

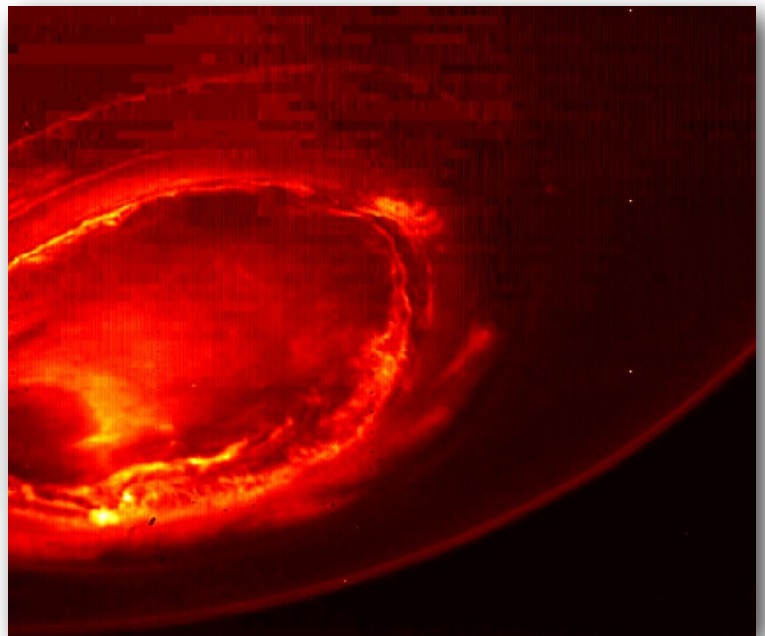


Astronomy News for Bluewater Stargazers
Vol 10 No.10 October 2016

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A fast moving stream of solar wind in the first days of September sparked auroras all over and Bruce and Grey county viewers were treated to nice displays. This image was shot by Julian Delf from his "lookout" over Owen Sound. Julian quit before a resurgence in the display got started around 3 am. See pg 11 for a nice image taken by Brett T. Julian's image taken with his Sony SLT-A77V digital camera was 15 s at f/2.8 ISO 1600 24 mm focal length. This was one frame of a longer video that Julian put together showing the eerie greenish glow behind clouds in front.



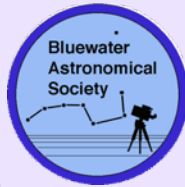
This infrared image gives an unprecedented view of the southern aurora of Jupiter, as captured by NASA's Juno spacecraft on August 27, 2016. Juno's unique polar orbit provides the first opportunity to observe this region of the gas-giant planet in detail.

Juno's Jovian Infrared Auroral Mapper (JIRAM) camera acquired the view at wavelengths from 3.3 to 3.6 microns -- light emitted by excited hydrogen ions in the polar regions. The view is a mosaic of three images taken just minutes apart from each other, about four hours after the perijove pass while the spacecraft was moving away from Jupiter.

More information about Juno is online at <http://www.nasa.gov/juno> and <http://missionjuno.swri.edu>

IMAGE CREDIT: NASA/JPL-Caltech/SwRI/ASI/INAF/JIRAM

Disclaimer: S G N reports on the activities of the Bluewater Astronomical Society (formerly Bruce County Astronomical Society) but any opinions presented herein are not necessarily endorsed by BAS. See the BAS website at www.bluewaterastronomy.com for up-to-date details relating to BAS events. The BAS weblog is back, with articles of immediate interest written by various BAS members. SGN is produced and edited by John Hlynialuk. I am solely responsible for its content. Your original articles, images, opinions, comments, observing reports, etc., are welcome. I reserve the right to edit for brevity or clarity. Errors or omissions are entirely mine although I strive for accuracy in star events, etc. I will not publish your emails or other materials without your specific permission to do so. No part of this publication (including images) shall be reproduced in any form whatsoever without the editor's consent. However, the Sky Calendar and Feature Constellation pages are free to copy. Feel free to forward this issue in its entirety to friends. Email comments and/or submissions to stargazerjohn@rogers.com

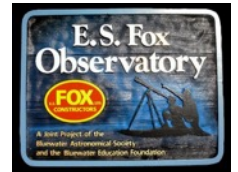


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The Bluewater Education Foundation



ES Fox Observatory is 5 years old!



Catherine O'Hagen accepts a commemorative gift from BAS at the 5th anniversary of the ES Fox Observatory Sep 17, 2016. The image of the aurora over the ES Fox Observatory was taken just 8 months (Apr 25, 2012) after the ES Fox official opening in September, 2011. Left to right: John Hlynialuk, BAS president, Brett Tatton, BAS past-past president, Catherine O'Hagen, ES Fox representative, Cheryl Dawson, BAS treasurer, Julian Delf, BAS member and Zoe Kessler, present as a reporter as well as BAS v-p.

The group sharing the celebratory cake included those above as well as a representative of the Bluewater Education Foundation, Ron Mottram, Deb Diebel site manager BOEC and Bill Walker, MPP. All the folks above (except Julian and Zoe) were present at the opening 5 years earlier! **Photo above: Zoë Kessler/Wiarton Echo**

Image right by Doug C. in Sep 2011 shows dignitaries at the official opening. The donation from Spencer Fox, (3rd from R.), put fund-raising over the top. Ray Fenton (at microphone) and Ron Mottram, (R. of Ray), worked with the BAS building committee Brett Tatton (L. behind Donna Stewart), John H., and other BAS folks to make the Fox a reality.



Astronomy Events: Oct 2016

Times in DST with 24-h clock unless indicated otherwise

Oct 3	Mon	12:30	Venus 5.6° S of Moon
4	Tue	06:02	Moon at Apogee: 406 100 km
6	Thu	03:04	Saturn 4.2° S of Moon
8	Sat	23:33	FQ
15	Sat	05:15	Uranus at Opposition
		23:23	FM
16	Sun	18:36	Moon at Perigee: 357 900 km
19	Wed	01:18	Aldebaran 0.3° S of Moon Occ'n 1:48 am to 2:31 am DST
20	Thu	23:45	Orionid Meteor Shower: ZHR = 20
22	Sat	14:14	LQ
24	Mon	23:01	Regulus 1.7° N of Moon
26	Wed	05:56	Venus 3.1° N of Antares
27	Thu		Venus between Antares and Saturn
28	Fri	04:33	Jupiter 1.6° S of Moon
29	Sat	20:49	Saturn 3° N of Venus
30	Sun	12:38	NM
31	Mon	14:29	Moon at Apogee: 406 700 km

BAS Club Events: Oct 2016

Oct 1	Sat	Fox Dark of Moon viewing (BAS members/guests -public welcome)
5	Wed	Regular Meeting Tom Thomson Art Gallery Women in Astronomy: Zoe Kessler Public Welcome
15	Sat	Uranus at Opposition, FM
19	Wed	Aldebaran 0.3° S of Moon Occ'n 1:48 am to 2:31 am DST
20	Thu	Orionid Meteor Shower: ZHR = 20
29	Sat	Fox Dark of Moon viewing (BAS members/guests -public welcome)

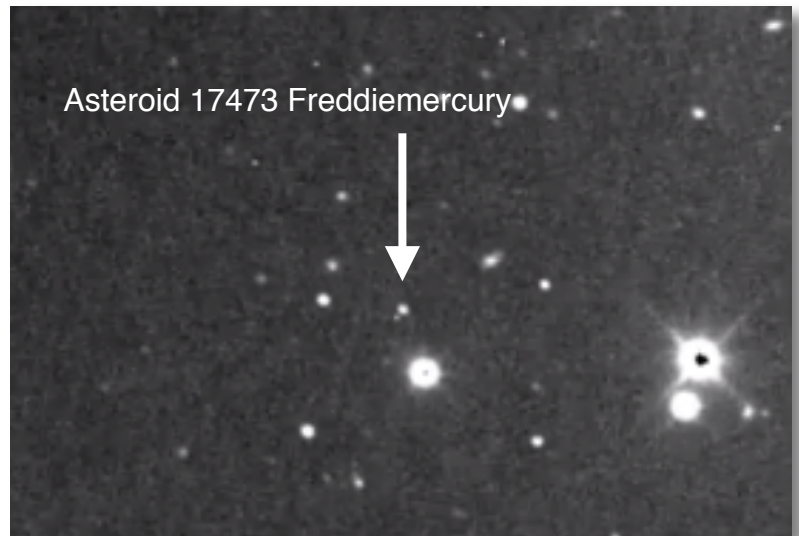
Mercury now orbits between Mars and Jupiter

By Hamish Johnston physicsworld.com

He may have taken the name of a planet, but the late rock star Freddie Mercury now has an asteroid named after him. 17473 Freddiemercury, is about 3.4 km in diameter and resides in the main asteroid belt between Mars and Jupiter. The designation was made by the [Minor Planet Center](#) of the International Astronomical Union and announced on Sunday by Mercury's former Queen band mate and astrophysicist [Brian May](#). In the video (link below), May gives some background to the naming, which was done to celebrate the 70th anniversary of Mercury's birth. And if you watch to the end, you will see a clip of 17473 Freddiemercury streaking across the sky with Queen rocking in the background.

Video here:

<https://www.youtube.com/watch?v=o2vo6VR51eA>



West Grey Council Declares West Grey Dark Sky Friendly

The efforts of a small keen group of "light-minded" residents of West Grey have payed off. Marian Ratcliffe and her team, have done a lot of research and taken their request for a Dark Sky Community to West Grey Council. West Grey is an amalgamated municipality, consisting of the former Townships of Bentinck,

Glenelg and Normanby, the former Village of Neustadt, and the former Town of Durham. It is the largest municipality in the County of Grey, in terms of geographic area, and has a population of approximately 12,000. Notably, West Grey includes River Place Park where Starfest is held every year.

The efforts of Marian and her group led to a meeting in May 2016, at which a Dark Sky Community declaration was adopted. Well done, and congratulations from BAS exec and members! A copy of the document is reproduced below.

Dark Sky Friendly Proclamation

WHEREAS, outdoor lighting is needed for a variety of purposes to the benefit of our community including: enabling people to undertake work or recreational activities at night; facilitating the safety and security of persons and property; emphasizing features of architectural or historical significance; and advertising and promoting locations, products and services or calling attention to commercial premises by way of area lighting or signs; and

WHEREAS, West Grey is a unique community in North America where star filled skies add to the quality of life, good health, safety and economic well-being of residents as well as tourists and visitors; and

WHEREAS, West Grey and Grey County are increasingly becoming popular four season "Natural Retreat Destinations" for tourism and the Bruce Peninsula is already designated by UNESCO as a "World Biosphere Reserve" and protecting and encouraging the appreciation of star filled skies is in keeping with the spirit of our "Nestled in Nature" initiatives; and

WHEREAS, efficient and effective outdoor lighting practices will preserve, protect and enhance our community's use and enjoyment of the natural environment by: eliminating hazardous and annoying glare from poorly designed light fixtures; reducing stray light through shielding and directing light fixtures to prevent light from unnecessarily falling outside the boundaries of the property on which a light fixture is installed; and

WHEREAS, dark sky compliant outdoor lighting practices will conserve energy and resources; and

WHEREAS, proclaiming the Municipality of West Grey a "Dark Sky Friendly Community" will protect our night-time environment and promote our community identity; and

WHEREAS, the Municipality is prepared to lead by example and is committed to improving where possible by retrofitting or replacement, municipal lighting to ensure safety, security, effective and efficient use of energy; and

WHEREAS, the Municipality, through the review of future exterior lighting within Site Plans and Subdivision Agreements and by the education of property owners to the benefits, shall encourage the use of dark sky compliant practices for exterior lighting.

NOW THEREFORE, BE IT RESOLVED THAT the Corporation of the Municipality of West Grey hereby proclaims this Municipality as being a "Dark Sky Friendly Community"; and

AND FURTHER THAT West Grey formally request that the County of Grey include a dark sky friendly policy within their Official Plan to ensure compliance by all future developments and also encourage all other Grey County municipalities to consider adopting similar proclamations; and

THAT this proclamation be forwarded to the Provincial and Federal Governments for their information and future support and recognition of this position.

Juno sees Jupiter Close-up

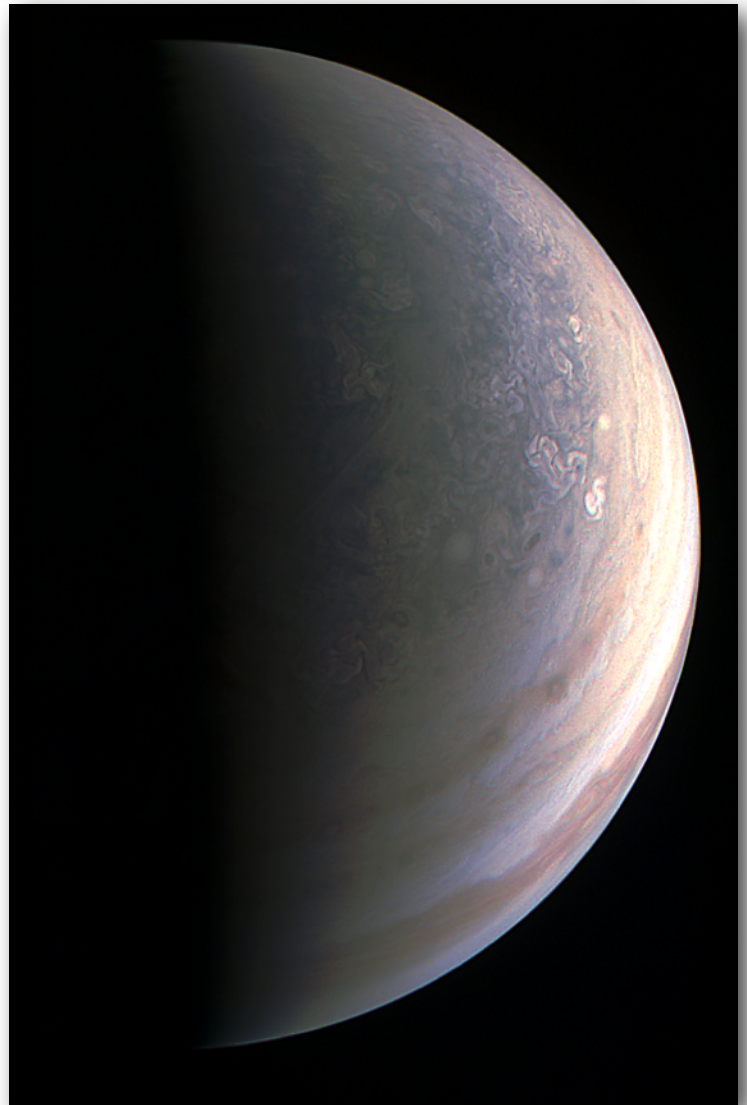
As NASA's Juno spacecraft closed in on Jupiter for its Aug. 27, 2016 pass, its view grew sharper and fine details in the north polar region became increasingly visible.

The JunoCam instrument obtained this view on August 27, about two hours before closest approach, when the spacecraft was 120,000 miles (195,000 kilometers) away from the giant planet (i.e., for Jupiter's center).

Unlike the equatorial region's familiar structure of belts and zones, the poles are mottled with rotating storms of various sizes, similar to giant versions of terrestrial hurricanes. Jupiter's poles have not been seen from this perspective since the Pioneer 11 spacecraft flew by the planet in 1974.

More information about Juno is online at <http://www.nasa.gov/juno> and <http://missionjuno.swri.edu>.

Image credit: NASA/JPL-Caltech/SwRI/MSSS



Hubble Takes Sharpest Image of Disintegrating Comet

This Hubble Space Telescope image reveals the ancient Comet 332P/Ikeya-Murakami disintegrating as it approaches the sun.



The comet debris consists of a cluster of building-size chunks near the center of the image. They form a trail larger than the width of the continental U.S. The fragments are drifting away from the comet at a leisurely pace of just a few miles an hour. The main nucleus of Comet 332P is the bright object at lower left. It measures 1,600 feet across, about the length of five football fields. Credit: NASA, ESA, and D. Jewitt (UCLA)

PHILAE FOUND! 05 Sep 2016, Press release ESA

Less than a month before the end of the mission, Rosetta's high-resolution camera has revealed the Philae lander wedged into a dark crack on Comet 67P/Churyumov-Gerasimenko.

The images were taken on 2 September by the OSIRIS narrow-angle camera as the orbiter came within 2.7 km of the surface and clearly show the main body of the lander, along with two of its three legs. Philae's orientation makes it clear why establishing communications was so difficult following its landing on 12 November 2014.

"With only a month left of the Rosetta mission, we are so happy to have finally imaged Philae, and to see it in such amazing detail," says Cecilia Tubiana of the OSIRIS camera team, the first person to see the images when they were downlinked from Rosetta yesterday.

"After months of work, with the focus and the evidence pointing more and more to this lander candidate, I'm very excited and thrilled that we finally have this all-important picture of Philae sitting in Abydos," says ESA's Laurence O'Rourke, who has been coordinating the search efforts over the last months at ESA, with the OSIRIS and SONC/CNES teams.

Philae was last seen when it first touched down at Agilkia, bounced and then flew for another two hours before ending up at a location later named Abydos, on the comet's smaller lobe.

After three days, Philae's primary battery was exhausted and the lander went into hibernation, only to wake up again and communicate briefly with Rosetta in June and July 2015 as the comet came closer to the Sun and more power was available.

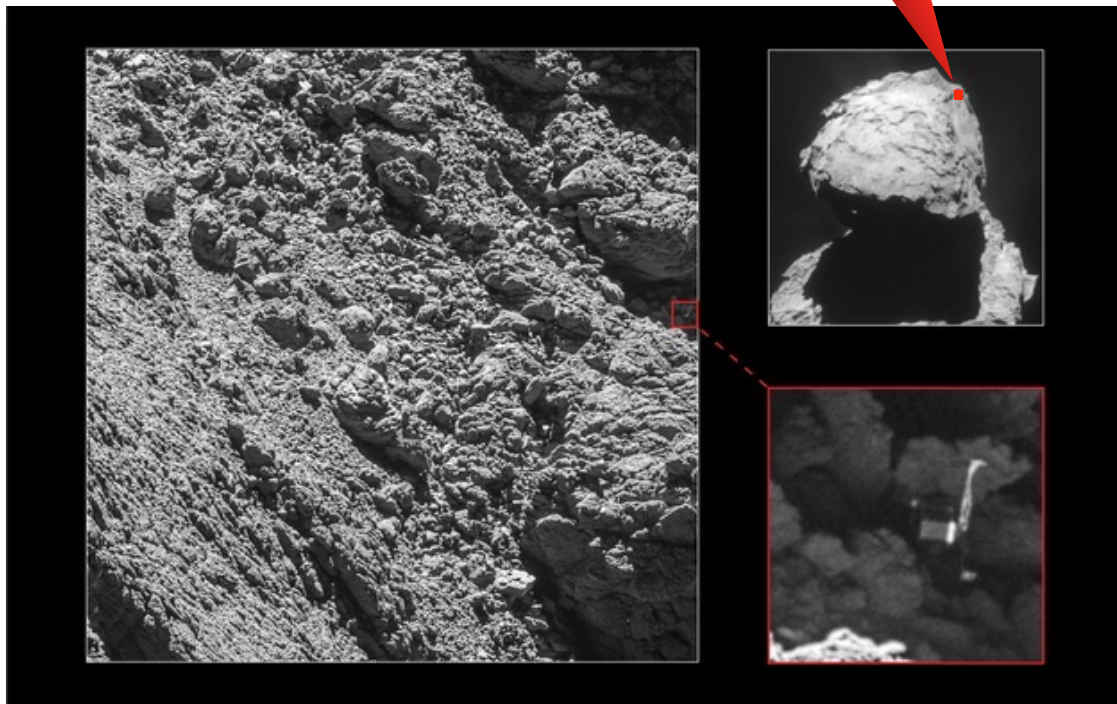
However, until today, the precise location was not known. Radio ranging data tied its location down to an area spanning a few tens of metres, but a number of potential candidate objects identified in relatively low-resolution images taken from larger distances could not be analysed in detail until recently.

At 2.7 km, the resolution of the OSIRIS narrow-angle camera is about 5 cm/pixel, sufficient to reveal characteristic features of Philae's 1 m-sized body and its legs, as seen in these definitive pictures.

"This remarkable discovery comes at the end of a long, painstaking search," says Patrick Martin, ESA's Rosetta Mission Manager. *"We were beginning to think that Philae would remain lost forever. It is incredible we have captured this at the final hour."*

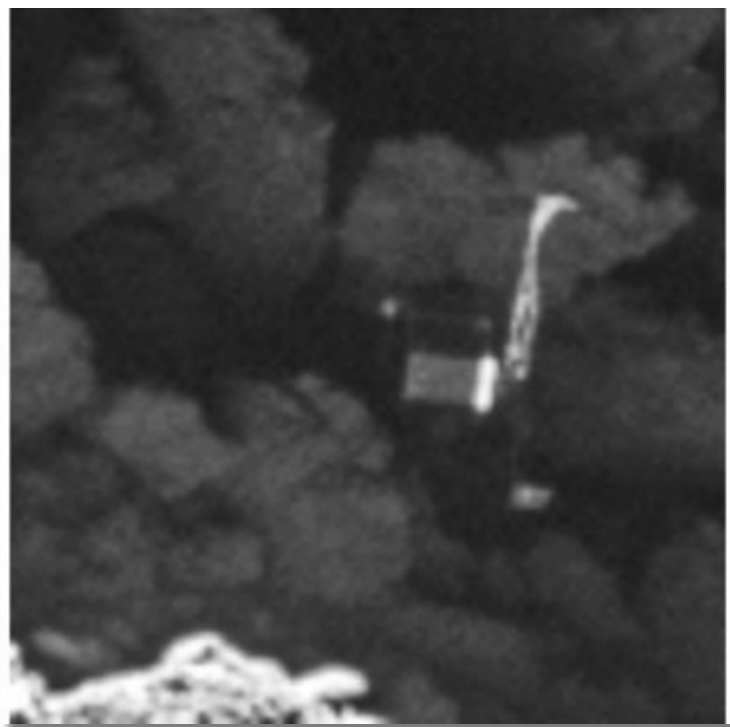
"This wonderful news means that we now have the missing 'ground-truth' information needed to put Philae's three days of science into proper context, now that we know where that ground actually is!" says Matt Taylor, ESA's Rosetta project scientist.

Philae is HERE!



"Now that the lander search is finished we feel ready for Rosetta's landing, and look forward to capturing even closer images of Rosetta's touchdown site," adds Holger Sierks, principal investigator of the OSIRIS camera.

The discovery comes less than a month before Rosetta descends to the comet's surface. On 30 September, the orbiter will be sent on a final one-way mission to investigate the comet from close up, including the open pits in the Ma'at region, where it is hoped that critical observations will help to reveal secrets of the body's interior structure.



Dobsonian 8" Student-Built Telescope

Last November I was contacted by an OSCVI student, Laura Metcalfe, who needed some advice on telescopes. She had decided to build a dobsonian reflector from scratch as a physics class project and wondered about design issues like apertures, focal ratios, and sources of materials. After a bit of discussion, she decided on an 8-inch f/6 mirror that she would purchase along with other components like a focuser that she could not fabricate herself. The rest of the components she was prepared to make herself from plans she had obtained from the internet -the classic sonotube/plywood John Dobson design.

I was able to supply some advice and even a few mechanical components (from my collection of odds and ends) and she was just about to order a mirror from K-W Telescopes when a general email for help to BAS members paid off. Paul Zelichowski had an 8-inch telescope that he was willing to donate for parts and Laura was able to adapt the primary and secondary mirrors as well as the focuser to her design. The mirror was an f/4.5 so that made the tube even shorter and more manageable. It saved a lot of time and expense and she was able to complete the telescope (minus a paint job) in time to get an excellent grade on her physics project. Laura's dad helped out with acquiring the wood-working tools and materials and even contributed a few excellent design ideas. An interesting connection here is that Laura's dad was part of the construction crew that worked on the ES Fox Observatory in 2011!

Some health issues delayed the finishing touches on the telescope (a suitable paint job) until just recently and first light occurred on Sep 18 (coincidentally one day after the ES Fox 5th Anniversary celebration). Sep 18 was the night following the full moon. The name she has chosen for her new telescope is "Luna" so I am assuming it was probably the Moon that Laura looked at first. From all reports, the view was terrific!

The pictures she sent show the finished telescope and you may notice that the focuser is placed well back from the top end of the tube. The short focal length of the mirror dictates where the focuser is located so the extension acts as a dew shield for the optics, another nice feature of Laura's design. Congratulations Laura! Job well done!

The traditional John Dobson design of telescope was used by Laura Metcalfe for her telescope construction project. First light was Sep 18 and according to Laura the views of the Moon were wonderful. She has named her instrument "Luna" but an 8-inch is a very capable instrument to show other objects like planets, stars and distant galaxies. She has these on her viewing agenda as well.



Laura Metcalfe, OSCVI student decided to take on the job of building a telescope from scratch as a school project. Images here shows the final product. She researched telescope designs and settled on a standard Dobsonian configuration. All images supplied by Laura.



The focuser looks out of place but it is correctly located for the short focal length of the mirror Laura received as a donation from BAS member Paul Z. The mirror is an f/4.5 eight-inch with focal length of only 36 inches, This allows for a longer tube that acts as an integral dew shield! Neat.



Chantry Island has been photographed numerous times from shore. Brett T. has many spectacular sunset images of the lighthouse from the Southampton side of Lake Huron and I have a few myself as well. But I have not seen any images of star trails or the Milky Way with the lighthouse in the foreground. There have been no images to my knowledge from the island itself with stars in the background. This was the project that I undertook Aug 31 and Sep 1 this year.

It required an overnight stay on the island and even though it is a federal bird sanctuary and overnight guests are not usually allowed, the Marine Heritage Society in Southampton that oversees visits to the island does allow scouting groups to spend the night periodically. It did not take a lot of convincing to get permission to be left on the island on the last trip over and picked up by the first tour boat in the morning. The trip over was a rather interesting but short boat ride to the Chantry dock with waves a metre or so and brisk winds. Captain Willetts assured me that the Peerless was a worthy craft and could handle even rougher water. In fact, he proudly added that they are the ones that go out to rescue larger vessels that are in trouble.

I have to admit that I was treated like royalty. I did not bring a lot of gear but a somewhat heavy item was the portable battery for my dew-heaters. A camera bag, backpack with personal items and a camp chair to bunk out on completed the list of luggage. The Captain and crew Mark were happy to lug the stuff on shore for me and gave me a quick tour of the area around the lighthouse. I had sent Captain Willetts a Google map showing where I would likely set up and he showed me the spots I had picked out. And to my surprise, they had unlocked the lighthouse keeper's

Image 1: Cygnus Milky Way above Chantry Is. Lighthouse
Canon 60Da, 10 mm f/2.8 ISO 2500, 20 s exp. Sep 1, 2016 1:13 am

cottage for me and I had access to a nice place to rest when needed. Also made available was a "luxurious" 3-hole outdoor bathroom. My only trip to the facility is documented clearly in the image on the top of page 9. [It was dark on the island and I needed my red light to see my way to the "facility"]. The night was cool but the temperature was very comfortable and a steady breeze blew all night long and well into the morning. That was a bonus because it prevented any dew from forming on my lenses and I did not need to use the dew heater I had brought.

I set up at my first location on the cobble shore south of the lighthouse and prepared to take a series of images looking south to the MW with Mars and Saturn (Image 2). I was right at the waters edge looking due south and the wind blew up waves that were lapping against one of the tripod legs. The images to the south turned out to be a revelation with respect to light pollution over Port Elgin and the area farther south towards the nuclear facility. The bright lights clearly delineated passing clouds over Port Elgin and the red lights of the wind turbines cast enough light upward to tint clouds a faint rosy hue (sickly yellow actually). Clearly, upward light trespass is still an issue in Port Elgin. Lights from Bruce Nuclear are also visible but they were more yellow than those of Port Elgin which are the newer and whiter LED lights. I took enough shots to make a video of the Milky Way crossing the meridian and the clouds streaming through actually added some ambiance to the scene. But the swaths of upward light really detract from the star clouds of the Milky Way.

My plan was to also do star trails with the lighthouse and for these I needed to be closer so I moved my baggage to a spot just south of the tower. Again I set up on a cobble beach as there was not much sand where I was. I found out later that tripods do not sit very steadily on cobble stones. Even walking nearby as you check the camera was enough to transmit vibrations through the rocks to the tripod and move it just enough to cause a little zigzag in the star trails. I now appreciate a lot more the damping qualities of good old regular soil.

I took more than enough images with the lighthouse and the Big Dipper to its left to give a nice star trail image but I had to do a lot of editing of "artifacts" mostly tiny dots over the final stack of images. This was not sensor noise, but possibly insects catching the light of the beam as it rotated. Each image in the several hundred I took was long enough that the 6 second rotation of the beam was recorded 3 or 4 times. Luckily the main beam is directed mostly horizontally and did not cause over-exposure of the 20 s to 30 s images. This was a worry from the beginning but turned out to not be a problem. All the light beam did was nicely illuminate the light enclosure at the top of the tower.

By about 2 am, I decided to get right up under the lighthouse and get some shots of the Milky Way behind the tower. I think these are my favourite images. Again these were 20s to 30 s tripod shots but on steadier ground this time. The lighthouse was nicely illuminated by lights from Southampton so no fill-in lighting was needed. I noted during the whole night how easy it was to see once my eyes were dark-adapted. Periodically a glow like full moon light would sweep over the area when car headlights from a kilometre away lit up the scene.

As mentioned earlier, the island is a bird sanctuary and nests in the trees can actually be seen from shore a km away. I was much closer and got a first hand look at the high rise nesting condos. The birds that have been seen on Chantry include Great Blue Herons,

Great Egrets, Black-crowned Night-Herons, Herring Gulls, Ring-billed Gulls and Double-crested Cormorants. They seem to get along pretty well with each other but as an intruder, i.e. a human visiting, you are likely to get attacked during the fledging season. You are advised at those times to carry a stick over your head to ward off protective gulls especially when you are walking around among their nests which are everywhere. During the earlier quick tour just after we got off the boat, a very healthy looking fox scampered away from our path as we approached. Foxes may come over the ice in winter, but it is known that some have been live-trapped and released on the island in hope that they would control the cormorant population. A mis-informed notion by those folks who are transporting foxes illegally since foxes cannot kill birds that just take to the air to escape. And unless a fox learns to climb trees, cormorant, egret and heron eggs are safe in their nests. The only "bird" food available would be easy prey for foxes, - the eggs of ground nesting gulls. I came across an internet report that there was at least one year when the population of gulls was decimated and all but two herring gull chicks were eaten by foxes. Apparently MNR stated policy is to not interfere even though foxes on the island are probably not a normal situation.

By 3 am, I had pretty much taken all the images I had planned (763 all together) and I decided to bunk out for the night. The sitting room in the lighthouse was very comfortable and I dozed a bit in the rocking chair. Thank you Marine Heritage Society!

Captain Willetts arrived in the Peerless at 6:30 am to take me back to the mainland and a nice breakfast at home. By noon I had caught up on my sleep and was ready to do some image processing. Some of those images are presented here. Needless to say, I am very happy with the results.

IMAGE 2: Milky Way Over Port Elgin is visible but there is a lot of upward lighting that brightens the clouds overhead. Note the different colour due to LED lights in Port Elgin and the older sodium lights further south. Image was taken with a Canon 60Da, 15 mm focal length, f/3.5, ISO 2500, exposure of 15 seconds. Note Mars, Saturn, Antares triangle. Image by JH taken about 10 pm local time.





IMAGE 3: Star trails over the Chantry Is. Lighthouse The images for this str trail photo were taken over a 42 minute interval around midnight Aug 31. The red light traces my walk to the “facilities” during the exposure. I was not going to stumble around in the dark in

a strange place so I used the light. Image was taken with a Canon 60Da, 15 mm focal length, f/3.5, ISO 2500, exposure of 30 seconds. The yellow glow is thin cloud that streamed across the island near the end of the exposure. It got thicker from 2 am on.

IMAGE 4: Big Dipper and Chantry Is. Lighthouse

Both the Big and Little Dippers are visible in this single image taken at 11:04 pm Aug 31. It shows a bit of reddish auroral glow low on the horizon. This became a very nice display the next night visible in our area. The thin clouds in the image did not really become a problem until after they thickened around 2 am. Even though the light beam was caught on camera every 6 seconds, (5 times), it did not cause any problems with the exposure and did not even illuminate the tree tops, happily for the roosting birds, I guess.

Image was taken with a Canon 60Da, 15 mm focal length, f/3.5, ISO 2500, exposure of 30 seconds.



Introduction to Astrophotography by Brett Tatton

The images I shared (at the last BAS meeting) were taken with a Canon 60Da and 18-200mm lens on a tripod...for some shots of lighthouse and close ups of the Moon with planets the camera was mounted to an ES ED80 telescope. The Explore Scientific is an 80mm F/6 APO refractor (F/6 = 480mm focal length...essentially a 480mm telephoto lens). Using these two lens allow me to frame a wide variety of skylscapes and objects well in the images.

You will need a camera with manual exposure control. You will need a steady tripod and you will also need a way to trigger the camera without shaking it. DSLR cameras are the most capable for beginning astro imaging. Perhaps not the cheapest cameras new but older models are available used at reasonable cost. Other types of digital cameras may have uses under the night sky but are typically limited under low light by design.

Technology is improving all the time. My iPhone 6s takes great sunsets and more. The new iPhone 7 is rumoured to have two cameras one with a telephoto lens. Apps are available to enhance the cell phone camera, but there is a bottom line. Those tiny pixels in the camera sensor cannot perform magic. There is no substitute for the larger pixels of a DSLR in a low light environment all other things being equal.

For your first night shots you will have to pick a lens angle. If you have a zoom lens you should start with shots as wide as your lens will go, mine was 18mm. This gives a huge swath of sky on an APS-F style DSLR camera. With this lens angle the results are more tolerant of focus and star trailing. You can shoot exposures over 20 seconds. With a 20mm at this exposure the stars will be points not streaks! The wide angle is the lens you want for your first Milky Way shots!

To capture night scenes and stars you will need long time exposures. The typical DSLR will shoot up to 30 seconds in manual mode (M on the selector dial). At ISO 1600 30 seconds will give stunning MW shots! You will be in "M" or Manual mode most all the time. At dusk you can make use of the camera's auto exposure capability up to a point. As it gets darker you will have to switch to

"M". Take note of the settings the camera chose before it became so dark you had to "take over".

As with the camera's auto exposure neither can you rely on the camera's auto focus, most of the time. It is always a good idea to check your shots for focus as you go. You will need to switch to Manual Focus and rely on one of a couple of ways to focus the camera. My lens has a slider switch for AF to MF. You can't even move the focus ring by hand until MF is selected!

One way to obtain sharp focus is by trial and error. Get close to infinity then take some test shots with the ISO at maximum. One or two second long shots in the area of some bright object should do. (myself I do not use this method).

My preferred method to focus is to make use of the camera's so called Live View. Live View is when the screen on the camera is displaying the live scene in between shots. You will have to move the live "box" in the screen to a distant object you can see on the screen like a bright star or the Moon. Next you must zoom in to X5 then perhaps X10. You will be able to see the result as you focus manually. Best results will come with experience and patience!



Above: Brett captured this very nice astronomical scene with a human interest foreground from the Saugeen River at Southhampton using a 480 mm Explore Scientific refractor (ED 80) as a telephoto lens. Exposure was 1/80 s, ISO 1600 on a Canon 60Da camera taken Sep 2 at 8:30 pm or so. If the camera clock was set correctly, the very thin crescent moon was only 1.55 days old and a record for thin moons seen locally.

So you have focused the camera but I mentioned triggering the camera shutter without shaking it. There are two zero dollar ways to do this. One is to find the delayed shutter function of the camera which can usually be set to two seconds, -plenty of time for the jiggles to settle out after you push the shutter. Another way is to cover the lens for a second or two with your hat perhaps. This works on long exposures like 10 or more seconds but it is not as effective for fast shot [shorter exposures] as you might block the whole exposure.

Shutter release cables are another way to make exposures without shaking the camera. These are just overpriced pushbuttons for DSLR cameras. The more sophisticated ones are interval meters which can take control of the camera shutter to shoot sequences of shots once you learn to program them. Nikon cameras are coming with interval controls built in now, come on Canon!

I have two other sophisticated camera controllers I've tried. One is to use a tablet or cellphone to take control of all the camera settings via the USB port. For Canon DSLR you can use an Android device with USB OTG cable dongle and the app called DSLR Controller. This gives you a touch screen for all camera functions! The inexpensive Nexus 7 tablet has a 7" screen that is a boon to my eyes. More of my images are coming out well exposed and focused using this method!

For those willing to take a laptop out into the field to control your DSLR you can use the extremely capable Backyard EOS (BYE) for Canon or Nikon DSLR. BYE is a very sophisticated but inexpensive tool that is remarkably easy to use. It not only controls exposures and sequences it also can incorporate auto-guiding using the free PHD program right in the application window. If you are using an autofocus lens BYE can control focus with the mouse! The focusing tool Full Width Half Maximum is so easy to use. It is essentially Live View on steroids!

I mentioned ISO. Digital cameras are adjustable for light sensitivity and the rating is called the ISO. In the old days you bought film of a certain ASA to get low light performance. In the digital age it is an adjustment. In Manual Mode you can change the sensitivity of the camera from low (ISO 25 or 100) to as high as the camera goes. Higher ISO typically makes for "noisier" images but this is improving with every new model camera. Try the highest ISO you can until you are unhappy with the images, then back off until you don't see flaws. You are the judge even if others may

change your mind with new evidence!

The bottom line is to get out and try your camera. If you are shy or need coaching talk to me or one of the other members who are happy and able to help or advise. Maybe we can arrange a workshop out under the stars if people are interested. I am still looking for tips myself! Digital makes all this easy and relatively cheap. I hope I might have encouraged some new astro imagers to take up the hobby!

Below: Spectacular aurora image taken at 3 am on Sep 3 from Saugeen River opposite the Range Light, Canon 60Da, 30 s, ISO 4000, focal length 18 mm.



Below: Another tripod image from Grey Roots Museum Aug 26. Canon 60Da, 30 s, ISO 3200, focal length 18 mm. f/3.5 lens with white balance set to 4300K which gives a bluer sky background. The brightest "star" lower right is actually a cell tower light.



Draco (Dra)

α-Draconis - Thuban β- Draconis - Rastaban γ-Draconis - Eltanin
 δ-Draconis - Tais ε- Draconis - Aldhibain ι-Draconis - Ed Asich
 λ-Draconis - Gianasar μ- Draconis - As Rakis ξ-Draconis - Grumium

Draco is composed for the most part of fairly faint stars that take a long winding path beginning with the tail between the Big and Little Dippers, curving northeast around the bowl of the Little Dipper, then curving sharply southwest and terminating in a clearly recognizable quadrilateral of stars (the Dragon's Head) pointing directly at the constellation of Hercules. β and γ-Draconis were considered by the ancients to depict the dragon's eyes. ν-Draconis is a beautiful binocular double.

DOUBLE STARS

	Mag.	Sep (s)	Location	Remarks
β	2.8-11.5	4	173052	
η	2.7-8.7	6	162362	
ε	4.0-7.6	3	194970	Yellow-Blue.
μ	5.8-5.8	2	170455	Both White.
ν	5.0-5.0	62	173255	Both Pale Yellow; beaut.
ο	4.8-7.6	32	185159	Orange-Green.
ψ	4.9-6.1	31	174272	
17	5.6-6.6	4	163553	
40,41	5.8-6.2	20	180480	A beautiful pair.
Σ1984	6.2-8.5	7	152454	
Σ2348	5.4-8.0	26	183252	Yellow-Blue.
Σ2573	6.2-8.5	18	194060	Striking.
Σ2604	6.5-8.7	28	200464	

MESSIER OBJECTS

Mag	Location	Remarks
M102	10.8 150556	Spiral Galaxy.

Other Objects of Interest in Draco

NGC 6543- Planetary Nebula. Magnitude 9, Location 175967
 R Draconis - Long period (245 days) variable, maximum magnitude 7.6. Location 163267.



This image of the almost exactly edge-on disk galaxy M102/NGC 5866 was obtained by [Chris & Dawn Schur](#) from Payson, Arizona at 5150 ft elevation. They used their 12.5" f/5 homemade Newtonian and SBIG ST7E CCD Camera with Enhanced Cooling, to create this LRGB composite exposed 70:20:20:20 minutes.

Messier 102 is a galaxy listed in the Messier Catalogue that has not been identified unambiguously. Its original discoverer Pierre Méchain later said that it was a duplicate observation of Messier 101, but there are historical and observational reasons to believe that it could be NGC 5866, although other galaxies have been suggested as possible identities. NGC5866 is shown in the image above. [From [Wikipedia](#), the free encyclopedia]

[In any case it has a beautiful narrow dust lane through its middle and no nuclear bulge, well worth observing -ed].



HST image of **NGC6543** or the **Cat's Eye Nebula**, in Draco.

NGC6543 or the **Cat's Eye Nebula**, is the other object worth observing in Draco if for no other reason than to compare the

telescopic view with the HST photograph above. Compare it to the other famous planetary nebulae that most amateurs have seen, the Ring Nebula (M57) and the Dumbbell Nebula (M27), the first planetary to be discovered by Messier.

The Cat's Eye is 5 ly in diameter and 3000 ly distant. The central star is probably 11th magnitude but I have not been able to confirm this. Different sources disagree on the overall magnitude also varying from 8.1 to 9.8 in magnitude. A 12-inch will reveal some detail at high power.

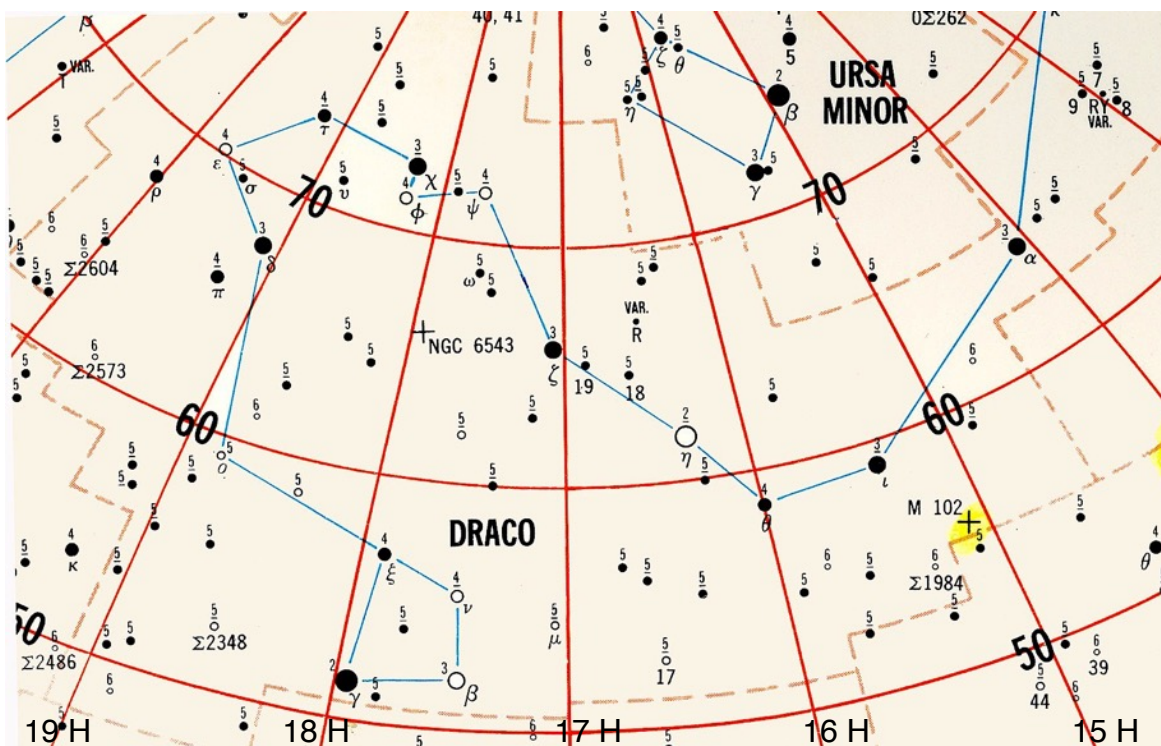


Chart Legend

- Star Location
- Double Stars
- + Nebulae
- ★ Clusters
- Variable Stars
- Var

Oct 3	Mon	12:30	Venus 5.6° S of Moon
4	Tue	06:02	Moon at Apogee: 406 100 km
6	Thu	03:04	Saturn 4.2° S of Moon
8	Sat	23:33	FQ
15	Sat	05:15	Uranus at Opposition
		23:23	FM
16	Sun	18:36	Moon at Perigee: 357 900 km
19	Wed	01:18	Aldebaran 0.3° S of Moon Occ'n 1:48 am to 2:31 am DST
20	Thu	23:45	Orionid Meteor Shower: ZHR = 20
22	Sat	14:14	LQ
24	Mon	23:01	Regulus 1.7° N of Moon
26	Wed	05:56	Venus 3.1° N of Antares
28	Fri	04:33	Jupiter 1.6° S of Moon
29	Sat	20:49	Saturn 3° N of Venus
30	Sun	12:38	NM
31	Mon	14:29	Moon at Apogee: 406 700 km

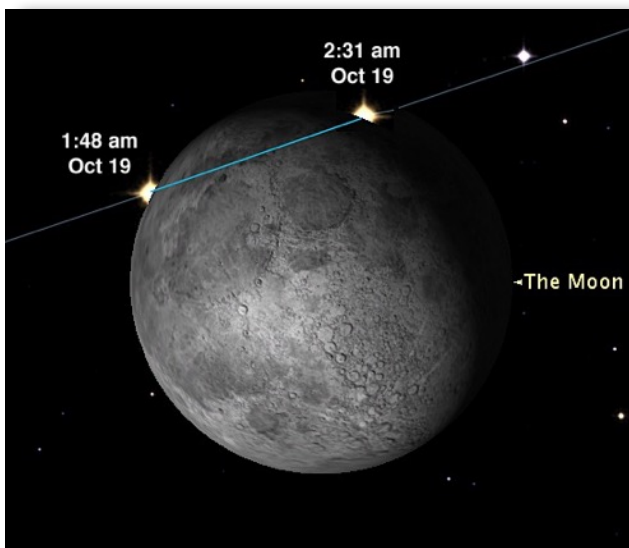
BAS Events

- Oct 1 Sat Fox Dark of Moon viewing (BAS members/ guests -public welcome)
- 5 Wed Regular Meeting **Tom Thomson Art Gallery**
Women in Astronomy: Zoe Kessler Public Welcome
- 8 Sat FQ
- 15 Sat Uranus at Opposition, FM tonight as well
- 19 Wed Aldebaran 0.3° S of Moon Occultation
1:48 am to 2:31 am DST
- 20 Thu Orionid Meteor Shower: ZHR = 20
- 22 Sat LQ
- 29 Sat Fox Dark of Moon viewing (BAS members/ guests -public welcome)

Special Events

Moon Occults Aldebaran Oct 19

One of the many occultations of Aldebaran in the current series is actually visible from the local area in the early morning hours of Oct 19. The moon is waning gibbous so will be quite bright and Aldebaran disappears first at the bright limb. Three-quarters of an hour later the reappearance should be easier to see at the dark limb. Aldebaran's size (44.2 times the Sun) has been determined from the gradual drop-off/increase of light on occultation. Watch for a 0.3 second gradual brightening during reappearance vs the instantaneous turn-on for most other stars.

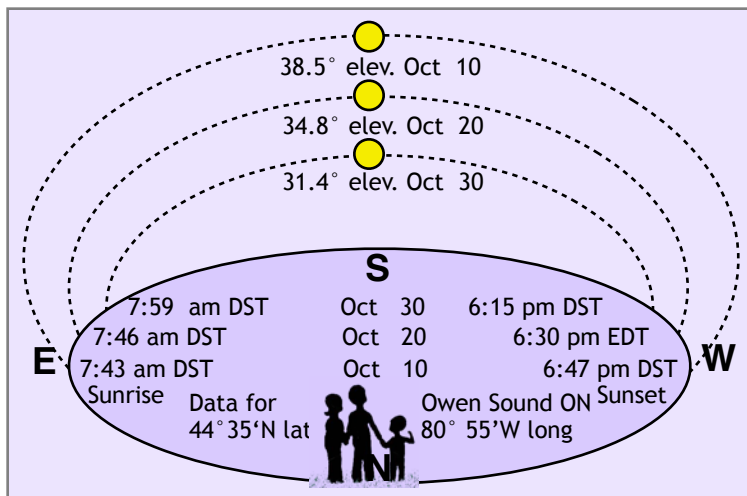


Planets

MERCURY is a morning planet now and is starting back towards the Sun. The thin crescent Moon is very close on Sep 29.

VENUS, (-4.0) hangs above the western horizon all month and threads the gap between Saturn and Antares on Oct 27/28. **MARS**, is mag. +0.3 (at month-end), and is still above the SW horizon at dark. The disk is noticeably gibbous. **JUPITER**, is too close to the Sun to be seen all month. **SATURN**, (mag. 0.5) is still visible in evening twilight and for an hour or two afterwards. It sets before midnight. **URANUS**, (5.8) and **NEPTUNE**, (7.9) are high in the sky after their oppositions and well placed for viewing. **Dwarf planet, Ceres** (8.2) rises an hour after Uranus. **Asteroid, Vesta** (6.7) is moving eastward towards the Beehive Cluster. It is high on the meridian at dawn. **PLUTO** (mag. 14) rises with Sagittarius and is visible near Mars all month. Charts for these planets/asteroids for 2016 are now on the BAS website.

The diagram below gives the sunrise/sunset times and the Sun's altitude for October. Note that the Sun continues lowering in the sky all month. The moon phase graphic at the bottom of this page shows the lunar phase for each night of the month. Times of moonrise for NM, FQ, FM and LQ for Owen Sound are in the Sky Calendar listing at left. See Special Events for details of the Aldebaran occultation on Oct 19.



Moon Phase Chart for Oct 2016

created with QuickPhase Pro 4.0



BAS Member Loaner Scopes

Solar H-alpha scope now available.

Our Lunt solar scope can be borrowed by BAS members and it is waiting at the Fox! Contact John to get your hands on it. We now have a suitable mount for it as well. A short training session will be provided on pickup.

Several Dobs available.

One 12-inch dobsonian loaner telescope is available for free loan to members. Smaller 8-inchers are also available. Contact John H. or Brett T. for availability. Scopes come in and out so keep checking with John or Brett if you are interested in a loaner.



SGN Classified Ads Section

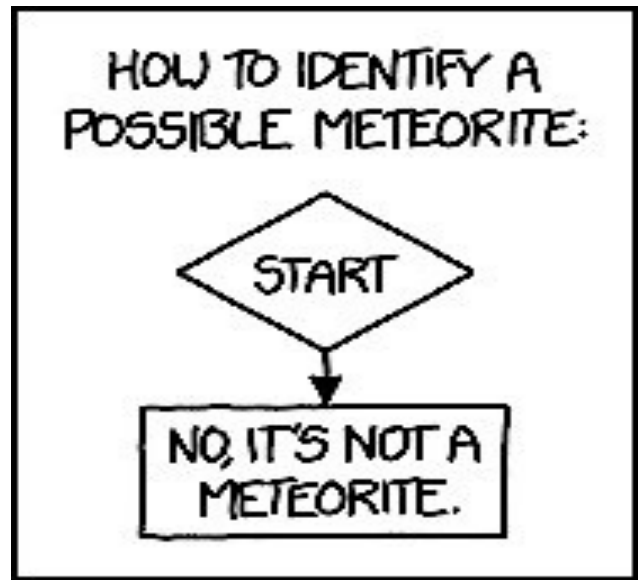
(Now also on our website)

www.xkcd.com

Free! Mirror-grinding machine Last chance! We deliver!

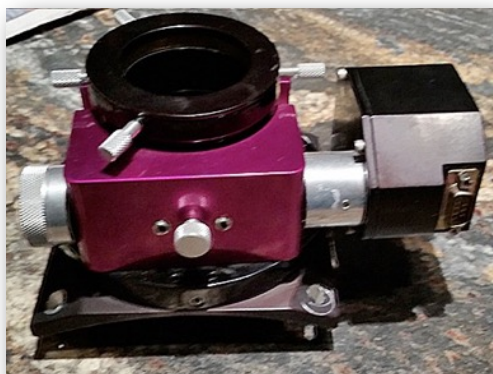


Contact John H. or Brett T. if interested.



Finally a fool-proof flowchart that actually works! c/o www.xkcd.com

FOR SALE: Moonlite CRL 2.5 inch Large Format **Crayford Newtonian Focuser** (\$592.10 new -see <https://focuser.com/products.php>) with Hi-Res Stepper Motor (\$252.81 new). Flange for 14" tube, accepts 2" accessories (EP/camera). This is a **true Crayford focuser**, not the cheap "Crayford-style" knock-off. Not set up for manual focusing, requires hand paddle (\$330 not included) for manual operation and computer control for remote focusing. This is meant for a remote imaging setup and comes from an abandoned project (12" scope). Over \$850 plus taxes and shipping new. Asking \$600.00. Contact **Paul** at ski@bmts.com



FOR SALE:

Two OEM Canon batteries (used) and charger \$50

I have two Li-Ion batteries LP-E6 with charger which fit Canon EOS 7D MKII, 7D, 5D MkII, 5D MkIII, 5DS, 5DS R, 60D, 60Da, 70D and 6D cameras. Note these are Canon OEM not third party items and have been lovingly used. If interested, contact John at 519-371-0670 or at stargazerjohn@rogers.com.

