

Event Horizon

Volume 22, Number 1
November 2014



From The Editor

As November arrives, it's the last chance for area astronomers to get out observing, etc. in reasonably comfortable conditions before the cold and the snow set in for real.

Clear Skies and
Happy Reading!

*Bob Christmas,
Editor*



Chair's Report by Jim Wamsley

This November marks the H.A.A.'s entry into its 22nd year, and I believe the club has never been healthier. At last month's meeting, elections were held and our council was acclaimed with just a few changes of jobs for council members, to help keep things interesting "a change is as good as a rest". We are very lucky to have such talented and devoted people on the club's council. They all work hard to ensure our club continues to be fun and interesting and the best astronomy club in the country. I would like to thank them all for their hard work in the past, and I'm looking forward to working with them again this year. We have had two club members step forward and offer to become councillors at large. Kevin Salwach, and Bernard Venasse. Both Kevin and Bernie came to a council meeting to check it out, and at the November council meeting, I'm sure council will welcome them aboard. If you have an interest in becoming more involved in the club, feel free to come to a council meeting. They are always open to everyone, and are held on week-nights, the week following the general meeting. Just ask me or any other person on council for the exact date and time.

November should prove to be an interesting and fun month for the club. We have the club's fall Telescope Clinic on the 7th. If you have *(Continued on [page 2](#))*

IN THIS ISSUE:

- Treasurer's Report
- The 2015 HAA Celestial Events Calendar
- The Sky This Month
- Astronomy Crossword
- Total Lunar Eclipse Gallery
- Partial Solar Eclipse Gallery

- Operation Paperclip
- Harvey Garden's New Hand-Crafted Telescope
- Unexplainable Flapping Objects
- NASA's Space Place
- 2013-2014 Financial Statements
- Upcoming McCallion Planetarium Shows
- Cartoon Corner
- Upcoming Events
- Contact Information

Chair's Report (continued)

picked up a new scope and need some help to understand how it works, bring it along and there will be someone able to help you out. If you have a scope, and just want to show it off, and maybe offer to help someone with the knowledge you have of the hobby we all love, please bring it along. If you don't have a telescope and want to learn more about scopes before you buy one, this is the perfect time. I will be there with the club's loaner scopes on display, so if you have been thinking about borrowing a club scope and haven't taken advantage of this club benefit, this is your opportunity to take home a fine scope to use for a month.

This month's general meeting will feature Dr. Peter Sutherland as our guest speaker. Dr. Sutherland will be speaking to us about Testing Einstein's General Theory of Relativity (Gravity). A very heavy subject indeed "pun intended". Dr. Sutherland has been a guest speaker for us in the past. His talks are always engaging and interesting. Matthew Mannering will also enlighten us with his "Sky this Month" presentation as well. John Gauvreau, the club's Education Director has asked me to announce that the Astro 101 course will get started this December. There will be a sign-up sheet at the welcome desk at the November meeting. Be sure to put your name down if you're interested in taking part, or would like to help out. You can contact him at education@amateurastronomy.org or me at chair@amateurastronomy.org.

Also at this month's meeting, or hopefully at the Scope Clinic, we will have the new 2015 H.A.A. Celestial Events Calendar available for sale. This year's calendar, in my opinion, is the by far the best we have ever produced. It is full of great photos from many club members, as well as essential celestial information and interesting facts. We can be very proud that club members can produce such a high quality product. Calendars can be purchased for \$15.00 or 2 for \$25.00.

The cosmology discussion group will not meet until December 6th at 7:30 in the rec-room in my apartment building. This change is because I like to keep these indoor activities close to a full moon, so we don't lose prime observing nights, and those nights in Nov. are already pretty full.

On a more personal note, we have been treated to two Eclipses this past month. I hope you have been able to get out and observe them. I have been lucky enough to get out and view them, getting a couple of photos, which I would like to share with you.

See you out there.

[See Jim's image below right, and another of Jim's images in the solar eclipse gallery on Page 12 - Editor.]

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.



Masthead Photo: *Partial Solar Eclipse of October 23, 2014 from Hamilton, ON, by John Gauvreau.* The crescent sun is partly covered by the silhouette of the Moon at sunset over Hamilton Harbour, as seen and imaged from near the Burlington Skyway on the Hamilton side. See more images in the Solar Eclipse Gallery on page 12.



Treasurer's Report by Steve Germann

Treasurer's report for October 2014 (unaudited)

Opening balance:	\$6,992.89
Revenue:	\$813.90
Expenses:	\$2,318.75
Closing Balance:	\$5,488.04

Revenue included 50/50 \$39.55 Memberships \$460, Banquet airfare rebate \$314.35.

Expenses included Calendars for 2015, \$2118.75, Niagara Parks Conservation Area (Binbrook) Donation \$100, IDA donation \$50, Clear Sky Chart Donation \$50.

Please see Pages 18 thru 21 for year end financial statements - Editor

Hamilton Amateur Astronomers 2015 Celestial Events Calendar

The HAA once again offers its wall calendar available for sale starting in November. This beautiful calendar features images exclusively by your fellow HAA members. They make wonderful gifts and look great when displayed at home or office.

The price is \$15 each or two for \$25.

Any revenue generated from sales goes back into the club to help support club activities.





The Sky This Month for November 2014 by Matthew Mannering

October was quite a lot of fun with some very interesting events. First we had the Lunar Eclipse of Oct. 8 just before dawn. Clouds obscured the horizon but many of the club members were able to get out and see most of the event. We saw the onset of the Earth's shadow making its way across the face of the Moon until just before 7am, a half hour before totality was due to end at Moon set.



Credit: Matthew Mannering



Next, the comet Siding Spring passed about 80,000 miles from Mars on the 19th. Unfortunately cloud completely ruined any chance of viewing the event locally. There were however many places where cloud wasn't an issue so there are lots of images online. We're still waiting for the bulk of the data to come from the Mars orbiters and rovers. Here's a Hubble photo of the event. Mars and the comet require very different lengths of exposure. Showing both objects in a single image requires a composite of two separate photographs.

(Continued on [page 5](#))

The Sky This Month (continued)

On the 23rd we experienced a partial Solar Eclipse at dusk. Janice and I arrived at the boat launch under the Burlington Skyway with time to spare. Les and his wife Teri went along with us and he set up his 80mm refractor while I set up my camera. About 10 other club members were there to share the event. I happened to look through my solar viewing glasses at the same time as Les was looking through his scope and we both saw the Moon take its first little bite out of the side of the Sun. We got a lot of good pictures. John Gauvreau went the extra step and sent his images into SpaceWeather.com and got one of his images featured on the main page. Way to go John! We were fortunate to have a mostly cloud free horizon and so were able to see the whole event. *(Continued on [page 6](#))*



Credit:

*Matthew
Mannering*

Credit:
Janice Mannering



The Sky This Month (continued)

The pre-dawn hours have been wonderful lately. I've been outside at 5am a few mornings to look at the sky. The seeing was as good as it gets in the city with crystal clear views of Orion, Canis Major, the Pleiades, Perseus, Taurus and Gemini. I have also seen Jupiter blazing away just to the west of Leo in the south-east sky at that time. How come we can't have those skies in the evening when it would be much more convenient? It's hard to be bright eyed and bushy tailed at 5am!

The Rosetta mission is getting set to execute its most difficult phase. The lander "Philae" will begin its descent to comet 67P on November 12th. Spend some time with the NASA JPL (Jet Propulsion Laboratory) or ESA (European Space Agency) websites to check on the progress. With a 50/50 chance of success it will be white knuckle time for the engineers in charge of the descent and landing. Hopefully they won't delay release of the first photos from the surface for too long.

The calendar is finished and will be ready by the General meeting on November 14th. Make sure you get your copy or better yet copies. The photographs are awesome and John has put in a ton of hours making the calendar look just as good as many professional publications. As usual there are lots of special astronomical events noted on the calendar.

We are having one of our Telescope Clinics at the Spectator building on Friday November 7th. This clinic is open to the public as well as members. If you have a scope that isn't working properly or you can't figure out how to use it, bring it along. One of the club members will be sure to give you some helpful advice.

By the way, don't forget to set your clocks back one hour before you go to bed on Saturday November 1st. You won't want to get up too early and miss that extra hour of sleep! Unless, that is, you want to see Mercury at dawn.

So, what's going on in the sky this month?

The Moon

Libration favours the North limb on the 11th. The East limb is favoured on the 9th. The South limb is at its best on the 25th while the West limb is favoured on the 21st.

This month I thought we could go looking for a few large craters that appear near the terminator on the evenings of the November 8th to 11th (Day 16/19 in the current Lunar cycle). These are large craters that will be visible even in small scopes. The craters are named, Endymion, Atlas, Hercules, Lacus Mortis and Burg.

Here's a look at them on November 8th at 9:30.

Let's start with a whole Moon shot (image at top of Page 7) just to show the area to look in. All images are courtesy of the [Virtual Moon Atlas](#) freeware for PCs.

Next we'll zoom in on the region we want to concentrate on (middle of Page 7).

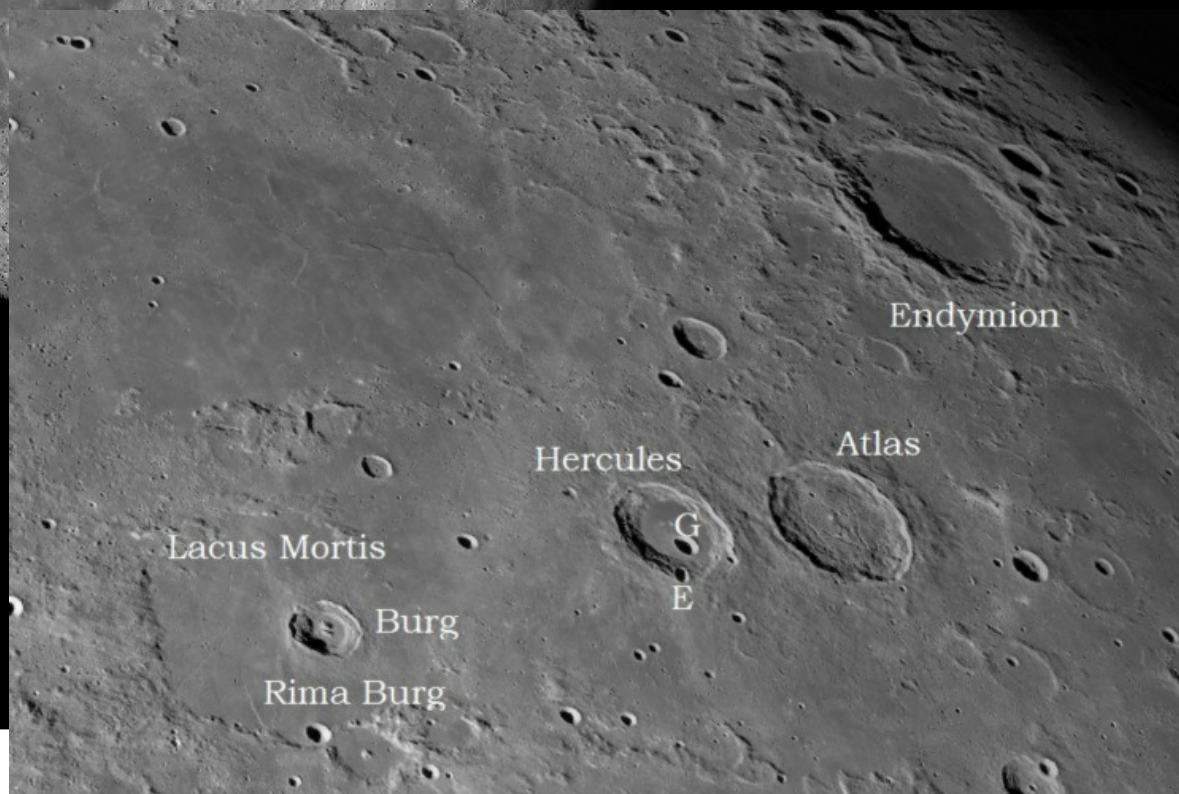
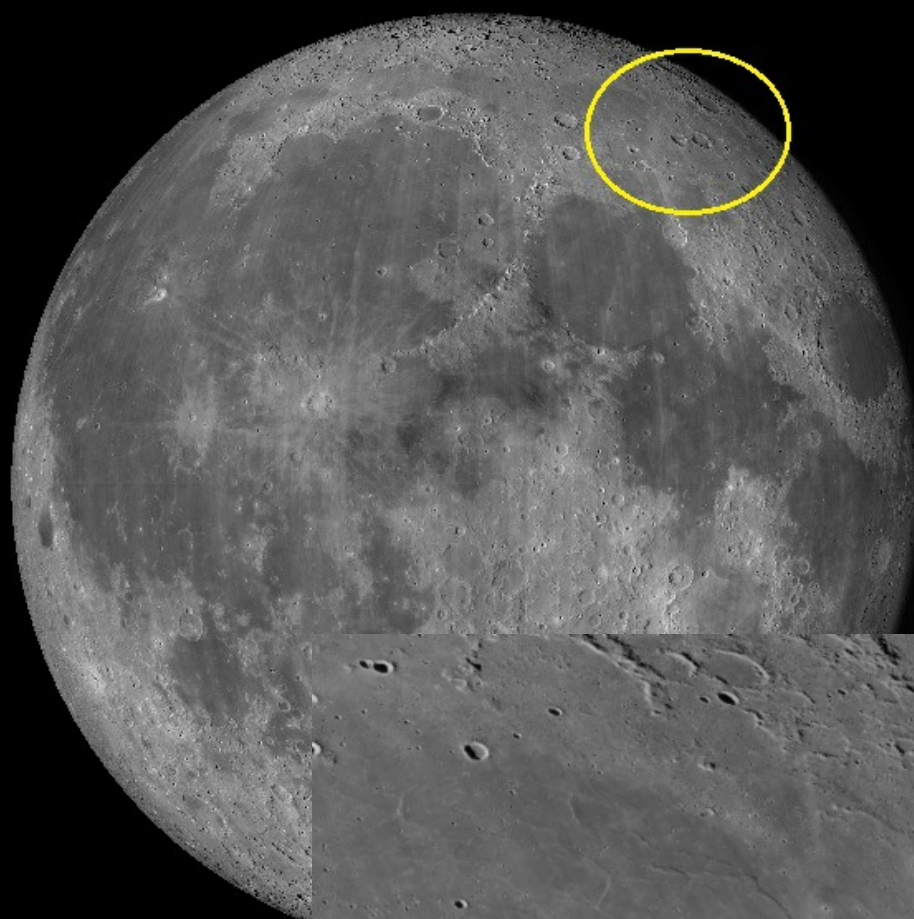
Then, some close ups of the craters. First, Endymion on November 8th (image at bottom of Page 7). It has a diameter of 125km and a height of 4,600m. Notice the bright areas within the shadows, they indicate high points and help to show the topography.

Next we'll look at Atlas and Hercules on November 8/9th (top of Page 8). They have diameters of 88 and 70km and heights of 3,000m and 3,200m respectively. "G" is 13km and "E" is 9km across. Notice the detail in the rilles in Atlas and the deep craters in Hercules.

Lastly let's look at Lacus Mortis and Burg on November 10th (middle of Page 8). Lacus Mortis (Lake of Death) is actually an ancient crater and Burg is a younger smaller one situated within Lacus Mortis. You can also see a couple of rilles named Rimae Burg. Rille and Rima (pl. Rimae) are used interchangeably. They both refer to channels in the lunar surface. Lacus Mortis has a diameter of 151km, is very old and filled with lava which overflowed from the Sea of Serenity. Burg has a diameter

(Continued on [page 7](#))

The Sky This Month (continued)

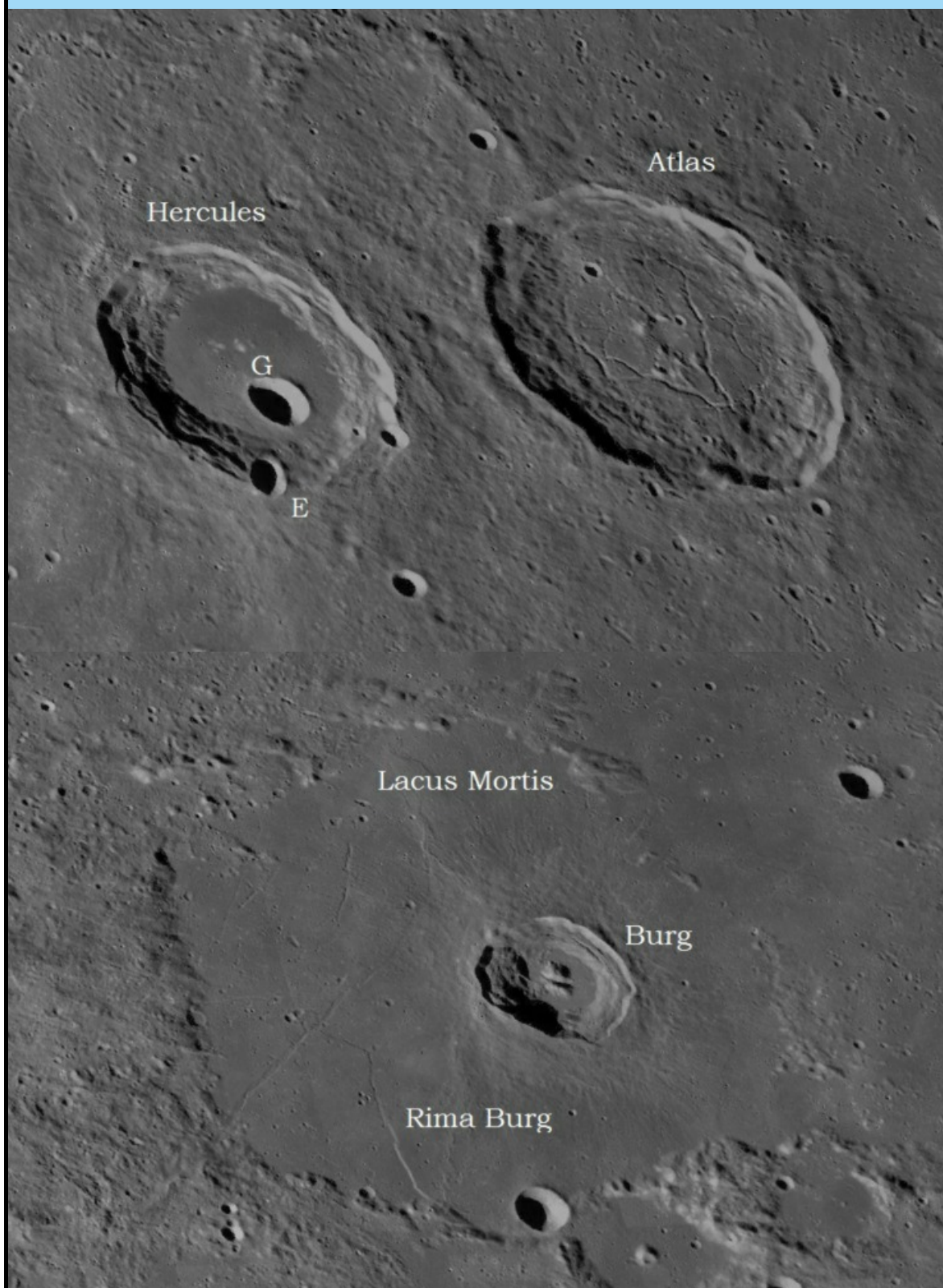


of 40km and is 2,200m high. The Burg Rimae network or Burg rilles have dimensions of 100km x 3km and probably requires an eight inch scope to view them. With small features such as rilles, the lighting has to be just right for them to stand out. That's why you want to look for them when they are near the terminator. These craters will also be ideally situated for viewing on November 26th a few days after New Moon.



(Continued on [page 8](#))

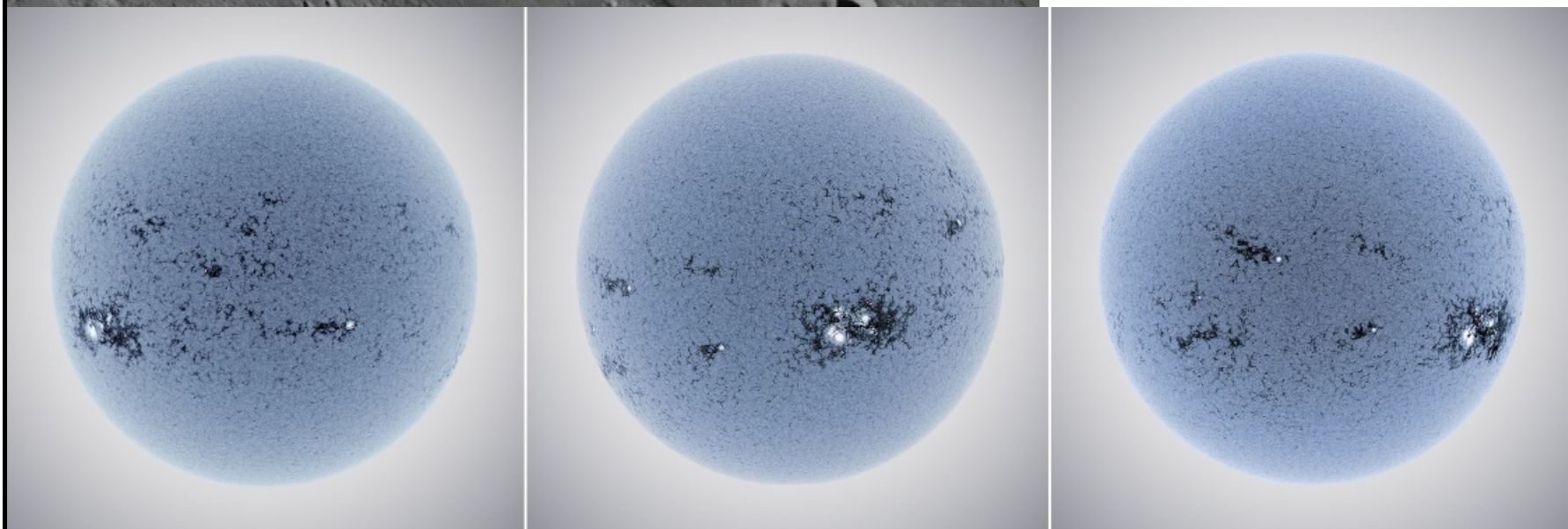
The Sky This Month (continued)



The Sun

Sunspot AR 2192 has turned out to be the largest sunspot in 25 years. The area has been extremely active generating multiple M and X class flares. These have ionized the Earth's upper atmosphere and caused HF radio blackouts on at least two occasions in the last couple of weeks. By the 1st of the month it will have rotated out of view. Very large spots like this one tend to survive several rotations of the Sun. So look for it again by mid-November. It will receive a new number when we see it again, but it will be the same spot. Strangely, with all the activity there haven't been any CMEs. A huge CME would have generated some spectacular aurorae. Maybe next time around activity will pick up. Interestingly though we have still experienced some fantastic aurorae in the far north likely due to the interaction of the Sun and Earth's magnetic fields. If you have a smart phone, you can download an app to alert you if aurorae are predicted to appear in the Hamilton area. Below is a series of views of the sunspot transiting the face of the sun over a period of 2 weeks.

(Continued on [page 9](#))



Credit: Alan Friedman; shot with Calcium K filter.

The Sky This Month (continued)

The Planets:

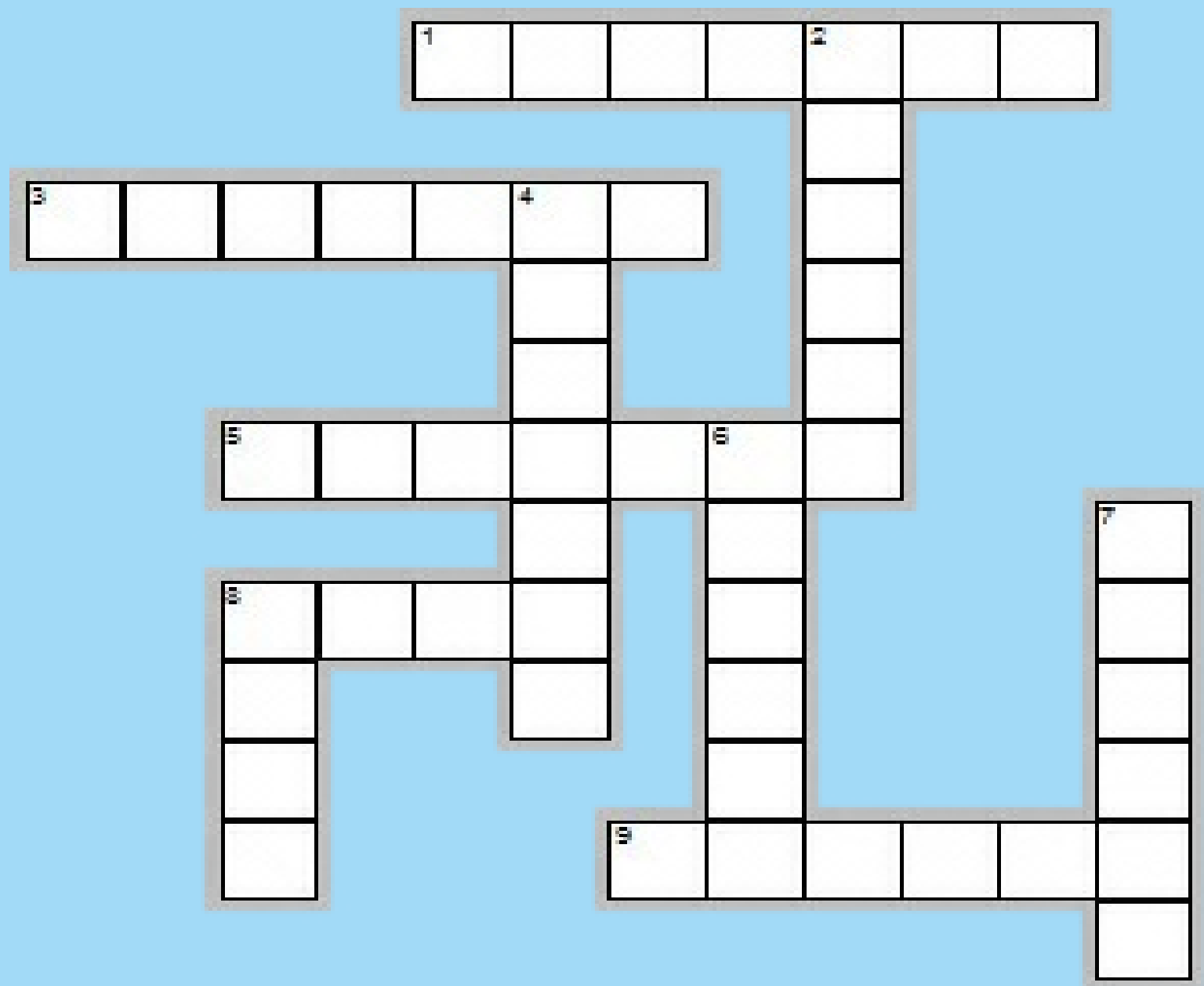
- **Mercury** is making its' best early morning appearance of the year. The first week of the month is the best time to look for it. It reaches its greatest elongation from the Sun on the 1st. Each day after that it will sink lower to the horizon and move closer to the Sun. Look for it about seven degrees above the horizon just south of east at 7am on the 1st. After the clocks change and you will have to look at 6am. It should be visible naked eye or with binoculars for a half hour after the times given.
- **Venus** has just passed superior conjunction on the October 25th. That means it's on the other side of the Sun from our position and will remain lost in the Sun's glare for November. However, Venus will re-appear in the evening sky in early December.
- **Mars** continues to be low in the South-West this month and set by 8pm. A couple of great photographic opportunities occur as soon as it's dark this month. On the 2nd, Mars will be within $1/6$ of a degree from M28, a bright globular in Sagittarius. On the 6th, Mars passes $3/4$ of a degree below and just to the east of M22 an even brighter and larger globular. As a sneak preview to next months EH, on December 3rd, Mars will pass $1/5$ of a degree from M75, a dimmer globular on the Sagittarius/Capricornus border.
- **Jupiter** rises just after 12am (after the time change) at the beginning of the month and 10pm at month's end. Look for it west of Regulus in Leo.
- **Saturn** is at conjunction this month so you'll have to wait till December to see it low in the morning sky.
- **Uranus** has just passed opposition which means it's visible all night. About an hour after sunset on December 1st, look for it less than one degree below the Moon. Another fine photographic opportunity if you missed the close pass during the Lunar Eclipse in October.
- **Neptune** is in Aquarius in the South at dusk and is well placed until well into the wee hours of the night. It stays very close to Sigma Aquarii all month.

Other Events:

- November 1st: Mercury as far from the Sun as it will get in the pre-dawn sky.
Uranus one degree below the Moon.
- November 2nd: Daylight savings time ends at 2am.
Mars passes M28.
- November 6th: Full Moon.
Mars passes M22.
- November 10th: Mars passes 3.7 degrees south of Pluto.
- November 12th: Philae lands on comet 67P.
- November 14th: Last Quarter Moon.
- November 17th: Leonid meteor shower peaks well after midnight.
- November 22nd: New Moon.
- November 29th: First quarter Moon.



Astronomy Crossword by Mario Carr



Across

1. A good time to see this planet is at the beginning of November in the dawn sky.
3. This planet rises around midnight.
5. This meteor shower peaks November 17.
8. On November 13 this object is below Jupiter?
9. The Full Moon on November 6 is sometimes called this Moon?

Down

2. On November 4 this planet is close to the Moon.
4. Uranus and Neptune can be seen during the . . .
6. This cluster is between constellations Persus and Cassiopeia.
7. This planet cannot be seen this month.
8. This planet is low in the early southwest evening sky.

Answers can be found on page 16. (No peeking!)

Member Gallery of Total Lunar Eclipse October 8, 2014



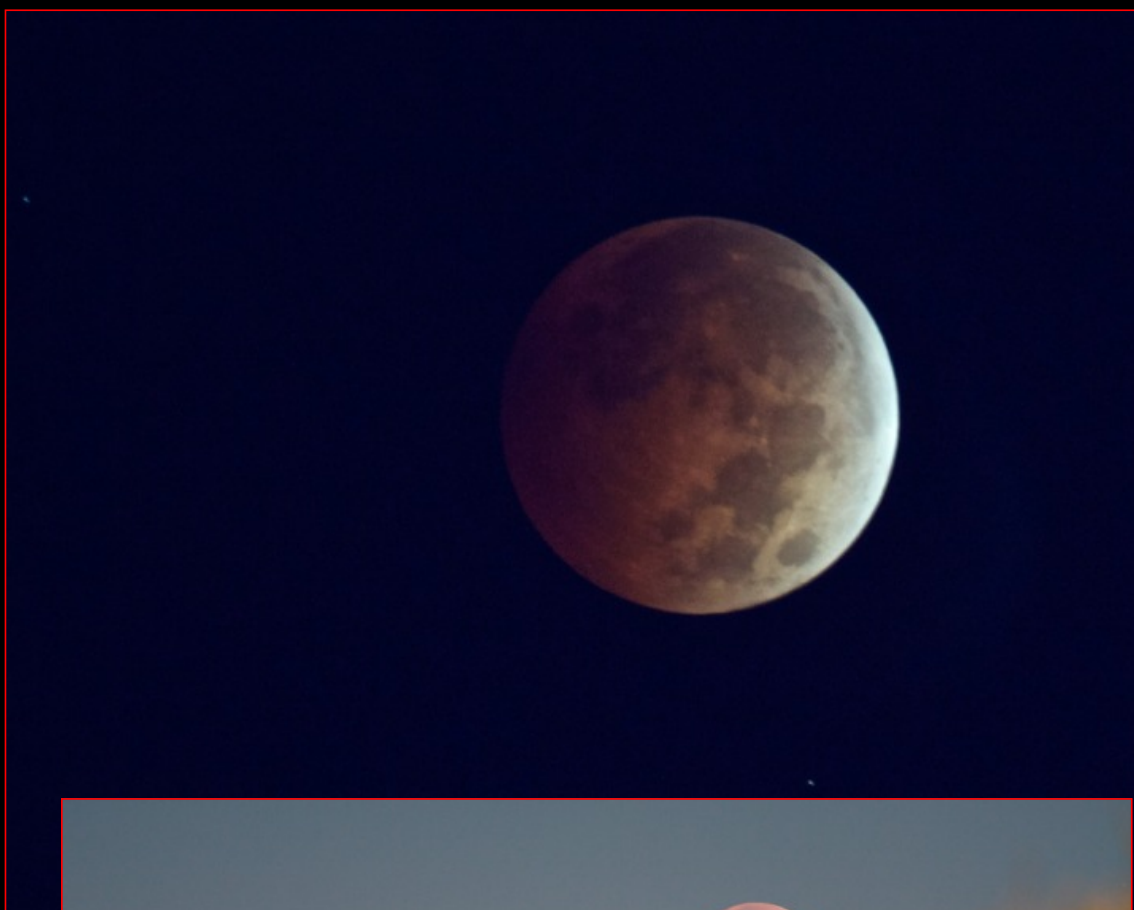
*Clockwise from
top left:*

Partial phases of
eclipse, by Lyle
Jeakins

Totality, with
Uranus at left, by
Lyle Jeakins

Totality in morning
twilight, with tree
in foreground, and
Mapleview Mall in
background, by
Bob Christmas

Totality, with
Uranus at left, by
Jim Wamsley



Member Gallery of Partial Solar Eclipse October 23, 2014



Phases of eclipse 5 minutes apart, by Bob Christmas



Image by Jim Wamsley



Image by John Gauvreau

Note: In all images above, sunspot group AR 2192 is very prominent.



Operation Paperclip and the Realities of the American Space Program by Mike Jefferson

Anyone in the Hamilton Amateur Astronomers who is from my generation (born about 1943 - 1947) is probably very familiar with the astronomical developments, the American space program and the space race history of the 1950's and 1960's. Those times were really from 'the world of tomorrow' which was also the catchphrase of the 1939 World's Fair in Flushing, New York.

The 1939 World's Fair, which was so hastily suffocated by World War II, promised a utopian future for those willing to embrace new concepts and inventions and the better world of tomorrow that science would surely guarantee for all. Not just held up by World War II, it had also struggled to get started in 1936 against The Great Depression, despite the best efforts of The American Museum of Natural History, the council of the City of New York and many industries like General Electric (which used it as a means of enticing participants to buy for the future). It promised a world where there would be more challenging jobs than there would be people to fill them. It piggybacked on American efforts to buy that country's way out of the Great Depression with projects such as The Tennessee Valley Authority and The Hoover Dam. It probably would have restarted in 1945, at war's end, but for the fears of Russian Communism and a new political norm known as The Cold War.

As a child in those times I have very little memory of the Korean War, the prior events of World War II, Joe Stalin, Chairman Mao and so forth. However, I was very much in tune with issues that hovered around 'the scientific stuff', the domestic political figures, etc. Stodgy Dwight (Ike) Eisenhower would soon be replaced by the much younger and charismatic Jack Kennedy - a president who actually read "James Bond" (which is what made those Fleming books so popular)!

However, the end of the Second World War forced the United States, the most powerful nation on Earth, to confront the difficulties of rebuilding Germany to become a fully functioning nation, once again. Along with this went the desire to have the United States continue where it left off with the World's Fair. Germany's wartime technology held a great fascination for the American Government. Even though the physicist Werner Heisenberg was way off base when it came to developing German nuclear power, their ballistic rocket technology was second to none - and the Americans wanted it for their world of the future. Enter Operation Paperclip!

Paperclip was a military convenience to import German rocket technology into the United States for its benefit and to combat the imperial designs of the Soviet Union, which also had its hands in German ballistic missile capabilities. Like 'top secret' and 'classified', 'Paperclip' became one of the new military buzzwords that, even today, govern much of what goes on in that 'world'. The way to implement Paperclip was to try any German leadership still living, that was directly involved with war crimes, at Nuremberg. Anyone who was technologically valuable to the United States and whose involvement with atrocities was 'indirect' (although, the definition of this was often conveniently vague) could qualify for Paperclip. A paperclip would be attached to his files to indicate that he was cleared for 'export' to the United States as a valuable and necessary technician for the future of that country - a 'trifle' hypocritical perhaps?

After the success of the Apollo Program and the settling down of American pride, when going back to the Moon was no longer a national priority, Americans began to inspect the pasts of many of these German ex-patriots and a great deal of criticism and cynicism began to emerge in the popular press. At least one of them was 'invited' to return home to Germany or face trial (for WW II crimes) in the U.S. - more than 20 years after arriving on American shores! (Some readers may wish to pursue this topic in more detail and good books to consult are as follows: "Operation Paperclip" by Annie Jacobsen; "Von Braun" and "The Rocket and the Reich" by Michael J. Neufeld; "The Dark Side of the Moon" by Wayne Biddle; and as a follow-on to these, "Area 51", also by Annie Jacobsen.)

The downside to Paperclip was that it was hypocritical, secretive and a delusion. People who had been involved with the death and suffering of others were allowed to become American citizens. Much of it was covered up from the general population for decades - until after Apollo. A whole generation of young people and the adult American public were never told the real truth and were led to believe that

(Continued on [page 14](#))

Operation Paperclip and the Realities of the American Space Program (continued)

these 'ex-patriots' were anti-Nazi (which most were not) and had to 'suffer' under Hitler before being able to emigrate to the U.S.

Many beautiful books, television programs and motion pictures about space travel to far distant places in the Solar System, speculations about interstellar travel and the launching of future robotic probes were published by them to 'cover up' the past as well as to promote the exploration and discovery of the cosmic realm. Their original thrust had been about human endeavours in the cosmos. However, the real difficulties, both physical and monetary, led many people away from human activities in the cosmos beyond low-Earth orbit, to robotic missions and new technology telescopes, which have expanded our knowledge of the universe a thousand fold! It was the knowledge and leadership capabilities of these people (...this, especially on the part of Wernher von Braun. Yet it would be doubtful today if anyone under 40 would even know that this man existed and the influence he had on astrophysical and space research.) that made these advances in space exploration and astrophysics possible.

So, where does this leave us in a 21st century world? The research, work and imagination of many former German rocket 'scientists' has made our present understanding of the universe a reality. However, the luxury of our vast, modern astrophysical knowledge was made possible by the torture and death of many thousands of individuals who were forced to work under horrific conditions, building the ballistic missile forerunners of modern space vehicles, both manned and robotic. The point is, that research in any field of pure science may not always come from a totally value-free environment. It's background just might not necessarily be ethical. It may have evolved from some very dark circumstances; and modern space research is just one of those fields.

(just my '2 cents worth')



Harvey Garden's New Hand-Crafted Telescope

This is HAA member Harvey Garden's recently completed home-made Dobsonian telescope. Harvey modularized it as three separate parts, the swivel base, the bottom section, which contains the primary mirror, and the tube section, which houses the secondary mirror, focuser & eyepiece tube.





Unexplainable Flapping Objects (UFOs) by Kevin Salwach

I would like to share with you an interesting personal experience - or rather string of experiences - I had while observing the night sky from my driveway in southern Hamilton. At some point in the summer of 2010 (before August 5th - the first entry in my first logbook) I was out with my telescope on the driveway when I looked up towards zenith and to my amazement - and confusion - saw a triangular formation of 3 bright "orbs" of light moving incredibly fast towards the northern sky. I had already been observing the night sky for 2 years, so I did not jump to wacky conclusions - my first thought was that it was a NOSS triplet or some other military or environmental satellite grouping. However I quickly realized the lights were moving too fast and were larger in size and appearance than a satellite, and were rotating around each other and switching positions very smoothly and swiftly. My next thought was a meteorite breakup - but there was no trail, no change in luminosity and these objects persisted at a constant brightness for about 20-22 seconds. I called my mother outside and she too saw the objects that defied explanation at the time. After 20 seconds the objects, still moving about each other, disappeared behind a tree. I racked my brain for months afterwards and could not come up with a plausible explanation. About 8 months later, while walking into the Hamilton Spectator Building to attend an HAA meeting, I witnessed the same event briefly in the low eastern sky, and still had no explanation. My answer finally came 2 months later, in June 2011. While outside on my driveway observing, I again looked up to notice strange objects moving down the eastern sky - 5 of them this time. Luckily, on hand I had with me a pair of binoculars. I quickly shot them up at the objects and to my amazement, and embarrassment, I discovered the strange UFOs which had been following me in the night sky - the same ones I had told numerous friends and fellow astronomers about - were in fact - wait for it - Canada Geese.

I live behind Mohawk College, itself a source of light pollution, only about 2.5 kilometres south of downtown Hamilton. It would appear that stray light from the abundance of parking lot fixtures in my neighbourhood as well as the Hamilton light pollution dome shot upwards into the sky, and illuminated the geese from below. This, coupled with the height at which they were flying - I estimate a rather high altitude of 400 or 500 feet based on their size, gave the geese a strange, almost otherworldly glow and made it very difficult to see any detail with the unaided eye. I could not hear them flying, and because they were moving about each other in formation, flapping their wings and flying at fair speed they gave that eerie appearance which had haunted me for almost a year.

Since then, I have seen Canada geese on numerous occasions, yet each time when I first witness them, that unique feeling you get when you witness something weird or unexplainable pops up in my gut. However, once I grab my binoculars, I laugh at myself and continue on observing. So, next time you witness a strange triangular shaped alien craft waiting to beam you up for probing, grab a pair of binoculars, because I would wager that it's probably just some Canada Geese happily on their way - you can thank light pollution for this one!





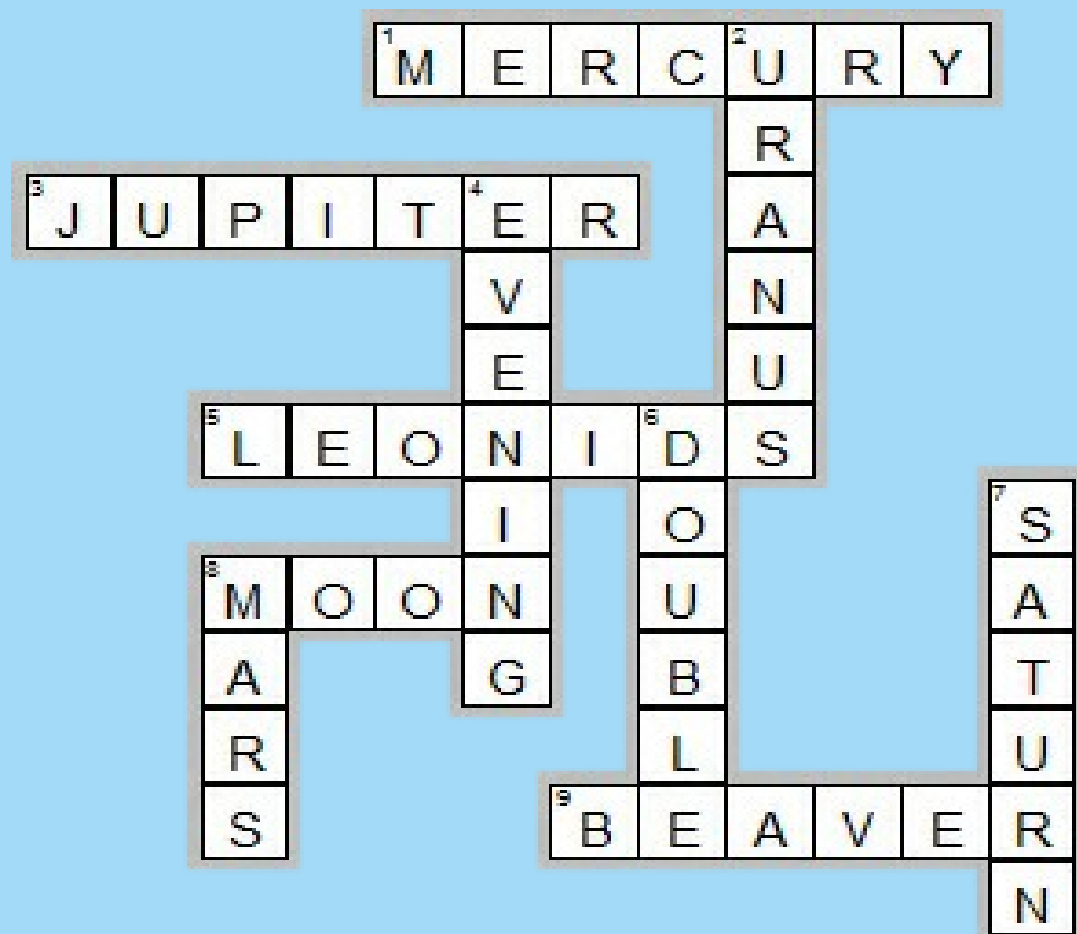
Space Place in a Snap: Heliophysics

This month, the Space Place is doing something a little bit different for our monthly column—providing you with a beautifully informative and educational poster about the mechanics of our sun ([see poster on the next page](#)). This poster accompanies our latest "Space Place in a Snap" animation. This "Snap" series is a set of narrated videos and posters that, together, explain basic scientific concepts in a dynamic new medium.

The sun is really, really hot. Every 1.5 millionths of a second, it releases more energy than all humans consume in an entire year. But where does all that energy come from? Space Place's animated series "Space Place in a Snap" tackles this important question in its latest episode. Check it out at:

<http://spaceplace.nasa.gov/sun-heat>.

Answers to Astronomy Crossword on Page 10



Where does the sun's energy come from?

Every 1.5 millionths of a second, the sun releases more energy than all humans consume in an entire year. Its heat influences the environments of all the planets, dwarf planets, moons, asteroids, and comets in our solar system.

National Aeronautics and
Space Administration



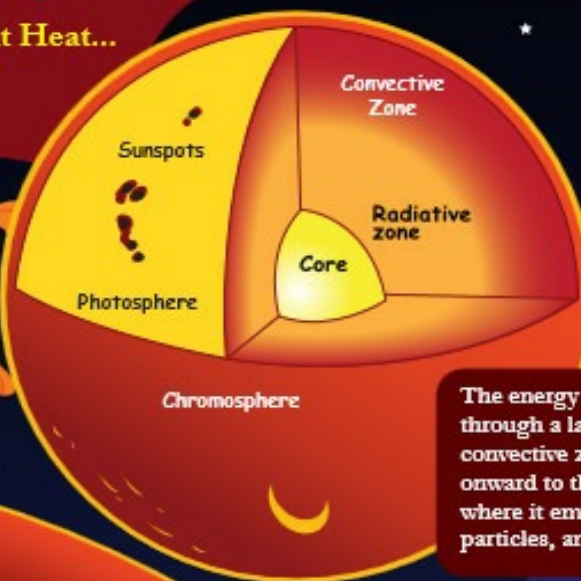
And that light travels far out into the cosmos—just one star among billions and billions.

Create a 'solar wind' that pushes against the fabric of interstellar space billions of miles away.

Allows gases and liquids to exist on many planets and moons, and causes icy comets to form fiery halos.

Powers the chemical reactions that make life possible on Earth.

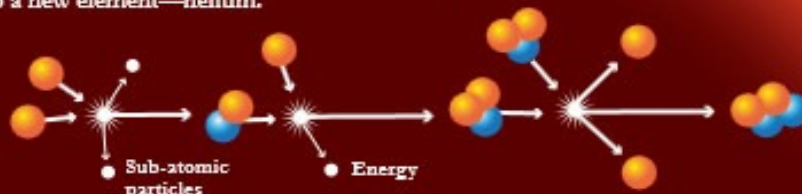
That Heat...



The energy travels outward through a large area called the convective zone. Then it travels onward to the photosphere, where it emits heat, charged particles, and light.

How does a big ball of hydrogen create all that heat? The short answer is that it is big. If it were smaller, it would be just be a sphere of hydrogen, like Jupiter. But the sun is much bigger than Jupiter. It would take 433,333 Jupiters to fill it up!

That's a lot of hydrogen. That means it's held together by a whole lot of gravity. And THAT means there is a whole lot of pressure inside of it. There is so much pressure that the hydrogen atoms collide with enough force that they literally meld into a new element—helium.



Nuclear Fusion

This process—called nuclear fusion—releases energy while creating a chain reaction that allows it to occur over and over and over again. That energy builds up. It gets as hot as 15 million degrees Fahrenheit in the sun's core.

Space Place
in a Snap!



2013-2014 Financial Statements by Steve Germann

Your club is financially strong. We have a healthy bank account and a cash flow which is reasonably balanced.

I thank all our members who contribute to the club through membership dues.

Your club is a registered charity, and your membership and other donations are tax-deductible.

Here's what we spend them on... Securing a meeting place, insuring our members and the club against mishap, (which is necessary for our public outreach and hall rentals), maintaining our equipment in good order, and promoting the science and fun of astronomy, both near and far.

Your dues also help pay for astronomy outreach through brochures and other promotional materials including the HAA lapel pins, and planispheres.

Other items in the report tend to balance, such as 50/50 vs speaker, and meeting expenses & Calendar net profit vs miscellaneous expenses and donations.

Our bank account cushions our budget against minor variations in cash flow, such as the net cost of the banquet.

As you know our 20th anniversary banquet featured Bob McDonald as our guest speaker, and we paid for his flight to be with us. (and his banquet ticket and hotel) For sure it was worth it. So that's the main reason why the banquet showed a small loss. Fortunately, another group which had booked him to attend the next day reimbursed some of the airfare so our club got the benefit of that reimbursement.

We make donations to a few local organizations which support our clubs goals. Binbrook Conservation Area (through the Niagara Peninsula Conservation Authority), the excellent Clear Sky Chart which we feature on our website, and the International Dark Sky Association, which we should all support. Their promotion of safe lighting fixtures that neither waste light into the sky nor cause unsafe glare on the ground, are something we should all applaud.

We also support the Bay Area Science and Engineering Fair with the James Winger Award for Science and Astronomy. That's something we can all be proud of too.

We have some loaner scopes and other stuff, including the club laptop, which we depreciate on a declining balance method: 20 percent of the remaining balance is considered depreciation. It's just acknowledging that things eventually wear out and need to be replaced. This started with the club projector, used at all our meetings until the Spectator had a projector installed in the meeting place.

We also use the projector for other club events such as to show information at the Astronomy 101 course.

In fact, I would say the depreciation figures are conservative, and our equipment is worth more to club than the book value.

We set aside some money to pay for computer repairs and upgrades in due course. This is part of the depreciation line item, and shows up in the actual repairs as well.

Our calendar raises money for the club. The money spent on calendars supports all our clubs activities.

I think I speak for all of the club, when I thank those who bring non-perishable food items to our meetings. We have collected tons of food since this program was begun a few years ago.

Going forward, your executive will soon be planning and making the budget for the new year. I am sure it will continue to respect the frugal and charitable ways the money has been managed.

REVENUE

HAA 2013 Revenue (Net)	31-Oct 2014	31-Oct 2013
Membership	\$2,955.00	\$3,170.00
Calendars	\$1,162.41	\$1,306.25
Cash Donations	\$25.55	\$285.25

(Continued on [page 19](#))

2013-2014 Financial Statements (continued)

HAA 2013 Revenue (Net)(cnt'd)	31-Oct 2014	31-Oct 2013
50/50 Draw	\$486.00	\$461.50
Planetarium Trip	\$0.00	\$0.00
Donations in Kind	\$0.00	\$0.00
Intangible Donations	\$0.00	\$100.00
Banquet	-\$685.51	
Net Revenue	\$3,943.45	\$5,223.00
Food Bank Estimate	\$2,000.00	\$2,000.00

Depreciation Table	31-Oct 2014	31-Oct 2013
Opening Balance	\$3,704.01	\$2,699.65
Depreciation Full Year	\$740.80	\$539.93
Donated Equipment	\$0.00	\$900.00
Additions	\$60.00	\$890.88
Sales	\$70.00	\$75.00
Net	-\$10.00	\$1,715.88
Depreciation Part Year	-\$1.00	\$171.59

Total Depreciation	\$739.80	\$711.52
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Closing Balance	\$2,954.21	\$3,704.01
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CASH FLOW

Income	31-Oct 2014	31-Oct 2013
Memberships	\$2,955.00	\$3,170.00
HAA Calendars	\$3,285.00	\$3,425.00
RASC Handbooks	\$0.00	\$0.00
Clothing Sales	\$0.00	\$0.00
50/50	\$486.00	\$461.50
Coffee Fund	\$0.00	\$0.00
Advertising Revenue	\$0.00	\$0.00
Cash Donations	\$25.55	\$285.25
Messier Marathon	\$0.00	\$0.00
Banquet Revenue	\$3,285.00	
Miscellaneous	\$0.00	\$0.00
Prepaid Postage	\$0.00	\$0.00
Total Income	\$10,036.55	\$7,341.75

(Continued on [page 20](#))

2013-2014 Financial Statements (continued)

Expenses	31-Oct 2014	31-Oct 2013	
Insurance	\$810.00	\$911.52	
EH Newsletter	\$0.00	\$0.00	
Brochures/Promotion	\$410.43	\$452.00	
HAA Calendars	\$2,118.75	\$2,122.59	
RASC Handbooks	\$0.00	\$0.00	
Clothing Sales	\$0.00	\$0.00	
Donations Outgoing	\$405.00	\$403.00	
Depreciation Expense	\$739.80	\$711.52	
PO Box Rental	\$169.50	\$158.20	
Speakers Allowance	\$0.00	\$122.69	
Office Supplies	\$5.28	\$0.00	
Postage	\$7.12	\$0.00	
Bank Charges	\$0.00	\$0.00	
Banquet Costs	\$3,970.51		
Kids Outreach Kit	\$0.00	\$0.00	
Hall Rental	\$941.67	\$1,130.00	**
Prepaid Hall Rental	\$1,130.00	\$941.67	*
Miscellaneous	\$409.58	\$180.00	
Equipment Repairs	\$111.25	\$225.98	
 Total Expenses	 \$10,093.89	 \$6,417.50	
 Surplus/Deficit	 -\$57.34	 \$924.25	

* not counted in total expenses for the year

** We got a discount on rental this year due to a cancellation

<u>ASSETS</u>	31-Oct 2014	31-Oct 2013
Bank	\$5,488.04	\$4,866.12
Cash	\$0.00	\$0.00
Inventory	\$0.00	\$0.00
Prepaid PO Box Rental	\$169.50	\$169.50
Prepaid Mailing Expense	\$0.00	\$0.00
Prepaid Liability Insurance	\$0.00	\$0.00
Prepaid Hall Rental	\$1,130.00	\$941.67

(Continued on [page 21](#))

2013-2014 Financial Statements (continued)

Accounts Receivable	\$0.00	\$0.00
Prepaid Banquet Expenses	\$0.00	\$4,067.79
Prepaid Calendars	\$2,118.75	\$2,118.75
Total Current Assets	\$8,906.29	\$12,163.83

Fixed Assets

Equipment	\$2,954.21	\$3,704.01
Total Fixed Assets	\$2,954.21	\$3,704.01
Total Assets	\$11,860.50	\$15,867.84

LIABILITIES & EQUITY

Liabilities	31-Oct 2014	31-Oct 2013
Deferred Membership Revenue	\$1,080.00	\$1,745.00
Banquet Tickets sold	\$0.00	\$3,285.00
Accounts Payable	\$0.00	\$0.00
Total Liabilities	\$1,080.00	\$5,030.00
Equity		
Opening Balance	\$10,837.84	\$9,013.59
Donated Equipment (Book Value)	\$0.00	\$900.00
Current Year	-\$57.34	\$924.25
Closing Balance	\$10,780.49	\$10,837.84
Total Liabilities and Equity	\$11,860.49	\$15,867.84



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:
 - Nov 5: **Introductory Astronomy for Kids**
(1st Wed of every month)
 - Nov 12: **The Astronomy of Shakespeare**
 - Nov 19: **Galileo's Astronomy**
 - Nov 26: **Lumos! Astronomy for Muggles**
- For more details, visit
www.physics.mcmaster.ca/planetarium



Observing In November

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

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UPCOMING EVENTS

November 7, 2014 - 7:30 pm – *Fall Telescope Clinic* at the Hamilton Spectator Auditorium. Many types of telescopes will be on display, and experts will be on hand to answer questions. You can also bring your own telescope and get tips and pointers about its use. Whether you have a telescope, are thinking of getting one, looking for advice on a unique Christmas gift, or just want to learn more about exploring our amazing universe.

November 14, 2014 - 7:30 pm – *HAA Meeting* at the Hamilton Spectator Auditorium. Our main speaker will be **Peter Sutherland**, a theoretical astrophysicist who spent 37 years at McMaster University. His talk will be “Testing Einstein’s General Theory of Relativity (Gravity)”.

2014-2015 Council

Chair	Jim Wamsley
Second Chair	Joe McArdle
Treasurer	Steve Germann
Webmaster	David Tym
Membership Director	Leslie Webb
Observing Director	Matthew Mannering
Education Director	John Gauvreau
Event Horizon Editor	Bob Christmas
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Secretary	Mike Jefferson
Publicity Director	Mario Carr
Councillors at Large	To be confirmed by the new council

Check out the newly-redesigned
Hamilton Amateur Astronomers
Website

www.amateurastronomy.org

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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

**HAMILTON
AMATEUR
ASTRONOMERS**