



# Event Horizon

Volume 24, Number 10  
October 2017



## From The Editor

It's the Fall now, and this edition of the E.H. has all the regular features back after last month's Eclipse edition. Hope everyone enjoyed reading that one.

And I hope you enjoy this month's edition!

Enjoy!

*Bob Christmas, Editor*  
editor 'AT' [amateurastronomy.org](http://amateurastronomy.org)



## Chair's Report by Bernie Venasse

WOW!! Did September ever pass by quickly. It seems that it just started only a week ago.

We had a very good turnout for our September meeting. A lot of new faces. Welcome one and all.

The September 30 Astronomy Day Outreach Event at Bayfront Park was a great success. Even though we were in competition with the Ti-Cat/Argo game, we still had a good turnout from the public. We look forward to seeing all of you again next month in Grimsby at the Gateway Niagara Information Centre.

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## Chair's Report (continued)

Gateway Niagara is located on the south/west corner of the Casablanca overpass of the QEW. Take QEW exit 74 Grimsby (Casablanca Blvd), travel south towards Niagara Escarpment, away from lake, to first stoplight, turn right (west) on South Service Road, immediate right into parking lot; 424 South Service Road, Grimsby.

This month's meeting on the 13th is our Annual General Meeting which will include the reading of reports and the election of council members.

*Kevin Salwach* will be our featured speaker. This time around his topic is "This Day in Astronomical History".

There is still time to submit your photos to Matt for consideration for the calendar (extended to Oct. 7). Calendars will be ready for the November meeting.

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

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



### 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*

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](#), 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:** *M13, the Hercules Globular Cluster, by Matthew Mannering.*

Taken with his Canon DSLR through his 80mm apochromatic refractor, tracked on an AVX mount and auto-guided using PHD2. Exposures: 2x2 mins + 8x5 mins = 44 minutes total. Processed using DSS and StarTools. North is to the right. Taken at Cherry Springs State Park in Pennsylvania.





The October 13, 2017 Annual General Meeting marks the end of another fiscal year for the club and as such it is time to select our council for the upcoming year. Posted below are the positions that need to be filled.

- **Chair** - shall preside at all meetings of the Hamilton Amateur Astronomers and the Council. He /She shall organize the general meetings and arrange for speakers. The Chair shall have signing authority for the Hamilton Amateur Astronomers.
- **Second Chair** - shall assist the chair in his/her duties and assume the duties of the Chair in his/her absence.
- **Secretary** -shall conduct all official correspondence. The Secretary shall keep a true copy of the Constitution and Bylaws of the Hamilton Amateur Astronomers as well as a true record of all annual and council meetings of the organization. Records of any meetings at which a vote is held by the membership shall also be kept by the Secretary. Records must be open at all reasonable times to the inspection of any member. The Secretary shall have signing authority for the Hamilton Amateur Astronomers and shall be responsible for producing meeting agenda.
- **Treasurer** - shall handle all financial affairs of the Hamilton Amateur Astronomers and the care and custody of its funds under the direction of the council. The Treasurer shall have signing authority for the organization and shall keep accurate books of account which must be available for inspection at all reasonable times by any member. The Treasurer shall submit a report including financial statements at the annual meeting.
- **Recorder** -shall take accurate records of all annual and council meetings of the Hamilton Amateur Astronomers as well as any meeting at which a vote is held by the membership.
- **Directors and Councillors** -the duties of such council members shall be such as the terms of engagement call for or the council requires of them.
- **Education Director**
- **Event Horizon Editor**
- **Membership Director**
- **Observing Director**
- **Publicity Director**
- **Webmaster**

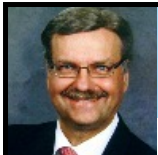
Please nominate a candidate of your choice for any one or more positions. You may nominate yourself.

If YOU feel that you have something to contribute to the club, this is the time to stand and be counted!

If YOU want to be more involved with the activities of the club but don't want to be a council member, we are always looking for good people that want to help out in any way. We call these people Councillors-at-Large. Let us know if YOU are interested in a C-a-L position (not an elected position).

### *Eligibility to vote:*

An Individual or Honorary member in good standing is entitled to ONE vote. A Family membership in good standing entitles TWO family members to ONE vote EACH.



## The Sky This Month for October 2017 by Steve Germann

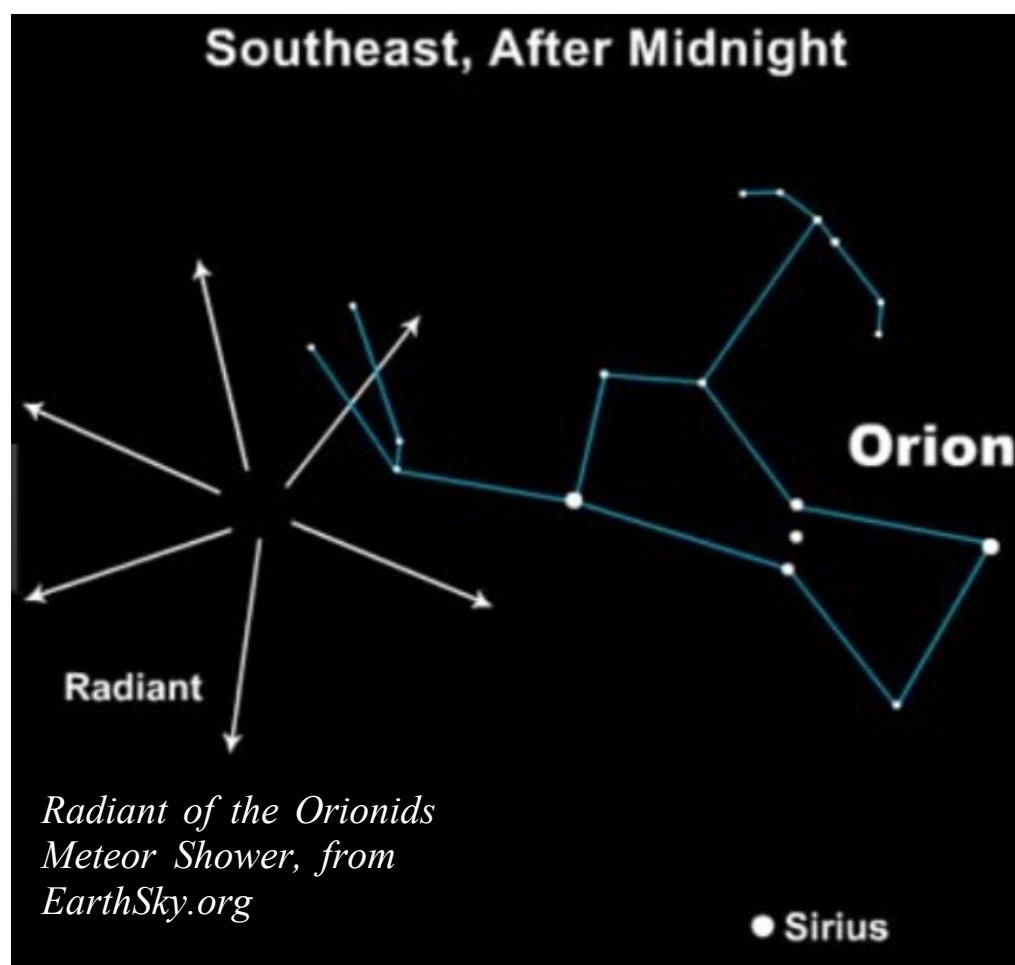
October is when the skies are still clear enough for observing, the mosquito is on the wane, and the winter constellations are starting to be available.

This month I am reminding you of Halley's Comet. I think we have all heard of it, and many of us became interested in Astronomy because of it. Some stores in Toronto rode that wave and came into business at that time. Halley's comet will return in July of 2061. That's one of the reasons I take my vitamin. Its orbit extends out beyond that of Neptune but it is very narrow, bringing it into the inner solar system every 76 years.

Did you know that you can see pieces of Halley's comet this month? (and every October)?

The *Orionids* meteor shower are chunks and dust from Halley's Comet. We can see them this month on the 21st of October, conveniently a Saturday night. The debris from Halley's comet has spread out all along its orbit and for millions of miles to each side, such that we can encounter it every year as the earth passes near it. Right now, Halley is in the direction of Leo in the sky, viewed from earth, but is so faint, it is a major undertaking to image it, even using the largest telescopes on earth. Even the Hubble cannot see it.

And it is the dark of the moon.



From a dark location, the Meteor Shower book promises 20 meteors per hour, but that's only half the picture. The Orionids are coming in at 67 km/s, which is just 4 km shy of the Leonids, the fastest meteor stream, which in November will put on a lesser shower. That means the Orionid meteors will leave long bright trails on the sky, and are often greenish in hue. For sure you should take advantage of this opportunity. The shower won't be this good again for at least 5 years.

If you go to Binbrook for Observing on October 21st, whenever you are not looking through a telescope, make sure you are looking up.

Orion rises at 11 PM, in the southeast, and that's when you will start to see the most meteors, but there will be some in the sky before that, and those will have the added charm that they skim long trails across the sky.

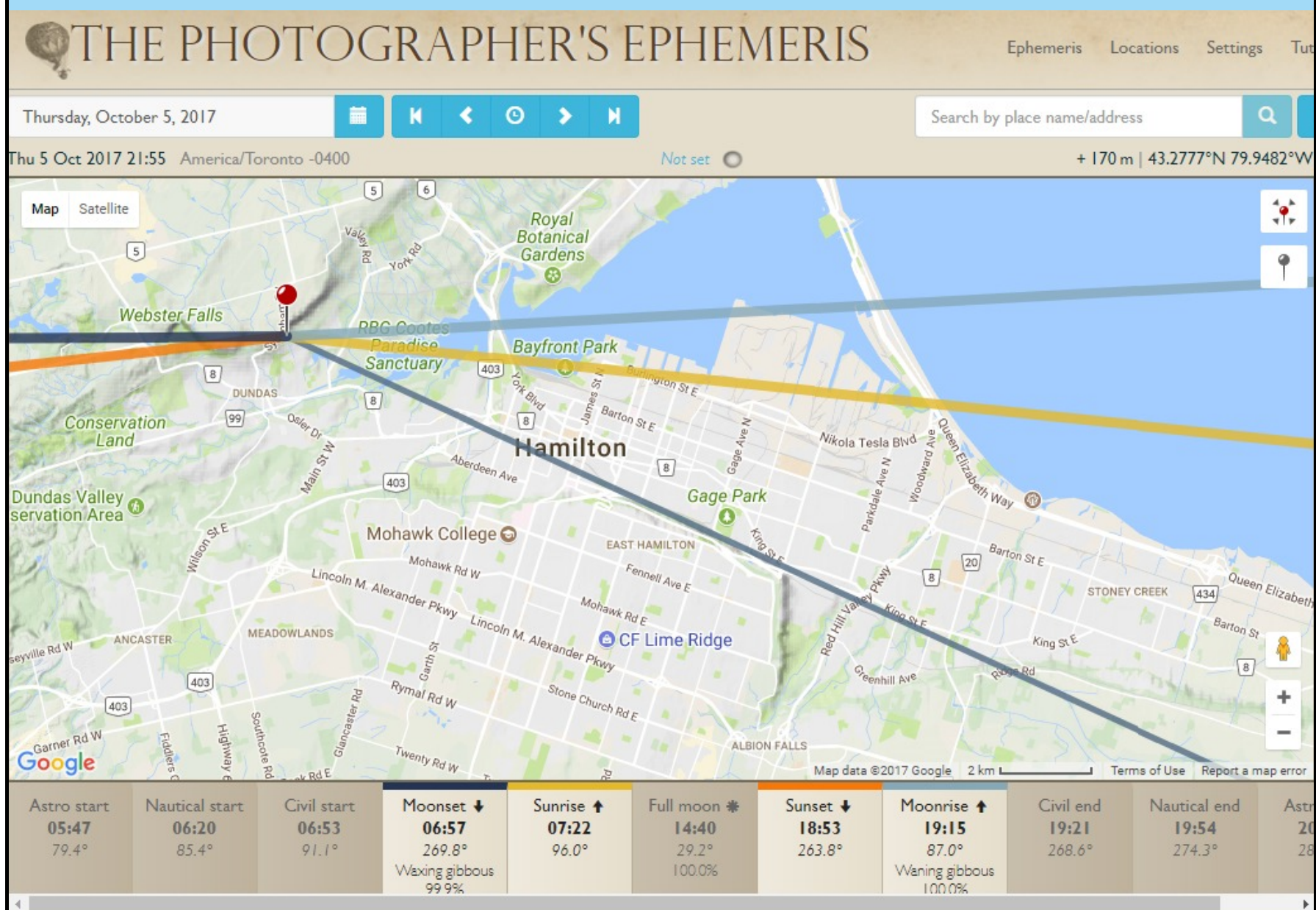
The Orionids is a wide peak, and you will see some from the 19th to the 22nd, and it will still be the dark of the Moon.

If you are not content to only view your comets in small pieces, (and i praise you for this), then take a look for *Comet C/2017 O1*, which is at 5.5 magnitude and visible now in the northern sky. Here's a URL to find it with anytime: <http://heavens-above.com/comet.aspx?cid=C%2F2017%20O1&>

See the charts for Comet C/2017 O1 on page 7.

(Continued on [page 5](#))

# The Sky This Month for October 2017 (continued)



## Moonrise Oct 5 19:15 PM

Speaking of the dark of the Moon, we also have the Full Moon rising this month on Thursday evening October 5.

Here's my customary map showing the Moonrise direction from a likely gathering place. It's interesting this time, because the Moon will rise with azimuth 87 degrees, almost due East, and we will be able to see it in the same place from the high level bridge on Plains Road and from the lookout on Sydenham road.

What I have noticed in the past is that the lower you get, the more of the moon you will see when it's at the horizon, because the long distances through air can make the moon almost disappear.

However, you will know exactly where it's going to be, thanks to the landmarks, so you could take photos just before the expected time and watch a red oval-shaped moon slowly break the horizon after some enhancement.

How low will the moon be when you first spot it rising? Still partly below the horizon? It is a challenge even with a telescope. Definitely you will want to be looking in the right direction, perhaps with binoculars to see it rise. Also notice the direction it rises at. It won't go straight up, but in the fall it rises more steeply than in the summer.

(Continued on [page 6](#))



# The Sky This Month for October 2017 (continued)

## Minor Planets

This month, may I recommend *7 Iris* to you? It is at its brightest during October, and will be an easy binocular object all month.

*2 Pallas* is also bright, but too far south to justify looking for it now.

Here's a finder chart for *7 Iris* dated for October 2, and you can always use this URL to get the latest charts.

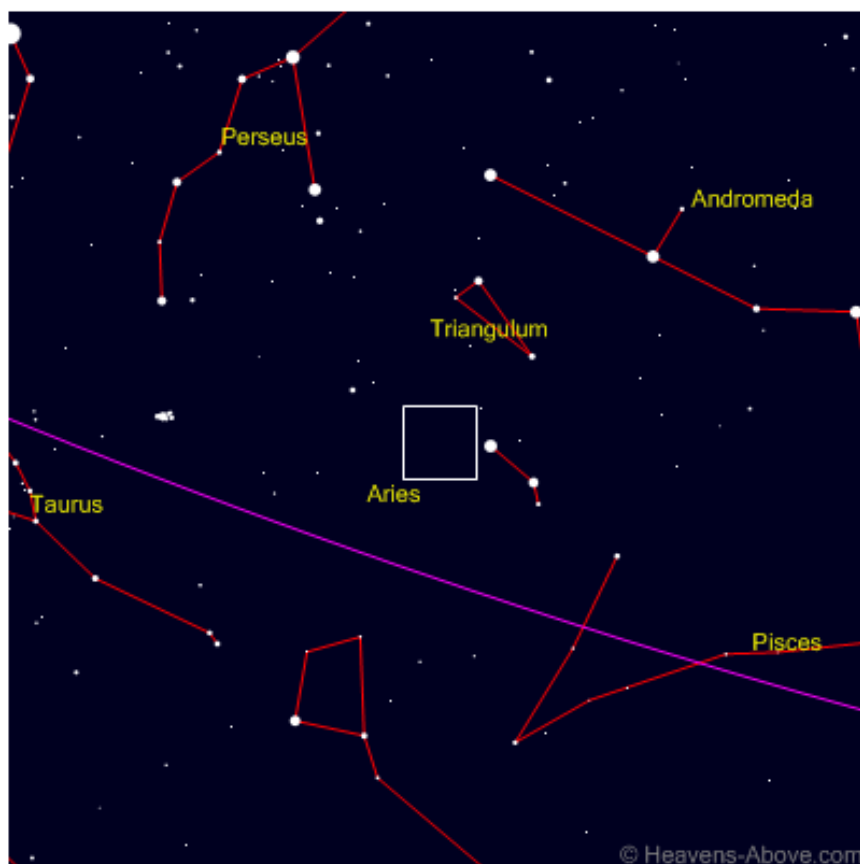
Just put in the date and time you intend to be observing.

<http://heavens-above.com/MinorPlanet.aspx?desig=7&>

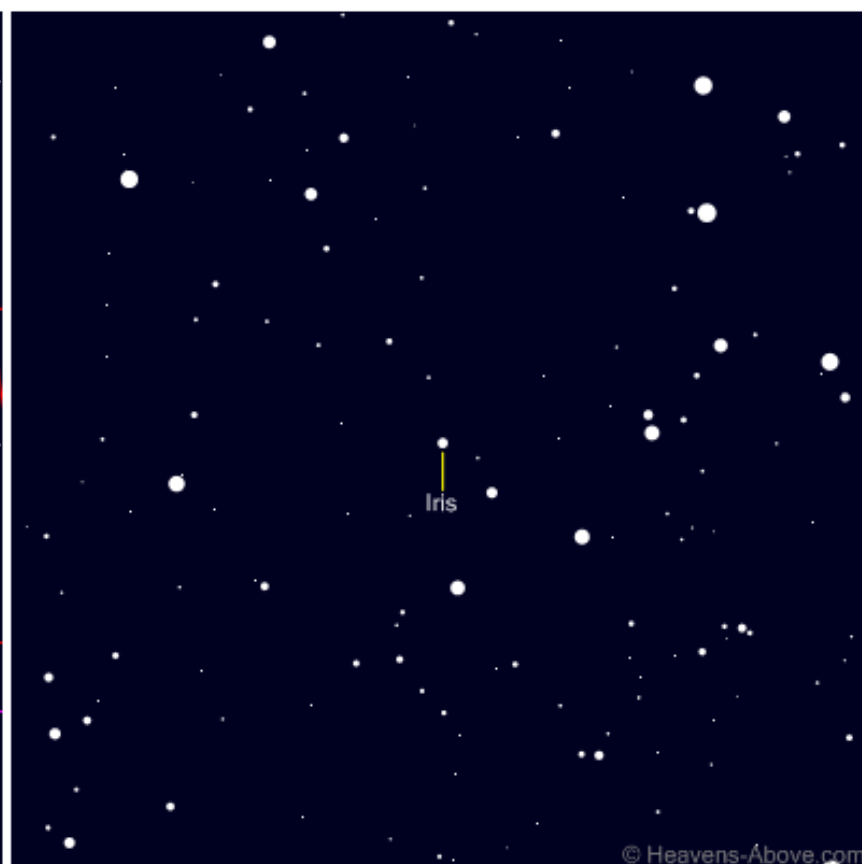
(Continued on [page 7](#))

## Asteroid 7 Iris

Year  Month  Day  Time



Coarse finder chart  
(Field of view=60°, Limiting magnitude=5)



Fine finder chart  
(Field of view=5°, Limiting magnitude=10)

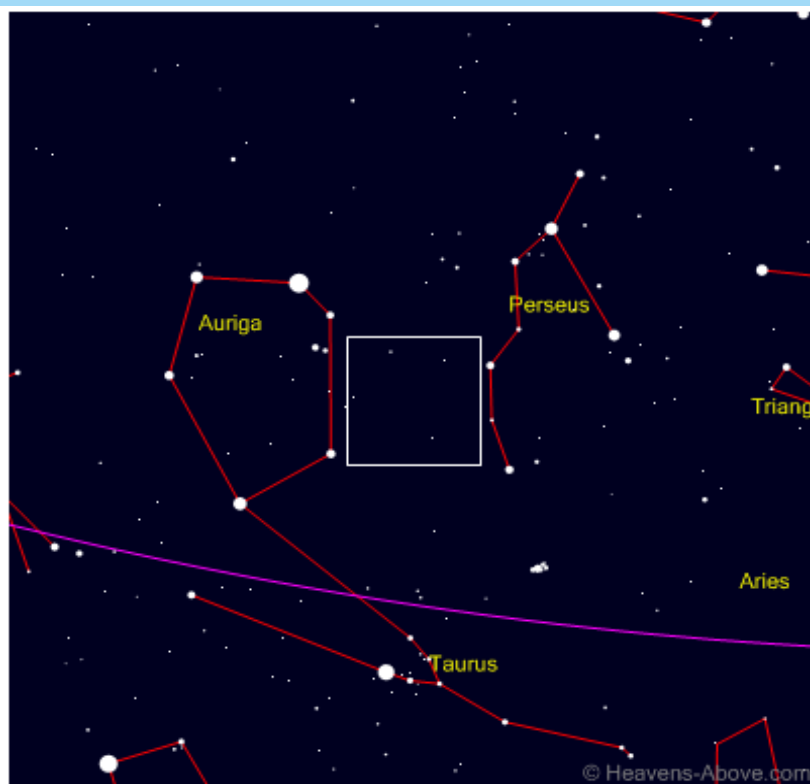
Position	
Right ascension	2 <sup>h</sup> 22.5 <sup>m</sup>
Declination	23° 43'
Constellation	<a href="#">Aries</a>
Magnitude	7.6
Distance from Earth	0.931 AU

Orbit	
Distance from Sun	1.855 AU
Perihelion	1.834 AU (13/03/2014)
Aphelion	2.938 AU
Period	3.69 years
Eccentricity	0.231441
Inclination to ecliptic	5.5°
Epoch	04/09/2017

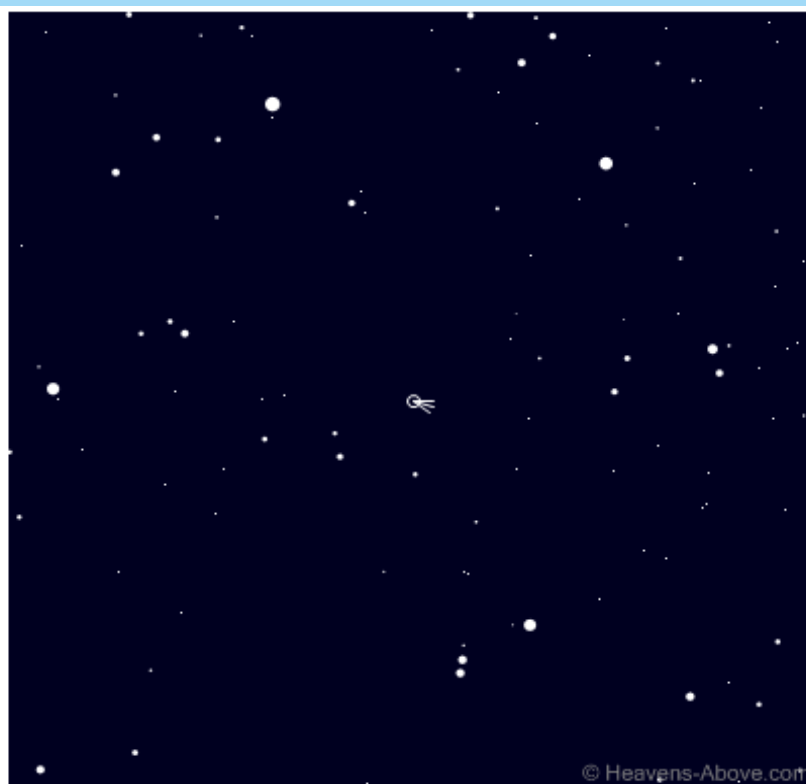
### Warning!

Never attempt to observe objects close to the sun without taking the proper precautions. In particular, never point optical instruments near the sun and look through them, or you risk permanent eye

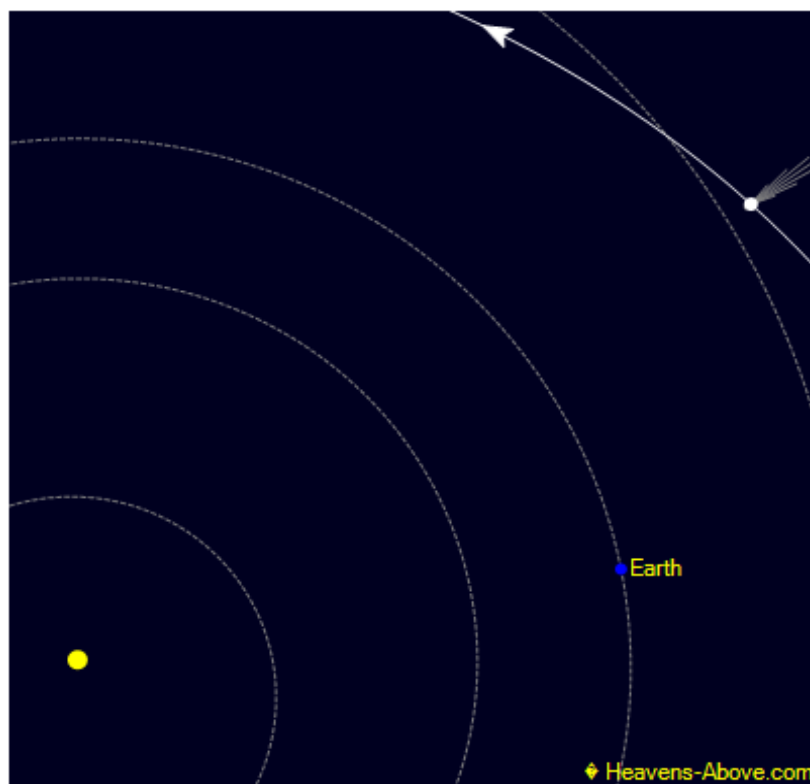
## The Sky This Month for October 2017 (continued)



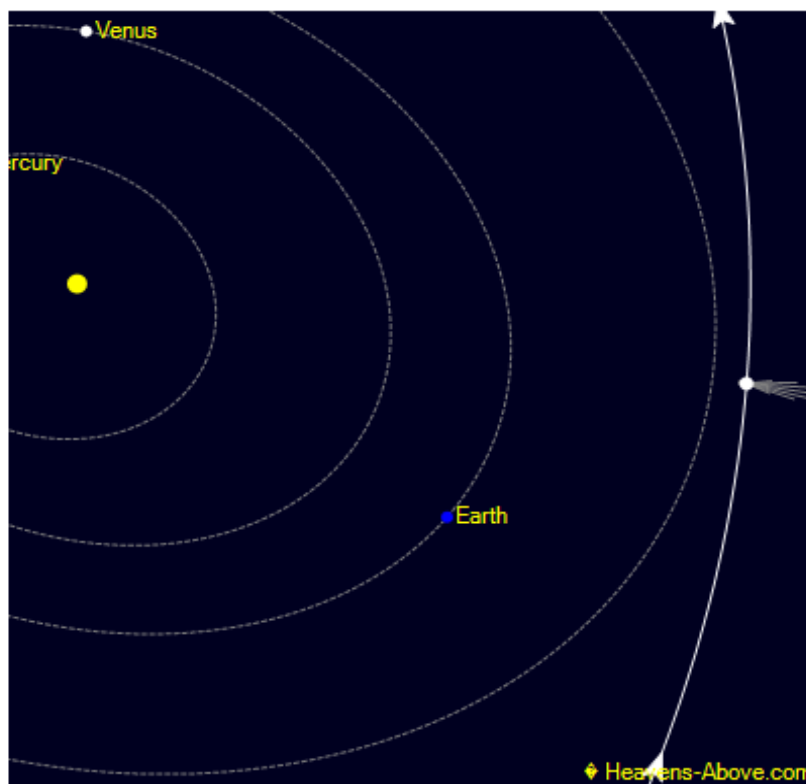
Coarse finder chart  
(Field of view: 60°, Max. star mag.: 5)



Fine finder chart  
(Field of view: 10°, Max. star mag.: 8)



View from 90° above ecliptic plane



View from above comet orbital plane

*Finder Charts for Comet C/2017 O1 for October 3, 2017 from Heavens Above Web Site*

### RASC 2017 Observer's Handbook

October is also the time of the year when the RASC, a staid organization of scientists and astronomers, publishes their world-renowned Observer's Handbook. As an astronomy club, we qualify to place an advance order for the book, and provided quantities allow, to receive a significant discount compared to the posted prices.

*(Continued on [page 8](#))*

## The Sky This Month for October 2017 (continued)

According to this link:

[https://store.astroleague.org/index.php?main\\_page=product\\_info&products\\_id=138](https://store.astroleague.org/index.php?main_page=product_info&products_id=138)

you could order a bunch and expect to get them sometime in December.

We however have a much better deal. Thanks to one of our members (this year it's me) being willing to make a run for them, the handbooks will be in club member's hands before members of the RASC get theirs. All you need to do to reserve a book is to send a short email to me (observing "at" amateurastronomy.org) and I will write your name in a blank space on my list. Then there's a chance we will get them in time for the October meeting, otherwise they will be available for pick-up soon after. Thanks to quantity discount, the club can provide them to you for \$20, HST included. We are not marking up the price, (our cost is \$19.87 plus gas and time) but if you don't reserve, when they run out, they are gone. Avail yourself of this excellent book.

This book has many sections useful to beginners in the Astronomy hobby. Those sections usually don't change from year to year, but are an essential reference. For instance, there's an excellent article about 'exit pupil'... no, not about leaving school, The 'exit pupil' is the diameter of the light beam that comes from the eyepiece to your eye, and is a function of the magnification and the diameter of the telescope. Understanding it is essential if you are shopping for an optical instrument. Likewise there's an excellent section on Binoculars. The Handbook will also tell you the names of the brighter stars in the sky, brightness of the minor planets, and many more things.

If you have never purchased a Handbook in the past, those articles are worth the money for the whole book.

I have read the whole book for 2017, so I know how it ends, but not to give away any spoilers, you will enjoy this coming year. Daily charts will indicate which of Jupiter's moons is which.

All kidding aside, the book also features in-depth articles about upcoming astronomical events, eclipses, conjunctions, and other special events seen only rarely. I regularly use it for Meteor Showers, eclipses, minor planets, and to find out events related to transits on Jupiter and dips in the brightness of Algol.

Clear Skies.

*Image Credit: David Tym*







## Astronomical Halloween by Bernie Venasse

*Halloween* - short for *All Hallows' Eve* - is an astronomical holiday. Sure, it's the modern-day descendant from *Samhain*, a sacred festival of the ancient Celts and Druids in the British Isles. But it's also a cross-quarter day, which is probably why *Samhain* occurred when it did. Early people were keen observers of the sky. A cross-quarter day is a day more or less midway between an equinox (when the sun sets due west) and a solstice (when the sun sets at its most northern or southern point on the horizon). Halloween - October 31 - is the approximate midway point between the autumn equinox and winter solstice, for us in the Northern Hemisphere.

In other words, in traditional astronomy, there are eight major seasonal subdivisions of every year. They include the March and September equinoxes, the June and December solstices, and the intervening four cross-quarter days.

In modern times, the four cross-quarter days are often called Groundhog Day (February 2), May Day (May 1), Lammas (August 1) and Halloween (October 31).

Equinoxes, solstices and cross-quarter days are all hallmarks of Earth's orbit around the sun. Halloween is the fourth cross-quarter day of the year.

Halloween is the spookiest of the cross quarter days, possibly because it comes at a time of year when the days are growing shorter. On Halloween, it's said that the spirits of the dead wander from sunset until midnight. After midnight - on November 1, which we now call *All Saints' Day*, the ghosts are said to go back to rest.

(Continued on [page 10](#))

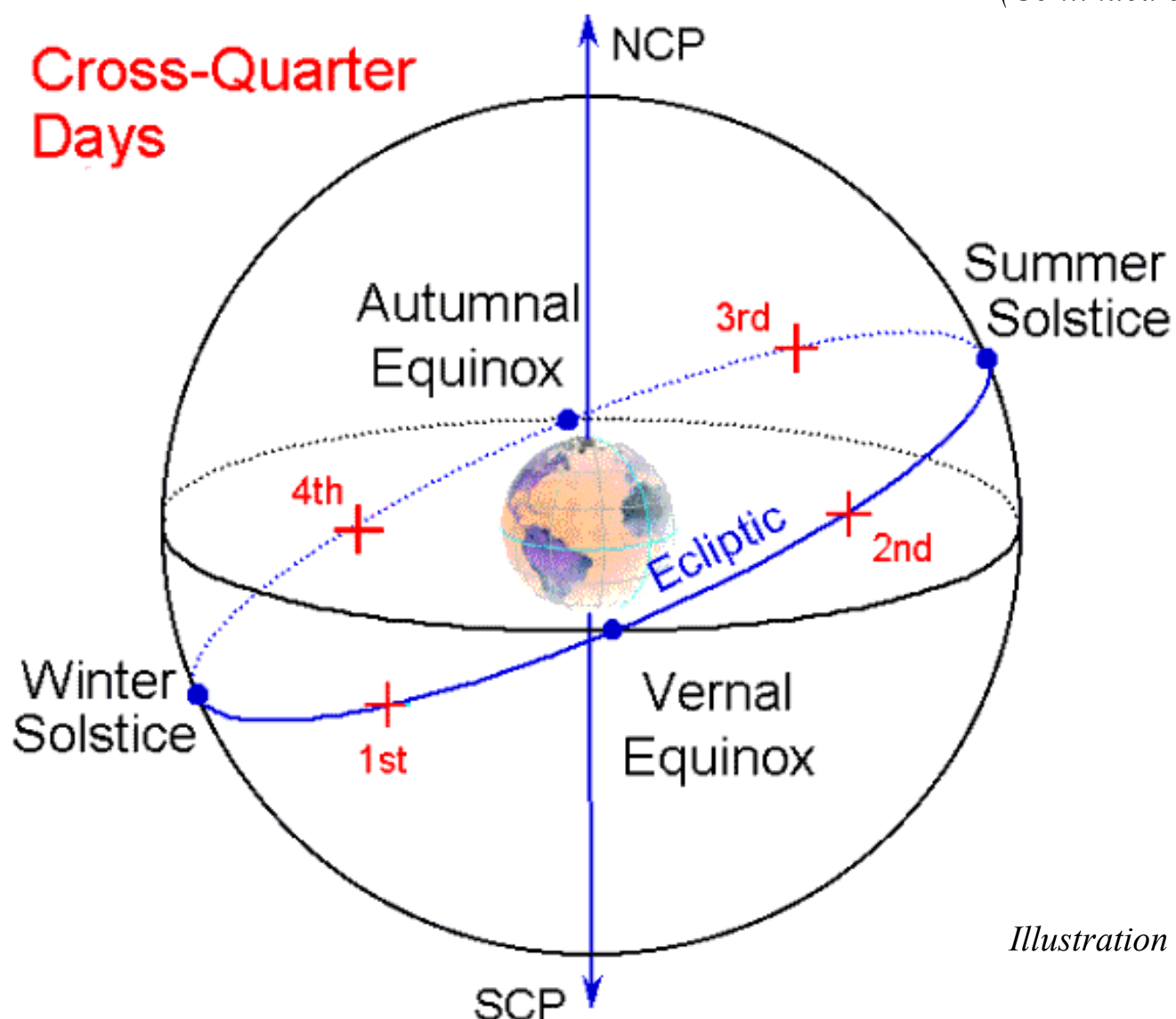


Illustration via NASA

## Astronomical Halloween (continued)

The October 31 date for Halloween has been fixed by tradition. The true cross-quarter day falls on November 7, representing a discrepancy of about one week. According to the ancient Celts, a cross-quarter day marks the beginning - not the middle - of a season.



*The Pleiades star cluster, also known as the Seven Sisters.*

*This tiny, misty dipper is easy to pick out in the night sky.*

*Photo Credit: Dave Dehetre/Flickr.*

### The Pleiades Connection

It's thought that the early forebearer of Halloween - Samhain - happened on the night that the *Pleiades* star cluster culminated at midnight.

In other words, the Pleiades climbed to its highest point in the sky at midnight on or near the same date as this cross-quarter day. In our day, Halloween is fixed on October 31, though the midnight culmination of the Pleiades cluster now occurs on November 21.

Presuming the supposed connection between Samhain and the midnight culmination of the Pleiades, the two events took place on or near the same date in the 11th century (1001-1100) and 12th century (1101-1200). This was several centuries before the introduction of the Gregorian calendar.

At that time, when the Julian calendar was in use, the cross-quarter day and the midnight culmination of the Pleiades fell - amazingly enough - on or near October 31. But, then, the Julian calendar was about one week out of step with the seasons. Had the Gregorian calendar been in use back then, the date of the cross-quarter day celebration would have been November 7.

But Halloween is now fixed on October 31. Meanwhile, the true cross-quarter day now falls on or near November 7 and the midnight culmination of the Pleiades cluster on or near November 21.

Bottom line: The present date for Halloween - October 31 - marks the approximate midway point between the autumn equinox and the winter solstice. Halloween is one of the year's four cross-quarter days. It is the modern-day descendant from Samhain, a festival of the ancient Celts and Druids. The Pleiades star cluster also plays a role in this story, because Samhain was said to happen on the night that the Pleiades star cluster culminated - or reached its highest point in the sky - at midnight.



**This article is provided by  
NASA Space Place.**

With articles, activities, crafts, games, and lesson plans, NASA Space Place encourages everyone to get excited about science and technology.

Visit [spaceplace.nasa.gov](http://spaceplace.nasa.gov) to explore space and Earth science!



### Twenty Years Ago on Mars...

By Linda Hermans-Killiam

On July 4, 1997, NASA's Mars Pathfinder landed on the surface of Mars. It landed in an ancient flood plain that is now dry and covered with rocks. Pathfinder's mission was to study the Martian climate, atmosphere and geology. At the same time, the mission was also testing lots of new technologies.

For example, the Pathfinder mission tried a brand-new way of landing on Mars. After speeding into the Martian atmosphere, Pathfinder used a parachute to slow down and drift toward the surface of the Red Planet. Before landing, Pathfinder inflated huge airbags around itself. The spacecraft released its parachute and dropped to the ground, bouncing on its airbags about 15 times. After Pathfinder came to a stop, the airbags deflated.

Before Pathfinder, spacecraft had to use lots of fuel to slow down for a safe landing on another planet. Pathfinder's airbags allowed engineers to use and store less fuel for the landing. This made the mission less expensive. After seeing the successful Pathfinder landing, future missions used this airbag technique, too!

Pathfinder had two parts: a lander that stayed in one place, and a wheeled rover that could move around. The Pathfinder lander had special instruments to study Martian weather. These instruments measured air temperature, pressure and winds. The measurements helped us better understand the climate of Mars.

The lander also had a camera for taking images of the Martian landscape. The lander sent back more than 16,000 pictures of

*(Continued on [page 12](#))*



## NASA's Space Place (continued)

Mars. Its last signal was sent to Earth on Sept. 27, 1997. The Pathfinder lander was renamed the Carl Sagan Memorial Station. Carl Sagan was a well-known astronomer and science educator.

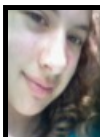
Pathfinder also carried the very first rover to Mars. This remotely-controlled rover was about the size of a microwave oven and was called Sojourner. It was named to honor Sojourner Truth, who fought for African-American and women's rights. Two days after Pathfinder landed, Sojourner rolled onto the surface of Mars. Sojourner gathered data on Martian rocks and soil. The rover also carried cameras. In the three months that Sojourner operated on Mars, the rover took more than 550 photos!

Pathfinder helped us learn how to better design missions to Mars. It gave us valuable new information on the Martian climate and surface. Together, these things helped lay the groundwork for future missions to Mars.

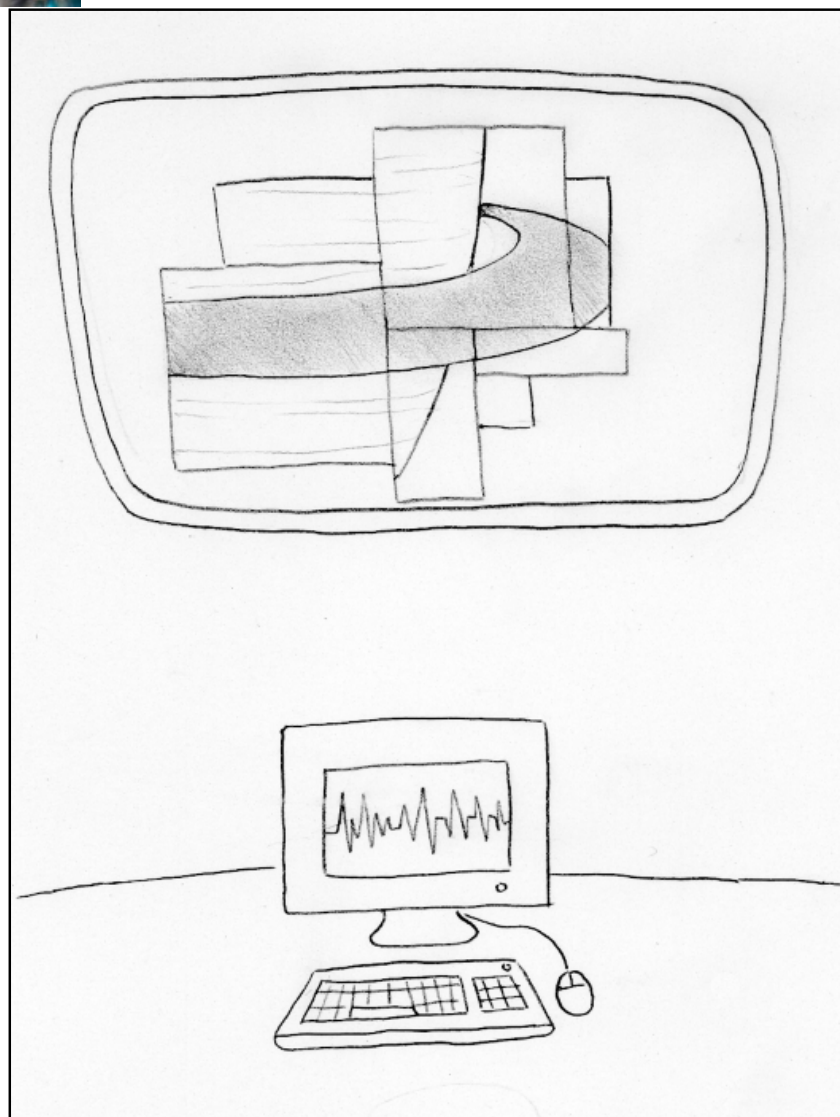
Learn more about the Sojourner rover at the NASA Space Place: <https://spaceplace.nasa.gov/mars-sojourner>



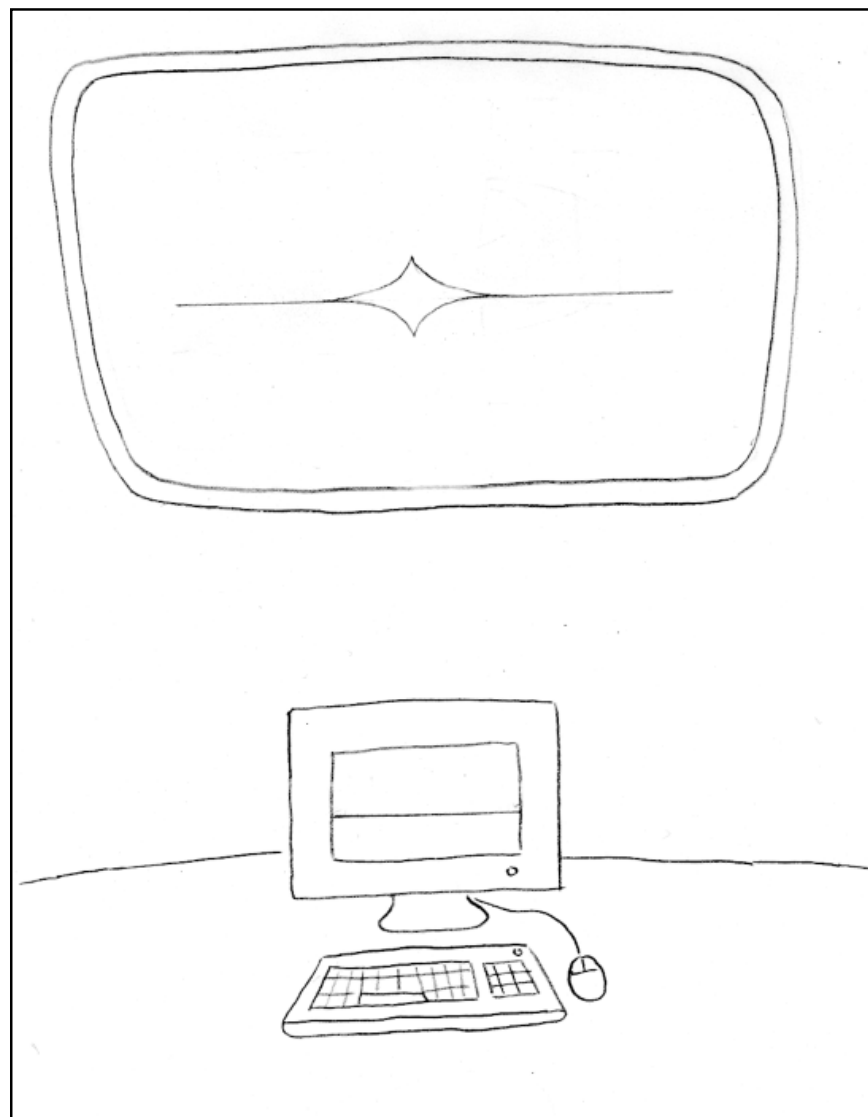
*Caption: The Mars Pathfinder lander took this photo of its small rover, called Sojourner. Here, Sojourner is investigating a rock on Mars. Image credit: NASA/JPL-Caltech*



## Cartoon Corner by Alexandra Tekatch



"Now you Cassini"



"Now you can't."



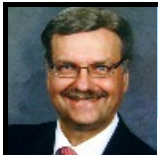
## Treasurer's Report by Ann Tekatch

### Treasurer's Report for September 2017 (Unaudited)

Opening balance (June 1):	\$8,757.17 *
<u>Revenue:</u>	
50/50 Draw:	\$52.00
Memberships:	\$970.00
Memberships via PayPal:	\$135.00
Eclipse Glasses Donation:	\$20.00
<u>Expenses:</u>	
Spectator Room Rental	\$1,130.00
Post Office Box	\$183.06
Office Supplies	\$37.46
PayPal Fees	\$5.18
Closing Balance:	\$8,578.47

\* Correcting error resulting from a duplication of cheque entries totalling \$159.89 in the December 2016 Treasurer's Report.





## The Astro-Physics Group by Steve Germann

As usual the Astro-Physics special interest group, currently comprising about 15 interested members, of which about 10 can make the meetings, meets on the Friday following our club's General Meeting.

At September's Astro-Physics meeting, there was a presentation by Mike Jefferson on the Eulogy to Cassini.

Mike attended Starfest, which featured a report on Cassini, and shared his impressions. It was informative and entertaining.

Some lively discussion followed, regarding the various kinds of science Cassini had helped do.

We watched a few videos using the projector, including the final Cassini downlink, where they showed a spectrum analyzer with a spike showing the received energy from the transmitter.

When Cassini could no longer maintain its antenna pointing at earth, the transmission ceased. We were assured that it would have broken apart less than a minute later.

Cassini was crashed into Saturn intentionally despite it still having some fuel remaining, so that it would not be a hazard (space junk) to any future missions, and would not by chance collide with any moons that are theorized to have life on them. Remaining microbes from Earth that hitched a ride on Cassini would otherwise have a chance to colonize such a moon. Those microbes will have to be content with colonizing the atmosphere on Saturn. Visions of Richard Kiel swimming in the Atlantic come to me.

After those videos, we reviewed some more videos highlighting the science achievements of Cassini and searched for the report of its assistance with pinning down the gravitational constant.

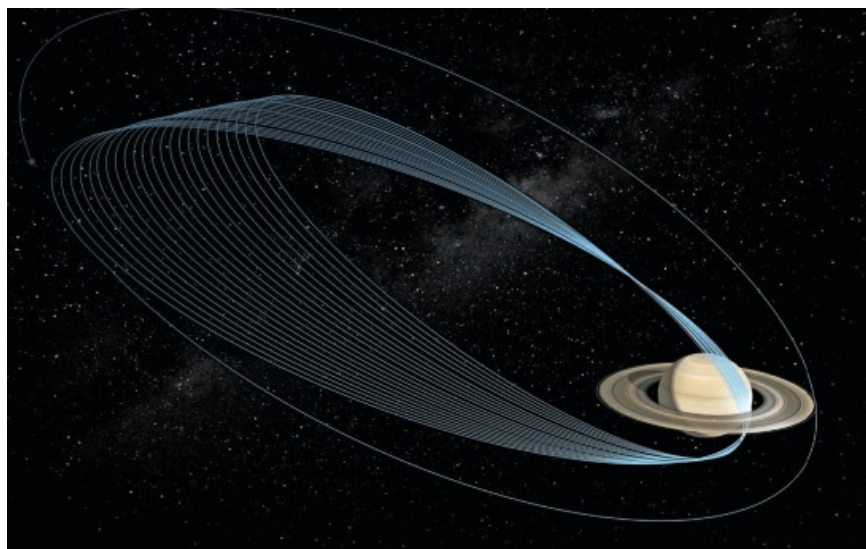
Ultimately, we watched some videos about the probability of finding living creatures with high technology (radio, rockets) on a planet, and what factors could affect the probability.

We were homeward bound around 10 PM.

Our next meeting will be on October 20th.

We have agreed to bump the astrophysics meeting in November to the 4th Friday to evade the Scope Clinic this year.

Next month we anticipate a discussion and presentation led by Garry Sutton. Details to follow.



*Illustrations of Cassini Spacecraft and its final 22 orbits: NASA*





# 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 4: **Introductory Astronomy for Kids**  
— Galaxies
  - Oct 11: **The Celestial Bear: The Six Nations' Night Sky**
  - Oct 18: **Gravity in Space: From Orbits to Gravitational Waves**
  - Oct 25: **The Invisible Universe**
- For more details, visit  
[www.physics.mcmaster.ca/planetarium](http://www.physics.mcmaster.ca/planetarium)

## UPCOMING EVENTS

**October 13, 2017 - 7:30 pm** — *Annual General Meeting* at the Hamilton Spectator Auditorium. Our speaker will be **Kevin Salwach**, who will talk about “This Day in Astronomical History”.

**October 21, 2017 - 8:00 pm - 11:00 pm** — *Public Stargazing Night* at the Niagara Gateway Tourism Centre, Grimsby, ON.

**November 10, 2017 - 7:30 pm** — *HAA Meeting* at the Hamilton Spectator Auditorium. Our featured speaker will be **Mitchell Cornell**.

## 2016-2017 Council

Check out the H.A.A. Website  
[www.amateurastronomy.org](http://www.amateurastronomy.org)

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

**Contact Us**  
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[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)

**Observing Inquiries:**  
[observing@amateurastronomy.org](mailto:observing@amateurastronomy.org)

**Education:**  
[education@amateurastronomy.org](mailto:education@amateurastronomy.org)

**Newsletter:**  
[editor@amateurastronomy.org](mailto:editor@amateurastronomy.org)

**Webmaster:**  
[webmaster@amateurastronomy.org](mailto:webmaster@amateurastronomy.org)

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/>  
 905-692-3228

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