

# Event Horizon



Volume 25, Number 3  
January 2018



## From The Editor



## Chair's Report by Bernie Venasse

Happy New Year!!!!

Welcome to 2018!

I hope everyone enjoyed a happy holiday season!

Here's the new year's first edition of the Event Horizon for your viewing and reading enjoyment.

Clear Skies!

*Bob Christmas,  
Editor*

*editor 'AT'  
amateurastronomy.org*

With the holiday season passed and a fresh calendar to guide us it is time to look forward with fresh ambition and it is also a time to reflect upon the year gone by.

Some highlights from 2017

Guest speakers this year included Bernie Venasse - Optics Care, Barry Sherman - Chromatic Aberration in Telescopes, Parshati Patel - The Tale of Disks around Massive Stars, Pauline Barmby - Astronomically BIG Data, Wayne Parker speaking about his SKYSHED Project, Kevin Salwach - My Favorite Astronauts & This Day in Astronomical History, and Kerry-Ann Lecky Hepburn giving us a lesson in astrophotography and the weather.

Our outreach program started up in March this year as we gathered in Grimsby to observe the occultation of Aldebaran. A number of members went afield to observe the grazing occultation.

In April, the HAA was once again involved in BASEF as a sponsor. John Gauvreau was a featured speaker. His topic this year was "Past, Present and future of Planet 9". John captivated the 1,000 students in attendance, 2017 marked the 5th consecutive year where John was a presenter.

A combined solar/celestial event was held at McQuesten Park in July. This well attended event afforded us the opportunity to distribute solar glasses to some of the 150 guests.

In August our annual club picnic was held at Binbrook Conservation Area in conjunction with the Perseid Meteor Shower event in August. Both events were well attended. We had approximately 800 attendees at this outreach event. Solar glasses were freely distributed at this event in advance of the local partial solar eclipse. Solar glasses were obtained by the club for free distribution to club  
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## Chair's Report (continued)

members and the general public. 200 pairs were held in reserve for distribution at the McQuesten Park solar eclipse event which attracted over 1,100 enthusiastic observers.

Harvey Garden donated books which were melded into the Portable Library, and in September the library was introduced by Denise White and is proving to be a success.

The November Scope clinic proved to be a very popular event as it was well attended by members and curious public alike.

Kerry-Ann Lecky Hepburn gave us a lesson in astrophotography and the weather when she was our guest speaker in December.

The 2018 calendar sold out early... a great success... Thank you to all involved!!!

Astro 101 was offered and attended by 20 members. We look forward to the next round of presentations.

Paypal was introduced as a payment option on our website. It is hoped that this will simplify payments.

Membership was at 151 in January and has risen to 219 in December.

Hello 2018...

I challenge each of you to attempt the following plans:

Short plan, easy... Attend outreach events. There are at least 8 outreach events planned this calendar year. How many will you attend? Did you attend any last year?

Medium plan, medium difficulty.....Observe Sabers' beads. There is at least one opportune time to view this phenomenon this year. What is the youngest and oldest moon that you have observed?

Long term plan, tougher.... Start a viewing program. Have you observed all the planets? How about the Messier objects? Caldwell's? Herschel 400? There are many other challenge lists to conquer.

TIDBITS...

Discussions are being undertaken regarding the 25th anniversary of the founding of this club. Your input is welcome.

April 8, 2024 Solar eclipse: Early discussions about this event are underway and your input is invited!



### H.A.A.'s Loaner Scope Program

We at the HAA are proud of our Loaner Scope Program.

If you don't have a telescope of your own and want to make use of one for a month or so, you can borrow one of our fine loaner scopes.

Please contact Jim Wamsley, at: 905-627-4323

or e-mail Jim at:

secretary 'AT' [amateurastronomy.org](mailto:amateurastronomy.org)

and we'll gladly get one signed out for you.



### HAA Helps Hamilton

To support our community, we collect non-perishable food items and cash for local food banks at our general meetings. Please bring a non-perishable food item to the meeting or a donation of cash and help us help others.

Our donations go to [Hamilton Food Share](https://www.hamiltonfoodshare.org/), which delivers them to various food banks around the Hamilton area.

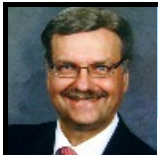
If you would like to help or have any questions about this initiative, please contact the H.A.A.



**Masthead Photo:** *The M11 Area in the Summer Milky Way, by Bob Christmas.*

Taken September 20, 2017, with his Canon EOS 40D camera through his 100mm f/2 lens set at f/2.8, at ISO 1600. Exposures: 13x2 mins = 26 minutes total. North is to the right.





## The Sky This Month for January 2018 by Steve Germann

January.

The time of new beginnings. A chance for a fresh start. Perhaps a chance to get more involved with the enjoyment of Astronomy?

In this article I would like to detail many of the ways you can advance in the hobby in terms of resources, learning, equipment, connections, and more formal courses.

We have the advantage that our general meeting this month will be basically a 1 hour presentation on 'Astronomy 101' with a valuable introduction to all things astronomy, in terms of enjoying the hobby and understanding it.

The Astronomy 101 course will continue in 3 more sessions for those who choose to pursue them, at later scheduled times, not in our general meetings. I am sure you will hear all about these various lessons.

We have done this course at least 5 times over the years and our presenters really know their stuff and are enjoyable to listen to and learn from. Their enthusiasm is contagious.

Please come to the meeting for a great introduction, and bring your friends.

In my department, it is more about what to look at rather than what to look with, so I am going to present some accessible objects in the night sky to help you get started, and some challenge objects for those who advance quickly or are starting with more experience.

The first thing I need to do, is to put on my 'Observing Director' hat, and do some 'observing directing'. Specifically, lots of people have seen lots of things, for tens of thousands of years, but it is the people who 'wrote it down' who are credited with the discovery. Sometimes we say they were the 'last person' to discover it, the others noting it and not bothering to write it down. All kidding aside, you need to keep, at minimum, a sheet of paper with you when you observe.

I suggest purchasing a sketch book, (mine I got at Michael's for about \$7 and it has about 150 blank pages in it, slightly textured heavy weight paper, useful for writing and pencil sketches with shading too)... and when you observe, write the date on the page, and mention your location, equipment, and if you are ambitious, what you are seeking (the Moon or the Pleiades, for instance).

When you see it and have taken a good look at it. (it's not enough to say, been there did that...) really take a look at your target. Try to appreciate what the first person to see it might have thought about it. You have the benefit of culture and communication.

Most of the things we can see have been perplexing people for at least a hundred thousand years, and those people sometimes shared their views with others, possibly inventing stories about them. Without the benefit of written records, we have but the faintest hints of what those comments might be... but take an example. Both in ancient Greece and China, the 'big dipper' was known as the 'Great Bear' even though they knew nothing of the other civilization at the time. How might that be? Could it be that even more ancient ancestors carried that story with them and preserved it over the ages? Could it be that it looks more like a bear than we think it does now in those ancient much darker skies? Well, I cannot be sure either way.

But for sure, make some notes. When you are finished observing, note some more things about your session: Mention whether you found your targets, whether it was cloudy or clear, cold or damp, etc, and whether lights interfered. Make a note of anything you saw that you want to learn more about.

*(Continued on [page 4](#))*

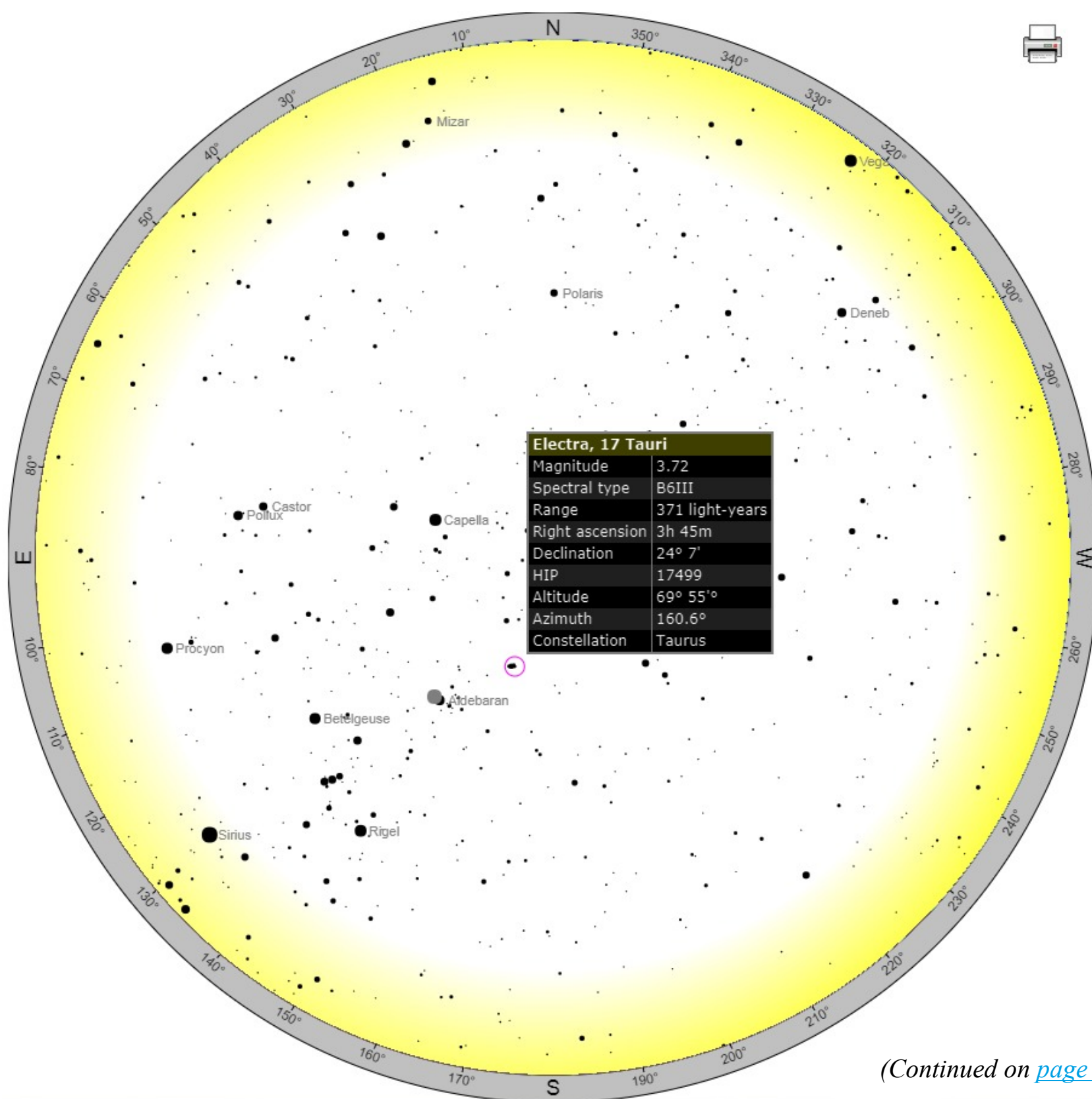
## The Sky This Month for January 2018 (continued)

Now suitably prepared in terms of record keeping, it's time to look up.

First of all, let's talk about binocular objects. By far the best investment you can make in terms of results per dollar is a decent set of binoculars, and a tripod mount to hold them steady.

With just about any pair of binoculars... ahem... mine are 25x100 but as I was saying, with just about any pair, for instance 8x50's or 7x35's you can see the *Pleiades*... which is a cluster of young bright stars, not far from Taurus, and well placed in the winter skies. Start with Orion's belt and head to the right, past Aldebaran the bright red star in Taurus, and you are on the way to the Pleiades. They are unmistakable in a reasonably dark sky, and will reward your binocular view.

Here's a map showing the location of the Pleiades, with the circled area, containing Electra, one of the stars in the Pleiades. Notice you can basically follow Orion's belt to the right to get there. The Pleiades



(Continued on [page 5](#))



*The Pleiades (M45)*  
*Photo credit:*  
*John Gauvreau*

is also known as Messier's object 45 (M45), because to him, it was something in the sky that to an observer without binoculars, might look like a comet. Before you use your binoculars, I suggest you find it in the sky and try your vision on how many stars there are. Young people sometimes mistake it for the 'little dipper' because it somewhat resembles one. How many stars can you count? If you see 7, you will know why the ancient Greek observers called it the 'Seven Sisters'... but most people can only see 6. It is thought that one of the stars might have been brighter in the past... but no firm theory exists.

Technically in really dark skies, Wikipedia says you (or some people) might see 14 stars, but your sight might not be able to separate them, nor your vision be steady enough to sketch them without magnification... so once you have given that a try, bring them to earth with your binoculars.

With my telescope, I see a stylized elephant and a distorted circle that kind of looks like a happy face. What can you see?

You can read about the Pleiades on Wikipedia, here...

<https://en.wikipedia.org/wiki/Pleiades>

I predict you will visit them again and again as you try out new equipment, filters, eyepieces, and cameras over the coming years. I hope you will record notable observations about them.

Messier's list of 'non-comets' is actually an excellent list of 'yes-interesting' things to see in the sky. It includes the brightest objects of various types... Supernova remnants (M1), Globular Clusters (M13), Star Forming Nebulas (M42), Open Clusters (M7), and double stars (M40).

You can spot all of those with binoculars in the night sky tonight anytime after dark. You will need a good southern horizon to find M7 but you can look for M44 instead, which is an impressive open cluster of stars.

I use 'Heavens Above' to find things. It's easy and free to get maps of the sky. You will probably need some experience to benefit from those charts. At first, it takes some learning to use them.

<http://heavens-above.com/>

*(Continued on [page 6](#))*



## The Sky This Month for January 2018 (continued)

After taking a peek at the 'stationary' objects, you can turn your binoculars on the *Moon*. The Moon has details at all resolutions, and will challenge your binoculars and your best telescope. On the Moon, there are mountain peaks and ridges which are illuminated by the sun before the area around them becomes illuminated. Without an atmosphere, shadows on the moon are very dark. Only a little 'earthshine' keeps them from being basically black. So Earthshine is the first thing you can observe. At the time when we see a half-Moon, our side of the Moon sees a half-Earth, and is illuminated by it. The earth is much brighter than the Moon, and bigger too, so Earthshine shows up even without binoculars. You will see the Moon appear to be completed as a full circle.

Challenge objects either require timing, special equipment, dark skies, or skill to see.

For interest, and to get a 'bucket list' item, I suggest you take binoculars and observe the moon in its first-quarter stage, paying closest attention to the area near the light-dark transition. The 'Lunar X' is briefly illuminated in the dark half of the first quarter Moon each month. This month, the time will be a touch before midnight, on January 24th, at 11:42 PM EST to be exact, when it starts being visible. If you miss it, this web page will help you find it again at:

<https://stargazerslounge.com/topic/305707-lunar-x-2018-start-times/?tab=comments>

Now, if you want to see more in the sky, there's a whole list of Messier objects which are considered 'binocular objects'... but to appreciate the planets, you are going to need a telescope.

Fortunately, as members of the HAA, you have some options.

First... for sure don't rush out and buy a telescope. If you happen to have one already, that's one thing, but I highly recommend that you first use a telescope before buying one. You will then know a few things about what's right for you.

The club has loaner scopes. If you come to Binbrook Conservation Area with us, for an observing session, there will be plenty of people there willing to let you look through their telescope (from time to time), and if you come to one of our public observing nights (several of which have been scheduled in the spring and summer) you will see the planets and the Moon through a variety of instruments.

When you are looking, while using your telescope shopping mindset, think about what kind of magnification you would need to see what you want to see. Is this particular scope, eyepiece, location and timing sufficient? Bigger telescopes magnify more, but they are heavier. How heavy a scope do you want to carry and use? Do you live somewhere that is dark enough to use a telescope from home? If so, then a bigger one does not have to be carried so far. Do you want to learn where things are and how to find them, or do you want to push a button and have the telescope find them for you? How much would you be willing to pay for that, knowing that you might have to give up the ability to actually see some of them, because the telescope will of necessity be smaller than one without motors could be. Be advised that usually you still need to know something about the sky, even with the newfangled computerized scopes.

You will also need to understand magnification, and things you can learn in Astronomy 101.

That's where your binocular experience will be of good use.

There are cost trade-offs for computerized vs manual telescopes, and for size vs weight, and computers vs manual. There are trade-offs in whether you want to use a camera with your scope, or just point the camera at the sky.

Dew control is something you will definitely need to be well prepared for.

*(Continued on [page 7](#))*

## The Sky This Month for January 2018 (continued)

These decisions matter and you need to be sure what you want satisfies your needs. There is no 'ideal' telescope that everyone would buy if they had tons of money. Each person will have an ideal telescope that is different, and will have a different path from nothing towards that ideal in terms of what's almost as good, for them.

Suffice it to say, that buying a telescope is not the best first step in Astronomy. It needs to simmer for a while.

Okay. So with that friend's telescope, what's in the sky right now, you ask?

This time of year, there are 'no' evening planets that you can see, (besides Earth, that is). So I am not going to recommend you seek them in the evening.

However, in the pre-dawn skies of morning, some are up.

Rising well before dawn, you will see *Mars* and *Jupiter*. The rest of the 'easy' planets, Mercury, Saturn and Venus are all too close to the Sun to see for the next month or so. So for Mars and Jupiter, you will be able to see them come close to each other, in the pre-dawn sky, on January 7th. Rise early for this rare conjunction, just 0.2 degrees apart. That will easily fit in most telescope views and certainly within binoculars. By the time you see them, they will be a touch farther, as the closest approach is when they are still below the horizon, at 11 PM on the 6th. But you will see them up before dawn. Sunrise on the 7th is at 7:52 am, but twilight starts at 6:09 AM. If you have a window facing east, you can do some indoor astronomy. Mars and Jupiter are BRIGHT and you will have no trouble seeing them from indoors. Your binoculars will give detail, although the window pane will give you reflections you probably won't like, and you will have to peek outside.

You can appreciate Jupiter with binoculars, and you will see some or all of Jupiter's moons. *Io*, *Callisto*, *Ganymede* and *Europa*. Make a sketch of their positions, and later you can determine which was which, using various resources. The 'Observers Handbook' which we provided to members for a low price, is an excellent source of diagrams which can help you identify the satellites of Jupiter.

In the case of the morning of the 7th, I can let you know what you will be seeing...

To the West, Callisto and Ganymede are almost juxtaposed. By 7 am, Callisto is slightly closer to Jupiter. On the East, Io and Europa are similarly close. In this case, Io is more yellow, and will be slightly closer to Jupiter, heading inwards, while Europa is heading away from Jupiter (from our vantage point).

Please go out and observe, and let us know at the meeting what you saw. And if you take a photo, send it to *observing 'at' amateurastronomy.org* and I will share it at the meeting.

If you have binoculars on a tripod, or a telescope, it is possible to take a photo using your phone, through the eyepiece. It can be a good way to keep track of what you saw. You can photograph your notes and sketches too, and they will then become part of your photo collection that you can search by date, for years to come.

If this report reaches you in time, don't forget the *Supermoon* rising at 5:20 PM on Monday, January 1, azimuth 62 degrees.

I will see you all on Friday the 12th at our meeting.

Keep looking up!





## My Reducer/Flattener by Leslie Webb

Last May I purchased a Reducer /flattener from a person up in Barrie (Type 4; William Optics). However when I received it I could not work out the distance correctly. Matthew did some research on it for me, and informed me that they made a mistake when it was made! It turned out to be a flattener with a twist, it was was a 1.2 times *Barlow*. Not really what I wanted. I contacted the person by email explaining this, and as expected no reply at all. So be careful who you deal with on Astro-buy-and-sell. I can't believe he didn't know this before dropping it on me.

So I contacted William Optics and explained this, the first reply from Tim was they knew this and put out a explanation on the Web. Also the person who sold this to me should have informed me of the error. I then informed Tim that it said on the device it was a flattener / reducer, and I had no way of knowing it was incorrect. I had heard about William Optics' great customer support, and is there anything they could do for me.

William replied to me, and said he would exchange it for me with his own personal flattener or I could wait until the Type 7 was on the market the fall, at a cost to me of \$150. I decided to go for the type 7. I finally received it November 21, 2017, and it is made for my FLT 132MM scope. I am really impressed with the quality of the reducer, threads into the scope, and I chose the Gold one to match my scope.

I can say I am impressed with William Optics, their quality and customer support. Now all I need is some clear skies!

Thanks again to William and Tim.







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## Snowy Worlds Beyond Earth

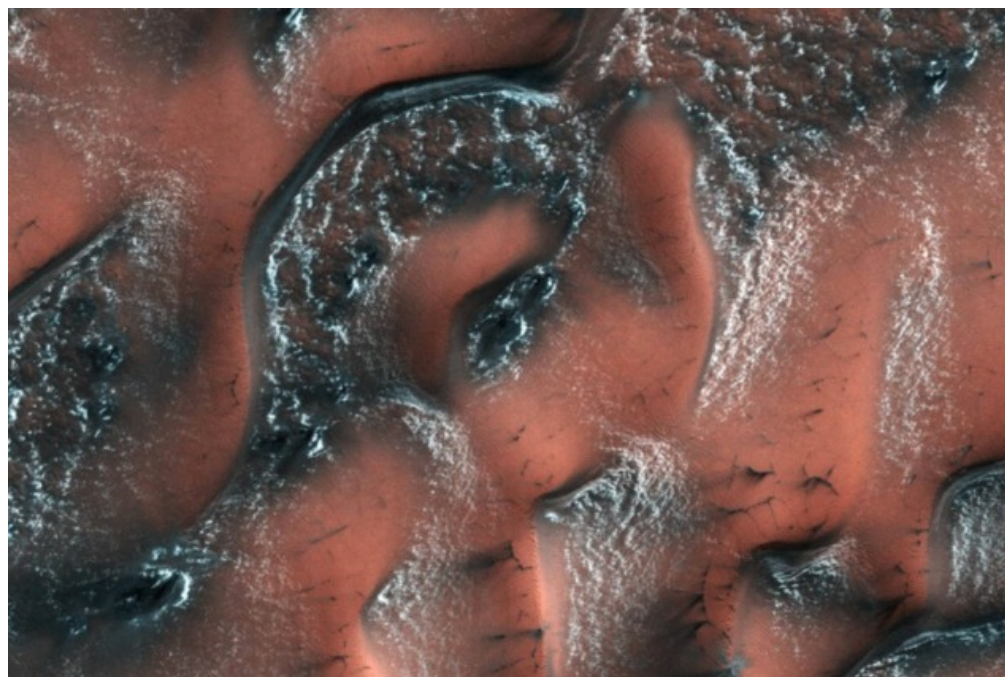
By Linda Hermans-Killiam

There are many places on Earth where it snows, but did you know it snows on other worlds, too? Here are just a few of the places where you might find snow beyond Earth:

### Mars

The north pole and south pole of Mars have ice caps that grow and shrink with the seasons. These ice caps are made mainly of water ice—the same kind of ice you'd find on Earth. However, the snow that falls there is made of carbon dioxide—the same ingredient used to make dry ice here on Earth. Carbon dioxide is in the Martian atmosphere and it freezes and falls to the surface of the planet as snow. In 2017, NASA's Mars Reconnaissance Orbiter took photos of the sand dunes around Mars' north pole. The slopes of these dunes were covered with carbon dioxide snow and ice.

*(Continued on [page 10](#))*



*NASA's Mars Reconnaissance Orbiter captured this image of  
carbon dioxide snow covering dunes on Mars.*

*Credit: NASA/JPL/University of Arizona*

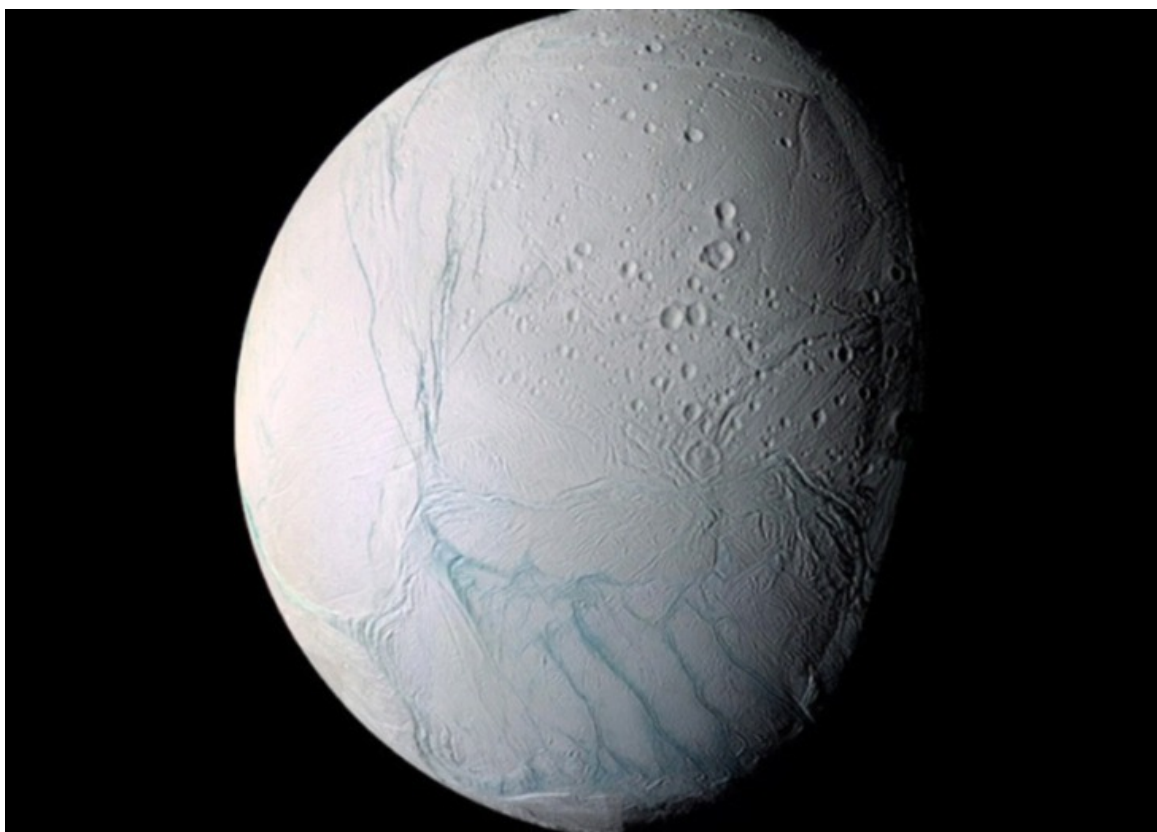


### A Moon of Jupiter: Io

There are dozens of moons that orbit Jupiter and one of them, called Io, has snowflakes made out of sulfur. In 2001, NASA's Galileo spacecraft detected these sulfur snowflakes just above Io's south pole. The sulfur shoots into space from a volcano on Io's surface. In space, the sulfur quickly freezes to form snowflakes that fall back down to the surface.



*A volcano shooting molten sulfur out from the surface of Io. Credit: NASA/JPL-Caltech*



### A Moon of Saturn: Enceladus

Saturn's moon, Enceladus, has geysers that shoot water vapor out into space. There it freezes and falls back to the surface as snow. Some of the ice also escapes Enceladus to become part of Saturn's rings. The water vapor comes from a heated ocean which lies beneath the moon's icy surface. (Jupiter's moon Europa is also an icy world with a liquid ocean below the frozen surface.) All of this ice and snow make Enceladus one of the brightest objects in our solar system.

*Enceladus as viewed from NASA's Cassini spacecraft. Credit: NASA*



## NASA's Space Place (continued)

### A Moon of Neptune: Triton

Neptune's largest moon is Triton. It has the coldest surface known in our solar system. Triton's atmosphere is made up mainly of nitrogen. This nitrogen freezes onto its surface covering Triton with ice made of frozen nitrogen. Triton also has geysers like Enceladus, though they are smaller and made of nitrogen rather than water.

### Pluto

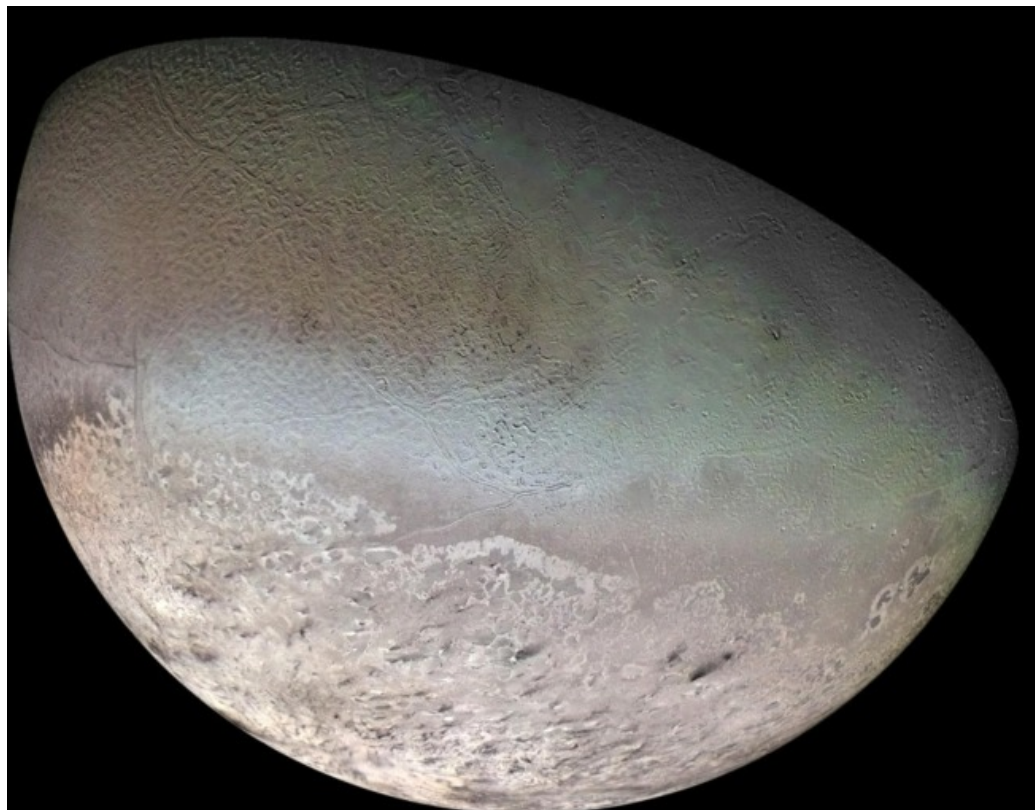
Farther out in our solar system lies the dwarf planet Pluto. In 2016, scientists on the New Horizons mission discovered a mountain chain on Pluto where the mountains were capped with methane snow and ice.

### Beyond Our Solar System

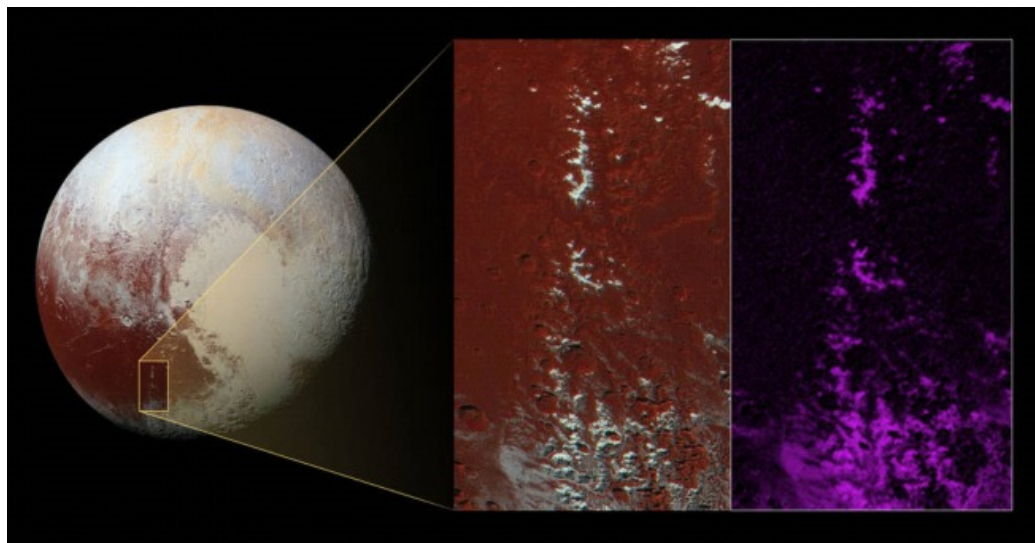
There might even be snow far outside our solar system! Kepler-13Ab is a hot, giant planet 1,730 light years from Earth. It's nine times more massive than Jupiter and it orbits very close to its star. The Hubble Space Telescope detected evidence of titanium oxide—the mineral used in sunscreen—in this planet's upper atmosphere. On the cooler side of Kepler-13Ab that faces away from its host star, the planet's strong gravity might cause the titanium oxide to fall down as “snow.”

Want to learn more about weather on other planets? Check out NASA Space Place:

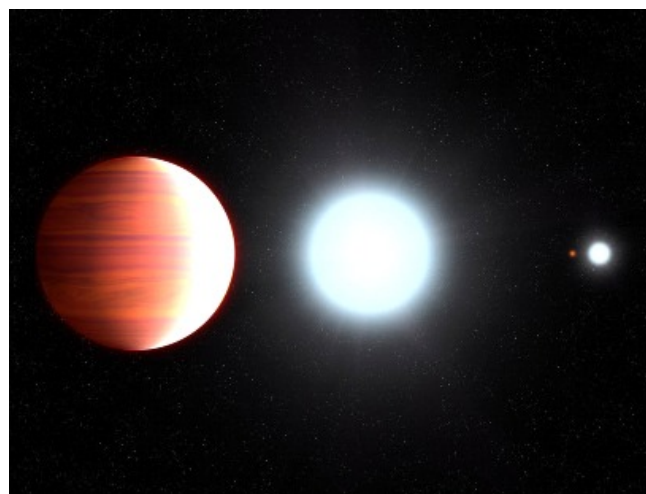
<https://spaceplace.nasa.gov/planet-weather>



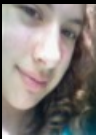
*The Voyager 2 mission captured this image of Triton. The black streaks are created by nitrogen geysers. Credit: NASA/JPL/USGS*



*The snowy Cthulhu (pronounced kuh-THU-lu) mountain range on Pluto. Credits: NASA/JHUAPL/SwRI*



*This is an artist's illustration of what Kepler-13Ab might look like. Credit: NASA/ESA/G. Bacon (STScI)*



"So, what's your New Year's resolution?"

"Oh, it's 2.018 arcseconds."





**The Supermoon of December 3, 2017 from Burlington, ON, by Bob Christmas**



**The Supermoon of December 3, 2017 from Brantford, ON, by Matthew Mannering**





*On May 13, 2017 Patrick Wiggins, a Utah amateur astronomer detected a supernova explosion in the Fireworks Galaxy NGC 6946. He made the discovery by carefully comparing photos he had just taken with photos he took several years ago.*

*During the summer of 2016, H.A.A. member **Peter Wolsley** had taken a photo of this galaxy, and in the summer of 2017, Peter revisited this galaxy for another photo shoot. Sure enough he was able to capture the supernova.*

*Can you see the supernova in the lower image?*

*above:*  
**NGC 6946,**

taken August 3, 2016 from  
Sauble Beach, ON  
12x300s exposures at ISO  
3200

*left:*  
**NGC 6946, with  
Supernova SN 2017eaw**

taken July 28, 2017 from  
Sauble Beach, ON  
36x300s exposures at ISO  
1600

For both these images,  
**Peter Wolsley** used his  
Celestron 8" EdgeHD F/10  
Schmidt-Cassagrain  
telescope and his Nikon  
D5300 camera.







**The Waning Gibbous Moon, by Sylvie Gionet**  
Taken on December 5, 2017 with her Canon Rebel T6i; ISO 100; 1/125-second exposure



**Treasurer's Report** by Ann Tekatch

Treasurer's Report for December 2017 (Unaudited)

Opening balance:	\$8,113.73
<u>Revenue:</u>	
Memberships:	\$385.00
50/50 Draw:	\$83.00
Calendar sales:	\$1,350.00
<u>Expenses:</u>	
Door Prize Books	\$126.67
Closing Balance:	\$9,805.06

## For Sale

### Canon EOS Rebel XTi DSLR



Very little use, mainly used for astrophotography. You can view some of them in the website. I don't claim to be a great astrophotographer but this camera can take some nice ones.

Comes with all the original accessories out of the box, plus 1 extra battery and two 4G compact flash cards.

**Price: \$250.00.**

If interested, please contact *Leslie Webb* via email at [membership 'at' astronomy.org](mailto:membership@astronomy.org)





# 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:
  - Jan 17: **Introductory Astronomy for Kids**  
— **Solar System**
  - Jan 24: **Serendipity**
  - Jan 31: **New Solar System Discoveries**
- For more details, visit  
[www.physics.mcmaster.ca/planetarium](http://www.physics.mcmaster.ca/planetarium)

## UPCOMING EVENTS

**January 12, 2018 - 7:30 pm** — *HAA Meeting* at the Hamilton Spectator Auditorium. In this meeting, we will present our *Astronomy 101 Beginners Guide*.

**February 9, 2018 - 7:30 pm** — *HAA Meeting* at the Hamilton Spectator Auditorium.

**Check out the H.A.A.'s new 2024 Eclipse Countdown Page:**

<http://www.amateurastronomy.org/2024-solar-eclipse-countdown/>

### 2017-2018 Council

Chair	Bernie Venasse
Second Chair	Mike Jefferson
Treasurer	Ann Tekatch
Webmaster	David Tym
Membership Director	Leslie Webb
Observing Director	Steve Germann
Education Director	Barry Sherman
Event Horizon Editor	Bob Christmas
Recorder	Matthew Mannering
Secretary	Kevin Salwach
Publicity Director	Mario Carr
Councillors at Large	Brenda Frederick Christopher Strejch Dee Rowan Gary Sutton Jim Wamsley John Gauvreau Sue MacLachlan

Check out the H.A.A. Website

[www.amateurastronomy.org](http://www.amateurastronomy.org)

#### Contact Us

Hamilton Amateur Astronomers  
PO Box 65578  
Dundas, ON  
L9H 6Y6

[www.amateurastronomy.org](http://www.amateurastronomy.org)

#### General Inquiries:

[secretary@amateurastronomy.org](mailto:secretary@amateurastronomy.org)

#### Membership:

[membership@amateurastronomy.org](mailto:membership@amateurastronomy.org)

#### Meeting Inquiries:

[chair@amateurastronomy.org](mailto:chair@amateurastronomy.org)

#### Public Events:

[publicity@amateurastronomy.org](mailto:publicity@amateurastronomy.org)

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Observing site for the HAA provided with the generous support of the

#### Binbrook Conservation Area

Come observing with the HAA and see what a great location this is for stargazing, a family day or an outdoor function.

Please consider purchasing a season's pass for \$79 to help support the park.

<http://www.npca.ca/conservation-areas/binbrook/>  
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