

Event Horizon

Volume 29, Number 6
April 2022



From The Editor

This month's E.H. has lots of info on lots of events taking place in the night sky this Spring. Here's hoping for some clear skies to see all these events in the sky!

Happy Reading!

Bob Christmas,
Editor

editor 'AT'
amateurastronomy.org



Chair's Report by Bernie Venasse

Welcome to Spring!!

Welcome to spring 2022 and the (hopefully) milder and clearer nights. I know that everyone is anxious to get back outside under the night sky and visit old friends again.

We are now about 2 years 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

A big thanks to John Read, our speaker in March, for his inspiring and entertaining views into authoring his astronomy books and for encouraging Goal Oriented Observing.

On Friday, April 8th, 2022, Pittsburgh, Pennsylvania amateur astronomer Larry McHenry will give a presentation on "*Observing the Moon for Beginners*", an
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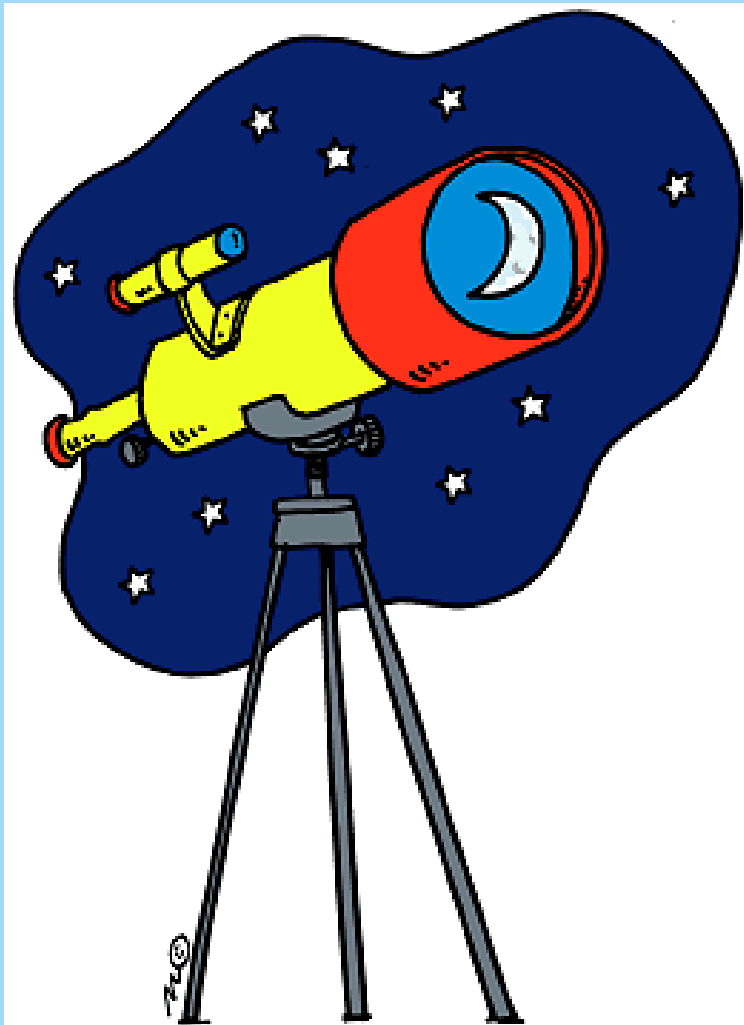
- Announcements
- HAA Explorers
- The Sky This Month for April 2022
- What's Up in Awards? April-May 2022
- NASA Night Sky Notes
- Eye Candy
- Contact Information

Chair's Report (continued)

introduction to our nearest neighbor in the Solar System. Larry McHenry has been active in amateur astronomy for over 40 years, and is a member of the Kiski Astronomers, and the Oil Region Astronomical Society (ORAS) in Southwestern Pennsylvania. You can learn more about Larry's astronomical interests online at his webportal: <http://www.stellar-journeys.org/>

Also, this month, I will be introducing the Hamilton Amateur Astronomers *Lunar Observing Program*.

Congratulations to Victoria!! Victoria is the randomly chosen winner in the HAA Explorers' Club Contest.



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 Melissa Whitman at

loanerscope@amateurastronomy.org.

Telescopes are loaned out on a first come basis.

HAA Helps Hamilton

While during the pandemic, the H.A.A. hasn't been able to collect 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](#).

In that spirit, we encourage you to continue making donations directly to your local food banks.



Masthead Photo: *The Gibbous Moon*, by Bernie Venasse.

**Come and join the HAA for
a weekend of star gazing
under the dark skies at
Andromeda Meadow.**



Excellent dark sky for visual
observing and astrophotography.

2 Local Observatory Tours

Saturday Potluck Dinner

Registration opens in April
2022 for HAA members only

Accommodations

Onsite

15 back in travel trailer sites
20 ground camping sites

Off site

Motels, B&B's, cottage rentals, Airbnb, and camp-
ing/trailer parks in and around Wiarton, Ontario.

**A small fee will be charged to all campers and non-
campers to cover the cost of the porta potties.**

**Come and make new friends
under the stars!**

Date: September 23 to September 25, 2022

Extension to September 26 available

**Where: 483161 Colpoys Range Road
South Bruce Peninsula**

Between Wiarton and Big Bay Ontario

HAA Dark Sky Star Party



**All skill levels from beginner to
experienced are welcome!**

Questions? Contact

Sue MacLachlan at
starparty@amateurastronomy.org
or

Matthew Mannering at
observing@amateurastronomy.org

Onsite Amenities

Porta-potties
Generators for charging as-
tronomy equipment during
the day.

No electricity
No running water
No flush toilets or showers

We Have a Winner!!!

Congratulations to Victoria, Age 6, the winner of the HAA Explorers Contest! Let's see what Victoria submitted!

1. Sketch a picture of your favourite constellation.



2. Tell us why it's your favourite.

I like Pegasus because
she is a unicorn and
unicorns are magical.

3. Tell us a story about it.

Pegasus is from Greek
mythology. she carried
lightning bolts for Zeus.
Zeus placed her among
the stars to reward her.

4. After looking at the night sky, create your own asterism, draw a sketch and tell us about it.

Victoria's parent had this to say: "We learned a lot. For one, we learned that one should not argue with a 6-year-old about the definition and/or gender of unicorns."

Thank you so much Victoria for your amazing entry! Victoria will be receiving this prize:

Wonders of Discovery SPACE Educational Tin Set which contains:

Reference Book, Sticker Book, Wall Chart, Glow-in-the-Dark Shapes, Sticker Sheet & Model Solar System.



The
Hour
Glass

Congratulations Victoria!

Bay Area Science and Engineering Fair (BASEF) Winners!

The HAA has been a proud supporter of BASEF since 1994!

The HAA sponsors an award at BASEF every year, called the *James A. Winger Award*. James Winger was a founding member of the HAA and is the only person to have been named its Honorary Chair. Jim was a skilled astronomer, expert telescope maker and taught many people how to make their own telescope optics. Jim was always a great supporter of BASEF, personally donating prizes to foster the enthusiasm of young scientists.

Consideration for this Award is given to a student who does a project related to Astronomy, Physics, Light Pollution Abatement, or Space Travel. The Award consists of:

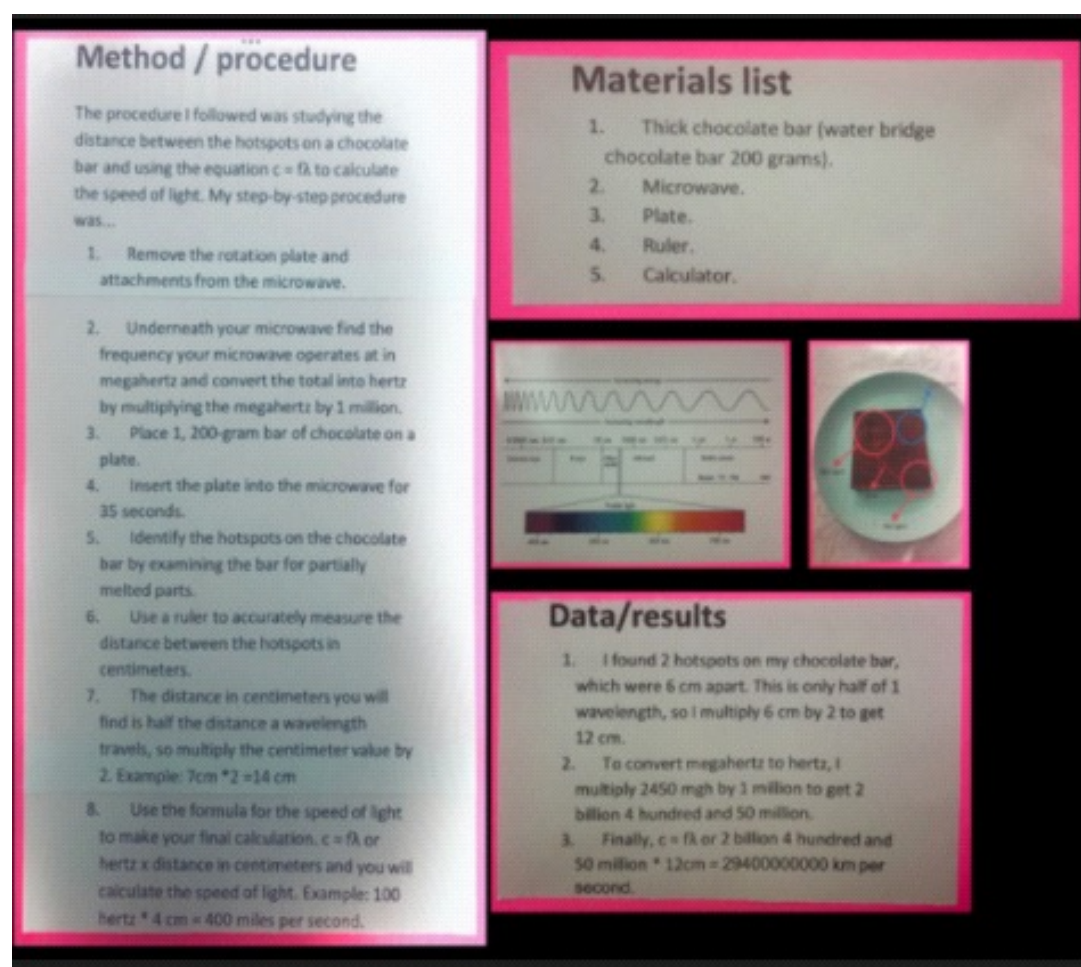
- a. The James A. Winger Junior Award: \$100 for a student in Grades 7-9
- b. The James A. Winger Senior Award: \$100 for a student in Grades 10-12

Also included is a free one-year family membership to the HAA for each winner, and the opportunity to present the project to the HAA's membership.

This year our BASEF judges were HAA members Mario Carr, Jo Ann Salci and Chris Strejch. For the third year in a row, BASEF was conducted on-line due to the pandemic. There were two excellent astronomy entries in the younger age group and no astronomy entries in the older age group, so although the intent was to award one in each, the judges agreed to provide two Junior Awards this year.

This year's BASEF award winners are:

Shaiq, a grade 7 student, who did a project called Black Holes Demystified. We were impressed by Shaiq's passion for astronomy and the desire to share astronomy knowledge with other students. Shaiq even created a website for them about Black Holes. Here is a link to the YouTube video where Shaiq describes the project and Black Holes: <https://www.youtube.com/watch?v=O6fNGhBaNWk>. And here is a link to the website Shaiq created: <https://sites.google.com/hdsb.ca/black-holes-demystified/home>



Method / procedure

The procedure I followed was studying the distance between the hotspots on a chocolate bar and using the equation $c = f\lambda$ to calculate the speed of light. My step-by-step procedure was...

1. Remove the rotation plate and attachments from the microwave.
2. Underneath your microwave find the frequency your microwave operates at in megahertz and convert the total into hertz by multiplying the megahertz by 1 million.
3. Place 1, 200-gram bar of chocolate on a plate.
4. Insert the plate into the microwave for 35 seconds.
5. Identify the hotspots on the chocolate bar by examining the bar for partially melted parts.
6. Use a ruler to accurately measure the distance between the hotspots in centimeters.
7. The distance in centimeters you will find is half the distance a wavelength travels, so multiply the centimeter value by 2. Example: $7\text{cm} \times 2 = 14\text{cm}$
8. Use the formula for the speed of light to make your final calculation. $c = f\lambda$ or $\text{hertz} \times \text{distance in centimeters and you will calculate the speed of light. Example: } 100\text{ hertz} \times 4\text{ cm} = 400\text{ miles per second.}$

Materials list

1. Thick chocolate bar (water bridge chocolate bar 200 grams).
2. Microwave.
3. Plate.
4. Ruler.
5. Calculator.

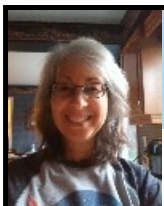
Data/results

1. I found 2 hotspots on my chocolate bar, which were 6 cm apart. This is only half of 1 wavelength, so I multiply 6 cm by 2 to get 12 cm.
2. To convert megahertz to hertz, I multiply 2450 mhz by 1 million to get 2 billion 4 hundred and 50 million.
3. Finally, $c = f\lambda$ or 2 billion 4 hundred and 50 million \times 12cm = 29400000000 km per second.

Isabella, a grade 8 student who did a project called Cosmic Chocolate. Isabella was able to calculate the speed of light using a microwave and chocolate! We were impressed by Isabella's creativity and passion for astronomy.

Congratulations to Shaiq and Isabella! We hope to have them share their projects with you at a later date and to have them join our membership!

Isabella's "Cosmic Chocolate" Project Display



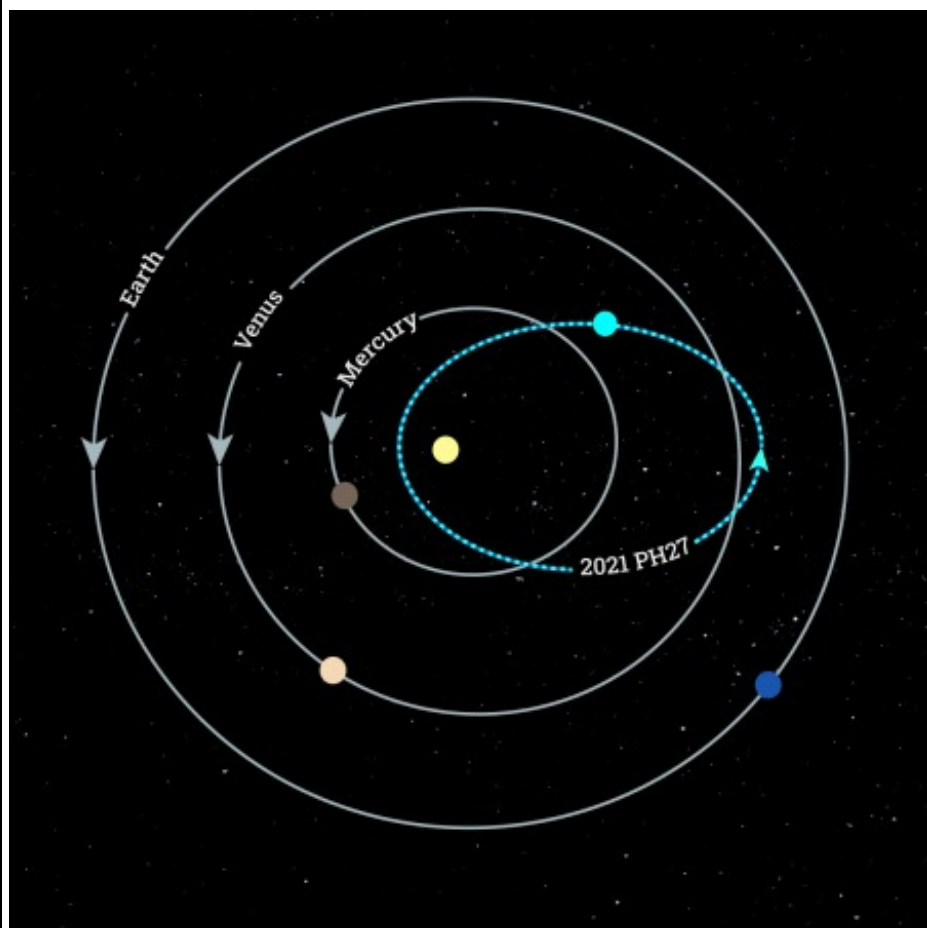
...A column for young astronomers - and those young at heart!

This month we are going to explore rocks...space rocks that is!

Leftovers anyone?

Space “rocks” 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 are made up of rock and metals. They were formed closer to the Sun, which they also orbit. Asteroids are hard to see from Earth with your eyes. They are dim and can look like a star. The main asteroid belt lies between Mars and Jupiter. Not all asteroids are found in this area. For example, there are asteroids that travel in Jupiter’s orbit, both ahead of and behind it, and they are called Trojan Asteroids. Lucy is the name of a mission to explore these asteroids. A newly discovered asteroid named 2021 PH27 orbits the Sun in just 113 Earth days, the fastest orbiting asteroid found so far! Its orbit is oval shaped (or elliptical) and it travels between the Sun and just beyond Venus, as seen in the diagram at lower left.



Credit: Carnegie Institute for Science



*Comet Neowise over Hamilton
Image Credit: John Gauvreau, HAA Member*

Comets are chunks of ice, dust and rock. Think of a dirty snowball with rocks in it. They tend to have elliptical orbits and were formed further out in the solar system. When their orbit brings them closer to the Sun, they form what we see as a “tail”. Sometimes there are two tails! This is caused by the evaporation of the ice by the Sun’s heat. Comets are brighter and some can be seen with our eyes alone. Like *Comet Neowise* that visited our area of the solar system in July 2020. Comets are slower moving and are not seen as sudden streaks of light (read on 😊)!

(Continued on [page 7](#))

HAA Explorers (continued)

Before we talk about those streaks of light, we have some vocabulary to learn! So far, we've learned about the two main types of space rocks: Asteroids and Comets. They are smaller than planets, but larger than the pieces that break off of them. Those pieces are called **Meteoroids**. These can be dust, pebble-sized or even larger chunks. When one of these meteoroids enters Earth's atmosphere and vaporizes (burns up), it creates a sudden streak of light, called a **Meteor**. These are sometimes also called "Shooting Stars", although they aren't stars. When the Earth passes through the path of an asteroid or comet's debris, we can see what's called a **Meteor Shower**, a large number of Meteors (see the diagram).

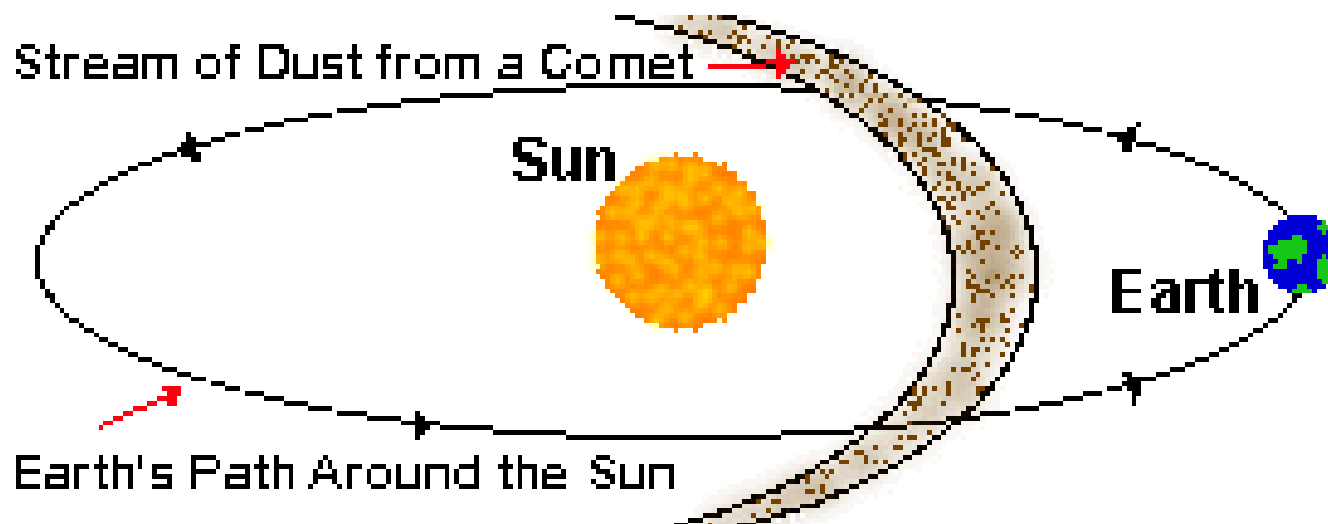


Image Credit: NASA

A great meteor shower to watch for is the Perseids, which occur mid-August.

So, what happens if a meteor survives its trip through Earth's atmosphere and lands on Earth? That is what's called a **Meteorite**. Meteorites land in water and on land. When they land on solid ground, they most often don't do any damage, as most of them are small. Meteorites come in different sizes, shapes, colours and textures. They are as old as our solar system - 4.6 billion years old! Some of our club members have collections of these amazing space rocks (this writer even has a necklace with a meteorite in it)! And some have traveled to see craters created by larger meteorites, such as the famous **Barringer Crater**, located in Arizona. It is over 1 km across!

(Continued on [page 8](#))

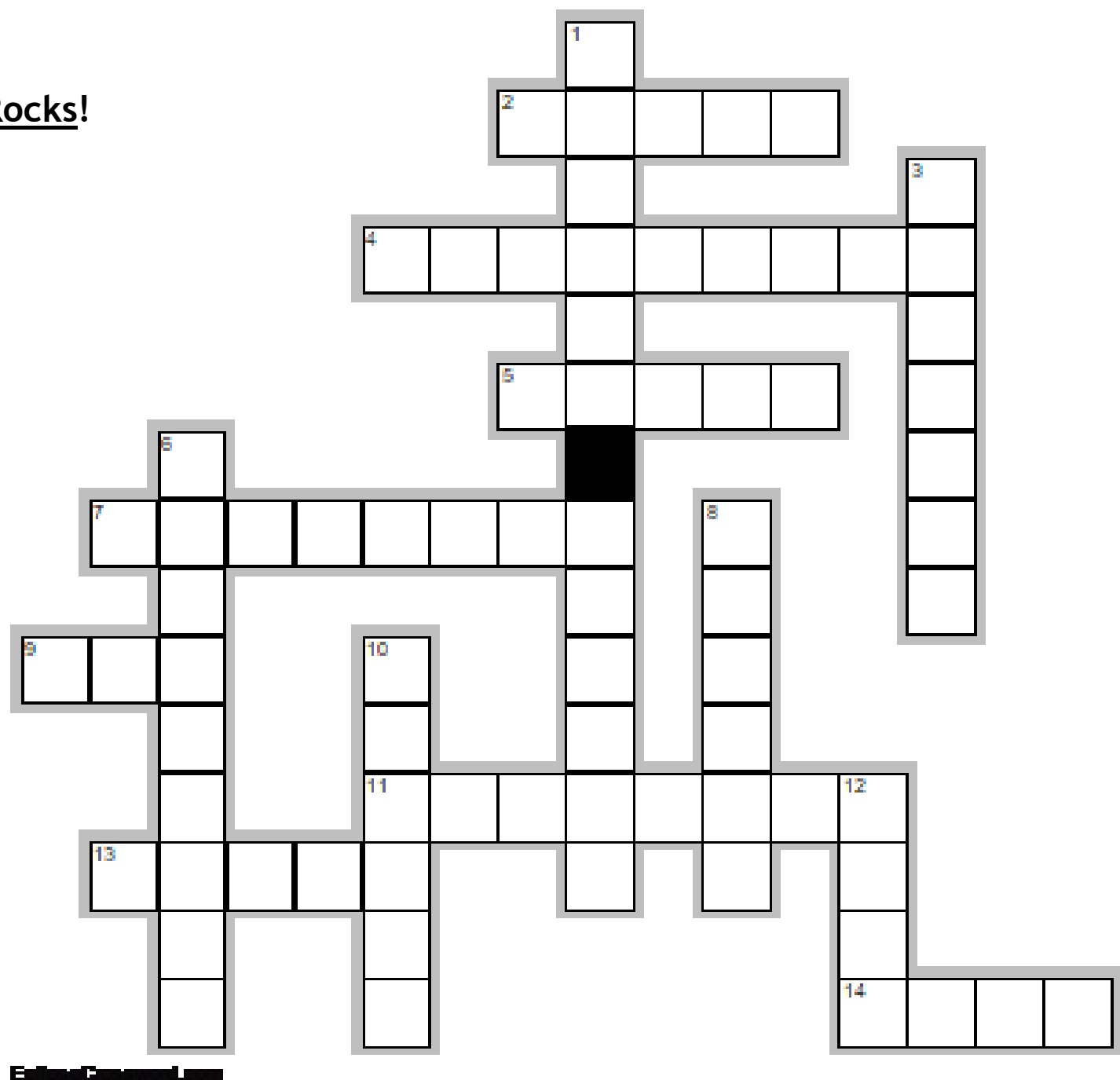


*Geminid Meteor Shower which occurs in December
Image Courtesy: Space.com*



*Barringer Crater
Image Credit: Astronomy Picture of the Day,
NASA*

Space Rocks!



Across

- 2. An “ingredient” found in Asteroids.
- 4. When a meteor lands on Earth.
- 5. The path that many space objects take; usually round or elliptical.
- 7. A meteor shower that happens in December.
- 9. Usually found in Comets.
- 11. Space object made from rock and metal.
- 13. Space object made of ice, rock and dust.
- 14. Comets can have one or more of this.

Answers on page 10.

Down

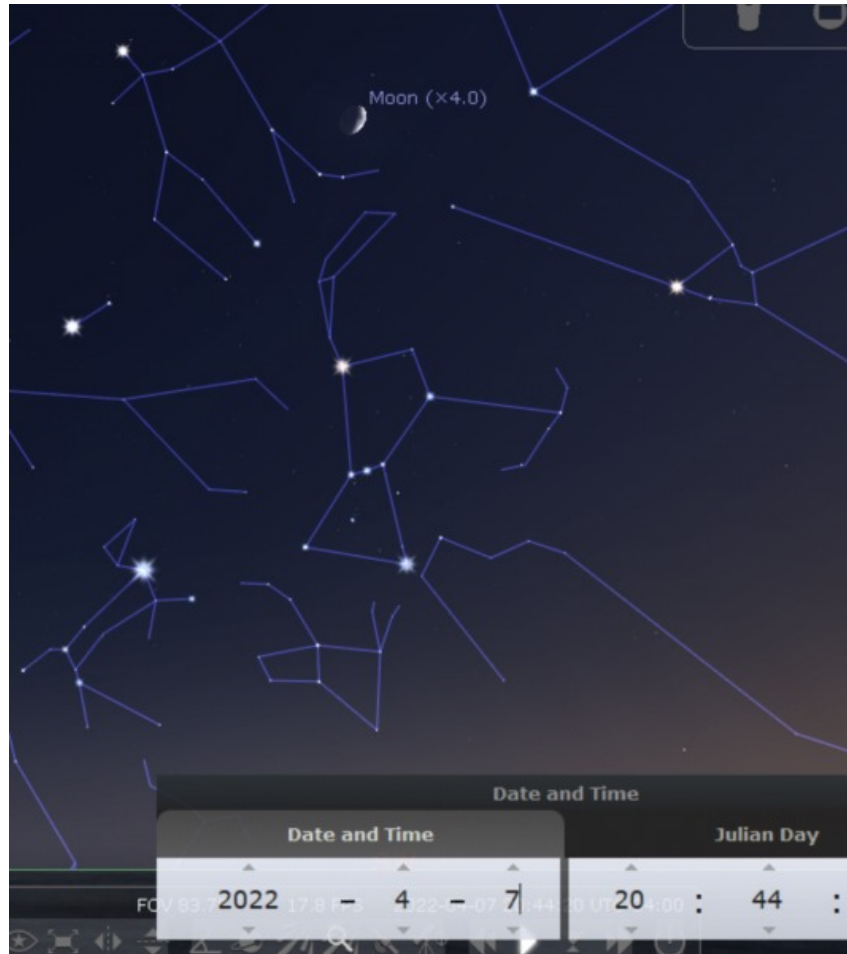
- 1. When many meteors travel across the sky.
- 3. A beautiful comet that visited our area of the Solar System in July 2020.
- 6. A small piece off of an asteroid or comet.
- 8. A meteoroid that streaks through Earth's atmosphere.
- 10. Some are made by the impact of a meteorite.
- 12. Could be an “ingredient” of a comet.

(Continued on [page 9](#))

HAA Explorers (continued)

During April, check out:

1. On April 7th at about 8:45pm: See the Moon above Betelgeuse in Orion. You can also still see the Winter Triangle asterism:



2. On April 24th at almost 9:00 AM (on your way to school!): You will see the Moon during the day if you look South. Remember to NEVER look at the Sun, though!



Images generated using Stellarium

(Continued on [page 10](#))

HAA Explorers (continued)

Things to do until next time **:

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

1. **Check out** this NASA poster on Asteroids and Comets:
<https://spaceplace.nasa.gov/review/posters/stardust/comets-vs-asteroids.pdf>
2. **Visit this website** to learn more about the newly discovered Asteroid:
<https://www.space.com/solar-system-fastest-orbiting-asteroid-2021-ph27>
3. **Watch** this *cool* Science North Video on the making of a comet:
<https://www.youtube.com/watch?v=yLgwEy6ANP0>
4. **Check out** The American Meteor Society website where you can report bright meteors you see, called fireballs, which are brighter than the planet Venus: <https://www.amsmeteors.org/>

Finally:

What do planets like to read?

Answer: Comet Books

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

Thank you to Mi for reviewing this article!

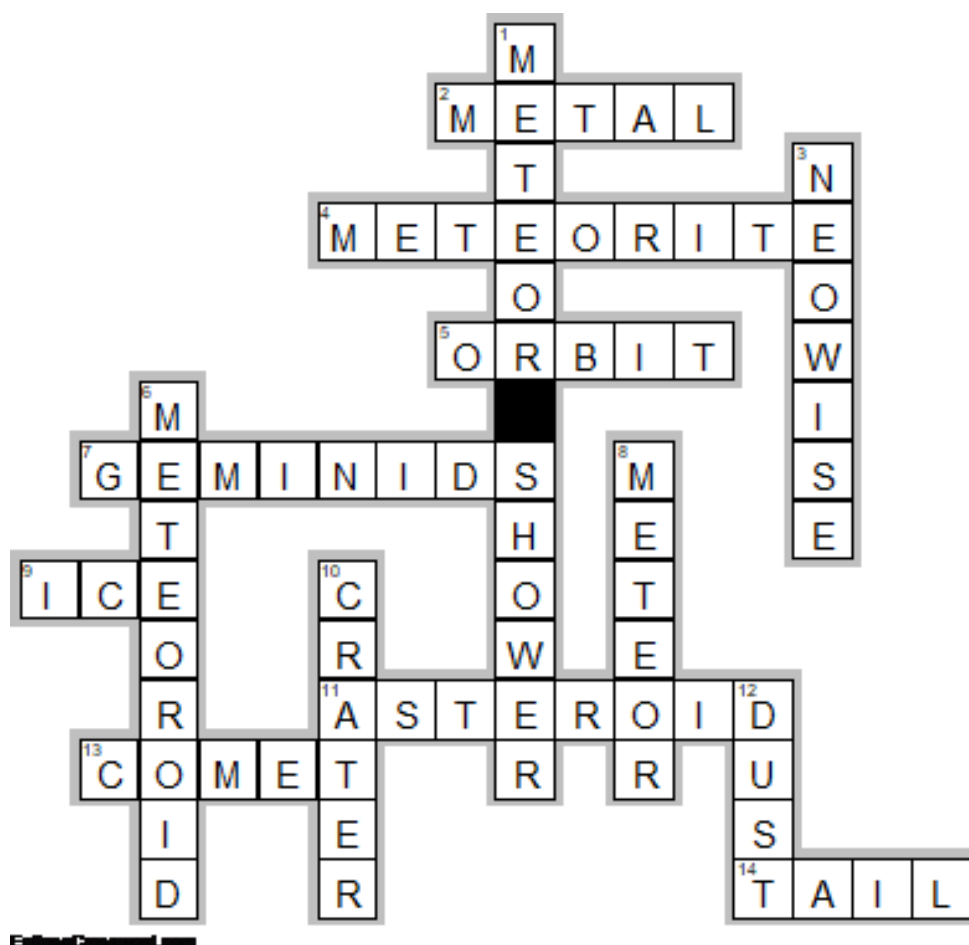


References:

<https://www.amsmeteors.org/meteor-showers/meteor-shower-calendar/>

<https://spaceplace.nasa.gov>

Page 8 Crossword Answers:



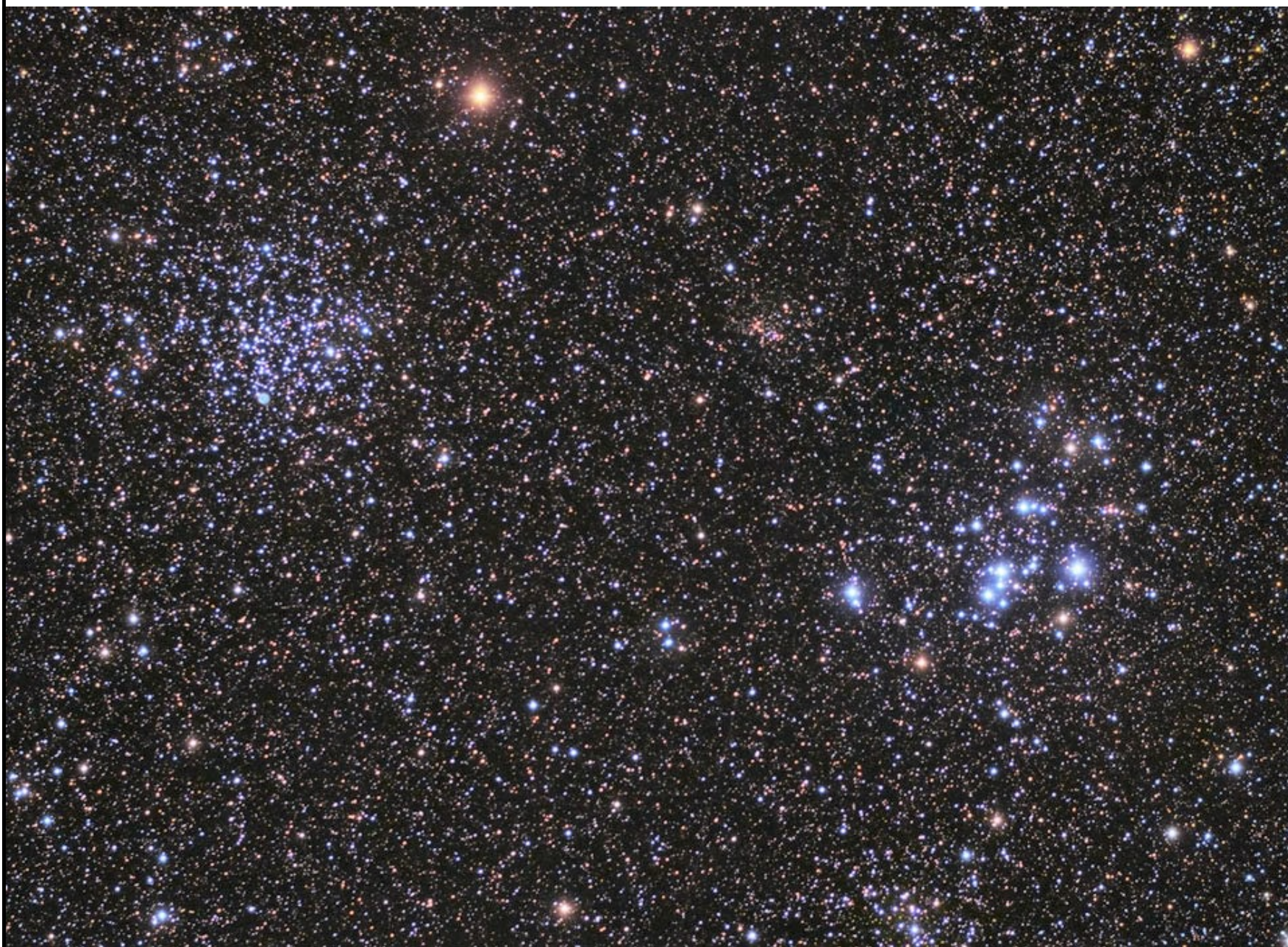


The Sky This Month for April 2022 by Matthew Mannering

A couple of weeks ago I was able to get outside and try a little binocular astronomy. My neighborhood, like so many, has way too many lights that get in the way of observing. In the end, I had to hide behind my truck to get rid of the glare that seemed to come from every direction. I thought I would try to find open cluster *M48* which is below the star Procyon. It's a relatively bright cluster with a very distinct pattern of stars just to the left of it. I could find the star pattern but *M48* was invisible. Four attempts later I was starting to get a little frustrated but persevered anyway. Finally, my eyes became somewhat dark adapted and there it was, I thought. I then tried averted vision and slowly moved the binoculars back and forth to determine whether that the faint patch of light was real and... success!

After that I had a good look at the belt in Orion and the Orion Nebula. Surprisingly, the extent of the nebulosity was more than expected and showed some wispy details. I followed up with nice views of the large open clusters *M35* in Gemini and *M41* in Canis Major.

Lastly, based on my success finding *M48*, I thought I would have a look for two more clusters, *M46* and *M47*. I found them, but they weren't much to look at. *M46* was star-like in the binoculars and *M47* was small and faint. At that point I started to feel the cold and packed it in for the night. *(Continued on [page 12](#))*



M46 and M47 in Puppis
Image Credit: Sergio Equivar / NASA / APOD



CG-4 Equatorial Mount

Although I am a big proponent of binocular astronomy, I don't expect visual miracles when looking at most targets. Generally, they are going to look very small and faint. The point for me is to refresh my star hopping skills to navigate to individual targets. This makes finding them much easier when using a telescope without GoTo capability.

Late last year I noticed that my simple, non GoTo CG-4 equatorial mount, was getting very tight around the RA (right ascension) axis. In fact, it would stick in certain spots even with a counterweight on the shaft. Also, the polar finder scope reticule was moving in the barrel of the scope. I had purchased this mount used, and I suspect that previously, someone tried to improve its workings and failed badly. Last week I finally remembered that it needed to be fixed before the start of the observing season.

After watching a couple of YouTube videos, I took my mount completely apart and cleaned out the old grease and dirt. I then regreased all the bearing surfaces and reassembled the mount. I took my time and was careful not to overtighten either axis. Overtightening of the axis along with dirt and old thick grease are major causes of stickiness/binding.

Next, I adjusted the worm gears in both axes to eliminate backlash which causes a delay when moving either axis with the slow-motion control. Backlash occurs in both motorized and manual mounts and the adjustment to the worm gear assembly is basically the same in either case. You can adjust for backlash in a computerized mount using the hand controller, but in my opinion, it's better to eliminate it mechanically before starting up the mount.

Lastly, I took the polar scope apart to figure out why the reticule was moving around, and difficult to focus. In this case the reticule happened to be stuck to the eyepiece rather than in its proper place in the barrel, centred between three grub screws.

I should point out that I am no more mechanically inclined than most people. I did however make a conscious decision to start with the simplest mount I own. Also, I made sure that I had the proper tools and took my time. If you are going to attempt this maintenance, remember that YouTube is your friend.

Just in case you were wondering; the mount now works properly, and I had no extra nuts, bolts or screws left over. That's a win in my books.

In preparation for this article, I was looking up April events in the RASC Handbook and wasted 20 minutes looking at the 2021 book by mistake. That was a little annoying. I then forgot to take DST into account when looking at the individual events in the list. Universal time (UT, Zulu or Greenwich mean time) is used for all events in the handbook, so subtract four hours from the listed time to get local time here during DST. As an example, an event at 2 am UT occurs here at 10 pm the previous day.

(Continued on [page 13](#))

The Sky This Month for April 2022 (continued)

Some interesting events in April and a surprise in May

- 4th and 5th: Mars $< 0.5^\circ$ from Saturn. Look low in the southeast between 6:00 and 6:30 am.
- 15th to 30th: Mercury puts on its best evening display for the year (see chart below).
 - 15th: look due west 7° above the horizon at 8:30 pm.
 - 30th: look just north of west 12° above the horizon at 9:00 pm.
- 15th to 30th: look low in the east about a half hour before sunrise. Naked eye planets Jupiter, Venus, Mars and Saturn along with Neptune (binoculars required) line up along the ecliptic (see chart at top of page 14). Note that at magnitude 8, Neptune will be a very difficult catch in the dawn sky.
- 27th: Venus at mag -4 and Neptune at mag +8 will be $< 0.5^\circ$ apart.
- 30th: Jupiter and Venus 0.5° apart. Look due east at 5:30 am about 8° above the horizon.

Moon Phases

1st: New Moon

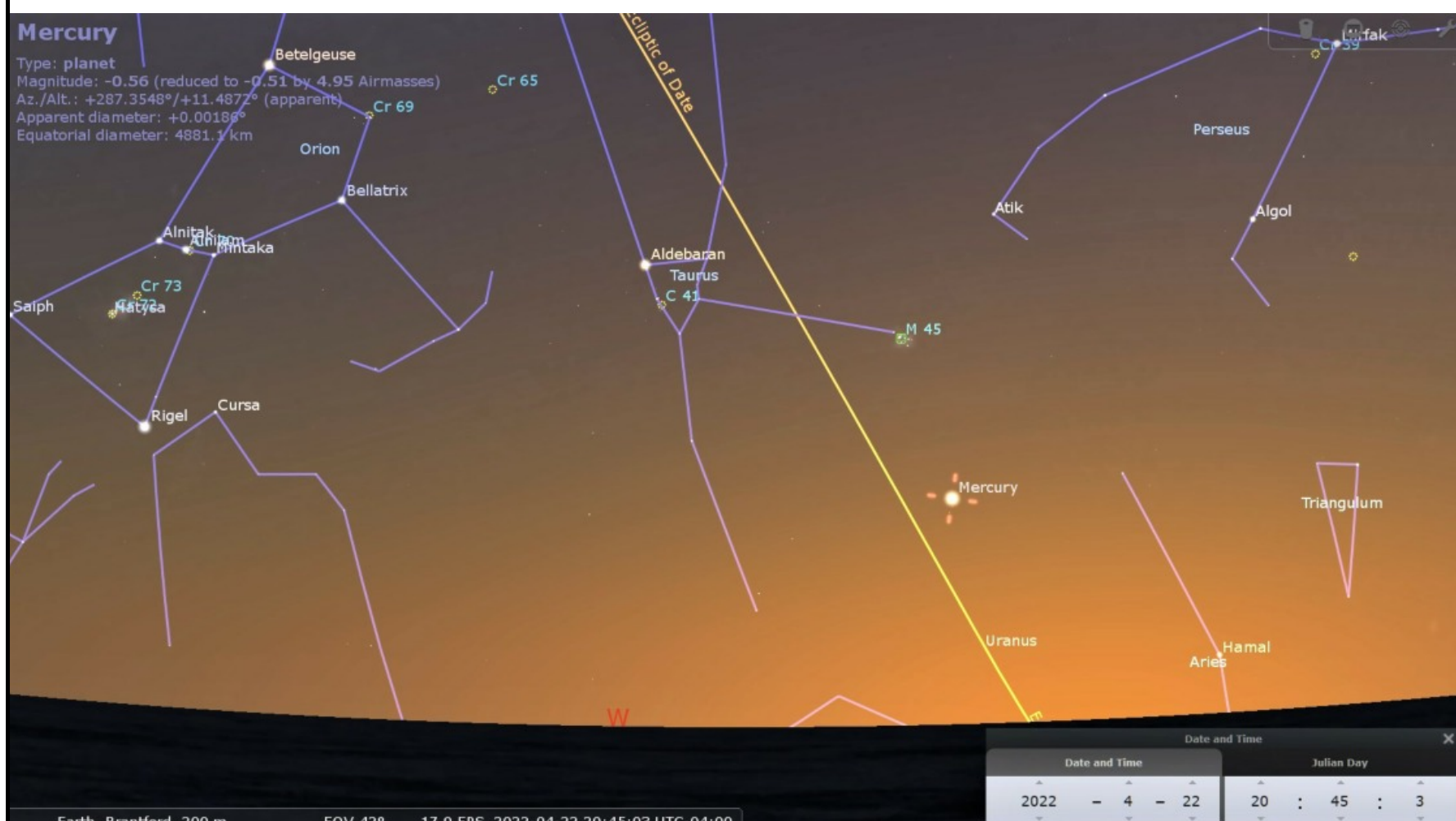
9th: First Quarter (waxing)

16th: Full Moon

23rd: Last Quarter (waning)

30th: New Moon

(Continued on [page 14](#))



Images generated using Stellarium

The Sky This Month for April 2022 (continued)



Lunar Libration greatest visible extents

Libration, or the apparent wobble of the Moon, allows us to get a peak at portions of the far side of the Moon. In most cases, we get to see an extra 6 to 8 degrees of the surface when the libration is at its greatest in any direction.

1st: Eastern limb

4th: Western limb

12th: Southern limb

25th: Northern limb

28th: Eastern limb

Upcoming on May 15th: A total Lunar eclipse!

The Lunar eclipse will be preceded by a Solar eclipse two weeks earlier. However, to see the solar eclipse you will need to go South to where the Penguins are. No, not the Zoo! Lucky for us, the Lunar eclipse will be visible right outside our doors! *(Editor's note: See chart of eclipse at the top of page 19.)*

Here is the timing for this event:

1st contact of the Umbra at 22:27 on May 15th.

Full eclipse begins at 23:29.

Greatest eclipse at 00:11 on the 16th.

Totality ends at 00:54

Umbra exits the Lunar disk at 01:55

This may finally be the summer where we can get together for some observing. I said the same thing last year and the year before so I'm hoping that the third time is the charm. In the meantime stay safe, clean and prepare your gear and get yourself a list of targets. Here's hoping to see you soon.



What's Up in Awards? April-May 2022 by Bernie Venasse

Contents:

What's up in awards?
Rising Star Program: April, May
Pathways Observing Program targets... April, May
Messier Observing Program: April, May... Including target hints!!
Comets
Upcoming Meteor showers

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

April

Constellations: Virgo, Leo
Stars: Dubhe, Regulus
Double stars: 42 Leonis Minoris
Object Pairs: M65/M66
Messier objects: M96, M109

May

Constellations: Ursa Minor, Leo
Stars: Spica
Double Stars: Mizar
Object Pairs: M85/M86
Messier objects: M51

Pathways Observing Program

Observable in April, May, June

Group A,

Spring Constellations: Find, observe, sketch: *Ursa Major, Bootes, Virgo.*

Stars: Find, observe, sketch: *Polaris, Arcturus, Spica.*

Asterisms: Find, observe, sketch: *Big Dipper, Virgo Diamond, Sickle.*

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

HAA Messier Objects Observing Award

April Messier targets

M40 This is a pair of faint stars located in Ursa Major. In telescopes, they appear to be an identical pair of stars and easy to split even at low power.

M108 This galaxy will appear as a thin streak of light in telescopes, there is a definite brightening towards the middle. M108 is a very tough object for the largest binoculars. *(Continued on [page 16](#))*

What's Up in Awards? April-May 2022 (continued)

- M97** This planetary nebula in Ursa Major, also called the Owl nebula, appears as a fairly large, round, hazy patch of light in a telescope. It is in the same field of view as M108 at low to medium powers.
- M109** This spiral galaxy in Ursa major appears as a small, oval patch of light. It can be found in the same field of view as Gamma UMa at low to medium power in a telescope.
- M106** This galaxy in Canes Venatici appears as an oval patch of light, larger than M109, with a fairly bright core.
- M95** This galaxy in Leo appears as a faint round patch of light with a bright nucleus.
- M96** Look for M96 in the same low power telescope field as M95. Another round patch of light, slightly larger and brighter than M95, it too has a stellar core.
- M105** This is a small elliptical galaxy in Leo and can be found in the same low power field as M96. It looks like a small fuzzy star. M105 has a close companion galaxy, NGC 3384, which is only slightly smaller and fainter than M105. To prevent confusion, M105 is the closer of the pair to M96.
- M65** A small, but relatively bright galaxy in Leo. It is an elongated oval patch of light with a bright stellar core.
- M66** A close companion galaxy to M65, it can be seen in the same low to medium power field as M65. M66 is another oval patch of light, brighter and slightly wider than M65. While you are here be sure to look for a thin streak of light which is the galaxy NGC 3628. It can be found north of M66 in the same low power telescope field as both M65 and M66.

May Messier targets

- M51** The famous Whirlpool galaxy in Canes Venatici is a bright face-on spiral with a smaller elliptical companion, NGC 5195. Look for a pair of fuzzy patches of light. The slightly larger and brighter one is M51. Make sure to spend some time here as there is almost always some spiral structure to be seen. On good nights the detail can be unbelievable. This is a difficult but very possible object in binoculars; appearing as a hazy patch of light.
- M63** Another spiral galaxy in Canes Venatici smaller and fainter than M51 but seen more edge-on, so the galaxy appears as an elongated patch of light with a bright star at one end. Further observation will show a faint halo around this patch. This is a difficult object in binoculars.
- M94** Just past M63 is another galaxy in Canes Venatici. Look for a bright, fuzzy star to find the core of M94, surrounded by a faint haze. A tough binocular object.
- M101** I consider this face-on spiral galaxy in Ursa Major one of the most difficult Messier objects to find in a telescope. This is a large, faint patch of light almost as big as the full moon. There is no real condensation, so use low power and look for a brighter part of the sky, more of a change in contrast than an object at first glance, which is the galaxy. Dark skies really help in the search of this one.
- M102** Not an official Messier object in most references, we will look for the galaxy NGC 5866 which is a somewhat standard insertion. Look for a small, faint patch of light that looks like a short, fuzzy line.

(Continued on [page 17](#))

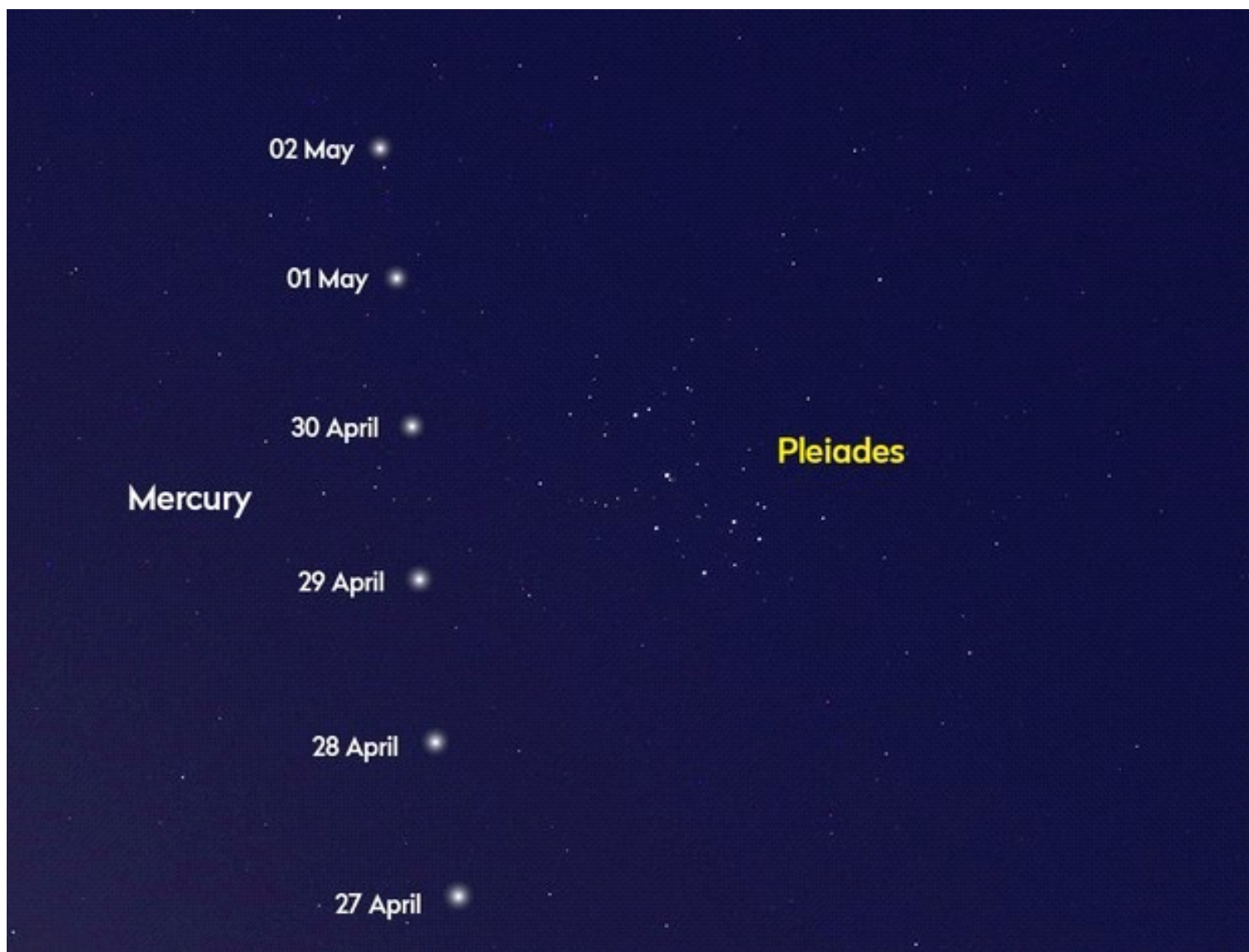
What's Up in Awards? April-May 2022 (continued)

- M64** In a telescope, this galaxy in Coma Berenices is a fairly bright, slightly oval shaped, patch of light. Look for the dark lane which gives this galaxy the common name Black Eye. The galaxy appears as a faint, fuzzy patch in binoculars.
- M85** This elliptical galaxy lies in Coma Berenices just north of the Virgo Cluster of galaxies. It appears as a bright but small, patch of light with a bright, stellar core.
- M49** This is an elliptical galaxy in Virgo just south of the main cluster of galaxies. M49 is round patch of light with bright center gradually fading to a round halo. M49 looks like a faint, fuzzy star in binoculars.
- M61** This is a face on spiral galaxy just south of M49 in Virgo, but much fainter. Look for a faint, round fuzzy patch of light.
- M104** This is the well-known Sombrero galaxy in Virgo. It is a bright, edge-on, spiral galaxy which looks like a bright, elongated streak. It is very possible to see in binoculars.

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

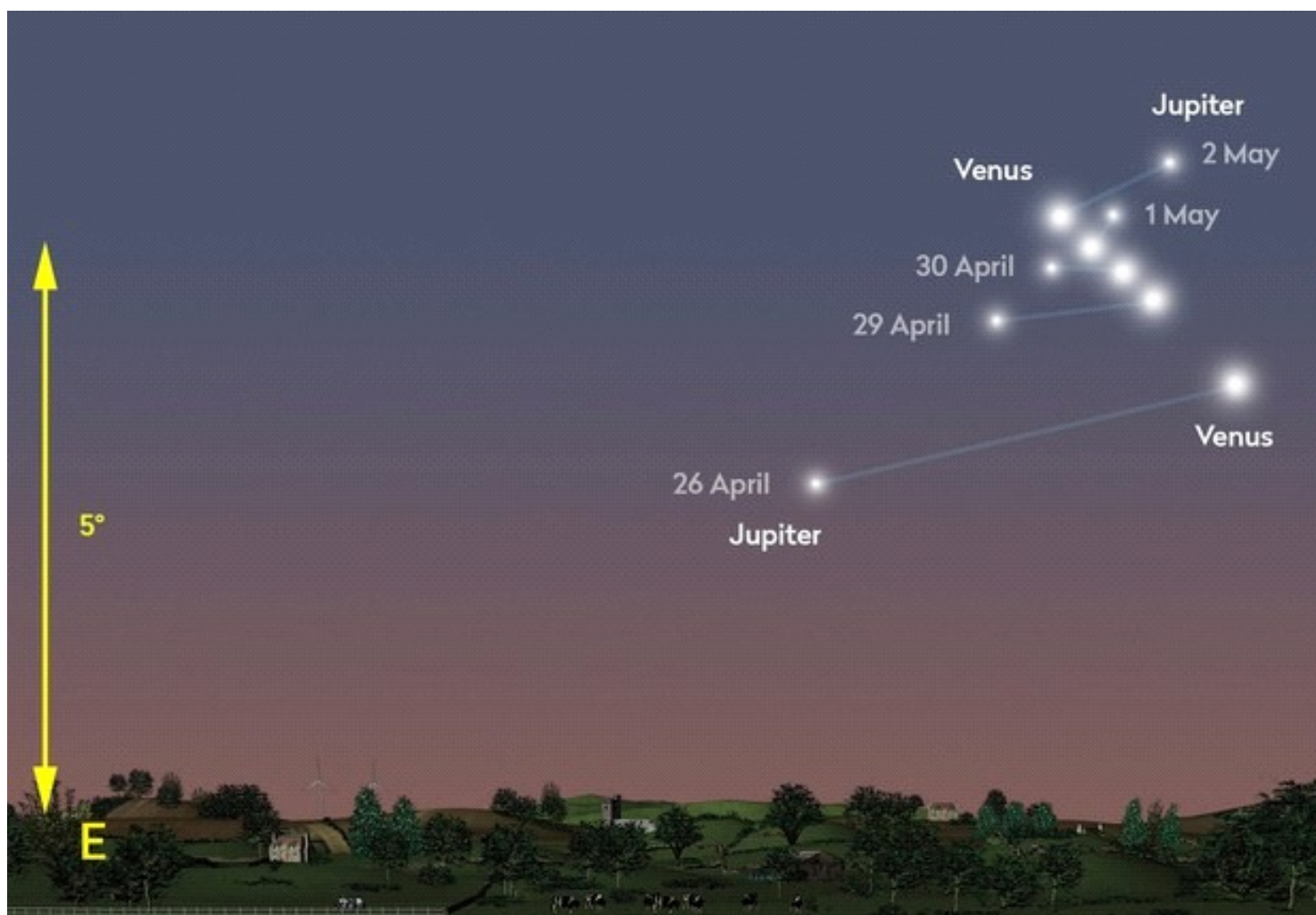
Mercury: Impressive in evening, sets over 2 hours after sunset by end of April. Close brush with the Pleiades at month end (see chart below).

(Continued on [page 18](#))



Mercury sets approximately two hours after the Sun at the end of April, a time when it will appear near to the Pleiades open cluster. Credit: Pete Lawrence

What's Up in Awards? April-May 2022 (continued)



Venus has a spectacular morning conjunction with Jupiter at the end of April and into early May. Visible in the morning sky approximately 30-45 minutes before sunrise. Closest apparent separation of 22' 43" occurs on 1 May. Credit: Pete Lawrence

Venus: Bright morning planet, low before sunrise. Near Mars and Saturn at start of month, close to Jupiter at end.

Mars: Morning planet. 19 arcminutes from Saturn on 5 April. Rises 90 minutes before sunrise at end of April.

Jupiter: On 30 April, morning planets Jupiter and Venus appear 40 arcminutes apart, rising one hour before sunrise (see chart above).

Saturn: Morning object, never gaining much height. Mars is 19 arcminutes away on morning of 5 April.

Uranus: Evening planet, just visible at start of April, then rapidly lost. Crescent Moon close on 3 April.

Neptune: Morning planet, but not viable for observation this month.

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

Mercury: Impressive evening planet at start of May, near the Pleiades.

Venus: Morning planet, near Jupiter on 1 May. 10%-lit waning crescent Moon nearby on 27 May.

Mars: Morning planet. Close encounter with Jupiter at end of May.

Jupiter: Morning planet, near Venus on 1 May and Mars on 29 May. Waning Moon nearby on 25 May.

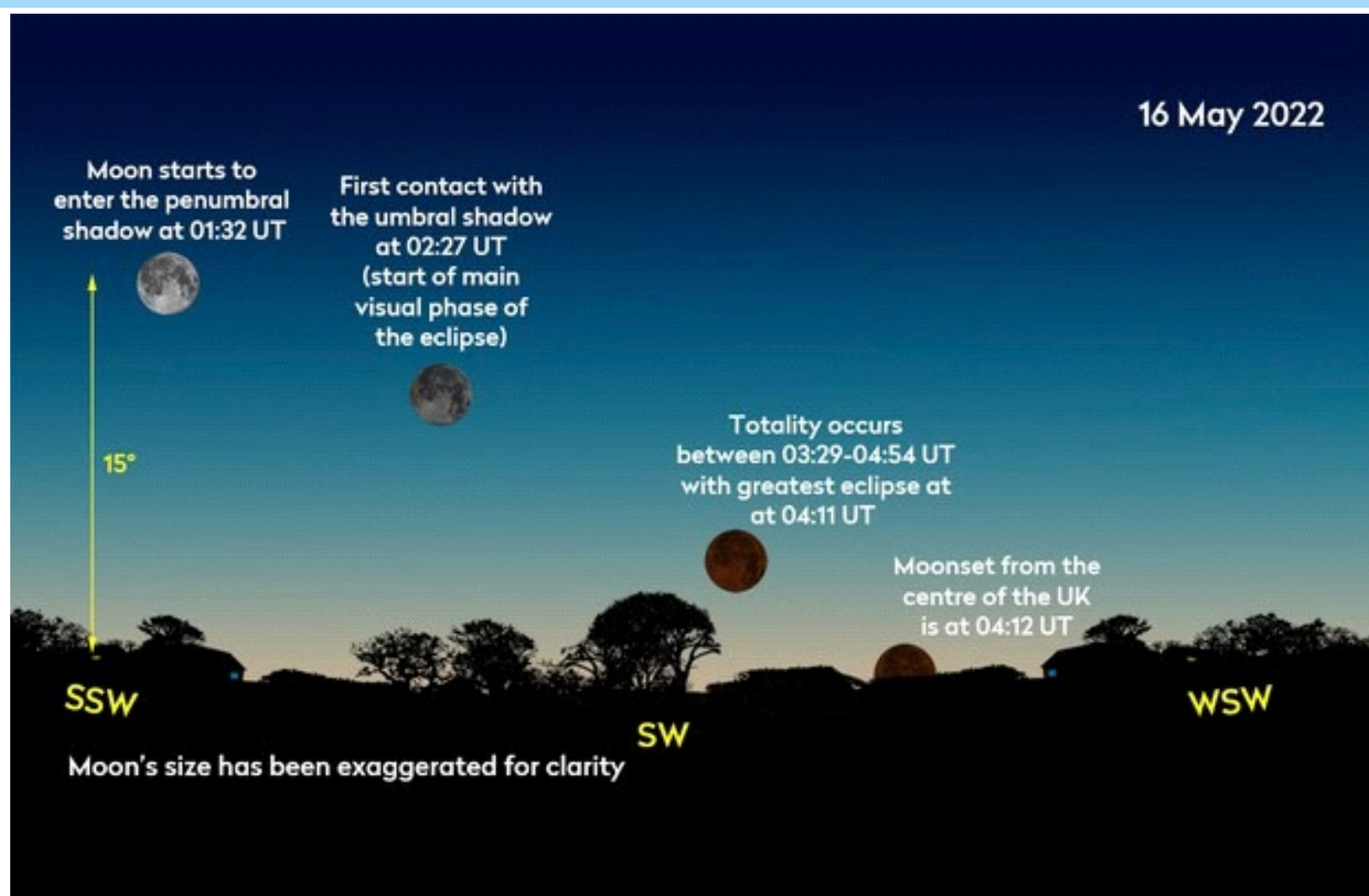
Saturn: Low altitude morning object. Waning gibbous Moon on 22 May.

Uranus: Uranus lines up with the Sun on 5 May and not visible this month.

Neptune: Neptune is a morning planet, but not visible this month.

(Continued on [page 19](#))

What's Up in Awards? April-May 2022 (continued)



Watch out for a total lunar eclipse on 15 & 16 May. This chart of the view from the UK.
Credit: Pete Lawrence

Comets April-May 2022

<http://www.aerith.net/index.html>

Mag = Magnitude, h= Highest altitude in that month observed at 35° N

(Continued on [page 20](#))

	Evening			Midnight			Morning		
	Comet	Mag	h	Comet	Mag	h	Comet	Mag	h
2022 April	C/2019 L3 (ATLAS)	10	59	C/2017 K2 (PanSTARRS)	9	27	C/2017 K2 (PanSTARRS)	9	65
	19P/Borrelly	11	42	C/2019 L3 (ATLAS)	10	10	22P/Kopff	10	10
	C/2019 T4 (ATLAS)	11	40	19P/Borrelly	11	3	C/2021 E3 (ZTF)	11	8
	C/2021 P4 (ATLAS)	13	20	C/2019 T4 (ATLAS)	11	37	9P/Tempel 1	12	16
	116P/Wild 4	13	74	C/2021 P4 (ATLAS)	13	5	C/2021 A1 (Leonard)	12	11
	C/2019 U5 (PanSTARRS)	13	37	116P/Wild 4	13	44	C/2021 P4 (ATLAS)	13	12
2022 May	C/2021 O3 (PanSTARRS)	5	42	C/2021 O3 (PanSTARRS)	7	35	C/2021 O3 (PanSTARRS)	7	29
	C/2017 K2 (PanSTARRS)	8	17	C/2017 K2 (PanSTARRS)	8	65	C/2017 K2 (PanSTARRS)	8	66
	45P/Honda- Mrkos- Pajdusakova	10	6	C/2019 T4 (ATLAS)	11	25	22P/Kopff	11	17
	C/2019 L3 (ATLAS)	11	32	C/2021 P4 (ATLAS)	12	5	C/2021 P4 (ATLAS)	12	10
	C/2019 T4 (ATLAS)	11	43	19P/Borrelly	12	3	9P/Tempel 1	12	20
	C/2021 P4 (ATLAS)	12	21	C/2021 A1 (Leonard)	13	11	C/2021 A1 (Leonard)	13	16
	19P/Borrelly	12	37	117P/Helin- Roman- Alu 1	13	15	117P/Helin- Roman- Alu 1	13	26

What's Up in Awards? April-May 2022 (continued)

Meteor Showers via American Meteor Society

Lyrids

Period of activity: April 15th to April 29th, 2022

Peak Night: Apr 21-22, 2022

The Lyrids are a medium strength shower that usually produces good rates for three nights centered on the maximum. These meteors also usually lack persistent trains but can produce fireballs. These meteors are best seen from the northern hemisphere where the radiant is high in the sky at dawn. Activity from this shower can be seen from the southern hemisphere, but at a lower rate.

Shower details - Radiant: 18:04 +34° - **ZHR:** 18 - **Velocity:** 30 miles/sec (medium - 48.4km/sec)

Parent Object: C/1861 G1 (Thatcher)

Next Peak - The Lyrids will next peak on the Apr 21-22, 2022 night. On this night, the moon will be 67% full.

eta Aquariids

Period of activity: April 15th to May 27th, 2022

Peak Night: May 4-5, 2022

The eta Aquariids are a strong shower when viewed from the southern tropics. From the equator northward, they usually only produce medium rates of 10-30 per hour just before dawn. Activity is good for a week centered the night of maximum activity. These are swift meteors that produce a high percentage of persistent trains, but few fireballs.

Shower details - Radiant: 22:30 -1° - **ZHR:** 40 - **Velocity:** 40.7 miles/sec (swift - 65.5km/sec)

Parent Object: 1P/Halley

Next Peak - The eta Aquariids will next peak on the May 4-5, 2022 night. On this night, the moon will be 15% full.

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

Rising Star Awards

001 Jean Jefferson

002 Kevin Salwach

003 Jo Ann Salci (Nov 2021)

RASC

Swapna Shrivastava

Explore the Moon

Explore the Universe

Jo Ann Salci

Exploring Exoplanets
(on-line course)

Bernie Venasse

Explore the Universe

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
(new this month)

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

— Bernie



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Springtime Catspotting: Lynx and Leo Minor

David Prosper

Many constellations are bright, big, and fairly easy to spot. Others can be surprisingly small and faint, but with practice even these challenging star patterns become easier to discern. A couple of fun fainter constellations can be found in between the brighter stars of Ursa Major, Leo, and Gemini: **Lynx** and **Leo Minor**, two wild cats hunting among the menagerie of animal-themed northern star patterns!

Lynx, named for the species of wild cat, is seen as a faint zigzag pattern found between Ursa Major, Gemini, and Auriga. Grab a telescope and try to spot the remote starry orb of globular cluster NGC 2419. As it is so distant compared to other globular clusters - 300,000 light years from both our solar system and the center of the Milky Way - it was thought that this cluster may be the remnants of a dwarf galaxy consumed by our own. Additional studies have muddled the waters concerning its possible origins, revealing two distinct populations of stars residing in NGC 2419, which is unusual for normally-homogenous globular clusters and marks it as a fascinating object for further research.

Leo Minor is a faint and diminutive set of stars. Its “triangle” is most noticeable, tucked in between Leo and Ursa Major. Leo Minor is the cub of Leo the Lion, similar to Ursa Minor being the cub to the Great Bear of Ursa Major. While home to some interesting galaxies that can be observed from large amateur scopes under dark skies, perhaps the most intriguing object found within Leo Minor’s borders is Hanny’s Voorwerp. This unusual deep-space object is thought to be a possible “light echo” of a quasar in neighboring galaxy IC 2497 that has recently “switched off.” It was found by Hanny van Arkel, a Dutch schoolteacher, via her participation in the Galaxy Zoo citizen science project. Since then a few more intriguing objects similar to Hanny’s discovery have been found, called “Voorwerpjes.”

Lynx and Leo Minor are relatively “new” constellations, as they were both created by the legendarily sharp-eyed European astronomer Johannes Hevelius in the late 1600s. A few other constellations originated by Hevelius are still in official use: Canes Venatici, Lacerta, Scutum, Sextans, and Vulpecula. What if your eyes aren’t quite as sharp as Johannes Hevelius – or if your weather and light pollution make searching for fainter stars more difficult than enjoyable? See if you can spot the next Voorwerp by participating in one of the many citizen science programs offered by NASA at science.nasa.gov/citizenscience! And of course, you can find the latest updates and observations of even more dim and distant objects at nasa.gov.

(Continued on [page 22](#))

NASA Night Sky Notes (continued)



(above)

Map of the sky around Lynx and Leo Minor. Notice the prevalence of animal-themed constellations in this area, making it a sort of celestial menagerie. If you are having difficulty locating the fainter stars of Leo Minor and Lynx, don't fret; they are indeed a challenge. Hevelius even named the constellation as reference to the quality of eyesight one needs in order to discern these faint stars, since supposedly one would need eyes as sharp as a Lynx to see it! Darker skies will indeed make your search easier; light pollution, even a relatively bright Moon, will overwhelm the faint stars for both of these celestial wildcats. While you will be able to see NGC 2419 with a backyard telescope, Hanny's Voorwerp is far too faint, but its location is still marked. A few fainter constellation labels and diagrams in this region have been omitted for clarity.

Image created with assistance from Stellarium

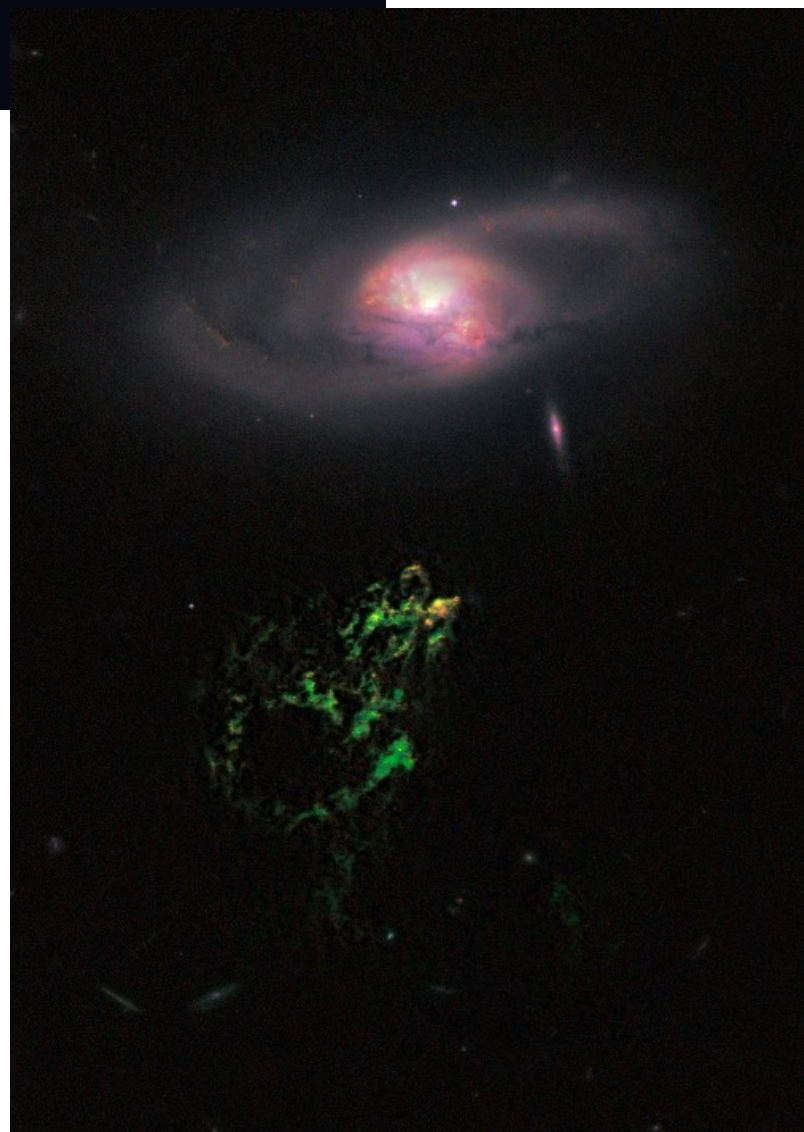
(below)

Hanny's Voorwerp and the neighboring galaxy IC 2497, as imaged by Hubble.

Credits: NASA, ESA, W. Keel (University of Alabama), and the Galaxy Zoo Team

Source:

hubblesite.org/content/news-releases/2011/news-2011-01.html





**M51, the Whirlpool Galaxy,
and NGC 5195**

by Andrew Brenyo



The Antennae (NGC 4038, 4039) and Area in Corvus, by Bernie Venasse



The Full Moon, by Matthew Trombetta.

“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.



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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.

UPCOMING EVENTS

April 8, 2022 - 7:30 pm – Virtual Online H.A.A. Meeting. Our main speaker will be *Larry McHenry*, and the topic will be *Observing the Moon for Beginners*.

Due to the COVID-19 Coronavirus pandemic, the meeting will be conducted on the platform Zoom. Be on the lookout for an invitation e-mail with a meeting link. You may download the Zoom app for various platforms from Zoom's [Download Center](#).

We hope to return to in-person meetings very soon!

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

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