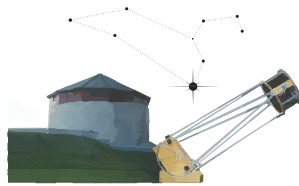


Regulus

December 2015
RASC Kingston Centre



Upcoming Events

Thursday, December 10 17:30
Holiday Dinner Meeting
Aunt Lucy's Restaurant, Kingston

Saturday, December 12 19:30
KAON Session
Queen's University Observatory

Thursday, January 14 19:00
Regular Meeting
Ellis Hall, Room 324, Queen's University

Saturday, February 6 19:30
KAON Session
Queen's University Observatory

Thursday, February 11 19:00
Regular Meeting
Ellis Hall, Room 324, Queen's University

Check kingston.rasc.ca for meeting locations,
kingston.rasc.ca/observing/sites for sites. ★

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- ▶ Observing Reports: Jun-Nov. 5
- ▶ Skyward, December 16

Here's what the clouds have been hiding from us through the first half of December: the best comet in many months. We will have to be vigilant and take advantage of any small holes in the overcast in order to see this one for ourselves. (Thanks to Dave Lane for letting us use this image.)

Reports and Other Items

from Kingston Centre, the RASC, and Beyond

EDITOR'S NOTES

Now that I'm back in action, it is time to get caught up on the backlog of material. Even with this expanded issue, it will take one more to get fully caught up. Thanks go to the El Niño clouds for the chance to catch up!

Our Honorary President, **David Levy**, has very graciously offered his latest columns for inclusion in this issue. He has been a most welcome contributor to the pages of *Regulus* from its earliest days and I'm sure I speak for the entire Centre when I say that I hope his new column will continue to appear here for some time to come.

OTHER ITEMS

AUGUST 21: Dave Lane reported that Project Pluto's *Guide* software was formally discontinued in January, and is to become an Open Source project...

AUGUST 31: Rick Wagner reports that the helipad lights at the **North Frontenac Dark Sky Preserve** have now been replaced by the ARCAL lights which only get switched on by an approaching helo pilot when required. So it is once again a dark sky site...

SEPTEMBER 4: Kim Hay reports that the **Active Surplus** store on Queen Street, Toronto, is closing...

SEPTEMBER 26: **Malcolm Park's** image of M31 and M33 was on APOD...

OCTOBER 8: **Malcolm Park's** aurora image was featured in a Global News story online. His images keep on popping up in so many places (like *Skynews* and APOD) it is hard to keep track...

OCTOBER 29: Hank Bartlett noticed that Barr Electric was in Newburgh converting the street lighting to LED...

November 5: Kevin Kell says that over the last week the Township of Stone Mills has been moving ahead with their streetlight replacement project as well... ★

ANYONE CAN ENJOY THE NIGHT SKY. While this column is intended specifically for those who enjoy going outside and relishing the wonders of the night, it is also meant for musicians who, like Saint-Saens, appreciate the sky vicariously through the music they compose. It is also meant for those who appreciate the sky through the poetry they write.

This month we will explore the astronomical interests of two American poets, both of whom lived in the American West, and both of whom loved the stars. Robinson Jeffers and Kenneth Rexroth both lived in the earlier years of the 20th century and both wrote about the sky.

I begin with **Robinson Jeffers**. As a human being, he particularly enjoyed living in California and he built a stone cottage and tower that allowed him to watch the Pacific Ocean near Big Sur. As an amateur astronomer, he especially enjoyed the night sky from the castle's turret. As a poet, Jeffers' writings are infused with the magic of the night sky from long before he even dreamed of building his tower, but the stone structure with its small lamp focused his attention:

this August night in a rift of cloud Antares reddens, / The great one, the ancient torch, a lord among lost children,... / Of a lost fire dying in the desert... / Wandered from at dawn..."

A few lines later, the poet delights his readers with his casual familiarity of the night sky:

Oh passionately at peace when will that tide draw shoreward? / Truly this pouting fountains of light, Antares, Arcturus, / Tire of their flow, they sing one song but they think silence. / The striding winter giant Orion shines, and dreams darkness.

Jeffers invokes images from all over the sky in this poem. Antares is a monarch of the summer sky, shining brightly at the head of the scorpion. Arcturus reigns from spring to fall in the northern constellation of the herdsman, but Orion rules though sky of winter, dominating the night with his magnificent belt of three bright stars surrounded by four even brighter stars, so that the whole complex resembles a magnificent structure not unlike the tower from which Jeffers is observing.

It is easy to fathom Jeffers'

Continues on page 4...

Regulus Needs You!

ITEMS OF INTEREST FROM MEMBERS—full articles, or even just a couple of paragraphs are always welcome. Items are gratefully accepted on each and every day of the year! Send items to:

walter (dot) macdonald2 (at) gmail (dot) com



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SIX ATTENDED the pre-meeting gathering at the Queen's Inn and then headed over to Ellis Hall, Room 324 for our meeting. The meeting was opened at 7:06 p.m. by President Kim Hay, welcoming everyone back with some announcements:

No members appear to have attended Pie in the Sky at Maberly, or the North Frontenac Dark Sky Night observing sessions. Upcoming events are: New Moon on September 12th, a total lunar eclipse on September 27th, and Uranus at naked eye brightness on the weekend of October 10th.

On this topic of dark sky sites, **Malcolm Bird** posted a fascinating video of the Lennox & Addington Dark Sky Site to YouTube.

We have lots of *Getting Started in Astronomy* booklets if anyone needs any for public events.

Bruce Elliot reported that he and Susan attended a session with Brownies ages 7–10 and they were quite excited about the planetary orbits and eclipses and observing at night. There may be another event next year with an older group ages 10–14 in which they may need more help with telescopes. They will let us know when help is required.

The Annual Meeting is coming up on November 12th, and three positions are up for election: President, VP, and Treasurer. The current VP will run for re-election and the President and Treasurer are stepping down, but would stay on as Directors, if needed. Please consider running for these positions to help your Centre, or if you want to get your feet wet, come on as a Director.

We then moved on to our observing reports from Members, on "What I did on my Summer Vacation:"

Richard Weigand is 75% done the Isabel Williamson Lunar Certificate Program. Way to go Richard! He showed us the areas that he

observed over the summer and is really looking forward to the upcoming lunar eclipse. (At this time the centre has no plans on a public event, however, if there are others that wish to do so, we will certainly help out.)

Rick Wagner gave us a report on the Halifax GA, which he said was a good time to meet other astronomers, and party into the wee hours; many people said that **Walter MacDonald** is the Man! Congrats Walter, you have really helped many in the RASC with your dedication to the website and archiving of RASC History. The 2016 GA is in London Ontario, so consider going. They are fun.

By the way the Centre needs a Council Rep, so if you would like to come on board for that position, please let anyone on the Executive know. There are phone meetings for the RASC Council and your way is paid to the GA for the Council Meetings. It's a good way to know what is happening at the National Level. Your input is always needed.

We had a ten minute break, then

Meeting Report: October 8

Susan Gagnon

PRESIDENT KIM HAY called the meeting to order at 7 p.m. and welcomed 19 attendees. The first order of business was to acknowledge the new Kingston/Queen's Nobel Prize winner **Dr. Arthur McDonald** for his work at the Sudbury Neutrino Observatory or SNOLab as it has come to be known. There is also a new comet, magnitude 10, C/2014 S2 (Panstarrs) near Polaris that should be possible to see. Kim presented an autographed copy of the new solar sketching book that she has co-authored to the library.

Announcements included the upcoming AGM November 12th and the board positions that would need to be filled: President, Vice President, Treasurer, and National Rep. The

back to reports.

Greg Latiak showed us his new Observatory (a SkyShed Pod), and how he mounted the scope, and took care of the cable clutter. He showed us the red lights which were truck side lights with red LEDs (from Amazon), mounted with a dimmer for inside the observatory. Now all he needs is clear skies.

Last up was **Leslie Roberts**, who did some excellent astrophotography using his new autoguider (which he is still testing) and new camera lens: a Rocan f/1.4. He imaged **Aquila**, the **Milky Way**, and got the whole **Summer Triangle** with the Milky Way. They had a lot of detail, but still had some drifting from one side to the other. He also said he had issues with the focus star, but discussion at the meeting I'm sure gave Leslie some tricks to try next.

It was a good turnout (17 members) this evening. We missed those who could not attend, but hope to see you all next month. The meeting adjourned around 9 p.m. ★

current VP will run for re-election and the President and Treasurer are stepping down, but would stay on as Directors, if the new Board wishes. Please consider running for these positions to help your Centre. There were paper copies of the latest *Regulus* available for pick up and those not picked up would be mailed out as the last notice of the November AGM. Saturday the 10th there will be a North Frontenac Dark Sky Observing Site event. There was a reminder for people to get Sky Quality Meter readings when they can. RASC 2016 Handbooks are being mailed out and several members have received theirs.

Following these announcements

Continues on page 4...

SUSAN GAGNON AND I had a lovely outreach session with a Sparks (Guide) group at the KOA Kingston Guide Camp on June 19th from 7:00–9:30 p.m.

Susan began with sized models of the planets and the Sparks arranged themselves in the order of the solar system. We talked about lunar and solar eclipses and why Pluto is not considered to be a planet now.

I then introduced the Milky Way and constellations. The Sparks had a pretty good go at finding The Big Bear, Orion and Cassiopeia on the star map. We then talked about the stories represented by these con-

stellations, and marked them out on black pages with glow in the dark stickers.

We topped the evening off with a viewing session through Susan's telescope of the Jupiter-Venus-Moon conjunction.

The Sparks maintained interest throughout and asked oodles of questions—with great thought and enthusiasm. We were impressed as the age range was 5–7 years (Kindergarten to Grade 1).

It was a great evening and we hope we can do it again, perhaps with an older age group as well! ★

interest in astronomy, in part because his brother, **Hamilton Jeffers**, was a famous astronomer who worked at the Lick Observatory. Known for his precise work, he photographed comet Schorr of 1918, helping to refine its orbit. Asteroid 1934 Jeffers forever honors his contributions to astronomy, and if I may be so bold as to add, his inspiration for his brother Robinson to write poetry.

If Jeffers' lines help us to appreciate the beauty of the night sky, the writings of **Kenneth Rexroth** demonstrate its detail in *Another Spring*:

High in the sky the Northern Crown / Is cut in half by the dim summit of a snow peak.

This poet obviously knew how to use a telescope. In *The heart of Herakles*, he writes how, as “Constellations climbed the sky,”

As the cluster of Hercules falls down the west / I put the telescope by and watch Deneb move towards the zenith. / My body is asleep. / Only my eyes and brain are awake.

I have viewed [Messier 13](#), the wonderful globular star cluster in Hercules that showcases over a hundred thousand stars, hundreds of times through dozens of telescopes. The cluster has never failed to amaze me, its magnificent structure lighting up the night sky and my imagination. It is easy to find these nights as it sets in the west, beckoning us to appreciate both it and the poet who admired it so much. When we read these poems, we are transformed to a new world where only our eyes and brains need be awake. Their poetry only makes the priceless gem of the night sky even richer. ★



...continued from page 3

...Meeting Report: October 8

was a long list of members ready to share their latest astrophotos of the eclipse and various astronomy-related activities:

Rick Wagner began with a time lapse series where he attempted to track on the shadow rather than the Moon. Not that easy as auto tracking is not available since there is no option to lock onto a star. We also saw daytime solar effects and observatory construction that included a lot of concrete and re-bar!

Malcolm Park showed us the stacked mosaic that was presented as an APOD and how it was stitched together with Registar along with the eclipse photos from Vermont and some info on CalSky, a satellite occultation application and an attempt to get a photo of the ISS transiting an eclipsed Moon. Malcolm also rated some of the dark sky sites he has visited, Carr Observatory, Lennox and Addington, the NYAA site, and North Frontenac. He found the sky best at North Frontenac but loved the L and A site for the way it had attracted the public, non-Astronomy people often enjoying their first look at a dark sky.

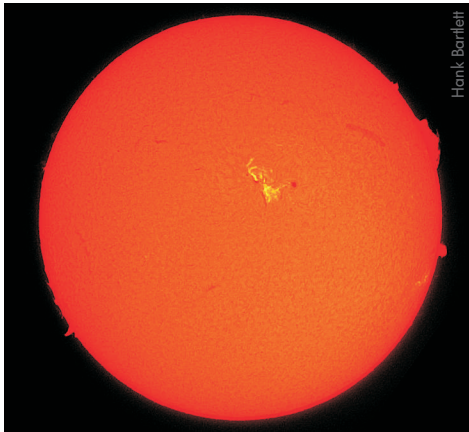
Richard Wiegand announced

that he was within 3 objects of completing his Isabel Williamson Lunar observing list and showed us his eclipse shots, good work Richard. Brian Hunter announced that he had copies of an online magazine called MagPi for Raspberry Pi fans that he would share. Susan Gagnon, Leslie Brooks, and Bruce Elliott showed their eclipse photos. Kevin Kell had their all-sky-cam view of the event. This all added up to a fair bit of entertainment considering the amount of cloud that some members experienced. We also saw the London GA promo video, very inviting! Laurie Graham finished off the evening with a summary of the photos from the Deep Horizons Mission to Pluto and some interpretation of the newly revealed geology. Very cool.

Kim Hay closed out the meeting with a reminder of the December 10th Banquet to be held at Aunt Lucy's (5:30pm) and what changes may be made to provide a bit better experience for all including a limited choice (4) main course option that she asked folks to comment on when they confirmed their plans to attend. Meeting adjourned. ★

MONDAY, JUNE 22

Hank: This looks like about an M6–7 eruption and I just missed the peak by about 10 minutes I think. I haven't found any solid data other than an hourly graph so far to pin the time down. This is SS2371 that Kevin had posted about; I should have been sitting at the scope rather than cutting the lawn!



MON/TUE, JUNE 22/23
AURORA BOREALIS



Malcolm Park (Thunder Beach, Georgian Bay): I was very lucky. On Monday the storms that roared through southern Ontario that clouded most folks out went south of my location in Penetanguishene on the south shore of Georgian Bay. We got some rain but by around 00:30 on the 23rd the sky was clear enough to see them.

I think most of the deep reds had already finished when I began shooting. Images from the east coast taken during twilight were stunning

(seen on spaceweather.com)

It's hard to describe what we saw. But they were bright! And everywhere. A little shy of a full 360°, but they surrounded us and standing facing south with my back to the north, I could see aurora south of the zenith! Aurora at the zenith at our latitude is so uncommon. The **Summer Triangle** was awash in green aurora.



The aurora shimmered and you could see the motion as it ebbed and flowed in waves of electric light. I woke my sister, her husband and my niece up from their slumbers. They were quite happy that I did, as we all stood out on their front lawn for at least an hour before the clouds came back and the show faded.

My imaging session ended when I had filled my memory card.

An amazing experience.



I found photographing this event quite difficult. The problem was that I was fully immersed in the aurora. Surrounded by it. There was no distance or separation so I couldn't get a perspective shot. I really wished I had my 8mm lens for this one.

TUE/WED, JUNE 23/24

Kevin K: There is just a very little bit of aurora (curtains) around 00:00–02:00 showed up on AllSky1, that and cloud, cloud, cloud.

MON/TUE, JUNE 29/30

Malcolm: Last night through a tree from the fixed pier in my SkyShed POD (TEC140 and D810a):



This was more of a “let's see what we can get” shot than anything else, but it kinda works.

TUE/WED, JUNE 30/JULY 1

Rose-Marie: Looked out the window, saw there might be a hole in the clouds, grabbed camera and tripod and headed down the hill to check. Caught the sight *just* before it set. Got a few grab shots, not the best after my day of work left me sore and tired, but at least I saw it.

Rick: With all the activity of travelling I had forgotten all about it. But walking back from downtown Halifax last night the beautiful pair intruded on my consciousness so I took a few shots from one of the parking lots at Saint Mary's University. Not sure mine are any great shakes either but as with Rose-Marie, at least I saw it. Surely even more lovely for having been a surprise.

SAT/SUN, JULY 4/5

Malcolm: Anybody see the aurora last night? Kp was 5 or 6 all night. I spent the night at Bon Echo PP. I went down to the water around the

...Observing Reports: June–November

Various Members

North Beach area and had a very pleasant evening chatting for hours with some campers. I even shared a bit of what I know about the sky with them it was very nice, and the weather was great too.

We watched the moon rise over the big cliff, as the faint auroral band in the north grew in strength slowly over a couple of hours but never really overpowered the moon. It's one of those "looks better in the pic" moments, for sure.

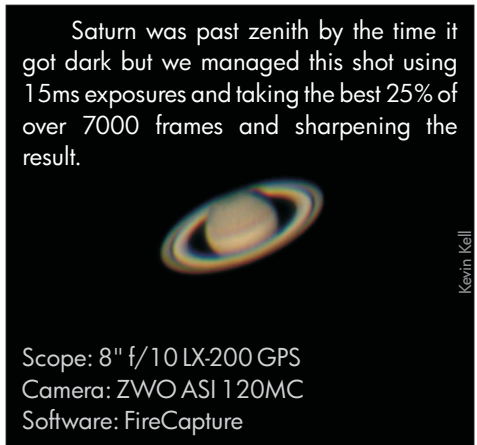


The aurora did a slow burn on the horizon (camera only) from end of twilight until midnight and then increased becoming obvious to the naked eye, peaking around 12:30.

It was very weak. The Moon and the haze conspired against us.

SUN/MON, AUGUST 9/10

Kevin K: For the first time in well over a month we got some time to go out and observe and it was wonderful! The mosquitos are still (!) bad but they did taper off when the temperature hit 12C or so around 21:30. The ISS made a nice pass



Saturn was past zenith by the time it got dark but we managed this shot using 15ms exposures and taking the best 25% of over 7000 frames and sharpening the result.

Scope: 8" f/10 LX-200 GPS
Camera: ZWO ASI 120MC
Software: FireCapture



around 21:30 local as did a few small meteors here and there.

TUE/WED,
AUGUST 11/12

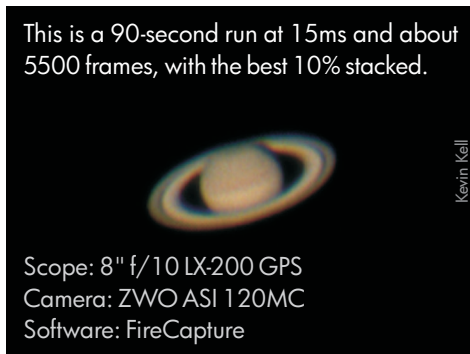
Kevin K: another good night for Perseid meteors... after the storm

clouds went away we were out from 21:00–22:30 and saw at least a dozen visually.

This is what the AllSky2 camera picked up overnight, including a real screamer down in the south at 04:32:42 UT.



We had to wait for some last clouds to blow south after the storms



This is a 90-second run at 15ms and about 5500 frames, with the best 10% stacked.

Scope: 8" f/10 LX-200 GPS
Camera: ZWO ASI 120MC
Software: FireCapture

yesterday. Funny how that works. The skies are clear at 21:00 so we go out, set up, get ready to hit the start imaging button, and 10 minutes of clouds roll through. Oh well. We were able to image until Saturn went in behind the trees but seeing and transparency were both poor (as opposed to two days ago they were average).

There was another good northern pass of the ISS around 21:30, same as two nights ago but this one was much brighter.

Rose-Marie: When I walked down the hill to set up the camera around 11:30 there was a very bright one. That would be the sucker punch one. I see a bright one and get all excited. Sat there on the dock for a half hour, only a couple little *pffts*. So I set it to forget and went to bed, checked the camera at 02:00, nicely fogged up; looks like I caught two moderates.

Perseid Meteors: Kevin, Greg, Rose-Marie, and Richard (Weigand) all reported being clouded out for the peak of the Perseids.

Malcolm: It was clear all night at Starfest. Aurora was faintly (mainly photographically) visible before midnight. There was a nice ISS pass around 10 p.m. below the Big Dipper, through Cassiopeia, ending at Pegasus.

Steady Perseids (didn't count them, but we guessed 60/hour). There were thunderstorms over Michigan which produced dry lightning to our west which was neat but disconcerting. Never a threat though.

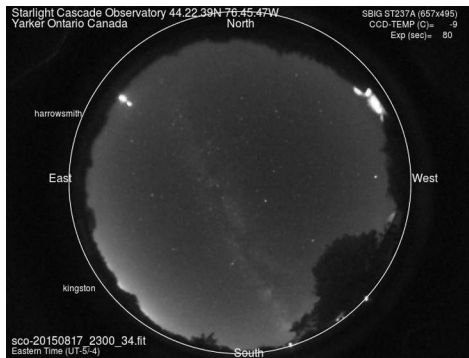
I stayed up til 04:30 and saw Orion rise. It seemed like the meteors were best around 2–3a.m.

SUN/MON, AUGUST 16/17

Hank: Did any of you happen to see this on Aug 17th? Did the all sky catch it? I saw what I thought was a

jet contrail staying in the same place for a long period of time and I was going to image it but was lounging on the back deck and didn't bother. DANG! I don't know if it was the same phenomenon or not. It would have been about 23:00 EDT.

Kevin K: Not that I noticed. We are set up for BRIGHT events. Here is the image from 20150817 at 23:00 EDT. The two lights on the top left are the new Rogers tower; the bright light on the top right is Jayne's Plumbing across the road. The camera was at only -9C (meaning it was a very warm night). Exposure was 80s. (I noticed the all-sky camera body screws were starting to rust, so last night I covered them with a blob of silicon caulking, and cleaned the lens as well.)



Greg: I was out in the dome, saw an arc across the sky to the north east of me, was sure it was a contrail. I looked at it for a while then went back to other stuff before the humidity and bugs encouraged me to think of other things. BTW, my glasses keep fogging up when it is so humid which is a nuisance.

SAT/SUN, AUGUST 22/23

Kim: Kevin caught some [aurora](#) on the all-sky camera at around 04:00 this morning.

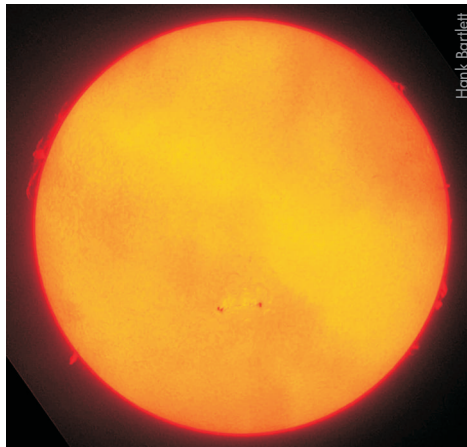
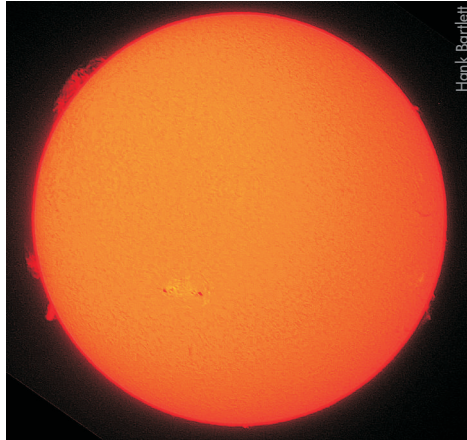
Kevin: Around 23:00 EDT the [Moon](#) and [Saturn](#) were very low in the SW and I missed the lunar straight wall.

Richard Weigand: I was out and the sky was very hazy and then another

layer of hazy cloud came over the moon as well.

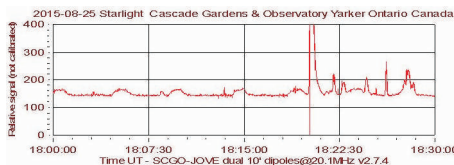
SUNDAY, AUGUST 23

Hank: I took a few images yesterday, [SS2304](#) has had numerous C and M flares but I was away Friday and yesterday I missed anything good. Here are two images though from 22nd and 23rd (brighter image with cloud).



WEDNESDAY, AUGUST 26

Kevin K: As the days go on, sometimes you wonder if the equipment is actually doing anything...or actually working...then along comes a day like today:



Network Boost

Kevin: Wow! Those of you involved in astro-imaging, especially with the newer cameras that take 100+ frames per second, know that you end up with *huge* amounts of data/image files: on the order of tens of gigabytes for a single run. In the past, they would load onto my desktop/laptop (USB2 or built-in SD card slot), which might take an hour or four, and then move across the network to another machine (a file server) for archiving/processing, etc.

Our network is a mix of 100 Mbit/s and gigabit switches. Previously we might get on a good day 5 MByte/s or 1000/5 = 200 seconds to move 1 GB, 2000s (33min) to move 10 GB and 10000s (3 hr) to move 50 GB.

We just purchased another D-Link \$25 gigabit 5 port switch (the first one to be powered by USB cable/power!) and now the entire path is gigabit—ten times faster! So 3h to move 50GB is now 20 minutes; 33 min to move 10 GB is now 4 min; 3 min to move 1 GB is now 20 s.

The next step is to replace the processing CPU (which is now 7 or 8 years old) with something newer and faster to cut down the image processing times!

Hank: There is nothing on the flare chart at that time, the largest was a flare of class C9.5 (2403, 13:41:00, 13:53:00, 14:20:00). However on GONG H-alpha it shows 2403 blowing away a filament.

TUESDAY, SEPTEMBER 8

Malcolm: I was out Friday night (Sept 4/5) at the Lennox and Addington observing site. It was an OK night and there was a little bit of a purple glow after darkness set in in some of my pics but while I was there (between 8 p.m. and midnight) I saw nothing.

Saturday night (Sept 5/6) I was at Oak Heights and it was pure pea soup until about midnight. But with moonrise around 00:30 it was a lost night. Visually the seeing was as good as it gets but alas, no planets to observe! I saw no sign of aurora

visually. Sunday night I was at Oak Heights again for a second try at imaging and it was a much nicer night.

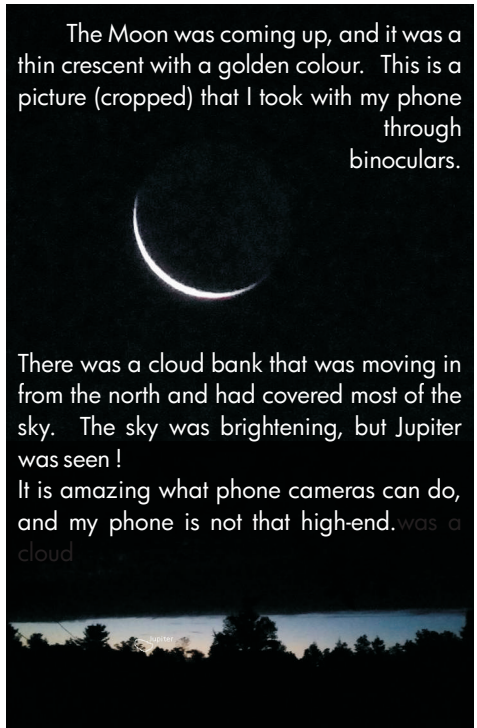
THU/FRI, SEPTEMBER 10/11

Kevin K: There was a short bout of intense [aurora](#) this morning, starting around 04:30 EDT and lasting until the clouds rolled in at 05:30. Looking back at the video there was a little more around 01:00 and a nice meteor in the SE over Kingston at 02:21 EDT. AllSky2 did not see the meteor: it was blocked by *&^\$(*@\$ trees!

Malcolm: I actually was awake at this time, but here it was cloudy to the north. I only looked out the window to see if it was clear though, I wasn't aware of the alert. And I didn't notice anything. I guess it started not long after that! Grumble.

Hank: Yes, [spaceweather.com](#) texted me at 05:05 with a Kp7 alert but I had the sound off of course. I better change my night notifications.

Kim: I woke at 05:15 and went out. [Venus](#) was like a diamond, so bright at -4.5. [Mars](#) was visible at 1.58.



The Moon was coming up, and it was a thin crescent with a golden colour. This is a picture (cropped) that I took with my phone through binoculars.

There was a cloud bank that was moving in from the north and had covered most of the sky. The sky was brightening, but Jupiter was seen!
It is amazing what phone cameras can do, and my phone is not that high-end. was a cloud

It was an amazing morning for observing: three planets and the Moon!

SUN/MON, SEPTEMBER 13/14

Malcolm: I was at the Toronto centres CAO site, I set up a camera and got no aurora. Kp 3 all night, then yesterday it hit 5 mid-day. So the predicted stream arrived a little late.

MON/TUE, SEPTEMBER 14/15

Malcolm: I went to Oak Heights, it was very dewey so I didn't do a time lapse. I did take the occasional still throughout the night to see if anything faint was there, but there was nothing again!

The skies have been wonderful though. It has been an enjoyable stretch.

WED/THU, SEPTEMBER 16/17

Malcolm: Wow, what a night! Was anyone else out observing last night? I managed to stay out until [Orion](#) rose.

Rose-Marie: I was too tired to go out for more than a few minutes. I set the camera up to do a series; while setting up there were three lovely meteors, but I didn't catch any in the pics.

THU/FRI, SEPTEMBER 17/18

Rose-Marie: So I gathered up my gear and headed down to the dock and got set up, started taking pictures. Beautiful night, clear sky. Sat there listening to the owls, the loons, the crickets, the froggies...and then three loud grunts from that black bear that has been hanging around. CRAP! He was over along the shoreline, about 300 yards away. I shone the big flashlight and saw two eyes looking back at me. I yelled at it and shone both lights at it, it moved

further away. In my 55 years I've never been worried about being outside at night, but then we've never had a black bear hanging around. I packed it up and headed back inside. Dammit! He's messin' with my astronomy!



ISO 1600, f/4, 10-20mm lens, 142s, 21:45

Malcolm: Day five of this amazing run of weather. I'm exhausted! But I can process images when the clouds come back.

Susan: I also got out, it has been a long time. My sky was not great, a lot of humidity. [Andromeda](#) was just visible naked eye and only because I knew where to look. Out over the lake [Capricornus](#) was really only half there. I took a stab at variable observing and drove the sky a bit.

Yesterday afternoon I had moved everything out of the observatory and swept it out, installed a single large table taking the place of two small ones and all of a sudden had twice the room. I plan on going out there again today to get Baby installed for regular solar use.

Oh yeah, no bugs!

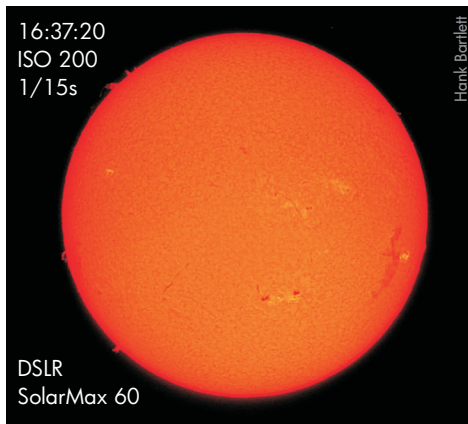
SAT/SUN, SEPTEMBER 19/20

Malcolm: I just happened to look at the Kp index at 05:00 and it was 7! Looking outside I could see some naked eye [aurora](#) with nice spikes. I had a nice view for about 15 minutes and then dawn started to wash it out. Methinks it was active for hours prior but I'm grateful to have seen what I saw. About time I saw something!

Kim: I was out looking at the planets

and M42 with the telescope, and did not see any aurora.

SUNDAY, SEPTEMBER 27



SUN/MON, SEPTEMBER 27/28
TOTAL LUNAR ECLIPSE

Kevin (22:16): It is now totality and we are indeed totality clouded out.

Hank: This is as good as it got here in the burg:



Rose-Marie: I actually had a clearing for about 20 minutes during totality.

Paul: It's clouding over now, but this was the best lunar eclipse I've seen. Actually, the clouds added some unusual effects during peak totality, making different areas of the moon brighten suddenly as if it was emerging abruptly from the umbra.

The weather mostly cooperated here, even though it was completely overcast at 20:30!

Greg: It was pretty good from Amherst Island as well. The clouds did a now-you-see-it, now-you-don't right up to the onset of totality. Being

backlit made for some interesting visual effects. A few minutes after the onset of totality the clouds closed in. Were solid every time I checked after that—of course. Glad we saw some if it anyhow instead of the usual solid cloud cover with great reports from elsewhere.

Susan: What a night!

I finally went in to bed at midnight. There were times where the cloud cover was significant but the temperature and lack of bugs just made it so nice to be outside that waiting for the next break was no issue. I just waited it out lazing in a lawn chair, snacking and playing on the computer. 4½ hours in the observatory has not happened here for a long time.

I had film in a camera and burned that off last night. Not sure how old that film is but the T-ring was still on it so it is all astronomy I guess.

I did some digital with my little camera but I have an idea that David's shots with the video camera were much better. Yes my husband spent an hour in the observatory.

We had plenty of clear breaks and I left before the absolute end just because I was bagged, not because it was cloudy.

At totality **M31** was naked eye, very cool.

Kevin: We stay up until mid-totality but it had been cloudy for some time before. Kim did some sketching through the Dobsonian and also got some nice images with the Canon ELPH120 camera up against the eyepiece.

Rose-Marie: No mosquitoes here, there was a breeze off the lake. Clouds rolled in around 19:30, but it looked like bits of clearing around 21:30 so I drove the truck down the hill and set up the camera. Drove because a) I had been cutting and hauling firewood for much of the day and was too tired to carry gear around and b) the bear has me spooked.

During daylight hours if I saw the bear I'd be running after it trying to get a picture...but come nightfall when I can't see, I'm just a wee bit more cautious. Anyway...we had about 15 to 20 minutes of gaps in the clouds, so I managed a few shots. Here are two of them, it was just getting to totality when the clouds rolled back in. There were some gaps that looked like they would arrive in a few minutes, but I was just too tired and sore to stay out when a nice comfy couch was calling to me.



Malcolm: We (Charlie & Sheila Szaboth and I) had a great time in northern Vermont. We had clear skies all night, and it got down to 4C in very dewey air.

Google maps is a wonderful thing! I found a location that was absolutely perfect, a playing field on the edge of a small unlit country road. It was quiet, peaceful, and STRESSFUL in a slow kind of anti solar eclipse panicky kind of way—you know what I mean.

I actually feel lucky to be able to show this pic as Murphy had so many

surprises in store for me I can't remember them all.

But it was worth it.

Rick: Well, I had two cameras running almost continually through the eclipse, one through my short refractor trying to create a time lapse close-up showing the Moon moving across the frame and through the shadow. It didn't work for various reasons. I had a second camera on a tripod with an 8mm fisheye doing 15s exposures of most of the southern sky. The intent was to show the sky getting dark, Milky Way coming out etc. However that also didn't work for various reasons. Glad I didn't drive all the way to Vermont only to have nothing work! Of course, one of the main reasons things didn't work as well as hoped was the cloud.

We were heavily clouded over through much of the eclipse but there were several significant breaks during which I could see all the various interesting phases of the eclipse, right from beginning to end. So I have ~2000 pictures, probably 1800 of which are of underexposed cloud decks.

Visually the eclipse was quite dark, I thought, but quite a nice shade of reddish orange. Or orangey red?

Malcolm: Visually the moon was much darker this time which I attributed to being closer to the centre of the earth's shadow than in recent eclipses that I have seen. But I've only been OCD about eclipses for 10 years or so. (Driving 6 hours to Vermont from so-so Ontario skies for a lunar eclipse is OCD if you ask me.)

Richard: I was able to see the eclipse as well from Sandhurst, from the start to the totality. Unfortunately, clouds came in pretty heavy near the end when the full eclipse was evident. Still, I was very pleased to see my first eclipse.

Walter: It was clear in Winchester until ~22:20, then I only had views through holes in the cloud. So it was

worth the drive from Oshawa to Winchester.

TUE/WED, OCTOBER 6/7

Kevin: There was light [aurora](#) from around 00:00 to 03:00 EDT.

Malcolm: It was at the peak as darkness set in.

WED/THU, OCTOBER 7/8

Kim: I went out a couple of times before 20:00, and nothing. We went back out after 21:00, though clear there was a lot of moisture in the air, and the transparency was not good maybe about a 3. I was watching the K index and it started plummeting down to 6 after 20:00.

I woke up several times through the night and there was cloud, then clear....damn work.

I went out at 04:15 (yes. I got Kevin out too) and we took images of the north (no aurora), and the [Moon](#) and [Venus](#), [Mars](#), [Jupiter](#). I was playing around with the OIII filter on M42, such a beautiful nebula.

Kevin: There was no aurora visible to the naked eye. The partial [Moon](#) was coming up, [Venus](#) was brilliant, [Mars](#) was just clearing the eastern horizon.

I got out the Canon EOS Rebel 300D (circa 2003) and plugged in the new intervalometer to try out. It works! Programmed it for a 5 second start up delay, then 60s exposure, wait 10 second and repeat 5 times. ISO 400 on the camera. The results were mostly useless. The camera and sensor are just too old for this astronomy stuff.

I tried 2 minute exposures of the north for aurora and very little showed. I tried exposures of [Orion](#) and only the main stars showed, no sword. The last shots were of the Moon, Venus, Mars, and Jupiter just coming up...very poor.

Our Canon Powershot ELPH-120IS (circa 2013) with its native

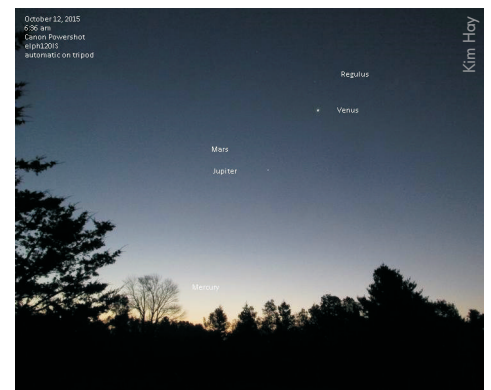
max exposure of 15s does a better job at capturing astro targets. With the associated CHDK software boosting it up to as much exposure time as you want, its even better.

I checked the AllSky1 camera live image; there was no aurora.

Malcolm: There was a bright, colourful and energetic outburst of aurora. I went to the North Frontenac RASC Dark Sky Preserve north of Kingston with cameras and associated gear hoping for clear skies and aurora. I was rewarded on both counts! This is a video presentation I put together of time lapse sequences taken overnight on the 7th and into the morning of the 8th: www.photopark.ca/Videos/i-Nkpjxg8/A. Moonrise with the planets near [Regulus](#) completes the show on the morning of the 8th.

SUN/MON, OCTOBER 11/12

Kim: I went out a bit later this morning, but did manage to see [Mercury](#) and photograph the planets (Mercury is labelled but not visible in the photo).



Rick: I too was out this morning (third time for this planetary lineup—8th, 10th and 12th) and the view was lovely. [Mercury](#) was quite obvious when it finally rose about 0600. [Jupiter](#) was still visible naked eye at 0700 and [Venus](#) at 0725 when I quit and went in the house for breakfast. I took a bunch of pictures as well.

My main goal was to see the very

old Moon. However, it only rose about half an hour before the Sun and with the bright sky and some thin morning haze/mist I was unable to see it. I searched with the 15x70 binos for about half an hour. Try, try, again. And again, and again...

WED/THU, OCTOBER 14/15

Mark K: Is there a minor meteor shower tonight? A lot of [meteors](#) heading from the Andromeda and Pegasus area towards Perseus and Taurus.

Rick Wagner: I was going to suggest it could be the Draconids. They come from the head of the dragon which is still above the NW horizon. I've been out looking for much of the past hour but haven't seen any myself.

I was trying for [Uranus](#) and [Vesta](#) naked eye. I did Uranus last year at Fall'n'Stars and it was quite easy. This year not so much—I don't think the sky is that great tonight. It was there with averted vision but quite difficult—probably visible 50% of the time. Vesta was much harder. I would say it was only visible 10% of the time but consistently in the right location and visible to the same degree as several stars of similar magnitude in the area.

Kim: I was out this morning before work, looking for the C/2014 S2 PANSTARRS: no luck, I needed a better map.

I did not see any meteors, but the planets were nice, and M42 as always.

The coyotes were howling down by the river, and the temp not bad at 2C. I was expecting more. Sky quality was 21.42 at 08:43 UT.

Malcolm: I was doing some imaging on the [Heart and Soul Nebula](#) and the [Double Cluster](#) as well as the [California Nebula](#) so my gaze was fixed in this direction most of the time I was outside. I was in the

Sandbanks Park at the Dunes day-use parking lot with DSLR and star adventurer mount, and although it was breezy it was clear and the transparency was pretty good. There was a nice bright [Milky Way](#) and [M31](#) really popped naked eye.

I probably counted 4 or 5 [meteors](#) in a one hour period in that general direction. I decided to go here instead of NFDSP.

Rick: I was going to do some pretty picture imaging last night but decided at the last moment that photometry takes precedence, especially since it didn't look like the skies would be all that great. I compromised by putting the DSLR/100mm/2.8 on my barndoor tracker and shot about four hours total on various areas from central Cygnus to southern Cepheus. And my images confirmed that there were variations in sky transparency through the night. The SQM was in the house (I was working from the shop/office) and I couldn't be bothered to go get it.

While the cameras were working I played a bit with some binos and an old scope of mine. The binos were my old 10x50s—not terribly good: low eye relief, but enough to show [Uranus](#) and [Vesta](#) very clearly. Using knowledge of the fields from the binos was enough to help me find both of them naked eye (Uranus was hard, Vesta was extremely difficult—required the full hour of dark adaptation while I viewed through the scope and binos.) The other binos were the Celestron 15x70s. Sure are spectacularly nice binos for \$50! But the best views were with the old 4 1/4" f/4 Newtonian with 14mm 82° field eyepiece—31x and 2.6° field. Wow! [M31](#) was spectacular, [NGC 206](#) stood out like a sore thumb, [M110](#) obvious. [M33](#) was really nice with [NGC 604](#) peaking out and the nucleus shining starlike. Several extremely rich clusters in Cassiopeia, the [Veil Nebula](#), [North America](#)

[Nebula, M15](#) a nice little fuzball.

I also heard a lot of coyote howling. Those guys are clearly dangerously crazy dudes!

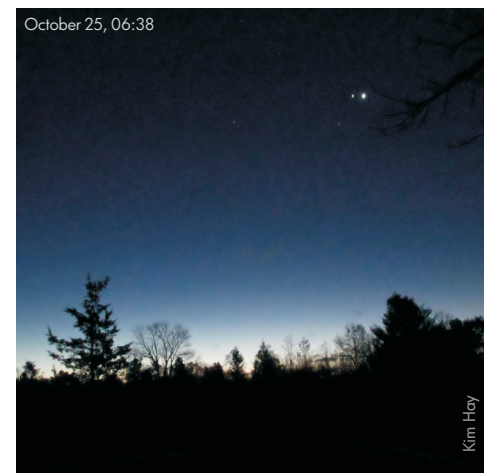
THU/FRI, OCTOBER 15/16

Kim: Here is a 15s picture of this morning's [planets](#). It was getting bright out and there was cloud. As I was taking my last image, a [meteor](#) streaked across the zenith, east to west, and I saw a very bright [satellite](#).



THU/FRI, OCTOBER 22/23

Rose-Marie: 'Twas nice and clear this morning. The ol' bladder alarm got me up just before 0600. Out of habit I peeked out the east window and saw the three [planets](#) close together; that got my eyes open. Got bundled up, grabbed camera gear and headed across the highway to the field, took a few shots of the group. Saw three really nice [Orionids](#) while out there, but of course they were out of camera's field of view. I was so



...Observing Reports: June–November

Various Members

ticked off the night before because of the clouds, ruining the Orionids for what, the fifth year in a row? Maybe we'll have better luck with the Leonids.

SUN/MON, OCTOBER 25/26

Kim: Its a crisp one out there this morning, -4C but clear.



Venus is at greatest elongation today, and is this is the tightest grouping of the planets.

Malcolm: I set my alarm for 04:45 and was out there until just past 06:30. It was weird watching **Arc-turus** rise given that I had sen it setting in the WEST just the night before! It threw me because I confused it with Mercury at first. (I never did see Mercury.) I don't know that I've ever seen anything quite like that before, an object that set after dark in the west and rose the following morning. It's no different than the Sun rising and setting, so why is this striking me as strange? Is it unusual? Oh well...

FRI/SAT, OCTOBER 30/31

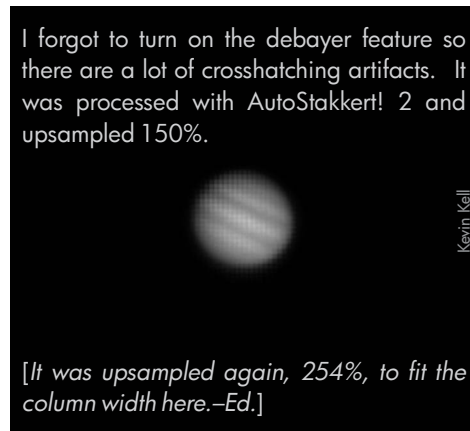
Kevin: Good thing we did get up at 05:00 and go out because at 07:00 the sky was overcast! It is a little clearer now but the cloud front seemed to have sped up its ETA when we announced yesterday that we were going outside to image!

As it turns out, the clamshell dome is very difficult to use, and being positioned where it is, on ground without a structure underneath it. Suffice it to say it was very damp and humid in there and the telescope cannot stay. It will be coming out later today for drier storage somewhere

I ended up using the Meade SC 102mm scope mounted in the observatory on a pier. It was the first scope I used with the ZWO ASI 120MC camera a year ago and going back to it felt like old home week. The focus was extremely stiff.

It was warm inside the observatory with the roll off roof half closed and the doors closed. Much better than sitting outside in a folding chair and folding table.

This is the last image run of **Jupiter** (mag -1.8, diameter 33"), taken at 05:38, 60s in total (11ms exposures), 5279 frames, using 75% of the best frames:



I also imaged **Venus** and **Mars** but they did not turn out so well.

Malcolm: I left a camera running all night and I'm importing the images now. I did wake up at 04:00 though and when I looked out the south facing window, I saw a bright green **fireball** streaking towards the horizon at about the altitude of Orion, and slightly to the west of Orion. It was total fluke to see that! I don't think it was in the FOV of my camera though.

Kevin: We caught it here, around

03:52 EDT. Orion would have been almost due south (down in this image, east to the left, moving right to left. There was another brighter, longer on around 05:37 EDT right when I was imaging, but I did not see it at all.

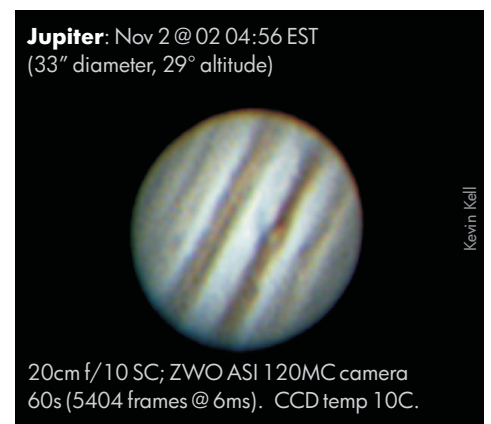


SUN/MON, NOVEMBER 1/2

Kevin: It was a good morning to be outside: not too cold (maybe +6), no bugs, a little cloud here and there, and the brighter-than-last-quarter Moon. Oh well. I had my first good imaging runs of **Jupiter**, **Venus**, **Mars** and the **Moon** in a long time.

The new (old) laptop was running well. It has higher screen resolution than the old netbook (you can see the entirety of the FireCapture program windows in this one).

I found a good RegiStax tutorial and for the first time got some good results from AutoStakkert into TIFF files and then into RegiStax for wavelet processing. I typically used only the best 10% of the frames. I will have to try 25% as well, as some



...Observing Reports: June–November

Various Members

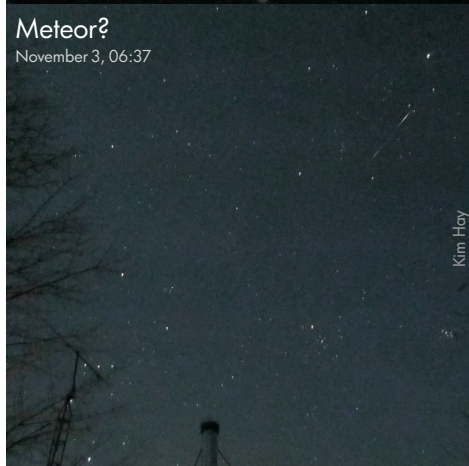
of the detail seems lacking in places.

Even with a heater on the 20cm SC corrector plate, it fogged over.

MON/TUE, NOVEMBER 2/3

Kim: I woke up several times through the night, and saw cloud.

Up at 4:37, out I went. Cloud, but took a few images of the planets, the cloud; there was a faint aurora in the North: red/green and very low on the



horizon. I also took a picture of Taurus and I believe I caught a meteor.

Rose-Marie: I stayed up til 11:30, then had the alarm set for 12:30, 2:00, 3:00, 4:30...nada. Saw clouds at 4:30 so didn't reset for the planets.



TUE/WED, NOVEMBER 3/4

Hank (23:12): It is time to give up and go to bed so that those of you that have the energy to get up in the night will have something to see. The speed has been climbing again but it has been a no-rora night here in the burgh, even photographically. I really thought this one was going to pan out and what a nice clear night.

Rose-Marie (23:48): A whole lotta nuthin' here in Glenburnie. Been out several times, nada, zip. Just had the camera out, nothing showing up after 15s exposures. Keeping my boots on for about another hour hoping I don't fall asleep in this chair. "It's the Great Pumpkin Charlie Brown!"

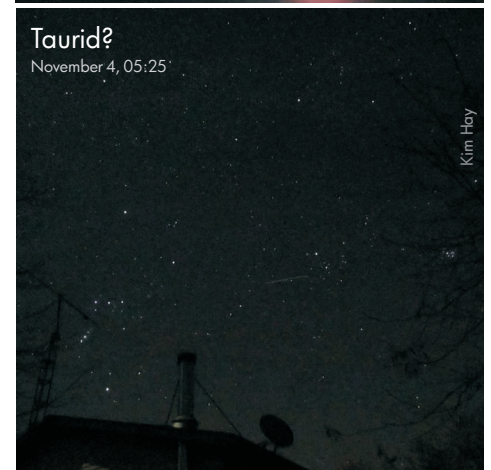
Malcolm (00:29): I've got a lot of humidity here, everything is drenched and there's even a bit of ground fog. Another spaceweather flop. 90% chance eh? Hmmm...

Kim (06:17): I went out this morning, and nada, no aurora. One image shows that the glow may be just reflection from the Moon, while others captured a **Taurid** (totally photographic, did not see it naked eye), and the **Moon** and a **satellite**, possibly Adious 2. The planets were aligned like a check mark, **Jupiter**

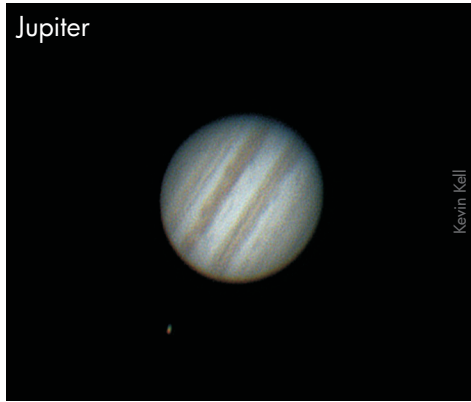
high, then **Mars** with **Venus**.

Kevin: Great morning this morning: no aurora maybe, but great skies and warm +7C temperatures.

I practiced last night with the 2x Celestron barlow and the ASI 120MC camera on **Uranus**. It was much harder to focus, and required at least 4x exposure. This morning tried it out on Jupiter. I am still getting dew on the corrector plate, so



I have to find material to build a new dew shield real soon now. Here is this morning's image:



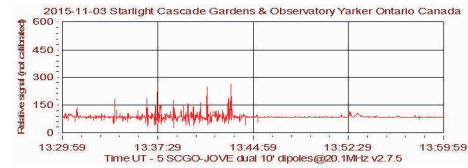
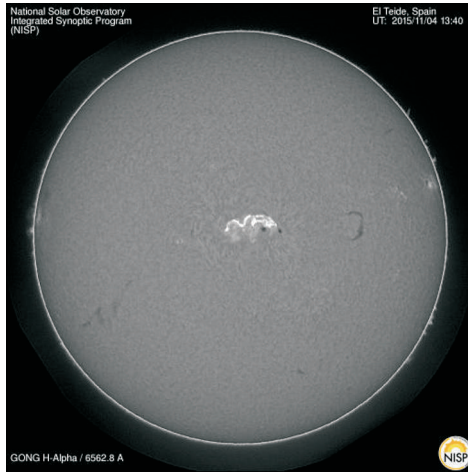
Rose-Marie (09:54): I got suckered yet again. Kept checking [for aurora] until about 03:00, snoozing in this big armchair in between. Finally got ticked off enough and went to bed. At 03:45 the BigWetNose decided it would be time to wake me back up and take her out. I saw a **Taurid** while out there, and decided to set up the camera on the back deck to run a series. Set the alarm for 05:15 to retrieve the camera. With the dampness I figured that it wouldn't take long to fog it up, but wonder of wonders the lens was still clear when I dragged myself out to get it. Caught one little bright flash, looks like it was a flaring satellite. After a few cups of coffee to make myself feel human today I'll download to see what I got.

Hank: Rose-Marie I am glad people like you and Malcolm have the energy and equipment to follow an event like this even when it doesn't happen. Your efforts are still appreciated, there may be real aurora yet to come.

WEDNESDAY, NOVEMBER 4

Hank: I wish I had taken this image, heading out now 08:48 EST

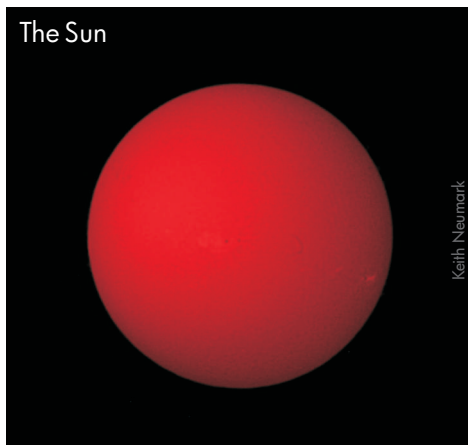
Kevin: Woohoo! And it is pointed RIGHT AT US! Nothing on the Radiojove system yet. Will keep checking in every 30 minutes at



starlightcascade.ca/radiojove/skypipepic.jpg

Hank: This is the 3rd M class flare today from 2443 & 2445 but this one is best positioned as you noted Kevin. This eruption stayed "M" level for about an hour, this is good. Attached is my image from 13:56:07 UT, the page has not updated the flare stats but it appears to be above M3 and maxing out just before this image.

Keith Neumark: Hank, I tried my luck yesterday for the sun, this is the best I could do. My eyes are so bad I just can not focus the camera. I even tried to catch the Milky Way last night, all I got was a couple of stars. I took the picture at f/2.8, 14 mm for 25s, then I see the picture on page 15 of *Skynews*. I want to kill! How did he get that?



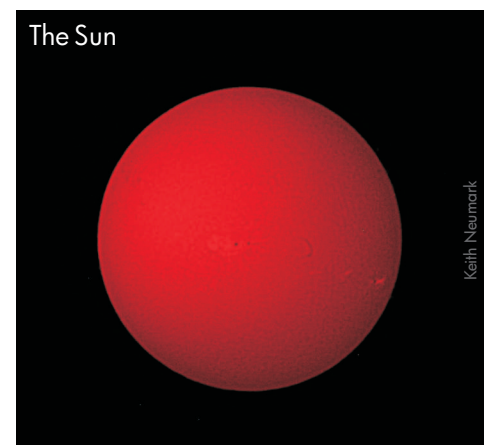
Hank: I got a chance to look at this image and hey it is a good start for sure and a little sharpening helps. Check this enhancement [your Editor had already done this to Keith's image (lower left) and then applied the Unsharp Mask a second time (lower right) but is unsure if this is going too far.]. Keep trying and you will get it. Sorry I thought Kevin was talking about my image, I was out and only saw the e-mail on my phone before.

WED/THU, NOVEMBER 4/5

Rick (20:58): I too was out on and off throughout the night (the scope was imaging some variable stars.) I took a few test shots of what I can see of the N horizon through the trees. On one at about 2200 EST I thought there might be a hint of green so I kept my eyes open but never saw a thing.

There was a brief period of cloudy skies from shortly before midnight to about 0145 but otherwise the night was quite good. Tonight I am imaging again (build observatories all day, observe all night, could life get any better?) but the sky looks terrible—very murky. I'll go up and take some aurora test exposures in a little while. Earlier I went down to the dock and tried a panorama—inspired by Malcolm's beautiful effort of a few days ago. We'll see how it turns out.

Rick (21:27): It just went decidedly



overcast. I can a half-dozen stars to the extreme SE and SW. Otherwise it is really quite astonishingly dark and very humid—smells like dense fog though the visibility is still good enough to see a couple of lights at the far end of the lake.

FRI/SAT, NOVEMBER 6/7

Hank (22:47): Totally clouded out her in the burgh in the past half hour; it came from the south.

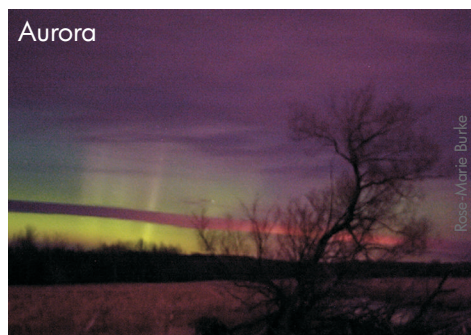
Rose-Marie (23:14): Clouded over here now as well. Excuse me while I go wail and beat my head against the wall.

Hank (23:22): The Planetary K-index has reached a level of 6. A moderate geomagnetic storm is in progress. High-latitude sky watchers should be alert for auroras.

Hank (23:35): It should clear now Rose-Marie as I am going to bed.

Rose-Marie (00:13): Nope. Checked about 15 minutes ago, one slim open band to the north, and it was green. Now completely clouded. Argh!! I shall be up half the night stressing over it.

Rose-Marie (02:49): Well by golly....saw a wee gap to the north around midnight, so I grabbed camera and tripod and drove down Unity Rd. to Collins Creek. There was bright green in the gap. The clouds were irritating me like fire ants stuck in a sandal, but then it started to clear out a bit. Had a nice show, saw pillars naked eye, took a whole lotta pics which are now downloading on the other computer.



Just hope they're in focus. Only thing that I was disappointed with was missing two bright meteors, they were *just* out of field of view of the lens. When the auroras were dying down the clouds were rolling back in. Okay, must get some sleep.

Malcolm, Rick, did you get out there? Kevin, any of these meteors show up on the allsky? That second one really lit up the clouds.

Malcolm: 2:53 a.m. Kp 6. Totally overcast! Moonrise soon, with Venus and Mars. Hoping for a break in the clouds. Not optimistic at this point.

Greg: Another morning display, probably the last chance. Jupiter, Venus and the Moon are clear. Mars is just a touch too faint and is hidden by the clouds.

Kevin: Not a lot of bright meteors last night. The best was at 02:14 EST in the north. One at 19:16 in the south. One at 21:57 overhead. Another at 05:18 in the southwest. That's about it.

SAT/SUN, NOVEMBER 7/8

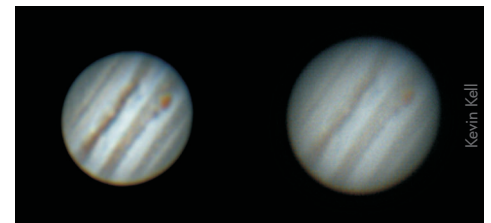
Kevin: This morning's imaging run of Jupiter, around 05:17. These are the first processed images of the day, as the corrector plate dew heater was

NORTH FRONTENAC DARK SKY OBSERVING SITE

Rick Wagner: Jeanette and I were up to see the Frontenac site for the first time. It is nice site except for the house next door. I notice that the concrete pad is about 10° off N-S unfortunately—it would have been cool to have the expansion joints in the concrete all running N–S and E–W. There are four outlets on a pole just off the NE corner of the pad. Their brochures claim internet is available at the site; I didn't read that until I got home so didn't confirm. The horizons are nice and low in most directions. It is right beside the road with a small copse of trees providing some protection. However, I think vehicles (probably not many) on the road will cause a few problems.

I don't think the "airport" at North Frontenac is anything to worry about. It's a very basic airport, paved, but very rough and I don't think it has any facilities.

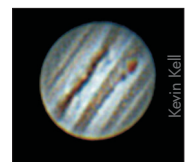
Kevin Kell: Last year someone said they were working with the house owners to try to minimize light by planting trees, or something. We have not been up since so cannot confirm if any work has actually been done. ★



not working and at -2C, it dewed up pretty quickly. The image on the left is processed by AutoStakkert! with no sharpening, then into RegiStax 6 for wavelet processing. The image on the right was processed by Autostakkert! with sharpening and 1.5x drizzle enlargement.

I wondered what would happen if you processed the sharpened drizzled into registax? A little over the top, reminiscent of the first voyager probe images from the 1970s.

This image was 6ms exposures x 6823 frames over 120s, using the best 50% on a 20cm SC. ★



THE CHRISTMAS STAR

Said the night wind to the little lamb,
 Do you see what I see
 Way up in the sky, little lamb,
 Do you see what I see
 A comet in the eastern sky
 With a tail as big as a kite
 With a tail as big as a kite.
 —adapted from *Gloria Shayne Baker,*
Nöel Regney

This beautiful Christmas Carol was written relatively recently, at the height of the Cuban missile crisis in 1962, as a plea for peace, a plea that was ultimately successful at the time but which remains so relevant in our time. It went on to become a very popular song, one that I adapted slightly by changing the line “a star, a star, dancing in the night” to “a comet in the eastern sky.” When **Brian Marsden** (may he rest in peace) was director of the Central Bureau for Astronomical Telegrams, the world’s clearinghouse for anything new that moves or changes in the sky, for example a comet or an exploding star, he and I developed a close friendship. I hoped that one night in late November or December I would discover a comet, and report it to him using the words of the song followed by the discovery position, in right ascension and declination, of the new comet. Although I doubt I will ever find another new comet, even if I did the CBAT is now too automated to allow such informality.

However, this does not mean that I cannot use the famous song to announce the presence of an already discovered comet in the morning sky during this Christmas season. Comet Catalina (C/2013 US10) will form the top of a triangle with bright Venus and fainter Mars in the morning sky around the morning of 18 December. Through a small telescope the comet should be an impressive sight.

It is at this season, where family

becomes even more important than usual, that some of us wonder if the Christmas Star, made famous in the opening lines of the Gospel according to St. Matthew, was actually a real star or an event in the sky that heralded the birth of Jesus Christ. The relevant portion reads thus:

In the time of King Herod, after Jesus was born in Bethlehem of Judea, wise men from the East came to Jerusalem, asking, ‘Where is the child who has been born king of the Jews? For we observed his star at its rising, and have come to pay him homage.’ When King Herod heard this, he was frightened, and all Jerusalem with him; and calling together all the chief priests and scribes of the people, he inquired of them where the Messiah was to be born. They told him, ‘In Bethlehem of Judea; for so it has been written by the prophet:

And you, Bethlehem, in the land of Judah,
 are by no means least among the rulers of
 Judah
 for from you shall come a ruler
 who is to shepherd my people Israel.”

Then Herod secretly called for the wise men and learned from them the exact time when the star had appeared. Then he sent them to Bethlehem, saying, ‘Go and search diligently for the child; and when you have found him, bring me word so that I may also go and pay him homage.’ When they had heard the king, they set out; and there, ahead of them, went the star that they had seen at its rising, until it stopped over the place where the child was. When they saw that the star had stopped, they were overwhelmed with joy.” (Matthew 2.1-10).

Was the star a real event, or was it simply a creation of the gospel’s writer? One early theory was that the star was actually a comet, specifically Halley’s comet which

made an appearance in the sky of 6 B.C.E. However, the Magi were known as astrologers rather than astronomers, and surely not modern sky watchers. They might have been more interested in a predicted alignment of planets rather than something real seen in the night sky. With that in mind there was a highly unusual conjunction of the sky’s two brightest planets, Venus and Jupiter in the evening sky of June 17, 2 B.C.E. at 6:11 p.m. Venus and Jupiter were so close that evening that without a telescope, (and there were certainly no telescopes at the time) it would have been impossible to see the two planets as anything other than a single bright object.

There are problems with this theory. First, the Magi saw a star “at its rising” in the East; the book does not make it clear whether they saw the star from an observing site east of Jerusalem, or in the eastern sky. The planetary conjunction would have been very close to setting, not rising, at the time. Although there are other theories, this is the one I prefer. If it is correct then it actually suggests a birth date for Christ in the middle of the year 2 B.C.E. although Christmas comes on December 25 each year, the choice of day actually dates back to the Roman Saturnalia festival just as the days were beginning to get longer in early winter.

Whether you celebrate Christmas or not, this is the season to enjoy family and friends, and to renew ourselves. Let it also be the season, on a clear evening, to head outdoors, look up, and appreciate the sublime majesty of the night sky. ★

