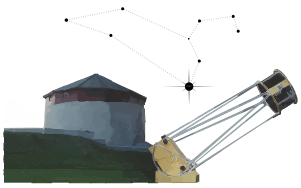
February 2019

Regulus

RASC Kingston Centre



The Pac-Man Nebula (NGC 281)
16" f/8.9, 4.5 hours each through narrowband Hα, OIII, SII filters.
Subframes were 30 minutes each!

Upcoming Events

Saturday, March 9 . . . . . 19:30
KAON Session

Thursday, March 14 . . . . . 19:00
Members' Night

Thursday, April 11 . . . . . 19:00
Observing Session (TBA)

Thursday, April 13 . . . . . 19:00
KAON Session

- Meetings are held at Stirling Hall Theatre 'A', Queen's University, unless otherwise noted.
- KAON Sessions are held at the observatory, Ellis Hall, Queen's University.

Check kingston.rasc.ca for the latest info, kingston.rasc.ca/observing/sites for sites. ★

In this issue:

The RASC's ROBOTIC TELESCOPE PROJECT (rasc.ca/telescope) continues to have a low profile as it works through its development phase.

Update—February 17th: The uncharacteristic rain/snow weather in California continues. It has been hampering our efforts of training and tweaking software. However, there have been a few moments to capture some quick images... [See a picture of SN2019np in NGC 3254 on page 3.] ★

Kingston Centre 2019 Lottery

Susan Gagnon

THE CENTRE HAS EMBARKED on a new experiment this year. We have applied for and been granted a lottery licence by the City of Kingston. This allows us to sell tickets on a grand scale. The Beginner's Observing Kit consists of:

- Celestron SkyMaster 20x80 binoculars,
- Celestron Regal 68 inch Tripod (nice and tall),
- A planisphere,
- Pocket Sky Atlas (Jumbo Edition),
- Two books: *Binocular Highlights*, and *NightWatch*.

The total value of the kit is $600. Tickets are $2 each, or 3 for $5. We are good to go for selling tickets on campus so we can offer them at KAON sessions there. Of course they will be available at meetings and I encourage anyone who thinks that they can sell tickets to let me know at a meeting and I can set you up with a pack of 25 or less—just return what you do not sell. We have limited the number to be sold to 500 (high hopes there!).

I also hope to get a couple of Saturdays of ticket selling at the Cataraqui Town Centre. I'll post the days on the chat list so that if you are in town on those days, (and who does not love to go to the mall on a Saturday!) please drop by. I am determined to at least break even so that we can try again. All proceeds will be used for outreach. I have a feeling that it could be a great outreach tool and I will take handouts with me when I sell at the mall. This is all new to the Centre so let's cross our fingers. ★

Centre Library Update

Kim Hay, Librarian

The Kingston Centre Library...is open. Most of the Library contents and bookcase were moved from past Librarian's David Maguire's home over the week of January 5–12th. Thank you David for hosting the library and being the Librarian for many years.

The books have been catalogued and placed in the Kingston Centre Storage Shed. There is a new library listing on kingston.rasc.ca. Go under the Library Listing.

There is still the video/CD library and the magazine collection to go through, of which some of these may be purged, but Kingston Centre members will be the first to see if they wish to add to their collection before these items go to recycling.

We had a book donated by Rick Wagner at the January 10th meeting, *Seeing in the Dark* by Timothy Ferris. And books have already been signed out.

Take a look at the updated list. Let me know before the meeting if there is anything of interest, and I will try my best to bring it to the next meeting. Contact me at kingston@rasc.ca ATT: Library.★

Rules for the library:

- You must be a member of good standing,
- Maximum 3 books loaned at a time,
- Loans are for one month time period.

New RASC Videos

In 2018 the RASC Observing Committee received funding from RASC to produce three videos promoting our seven observing programs with certificates. The creative team from Halifax was **Dave Chapman**, **John Read**, and **Halley Davies**.★

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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Big-Bang-quet Report: December 13

Various Members

Hank: Thank you to all whom arranged the evening, I had a very good time and meal. Having the separate room and the freedom to wander around (although I did not do enough) is a big part of the evening, to all of my astronomical friends a very Merry Christmas and see you all in the 2019!

Kevin: Thanks for a great turnout last night, it was fun!

Thanks to all who brought door prizes! That was a great turnout as well.

I am sorry to the two people that did not get door prizes—we had so many I thought they would go around. It is always disappointing not to be on the receiving end. I think if we are in a similar situation in the future, we can perhaps augment it so that no one goes away disappointed.

For those that chose the Meade LPI, DSI and DSI cameras, two of them are from the Centre's equipment loan program and were withdrawn from inventory last year. The remaining DSI camera was a donation some years ago from a member. To my knowledge all were in working condition and the software CD was in the box. You may find newer better software online and will require a standard USB appliance cable to connect to them. One these old ones, remember to load the software before connecting the device.

The food was good tasting, hot, and somehow I gained two pounds since yesterday. Let us know, give feedback as to the venue for future events. I believe the final count was 26.

Susan: Thanks for organizing dinner Kim! It is great to have our own space to move about and visit. Thanks to all who donated door prizes.

Thanks to all who took the chance to donate $$$ to the Centre and I will soon move on to get the 2018 tax receipts out!

Dieter: Ditto. Especially the having-our-own-space-to-move-around part.

Rose-Marie: Yes, thank you to the organizers, it was a wonderful dinner! I ate way more than I should have, but it was a bit of a celebration so I ain't feelin' no guilt.★

Meteorite Mystery at Cataraqui Woods E.S.

Dieter Brueckner

I DID ATTEND the meteorite evening at Cat. Woods Elementary School on November 26th. I'm really happy I went. Attendance was relatively sparse, the rainy evening likely being part of the reason that folks stayed away.

The sequence of events that led to the discovery that the meteorite that had been discovered in the school's quadrangle was a fake was first recounted. Students had found all the blinds drawn when they arrived at school, then were called down for a briefing by the principal, explaining what had been found.

Students were then led through a variety of activities to ascertain whether the large rock was indeed a meteorite. They were reminded of the Leonid meteor shower a few days earlier, concluding the timing did not fit exactly (I did point out to the organizers afterwards that meteor showers generally do not produce meteorites).

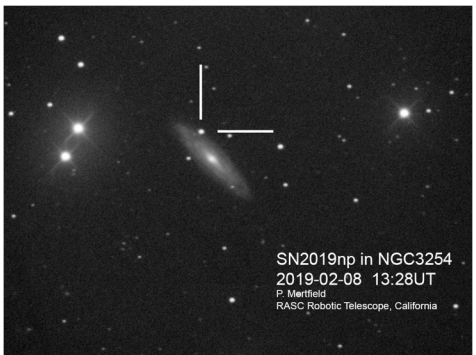
They did tests in flour to see what kind of craters were formed when they dropped marbles from various heights and angles. They had a small planetarium set up for identifying constellations.

There was also a "field station" set up under a tent where they could research different kinds of rock, and do comparisons—it almost felt like a set from "Raiders of the Lost Ark." All the venues set up with great imagination, an air of mystery, and charm.

The actors who ran this activity posed as teacher candidates and a visiting prof. from Queen's. After much reflection, they decided, after experiencing the enthusiasm and curiosity aroused in the students (Grades 4–6), not to reveal their true identities, and asked us to do the same, and not disillusion the kids. They were so keen, that whenever **Dr. Kosma** (the fake prof) wandered into the hallways, she was apparently mugged by students with questions and suggestions.

Jan Le Clair, the principal, is hoping we can continue to build on this enthusiasm. I've made a start by sending her some links to JPL and the InSight Mission, as well as an educators package from JPL that relates to the mission. Can we organize a Star Night some time, or encourage the kids to come to KAON? With their new membership to the RASC, connections to astronomical events will hopefully become well-enabled.

A bit verbose, but I wanted to convey the flavour.★



Discovered by Japanese amateur Koichi Itagaki on January 9th. It is at mag 14.0 and fading.

KAON Report: September 15

Susan Gagnon

We enjoyed the earlier start hours this month and the lecture in the auditorium in Ellis began at 8 p.m. Prof. **Greg Wade** (RMC) talked about the Parker Solar Probe. Others will have to comment on this as I was on the roof setting up for the visitors.

We had three scopes: **Laurie and Devin** brought their 8" Meade SCT, **Kevin** operated the Centre's 6" Celestron NextStar, and I brought my 90mm ETX. There were three groups assigned to tours of the dome which translates to 70+ members of the public and this agreed with the constant circulation on the deck as we provided views of Jupiter, Saturn, Mars, the Moon, Alberio and M31.

We handed out two new bookmark-sized flyers about the Centre, getting started in astronomy, Sun/Moon/Jupiter/Saturn card sets, and the usual lunar observing cards and StarFinders that we supply the observatory with.

Once again it was a very rewarding night where people were so appreciative of someone taking the time to share their equipment and knowledge.

Kevin: This was our first KAON in months and it was great: clear skies, 75 people, and equipment that worked. As we arrived on deck around 19:30 we could see five planets all at once: Venus, Jupiter, Saturn, Mars, and of course Earth and for bonus points the Moon!

Susan: It was great to have 3 scopes on the deck! ★

KAON Report: January 12

Susan Gagnon

Wow! It was clear! I estimate that the deck was a cozy –14C, far less scary than the predicted –22 with the wind chill as we had no breeze at all. Aside from the usual cold fingers we did very well. Laurie and Devon brought out their 8" LX-200 (I am always amazed how casually you guys carry this along every month!). I used the club's 6" Celestron and binoculars and Connor brought out the Queen's Questar. The ticket tally was 100 and I think most made it to the deck. Mark Richardson was there to bring visitors over to the Arthur B. McDonald Canadian Astroparticle Research Institute McDonald Institute Visitors Center as part of the tour. Joe Bramante from the institute gave the talk on Dark Matter and Exploding Stars offering the theory that dark matter can be created in collapsing white dwarfs. Before the talk I made an announcement about the eclipse and encouraged the pick up of the handout that outlined the event in local time. We also had SkyNews to offer and at the end of the night the entire table was cleared of those items plus all the starfinders and lunar observing cards! I also had a chance to mention the upcoming raffle for a beginners observing kit and Conner reported that there was a lot of chatter about that in the dome so we may have some real interest. It was a great night to make contact with people but I had an odd question that came up at least 6 times. I was set on the Moon and the question was 'Can we see the flag?'. The theme seemed to be: if we have so many high powered telescopes looking at tiny distant stuff why have we not seen a picture of the flag? Very odd. All in all a great event.

Kevin: With great respect I read your adventure in the cold. I went out last night and could not stand more than a few minutes, and then ran back inside to warm up. Way to go!

Paul: I gave KAON a miss so I could get up early; I'm still chasing Iridiums (Iridia for English speakers). After many outings (endless bad weather, as Walter noted) I've caught several over the past couple of nights. Very exciting for me as their days are numbered.

Kim: I was out this morning for the ISS pass which was a success.

Stephane Courteau (Queen's): Thank you all for your extraordinary contributions at the Open House last night! What a nice turnout too! As usual, to **Susan Gagnon** and all the RASC members who help make these evenings so special (despite the cold), a huge thank you! (*Edited...*) Overall, you guys are fantastic, fun, and engaging. We are lucky to have you! Kudos to you all! ★

KAON Report: February 9

Susan Gagnon

It was a small crowd of 45 at the observatory. The guest speaker was respectful of the fact that the sky was clear and ended his talk right at 8 p.m. For the second time the event has been a 4-part show: 1-Everyone does the lecture, 2-One group goes to the dome, 3-One group goes to the McDonald Institute and 4-(if there is another group) people head out to the deck. It does not work seamlessly but it is an interesting experiment. The number of volunteers who have been enlisted in the process is impressive. **Laurie and Devon** with their scope and Queen's Quest Star were out first while I initiated ticket sales for our fund raising raffle. I then joined the others with the Centre binoculars x3. Orion, the Moon, and the Pleiades were the most obvious targets and Laurie managed to do a couple of sky tours. The sky was clear but not that transparent and even at the zenith was limited. Even so people enjoyed the event. ★

Observing Reports: December–February

Various Members

Saturday, December 1

Kevin: We went out to SCGO and the Telrad was not working. Pushed the Dobsonian around as best as we could otherwise but you do need a finder, and you quickly forget how good a Telrad is to have.

So it came in the house and was opened up. Turns out this particular problem was easy: a corroded two AA battery holder. Luckily I have just received a couple of months back a bulk packages of them on the slow boat from China. Replace it easy-peasy and it is operational again. Yay!

Hmmm. where did all of this cloud come from?

Mark C: I've replaced them with AAA battery holders. I find AAA batteries hold up as well as AA and that gives more room for Telrad dew heater controls and wiring.

Rick: Good fix Kevin. Yeah, I was just going to respond that there sure is a lot of room in there for lots of accessories. Could probably fill it with other batteries and power all kinds of other reticles and stuff. Of course that would make it even heavier. I have a Telrad I got as a door prize some years ago and have always been intending to put to use. But it is too heavy for any of my current scopes. So it may go on the new 25cm f/4 that I'm working on (mirror just finished fine grinding yesterday and a plaster tool for a pitch lap poured) or maybe on the 20" I'm planning for a couple of years from now.

Kevin: Not mentioned but part of this Telrad...there are resistors mounted under the plastic viewing up top and wired into an external 12Vdc RCA style jack, for anti-dew purposes. At one point we had a voltage reduction IC in there so the external 12Vdc could also power the 3Vdc LEDs in the Telrad itself...but those broke some years ago and we haven't gotten around to fixing those.

Sun/Mon, December 2/3

Stephen: I got an unexpected clear evening so I'm imaging M77. No sign of the supernova. It may have faded. I'll take a closer look tomorrow after I stack my images.

Hank: Glad you are doing what most of us don't; looking forward to armchair astronomy via Steve!

Tue/Wed, December 4/5

Rick (17:49): Well, it's clear out—if it stays that way I will try to image the SN and try getting a spectrum once it gets above the trees. I think it will be too faint—unless I can get a bright guide star. Which actually it looks like there might be one. I'm trying to get the scope running and supper done, review minutes, review action items, consider my NC report... before we start our exec meeting this evening.

Malcolm (21:06): Yay! Found comet 46P/Wirtanen in binos... imaging it now. It's right by NGC 1118 if anyone wants a slew-to target.

Rick (21:13): I had Wirtanen on my list for just after M77. But it has just clouded over—guide star gone, last image of DY And had only 5% of the signal of the image immediately before it. However, at least I caught the maximum I was looking for, nicely right in the middle of my series of images. Doesn't look like it will clear off again tonight. You probably have a couple of hours yet. Good luck.

Malcolm (22:36): It crapped out for about 30 minutes but it cleared up again...

Hank (22:36): 46P/Wherenot: Well isn't that wonderful: I have been keeping an eye on the sky tonight, waiting for the 9:30–10:30 hour of maximum altitude, checked the maps, gathered the eyepiece case and power supply and CONFIDENTLY headed out to the RHA Observatory just after 10 p.m. EST. I rolled off the roof, looked up over my right shoulder and said "GD Frickin hobby!" Total cloud from just east of meridian to west horizon, closed the roof, end of story.

Keith: Well I was not fooled, I looked up about 7 p.m. and thought, "What a beautiful sky, no wait a second, is there a halo around the brightest stars?" Yes! Almost was tricked to go out, NOT.

Greg: Me neither. Had things warmed up and ready to go but the cloud sensor started to edge up about the time we finished dinner. So I looked at the satellite IR and saw this huge swath of cloud moving our way. By about 9:30 there was one star visible—the rest was Ontario standard grey... So much for exercising the new camera. Time for a drink.

Kim: We had cloud and by 9 p.m. totally overcast and now there is snow on the ground. Was it easy in binoculars?

Malcolm: This is how I found it: Due south is the easy part, then identify Cetus. Look for Cetus' tail, the ring of stars that makes up the fluke. Then just drop down slowly about 10 or 15°. It is big, but diffuse and fuzzy. Colour is binos is neat. This obviously will change over time, but using Cetus' tail to start with will work for a few more days. Then the Moon will be back by the time it gets interesting...near the Pleiades.

Rick: We too had solid cloud all night and a dusting of snow on the ground this morning. I held out for a couple

of hours after it clouded over but then gave up, closed up, and went to bed.

Stephen: I woke up yesterday [Dec. 3] to find my computer wouldn't power on, dead as a door nail! It will be in the shop for at least a week. And we have lots of clear moonless nights coming. So I took back my old computer that Donna uses and got it set up to do astronomy again. It's not as capable as mine but it will do in a pinch.

My observatory really doesn't like my old computer. That's why I bought the new one last year. I fought for three hours to get it working, and then it clouded over.

Kevin: The Falcon 9 launch was a success: the dragon cargo capsule is in orbit and on its way to the ISS, docking on Saturday. The *landing* not so much. It was a good, slow speed landing—in the water off the landing zone. A grid fin hydraulic pump stalled, so Falcon landed just out to sea. It appears to be undamaged and is transmitting data. Recovery ship has been dispatched.

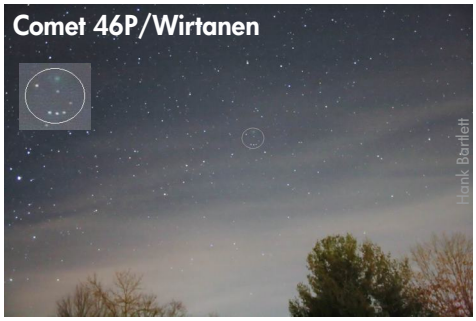
Fri/Sat, December 7/8

Malcolm (20:45): Tonight I put my D810a on my Orion ED80 and I got all my comet shots before the clouds rolled in. I used an Orion focal reducer/field flattener on this scope for the first time. What a difference: stars are round!

Kim (21:22): I saw the comet with binoculars. Have not checked the gazillion images I took. With 15x70 binocs it was a fuzzy patch. The seeing really sucked. But I saw it, so I'm happy!

Malcolm (22:57): The sky was clear for about 2 hours here, so I shot the comet again tonight, but with more magnification. Using Deep Sky Stacker for the first time: I'm really liking it.

Hank (23:21): Very nice Malcolm. Hazy cloud and COLD here but I still got out there around 10 p.m. EST. At least I got it, it is the left eye (on right) of the Comet emoji that is missing one tooth.



Malcolm: Haha! Nicely done!

Kim: Nice image Hank. I went through my images, which were only 15s on the Canon PowerShot ELPH 120IS, and I did capture it but it was very dim, and in very poor skies. The images are not worth posting, but I will be waiting for the next opportunity to observe it. Now I can watch it move. One thing I love about comets is watching the movement.

Hank: Thanks Kim. If it had not been so cold I would have moved up to 55mm and got in tighter for some more images. The cold affects my fingers more with the Raynaud's and they get sore and then numb so I don't do that much cold weather anymore. I will try again next clear night and maybe skip the nightly Christmas movie/eggnog and go out earlier.

Greg: I share your pain regarding finger pain and cold weather. But I discovered snowmobile attire and bought a pair of heated glove liners and heated vest—runs off a pocketable lithium battery or in the dome a 20A DC power supply. It was not cheap (sadly), but worth every penny. Made a huge difference.

Sat/Sun, December 8/9

Walter (17:07): I walked up to the corner and saw a nice thin crescent Moon low in the SW. The sky was too bright to see Saturn, so I walked back and grabbed my 15x70 binocs. By then dark cloud had covered up that area of the sky. In fact most of the sky is covered in cloud right now and the forecast is for cloudy periods all night.

Last night was terrible prior to midnight and then when I woke up this morning it was nice and clear for a little while. Venus was spectacular—almost a match for the painfully glaring LED lighting around town.

Such are our skies of late.

On the inside front, I just upgraded *Stellarium* to 0.18.2. The app has grown from 293 to 323MB, but has lots of new features like transit times and planetary nebulae.

Mon/Tue, December 10/11

Kim: We watched the ISS go over and saw the comet. Ground fog and ice crystals had formed and cloud was coming in from the west. Beautiful Moon tonight too.

Kevin: Here is a 15s shot of a 71° overhead pass, coming from the NNW. Aboard is David Saint-Jacques. He is the third Canadian to complete a long-duration mission aboard the Station. He flew to space in December to spend 6½ months in orbit as a member of Expedition 58.

Tuesday, December 11

Stephen: Everyone can blame me for the notable lack of clear skies. My old computer just couldn't handle the data load I put on it so I bought a new one. I've had a little bit of clear weather to test it out but not enough

to really do anything useful. Oh well, the sky will undoubtedly clear in time for full moon.

I'll eventually get my computer back from repair and Donna will get the new one for Christmas.

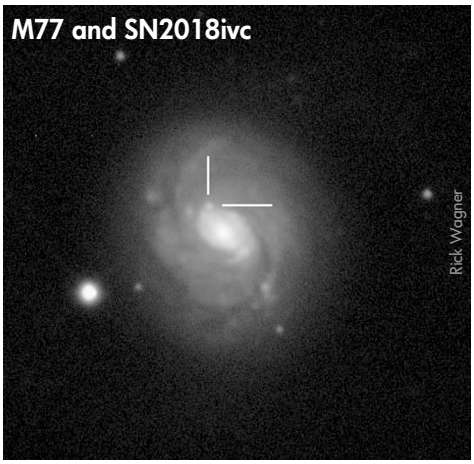
Rick: And, starting today, I have to accept some blame too. I ordered a new tiny camera for my guide scope and I picked it up at the post office this afternoon. I was hoping to try it out this evening but it was decidedly cloudy (after a nearly perfectly clear afternoon.) Between the two of us we're probably all done for the year. Dare we hope that the forecast clear skies for Monday night will hold up better than the 4 clear nights in a row that were forecast for this week?

Tue/Wed, December 11/12

Rose-Marie: I would still be curled up and snoring away in my nice warm nest, but the BigWetNose roused me out of my dreamin'. As I stood outside in the cold waiting for her to take care of business I gazed at the sky towards the west, in spite of the bit of haziness in that direction I was rewarded with 2 very short but bright *pffffts* of meteor.

Wed/Thu, December 12/13

Rick: Well, it cleared off briefly here so I rushed out to open the observatory. By the time I got everything arranged, target found, shifted slightly to get a good guide star, changed filter and refocused, I got one 100s exposure as an exposure test shot and one 300s official shot, and a second 300s shot which was ruined in the last 30s by cloud blanking my guide star. At any rate I caught the supernova—see the attached crop processed to show the SN to advantage. Maxim seems to put it about 17th mag though that's lower than most others have been reported and the core of the galaxy right next door makes the mag estimate really iffy.



Kim: As I was retiring to bed, I asked, "Do you think it might be clear?" "No," said Kevin, "Total cloud." I looked out and it was clear—enough to go out and see the Comet 46/P visually in binoculars very faintly. It needs more exposure time for it to show up on the camera image—15s was not enough. I did see two Geminids as well.

Thu/Fri, December 13/14

Kim: It was a great time last night [at the Centre's Big-Bang-quet]. Thank you all for coming out. It was great to see many people we have not seen in awhile and to meet new/past members.

We got home last night and total cloud. So I got up this morning and looked out the East window and it was clear from 50° up and over head. This was 5 a.m. I saw 2 Geminids from the window, then went out and took some pictures—mainly of Venus and Spica, but saw another half dozen Geminids, fast and bright.

Rose-Marie: It was totally clouded over when I arrived home last night. BigWetNose rousted me out at 6:30 a.m.; it was hazy, about the only stars I could see were (planet) Venus and two stars of Gemini. I dawdled for a bit but did not see any meteors, so Beastie and I headed back to my nice warm bed.

Friday, December 14

Kevin: The Centre`s 20cm Meade LX-200GPS is old and cranky. The alignment routine typically works maybe 1 out of 4 or 5 times. Even then the pointing model is not that much greater and often needs to be re-syncd during operation. When first powered up from a Park (go to sleep, remember where you are, not Malcolm), Goto an object often fails... So, I want to add a remote image finder with a much wider field of view than the primary camera in the telescope.

Greg: I do it both ways: I plate solve using *Astrotortilla* to correct my pointing, but I use a Williams Z61 as a finder/wide field scope. Normally it has an AG1.2c that works well with PHD2 or AT, and is my final confirmation that the sky is crudding up. Once I discovered blind plate solving I never used the finder to 'find' things. However, one must ensure the primary and secondary scopes are actually pointing at the same thing—and check it every so often.

The cameras I generally use don't play nice with ASCOM, so I save an image to the desktop and have AT read it. *PHD2* likes to save as FIT, *Mallincamsky* as jpg. AT is picky regarding the file formats it likes. Essentially, it's the same software as astrometry.net.

The platesolving software is on the same machine (and its database), reads the image, filters it for groups of four stars and searches for matches. Initial setup is tricky—there are a few parameters to diddle unless you are lucky. It took me a while, but once determined I just leave them alone.

You must have ASCOM installed and an ASCOM driver to control the scope. When AT starts it asks the

mount where it thinks it's pointing, then does its solve. The report displayed is where you are actually pointing and the calculated discrepancy. There are tick boxes to choose whether you want to 'sync' to this location (tell the scope controller where it really is pointing) and to slew the scope to the expected location (where the scope thought it was pointing). 'Sync' matters for me because my scope controller has a pointing model and these gradually improve it. I redo the pointing model every time I realign the scope or take it in the house for work. Otherwise I don't bother with multiple star aligns every session—just pick a nice bright star, mask focus the main and guide scopes then let AT correct things ongoing.

Before I got AT working, I would upload images to astrometry.net and get it to confirm what I was actually pointing at. It helped me through my learning curve. I still use it every so often for that purpose. If you cannot control the mount from the computer, then the information from astrometry.net will at least help understand what your errors are—especially if you start a session by multi-star alignments.

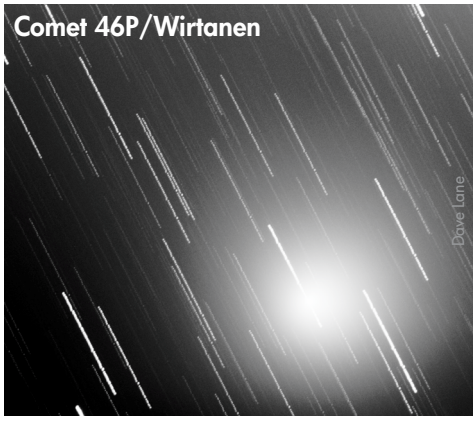
Fri/Sat, December 14/15

Kevin: It looks like about 8 Geminids came through the cloud cover we had here at SCGO on the night of Thu/Fri 13/14. The *Clear Outside* app showed near 100% high cloud but methinks high cloud may also be a bit transparent. I am waiting for last night's run.

We stopped by to visit with Terry Hicks, who is doing as well as can be expected in the circumstances. He thanks everyone for the thoughts and card.

Sat/Sun, December 15/16

Dave Lane (*on RASCals*): This image of Comet Wirtanen was taken on Saturday night from the robotic Burke-Gaffney Observatory in Halifax (0.6-metre CDK) from 62 30s images stacked and aligned on the comet and histogram stretched. The FOV is about 20 arc-minutes. I thought a thin tail might be visible, but nope! The tail seen by some photographers about 10 days ago appears to be gone (or is behind the coma).



Wednesday, December 19

Hank: Hello fellow RASCals Hank here, today I received a self present in the mail for Di and I in the form of two plush bear decorations for our Christmas tree 2018. These are no ordinary bears, they are space bears, on Dec. 9 2018 they flew to the edge of space and returned safely riding on an Earth-to-Sky balloon. I purchased these bears in support of the experiments being done by Earth-to-Sky Calculus students under the supervision of Dr. Tony Phillips. See more at spaceweather.com. BTW Di has the red scarf and Hank the green.

Kevin: I *think* this is the movie that started by dislike of fungus...you should watch it...you will not look at your space bears the same again! "Mutiny in Outer Space" (1965).

Hank: I have looked up the IMDb on this movie it looks like a classic '50s not mid '60s film. I just watched the trailer; it may be too painful to watch the whole movie. I MUST box the space bears every night and tape it shut in a drawer in a locked cabinet out in the garage! WAIT, I don't have a garage!

Friday, December 21

Kevin: Kim went out early this morning in the pouring rain to remove the electrical-tape-shutters from the two pinhole cameras she built a few days beforehand.

Yes, they are totally designed from the beer can design as previously done and discussed by Rick Wagner, with references from youtube.com/watch?v=wtZOWEB_wcI I assisted but did not get to partake in the primary role: emptying the tallboy beer cans! They were already empty.

So, they were opened on the Solstice and the intent is to run them until the next solstice, six months away.

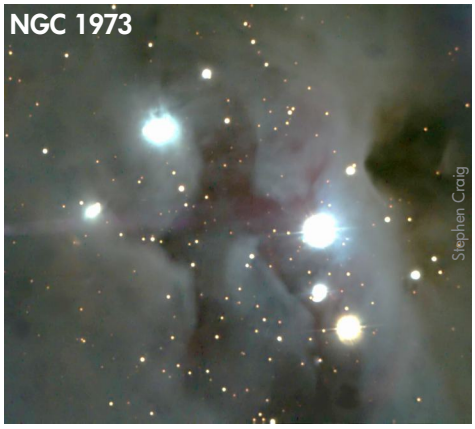
Sat/Sun, December 29/30

Kim: We were outside to see the comet (Kim) and Mars (Kevin). It was –13C out, with a slight wind from the north, 3.75/5 for seeing. I had the Canon Power Shot ELPH 120 IS with upgraded OS ver 1.001, which allows exposures as long as

60s (up from 15s previously). This photo is three 60s exposures, stacked in *DeepSky Stacker*. There is a big learning curve on the stacker program and the camera OS settings.

Hank: Way to go Kim, you will be a stacker pro in no time. It is interesting what the stacking does to the tree—looks very artsy!
Stephen: I finally got some clear sky with a working computer! My goto pointing was acting up but I still managed to get some photos. This one is my best-yet of NGC 1973.

With more clear nights coming this week I'll realign the telescope mount and see if I can improve my goto.

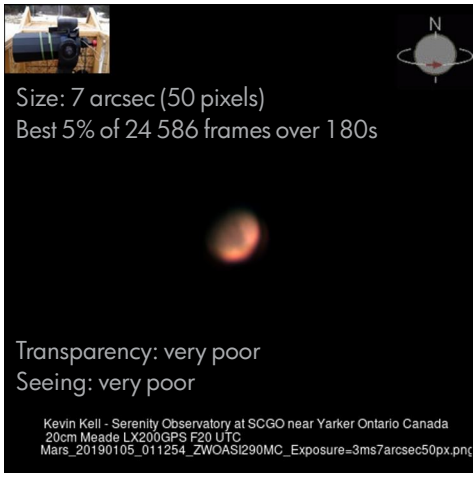


Tue/Wed, January 1/2

Malcolm: It was clear last night, with poor seeing but stars were visible! STARS! I have been working on Pixinsight processing. Getting the Warren Keller book has changed everything. IT'S EASY with the book, as compared to without. I highly recommend it, and there is a significant contribution in the book from Ron Brecher (for those who don't know him, Ron is an active Ontario-based imager). Anyhoo...all I have captured so far is 15x300s of Luminance on M45. Maybe someday I'll get R,G, and B for this object if it's ever clear again.

Fri/Sat, January 4/5

Kevin: A nice night for a change, though maybe a little hazy. I took out the old DSLR on a tripod and did a run of 60s exposures of Orion rising. Too bad the focus at infinity was not in focus. Then I moved over to the northern skies in the hopes of aurora, but in reality the lens was fogging over and the red cell tower lights were lighting up the lens face, so mostly nothing there. And the built-in battery also was almost dead after an hour in the cold.



I also opened up the Serenity observatory with the Centre's 20cm LX-200GPS and wrestled with pointing issues for a while. I am still commissioning the new ZWO ASI290MC camera, and got it to work with *FireCapture*, including the autoalign and autoguiding functions. *FireCapture* autoguides on the actual single camera image you are taking in realtime. It only works on planetary objects, not stars, Moon or Sun, by using the centroid of a planetary image on the screen.

I left it taking 180s exposures at 3ms for a total of around 24k frames in a file size of about 18GB.

I went inside the house and brought up Chrome Remote Desktop to see what was going on and saw that it successfully tracked and guided Mars for the entire run! I also saw that the 120 GB SD drive that started with 90 GB free, filled up after only 5 runs and it aborted the rest of the runs. I have a script to move images off the drive onto the house file server but neglected to start it up. Will have to put that on a Win10 scheduled task next time.

In the morning, we were out in the freezing fog and haze and caught the ISS pass at 05:26. Very nice!
Malcolm: hmm... about that freezing fog... BOOOOOOOOO
Greg: It wasn't too bad around here. I was able to observe for a few hours before the clouds rolled in. Everything was covered with frost and the ramp out of my dome was slippery. It was curious that the SQM was bouncing all over the place—made me think of thin clouds drifting over. I can see the differences in the frames captured. I was trying the DS16c on my Williams Z61 APO—gives about 2x3° FOV so enough for M31 or M45.
Rose-Marie: About the freezing in general.... BOOOOOO! I'm feeling the cold more this year. I kept checking see if there were any sign of aurora when the kp read 5, but by 10:00 p.m. there was a bit of haze and I chickened out yet again.

Yeah, that finding infinity focus can be a real pain, trying to figure out just how much a smidge to turn back on the lens. I often have to use the shotgun approach and peer intensely at the display after each shot. And any time you move that tripod around, check it again.
Stephen: It started off nice and clear here too. I had been in town so didn't get my observing started until 8. By

10:30 I was having trouble seeing my target. I went outside to find we had a heavy fog rolling in off the lake. Everything was covered in a thick frost. My dew heaters couldn't keep up with the frost. So I packed it in for the night. At least I had managed to get one good pic done first.

Cathy: It has been overcast, cloudy, icy, snowy... repeat iteration... for days and nights up here.

Paul: I was in the country out Brockville way this morning from before 6 a.m.—it was just barely getting lighter in the East. The transparency was even worse than the bad days from my driveway! I could see Venus and Jupiter. Astrospheric told me there was 21% cloud cover, which is not bad for this season's viewing so far.

The following stars were up there in the murk (at reasonable altitudes above the horizon): Arcturus, Vega, Capella, Spica, Deneb, Regulus. I was observing with 12x50 binoculars in the Lyra–Cygnus area: no stars there at all!

Obviously I had made a wrong turn and was at Keith's house.

Kim: It was a lovely morning. I was out at 4:40 and saw all those stars Paul did, took lots of pictures. I was out again at 06:19 for the ISS pass amid the ice fog. It was a great way to start the day.

Hank: Oh Paul, Visibility Nil!

I was down at the creek today with the kids skating (them not me). Suddenly the sky cleared, SUN! I headed home, grabbed the eyepiece case and cranked open the observatory. By the time the eyepiece was in the scope it hazed over, I got to see the cloudy sun for a couple of minutes before cranking the roof closed again, FRICK!

Kim: Could you see the sunspot on the west limb even in the haze? We had one tiny sliver, got the mount and scope ready and it clouded over again.

Hank: There was too much haze/cloud to see the sun spot. I guess we will have to wait a few weeks for the next one. At least my equipment still knew who I was!

Friday, January 11

Malcolm: I watched the SpaceX launch and landing this morning on my iPhone. I couldn't help but feel a bit of nostalgia as the Iridium update project nears completion. It is the end of an era (Iridium flares) that so few of us (amateur astronomers mainly) even knew existed.

Fri/Sat, January 11/12

Kim: There was cloud all around except for this area to the zenith. Scorpius is rising! That is Antares. 15s is too long, as Venus is flaring (taken with the Canon PowerShot ELPH 120IS).

After one shot I did see an Iridium, but the information on *Heavens Above* did not match the sky area, so I have sent a note off to Kevin Fetter.

Paul: Iridium 60 did flare at 6:19 this morning, but that was in Cygnus. Ophiuchus flares were at 6:40 and 6:44 so it couldn't have been them.

Rose-Marie: I admire your willingness to get out in this brutal cold. This winter I'm feeling the cold more and just haven't had the gumption to get out there when there's the slightest breeze. Last night when I walked Kerrie the sky was completely clouded over.

Paul: I saw Jupiter and Venus through our eastern facing window. Your picture brings out their position in the sky beautifully!

Walter: When will we get a night that is clear from end-to-end? I saw some cloud on the satellite loop that looked like it would arrive in a few hours, but I went ahead anyways. After some problems getting the computer started, I was up and imaging. Though it has been a few months since the observatory has been in operation, the scope was not lost and everything hummed along nicely until the sky clouded over just before 22:00. The computer's CPU overheated a couple of times (time to re-grease!) and the network interface is not working, so I used an old 2GB USB key to move the images to another machine for processing. The computer's clock was right on time (with reference to my wrist watch) amazingly enough.

Hopefully tonight will be clear all night and I can get the flat frames I need.

Venus, Jupiter, and Scorpius were spectacular this morning. I wonder what time it cleared again?

Sat/Sun, January 12/13

Walter: Another spectacularly unsatisfying night! The computer hung in all night but once again clouds dominated the sky most of the night, including when I did flats at dawn. It makes me long for the old days when –20C cold snaps guaranteed clear skies. Clear nights are so extremely rare now.

As it turns out, the CPU overheating issue is due to one corner of the heatsink retention bracket having broken. Guess I should have ordered two of them last time! [*Update: New brackets on the way from China—should arrive early March.*]

Venus and Jupiter in Scorpius were nice once again, but that doesn't

make up for the crappy night.

Kevin: Greetings! Day 9/12 for the new year and it was a cold one, –13C, when I went out with the DSLR set to 18mm, trying out Hank's method of trying to achieve a good focus. After several focus adjustments, I set the intervalometer to delay for 5s to allow the camera and tripod to settle down, and then take 60s exposures with 1s in between for 25 shots. Then ran inside!

It actually worked! The battery held out, and the front lens also stated clear.

Sun/Mon, January 13/14

Rick (18:50): Wow, gotta love winter! I've already shot two dozen short videos of the Moon, done 8 transform shots of NGC7790 and shot 3 each B and V shots of XY And. All before supper! And still 12 hours of observing to go before dawn! It was basically the same yesterday—observing from 17:00–06:45. Woohoo!

Wednesday, January 16

Kevin: We have created a web page to help us keep track of our 365 days of observing in 2019. You can see it here: starlightcascade.ca/365

Hank: Hank will do his best to observe the number of days you two DO NOT!

Sun/Mon, January 20/21
Total Lunar Eclipse

Stephen (15:53): The Clear Sky Chart says cloudy for tonight. The satellite shot shows some promise. Let's hope it is right!

Malcolm (17:40): I may drive west a bit for a wide angle landscape shot...

Kevin (18:13): Clear now in Yarker. Moon is up.

Rose-Marie (18:59): I ain't sayin' nuthin...don't wanna jinx it...

Rick: Certainly not clear here yet but I can see the Moon easily through the cloud. I'll set something up in an hour or so if it stays clearish.

Mark K: I went too far west. Cloudy and 0C here.

Kevin (21:40): Outside with a cold north wind blowing. High thin cloud with some medium cloud bands here and there. First few images now, nothing noticable...2nd contact in an hour or so...

Rose-Marie (22:50): I just had the BigWetNose out for a quick walk and damn is it cold! Saw the first bit of bite but I don't think I'll try with the camera until the peak.

Kevin (23:49): This from earlier, totality just hit, clear skies!

Mike Watson (*on RASCals*, 23:50): I was looking through the scope using ~31x, and there were several stars down to 9th mag surrounding the Moon. The colours are more muted than I remember from April 2014. It's much more orange than red to me.

Rose-Marie (23:59): Just took camera and tripod and cable release out. Damned moon is high, I'm too tall, can't get the moon in the eyepiece. Then with gloves keep hitting display button which lights up the viewscreen, blinding me. After just one minute of this accursed bitter cold, the tripod leg clamps don't hold, also the quick release at bottom of camera is not holding, and the camera keeps slipping. I got mad and yanked up the tripod, which pulled the cable release head between the legs of the tripod and popped it off. I tried a couple handheld shots, blurry. Figured I'd better quit before grabbing a hammer and smashing camera and tripod all to pieces. I HATE ASTRONOMY!

Kevin (0:01): Deep breath... Our tripod too could not go high enough so I am hand-holding with the camera up against the observatory walls. It's hard to focus; trying 1s exposures during totality...may go a bit shorter and adjust in post.

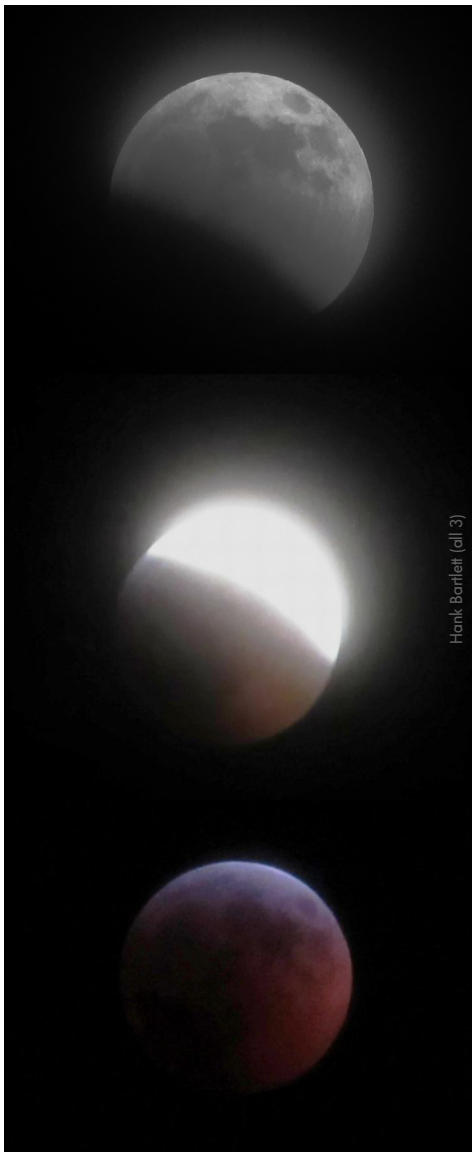
Hank (0:02): Looking very nice!

Hank (1:04): I took about 50 images just for freezing fun, here are three. [*next page*] Seeing as the Sx600 does not have manual focus, I was done at totality.

Cathy (2:22): Tried to get a bit of sleep, then crawled out of a warm cozy bed just after midnight to check out the eclipse. I figured if I didn't get up, there would be a nice rainbow circle around the eclipsed moon due to ice crystals...and then I'd really kick myself. Heck, it wouldn't even be down to –35C yet...

My apartment faces east, with an overhang above me, so I had to get bundled up to go outside to the west side of the building. I figured I'd be looking just about straight up...so passed on the tripod...passed on the cable release.

This photo is handheld: Canon Rebel T3, f/5.6, 1.3s, ISO 3200, 28mm setting, taken about 12.30 a.m., last photo I took. Not touched up at all, just cropped from the original. The eclipse was a nice dark



orange, but quite a bit brighter on one side during the total phase, even through snow clouds.

Anyway...in spite of snow, at least I saw it!

Kim: We celebrated the eclipse with Mimosas.

Walter: Clear skies in Oshawa, but temp. was –23C with a windchill of –37C. With conditions like these, of course Murphy would give us clear skies—he is one sick dude. Oh for a window that would have allowed indoor observation of the eclipse! At least by totality there was almost no snow swirling off the roof.

I set up the C8 on the front porch (stored in the car so it was already pre-cooled) for totality and managed a few visual peeks and afocal shots with my NexYZ unit (without which I'm sure I couldn't have managed to get the camera into the exit pupil under the prevailing conditions). The Oshawa skies are horrendously bright, so it wasn't as nice a naked eye view as it would have been from the country, but there was no way I was going to venture more than a few feet from the front door.

One image is attached (ISO 2000, 1/4s, 00:21:55 EST). I'm sure it's possible to take a better photo than this with my phone, but I wasn't willing to take the time and further frostbite to experiment in the midst of an extreme blustery deep freeze. It's good enough as a memento at least.

Hank: Nice image Walter. This was a bust mostly as eclipses go for many: too cold or too cloudy or something better on TV. My daughter and I had planned to watch it together but she was clouded out in Costa Rica, bad weather everywhere.

Kevin: Outdoor conditions were about as bad as they could be...just be glad that you (and we) were able to get outside and see anything at all! The next one is in May 2022...I think it will be a little bit warmer!

Malcolm: I lost all hope at 10:30. Went to bed.

Keith: Nice shoots Hank! I cleared the deck in prep for the tripod, went out to have a look, still had cloud, and the wind was so strong that snow was blowing everywhere. I actually thought that it was still snowing, no way I could set up and after the event ended, I looked out and there was at least a ¼" of snow on the deck. My thoughts were the same as Walter: need a skylight and take pictures through it, in the warm, need to live where the weather fits my clothes.

[*A possible meteor impact on the Moon was imaged at 04:41:43 (just before totality), but not by any of us!*]

2000 Jan 21 Total Lunar Eclipse
(*from the RASCals List*)

Clark Muir: Some of you will member the Lunar eclipse of 2000 Jan 21 which was very similar to tonight's eclipse (not just on date). I wish I had kept notes. My recollection is that it was very cold that night as well. Checking historical data for that night, the low was -23C in the Cambridge, ON area. Tonight is forecast for -21C.
During the lunar eclipse observed at the old K-W observatory in Ayr, Ontario in 1992 Dec 9 the Moon was rendered nearly invisible during totality due to the eruption of Mt. Pinatubo in 1991.

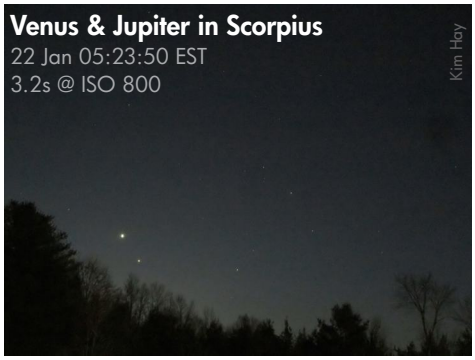
Dave McCarter: I remember that night well. Wind was out of the north west and a streamer was dumping snow on London. I picked up a friend and followed three snow plows down Wharncliffe Rd until they turned at Lambeth. We broke out from under the cloud at Talbotville and when we got to our Fingal observing site it was gloriously clear and -26C. I dared not shut off the van and kept the heaters running flat out. I shot the eclipse using Ektachrome film and had to warm the camera up in the van so I could advance the film. The eclipse was probably the reddest I've ever seen. When we got home London was buried in over a foot of snow.

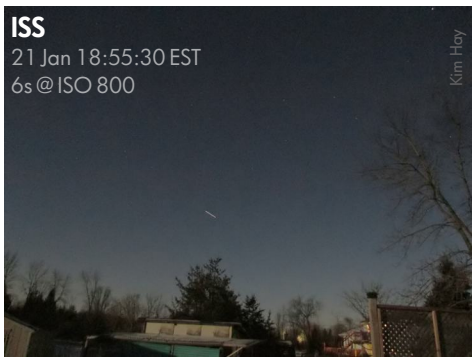
Mon/Tue, January 21/22

Rose-Marie: After last night's episode of equipment failure and painful freezing of fingers and having my little temper tantrum, now I see that tomorrow is the conjunction of Venus and Jupiter, with clear skies forecast. It will be brutally cold, and yet I am already planning to set the alarm.

WHAT is wrong with me?! Oh wait, I'm asking the wrong people, my fellow addicts.

Kim: Here is an image I took this morning. It's –26C, no wind, quite nice out.





Hank: Glad you are brave enough to get out for these images Kim. We never left the house yesterday, watched 8 episodes of Outlander. –32C here this morning in the burgh. I looked at many eclipse pics online and I recently joined "Telescope Addicts" on FB, there were many good and amateur images there from all over. I have actually picked up some tips from this site. There is also some strange stuff but that is everywhere.

Rose-Marie: Well I was very happy to discover that I could view the conjunction quite comfortably through the big window in my front door. I woke up at 5:00 a.m. and went downstairs to stoke up the woodstove, then grabbed the camera and took a couple of shots through the window.

Malcolm: After missing out on the eclipse I was pleased to see the reminder from you of this morning's conjunction of Venus and Jupiter. Somehow I woke up and was able to take a few shots from the back deck, and reasonably quickly so as not to freeze.

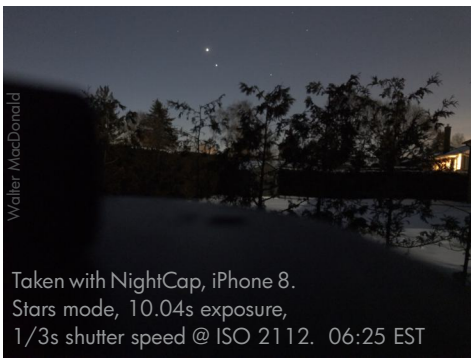
Paul: I *love* Scorpius in this photo! Nice job.

Rose-Marie: Yes, nice to see a 'summer' constellation during the depths of this cold winter.

Malcolm: It is kinda weird seeing it in January!

Walter: It is kinda COLD seeing it in January!

It was much warmer this morning: –18C and no wind. I found an app for my phone called *NightCap* which has all kinds of neat astronomy modes (check out the tutorials at nightcapcamera.com), so I splurged on the $3.99 cost and tried it out this morning. A Meade tripod served as a makeshift platform for the phone so I could do a hands-free long exposure (which is why the hedge is so high in the photo—it was still too cold to take my time and refine things on the fly). I must rig up a phone holder of some sort for my photo tripod.



rho Oph at mag 4.95 is just barely visible in the original full-size image. Not bad for a 10s exposure at twilight with thin overcast. I'm looking forward to seeing how far I can push a phone camera!

Wednesday, January 23

Rose-Marie: Okay...finally stopped gnashing my teeth and muttering unladylike language long enough to download a shot. Handheld at 6400 ISO so it was grainy, took some tweaking to clean it up a bit. Image cropped and enlarged.

Had I known it was (surprise!) actually going to be clear I could have set up the tripod and a chair in a position so that I could keep running out and take shots. Woulda coulda shoulda. I do NOT want to go through that brutal condition again!

Thursday, January 24

Kim: There be a sunspot, if it clears, and everyone can get a chance go observe this rare event.

Hank: Rare event it is IF it clears!

Greg: Sounds wonderful. Teaser: I was reading a complaint from someone on the SGP list saying he hadn't had a decent night since 7 Nov. Makes me think this is how Venus evolved.

Rose-Marie: Methinks we'd need to charter a bus and take road trip to Phoenix.

Susan: Did you guys not get the memo? When there is a spot, the sun

will not be 'available.'

Rick: I think we've had quite a few clear days—I keep complaining about all the sunshine and what a waste of clear skies it is (not a solar guy you know.) I've also had 9 good nights of observing so far this month so the clear skies aren't restricted just to daytime.

Saturday, January 26

Malcolm: Did anyone else see this today? [*A great display of arcs and sundogs.*]

I see an almost complete parhelic circle right now (12:43).

Mark K: Could you see any brightening or colour at the 120° points? You have a good selection of solar optical phenomena going on there. I was lucky to see a good display last February at Blue Mountain, but it did not include the parhelic circle. That one had good colours going on at all the bright points.

Malcolm: 22° halo, sundogs (parhelia), partial parhelic circle, circumzenithal arc. The circumzenithal arc was like a bright rainbow. The parhelic circle got better and completed the circle. I regret not doing a time lapse—the phenomena lasted all day.

Hank: I was out to the obs just before noon and there was nothing visible from here as far as that and not now either. I did get in some solar in (thanks R-M) and I will get to looking through the hundred-plus images later this aft.

Kim: We saw the beginnings of two small sundogs on our trip to Brockville today. But no full halo. It's totally overcast. I did get out this morning to see the sunspot.

Hank: A couple more smaller AR-2733 eruptions have taken place today so far. Attached is an image from 20190126 13:34:39 ISO200 333ms. It is so good to get back out there. I had trouble getting focus today and eventually found that part of the SM60 lens where the eyepiece fits in was frosted over! I should have taken an image of it, there was a line of frost that would have covered about 10% across almost the middle of the lens that the eyepiece seats to on the energy rejection filter. Once I blew it out of there all was fine.

Tue/Wed, January 29/30

Walter: I saw the Moon this morning around sunrise, but missed seeing Venus and Jupiter with it in a dark sky. My cousin imaged it through the window with her phone, so I did see it after the fact. The main event (Moon close to Venus) is tomorrow morning so I have my phone set to wake me at 6:00. Hopefully the clouds will be thin enough to see it.

Wed/Thu, January 30/31

Paul: Spectacular left–to–right queue of Venus–Moon–Jupiter in a straight line! With Antares a little further along. (Forgot to look for Saturn!) The Moon also had pronounced Earthshine—Wow! (I viewed the above from the country site I'm using.)

Hank: Not a chance of me getting up that early but I did open the RHA Obs to try and image the Moon and Venus in the same image. Unfortunately the Mak 90 FOV with a 40mm is not wide enough. This is why I am going to purchase an 80mm f/6 refractor. At least I saw both and got the Moon naked eye as well, but not Venus. I will let Paul's description of this morning be my false memory of how wonderful it was, way to go Paul.

Susan: I actually saw this! Observing from bedroom window—but still observing! Yes, my standards are low, but I have to take what I can get.

Kim: That is all that matters Susan. I did get out and took some pictures. Uploaded a few to the spaceweather gallery. It was a beautiful sight.

Rick: It was cloudy here until just after sunrise. I got a several hours of imaging in before it clouded over. I'm working an early evening variable of some unique interest and challenge—images at the meeting!

Hank: Looking forward to those for sure Rick, you do imaging that no one else seems to do which makes it a welcome interest. I shouldn't say no one else as 'Walter the Invisible' I believe does similar.

Kevin: Ditto ditto ditto. Was gorgeous! No Saturn either—maybe next time. It was only –23C with little wind—one of the better days this week!

Rick: I saw the solar system lineup this morning—when I'm observing (while the telescope is observing) I sleep in a bed in my office which has a window right beside it. Without lifting my head from the pillow I watched Jupiter, Venus, and the crescent Moon with Earthshine, just as Paul described them, rising in the

brightening twilight. It was so beautiful I had to get up and walk down to the waterfront to drink in the full view. Too stunning to even get out the camera for a picture.

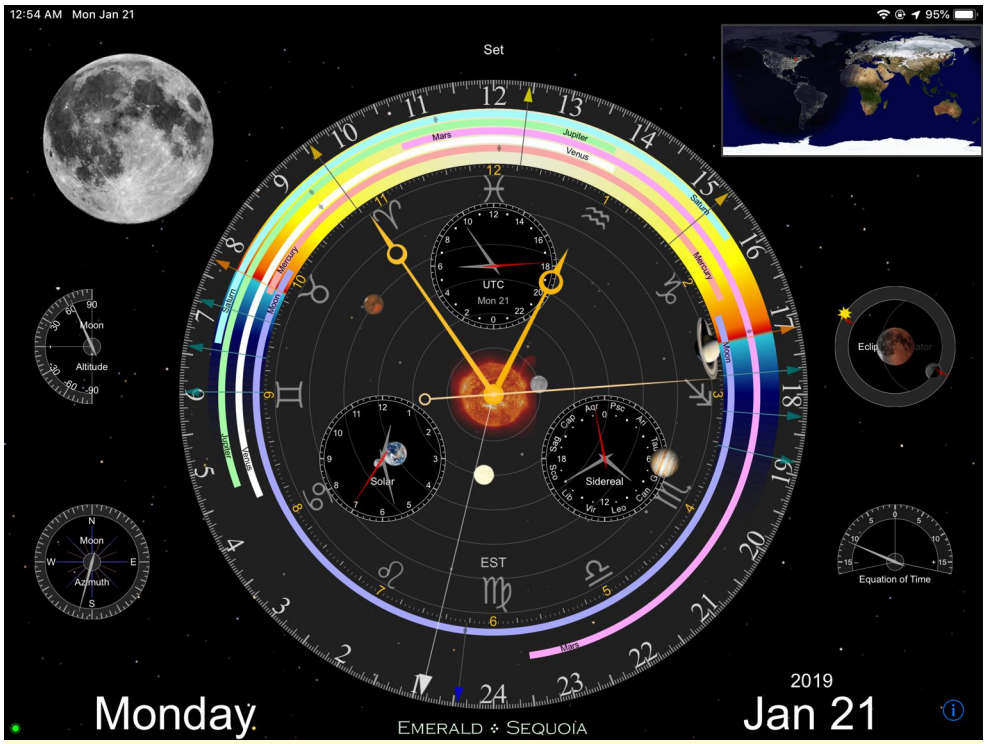
The only disappointment is that I couldn't see Saturn which is supposed to be down there somewhere closer to the horizon.

Thu/Fri, Jan 31/Feb 1

Malcolm: I can see stars! Though my windows. I took a test shot, saw no aurora. Heads up just in case!
Hank: Clouded over now in the burrrrrgh. Good night!
Rick: But are you imaging any stars? I'm in the middle of 3x300s exposures of Wirtanen (quite bright, ~15' diam), just finished the same of Stephan–Oterma (fainter, 3' diam.) Then it's back to photometry (UV Hya) for a couple of hours then a brief break for West-Hartley (and that's the three comet challenge completed.) Finally end the night with a couple of hours each on VZ UMa and SX UMa.
Malcolm: Not tonight. The contents of my Pod were disassembled on Monday, for shipping to Chile. Next stop, San Pedro end of March.

Tue/Wed, February 5/6

Malcolm (12:33): Sucker hole has started to grow here...hmmm....will it hold!?
Rick (15:46): Satellite pictures are looking extremely promising!
Malcolm (17:05): Maybe for you ...transparency fail imminent here.
Rick (17:57): We are go for launch! Dead clear here. Camera is cooling, targets being selected.
Malcolm (18:22): I'm going to try. Polar alignment successful.
Rick (18:22): Bah, got the scope pointed, guide star acquired and tracking, started imaging and it clouded over!
Stephen (19:04): I'm all set up and



Emerald Observatory

I've been using this incredibly beautiful iPad app for years now. It packs in a lot of information and is fully interactive for dates from 4000 BCE to 2800 CE. Here is a rundown of the various displays:

The gold hands for hour, minute, and second show the current time in 12-hour format. The white arrow on the outer circle shows the current time in 24-hour format. A time zone indicator is located just above the 6 o'clock position ("EST" in the screen shot above).

The centre of the display is a solar system orrery, along with solar, UT, and sidereal time clocks. Moving outward is a series of coloured bands that show when each solar system object is above the local horizon. Daylight and twilight is shown too, and 12 coloured arrows show the times of the various twilights, sunrise/set, noon/midnight, and even the 'golden hour.'

At upper left is an image of the Moon, showing its current phase (including Earthshine), orientation as it moves across the sky, and apparent size (libration is not shown unfortunately—perhaps in a future version).

Altitude and azimuth dials on the left side give can be tapped to cycle through the Moon, Sun, and planets (out to Saturn).

An NTP status dot is at the bottom left. (NTP is used to keep the time accurate to +/- 0.1s) It blinks while communicating, glows steady green if it was successful, and is yellow otherwise.

The map of Earth at upper right is surprisingly informative: the red dot is your chosen location (from input or using location services), day and night areas (complete with light pollution) are shown, and the image is updated monthly for changing snow and vegetation cover.

At middle right is an eclipse simulator. It shows the Sun, Moon, and Earth's shadow. The two red lines indicate the nodes of the Moon's orbit. The simulator is empty except during lunar and solar eclipses.

The dial at lower right shows the current Equation of Time.

Animation: Tapping on "Set" allows you to jump forward or backward by minute, hour, day, month, year or Moon phase. You can latch one or more of these in for continuous animation. When you're done, tapping "Reset" takes you back to the current time.

Miscellaneous: You can also set an alarm, or choose the "Noon on top" setting to flip the orientation of the big clock display.

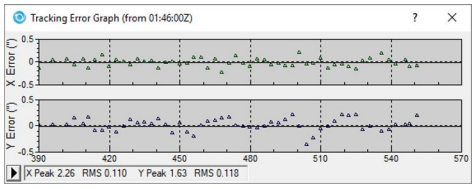
Orientation: Finally, it should be noted that the screen layout as discussed here is for landscape mode. If you hold your iPad in portrait mode, the screen layout will be somewhat different in that orientation.

—*WM*

ready to go. But we have a persistent patch of cloud hanging over us! I'll wait for a while.

Stephen (20:06): I see stars! It is still partly cloudy, but this is a hopeful sign.

Malcolm (21:10): Things were going well until I hit a roadblock (again) with Prism...it's always something! I couldn't convince it to calibrate the guider. I switched back to Maxim and looking good.



Rick (21:35): We seem to have cleared off at least somewhat. My guiding exposure needs to be longer than normal so I think there may still be some thin cloud out there. Anyway, glad I didn't bother setting up all kinds of other scopes. And I can see a system coming in from the west that's going to cause problems later.

Stephen (21:59): Yes, transparency is not good. Seeing is passable. It may not be a good night for imaging but I will go through the exercise. The long range for the weekend looks good.

Stephen (23:13): Transparency has taken a nose dive. Seeing is not that great either. I'm going to quit and wait for a better night.

Malcolm (23:36): Pretty good here, guiding is great, subs have round stars, but they may be bloated, processing will reveal if any problems...

Stephen (23:47): False alarm. Turns out my target was in the trees. I'm imaging deep in the south. Just got a decent image of Thor's Helmet. I'll keep at it. Seeing is not great. My half flux diameter is averaging 4 arc seconds. Good seeing is 2.5.

Stephen (13:05): I really didn't have a good night last night. It was plagued by clouds, haze and equipment problems. I was late in starting and early ending. Hopefully the next clear night will be better. I managed to get one quick image of Thor's Helmet (NGC 2359) before it drifted into the trees. It's pretty grainy as I only had time for one exposure, so not a great shot, but I was happy to get it anyway in the midst of my technical problems.

I also grabbed a fairly decent shot of the Horsehead Nebula:

Rose-Marie (13:37): I took BigWetNose out around 10:00 p.m., saw some stars, and was thinking of grabbing the camera to take a few shots...until that cold wind hit me. I went back inside and stoked up the woodstove.

Malcolm (14:23): The transparency wasn't very good here last night after all. At least I got out there though I'm struggling with PI. I'm following along with the Keller book, and cosmic rays are not being processed out. I don't get it. Not to mention the time it takes. Sheesh, I'm spending hours on pre-processing that it takes Maxim about 5 minutes to do and it does it perfectly. Sigh. Anyway, I got the Beehive: 1 hour each of RGB with an Orion ED80 and Orion FF, QSI683WSG CCD camera, guided.

Fri/Sat February 8/9

Stephen: I don't know about anyone else, but it's too windy for me to open the observatory tonight; too many snow squalls as well. I'll wait for better weather tomorrow night.

Malcolm: Just a tad!

Sat/Sun, February 9/10

Walter (19:38): Well, it's clear for now. I've been playing with the NightCap app on my iPhone 8 (nightcapcamera.com). I imaged Ori/Lep/CMa through the window (10s exposure)—all naked eye stars are recorded and also M42.

On impulse I decided to check heavens-above for ISS passes and discovered there was one in just 5 minutes! How's that for good timing? Anyways, I went outside and successfully imaged the pass —and it was warm enough (–9C) that the phone didn't freeze during the exposure. As it turns out it would have been better if I'd done it from the upstairs porch because ISS barely cleared the neighbouring buildings! Fortunately it was bright enough to show through the tree that it didn't clear. (Yes, I did miss the early part of the pass but that was mostly behind the other house.)

I'm really enjoying this app—I

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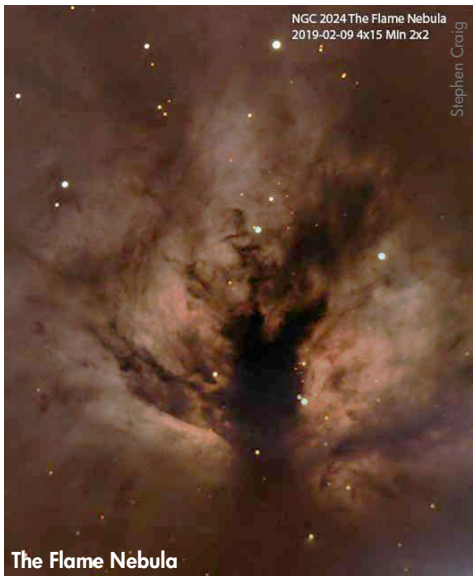
guess you could say when it comes to astrophotography these days, I'm phoning it in!

Stephen (23:25): I was all set up for a clear night. Started up the evening with my guider glitching. Got that fixed. Got a good image of the Flame Nebula while I waited for Thor's Helmet to clear the trees. That was my primary target for the evening. It took a while to center the image. It's very faint. Started my imaging run. My computer froze! Got that all reset and set up again. Started a new image run only to see the signal to noise ratio dropping. Clouds!!!! I have to be up early in the morning so I quit for tonight.

Stephen (00:45): In between equipment problems and clouds I managed a good photo of the Flame Nebula in Orion (NGC 2024). I really wanted an improved shot of Thor's Helmet, but that was not to be.



Hank: Very nice Steve, I hope it makes your hard work of value to you. Our imaging members are of great value to the rest of us whom have not the desire or ability to enter into this complicated aspect of astronomy.

Sun/Mon, February 10/11

Walter: ISS pass in strong twilight. 130.96s exposure (1/3s shutter speed) taken with the NightCap app on my iPhone 8. The FOV is only enough to capture about half of the pass, so you have to point the camera

Meeting Report: February 14

Kevin Kell

Pre-meeting: Dinner with 13 at the Sports Tap and Grill on Brock St.

The Regular Meeting was in MacCorry Hall Room D214 on Queen's University Campus in Kingston Ontario, and ran from 7–9 p.m. 17 people were in attendance including Rick Wagner (President), Susan Gagnon (Treasurer), Kim Hay (Librarian) and Kevin Kell (Secretary).

Rick called the meeting to order at 19:07 EST and welcomed everyone. He then went into Upcoming Events for the next month.

The University's new McDonald Institute (mcdonaldinstitute.ca) has seminars coming up on February 15th, 21st and 28th. The next KAON-Queen's Observatory Open House will be on Saturday, March 9th at Ellis Hall. Upcoming astronomical events were listed.

Next, **Rick Wagner** presented some images from last month's total lunar eclipse. Many members were clouded out. **Susan Gagnon** discussed the Centre's first Raffle Fundraiser with tickets selling for $2 each, or 3 for $5. We have $600 in a prize package which will be drawn at the June KAON on June 8th.

Brian Hunter talked about some of his equipment for travelling to Chile with, a Star Adventurer tracking camera mount. He has also been experimenting with a 3D printer to produce different sizes of Bahtinov masks for focusing assistance with it. Lastly he identified an ISS transit of the Sun occurring this month in a line from Sharbot Lake to Alexandria Bay and encouraged members to try to image it. **Kim Hay** and **Kevin Kell** talked about the Bushnell Voyager donation from **Janet Gibbs** and our intent to try and use it on the observing deck at KAON. We are awaiting word from **Connor Stone**, the Observatory Director, about space availability.

After a short break, **Kevin Kell** made the draw for two door prizes. **Hank Bartlett** presented some solar imagery as well as images of some of his astronomical equipment that he is selling (a C9.25 on a Losmandy mount amongst other telescopes)—to purchase more astronomical equipment. **Steve Craig** showed some of his latest images with his C11, plagued by bad seeing this time of year. **Rick Wagner** discussed some of his photometry results using Maxim DL. **Kim Hay**, chair of the 2019 Fall'n'Stars Star Party, let us know of the date this year, Friday–Sunday, Sept 27–29 at the regular location, Camp Sagonoska inside the Vandewater Conservation Area near Thomasburg. We were also invited to an observing camping weekend by the RASC Belleville Centre, in a private campground in the SE of Prince Edward County. Prices were $20/night for unserviced camping.

In closing, Rick issued an observing challenge to members for the next month: M36, M37, M38, NGC 2392, Comets 46P/Wirtanen (at mag 10), 38P/Stefan/Oterma (at mag 11), 123P/West-Hartley at (mag 13), Iwamoto 2018 Y1 at (mag 7), and lastly another Algol minimum on February 26th at 19:05:10 EST. Be sure to visit: cometwatch.co.uk/bright-comets-of-2019

Our next meeting is March 14th at 7 p.m., Mac–Corry D214, Queen's University. The meeting adjourned at 21:10 EST.★

Blast from the Past

from JRASC, Vol. 24, p.471 (1930)

News and Comments[1]

At the recent meeting of the Optical Society of America, held at the University of Virginia, **Dr. Herbert E. Ives** reported successful television transmission and reception of a colour motion picture. Is it too much to hope that the total solar eclipse of August 31, 1932, which passes so favourably down through Hudson Bay, Quebec and Maine, may be broadcast so that people throughout America at least may see it in all its colour glory? It is possible; as also a daily broadcast of the solar image in various wavelengths so that each may see what is in store for the earth from the activities of the sun. Will **Dr. Hale** kindly oblige by initiating such a service on red Hydrogen alpha?

REDeL. [Ralph DeLury]

While television took off in the 1950s, sales of colour television sets didn't surpass B&W until 1970[2], so the first eclipse to be broadcast—likely the one in 1963[3]—would have been mostly seen in B&W. It's safe to say that no TV station ever did a daily broadcast of solar images, but now, in the new millennium, the Internet has fulfilled these dreams in style: from live webcasts of eclipses to websites with realtime solar images in multiple wavelengths taken on Earth and in space. ★

Notes

[1] adsabs.harvard.edu/abs/1930JRASC..24..470D
[2] earlytelevision.org/color.html
[3] radioinsight.com/community/ topic/past-televised-total-eclipses-of-the-sun/

Background Photo: JRASC, V.26, p.337 (1932)
G. Harper Hall at Maskinongé, P.Q. 26" f.l., f/8, 2s.

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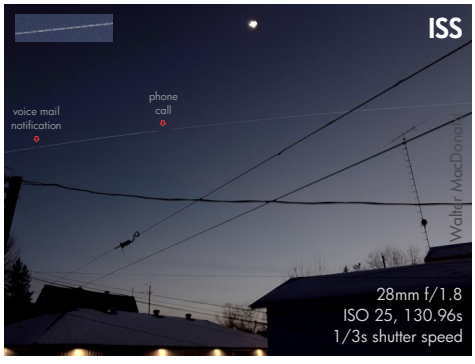
with that in mind. The image didn't overexpose because it is made up of a whole bunch of ⅓s sub-exposures which it stacks and shows in real time on screen during the capture sequence. Very cool. In the original 4k x 3k image the ISS trail shows as a dashed line when I zoom in on it. The effect is like that given by those mechanical rotating shutters they used to use on meteor cameras.

There are two breaks in the ISS trail: one when a phone call was received (decline button pushed right away!) and a second (smaller) break when the voice mail notification was received. This is not a problem I would have anticipated! Hopefully using "Do Not Disturb" will solve this in future photo sessions.

Susan: Who would have thought someone would use a phone as a phone, shame on them.



Rick: Nice shot. You need to put your phone in spaceplane mode to prevent incoming calls and messages.

Paul: As the owner of a mere Android phone, you make me very envious Walter!

Hank: Amazing that these phones are becoming and better than many cameras. Is this a new found interest for you? Do you realize you won't be able to sleep and image like this?

Walter: This *is* a new interest. Since I have a fancy new iPhone (though it is two generations behind the bleeding edge) with a much better camera, and there is a great app available I figured it would be a fun project to see what I can do with it.

Actually I can sleep and image if I use the time lapse video function!

Mark K: Sure would be nice to have a phone that was good at taking and sending phone calls...

Rick: I recall recently hearing a fellow saying that he used to look forward to the day when a computer would be as simple to use as a phone. He admits that we are now there, just not in the way he hoped. ★

Another astronomical production! This play is about Henrietta Leavitt, and her colleagues Annie Jump Cannon and Williamina Fleming, at Harvard College Observatory.