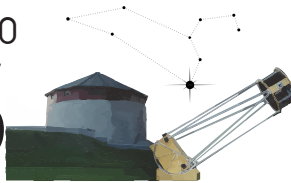


Regulus

Sept/Oct 2020
RASC Kingston Centre



Upcoming Meetings

Join us at our next Kingston RASC Meeting ONLINE, second Wednesday of the Month at 7pm.

- Oct 14th, 2020
- November 11th, 2020 (AGM)
- December 9th, 2020

Email kingston@rasc.com for a ZOOM invite (note we are working on a email list for members to get notification invite for meetings).



Hank Bartlett with his new pier installed, read about it on page 4



In this issue:

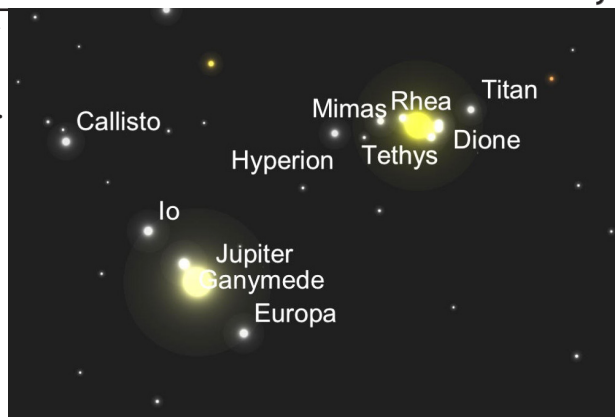
December Conjunction	1
President's Tidbits	2-3
Pier Pressure	3-5
Financial Report 2019-2020	6-7
Alternative Observatory Supports	7
AY Lac In Outburst!	8-9
In the Sky Nov 2020	10
AstroCross	10
Meeting Minutes June 2020	11
Meeting Minutes Sept 2020	12-13
Meeting Minutes Oct 2020	14-15

December Planetary Conjunction

Just a Heads up for all you Planetary Fans out there, shortly after dusk on December 21st Jupiter and Saturn (and their moons) pass by each other low in the southwestern horizon (for Canada). So you will want be set-up long before the sun sets (don't point exposed optics at the sun however!)

As you can see from the photo to the right (pulled from SkySafari Pro on my iPhone) they will be closer together than the moon. Add in all the Moons in Play and that ~0.1 degree (6 arc minutes) of sky will be quite a busy place that evening.

Graeme Hay



It was a windy and partially cloudy night that saw the Blue Moon of Halloween come and go. High in the sky with Mars racing ahead of the Moon with about a 28° separation, it was a very spooky sight in and out of the racing clouds. A special treat this month were two moons in October (October 1st, the Harvest Moon, October 31st the Hunter Moon, Mi'kmaw Animal Fattening Moon)

We are all doing Astronomy and living life in the ways we can while being safe through this Covid19 year. Our Centre is holding the weekly Centre socials on Wednesday nights at 7:00 pm, which I am so glad that our Executive pressed forward to do. Thank you to our Hostess Susan Gagnon for sending out the weekly invite. They have been well attended, and this gives everyone a chance to showcase their images or ask questions that turn into a great conversation. If you have not ever attended please do. The invite goes out to our Email list, so if your not receiving it, perhaps its time to sign up to the email list. Directions are on the front page of the Kingston Centre website link called kingston.rasc.ca members accounts to send a note to kingston@rasc.ca subject line Email list.

Our Annual General Meeting is coming up on November 11th, 2020 at 7:00 pm. There are positions that are coming up for election, please consider helping your Centre out. You must be a member in good standing and membership dues paid up. There was an announcement sent out to each member by email in early fall. At this time we are holding all Centre meetings and Exec-



utive Meetings (4 max per year) . Our Centre runs on the help from Volunteer's and some of our volunteer's have been holding positions for many years and are looking for a break, or to do something new for the Centre.

I want to Thank Graeme Hay who stepped up last year to be the Editor of Regulus for this year. Graeme has let us know that he needs to step down to work on some other projects. Regulus our Centre's newsletter has had some wonderful additions , such as the word searches and astro puzzles. Thank you Graeme.

Then we have our December meeting on Wednesday December 9th. Generally we have our Christmas Dinner at the Mandarin Restaurant, however since there is

no in-house eating we will be not having our celebrations, but we can share our dinner online with the Centre members if you wish. Also I am asking everyone to wear something Christmas oriented (hat, the ugly sweater or a t-shirt) to get us in the Christmas spirit and help to celebrate in a small way. Our guest speaker will be Jenna Hinds from the RASC who is the Outreach Coordinator. I hope you have been able to take in the Explore the Universe YouTube presentations on RASC-CANADA YouTube Channel. They have worked through the whole manual, and have helped many to finish this observing project. The President must be on her twelfth start, and will be finishing this program up.

The Centre is still in total lock down, as Queen's University

ty is also locked down to the public. So we will be continue to hold our weekly socials and Meetings on our ZOOM account. Our January Speaker is set to be Andrew Godefroy Title” Reaching Out: a History of Canadian Space Robotics and the Canadarm Legacy”.

On behalf of the Executive, we want to wish you all a Safe and Happy Holiday Season and a Happy Clear 2021!

<Connect with us Online>

Kingston RASC Facebook Page & Group

Join us on Facebook!

Page

[facebook.com/rasckingston](https://www.facebook.com/rasckingston)

Group

[facebook.com/groups/681409686039729/](https://www.facebook.com/groups/681409686039729/)

Kingston RASC YouTube Channel

Check out some of our videos about astronomy

<https://www.youtube.com/channel/UCFF-jyftqHUeQwsVMh99fXQ>

Official RASC Canada YouTube Channel

Learn about Astronomy from some of Canada's Top Astronomers and join in on Live Stream Videos via chat to ask questions about all things space related!

<https://www.youtube.com/user/RASCANADA>

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Submit your Astronomy Content

(Astro Articles, Photos, Sketches, Observation Reports, Etc.)

Email kingston@rasc.ca

“Regulus” mentioned in the Subject line!



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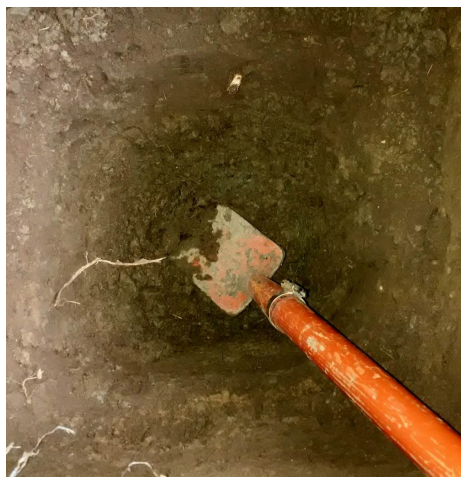
E-mail:

kingston@rasc.ca

Website:

kingston.rasc.ca

I would say it all started with a hole in the ground but that came much later. This “pier pressure” started with a gift from a dear and departed friend and fellow RASC-KC member Norm Welbanks 2009, as I do not do well under pressure it has taken almost 11 years to install it. It has been a matter of having the right observatory as well as many other roadblocks of life. The SkyGuy Observatory was deconstructed in 2015 and reconstructed in 2017 only 3 years ago, which makes me look a little less negligent in honouring this gift.



Now came the hole, the placing of it was set by the previous framing in the floor so begins the dig. How hard can it be to dig a 3 foot x 18 inch hole in the ground at 68, easy as 1, 2, 3? Not quite, it required kneeling, laying on the floor, reach-



ing, sweating and getting back up all things I have grown allergic to in my old age. With the help of an ice-cream container, a bucket, a crow-bar and this sod/post hole shovel it got done over a couple of sessions.



I know now that if using 12-inch tube one should be more careful and dig a 12-inch hole or use a 12 inch auger, this is what happens when you don't do enough research. I dislike research; real men don't need no stinking manuals (that is a double negative, so I guess we do). I hit something hard just before 3 ft deep so that was it, could have been a rock, a pipe or the Pandorica. I stopped there as the base is only 32” long, this was deep enough for it and as for frost we no longer live in those deep freeze winters, however this is 2020 and the unthinkable can happen.



The tube was more dollars than I thought (I should have saved up and banded together toilet paper rolls) \$25 plus tax in an eight foot length. Fortunately I found an ambitious fellow astronomer to buy the leftover, as we all know staying in budget is important where astronomical projects are concerned, NEVER. The product I got locally is called Easy-form (at Home Hardware) and is similar to Sonotube but I sure would not build a DOB OTA from it unless it was a flex Dob as this stuff is rather thin. After leveling, I firmly packed and tamped the soil back around the form checking it as I went until I reached the top edge. Next I fashioned some strips to lift and shim the base level, this supported the base section enough above the tube edge and concrete to get the nuts under the base plate once the bolts securing the pier went in.



All set and ready for concrete now. I had previously searched online and found a site to calculate how many bags of concrete mix I would need for both inside and outside the pier within the Easy-form so I purchased 6 bags as directed. There will be no images of the concrete mixing here as I was having so much fun I forgot to take any. Mixing in a wheelbarrow using my trusty shovel, a hose, and a bucket got the job done without passing

out from exhaustion. What only 3.5 bags, what the heck is going on here? I lugged two extra 66 lb. bags for nothing, only to move them again to storage. What went wrong? Then I remembered what I had read (U.S. site) 6 x 40 lb. bags of concrete mix. Of course we Canadians being much stronger and healthier due to our consumption of Canadian beer pack our concrete in 66 lb. bags, less trips = more time to drink beer! I was clear minded enough in my over-worked state to remove the level and shims until the concrete was all in. After the first bag I checked level again, level twice pour concrete once. Now with the form full I put the support shims back in place, checked level, slid the 67 lb. base into the center of concrete form and shimmed it to level. Now was the time for that beer, I cleaned up and left it for the weekend to set and cure, instead of the beer I had a well needed rest.



I returned to my pier pressure project on Monday (which was more than enough time for the concrete to set and just enough time for me to heal) to find the bubble in the level just where I left it! I removed the shims ready for the next step of mounting the pier. I



decided to only secure with 3 bolts until all is in place and fitting properly with the G11 mount and C9.25 in place. I had left just enough room under the base plate to work with tightening the nuts; the pier I am happy to report is level “enough” for this old man and any further will be done with the adjustable top plate. Installed and bolted securely the 110 lb. pier rang like a church bell so I poured 70lbs of excess filter sand into it, ah the sound of silence!

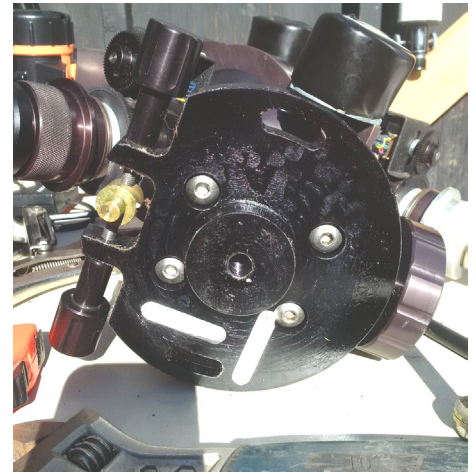
Although it does not appear



so in the image below due to camera positioning, the top plate is level. Now I was ready to mount the G11 mount and scope. Well Norm ya fooled me, this must have been the pier your refractor was on, dang. “KEITH! I need help!” it is nice to have skilled friends nearby. “Hey buddy, can you make this fit on this?”

It just needs some milling and drilling and tapping and cutting and...”

Currently this is a work in progress and I am confident it will



fit perfectly. The SkyGuy pier is in place and I have redeemed myself albeit in a less than timely fashion.

The calculated weight of the pier and all its parts and fillings



come to about 220kg., about one quarter of which is above ground. Here I sit with my pier from one of my peers. I weigh less than half the pier but I am sure not as skinny. As the modifications to the top pier plate are still under way this project and scope mounting is to be continued...

RASC Kingston Centre Treasurer Financial Report for Executive Board and Auditor, October 1, 2020.

Summary: Income \$3,636.62, Expenses \$1,667.69 for a net gain of \$1,968.93, Total assets \$32,876.39.

Fund Status: Spreadsheets, Open Office (4.1.3)

Cash float	\$5.00
Fall'n'Stars	\$500.00
Observatory	\$22,592.69
Operating	\$7778.70
Reserve	\$500.00
Special Projects	\$1,500.00

Membership at the time of reporting is 65.

At a glance one can see that financially we are in good shape despite this unusual year or perhaps because of it. While we chose to purchase a Zoom account for the Centre, a year of Zoom is equal to 4 months of meeting room rent at Queen's. Fiscal year end finances outstanding liabilities are limited to \$28.25 for the latest SkyNews bulk purchase of 50 copies.

Income

While membership fees are a major source of income (\$1232.24), once again this is surpassed by the generous donations of members (\$1344.92). In addition to cash donations we received donations in kind totalling \$240. GICs have surely peaked this year at \$283.50 as interest rates are on the decline. Calendar income shall guarantee a small profit as we now request only numbers as pre-ordered.

Expense

Expenses once constant have been overturned this year with the cancellation of public meeting space. The Zoom account plus meeting room rent came to \$482.50 (\$200+\$282.50). This is more than the usual \$360, but for the year's subscription to Zoom we get an additional ~3 meetings a month as well as our regular monthly meeting. This contract runs until April of 2021 with expected continuous use as in person meetings will most likely be prohibited until that date at the earliest. Director and Officer insurance (\$432) remains the same. Invited speakers to add variety to meeting content and this year we did well for our \$246.55. Starfinders and Lunar maps from National (we pay shipping only) are well stocked up and there are no events in the near future for giving any of these away so no purchases this year to date or anticipated for the remainder of 2020. SkyNews copies that were also part of our outreach giveaways, are currently being sent to the Kingston Library system as usual while Lennox and Addington have declined our offer due to lack of access by the public. The remaining 46 copies are being distributed in Amherstview from a local grocery store as a free handout. The number we order can be increased if there are other suitable sites for distribution by members.

Banking details.

We remain with the RBC branch on Gardiner's Road, hours are good and the location is convenient for the Treasurer. When assistance is needed it is not difficult to arrange time. We save fees by downloading e-statements. We do not however conduct any business online.

Future fundraising.

Ideas are welcome for the time when we may be able to engage the public again.

Notes for the Auditor

Financial year October 1 to September 30 (2019-2020)

Treasurer: current Susan Gagnon (2015-2020), past Kevin Kell (2010-2015)

Records: within the 2019-2020 Treasurer Deposit and Expense Binder please find the following,

- Summary: AGM minutes November 2019 appointing Stephen Craig Auditor.
- General Ledger: Central spread sheet, all transactions.
- Payments, all cheques (#291-#309) issued and deposit slips.
- Reports: all monies received through RASC national through direct deposit to the Centre.
- Bank: All e-statements received from RBC.
- Investments: all statements referencing GIC status.
- CRA: papers submitted to the Canada Revenue Agency
- Equipment: inventory to be presented at the AGM November 14, 2019.

In addition to the binder I have included: Profit and Loss (1 page), a sorted Ledger account (all transactions separated by Income vs. Expense), Balance Sheet reconciling the General Ledger accounting and the RBC chequing and GICs as well as the cash on hand (1 page).

Process

3 members of the executive (Treasurer, Secretary, President) have signing authority for the Centre. Two signatures are required for every cheque and one must be the Treasurer's. As Treasurer I continue to hone my book-keeping skills to keep things tidy and transparent. As I have said before, the books for the Centre remain uncomplicated and CRA and National reporting is not onerous. I look forward to the report from the Auditor and any feedback from the executive or membership.

Sincerely,

Susan Gagnon

Treasurer

Royal Astronomical Society of Canada

Kingston Centre

Alternative "Floating" Observatory Supports

Susan Gagnon



This is what I resorted to as a support that kept me a bit off the ground in an area of the yard that tended to be a bit wet at times. Sometimes very wet. Since 2006 the patio stones have all sunk to the same degree.

Otherwise I guess stringers and frame on the ground may have worked.

But I would not have opted to move gravel. We now have 'slab setters' to move patio stones (two person job) and once you get a 4x4 into the deck block you can easily walk them around the yard, and I did a lot of shuffling about during the set up.

AY Lacertae is a known cataclysmic variable star which has had two previously known outbursts. On October 8 it was found to be in outburst once again.

So what is a cataclysmic variable? It is actually a pair of stars orbiting each other. One, the primary, is a white dwarf and the other, the secondary, is either a main sequence star (i.e. normal star still fusing hydrogen in its core) or is an evolved giant star (a star which has expended all the hydrogen in its core and expanded greatly in size and reddened.) The orbit of the two stars is so small that the outer layers of the secondary star are actually more strongly attracted by the gravity of the white dwarf (WD) than by secondary's own gravity. This is termed 'filling the Roche lobe'. As a result material streams from the secondary star through the Lagrangian point to the white dwarf. However, in most cases it can't just form a stream of matter that crashes down onto the WD. The gas swirls around the WD in an accretion disk gradually spiraling down onto the surface.

All this makes for a very complicated system. The secondary star may vary in brightness or its magnetic field, if strong enough, may vary the amount of matter streaming away. The stream of material generally forms a bright hot spot where it hits the accretion disk. Turbulence in the stream can cause flickering in the brightness of the hot spot. Friction within the accretion disk heats the spiraling gas to very high temperatures causing the emission of varying amounts of light and ultraviolet and x-ray radiation. In-

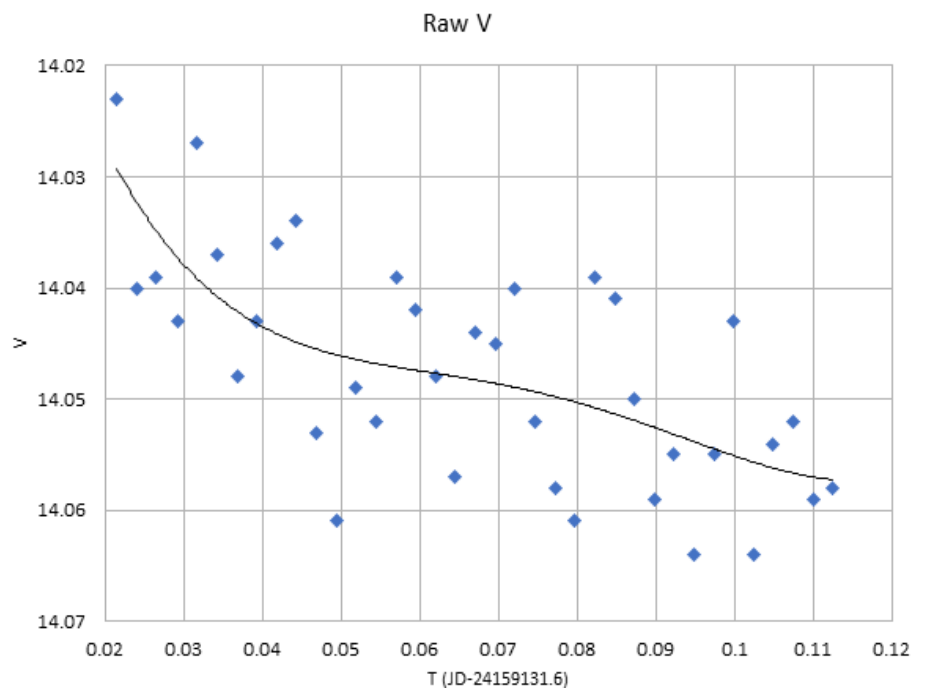
stabilities can form in the accretion disk causing sudden brightening or, less often, dimming of the disk. Close to the WD the accretion disk breaks apart and the plasma crashes onto the surface. As this material builds up fusion of the contained hydrogen can be ignited. This will cause a sudden brightening of the star depending on how much hydrogen has built up. The more added material the brighter the flash. In some cases the burden of new material is enough to push the mass of the WD over the Chandrasekar mass and the star explodes as a supernova. Some WDs have magnetic fields which can dramatically affect or even eliminate the accretion disk, causing the matter stream to flow directly down onto the WD. Finally, if the orbit of the pair is edge-on to our view then the various parts of the system can be eclipsed by the secondary star. Complicated indeed.

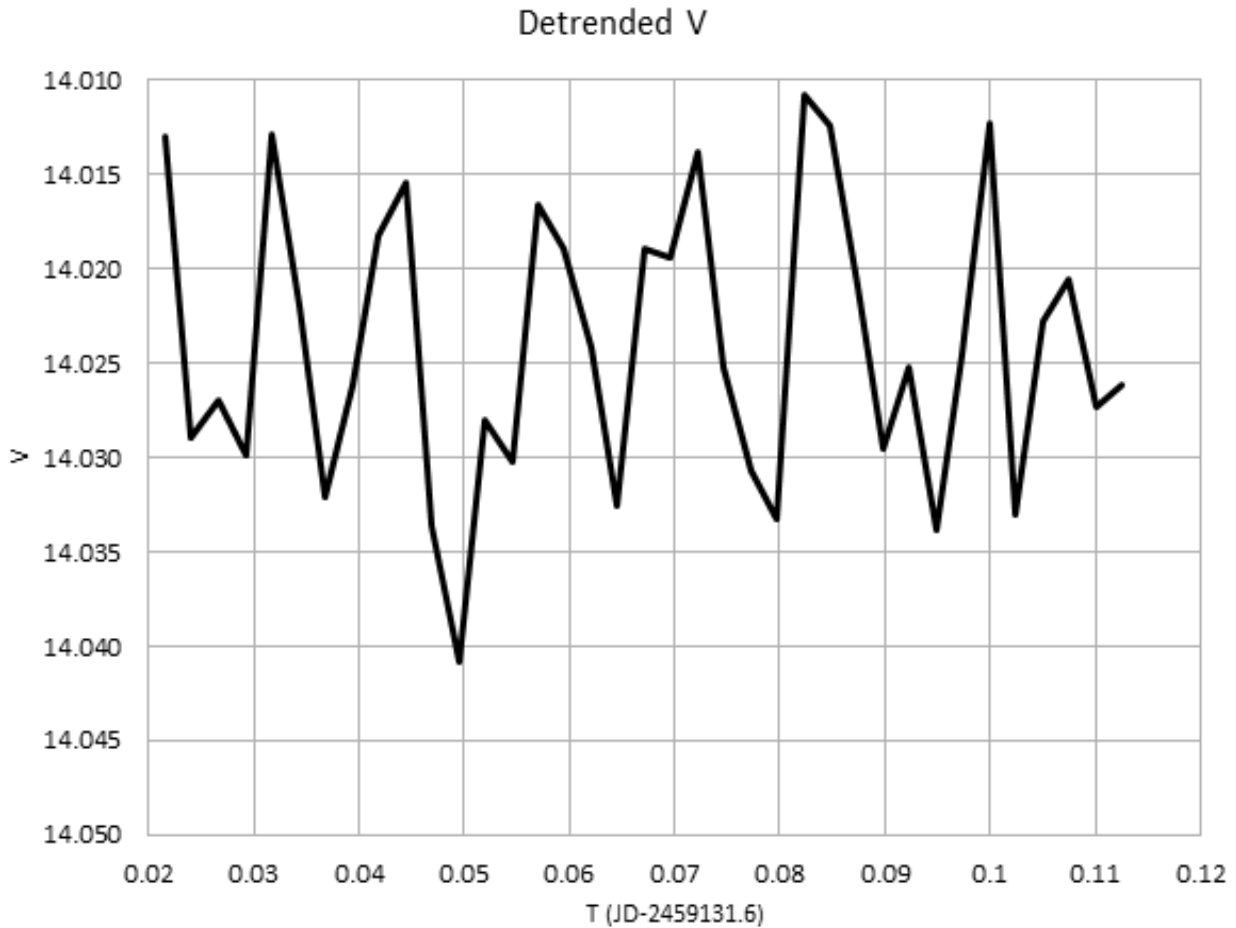
AY Lac was first seen in outburst on a few historical plates by Cuno

Hoffmeister in August and September 1928. Without much data it was possibly thought to be a nova, a U Geminorum type star, or a Mira-type variable.

In 1966 H. Gessner examined 250 historical plates of the Sonneberg Observatory dating from 1927-1933 and 1959-1962 and found the star dimming from 14.5mag to 16.5mag on two plates from August 1962. It was hypothesized that the star might be a Mira with an 1159-day period. The star was subsequently detected near 18mag on one plate that September. Using a position measured from the best of the Sonneberg plates the star was detected at near 21mag only on the blue plates of the Palomar Observatory Sky Survey II (you can see it, barely, on the Digital Sky Survey.) The fact that it is not visible on the red plates makes it very unlikely that it is a Mira variable, which are quite red.

The current outburst was detected





by the ASAS-SN sky patrol (see https://asas-sn.osu.edu/light_curves/57596b7a-f011-4a25-9d86-e5674f0b368f) early on 8 October and was also detected by Patrick Wiggins who was observing CVs on behalf of Patrick Schmeer who put out an alert to the AAVSO forums. As the star was accessible in my sky starting about 10PM on the evening of the 8th and nobody yet had reported any observations I decided to observe it for a couple of hours while it was out of the trees. After shooting a few images I roughly measured the star at a V magnitude of 14.00. Also, given some earlier doubts about its precise location, I also used my local installation of astrometry.net to measure the position of the star as 22 22 22.19 +50 23 40.4 with respect to the GAIA Data Release Sept/Oct 2020

2 catalogue. All this I reported on the AAVSO Time Sensitive Alerts forum.

After AY Lac went into the trees at about 1AM I reduced all my images and used Maxim DL to perform ensemble photometry of all the images. The results as reported to the AAVSO International Database are shown in Fig.1. A cursory glance shows a slow decline in brightness with lots of apparently random scatter. I fitted a quadratic curve to the data as seen in Figure 2 and subtracted this from the data. The final result is Figure 3 which shows that the 'scatter' is in fact a periodic brightening of the star with a period of about 16.75 minutes and peak to peak amplitude of somewhat under 0.02 magnitudes. The standard deviation on my check

star is only 3.5 millimagnitudes so the light curve of AY Lac is quite solidly determined.

There is the question about the slow decline in brightness. My initial thought was that it was an airmass effect resulting from a difference in colour between the variable and the ensemble. However, the USNO-A2 catalogue quotes a B-V = 0.6 for AY Lac = USNO A2 1350-297478 roughly in the middle of the colour range of the ensemble I used. My check star is also a similar colour and it shows no such slow trend in brightness. In addition, the variation in airmass over the observation window was only from 1.01 to 1.14. So it appears the slow dimming of about 0.02 magnitudes over the 2 hours is real as well.

All Month - watch Jupiter and Saturn moving closer and closer together, heading to their closest approach in nearly 400 years.

01 Nov - daylight saving time ends at 02:00

05 Nov - South Taurid meteor shower peak - minor shower with lots of interference from the Moon.

08 Nov - last quarter Moon

10 Nov - Mercury at greatest elongation west, mag -0.6 - see it before dawn about 13deg to the lower left of brilliant Venus; best morning apparition of the year.

12 Nov - crescent Moon hangs above Venus and Mercury in the eastern

sky before dawn

12 Nov - North Taurid meteor shower peak - minor shower of probably < 10 meteor per hour but known for producing fireballs! For a few hours before dawn.

12 Nov - Jupiter (mag -2.1) just 2/3° north of Pluto (mag 14.4 = 4,000,000 times fainter!) in the evening sky; you'll need at least a 25cm telescope to see Pluto.

13 Nov - best morning to see a thin Earth-lit crescent Moon forming a triangle with Venus and Mercury low in the ESE sky starting about 1 hour before sunrise.

14 Nov - very old Moon about 17 hours before New Moon; very very

low in the ESE about ½ hour before sunrise.

15 Nov - New Moon

17 Nov - Leonid meteor shower peak before dawn; 10-15 extremely fast meteors per hour.

18 & 19 Nov - pretty crescent Moon near Jupiter and Saturn in the evening sky.

22 Nov - first quarter Moon

30 Nov - Full Moon - Penumbral eclipse - the Moon will pass through the outer faint portion of the Earth's shadow - should be visible for about 1 hour either side of 04:30 as a subtle shading across the face of the Moon.

AstroCross:

Famous Female Astronomers

I N G R I D V A N H O U T E N R G R O E N E V E L D V B X C
 A M L L D T Z P G J T L Q R T D L R W K B Y L K T N T X E Q
 M X Y M K X X K M D R K D X B Z J Y L T M R T G T T V C T Q
 Y L T K G M J D W V K N N P K K N J Y W B Y P W M K I L N D
 M B P V M R N M L R Z T P J Q X Y B N R B J R B T L P T R K
 A V D P W C A R O L Y N S H O E M A K E R L C M I L T J R V
 I M D Y M D M D R M T N R K T D N M Y P Y A M A R O D X J K
 N A M G L Z R Y M W M J B J M Q X N D U R R H Z C D T R T M
 Z R R E B A F A R D N A S D G N K D D O N E T S M R B B R H
 E G Y T N R N W Y T J N Q Y N D Z M L A L H V T N R M T E W
 R A B B Y Y T Z Z M M Z L L W I Y N E E E D X Z R Z I T G
 W R Z E H G A E R D N A V V N L N C N N N Q R J M Y D L Y Y
 G E M R Y R N R Z Y P Q Y Q A P Y A R Y D D Y Y N I Q W J D
 M T Z P N R N B J N X B N C O G P I A Q T D M N H L Q X J J
 D J R H D D L I T Z P Z H R R A E P N P E Q Y A N Y D M T T
 W . B R E X B W B N T E C A Y T Y W E B Y B M J Z P B G D B
 W G Y T L L M W Y U R O C N T B M R R L Y M X Q N L P Q K Y
 M E G Q Q Z E Y N N R E E A U Y B A V X E D R V Z M T L J T
 Z L J Z R X L N Y G R R S R P V F L R L B A D W Y K Z Y Z Y
 T L V R Y R N K S O G W E R X I T P K I L P N J V P Q Q J X
 R E N B J P H Z M A A N E P S J M K T Y A Y P O R B L B M W
 M R J R B P T A P N W T N C O R R Q Z L W M K T R Z L Z L Z
 P D D Y Y Z N O L L R Y H Z R O M D D M Y T I M M H J V D P
 T P J T V P S E J A T E E T N K C Z M B N N M T B X E J R B
 M N K J T C A T T J R L T R L T K A Z T Y L M G C N N L M X
 N W Z J H V T L B L M R R M H J M Y R L V X G D Y H Z Z I K
 W G Z K I J L T X T Y Y D D Y O G K L E M D J W B W E Q V N
 N D I T T I J D D D L D R N Q N G T P Q V B V B Y D V L V D
 W N T R J Z M R T N B Z N M Y Z Z G M W X D P Y B R R T L Z

- Vera Cooper Rubin
- Carolyn Porco
- Nancy Grace Roman
- Margaret J. Geller
- Debra Fischer
- Carolyn Shoemaker
- Heidi Hammel
- Sandra Faber
- Jill Tarter
- Henrietta Swan Leavitt
- Ingrid van Houten-Groeneveld
- Ruby Payne-Scott
- Andrea Ghez
- Eleanor Helin
- Maria Mitchell
- Amy Mainzer
- Lyudmila Chernykh
- Helen Sawyer Hogg
- Cecilia Helena Payne-Gaposchkin

The third Regular Meeting since the onset of the COVID-19 pandemic, was held remotely with the Zoom video-conferencing software and started at 19:00 EDT. This was using our own Zoom account.

20 people were in virtual attendance.

Kim Hay at 19:01 EST and welcomed everyone. Introductions of the members of the Board took place.

Kim Hay made announcements of upcoming events. She had sent out an agenda to the email chat list as it contained many links to virtual events. She also highlighted our Weekly Social Chat via Zoom videoconferencing, which has been going well. Thank you Susan Gagnon for hosting these! There will be no Regular remote or otherwise meetings in July and August of the Centre.

Rick Wagner presented Upcoming events and What's up in the sky:

RASC sunshine coast meeting, RASC halifax meeting, Queens Observatory trivia night, weekly Wednesday social chat of RASC Kingston, RASC Explore the Universe Certificate conference every 2nd Thursday at 15:30, and the weekly Wednesday BAA webinar.

Whats Up in the Sky for June:

June 12 Mars near Neptune,

June 13 last quarter Moon, near Mars and Neptune

June 19 Moon 0.7 deg from Venus

June 20 Summer Solstice

July 04 Earth at Aphelion

July 14 Jupiter at Opposition

July 15 Pluto at opposition mag 14.5

July 20 Saturn at opposition

Both Dark Sky Observing sites are still closed (L&A, North Frontenac).

Next presenter was Stephen Craig: images of opening his observatory. It is a metal shed similar to the previous Hank Bartlett observatory and to the existing SCGO. No issues with rodents but then again there are a lot of cats onsite. 11" celestron F10 on CGEM2 mount, now up and running for 3 years now.

Hank Bartlett showed some solar images from the past month using: Canon T7i on a Coronado 70SMIII60DS. He consistently pulls out prominences with his postprocessing. He uses the GONG website for current status of the sun to plan his imaging session.

Rick Wagner showed some widefield images at the potential site of his next potential observatory, Venus in the daytime, a pass of SpaceX Starlink satellites.

Bruce Elliott then showed images of the moon with a new camera lens, a 135mm Rokinon. He is very impressed by it. Other images of Venus and Mercury near the horizon.

David Levy talked about some of the brush fires near him in the Arizona area.

Formal presentations had come to an end and general astronomy discussion ensued.

Mike Hanes showed a 15" mirror blank that he has been working on for some time now. Polishing is done, figuring is coming in the future.

Keith Neumark talked about his observatory and his plans for the summer.

Graeme demo'd a camera gimbal that he uses for some video work.

Ian Levstein talked about the weather down in Kentucky and his following of ISS passes.

Paul Winkler talked about his scope and alignment issues with his finder.

David Levy read poetry.

Kevin Kell reported that Khan scope website is still showing him in business, just closed to the public for COVID19 reasons. He also showed the schedule for the remote RASC General Assembly coming up that weekend.

Kim Hay reported on the National RASC front.

Kim Hay reminded people that we are now hosting a weekly social remote videoconference on Wednesdays at 7pm edt for about an hour. Feel free to drop in and chat.

The meeting adjourned at 20:50 EDT.

Minutes of The RASC-KC Remote Zoom Regular Meeting of Wednesday 2020 September 9th

The third Regular Meeting since the onset of the COVID-19 pandemic, was held remotely with the Zoom video-conferencing software and started at 19:00 EDT. This was using our own Zoom account.

31 people were in virtual attendance.

David levy led off with a quote of the day from Richard the 2nd, before the start of the meeting.

Kim Hay started the meeting at 19:00 EDT and welcomed everyone. We muted all participants so that the presenters could be heard without interruption.

Introductions of the members of the Board took place. Susan Gagnon Treasurer, Kevin Kell Secretary, Laurie Graham VP, and Kim Hay, President.

Housekeeping notes for the meeting. Shared screen turned off, allow users to unmute themselves turned off, Kim will moderate the meeting, Kevin providing primary technical support. Raise your hand with questions on the zoom participant panel.

Kim introduced Paul Gray from Halifax Centre (VP), a member of the RASC since 1988, co-discoverer of supernova 1995F in NGC2726 from the St. Marys University Burke Gaffney Observatory <https://www.ap.smu.ca/pr/bgo-about/supernova-1995f> and <https://www.youtube.com/watch?v=78B1ibOAtJE> for more information.

He has also served on the RASC national council and the RASC Halifax Centre. He is also editor of the RASC calendar, a nature enthusiast, restores canoes and volunteers with the local air cadets.

Paul then started presenting "Construction of a backyard observatory".

The following is a long list of little nuggets of information that members might value if they are considering building an observatory of their own.

Some notes from the talk: 8x12 rolloff roof design. Designed with a CAD program but no plans otherwise. End full size door and tall wall. No flippy door as the roof butts up against door wall with overhang. One pier near rear but offset from centre. Roof has 5 trusses. Bigfoot concrete form for pier. Started in 2014. buried bigfoot 4' down 24" diameter hole. 6 footings for 8x12 observatory using 6" sonotubes 4.5' down. 8" sonotube (using big-foot) for pier up to about 3' above floor with bolts and steel mount another 1'. Designed for specific mount and scope. After pier poured test mounted mount and polar aligned heq5 mount. The wood frame rests on centre of footings.

Deck frame Pressure Treated (PT) 2x6, just laid on top of concrete posts, no anchors. 6" on centre with 8 inside joists, 2 outside. PT 2x6 Floor Joists cross braced with 2 and 3 crossbraces.

The frame is separated from the concrete footings with some material to prevent moisture into the wood. Also between frame and floor sheets. Floor is oriented strand board (OSB) instead of much more expensive plywood. Plywood is \$60-70 vs \$15 for OSB of the same thickness.

To reduce moisture from coming up out of the ground and affecting the frame and the floor. He dug into ground 6", laid down 6mil plastic vapour barrier then added 6" gravel. The OSB is stained \$10/gal on three 4x8 sheets on bottom to keep moisture out. The OSB is screwed in. The pier is offset from centre for imaging on pier and also use dob . The long aspect of the observatory runs is east-west. The short dimension is south-north. The framing of walls was 2x4 at 16" on centre. Last bit of wall next to roll-off portion is lowered to support the roof rails for a really secure connection. The wall height is 4.5' to the double sill on top to support rails. The end walls do not support the roof load. Two more concrete footings for roof rollout support. The rolloff roof beams are, doubled 2x6 PT glued and screwed together with PT 2x4 top rail a little extra long . Lagbolted every which way from observatory walls. The endpost are 4x4 PT, double crisscross 2x6 and blocked in centre to keep square. Rails have not moved or twisted in 5 years. Overhangs past end posts by about 3-4' as the roof rolls to the west.

Outside walls hardy plank pressed wood like our local RASC-KC storage shed. It is pre-primed and gradeB quality. The roof has 3 wheels each side, inset about 2' from the ends. Above the wheels are two 2x6 glued and screwed together and are inverted v-groove.

The inverted vgroove wheels run on 1"x1" angle steel and the rails keep the roof from twisting. The roof was built in place on beams and wheels. Trusses are triangle shape with centre support and rest on top of the 2x6 beams above the wheels, made of 2X4 with plywood gussets. The wheels are about \$300 for 6 and are 3 or 4" diameter with grease nipple, 250lbs per wheel. The wheel beams 2x6 with ½ piece of plywood in-between for spacing to allow the wheels to fit? And glued and screwed. The wheels are lagbolted to the beam. Screws and washers every 12" to secure angle iron to lower sill. No wheel binding at all. 4 turnbuckles to secure the roof, each with 500lb rating. The connecting eyescrews go through the double sill. The outside skirt is made of spare hardy board and screwed to outside of the wheel beams, with a 12-14 inch overlap with the gap. Air vents in ends and in eaves. Keeps small bulb in winter under telescope cover to stop dew. Plywood eaves sheet metal roofing extends 2" past supports. No rain gutters needed. Air gap at top of metal roof. Roof truss bottom is at least 6' above floor. The roof supports hang approx 1' to overhang the wall with the door with about 1/4" clearance over end gable. The roof end truss runs flush up against end gable. The steel angle iron is heated enough by the observatory heat that the rails melt off any snow. 2 or 3 air vents in eaves, each side. Added trim to end gable to help snow from blowing in.

Inside simplicity. Some 110vac wiring plugs, switches. The roof does not appear to totally clear the end wall. Small portable table to start. Painters box 1x2x4 allows to sit at various heights, made from 3/4plywood. Inside is also his 12.5" dobsonian telescope. Added red led rope light. Added plywood over the red LED rope light for blocking direct light into eyes. Added a dimmer switch to red led. Added mounting plywood on walls for lectrical boxes and switches. Left a 6" gap and top and bottom of the plywood wall to allow for airflow to cool down faster. Started painting internal walls black for internal reflections. The wall plywood is to protect cables and wiring, keep it drier from dew. Added a fake wasp nest to deter wasps.

He then presented many great astroimages from his observatory.

Pauls summary: having an observatory means you can observe more.

At 19:55 a lot of Q&A followed.

Rick Wagner – presented whats up for September

Sept 24 Queens astronomy on tap at home on youtube 19:00edt

L&ADSVA open but keep to social distancing circles

North Frontenac Dark Sky Preserve also open but limit of 10 people on the pad and masks on pad.

2 Sep - Full Moon 01:22EDT

5 Sep - Moon glides by just one apparent lunar diameter south of Mars through the evening

10 Sep - Last Quarter Moon 05:26EDT

11 Sep - Neptune at opposition (mag 7.8)

11 Sep - asteroid 11 Fortuna at opposition (mag 9.2)

14 Sep - double shadow transit on Jupiter 02:57EDT

17 Sep - New Moon 07:00EDT

17 Sep - very difficult ~12.5hr old Moon a couple of degrees above the western horizon just after sunset

22 Sep - Autumn begins with the equinox at 09:31EDT

23 Sep - First Quarter Moon 21:55EDT

30 Sep - asteroid 68 Leto at opposition (mag 9.5)

How to observe all planets in one night. Mercury, Jupiter Saturn, Neptune, Mars, Uranus, Venus, Earth.

Hank Bartlett presented Hanks Sun Spot with solar imagery over the last month, along with daytime images of Mars.

Graeme Hay asked for Regulus submissions

Bruce Elliott presented on his experiences with the Celestron Nexstar 6SE from the Loan Program.

Kim Hay reminded people that we are now hosting a weekly social remote videoconference on Wednesdays at 7pm edt for about an hour. Feel free to drop in and chat.

The meeting adjourned at 21:00 EDT.

The RASC-KC Regular Monthly Meeting (via zoom) of Thursday 2020 October 14th
The fifth Regular Meeting since the onset of the COVID-19 pandemic, was held remotely with
the Zoom videoconferencing software and started at 19:00 EDT. This was using The RASCKC
Zoom account.

24 people were in virtual attendance.

Kim Hay started the meeting at 19:00 EDT and welcomed everyone. We muted all participants so that the presenters could be heard without interruption.

Introductions of the members of the Board took place. Susan Gagnon Treasurer, Kevin Kell Secretary, Laurie Graham VP, and Kim Hay, President & Librarian Housekeeping notes for the meeting. Shared screen turned off, allow users to unmute themselves turned off, Kim will moderate the meeting, Kevin providing primary technical support. Raise your hand with questions on the zoom participant panel. For the first time we are livestreaming to Youtube and will have that video publically available afterward.

Announcements (Kim Hay)– She attended virtually a RASC National Council Meeting 2020sept20 and noted that there were proposed bylaw changes and policy manual changes.

Green Laser Pointers – must only be used with 2 people with one acting as a trained (and certified) spotter. Must be preregistered with RASC. Absolutely no use within 10km of an airport. Our KAON sessions at Ellis Hall Observatory is within 10kml of two airports, so no more green laser pointer use.

Weekly Social Chat – Members and their guests only, Wednesdays from 7-8pm (sometimes longer) via zoom video chat. The Zoom link is posted in the email chat list usually the day before or sometimes the day of. Volunteers are appreciated to help run this event as zoom cohosts. The AGM is November 11th. Elected positions are: Secretary, Editor, Librarian and National Council Rep (vacant).

Kevin Kell – presented a short list of smaller volunteer/job opportunities within the centre to let members get their feet wet so to speak.

- become and expert zoom user and help managed online meetings; submit content to the Centre newsletter Regulus (equipment, book reviews, images with short descriptions, projects, etc); rewrite the Centre bylaws based on the new provincial guidelines; - RASCKC 60th anniversary celebration ideas. For the 40th we created a CDROM of all RASCKC historical information and sent it out to all members; investigate a professional banner similar to RASC Vancouver; Write up a 1-2 page summary of your observatory construction; proposals for loan equipment purchases.

Rick Wagner – Upcoming events and Whats up in the Sky Oct 28 BAA General Meeting; Oct 31 AAVSO Spectroscopy workshop; Nov 11 BAA Webinar Video Meteor detection and spectroscopy; Nov 13-15 AAVSO General Meeting

Moon phases for the month, graph of daytime vs nighttime hours. Mars opposition this month.

Jupiter double shadow transit on Saturday afternoon October 17th at 17:25 to 19:35 EDT. The Orionid meteor shower should be excellent this year, morning of Oct 24th. Maybe 15-20 per hour from Comet Halley. Opposition of Uranus is Oct 31st. On Nov 10th, Mercury is Greatest Elongation west, about 19 degrees.

David Levy reads a short passage of poetry.

Hank Bartlett – Hanks Sun Spot – imagery of white light and hydrogen alpha of the sun and sunspot AT12774. Hanks white light setup is an ED80f6triplet with x2 barlow and a Canon T7i. His H-alpha setup is a Coronado SMIII 70 Double Stack, a x1.5 barlow and the same camera. Other combinations of other active regions were also shown. He then presented images of building his new observatory steel pier. 15cm inside diameter 3/16” steel, 81cm base @ 30kg and 135cm pier @ 50kg. Digging the hole he used an icecream container, a crow bar and a sod shovel, down to 36” and hit a pipe. Covered the pipe with 2” gravel and put the easyform tube (not sonotube) from Home Hardware. It was backfilled (the outside) and packed it down. He leveled up the tube. Built support

shims to allow room to secure nuts and bolts for the top part of the pier. 3.6bags of 30kg concrete to go inside the steel pier/easyform. Added top pier and when tapped, rang and rang. Added 32kg of sand into the pier and it stopped ringing. Added the top mount, made from brake rotors. Keith is modifying the top plate for Hank. Total pier weight is approx 220 kg and Hank will be mounting his 9.25 OTA on it.

Susan Gagnon presents about Education and Public Outreach meeting at the National level.

Francesco and Susan sat in on the virtual meeting for ideas: Any centres with astronomy clubs in schools? A kids publishing forum; Youth certification program for ETU; A simpler ETU; a one night observing list (x4 seasons).

Parks Canada is starting an astronomy program. Dave Chisom (RASC Ottawa) is the main contact. Previous contacts with Parks Canada years ago resulted in a 22 page legal document to be signed for the project, and with no legal advice available from RASC, they declined to participate

Susan had reviewed the RASC National website and Youtube channel and thinks that Jenna is doing a great job. What she thought was missing were short-midrange timeline videos. 1- 1.5 hour videos were way too long for most. What we (RASC Kingston) might be able to do locally is 10-15 minute video presentations. Francesco has started on a Quick start talk on Stellarium. Susan will be doing a star hopping presentation. Equipment reviews are also a good possibility. How to set it up? What is it cost? What does it do? What equipment does it work with?

Equipment vs sky conditions comparison? Eg 10" dob in city vs 10x50 binocs in dark skies?

Light pollution two voices, astronomical and biological? Beginner equipment, centre updates, etc. Sub committees on more specific interests. Kingston had a small armchair subgroup in cosmology and a lot of attention was had at that time. When the topics stopped, the members left.

Susan also participated in a Pathfinder (midget cubs?) session with Dave Chisom (RASC Ottawa).

Bruce Elliott shared some images taken in Deep River. These were mostly wide field on a tripod and various focal length lenses.

Rick Wagner showed some images from AY Lacerta, a catastrophic variable. Rick will write this up for Regulus.

Kevin mentions to Hank about his pier. Get a second opinion before setting anything is stone or concrete. An astronomer in the Kelowna area was know to install the pier 180 deg wrong in the first instance.

Susan Gagnon reports on a UFO, perhaps the ISS and cloud but very bright and only a few flashes. Not typical of a tumbling satellite she thinks, around 20:45

Mark talks about his Celestron Nexstar 6E and shares a sample image of the Orion Nebula M42. He used sharpcap and livestacked the image.

Asser shows some images and some experiences with deepskystacker. He was going to process some images to show but now was not the time, during the live meeting.

Kim reminds people about next months AGM and elections. Hank reminds people to check out the facebook site.

Susan Gagnon reports on the centres financial and compliments the auditor Steve Craig for a great turnaround. She will release them once the Board can review them.

Peter Jedicke requests Kevin share his small volunteer job list to the list.

The meeting adjourned at 20:30 EDT.