



Event Horizon

Volume 22, Number 8
June 2015



From The Editor

The Event Horizon takes its summer break, but it will be back in September.

I look forward to receiving lots of articles and images from our members come late summer and early fall.

Until then, Clear Skies!

*Bob Christmas,
Editor*



Chair's Report by Jim Wamsley

It's June and we will now be taking a break from having our monthly meetings for a couple of months. Our June and September meeting dates have been changed to allow members to attend the Cherry Springs and Black Forest Star Parties. Don't forget the meeting in June will be on the 19th and the September meeting on the 18th.

Looking back at the H.A.A. activities in May, although not as busy as April, we still had lots going on. May 2nd saw the Astro photo group get together to talk over their common interests. May 8th we had Kerry-Ann Lecky Hepburn impress us with her fabulous astro photos and her talk about the road she travelled to arrive at the impressive level of expertise she has achieved. Of course our Observing Director, Matthew Mannering, gave his usual great "Sky This Month" talk. I can't imagine the amount of work it takes each month to put together an interesting talk, not to mention the super article he does for us in the Event Horizon. Thanks, Matt, for the tremendous job you do. We also held the first of two public nights scheduled this year at T.B.McQuesten Park. The turnout was great. An impressive number of scopes were set up to give the over 100 members of the public that came out a *(Continued on [page 2](#))*

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Chair's Report (continued)

chance to see close up views of the Moon, Jupiter and Saturn, as well as getting good information on how to further their interest in astronomy. Thanks to all of the H.A.A. members that came out to help. I was also happy to accompany John Gauvreau on an outing to the Stoney Creek Public Library where John delivered a talk to about 14 people. I happily tagged along and did a little show and tell with my meteorite collection. Friday May 22nd saw Bernie Venasse, the club's newest Binbrook key holder, open the park for his first time. (I'm sure just the first of many). Thanks Bernie. Let's hope we can get out to the park often this summer. I know all the key holders try to do so, but life and weather seem to get in the way.

Over the summer months, please keep an eye out on your e-mail for notices of park opening and other club events. Try to get to a Star Party if you can. They are a huge amount of fun. I hope to see you in the dark often this summer, but if not, I hope you have the best summer ever, with clear dark skies.

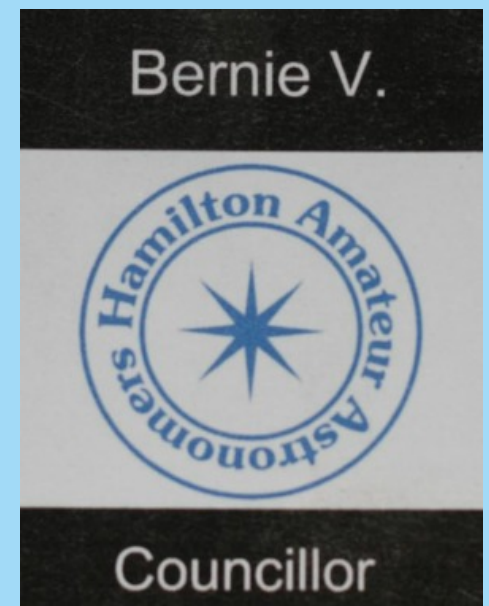


HAA Helps Hamilton

To support our community, we will be collecting 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.

If you would like to help or have any questions about this initiative, please contact Jim Wamsley at 905-627-4323.

Introducing our New Council Name Badges



Hey folks, if you see someone wearing a name badge like this one, that person is an HAA Council Member.

Feel free to ask any HAA Councillor any questions you may have about club business, club activities, or astronomy in general.

Masthead Photo: *Comet C/2014 Q2 (Lovejoy) & open cluster NGC188 in Cepheus, by Bob Christmas.* Taken on May 13, 2015, with a Canon 40D through a Tamron 300mm lens on SP EQ mount, at f/2.8 and ISO 1600; 30 x 1 minute, for 30 minutes total exposure time. North is to the right.



The Sky This Summer for 2015 by Matthew Mannering

This edition of 'the Sky this Month' actually covers the months of June, July and August. These are the busiest months for star parties. If at all possible try to attend one of these events. You don't have to be experienced or own a scope to enjoy the party. Lots of people are more than willing to let you look through their scope. The speakers cover a range of topics for beginners as well as advanced observers. If you are already a camper, then this is really just camping with telescopes and a few star party rules. The most important rule being no white light allowed after dusk, red light only. Don't activate the dome or headlights in your car for any reason.

Astrocats, the Canadian Astronomy Telescope show will be at the Science Centre on June the 27th/28th. There are going to be some very good speakers and of course the vendors will have lots of toys for you to buy or at the very least drool over. For more information visit astrocats.ca.

Public Observing nights continue during the summer. We'll be at the Niagara Gateway Tourism Centre on June 27th and at Bayfront Park on July 25th. Also, we will be opening Binbrook Conservation Area on August 11th for the Perseids Meteor shower. Please contact Jim Wamsley if you can spare an hour to help run the event. We will definitely need volunteers. Keep an eye on the website regarding the Perseids as the event is very weather dependent.

At the end of June, watch for the **Jupiter/Venus conjunction**. It should be a beauty! Then on July 14th, tune in to the **New Horizons mission** as it arrives at **Pluto**. In the meantime keep an eye on the **Dawn** and **Rosetta** missions at **Ceres** and **Comet 67P**.

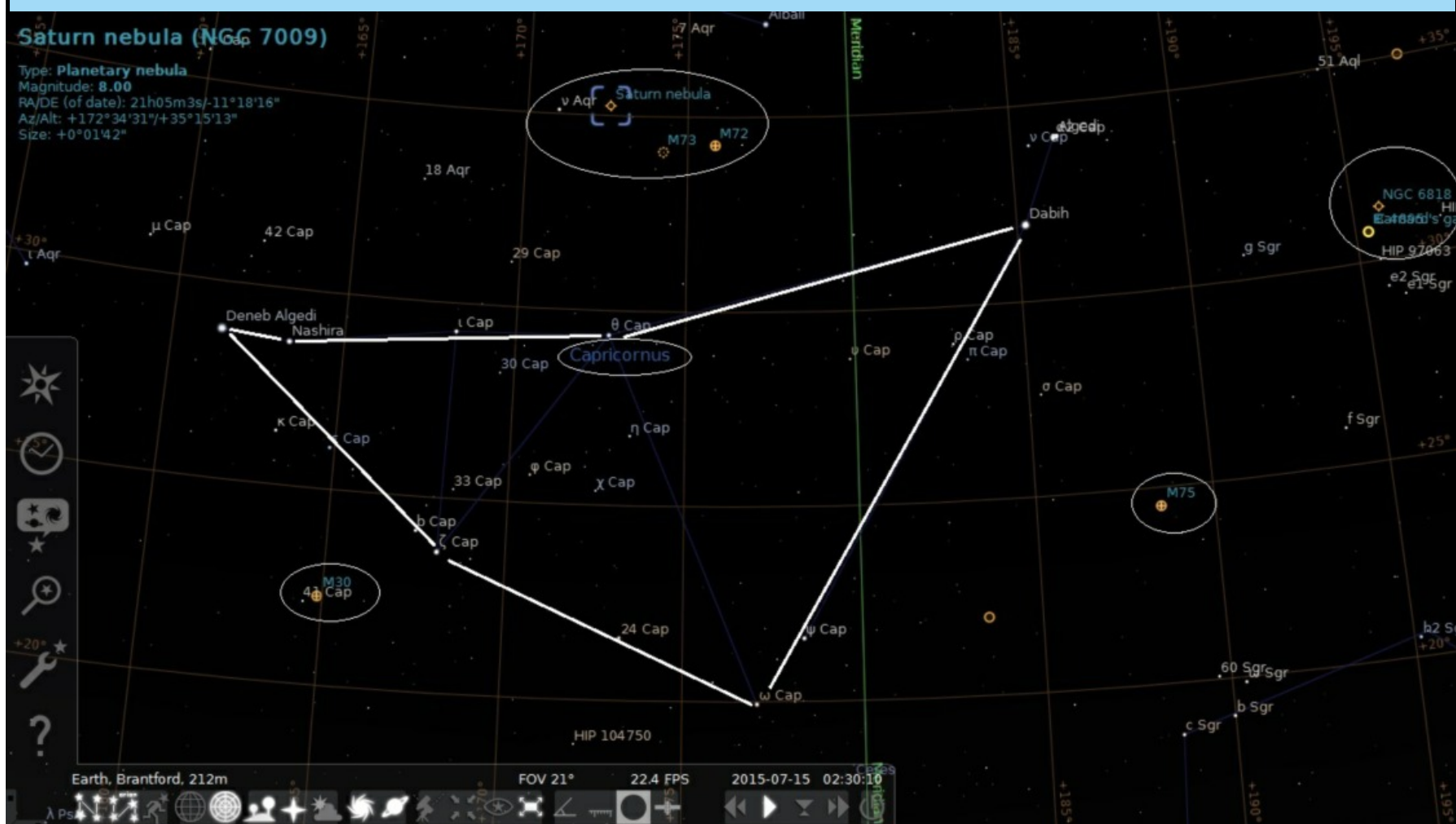
Targets for the Summer:

For those of you who are just starting to observe the sky you can check out the Event Horizon for June 2014. There are a lot bright targets listed. These are objects that you will come back to time and time again over the years just because they are so nice to look at.

For this year, let's try some targets in the **Capricornus/Aquarius** section of the summer sky. To see these constellations at their best, you'll need to stay up well past midnight. I should also mention that Aquarius and Capricornus don't have a lot of bright stars and cover a large section of sky. It would be a good idea to find these objects on the charts you use at home and use a *(Continued on [page 4](#))*



The Sky This Summer for 2015 (continued)



planisphere in the field to hunt them down. Don't get out the scope until you can find the constellations visually. Let's start with an overview of the south to south-east sky at 2:30am in mid-July.

Sagittarius and the **Milky Way** are just off the right side of the chart on page 3. **Capricornus** is due south with **Aquarius** and **Pisces** to the left side (east). Near the top of the chart is **Pegasus**.

Globular clusters are plentiful in summer and this chart shows seven of them. Near the top of the chart on page 3 are **M15** in Pegasus, **M2** in Aquarius and **NGC 6934** in Delphinus. Off to the right is **M55** in Sagittarius. The other three globs are in Capricornus which the above chart shows in more detail.

The three globs are **M30**, **M72** and **M75**. Just to the east (left) of M72 is the **Saturn nebula**, a bright planetary nebula that looks very much like a football. **M73** which is between M72 and the Saturn nebula is one of the least interesting Messier objects in the sky. It consists of four magnitude 10 stars with a few very faint stars in the background.

At the far right side of the above chart you can see another planetary nebula **NGC6818** which goes by the name of the 'Little Gem'. Use magnification greater than 100x to see it clearly as a planetary nebula. Just below that is **NGC6822**, **Barnard's Galaxy**, which is a member of the local group of galaxies to which we belong. Use a wide field scope at low magnification to see it.

Lastly, try to find the **Helix planetary nebula**. This is best found using binoculars or a wide field telescope. The Helix is about $\frac{1}{2}$ the size of the full Moon so the light of the nebula is spread over a large area. Use the chart at the top of the next page to find it about the same height above the horizon as M30. Try using a narrow band light pollution or O3 filter to increase the contrast. This may be a hard catch due to its low surface brightness and the fact that it is only 20 degrees above the horizon. This is one of my personal targets for this year as I've never seen it before.

The Moon:

In winter the Moon appears high overhead. That's because the Earth's axis is tilted away from the Sun for the northern hemisphere. This means that during the night our view of the sky is biased 'down' below the plane (ecliptic) of the solar system. As a consequence the Moon (*Continued on [page 5](#)*)

The Sky This Summer for 2015 (continued)

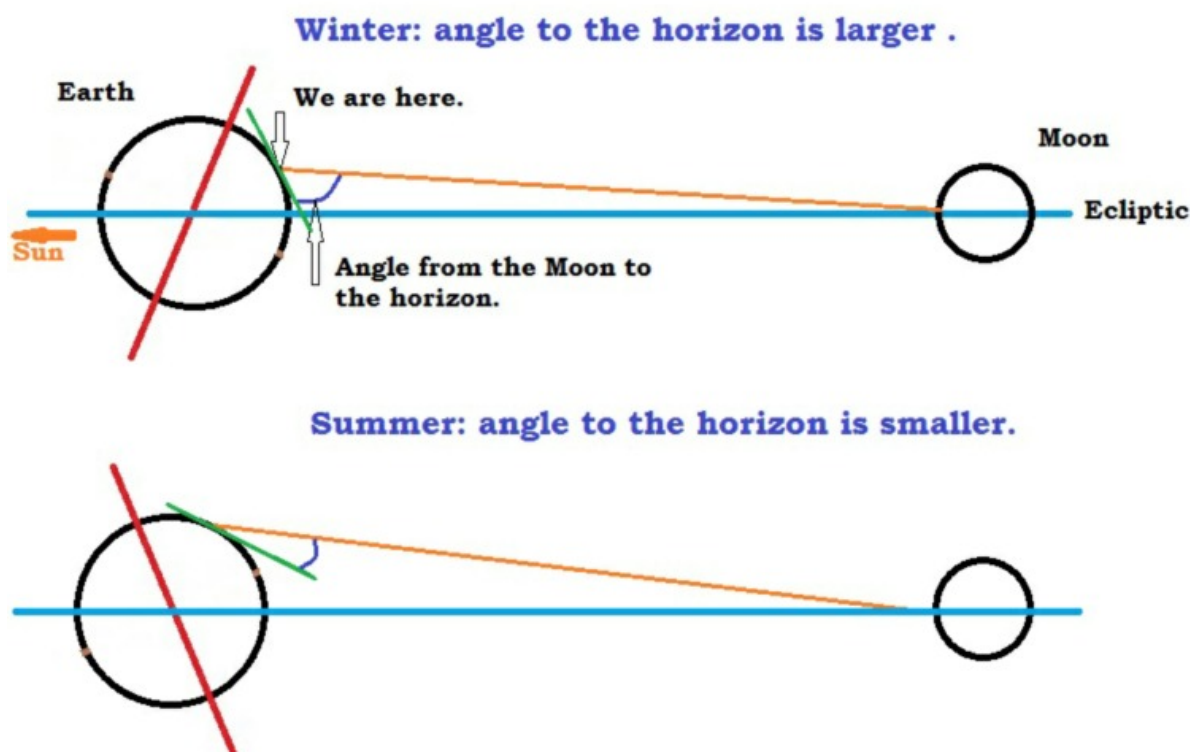


The Moon (continued):

appears highest in the sky. The reverse is true in the summer months when the Earth's axis is tilted towards the Sun for the northern hemisphere. This means that during the night our view of the sky is biased 'upward' from the plane of the solar system. Therefore the Moon stays much lower in the sky. If you want to double check this, run a planetarium program like Stellarium for the winter months and then the summer months. You'll be able to see the difference quite easily.

Another way you can check this is to draw a picture of the Earth/Moon and ecliptic for December and June. Then draw a line from where we are (about ½ way to the north pole) to the Moon. You can now compare the angle from the horizon to the Moon. It should look something like this below.

(Continued on [page 6](#))



The Sky This Summer for 2015 (continued)

The Planets:

- **Mercury** spends much of June in the morning sky but remains very close to the Sun for those of us in the northern hemisphere. The viewing in the evening in August isn't much better.
- **Venus** is well placed for evening viewing in June and July. It reaches maximum brightness on July 10th. Look for its very close conjunction with Jupiter on June 30th and July 1st. By the end of July Venus will be approaching the Sun and won't appear in the morning sky until near the end of August.
- **Mars** is out of sight for the summer.
- **Jupiter** drops out of sight below the western horizon by the last week of July.
- **Saturn** is visible for most of the night in June. By the end of July it's setting by about 1:00am and by the end of August it sets at 11:00pm.
- **Uranus** rises in Pisces at about 3:30am on June 1st, 1:30am on July 1st and 11:30pm on August 1st.
- **Neptune** is still hanging out in Aquarius. It rises at 2:00am on June 1st, midnight on July 1st and 10pm on August 1st.

Other Events:

- | | |
|--------------------|---|
| -June 2nd: | Full Moon. |
| -June 9th: | Last quarter Moon. |
| -June 12th: | Venus ½ deg from M44 the Beehive cluster in Cancer low in the West. Best seen between 10 - 10:45 pm. |
| -June 16th: | New Moon. |
| -June 21st: | Summer solstice. |
| -June 24th: | First quarter Moon. |
| -June 30th: | Venus and Jupiter 0.3 deg apart low in the West. Best about 9:30pm. |
| | |
| -July 1st: | Full Moon. Venus and Jupiter still less than 0.5 deg apart. |
| -July 8th: | Last quarter Moon. |
| -July 14th: | New Horizons spacecraft arrives at Pluto! |
| -July 15th: | New Moon. |
| -July 18th: | Venus and the Moon less than 1 deg apart in the West after sunset. |
| -July 24th: | First quarter Moon. Dwarf planet Ceres at opposition. |
| -July 31st: | Full Moon. |
| | |
| -August 5th: | Uranus approaches the Moon low in the East. 2.5 deg apart at 1:00am down to 1.25 deg apart at 5:00am. |
| -August 6th: | Last quarter Moon. |
| -August 12th/13th: | Perseid meteor shower peaks. |
| -August 14th: | New Moon. |
| -August 22nd: | First quarter Moon. Moon and Saturn 4 deg apart at 9:30pm low in the West. |
| -August 29th: | Full Moon. |
| -August 31st: | Neptune at opposition. |

Our first general meeting of the fall season will be on September 18, 2015. Have a great summer.



Astronomy Phone Apps by David Tym

1960's Star Trek could only imagine the power we wield today with our smart phones and the amount of information available at our fingertips. I'm never far from my phone, drawing it from my pocket whenever I need a bit of information or to access some tool for a task at hand. Somewhat akin to Mr. Spock's tricorder, using astronomy apps I can point my phone at the cosmos and see what star is in view, when the International Space Station will cross the sky or predict upcoming aurora. Here is a list of some of the apps I use and while I'll be focusing on iOS apps, many of these or similar are also available for Android and other platforms.

Be it under a night sky or riding the train home from work, **Aurora Forecast** provides upcoming aurora predictions and includes a 3D view of the Earth showing exactly where the aurora is presently visible. Added details such as solar wind speed and density help provide a complete picture which can be fascinating on its own even if the aurora is not visible.

Sputnik! will advise on upcoming iridium flares as well as visibility for the International Space Station. Details include the time and direction to look, the brightness of the flare and which satellite is producing the show. You can view up to 7 days in advance so you're bound to see something between typically cloudy spring nights.

I enjoy viewing the latest exoplanet discoveries and keeping an eye on candidates closest resembling Earth. **Exoplanet** provides a complete database of confirmed exoplanets, a visual representation of their relative sizes to our solar system planets, orbits and location within the Milky Way. It's a great all-in-one resource to view and explore exoplanet data.

Starmap is my go-to planetarium app containing a host of valuable details useful when behind the telescope eyepiece. Current locations for stars, planets, and deep sky objects are easily checked as is referencing which objects are visible at the time I'm observing. Evening weather conditions, current seeing conditions and Bortle sky darkness details for any location can come in handy when scoping out new observing sites.

Both **Moon Globe** and **Mars Globe** are great resources for viewing feature names, spacecraft landing sites and topography data for the Moon and Mars. You can spin these celestial bodies under your finger tips, zoom into features, and change day/night cycles for added depth.

Undoubtedly there are many other great apps as I've only touched on a few and new choices appear frequently on app stores. Many apps are completely free with some having pro features, which in Starmap's case, is well worth the minimal cost. If you've found an app or even desktop software that you find invaluable in your observing sessions please let other club members know. Tell us about it by posting a quick note to the HAA's Facebook page.

www.facebook.com/hamiltonamateurastronomers

Scenes From McQuesten Park Public Night May 23, 2015



*All three Images taken
by Don Pullen*



The "G" in GOES Is What Makes It Go

By Ethan Siegel

Going up into space is the best way to view the universe, eliminating all the distortionary effects of weather, clouds, temperature variations and the atmosphere's airflow all in one swoop. It's also the best way, so long as you're up at high enough altitudes, to view an entire 50 percent of Earth all at once. And if you place your observatory at just the right location, you can observe the *same* hemisphere of Earth continuously, tracking the changes and behavior of our atmosphere for many years.

The trick, believe it or not, was worked out by Kepler some 400 years ago! The same scientist who discovered that planets orbit the sun in ellipses also figured out the relationship between how distant an object needs to be from a much more massive one in order to have a certain orbital period. All you need to know is the period and distance of one satellite for any given body, and you can figure out the necessary distance to have any desired period. Luckily for us, planet Earth has a natural satellite—the moon—and just from that information, we can figure out how distant an artificial satellite would need to be to have an orbital period that exactly matches the length of a day and the rotational speed of Earth. For
(Continued on [page 10](#))

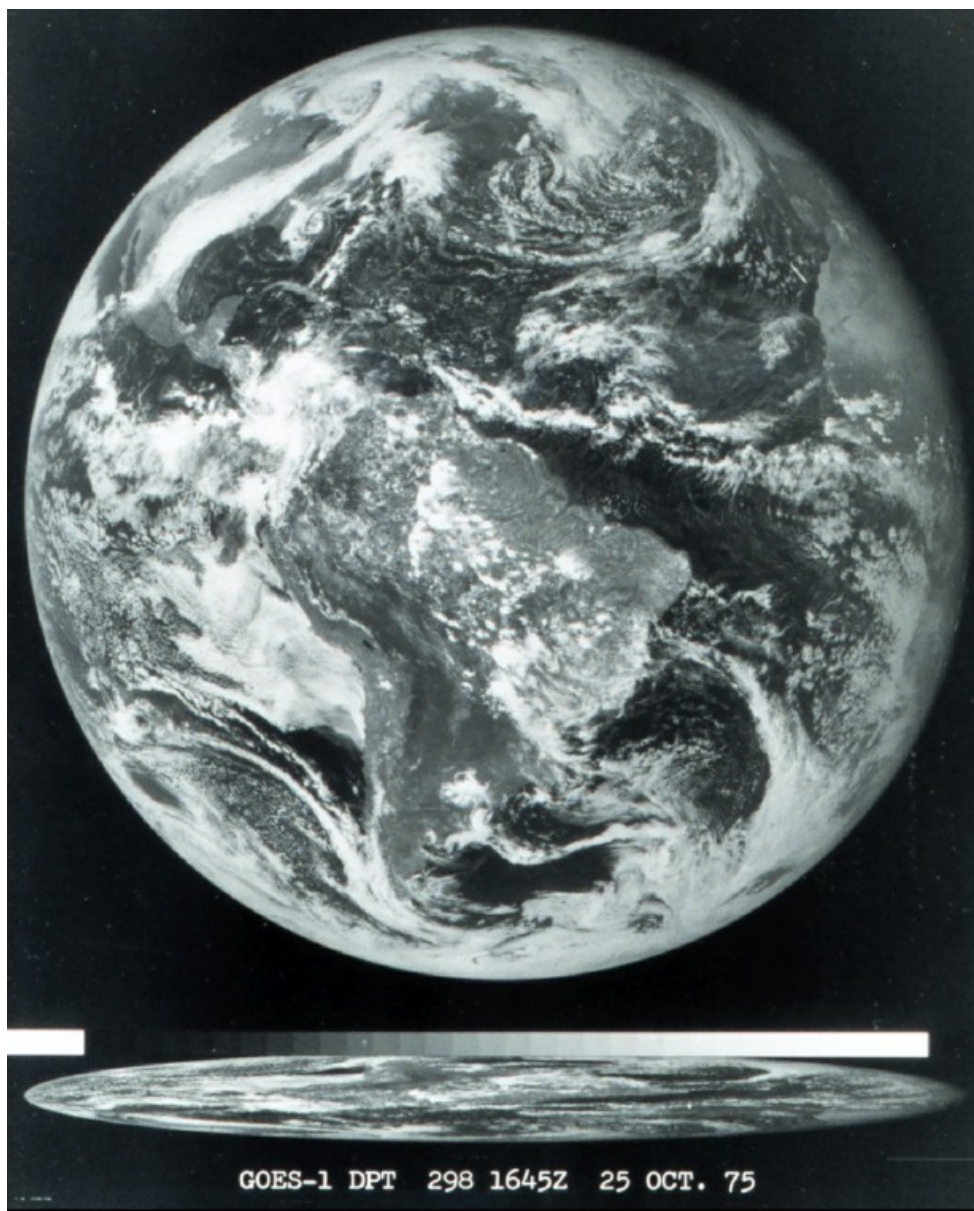
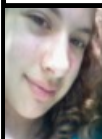


Image credit: National Oceanic and Atmospheric Administration, of the first image ever obtained from a GOES satellite. This image was taken from over 22,000 miles (35,000 km) above the Earth's surface on October 25, 1975.

NASA's Space Place (continued)

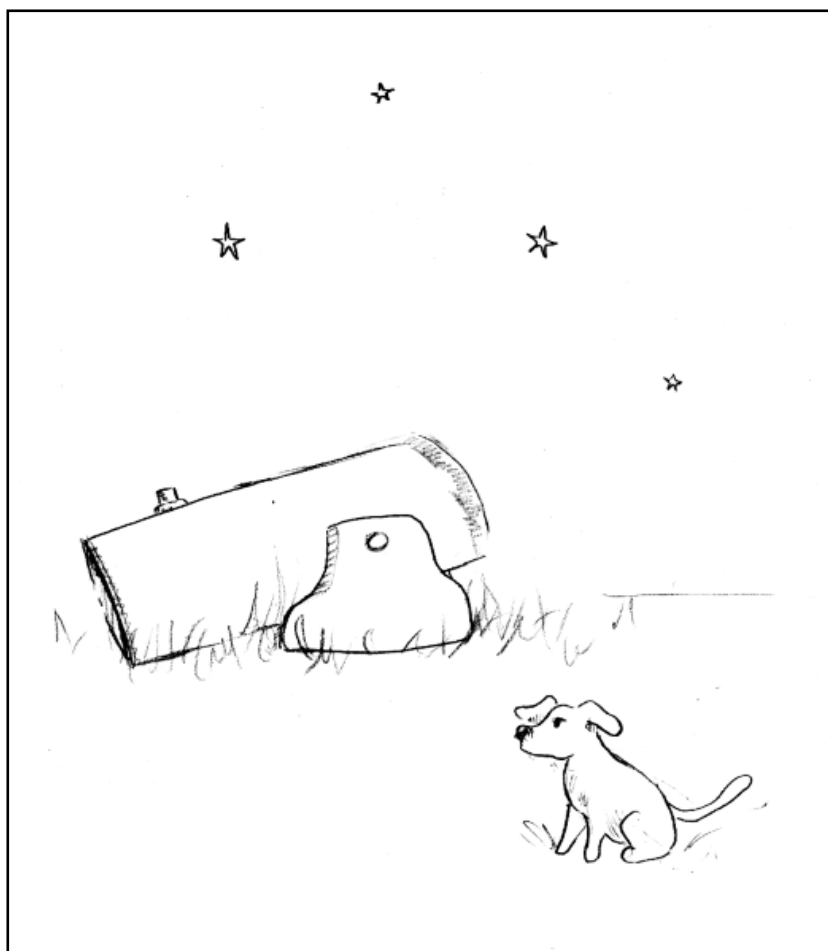
our world, that means an orbital distance of 42,164 km (26,199 miles) from Earth's center, or 35,786 km (22,236 miles) above mean sea level.

We call that orbit *geosynchronous* or *geostationary*, meaning that a satellite at that distance always remains above the exact same location on our world. Other effects—like solar wind, radiation pressure and the moon—require onboard thrusters to maintain the satellite's precisely desired position above any given point on Earth's surface. While geostationary satellites have been in use since 1963, it was only in 1974 that the Synchronous Meteorological Satellite (SMS) program began to monitor Earth's weather with them, growing into the Geostationary Operational Environmental Satellite (GOES) program the next year. For 40 years now, GOES satellites have monitored the Earth's weather continuously, with a total of 16 satellites having been launched as part of the program. To the delight of NASA (and Ghostbusters) fans everywhere, GOES-R series will launch in 2016, with thrice the spectral information, four times the spatial resolution and five times the coverage speed of its predecessors, with many other improved capabilities. Yet it's the simplicity of gravity and the geostationary "G" in *GOES* that gives us the power to observe our hemisphere all at once, continuously, and for as long as we like!

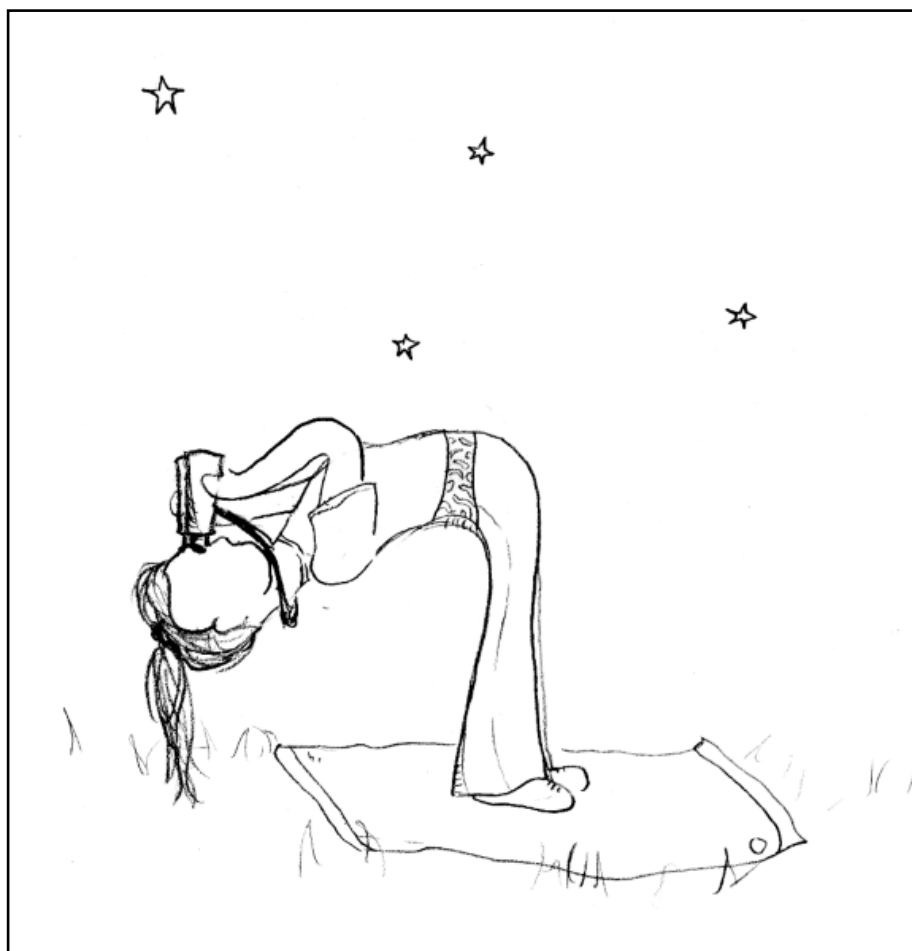


Cartoon Corner by Alexandra Tekatch

Astronomy Yoga Poses



Downward Dob



Bendnocular



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:
 - Jun 3: **Introductory Astronomy for Kids (1st Wed of every month)**
 - Jun 10: **Weird Space**
 - Jun 17: **Themed Astronomy for Kids' Show: Explosions**
 - Jun 24: **The Scale of the Universe**

For more details, visit

www.physics.mcmaster.ca/planetarium



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- Public transit available directly to McMaster campus
- Tickets \$7 per person; private group bookings \$150
- Different shows every week
- Upcoming shows include:
 - **Jul 8: Introductory Astronomy for Kids**
 - **Jul 15: Moons of the Solar System**
 - **Jul 22: Cosmic Footprints**
 - **Jul 29: Cosmology**

For more details, visit

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- Public transit available directly to McMaster campus
- Tickets \$7 per person; private group bookings \$150
- Different shows every week
- Upcoming shows include:
 - **Aug 5: Introductory Astronomy for Kids (1st Wed of every month)**
 - **Aug 12: Lumos! Astronomy for Muggles**
 - **Aug 19: A History of Cosmic Perspectives**
 - **Aug 26: Ancient Astronomy**

For more details, visit

www.physics.mcmaster.ca/planetarium



Treasurer's Report by Steve Germann

Treasurer's report for May 2015 (Unaudited)

Opening balance:	\$8,075.70
Revenue:	\$149.00
Expenses:	\$32.48
Closing Balance:	\$8,192.22

Expenses included telescope repairs, \$6.21 and speaker expense \$26.27.

Revenue included \$90 in new memberships and \$59 for the 50/50.

We received telescope donations independently valued at 400 dollars, and charitable donation tax receipts were issued for them.

The Scope Store at Camtech

**Largest Selection of Telescopes, Binoculars and
Microscopes in the Golden Horseshoe**

**Dealer for Celestron, Orion, Vortex, Bushnell,
Nikon and Pentax**

We now carry the Sky Watcher line of products!

Proud supporter of the HAA

588 Concession St., Hamilton, ON, L8V 1B1

(905) 389-8545

www.camtechphoto.com

UPCOMING EVENTS

June 6, 2015 - 7:30 pm – *Cosmology Group Meeting*. Contact chair for meeting location.

June 19, 2015 - 7:30 pm – *General Meeting* at the Hamilton Spectator Auditorium. This will be our question-and-answer night for our audience. **NOTE that this will be the 3rd Friday in June.**

June 27, 2015 - 8:00 pm - 11:00 pm – *Public Stargazing Night* at the Niagara Gateway Tourism Centre, Grimsby, ON.

July 25, 2015 - 9:00 pm - 11:00 pm – *Public Stargazing Night* at Bayfront Park in Hamilton.

August 11, 2015 - 8:00 pm - 11:00 pm – *Perseids Meteor Shower Public Night* at Binbrook Conservation Area. Stay tuned for more details.

September 18, 2015 - 7:30 pm – *General Meeting* at the Hamilton Spectator Auditorium.

NOTE that this will be the 3rd Friday in September.

2014-2015 Council

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

Check out the newly-redesigned
Hamilton Amateur Astronomers
Website

www.amateurastronomy.org

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Education:

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Newsletter:

editor@amateurastronomy.org

Webmaster:

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

