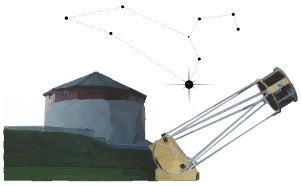
December 2017

# Regulus

RASC Kingston Centre




**Editor's Note**:
Due to a very busy 2017, *Regulus* has had a bit of a hiatus. This was supposed to be the September issue, then October, and so on until now. I'll try to do better in 2018.

Despite the size of this issue, there is still lots of material left to publish, specifically observing reports and Centre business from the AGM. This will appear in the January issue (I promise there will be one!).

2018 will be another anniversary year, this time with the RASC celebrating its sesquicentennial. Things kick off in January with a podcast and a national star party. Be sure to visit rasc.ca/2018 to check out all the activities that are planned. ★

## Upcoming Events

Thursday, **September 14** 19:00
**Members' Night**

Thursday, **October 12** 19:00
**Members' Night**

Saturday, **October 14** 19:30
**KAON Session**

Thursday, **November 9** 19:00
**Annual General Meeting**

Saturday, **November 11** 19:30
**KAON Session**

Wednesday, **December 6** 18:30
**December Banquet**
Mandarin Restaurant

Thursday, **January 11** 19:00
**Members' Night**
Stirling Hall, Theatre A

- Meetings are held at Ellis Hall, Room 324, 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. ★

## Reports and Other Items

**From Kingston Centre, the RASC, and Beyond**

*Promotion*

The position of Communications, Education & Outreach Officer for the Canadian Particle Astrophysics Research Centre (CPARC) has been awarded to **Dr. Nathalie Ouellette** this past summer. Congratulations Nathalie!

*In Memoriam*

I just heard that **Paul Boltwood** passed away... Paul was a good friend and a very accomplished amateur astronomer, in particular he was a pioneer in CCD imaging. He had a real passion for his projects and dogged determination, not to mention an incredible attention to detail. —*Doug George* (*on RASCals, Oct. 2*)
For more, see:
http://forum.diffractionlimited.com/threads/paul-boltwood-1943-2017.3838/

Long time members of the Society remember our Executive Secretary **Rosemary Freeman** who worked for the Society from the mid-70s until 1996. We were saddened to hear of her recent passing. Unfortunately we heard the news after the funeral so we were unable to represent the Society at the service.—*Randy Attwood (Oct. 6 on RASCals)* [Rosemary died September 29th at age 89.]

*R CrB*

After a decade in the dumps (with a few abortive climb-outs), R CrB has finally made it back up to mag 7.0. This is one of the longest ever fades for R in recorded history.

*Exo Asteroid Discovered*

On October 19, Robert Weryk (a one-time London Centre member) discovered A/2017 U1 with the Pan-STARRS 1 telescope at the University of Hawaii Institute for Astronomy. Unfortunately its orbit indicates that it is heading back out of our solar system, so there will be no chance to send a probe to it in the future. We should expect more of these interstellar visitors to be discovered as robotic imaging systems comb the sky with ever increasing frequency and sensitivity. ★

## In this issue:


- Editor's Note . . . . . 1
- Reports and Other Items . . . . . 1
- KAON Reports: Jun., Aug. . . . . 2
- Astronomy Outreach: Jun. 24 . . 3
- KAON Report: Sep. 19 . . . . . 3
- Fall'n'Stars 2017. . . . . 4
- Astronomers of Planet X. . . . . 5
- Observing Reports: May–Oct . . 6

## KAON Reports: June, August

Susan Gagnon

JUNE 10

The Saturday open house was a popular event once again. Remember summer hours are in effect, talks begin at 9 p.m. with observing and dome tours after that. I missed the talk by **Dr. Kristine Spekkens**, due to setting up on the roof, but previous events inform my opinion that it was most likely very good with a topic like this: *A Chaotic Universe of Colliding Galaxies*. At least 65 folks came up to the deck to have a tour and look through the scopes. I operated the club's 6" Celestron and **Laurie** and **Devon** had their 8-inch LX-200. We began with Jupiter as our target for some time followed by the Moon and Saturn. It was a great target line up which stood up well to the very cloudy/hazy skies. We gave out the most recent *SkyNews* magazine, Star Finders, Moon maps, the monthly constellation map, and a handout on improving your observational skills. It was a very satisfying evening with lots of great visitors.

AUGUST 12

Queen's construction crews shut down the 4th floor of Ellis Hall, putting and end to tours of the dome for tonight's session. It seems at the end of construction for the week, all project materials were stacked up blocking the area. **Matt Chequers**, the Observatory Coordinator was unaware of the situation until he arrived to open up for the evening. At least it happened on an overcast evening. I covered the talk for the evening on the eclipse. It was pretty light fare and I stopped on time! We had a good supply of handouts with the *SkyNews* issues, Moon gazer guides and the eclipse hand out supplied by RASC. There were about 45 members of the public, **Matt** and **Nick** from Queen's and RASC support in the form of **Hank**, **Paul** and **Bruce**. Thanks to these members answering the call to help with deck activities. Thanks for the TimBits Hank (also enjoyed by those picking up handouts).★

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## 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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## Astronomy Outreach—June 24

**Bruce Elliott**

**Laurie Graham**, her son **Devin** and **Bruce Elliott** led an Astronomy Outreach session with the local Kingston Sparks Girl Guide Group at Carruthers Point on June 24th. There were 10 keen girls (3 others unfortunately were not able to come). The age spectrum was broad (ages 4–7), but they were a keen and interested group!

We began by introducing them to the sun and planets. Laurie explained how the Earth orbited the sun using the fire pit; Devin filled in as the Moon, and the consequence of explaining the day was that Laurie became very dizzy, which the girls loved! John (Laurie's partner) was a great help in going back to the house to retrieve the forgotten solar filter, and Devin was tasked with hauling the telescope and supplies from place to place.

Laurie showed them some sunspots through her 8" Meade SCT. Some of the younger ones needed a lot of help learning how to look through a telescope, but Devin and Laurie persisted with each one until they saw the sunspots. There was one nice group with a large spot and several small spots.

Meanwhile Bruce led them through the planets using the wonderful props that Susan supplied. The girls loved play acting out the orbits of their chosen planet! Bruce also talked about the August eclipse of the sun, and they acted this out with Susan's models—the Sun was always the most coveted prop to hold!

When it was darker, Laurie aimed her scope on Jupiter—it was really clear with 4 moons and clearly identifiable cloud bands. The girls were able to see Jupiter easily after practicing on the Sun, pine cones on a distant tree, and swarms of midges. Again a lot of keen interest!

In parallel, Bruce talked about the stars and galaxies. Susan, your golden star cluster prop was shared around by just about every Spark! Devin devised an orbital model using a marble and glass bowl to show how planets had circular orbits and comets did not. The girls all wanted to try, mostly because spinning marbles in the bowl was fun and noisy. The girls were also tasked with finding one small red marble in a bowl of larger marbles, which they did with gusto. The point being that the 100 large marbles represented all the stuff in the Sun and the small marble, all the stuff in the planets.

We finished up with a short video on the Juno spacecraft orbiting Jupiter, which the older ones in the group appreciated. For the younger ones, Bruce led a craft with glow-in-the-dark stickers to illustrate the constellations (Big Dipper, Orion and Cassiopeia). At the same time, Laurie was showing more pictures and videos and having an informal question and answer time about the planets—during which the youngest girl expressed great surprise that Earth was the only planet that people lived on and was very disappointed that Pluto was too cold for people! The constellation craft was such a hit that three of Laurie's group left her to do that.

While every activity was valuable, the two that the girls seemed most taken with was the constellation craft and the solar viewing. Unfortunately, the Moon was close to new. The event lasted 2½ hours and was a real hit! We gave each Spark a goodie bag (prepared by Susan) containing moon and star finders and a *SkyNews* magazine on the August eclipse. The two leaders kindly presented us each with a beautiful pot of chrysanthemums.★

## KAON Report: September 9

**Susan Gagnon et al**

There is no better cure for volunteer burnout than a good open house turn out and clear skies! Thanks to **Hank**, **Laurie** and **Devon** for coming out with scopes to help out on the deck. With the dome going and three small scopes (Hank may have had two going on his tower) there were very short lines for people to be doing things. With Queen's winding up to get classes going we (I) enjoyed, music all through the session.

While the skies were not obviously cloudy, there was a thin film preventing stunning views but there were enough key items visible for me to show Saturn, the Trifid and Lagoon nebulae, and a star hop to the open clusters M24 and M25. Hank spotted the ISS pass, always a crowd pleaser. We wrapped up the night with a nice view of a very buttery Moon! About 45 people came out for the talk and observing. It was a great, fun time.

**Hank**: It was Laurie that spotted the pass; checking tonight there were no early evening passes, only early morning, so it must have been another satellite. I see nothing listed to be that bright. I wish we had marked the time.

**Rick**: We saw a nice bright slow satellite transit during SSSP (about midnight Friday the 26th?) but I was unable to identify it. I made a mental note of the time and checked Heavens Above cursorily some time later but there was nothing obvious. And as I did not record the time I can't now follow up more carefully. Anyway the lessons learned are: always record everything, and there are bright satellites up there in addition to the ISS.★

# Fall'n'Stars 2017

Kim Hay, FnS Chair

September 22–24

The RASC Belleville and Kingston Centres co-host this event every year, with Kingston Centre chairing the event this year. Fall'n'Stars is set in the Colonel Roscoe Vanderwater Conservation Area at the Boy Scout Camp Sagonaska, in Thomasburg, Ontario. There is a beautiful walk to go swimming in the Moira River down the road, and lovely nature trails.

The event started off with our traditional rocket launch. It was caught by Kevin Kell, safe for another launch. This year, it was a true treat setting camp up in the summer and then ushering in the fall equinox at 16:02 EDT. It was the warmest year we have had yet: each day was in the high 30s Celsius, and nights only went down to 13–15C. Despite the heavy dew in the evening and early mornings, the skies were great with relatively no cloud. Many were up observing or having great conversations till the early hours. There were several new members at this year's event. **Bruce Elliot** and **Andy Bryson** both brought telescopes and cameras to take in the whole weekend. There were many members lending them a hand in true astronomy spirit.

Thirty people were in attendance for all or part of the weekend. The swap table had some good deals. We saw some Black Swallowtail, and Monarch chrysalis in a glass aired container being cared for by **Janet Elliot**. There was daytime planetary and solar observing done, along with many talks on everyone's adventures on the total or partial solar eclipse in the long house, which had been recently upgraded. Dinner was catered by a local company. There was a raffle draw in which we had three prizes. Winners were **Larry Hum** a basket donated by **Hank and Di Bartlett**, **Rose-Marie Burke** who won a Lee Valley bag filled with Lee Valley gift certificates, peanuts and refreshments, and a wonderful space quilt donated by **John Cairns** and **Joanne Burns** and **Hank Bartlett** won this. The 50/50 draw was won by **Steven Fritz**: a grand total of $53.00. The Grand door prize was one by **David Billo**, which was a *Star Wars* themed prize, of a child's chair, sound book, and an X-Wing fighter. This was donated by **Mark and Susan Coady**, who could not be with us this year. We had many fabulous door prizes donated by many individuals. This is always a fun part of the evening. Thank you all for donations.

Sunday saw us having the closing ceremony: another rocket launch; the rocket is still at the camp, resting high in a tree—the Yellow Crayon rocket bites the dust. The camp was cleaned up and all locked up with Kevin, Joe and myself leaving at the end, to make sure all was OK. Each Centre will split this year's profit: $175.52.

I personally want to thank all the volunteers who helped make all the tasks flow seamlessly for FnS 2017:

- **Hank Bartlett** was our MC for the weekend.
- **Susan Gagnon** made sure all was OK in the updated restrooms.
- **Kevin Kell** was our AV person. The camp supplied a generator this year which makes it easier to plan electrical uses.
- **Joe Shields** who worked with **Don Sinclair** of the Boy Scouts on securing the building for us, and booking the caterer.
- **Joanne Burns** and **John Cairns** for helping to setup the dinner tables, cleanup at the end of the event, and taking away the trash.

It was another successful sunny and dry Fall'n'Stars. The date for 2018 has not been decided yet, but stay tuned.

**Susan**: Thanks to all for a great weekend! What a difference it makes when you are not up to your ankles in mud!

**Mark C**: I am glad it was finally clear for two nights. Man, I wish I was there with you but, as I told you at the June meeting, I was afraid to be an hour and a half away should something happen and something did happen—not Earth shattering but something that could have escalated should I had not been there to diffuse a bad situation.

**Hank**: Firstly, I second what Susan posted, for me this was one of the best FnS events ever. I thoroughly enjoyed all of it and it is great to relax among friends without the threat of bad weather. That said, holy frick it was HOT. A big thank you to all those whom made it what it was and that would be everyone!!!

Secondly, Mark you were mentioned, and missed for both your volunteer input and friendship. We are glad you were where you needed to be. Take good care my friend and perhaps we will see you in attendance next year.

**Rose-Marie**: I'll echo what Hank said, add my thanks to the organizers, and yes, Mark, you were missed. Dennis really enjoyed himself, although he missed talking with "the two Gregs." I had one of the best sleeps I've had all summer, albeit with an hour's break at about 2:30 a.m. I didn't need the BigWetNose to get me up—nature called me on its own. Being wide awake by the time I got back to the tent figured I'd just fire up the camera and take a few pics of Orion. In spite of the unusual heat and morning dew, it was nice to have dry clear weather and not having to bring the extra blankets.

**Andy**: Karen and Andy Bryson want to thank you all for a great weekend. Being the newbies is always interesting, a learning curve that is vertical is always a challenge, but we all have to start somewhere. Also

many thanks to the Belleville group whom were so helpful in many different ways.

**Bruce**: This was my first FnS experience, and I can say that I thoroughly enjoyed it. It was so great to visit with everyone in such a lovely astronomy-friendly spot! I learned so much from seeing our club experts in action.

Hank, thanks so much for your encouragement and help in getting my scope focussed on Saturn. The green laser pointer and spotter methods really worked wonders. And you were able to fit me with a spare pair of screws for my telescope mount (critical!).

Susan, it was great to see your scope set up which is very similar to mine—an example of what I can look forward to being able to do!

Joe (and Ali) kindly presented me with a sun spotter home made from wood. It worked wonders in focusing my scope on the Sun. Thanks also to some fine tuning suggested by Rick.

**Rick**: Yep, I had a great time too; got another 6 or 7 of my Deep Sky Challenge objects completed, thanks partly to Doug with the Venor scope —24" aperture made the Perseus galaxy cluster much easier and I was able to go deeper and collect more galaxies. And thanks to Kevin who helped me pack up my tent and dining shelter to save me from heat stroke. Man it was hot. And of course the company is great and really makes the weekend.

After we all drove out I headed down to the south end of the road and spent an hour swimming in the river and eating lunch on a rock on the shore. Idyllic. And what a nice river to swim in: great access and just enough flow to keep the cool water passing over one's body without having to do any work. I got home about 3 p.m., just in time to unpack and then set up a telescope for a night of observing.★

# The Astronomers of Planet X

from Nova Notes (Halifax Centre newsletter), July/August 1978

**Steven Morris**

"I'm amazed," stated Sargon, "that you insist on observing at the Cove." But his companion, Larnu, only smiled. The beach they were on was a perfectly flat plane of quartz. If one bothered to look down into it, one could see for many feet by the light of the two suns, before sight failed. Upwellings of green and gold were there, with cliffs, yellow streams and delicate veils of blue, formed from impurities in the rock when the land had formed uncounted years ago. The rock had cooled and all was now frozen in place, forever.

Behind them, sheer cliffs of marble glowed like living hands in the failing light. Sargon had his back to them, poring over his star charts.

"Do you think we'll see anything tonight?" he inquired.

Larnu looked over the waters at the sky. Night slowly deepened, and the usual battery of comets became visible. Many were particularly large, with bright tails fanning in great arches across the sky. Several meteor showers were in full force, lighting the sky with their uncountable numbers. The east was ablaze with curtains of aurorae. Larnu surveyed it all, then said sadly, "No, I don't think we'll see any stars tonight. There's just too much junk around."

Disappointed, they went home.

**********

Sargon did not really want to observe the next evening as it seemed particularly warm out, but Larnu insisted. At the Cove, they waited patiently for the suns to set. The blue dwarf could be seen racing across the surface of the giant, raising a thin bridge of glowing gas. The giant shone a dull red just above the horizon, its surface covered with a delicate web of sunspots. It passed unnoticed, however; Sargon spent the time making small adjustments to the telescopes, while Larnu scanned the shoreline to the south.

"What are you looking for, Larnu?" called out Sargon. "Nothing will be out for a while yet."

In answer, Larnu hissed and said quietly, "Look over there." Startled, Sargon did so, and saw a peculiar greyish mass suspended over the southern shore far away. It was enormous and grew even as he watched, seeming to feed off the water below. "What is it?" he asked alarmed.

"They're just particles of water," Larnu was talking excitedly now. "The water evaporates—it's always so warm around here—and rises high into the air. You never see it because the air's always the same temperature up there as down here. But it's been so hot today that there's a temperature difference. The hotter air hits the cooler air, and the water condenses. That's why I wanted to come here tonight. If they'd form anywhere, they'd form here, and they'd form now."

The two astronomers stood for a while, watching as the night drew on. The object now filled all the southern sky, formless and featureless, as if one's eyesight were blanked out in that direction.

Sargon said quietly, "They're very rare, but they have a name. They're called clouds."

Silence, and then he added, "Well Sargon, what do you think?"

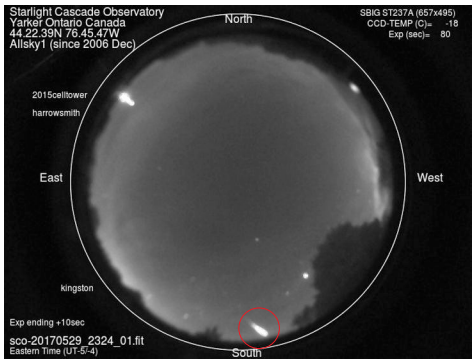
Sargon said nothing, and then, "They're beautiful," he whispered.★

# Observing Reports: May–October



Mon/Tue, May 29/30

**Kevin**: We had an email about a fireball last (Monday) night, and I did not check the camera this mor-ning, but there it is! (The blob at the bottom of the image.)




Thu/Fri, June 1/2

**Kevin K**: I am still *@#% that there is not a single source of push information that I can pick and choose from and then it will remind me in various ways beforehand, of astronomical events. Like the serendipitous Io shadow in my last Jupiter image. Or like last night, with the Werner Lunar X feature.

I used to go through the RASC *Observer's Calendar* a week in advance, but it did not have everything either; I needed advance notice closer than 1 week in advance, and I didn't hear a lot of feedback from others, so I stopped.


This morning I took a quick look at the RASC calendar and did not see the lunar X there either. Not to mention the last year or two they stopped shading the entire day in green to let you know from across the room that a special event was coming up.

In any event, Dave Chapman (?) posted a picture on Kim's facebook feed of the Lunar X and she mentioned it to me as we were getting ready to pack it in for the night. I decided to go out quickly as I haven't been out observing much lately. I installed the 2x barlow and camera that I had cleaned the day before, opened the roof, fired up the scope, found the Moon and did a quick imaging run of the lunar X.

I did not align the scope so manual tracking was constant, nor did I do a detailed focus, but for a quick 30 second run, its OK.

After grabbing the Lunar X, I noticed Jupiter up there in between the mosquitos...and ran a quick 120s imaging run on it before shutting down and retreating inside. Again, no fine focussing was done, tracking was bad and manual tracking was done for the whole run.


**John Hurley**: Friday morning at about 0310 hours I walked out my front door and had to stop and look up onto a very clear sky and was greeted by a fireball shooting across the sky moving from the west to the east. There was some red and white and a visible trail for 20 seconds or so. It was directly overhead and almost as good as the light show the other night.

**Kevin K**: Bummer that AllSky2 is still down. AllSky1 was up but did not record anything, most likely because of the 60s exposure plus 10s download time there is a 1⅐ or 14% chance it is in the download cycle when an event happens. There is nothing in the report queue at amsmeteors.org/fireball_report/ yet but then again not a lot of people are up that early on a work day!

**Greg**: I checked my video AllSky and had nothing in that time frame.

**Malcolm**: I was out and I did manage to squeeze in a couple of pics but ran out of dark. I set my alarm for 02:15 (moonset) and that gave me almost an hour to try to get something. It was a stunner of a night, even if it was brief. So peaceful.

Fri/Sat, June 2/3

**Malcolm**: It was a pretty steady sky tonight. I took some video of the moon with my DSLR. Maybe I'll try stacking. I have no idea what I'm doing though!

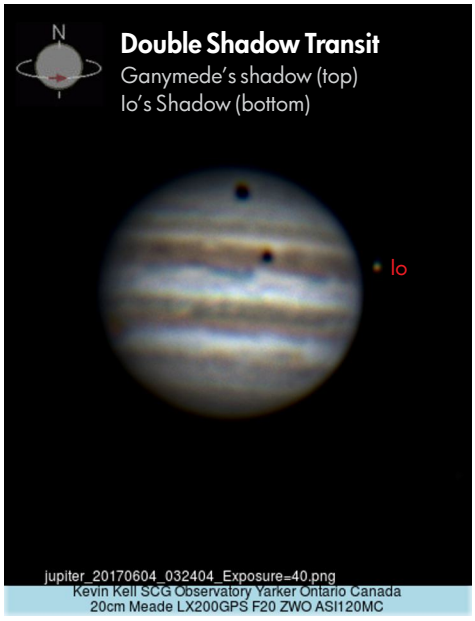
Sat/Sun, June 3/4

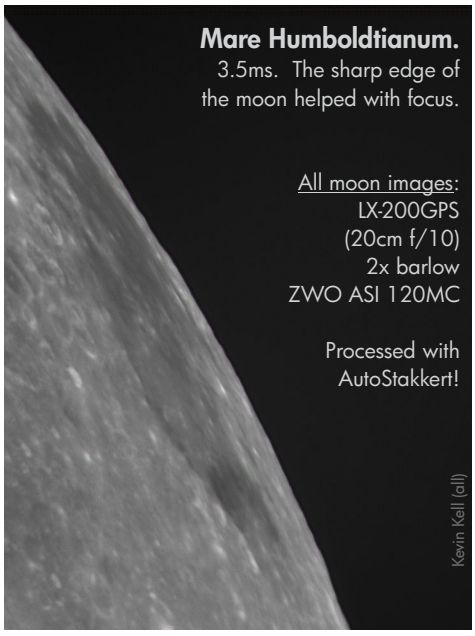
**Susan**: Thanks to Kevin for keeping this in the 'news' for the weekend. I had a nice view of the transit before it slipped behind the trees.

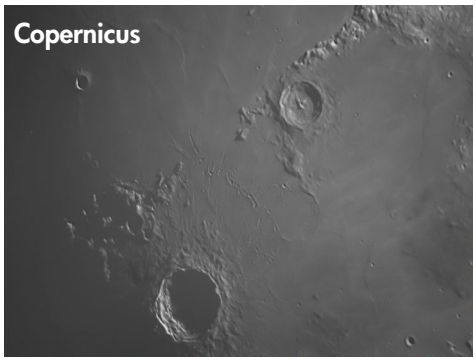
**Rick**: Glad you were able to see it Susan. I was on again/off again all afternoon as the clouds moved in and out. Finally about 9 p.m. I headed out under the mostly clear skies and opened up the scope. I shot about 38GB of video of Jupiter and the Moon. It was a lovely sight and the seeing seemed to be pretty good. Unfortunately Kevin won't be giving

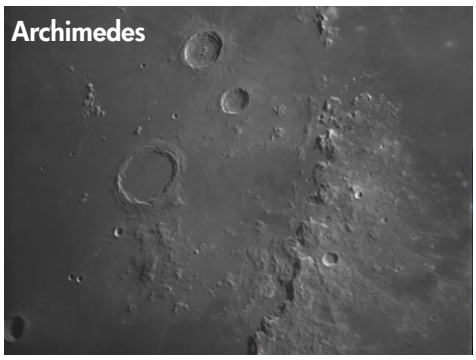
his talk on processing planetary images until October so I guess they'll just have to stay blurry and pale until then. After the Moon headed into the trees I did a bit of shooting of several exoplanet stars so I can identify the actual target star, decide on comparison stars, judge proper exposures, etc. Then the clouds came in about 01:30 and I went to bed. It was a good night.

**Kevin**: June 1, 2 and 3 were the first string of three days in a row of Jupiter imaging I can remember. Granted two of those days were just 1 or 2 runs but Saturday was pretty darn good.

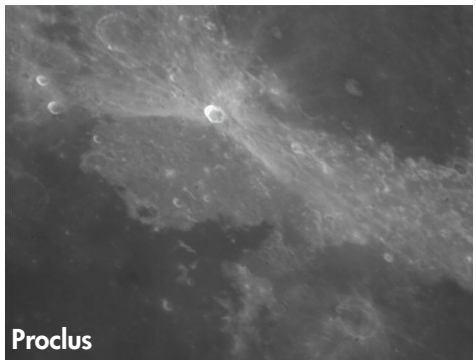







The scope was aligned on Friday and Saturday, in spite of conflicting forecasts, turned out to be mostly clear through to Jupiter-set-in-trees.

I started imaging in the twilight with bright skies, so the colour balance was way off, but this is the best time to get Jupiter and its moons in the same exposure. The seeing and transparency were average. I got away with 40ms exposures—a little

## Viewing Space Launches

**Kevin**: For those space enthusiasts: ever gotten any imagery of a fresh launch from this area? I don't think it is possible... maybe the east coast has a chance from time to time with a Kennedy launch into a highly inclined orbit?

**Rose-Marie**: Sat at my desk at work at the north end of Tampa, FL back in the 80s and saw the shuttle launch a couple times, just a wee bright streak on the eastern sky. The one time I was talking on the phone with a customer when one of the gals said "There goes the shuttle!" and I stopped in the middle of my sentence, then told the woman sorry, there's commotion here, we can see the shuttle taking off, and she said "Hold on a minute, I'm going to look!" A minute later when we got back into our conversation it was no longer about her service call but a 10 minute chat about the space programs.

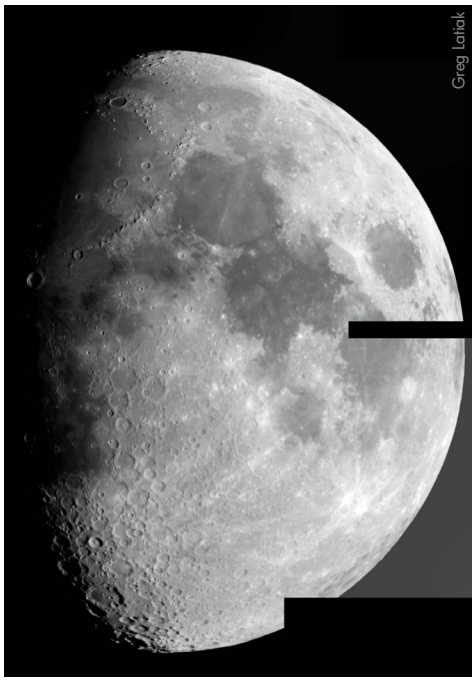
**Malcolm**: I've seen the opposite. From the Forks of the Credit, PP. I was out with some local observers waiting for it to get dark. This was before I took a camera everywhere with me. Not long after the loss of Columbia on re-entry. So I had that in my mind as we watched what looked like the same event happening again! Great long streaks of stuff burning up, we thought maybe a shuttle was burning up. I looked it up and were able to determine that we saw space junk, an old proton K booster burning up on re-entry.

I've seen maps that showed that we can see launches around here that originate from Wallops in Virgina. Never seen one though.

**Rick**: There was a launch of a biggish rocket from NASA Wallops Island a few years ago which was spectacularly visible from here. I showed my pictures of the launch at the following meeting. ★

better than normal. There was a lot of intermittent cloud coming and going. Just as Jupiter hit the trees, the cloud came in and it became pretty much overcast.

**Greg**: I have been envious of the better skies some folks close to me have been getting. Last week was spent drift aligning the new mount and pointing the changed guide scope in the same direction as the scope. Then a bit of lunar observing: the final image is a *Photoshop* merge of a couple of the terminator images after massaging in *Autostakkert!* and *Registax*.




Wed/Thu, June 7/8

**Paul**: Well, First Light was sort of a casual affair. My mount isn't due to be shipped out until some time next week, so I had to hold the scope balanced on a chair seat. At 31x the Moon was pretty impressive and Jupiter and his moons were great as well, but the image got shakier as my arms got tireder!

Thu/Fri, June 8/9

**Paul**: Well Folks, I tried. I am not into astrophotography. But I have an iOptron cell phone adaptor that I was going to use to take a pic of Jupiter or the Moon tonight and share. The Moon was clouded over so I tried for Jupiter, but my dining room chair was too slippery and wanted to dump the scope on the ground, which I did not agree to. While this difference of opinion was going on, Jupiter got clouded over too.

Mon/Tue, June 12/13

**Kevin**: There was a lot of intermittent cloud that did clear mostly away. I missed the double shadow transit, but did capture a couple of runs of the single Europa shadow under poor conditions.

**Susan**: I had a short view of Jupiter and its little cluster of moons and then cloud; I closed up shop as any clearing would have happened after Jupiter made it into the trees.

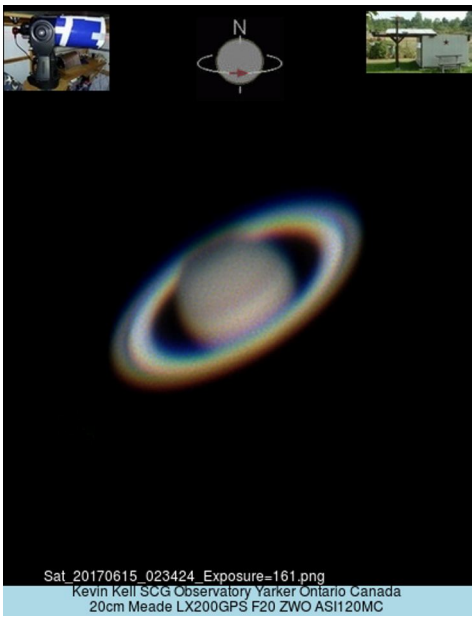
Tue/Wed, June 13/14

**Stephen Craig**: Here in Battersea it was clear all night! Seeing wasn't the best. Saturn was quite blurry. I managed to get a couple of good photos of M10 and M14.


Wed/Thu, June 14/15

**Kevin**: This is Jupiter, taken while waiting for Saturn to clear the trees in the east. There is lots of detail in the southern belts, and a few good storms in the northern. No Great Red Spot is seen, not any moon shadows. Jupiter now hits the western trees earlier, around 22:45 EDT. When I first started imaging, it was already past zenith.

This is the last of the series of images of Saturn, taken a day before opposition. I was only able to stay up until 22:34 and Saturn was only 15 degrees above the horizon and in the middle of the Kingston light pollution dome. The improvement was tremendous from when it first cleared a tree at about 9° altitude. Exposures were made at 161ms for a run of 120 seconds—so not nearly so many frames as with Jupiter at around 40ms exposures.




Sat/Sun, June 17/18

**Paul**: You'll all be amazed at my image of Saturn through a four-inch refractor with a mobile phone. With a considerable amount of imagination (and kindly excusing the jiggles from pressing the shutter release) you

can clearly see that this is Saturn and not a fat sausage on fire. This is the best of several dozen pics.

The photos of Jupiter somehow disappeared when I was moving them between folders, so I don't know if they also resembled sausages.

I hope that this will constitute incontrovertible proof that I am not, in fact, a true astrophotographer.

**Hank**: I see rings!

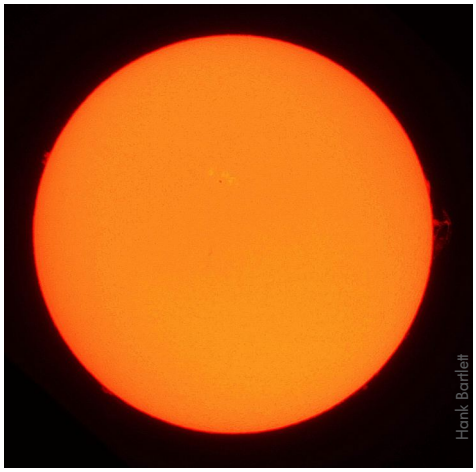
**Kevin**: And this is how it starts!

### Sun/Mon, June 25/26

**Stephen**: To say I am thrilled beyond measure is quite an understatement. With trees in the way I never expected that I could image an object so far south. Thank you to my neighbour for cutting down his tree! I wasn't sure of the camera orientation so I just took a stab at the framing. The result is just about perfect. Just think what I can do with a little more time and knowing what I am doing. Here is my first attempt at M20, the Trifid Nebula:

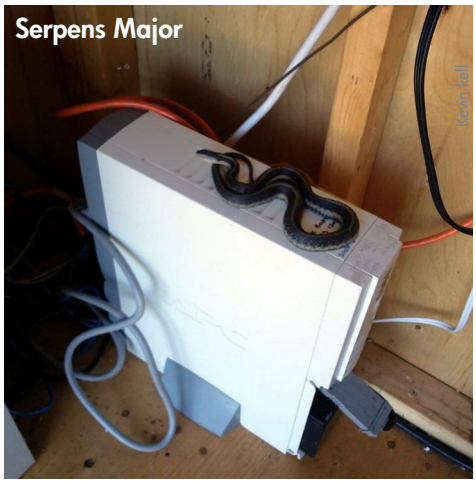

### Monday, June 26

**Hank**: Yesterday this was a pretty good hedgerow and then this morning it was thinning out and that often means a release or a collapse. In this case it was a little of both as it puffed up a little and then collapsed into itself. The rest of the day was mostly cloudy and/or busy and then at dinner it stormed and hailed!




### Tuesday, July 4

**Kevin**: We spent some time working on the Torus telescope and Tardis Observatory yesterday, maybe an hour working on the wheels and rail transport and then moved inside to work on the telescope. About 10 minutes in I made the startling revelation that I was not alone:




Rick made mention of hitting his head on his telescope large counterweight a few times before padding it. I did indeed hit mine as I recoiled. This snake had been inside, keeping warm on the heat vents of the UPS that powers everything in the Tardis, *watching* me!

Kim was kind and brave enough to get it into a bucket, and then released into the wild. Not far away enough for my liking!

**Rose-Marie**: Leave it in there, it's eating the mice! Mice are destructive! Mice are messy! Mice chew on wires and poop and pee all over everything! Thank you for not harming it.

**Kevin**: Agreed, it is a nice predator. There have been no mice in there for a while, but snakes are so SCARY! I will be spending a considerable amount of time in the dark, with a very powerful light...searching... Let's hope I do not declare it snake-free and then go and grab a power cable to plug in that isn't!

**Greg**: Cute. We find these every so often. Good thing you are too big to eat...

### Wednesday, July 5

**Kevin**: Oh, and last night, the snake came back, the very next day. Same place, on top of the UPS. Kim thinks it was a different snake...as if that is any better!

**Rose-Marie**: Rat snakes are territorial, and can cover some distances. We had some that were after certain birds' nests, so we took them a kilometre out the laneway. The next day they were back. A couple of them had scars, one had a short tail—it had been bitten off at some point—so we knew they were the same old gnarly snakes. If your snake has found mice in the observatory it knows there's food there, and shelter. Just think, it's cleaning up all the mice out of your gardens and yard.

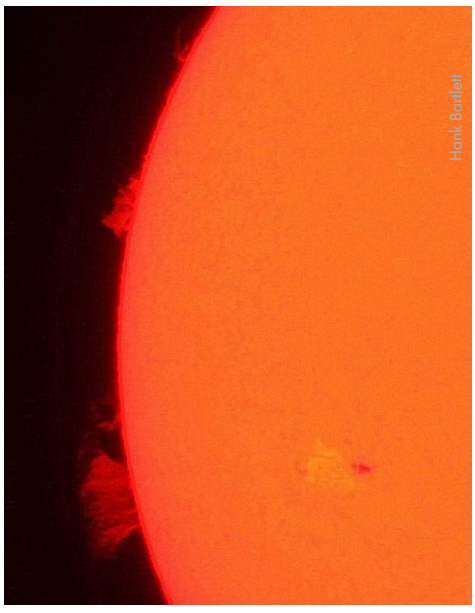
**Greg**: I agree with Rose-Marie. Snakes are much better pests than mice and voles—especially in an observatory. And none of them in this area are likely to be poisonous, so be happy you have a mascot. Give it a name...

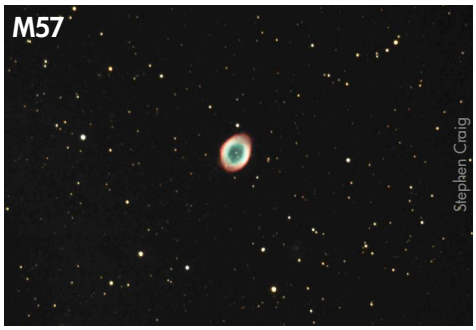
Tue/Wed, July 4/5

**Stephen**: Last night I went back to an old favourite, the Ring Nebula. This is possibly my best shot of it yet in spite of the moonlight. The exposure was 5x300s, stacked with *DeepSky-Stacker* and enhanced with *Photoshop*. I've found a procedure in *Photoshop* which mostly eliminates sky and moon glow.

Saturday, July 8

**Hank**: There was a very nice and large hedgerow on the east limb of the sun today as well as AR2665 looking fine. I only got one chance to get out there and little time to process but here it is at 12:45:39 EDT.

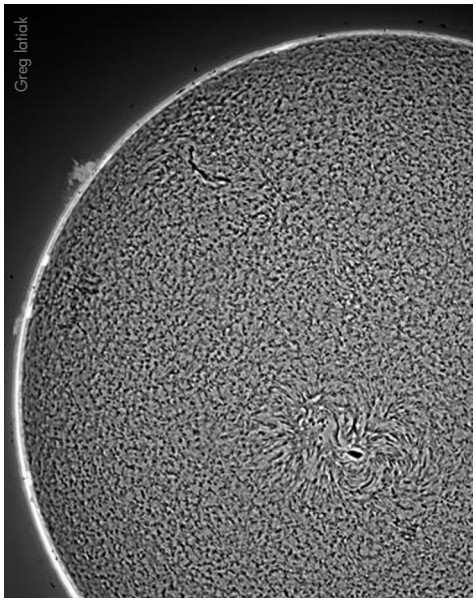




**John Hurley**: I got to show this to about a dozen 10 year olds and half a dozen adults on Saturday from a Windsor subdivision while visiting my brother and his family. Many of the kids wanted to look again and again and lots of cool and wows where heard Peggy and I were very pleased with the responses. There is hope that the next generation will not be just tried to a computer screen.

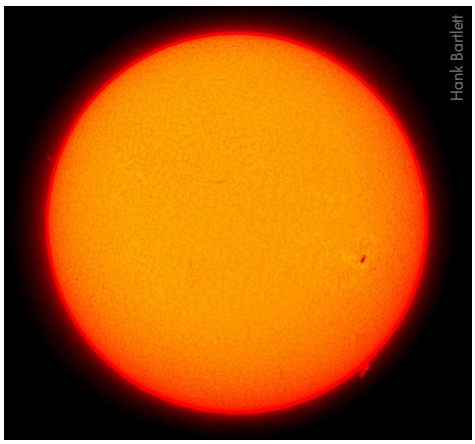
Tuesday, July 11

**Greg**: I got a brief window in the clouds. The image bounced around a lot but I was capturing video at around 10ms frames, trying to separate exposures for surface and prominence detail, then merging in *Photoshop*. It is a bit sloppy in places, but the effect is nice.




Friday, July 14

**Hank**: Hey, you all gotta move to Victoria: clear sky and low humidity! I missed the M2 eruption as I was in the air over the Rockies. The clarity in the air here is so different than what we have been suffering with this past year especially, even in the winter it did not dry out. I suspect Vancouver next week will not be the as clear.




**Paul**: Listen, Hank, you wanna see no humidity? I just disassembled my old dob for parts and it was rusted through and through, not to mention the multi-layer varathaned wood was punk. For four years I lived 50 km from Vic as the crow flies, and had much LOWER humidity than they do. I will say the transparency of the skies was always spectacular, and the lack of light pollution was like nothing I've seen anywhere that close to population centres. But beware the d-e-w!

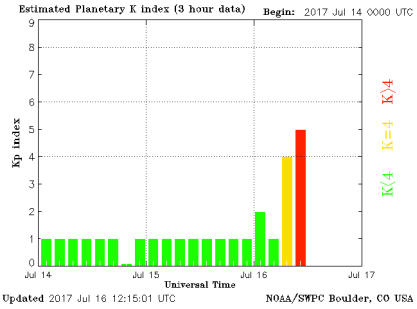
**Kevin**: We tried to view sunspot AR2665 naked eye with solar filters, and could not resolve it at all. It has shrunk in size over the last few cloudy days and is now approaching the limb.

**Paul**: I viewed the spot as my "first light" object with my new solar filter. Wow, was my mind blown! A beautiful left footprint within a pool of molten metal. Absolutely gigantic at 92X. Gorgeous!

Sat/Sun, July 15/16

**Kevin**: We looked for the first predicted solar storm impact last evening and saw nothing. Kim checked through the late evening and early morning and still nothing...but a lot of cloud that should not have been there! No aurora was visible in the overnight AllSky1 system either.

**Malcolm**:




**Hank**: I spent Saturday evening with my buddy Don at the DAO here in Saanich. It was a reasonably clear sky but windy on the hill. RASC Vic was there for public observing, the NRC building has some nice displays, and of course we toured the Plaskett. I didn't find the RASC members particularly embracing of a visiting dignitary but I did find out they still own my old Sm40.

We spent some time in the warm room of the Plaskett while the volunteers were slewing it to M13 and found it interesting. Once dark, they projected images on a screen for the 50 or so visitors. It is a beautiful hulking metal structure and nice to see it actually functioning.

RASC scopes ranged from a 35mm Lunt to a 15" f/4.2 Obsession. Their set up and style is much the same as anything we would do and I must say I quite enjoyed the excitement of it all. Later at Don's (1 a.m.) we looked for aurora but saw none.

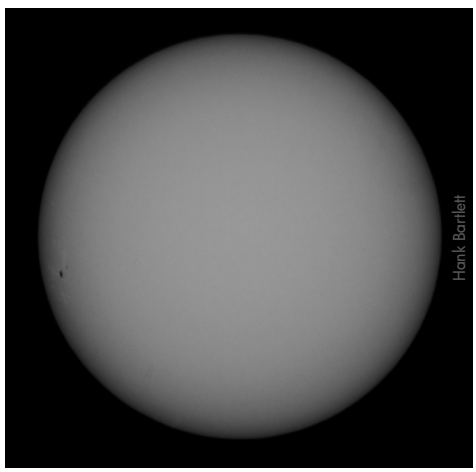
Thu/Fri, July 20/21

**Stephen**: I tried a difficult object, NGC 7023, the Iris Nebula. It turned out pretty well. This is 5 x 15 minute exposures, stacked with *DeepSkyStacker* and enhanced with *Photoshop*.


NGC 7023

**Greg**: Nice one, Stephen. Glad you are even able to see it. Hope you have better luck with getting clear skies...
**Stephen**: I had 4 clear nights in a row here! I got lots of good pics this week! This weekend is not so good. But I need to rest up after my marathon observing.

The Sun




**Malcolm**: I had three in a row as well here in the county. Tuesday night seemed to be the best one. Fog settled in on Monday and the transparency was pretty poor on Wednesday. I went to Starfest on Thursday and it was clear at sunset but crapped out by midnight. There wasn't much observing Friday, Saturday either. The speaker program was excellent though.

Wednesday, August 2

**Hank**: AR2665 made its way back around in diminished but hopeful capacity. Here are a couple of images with the SM60 h-alpha at 14:42 EDT ⅛s at ISO 200, and the Mak 90 Baader at 15:08 EDT, 1/125s at ISO 200. It was a hazy sky of course, as this is Ontario.

Monday, August 21
Solar Eclipse

[12:36 EDT] **Mark K**: The Sun is starting to disappear under completely blue skies in Shawnee Wyoming. Very emotional moment.
[15:42 EDT] **Kevin K**: First contact a few minutes ago south of Jay Em, WY, north of Rawhide Creek as close to centre line as we can make out. 30C, sunny as all heck, but strong winds gusting from the north.
**Mark K**: That would put you about 60 klicks due east of us.

[...*Totality*...]

[14:42 EDT] **Mark K**: That was amazing! We had perfect blue skies for the whole event. The strong winds died right down for totality. While we were packing up, thin clouds came over.
**Malcolm**: Wow. No words.
**Mark K**: Isn't that the truth! There are not any words to describe the depth of feeling and relief. It is truly a wonderful thing.

[16:03 EDT] **Hank**: A great time; lost count, but at least 75 public observers with about 7 of them connecting their cell phone to the Mak90 with my adapter, and getting images to take away. Maximum noticeably changed the lighting with softer shadows and dimmer grey pavement in the parking lot at Hilltop Variety. Now it is time to hit the pool with a cold beer!

All if you in Kingston must have been swamped with public.

**Walter**: Yes, the daylight was subtly mellower but a bigger difference was that the Sun didn't feel as hot—a nice thing when the humidex is over 30. I wonder if the reduction in solar PV output was offset by a moderation of A/C demand?

I really should get one of those phone adaptors: it would make things easier and the pictures would be better too.

**Hank**: Imaging time was a problem yesterday but it is true that the adapters and cell phones take very impressive images if you have the time to fiddle with focus and exposure. The adapter I have (23mm eyepiece included) fit everyone's phone who tried, even the large Samsung models. That said, some did not fit the whole sun; later I realized those people may have had their phones on 1:1 ratio, not 16:9 as it made a great difference. The Mak90 provides a larger image but less contrast than a refractor; I'm still thinking of picking up a short tube refractor to replace the Mak. The cells are so much more manageable as well on mount and scope. If I ever get rid of my BB for a new cell I will definitely take the camera mpx and options into consideration.

Yes, the cool down was quite apparent. I should have had a thermometer with me but did not expect that much change.

**Paul**: Very nice images, Hank! Quite a few of my "customers" (about every 4th one) tried to image the eclipse with their phone, some with amazing success.

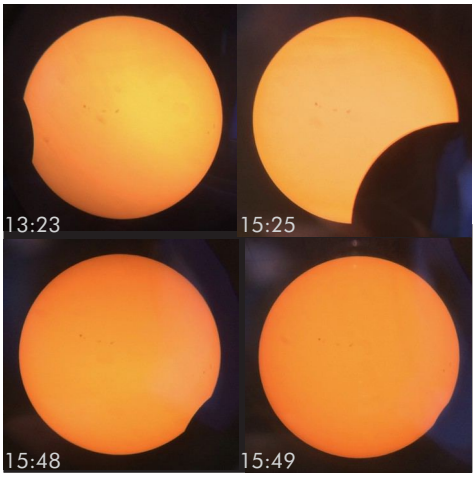



[16:25] **Greg**: Great day here even with the distractions.

[16:49] **Mark C**: I was kept busy with my new Meade ETX-80 with the solar filter, the eclipse shades from *SkyNews*, and Coronado Binomite solar binoculars. A lot of my neighbours came by and two Hydro One trucks doing a service call stopped on their way out to view the eclipse.

I plan to be in Prince Edward County in 2024.

[17:23] **Walter**: I had a great session in Winchester with the C8 set up in the backyard near the carport and my iPad on the car windshield with the NASA eclipse coverage running (great coverage BTW). Nine visitors had a few looks with *SkyNews* eclipse glasses and also through the C8. There were some nice spots dressing up the solar disk as an extra little bonus.


[19:23] **Paul**: Great afternoon! We had a solid crowd at Confederation Park. I was too busy to see how others fared—it was steady without a break at my scope from well before first contact until about 3:45 p.m. (last contact was 3:50.)

Boyd from Peterborough was beside me with his scope, Brian Hunter with his Coronado a few more steps away, and Susan Gagnon a little in the other direction. If there were others I was too busy to notice. The Queens/RMC crowd were up on the main sidewalk at street level from what I could gather from Stephane Courteau. I would categorise this as

an unqualified success. What a rush!
[20:02] **Rose-Marie**: For some reason I just couldn't muster up much enthusiasm for the event. I couldn't find that darned solar filter for the small scope, I thought the Moon would only cover ⅓ of the sun, and figured we'd have clouds.

So anyway, we had our nice little lunch of shrimp and pâté, then headed down to the chairs on the lawn. Me and Pup had a few swims, and Friend and I and Pup enjoyed just sitting in the shade and listening to the birds and watching the loons swim by. Had my handy dandy little eclipse viewers courtesy of *SkyNews*, and got up occasionally to peer at the eclipse progress. So I did enjoy seeing it.
[20:17] **Bruce**: Yes indeed it was a great afternoon. I was up on the cement platform with Matt from the Queen's open house. I had difficulty with my initial Sun alignment and some trouble with the side real set up. But once I got going there was a huge lineup as well. My wife Janet was also helping and set up a pinhole camera arrangement which was also fun.

My only regret is I did not have time to take any pics—except at the very end when the Moon kissed the Sun goodbye! It was great fun though.
[20:55] **Kevin K**: Wow. Too short. Lost all cell service after that last post. Awesome. No clouds.
[21:17] **Susan**: I did not even see you Bruce! Once we started it was full throttle all day! At the end, the conservative estimate that was agreed on was 1000 public observers. Time well spent! Everyone was appreciative of the view. And it was clear all day! There was a very noticeable change in light and temperature at maximum. I think the scope count was Bruce, Matt, Colin, Paul, Boyd, Brian, me.
[21:28] **Dieter**: We had a lovely afternoon too. I invited neighbours, friends, and customers on my paper route to join me on my front lawn, where I had eclipse viewers and a Stargazer Steve 4-inch Dobsonian available. I counted 40 people, and we all enjoyed a mellow time together. I also gave out quite a few viewers to people who couldn't make it to our gathering, and also mailed them out to family and friends across Canada (Vancouver, Waterloo, Toronto, and St. John's).

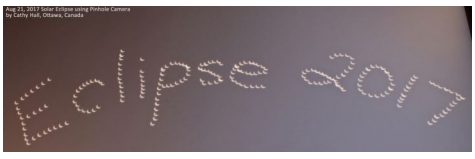
Interestingly, one of my neighbours pointed out that it had become cooler at maximum, and we all noticed the somewhat unusual illumination.

I am happy it turned out so well for all our local RASCals.
[23:41] **Rick**: Glad to hear it was a success in Kingston. We've just arrived back in our hotel from probably the longest day of driving we've ever done: ~7½ hours from Omaha NE (started out at 0400) to Alliance in NW Nebraska and then same thing back—about 18 hours for the whole trip. But the scenery was great, and the traffic light so it was actually a really nice, though very tiring day. Oh, yeah, we saw the eclipse. The drive out was under cloudy skies and then thick fog and drizzle until only 100km from Alliance when the cloud broke wide open. Hurray! Then the cloud closed in again. Oh no! Then opened up, closed down. Finally we arrived in Alliance to a nearly perfectly clear sky.

There was a brief threat as a little bit of low cumulus scudded by midway through the partial phases but without actually obscuring the Sun. This stuff all evaporated well before totality. So the view was terrific, Venus was very bright to the left, Regulus was visible in binoculars just to the right of the Sun. There were some really nice prominences and a nice, very asymmetric corona. I was so stoked when it ended that we had to sit and calm down for 15 minutes before I could start driving. We might have been able to see everything with a lot less driving but it was far better to go too far and see it all than try to scrimp and miss it. We haven't seen one other Canadian car the whole trip.

I took pictures of the eclipse—but I definitely focused all my attention on watching (that may show in the pictures.) I got one camera with 300mm lens setup on a tripod and through totality just cranked the shutter setting up and down from $\frac{1}{2000}$ to about 1s and clicking the shutter button while I watched. And of course I did a few shots of the ingoing partial phases since there was so much free time then.

I took lots of pictures to show at the September meeting if they turn out. I also got the T-shirt, also to be shown at the meeting.
**John**: *Report from Sharbot Lake*: Peggy and I held an open house in the yard for the big event. We ended up with about two dozen people stopping by and hanging out including 10 kids ranging from in age from 8 to 13. The WOWs, OHs and COOLs brought smiles to our faces. We even had some drone coverage of the event. We are waiting to see what turns out, but the memory card filled up fast.
**Rose-Marie**: Y'alls got writ up about today! Good show!
thewhig.com/2017/08/21/partial-solar-eclipse-a-very-good-show




## Thu/Fri, Aug 31/Sep 1

**Hank**: I went out at 23:00 EDT last night to see if I could find Florence. After a few quiet calls "Florence,

Florence...” she didn’t appear so I turned on the MiniTower II as the asteroid’s path is set in the memory. I thought this would be rather easy as usually what I search ends up in the field of view. Of course a car drove right by slowly as I was starting to image (I had to set up on the road edge to get path and shade of the house from the streetlight) and then the car came by again and stopped. A young man jumped out and asked “Hank what are you looking at?” Sure enough it was someone from the eclipse viewing that just happened by that time of night and was now all excited (not what I had in mind, but...); I gave him a view of the Moon, talked about the asteroid, let him hold the 613g Campo del Cielo I have and he was happy and went on his way.

Back to Florence: I took 10 good and bad images at varied exposures over about 20 minutes; visually I could not identify any asteroid. The night was rather hazy so there was no resemblance to the over-populated chart on *Sky Live* so I headed in to review the images and see if anything moved relative to the stars during that time. I do not see any difference in movement in my images so Florence must have been out of my field of view. Of course where the scope went to was likely where the asteroid was “when” I selected it and as the mount is tracking the sky, not the asteroid, it may have been gone after a few minutes. For a first time at it I had a good outing except I allowed myself to get distracted.


I shall try again tonight but will hide in the side yard behind the hedge.

### Sunday, September 3

**Rick**: Well we’re back home as of 2300 Friday evening. We had a bit of trouble Friday on Hwy 17 when an accident closed the road for 4 hours, but otherwise the driving went quite well. Quite the exhausting trip. While we took a whole 17 days to cover the 10 400 km, we did 3 600 of it in three days to get from srn Manitoba (outside the evil empire) to Omaha (hotel) to Alliance (eclipse) to Omaha (hotel) to Manitoba (back outside the evil empire).

SSSP turned out to have much poorer weather than forecast and we stayed a shorter period as well so I got only one night of intermittent clear skies and one night of clear skies, but it was good regardless. Got to see Alan Dyer’s first cut at his eclipse pictures and videos. Wow, not sure why I spent the time to take pictures. Ah well, we’ll see how they turn out once the arduous processing is completed.

### Wednesday, September 6

Kevin: starlightcascade.ca/blog/2017/09/total-solar-eclipse-raw-video/ Here you can find the entire 2 hours 19 minutes 29 seconds of video that we have (less than the total duration of the event as the camcorder shut itself down 5 times during the eclipse). This final video was played back from the camcorder to a DVD recorder so we could get the timestamp information onscreen. The audio was scrubbed as a lot of it was profane (I yelled a lot at people driving on the road, packed with people and cars on either side, during totality).

Now to work on the DSLR shots. I need to centre the wandering (manually guided) Sun and then crop it all. I’m still looking for an automated tool to do that—all of mine (*AutoStakkert!*) only use .avi files, not .jpg files).

**Rick**: At SSSP we got to see Alan Dyer’s first cut on his time-lapses and images. They included some expletives whenever he remembered that he was supposed to be looking up in addition to trying to run 5 cameras! “*Sh*t! Got to look at it. Oh god it’s magnificent. Sh*t, got to get that filter off...*” Presumably the final versions will be censored to be more family-friendly.

**Kevin**: X-ray solar flares, 6-hr max: X9 1202 UT Sep 6. Looks like the Sun just had an X-class flare event; the clouds in our area may part a little from 10:00-13:00. Nothing on our radiojove system,

**Hank**: Yes! Saw that and got some cloudy images in its declining state. Painting house right now so can’t process. They will be poor anyway.

### Thu/Fri, September 7/8

**Hank**: First shot of the night, the wearing of the green is on!


**Rose-Marie**: Going back out to check for the fourth time...haven’t seen anything fire up here yet.

**Greg**: Lucky you. Congratulations. The clouds here didn’t finally clear until almost 8 a.m. Nice to know that a sky still exists on the other side of the cloud layer.

**Rick**: It was cloudy all night here; never saw a thing. It’s the same thing

over here. I'm about 15 miles as the crow flies due west of you. Nothing but clouds lit up by the bright Moon. There were a couple of gaps around 9:00 p.m. but nada for green.

Sunday, September 10

**Hank**: At approx 16:00 UT, 2673 blew another X8ish flare. A large arching prom is beginning to form: get out the h-alpha!
**Kevin**: We did and saw the most amazing double loop on the limb.

Sun/Mon, September 10/11

**Stephen**: Now that we have some decent weather and the Moon is starting to wane, I'm starting to go after some of the fainter objects. Last night I tried 15 minute exposures of the Bubble Nebula in Cass. It's not a bad result for a first try. My collimation was a bit off. I fixed that later in the night after the Moon came up. I'll try some 20-min exposures tonight and see if I can bring up more of the faint detail. I've really improved my post-processing techniques. I'll go after fainter objects as the Moon and clouds allow.


**Peggy**: Just received a Facebook message from Denise. She and her family moved up to Tampa for the storm. They are all well and didn't have too much trouble in Tampa. She doesn't know when she can return home yet and see how bad things were there. She said Irma was a cat. 2 when it hit her home. ... [*later*] Second report from Denise says the condo appears to be okay. A lot of trees are down in the area.

Monday, September 11

**Ian**: It's great to hear good news from Denise. Sheila and I were thinking of her yesterday when Irma passed over Bonita Springs. We here in eastern Kentucky are fine. We're supposed to get some of the rain bands through our area tonight and into Wednesday —so, a thorough drenching, but not unmanageable at all.

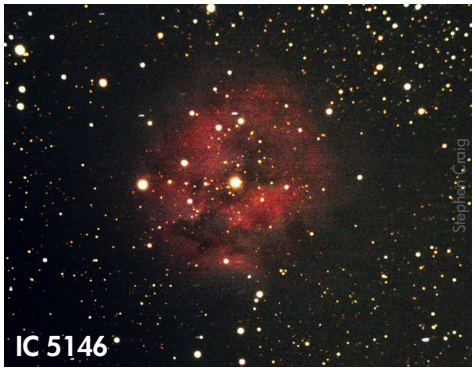
Tuesday, September 12

**Rick**: [*In response to the link posted for the Goodbye Cassini live stream.*] Phew! I was observing but followed up the link never-the-less. At 3.6 hours duration, I don't think so.

I have done three all-nighters in a row, tonight will be the fourth. Even though I get to sleep while the telescope does the work, the frequent breaks in sleep are very disturbing. Fortunately tomorrow night is supposed to be cloudy.
**Susan**: I watched the whole thing! I know! Crazy! I found it very interesting and uplifting. So many people involved in such a long project with so much success. I will watch the end of the Cassini probe on Friday a.m. as well (NASA live TV). I look forward to viewing some of the videos from the mission. Part of what was interesting was the setting at Griffith Observatory, seen in so many movies, and which David and I visited once. If you think our open houses have a light pollution issue...

Sat/Sun, September 16/17

**Stephen**: I have really improved my image processing techniques since earlier in the summer. So I am going back and reprocessing old images. Here are two renditions of the Cocoon Nebula in Cygnus. It's faint and hard to capture. The first was imaged and processed on July 25th. The second was processed on Sept. 16th. I think the second is far superior!





I'm up to 30 minute exposures, which is quite an accomplishment as my camera USB link is ported over a 150' Ethernet cable and has a tendency to crap out once in a while. The longer the exposure is, the more chance there is of failure. But last night worked well and I got some great shots.


**Greg**: Very nice. I am gathering from the nice round stars yours is not a low-end mount. Glad you had good air last night; it was pretty hazy here. I'm surprised that you don't hang a

small form factor machine next to the mount instead of the USB over ethernet forwarder. Anyhow, the images you are getting with your 'Universe' are spectacular.

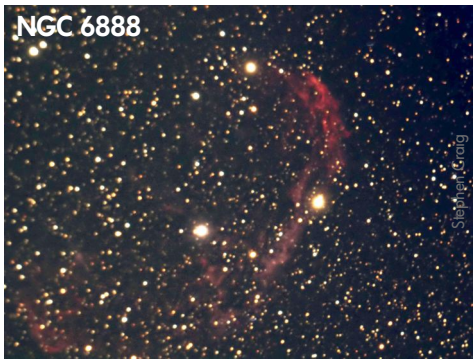
**Stephen**: The round stars are thanks to my On Axis Guider. It is guiding well within the limits of the seeing. The last time I had my computer directly connected to the camera in the observatory I was still getting data glitches on the USB. The Universe puts a tremendous load on the USB and the CPU. I suspect I will eventually have to move up to a high end computer but for now I can live with what I have. I'm really happy with the images I'm getting.

**Greg**: I have just got a DS16c and am slowly climbing up the learning curve. It is not cooled (should have been) and similarly slings a lot of data on the USB3 line. From reading the discussions on the Mallincam newsgroup I am no longer sure what constitutes a 'high end' system. When I decided to get a second machine for the dome I bought a small form factor HP mini. There seem to be curious issues with the current fast Intel CPUs. My little box has an AMD APU—its a new architecture that merges the graphics processor and CPUs: 4 nominal CPU cores and 6 graphics cores. 8GB of memory and an SSD. So far with *Mallincamsky* controlling the camera the machine just loafs—I have not seen it over 25% load yet. Although the 41MB tiff snapshots and 1 minute videos that pile up 4GB of stuff. I'm sure your Universe is shoveling it out similarly.

### Sun/Mon, September 17/18

**Stephen**: I'm still going after the faint stuff. I managed to get a fairly good 30 minute shot of the Crescent Nebula in Cygnus, in spite of rather hazy skies.

**Peggy**: Denise has posted an update

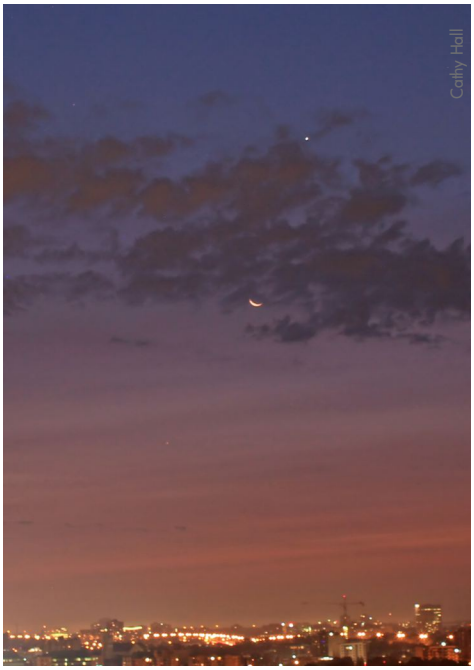



on her condition. She is without internet or phone but that is about it. She'll keep us posted.

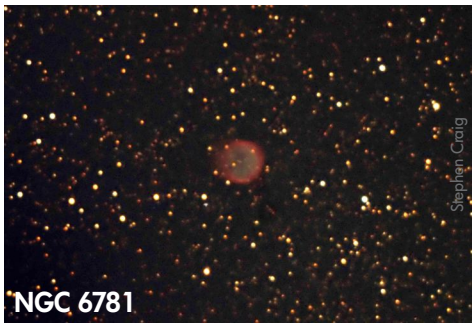
### Mon/Tue, September 18/19

**Cathy**: Got up about 5:00 this morning to take a look at the planets in the morning sky, and took a series of photos from my apartment balcony. There was a fair amount of haze and cloud around. Venus, the crescent Moon, and Mars showed up, but I was unable to see Mercury.

The sunrise was dark orange, and visible for maybe ten minutes—and then pea soup fog rolled in and obscured even the sun.




**Stephen**: I'm still catching up with processing some faint objects I imaged a few nights ago. This one is NGC6781 in Aquila. It rather reminds me of M57. This was a 15 minute exposure. I'll try a 30 minute tomorrow night. Maybe I can bring out more of the colour. Anyway it's not bad for a first try.




**Rick**: I went out (forgot about the 18th [*yesterday's*] alignment) to see the very nearly new Moon. I didn't see it (it was rising right behind the tallest tree on the horizon so I think it was already too bright out by the time it cleared the tree—I should have gone out in the canoe to a better vantage point), didn't see Mars even in 8x42 binos, but the rest of it was beautiful.

The mosquitoes were pretty spectacular as well. All the dancing about and swatting doubtless contributed to the failures.

### Fri/Sat, September 22/23

**Stephen**: I've been having a lot of trouble getting my collimation the way it should be. So last night I spent the first half of the night adjusting it until I was satisfied. Of course I had to get it all screwed up before I got it right. After a couple of hours of cursing I was finally satisfied. I took a test photo of my old favourite, M1,

The Crab Nebula. It was a fitting subject for the night. I think it turned out pretty well! So hopefully I won't have to do any more alignment for a while.

Sun/Mon, September 24/25

**Stephen**: Last night I managed to get a great shot of NGC 891, an edge-on spiral galaxy in Andromeda. I am particularly pleased with how it captured the detail in the central dust lane.

I use a Celestron 1100 at f/10 and a Mallincam Universe camera. It was guided with an Innovations Foresight On Axis Guider and a Starlight Express UltraStar auto-guider. Exposure is 5 x 20 min, stacked with *DeepSkyStacker* and enhanced and cropped in *Photoshop*.


**Greg**: Glad you are having fun, Steven. I was working in the dome myself but had far more prosaic tasks to perform. Looks great!
**Stephen**: I've been pulling all-nighters every night for over a week and got lots of good shots. Now I'm taking advantage of a mostly cloudy night to get some much needed sleep!

Tue/Wed, September 26/27

**Stephen**: As I got an unexpected clear night I thought I would try a very difficult shot. This is Stephen's Quintet in Pegasus. It is very small and faint but I did managed to pull off a couple of decent 30 min exposures before the clouds rolled in. My shot is not nearly as good as the Hubble Space telescope gives but then time on my little scope doesn't cost nearly as much as time on Hubble! I'm quite happy with my result. I'll try again tomorrow night.

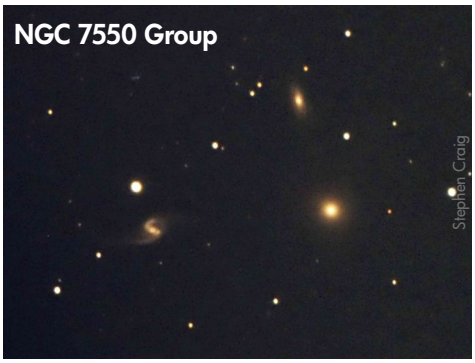

Wed/Thu, September 27/28

**Kevin**: Just before 02:00 we were out and imaged some aurora. It's been *ages* since we saw aurora! This is a 30s exposure on the 13 year old Canon DSLR with an 18–35 lens at 18mm on a tripod.


**Mark K**: That is pretty much what I saw this morning around 0400. You could just tell that the northern sky was a bit more green than it should be.
**Malcolm**: I did a time lapse; processing it now. It was disappointing for a kp7. It seemed glowy to the N, but I didn't see anything naked eye. It was cloudy until about 3:30 for me, so I may have missed the best part of the show when it was cloudy.
**Rick**: Why aren't you guys sleeping!? Of course, the better question is 'Why am I sleeping?' I just can't afford to waste good sleeping nights getting up to check the skies every hour. I need to make an aurora alerting system that wakes me up when there are aurora.
**Malcolm**: Sleep is for after the astronomy is done.

Thu/Fri, September 28/29

**Stephen**: I've set myself a goal of imaging all the Hickson Compact Groups featured in the November issue of *Sky & Telescope*. I've already got three! The first was #93 (Stephan's Quintet). Tonight I got #96 and #93. I rather like #93. It is centered on NGC7550. I just need two or more clear nights to get the rest. Here is #93:




**Rick**: Nice image Steve. You're pretty quick off the mark—I only got my copy a couple of days ago. But why limit yourself to just the ones in the Nov. *S&T*? Go for the whole catalog. My motto is 'if something is worth doing at all it's worth doing to extreme.' Of course, that's probably why so many of my projects never get completed.
**Susan**: I do not have a problem with this. My motto is 'a to-do list that is completed indicates...not much of a to-do list.'
**Stephen**: My 'to do' list is pretty long! 72 objects done to date. Some I'm not satisfied with and have to do over. I'll be at this for years! Stuff in *S&T* is just the tip of the iceberg.

Fri/Sat, September 29/30

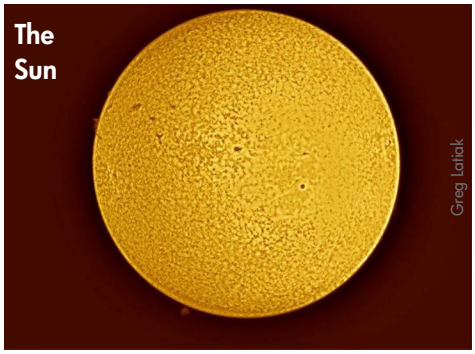
**Stephen**: Just to show that I am not just fixated on the faint stuff, here is my latest shot of M27 taken on the

24th. I took five 10 minute exposures, stacked with *DeepSkyStacker* and enhanced with *Photoshop*.


**Hank**: Beautiful. I still think it should be the Apple Core Nebula.

Sunday, October 1

**Greg**: It was a nice clear day for a change—with some interesting features on the surface. Not a very stable sky to look through, though. As usual: Lunt 60THA, SLP with MFR 5-IIB, *Autostakker*, *Registax* and *Photoshop* for post-processing. Still a bit crude, but am learning.




Wed/Thu, October 4/5

[*Kevin alerted us to a Venus-Mars syzygy in this morning's sky.*]
**Hank**: Dawn? Do you know how early that is? Oh man I don't think I can do it.
**Malcolm**: It's an interesting idea, but I was out a week ago at that hour looking for Mars, and Mercury too. I neither saw Mercury, nor Mars. Mars did show in the picture I took though. I'm guessing it won't be much brighter tomorrow!
**John**: The sky was great this morning with Venus and Mars to the east and the setting Moon in the west. A bunch of Queen's students flying out this morning were interested in the view.
**Kevin**: We had heavy fog in Yarker from at least 05:00-06:45. On the way in it finally cleared near Highway 38 and we saw Venus but could not make out Mars. Bummer.
**Cathy**: Woke up about 6:00 a.m. this morning, to crisp clear skies in the E. Venus was brilliant, and Mars incredibly close to it in 8x30 binoculars. There was nice contrast between the brilliant white of Venus and the dark orange of Mars...
**Stephen**: I've added a focal reducer to my camera in an effort to get a wider field of view. I tried it out on M33 which I have learned is not an easy target (large and faint). I managed to get three 30 min exposures after the Moon set Monday morning. When I processed the images I saw problems. The focal reducer introduced a lot of vignetting which I wasn't happy about. So I went on a quest to conquer it. I took some flat frames to include in the stacking and found some software that reduces field gradients. I spent


the better part of yesterday experimenting with different processing parameters. In the end I solved my problem. So I posted my result on the Mallincam user group. Today I got a very nice email from Rock Mallin, the president of Mallincam. He was so impressed that he wants to use my photo on the Mallincam website. That helps make all the hard work worthwhile. Here is my latest M33. You be the judge!
**Hank**: Beautiful image of a very faint and diffuse object, congratulations on the image and the recognition!

Thu/Fri, October 12/13

**Stephen**: I think I set a personal record: I was home 35 minutes after the meeting. I opened up the observatory, focussed the telescope and did my star alignment all within 30 minutes. Then I had acquired my first object and was imaging 15 minutes after that! Can't let a good clear moonless sky go to waste. Tonight I'm taking 5x30 minute exposures of the Cocoon Nebula, seeing if I can find the supernova in NGC4964, and taking a first stab at Comet Assassn1. I'll sleep in the morning.
**Kevin**: Good for you! I tried that and barely made it home awake last night.
**Walter**: I was pretty tired and I didn't even go to the meeting. I did have the observatory pumping after a delayed start, bagging 122 variables and 4 comets:

- C/2015 ER61 (PANSTARRS): in Taurus, bright nucleus and a bit of a tail, only ⅔° from V701 Tauri.
- C/2017 O1 (ASASSN): in Perseus. I wouldn't say my 10 minute image is a killer, or perhaps I would! It shows as a bright nucleus with lots of fuzz (it is an ASASSN after all), moving rapidly north.
- 62P/Tsuchinshan: in Cancer, diffuse and faint, moving rapidly


north.

- 24P/Schaumasse: in Leo, diffuse and faint; this must be the same Schaumasse I saw in the 90s—it was quite diffuse back then which made it invisible from Oshawa but easy at the farm (using my C8 at both locations).

I would have tried C/2016 R2 (PANSTARRS) but it is listed at mag 14.6 and is only 7' from mag 1.7 Alnilam. Perhaps next week once it's moved out of the blast zone.

It's been a few months since the scope was last used, so it was lost (power cycling it a couple of nights ago without synching then likely contributed to this) and I actually had to *look through an eyepiece* to get it synched with the sky again. Ah, that really takes me back to the 20th century.

There were no USB lockups, though the run stopped after repeated plate solve failures on one of my southern LPVs in Cetus. I restarted it promptly (the computer plays music to alert me to such problems) and didn't lose any sky. At dawn the cloud held off long enough to let me get some new flat frames, though having that pesky LQ moon so high and only 30° from the zenith was not ideal.

**Rose-Marie**: There were beautiful dark clear skies last night; I wandered around a bit admiring them, but was too tired to set up the big binocs. I need to get a new cable release for my camera—the one I have isn't working properly, or I'd have taken the barn door tracker out.

**Stephen**: Last night I managed to get my improved shot of the Cocoon Nebula. The supernova in NGC 4964 was behind the tree and it clouded over as I was hunting for Comet Asassn1. I'll try again the next clear night.

Kevin's talk on processing images got me thinking more about my processing regime so I'm spending the day trying out new things. This rendition of the Cocoon Nebula (a work in progress) is already better than my last image!


**Hank**: Stephen, I think Kevin got quite a few of us thinking about changing our astrophotography practices. Sometimes it takes someone with a clear and simple approach to a subject to brush away the anxiety and fears of working with these fancy programs. To do as he said, just use someone else's numbers and work from there and not worry or even question HOW it works. A good and productive talk.

I was glad to find out last night that you have been into astronomy since you were 15 years old, as I thought you had only just recently taken up the hobby and were advancing at light speed and leaving the rest of us in your dust already.

**Stephen**: I took a long hiatus from astronomy while I was working. I just couldn't handle the late nights. Now I'm retired and making up for being away from it. I'm up taking photos every clear night. So I have a lot of images, not all of them good. It's been a steep learning curve this year. "Never stop learning!" is a good motto to live by.

**Paul**: I just discovered today that the scope I bought is not as rare as I believed. I think Takahashi must have made a third run of the FC-100D telescopes, because astronomical dealers across North America are advertising them heavily right now. In fact, they are available at 20% off the regular price! I could have saved a bundle if I hadn't been so eager this past spring.

Oh well, I'm still thrilled with my purchase.

**Hank**: Paul, your scope is a beauty. Do not do your scope or your purchase any disservice by searching further. Go to it now and apologize, caress it and promise you will never be unfaithful again. I am looking forward to seeing this scope in action.

I have 7 scopes altogether, one I have had for 50 years, and I cannot part with any of them no matter how hard I have tried or how little I used them.

**Rose-Marie**: That is the Standard Law of Purchase, the more you want something and the more expensive it is, the greater the chances are that when you do finally get it, it will be on sale for a lot less soon after you purchase it, but not soon enough to qualify for a refund when you complain to the retailer. This Law applies to a wide variety of products, not just astronomy gear.

### Mon/Tue, October 16/17

**Stephen**: Last night was a great night, clear as a bell and no Moon! I tried something new, the eastern Veil Nebula. I always thought it too big a target but this shot turned out pretty well. I have the 0.5 FR on; it seems to work well, though I still have a little more vignetting than I like—I'm working on that. I cropped this image a little bit.


### Tuesday, October 17

**Kevin**: Both of our AllSky camera systems are due for some maintenance work this weekend. AllSky2 went down for a couple of days when its control computer's dual 750GB RAID drives had a single drive failure. It is over 5 years old now and constantly recording video all night long and that means some pretty intense drive activity. It is limping along now in single drive mode and a new one is on the way, hopefully to arrive Friday for a weekend install.

AllSky1 has been patiently waiting for a dome heater.

Lastly the RadioJove dual dipole antenna system will be raised from 10' to 20' off the ground in order for it to get a better signal from Jupiter, as it enters into a low declination period.

**Hank**: You are so busy with all this and maintenance, I hope you do enjoy some of it and the data collected. Rest assured you are appreciated for what you do. The all-sky cameras have given you a great deal of grief in the past few years, is there not a standard design for these? I realize that the design must vary by environment and locale but I would think that given these are in use by universities some one would have worked the bugs out of the design and system by now. Wow, I can't believe I just typed that statement, think "Torus," duh. Oh well, good luck and contact me if there is anything I can do to help.

**Paul**: Hank, you put into words what I immediately thought when I read Kevin's report.

Kevin, you are so hard-working, I don't know how you find the time to have an actual job. Keeping this equipment up and running is a service to all of us—we just get to sit back and watch the good bits when you point them out to us!

**Kevin**: I look at it the opposite: most of what we try to do is automate so that we can spend our time doing the things we love, be it visual, imaging, or whatever. Everything we have here is pretty much lowest end, build-it-with-duct-tape-and-rubber-bands. Commercial off the shelf all-sky cameras for instance, were in the $1500-3000 range US last time I looked. Even the UWO systems, hand made one-by-one, were in the $1000 range, at least initially.

So that is why there is the need for a lot of hands-on micro management—but only so often, as the systems have done remarkably well for years now.

The weather station has been online since 2002 and, even more important, today is the 365th day the "weather Pi" has been up and running without interruption. Wow! No computer system at home has ever survived that long, what with all of the sometimes long power outages. But it takes next to no power and the UPS hooked up to it is more than enough for a few days.

Our other long-lived systems are:

- AllSky1 since 2002 in various forms
- AllSky1 in its present incarnation since 2007 January.
- Allsky2 since 2012 June.
- Supersid since 2016 Jan
- RadioJove since 2011 April

We are proud that we can contribute data to anyone who can use it. We are still looking to add more someday: data logging Sky Quality, Earth-quake, colour all-sky, weather cameras.

We are using a lot of this data ourselves; we may have to wait until retirement, but then again there will be a lot of long-term stuff ready for reference!

**Rick**: I'm sure there are standardized all-sky cameras available. Like the SBIG 340. Can you say '$2495US?'

**Kevin**: Hence the possibility of a raspberry pi allsky camera system project for < $300.

**Hank**: I love this phrase, so Canadian: "build it with duct tape and rubber bands." I think you are doing amazing and your technology outstrips anything I have/run for sure. I certainly did not think that the cams would be that high a price. The amount of success far outweighs the failures or maintenance. Thanks, I have a much better understanding of the situation now.★