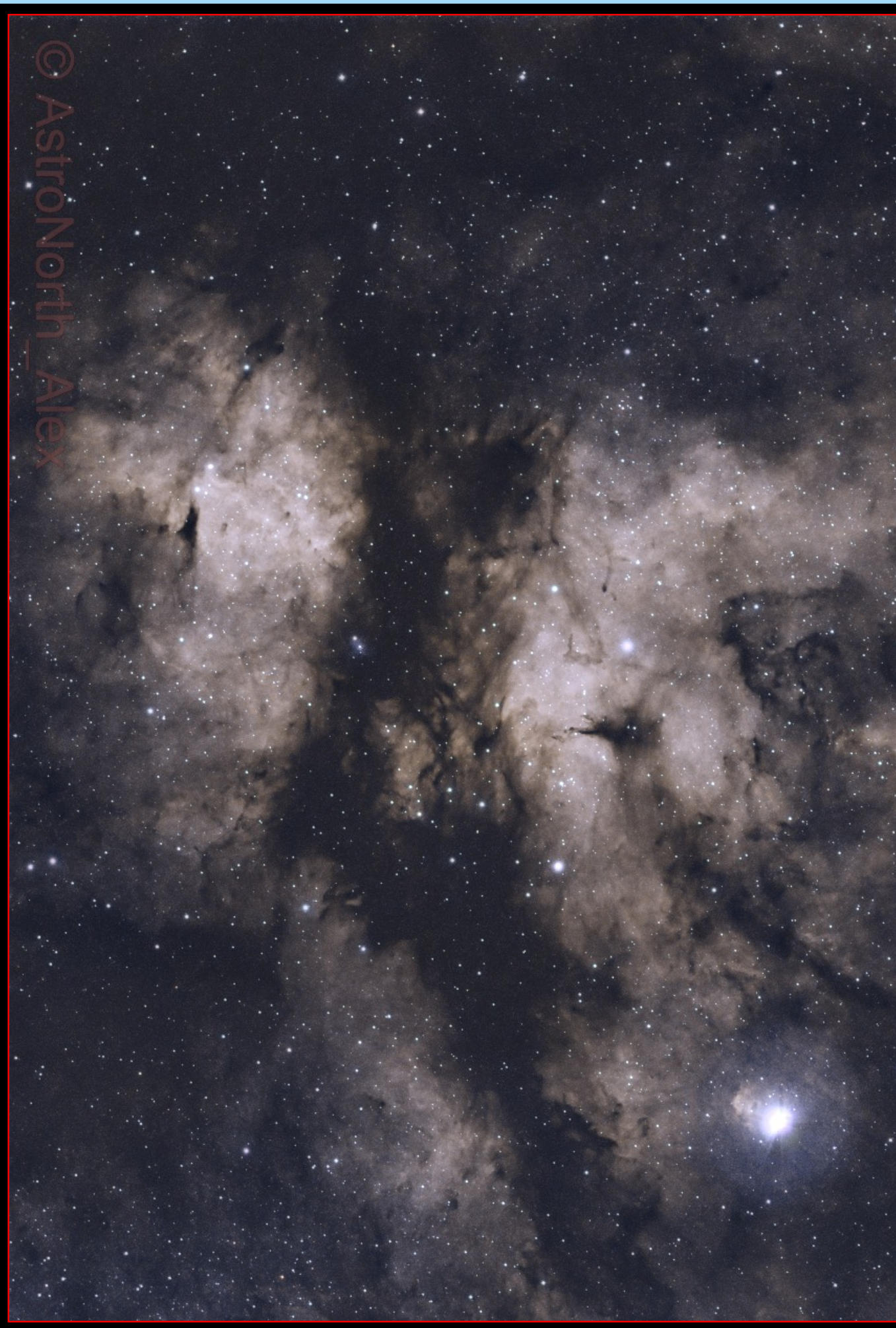
Image created with assistance from Stellarium



above: The magnificent and complex dust disc of the Fomalhaut system (left) with the path and dissolution of former planetary candidate Fomalhaut b displayed in detail (right).

Image credits: NASA, ESA, and A. Gáspár and G. Rieke (University of Arizona)

Source: https://www.nasa.gov/feature/goddard/2020/exoplanet-apparently-disappears-in-latest-hubble-observations



The Butterfly (Gamma Cygni) Nebula (IC 1318), in Cygnus

by **Alex Kepic.**

Taken with a ZWO ASI294MC Pro camera through a Explore Scientific ED102 on a Celestron AVX mount.

Eye Candy the Members' Image Gallery

top:

The Trifid Nebula (M20),
in Sagittarius

by **Dan Copeland.**

Taken at Backus Mill Heritage and Conservation Centre with a modified Canon 5T1 and a 400mm lens and 1.4 adapter at f/2.8.

28 stacked 30 second images at ISO 800

Jupiter, by **John Gauvreau**

Single frame from holding his camera up to his telescope eyepiece.

William J. McCallion Planetarium

McMASTER UNIVERSITY, HAMILTON, ONTARIO

- **Public shows every Wednesday (7:00pm)**
- **Public transit available directly to McMaster campus**
- **Tickets $7 per person; private group bookings $150**
- **Different shows every week**
- **Upcoming shows include:**
  - **Oct 5: Introductory Astronomy for Kids — Solar System**
  - **Oct 12: Planetarium show: Lost at Sea**
  - **Oct 19: From Human Computers to Supercomputers: Astronomy in the 20th Century**
  - **Oct 26: A Voyage with Voyager**
- ***Masks strongly encouraged for duration of all shows.***
- **For more details, visit www.physics.mcmaster.ca/planetarium**

UPCOMING EVENTS

October 14, 2022 - 7:30 pm — H.A.A. Meeting at McMaster Innovation Park. This is our *Annual General Meeting*. **This will be a "hybrid" meeting, with the attendance option of in-person or online via Facebook and Zoom.**

November 11, 2022 - 7:30 pm — H.A.A. Meeting at McMaster Innovation Park. Our main speaker for the November meeting will be *Parshati Patel*.

2021-2022 Council

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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