Regulus

Newsletter of the RASC Kingston Centre

Vol. 50, No. 10 October 2023

M33 - The Triangulum Galaxy

On the Horizon ....

Centre Meetings

11 October 2023

Centre meetings occur on the second Wednesday of every month at 7pm EST from September through to June.

RASC Kingston Centre Annual General Meeting

8 November 2023

Annual reports and elections! Don't miss out on joining in person or online.

For more information visit us online
https://kingston.rasc.ca

In this issue ...

President's Nook

Kim Hay

We have had our Fall 'N" Stars event on September 15-17, 2023, at Johnson's RV Park, and it was a great success. Fun was had by all, with many helping each other, and taking looks through different telescopes. The 60 cm (Robert) Venor was on hand, and objects that required aperture, were observed.

Another Queen's University Total Solar Eclipse planning session has been held with what happened over the summer. Documentation and Training will be supplied by Queen's for the Tri-Board County teachers to work into their curriculum. The Solar Eclipse glasses will not be handed out in bulk until February 2024, but some will be distributed on October 14, 2023, when Queen's will be holding a daytime talk with Livia Comeau at Ellis Hall Auditorium on the Partial Solar Eclipse. This event starts at 11:00 am and then people will move to the outside to observe the Eclipse.

Our next meeting will be October 11, 2023 with Kingston centre members taking the lead - speakers include Andrew Godefroy, Shelley & Stefan Jackson, along with Rick Wagner's What's up in the Sky and Member's Observing Reports. We also want to welcome in our newest members to the Kingston Centre: Paul Paradis and Aadya Mishra. Welcome to the RASC Kingston Centre and we hope you enjoy your time with us.

November is a busy time - Annual General Meeting and Elections are coming up. We would like to encourage all our members to come forward and help out to help shape your Centre and its future. We will be having elections for three important positions at our Annual General Meeting on November 8, 2023. The positions are club President, Vice President, and Treasurer.

At this time, I will not be seeking re-election, so the Presidents role needs to be filled. The current Treasurer, Susan Gagnon has stated she would continue to stand if nominated. This leaves the VP position open as well for a new face. If you have had experience being on a Board, or holding a position in any other organization, and feel that you would like to contribute to the Club, please let us know on AGM night, if not before.

The position of Auditor is also up for election as well, which is voted on by the membership.

There are always other ways to help out at the Centre, if you have skills and time. Please come forward and help us make the Kingston Centre one of the best! If interested, please send a note to kingston@rasc.ca

Welcome to Fall, and more observing! Clear Skies!

On the cover: RASC Member Joe Gilker (aka Dark Arts Astrophotography) caught this image of M33 - The Triangulum Galaxy, at the Camden Lake Provincial Wildlife area near Moscow, Ontario, using a ZWO Astronomy Cameras ASI 1600MC-Pro with his Sky-Watcher Esprit 100 on a Celestron CGX mount. This galaxy is the second closest to our own after the Andromeda Galaxy, and the third largest member of our local group of galaxies. Acquisition: 7h of 5m exposures, and processed with Astro Pixel Processor, PixInsight, and Photoshop CC.

Editor's Eyepiece

Andrew B. Godefroy

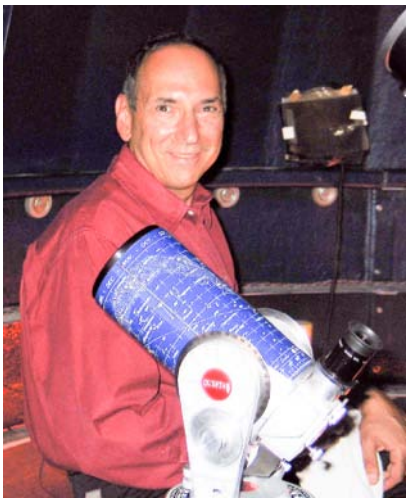
Welcome to the October issue of Regulus! The fall season is always a busy time for the club, with everyone coming back to business after a few lazy summer months observing and tinkering and hopefully more than a couple of memorable evenings out under the stars. For me, after a less than successful summer observing session, I am more than ready to make the most of the fall, and will hopefully get more opportunities to get back outside with the telescope before winter hits us in full force.

In the meantime, the newsletter keeps me focused on the hobby, and I am happy to report that this issue marks the completion of my first year as your editor of Regulus. Longtime readers will note the aesthetic changes I made over the past year, and hopefully the variety of entries ensures there is something in the pages for everyone whether they are a veteran club member or newcomer.

Among the many articles of interest, this issue contains important information regarding upcoming elections to the board of the club. The positions of President, Vice President, and Treasurer will be renewed at the AGM in November, so please ensure you plan to attend either in person or online. Whether you wish to come forward and serve the club in one of these roles, or simply wish to observe and cast your vote, your participation is important and meaningful to the successful future of our centre.

In the meantime, keep looking up!

The latest issue of the RASC Journal (Vol.117 No.5) is now online and in mailboxes. Log in or take a time out and dive into the latest society news and articles!

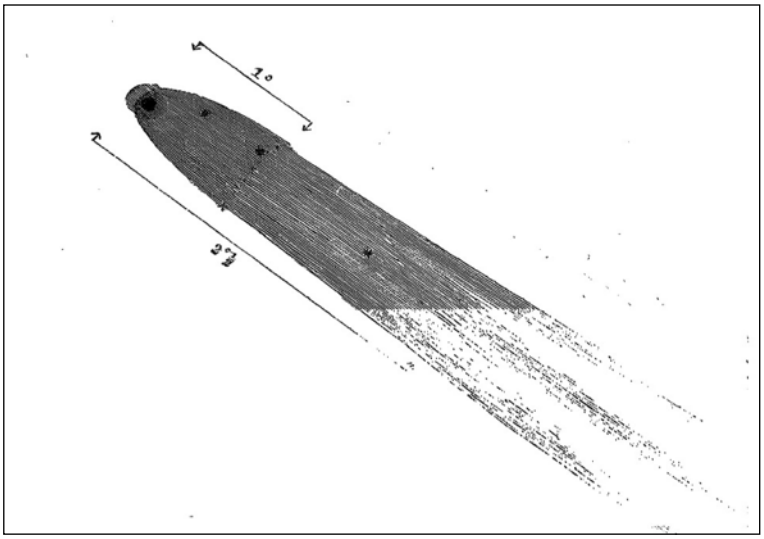


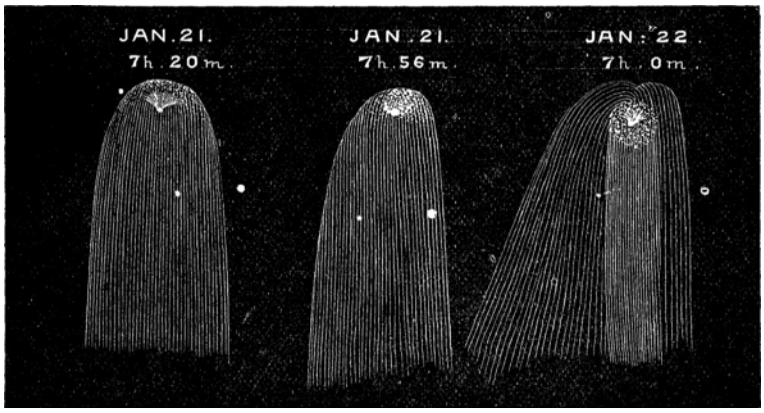
Pons-Brooks: A Comet for the Centuries

When David Rossetter and I began our observing session at the Tucson Amateur Astronomy Association's Chiricuaha Astronomy Complex on the evening of August 5, 2023, we did not expect that we would be treated to an evening of cosmic history. That was the night we glimpsed Comet Pons-Brooks, a comet with an orbit that, like Halley's comet, takes almost a human lifetime to orbit the Sun. I might have spotted it the night before, but on this night David and I saw the same thing, a spot of haze in the darkness. It was a faint misty cloud that bears the names of two of the most famous comet discoverers in all history, a spot of haze with quite a story to tell.

Comet Pons-Brooks was first identified by Jean-Louis Pons, the great French comet hunter, during the summer of 1812. In the late summer of 1883, on its subsequent pass around the Sun, it was rediscovered by another famous comet hunter, William Robert Brooks. I first encountered Brooks in a *Sky & Telescope* article I read in the second issue I received, at age 14, in April 1963. As I digested the story, I learned how Brooks might have politely entertained a visitor to his observatory, and how that visitor eventually learned that Brooks was one of the world's most famous comet discoverers. As I relished these words, I foresaw myself, someday, also as a hunter of comets. Not a discoverer, because that would be hard. But as a

A detailed sketch of Comet Pons-Brooks made by Edwin Emerson Barnard in 1884. He was notably one of the foremost visual observers of his time.





Three sketches of the Comet Pons-Brooks during its January 1884 apparition, captured by Professor and 'Popular Astronomy' Associate Editor Herbert Couper Wilson.

hunter, that's easy. Those ideas stayed with me until December 17, 1965, when I began my program of searching for comets. Since then, my own life has been punctuated by several sparks of cometary light, as each new comet added brightness to the field of my telescope. I joined a group of people linked not by nation, nor either by continent, but by being citizens of the world united by a love of comets.

Emboldened by the offer by Hulbert Harrington Warner of an award of $200 for each comet discovered, Brooks managed to find three comets within five weeks of each other, on April 17, April 30, and May 22 , 1886. He must have known how his colleague Edward Emerson Barnard built his "comet house" partly out of funds also earned from Warner's award. (The Warner prize has survived through history. The Astronomical Society of the Pacific offered its "Donohoe Comet Medal" for a time, and later Roger Tuthill gave a plaque, and now there exists the Edgar Wilson Award, which is sponsored by the Central Bureau for Astronomical Telegrams [CBAT] of the International Astronomical Union.) Like all serious comet hunters, Brooks was far more interested in discovering comets than in the money he could earn from these finds. In later years his success as a a comet hunter earned him a professorship in astronomy at Hobart College in Geneva, New York. With Brian Marsden's 1979 Catalogue of Comet Orbits as a guide, we can surmise that Brooks discovered a minimum of 22 comets in his lifetime.

Despite this remarkable accomplishment, Brooks is only the second most prolific comet finder in world history, The winning ticket goes to Jean-Louis Pons himself, who was "the first "discoverer" of Comet Pons-Brooks. Truly, Pons was also not the first. This comet might have been observed by Chinese astronomers in the late summer of 245 CE, then definitely by the Chinese in 1385, and in 1457 by Paolo del Pozzo Toscanelli. Pons today is considered to have discovered about thirty comets. Over the decades I observed a second Pons periodic comet, Pons-Gambart, in January 2013. By the way, Pons had a most humble and trusting nature, and in his younger years he was ridiculed by astronomers who should have known better.

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These days, it is almost impossible for an individual to discover more than half a dozen comets. My total is 23, but as CBAT director Dan Green (possibly correctly) stated, "he discovered 9 comets and lucked out on 11 more," before graciously adding Comet Shoemaker-Levy 9 to my total.

Pons and Brooks shared a passion for telescopes and the fleeting comets they could detect parading about the sky. I like to imagine that finding new comets was secondary to their pure enjoyment of the night sky, its treasures, and the secrets that it infrequently shared with those people who truly lived, and live, for its precious hours of darkness.

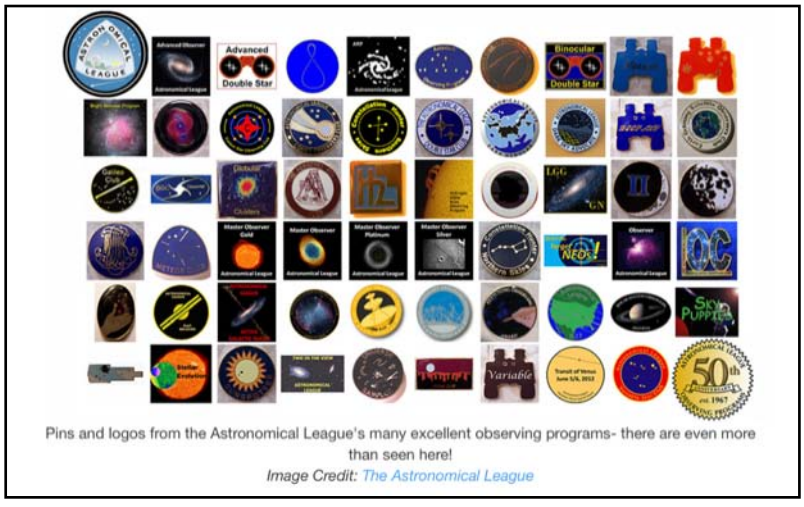
The orbital elements of 12P/Pons-Brooks (source: http://astro.vanbuitenen.nl/)	
q (perihelion distance)	0.780852
a (semi-major axes)	17.187647
e (eccentricity)	0.954569
ω (argument of perihelion)	198.9879
Ω (Longitude of ascending node)	255.8562
i (inclination)	74.1912
P (Orbital period in years)	71.2594
T (time of perihelion passage)	2024-04-21 03:06:46 JD2460421.6305
Epoch	2023 Sep 30
Reference	MPEC 2023-SQ0
Magnitude parameteres (source: COBS last 30 days)	
Absolute magnitude	5.1
Slope parameter	4.0

https://www.aavso.org/112

More Observing Programs!

Whether you're new to amateur astronomy or have been at it for a while, chances are you've hit a wall now and again with your observing, wondering what targets one might pursue next.

To help with those looking for a new challenge or desiring a goal, most societies offer directed observing programs. The RASC hosts a number of good programs, but if you really want to expand your options, consider looking into what the Astronomical League has to offer. Not only do they have dozens of challenging offerings, submitting your results leads to the award of a certificate and unique pin. Collect them all if you dare! More info at: https://www.astroleague.org/observing-program-division/



Pins and logos from the Astronomical League's many excellent observing programs- there are even more than seen here!
Image Credit: The Astronomical League

Centre News and Updates

Stop the press! Got news to share? Send your centre news, updates, pics, sketches, notes, and links to the Regulus editor!

2024 RASC Calendars

We have received notice from National that we can place our calendar orders. The deadline is October 1, but if you are reading this later than that check to see if there are some extra left. Send a note to the chat list or kingston@rasc.ca or to Susan Gagnon personally if you need one or even 10! It's a great Christmas gift with an inflation beater price of $20, unchanged for ??years! At this price the Centre makes a couple of $, but it is still less expensive than buying your own and paying for the shipping & handling.

Calendar Pick up

We routinely set up a day to meet in a parking lot or park for a bulk distribution of RASC calendars, and post this time and date to the Centre's chat list. You can also pick up your calendar at the next monthly meeting, or make other arrangements with your treasurer if you can not make any other event. Please note, however, the Centre will not mail calendars out to members.

2023 Fall'n'Stars Report by Susan Gagnon

I was the Kingston Lead for this joint activity and once again it was a great experience. I would like to thank Don Town, the Belleville Lead. A special thanks also goes to Steven Burr, our registrar and liaison for the Johnson RV Park. This has been a great spot for 3 years now and it did not fail to deliver with amazing views of the Milky Way on Friday night.

My observing experience for these events is always a chance to learn new things, as I am away from my observatory and a bit of a routine. Having purchased a Star Adventurer a few years ago I had never gotten into the habit of setting up so I was quite rusty. Fortunately on Friday night Malcolm Park was generous with time and patience to guide me through the set up and some basics for my photo experiments. On Saturday night I was able to pass on what I had learned to another S.A. owner, Peter Hutchinson. That second night, skies less than perfect, Kim Hay and I got together with our binoculars and TCrB AAVSO charts to track down this starfield in an effort to prepare for what will probably be more than a year of monitoring. There was a lot of chatting through the night but moving clear spots, (bigger than a sucker hole), provided a chance for some planetary and DSO observing with the Vendor scope. During the day I was able to see varied telescope construction ideas that I hope to make use of in the future. I got some photos of some great gadgets that it would seem I really need. I made out well at the swap table with the purchase of a Telerad in what seemed to be new condition. With a chile pot luck dinner on Friday, pizza on Saturday, a wide array of communal snacks with coffee on demand, this is a low key, low stress event. Thanks to everyone who registered. Showing up to share your varied knowledge and skills makes the event a huge success!

Club members Doug, Rick, and Kevin assemble the mighty Venor telescope at Fall'n'Stars 2023.

The Sky This Month

Rick Wagner

Any night of the week can offer up a broad range of viewing wonders. RASC KC Past President Rick Wagner keeps an eye on the sky for us each month, sharing some of the best viewing opprotunities as well as timings to catch your favourite night sky target at its best.

02 Oct – minor planet 29 Amphitrite at opposition (mag 8.7)

06 Oct - Last Quarter Moon

10 Oct - South Taurid meteor shower peak, zenith hourly rate 5 meteors per hour

10 Oct - crescent Moon, Venus and Regulus in a straight line in the eastern sky during morning twilight

12 Oct - zodiacal light in the pre-dawn sky for the next two weeks; look for the gegenschein, a ~10deg wide extremely faint glow near zeta Piscium, only visible under very dark skies

14 Oct - partial solar eclipse

14 Oct - New Moon (13:55EDT)

20 Oct - 2 moon shadows on Jupiter (0157EDT)

22 Oct - Orionids peak – best between midnight and dawn (moon sets before Orion rises)

22 Oct - First Quarter Moon

23 Oct - Venus at greatest elongation west in the dawn sky
28 Oct - Full Moon (16:24EDT)

Planets at Mid-month

Saturn (mag 0.6) transits low in the south at mid-evening. Neptune (mag 7.8) is low in the SE at the end of evening twilight and transits about 23:30EDT

Jupiter (mag -2.9) rises in the ENE about the end of twilight and transits high in the south about 02:20EDT

Uranus (mag 5.6 – should be visible naked eye!) follows Jupiter by about 1/2 hour

Brilliant Venus rises in the eastern sky about 03:30EDT and is well up in the SE by sunrise

Mars and Mercury are too close to the Sun to be seen.

In the News

NASA's OSIRIS-REX mission returned safely to Earth on Sept.24, 2023, concluding a seven-year **6.21 billion km journey** to collect and bring home a sample from the near Earth asteroid Bennu. Interestingly, now that the spacecraft has dropped off its precious payload on time and on target, it will now contnue onwards under a new name, OSIRIS-APEX, on a new mission to investigate a different asteroid named Apophis.

Interested in Asteroid Hunting? Now you and a few of your friends can band together into a team and join a four-week campaign online to help the International Astronomical Search Collaboration (IASC) discover new minor objects using data provided by them. All you need is a Windows compatible computer (the program does not work on Mac), data provided via email by IASC, and at least one team mate to get started searching through the imagery and data shared. Go to: http://iasc.cosmosearch.org for more information and when you're ready, good hunting!

Meeting Minutes - 13 September 2023

Elena Zanetti

PThe club met at Ellis Hall, Room 226, Queen's University and online via Zoom.

The meeting started at 7 p.m. with 15 people onsite and 13 on Zoom (18 pre-registered). Kim Hay, our President, welcomed Kingston Centre members and guests. Beginning with our land acknowledgment, Queen's University is situated on the territory of the Haudenosaunee and Anishinabek Nations and we respect that land we meet on.

Announcements: We welcome new members John Chesney, Bob Lyons and Taylor Levert. Wednesday's Social Zoom is at 7 pm. Send an email to the Centre chat list to join. Fall'N'Stars September 15-17. Queen's Observatory Open House Sept 16 7:30 – 10 pm and volunteers welcome on the Deck to use the onsite telescope. Oct 14th, Queen's U. hosting a partial Solar Eclipse event. Solar Eclipse viewers handed out to those present. Our Centre library new book – "Total Solar Eclipse of 2024 April 8", by Fred Espenak and Jay Anderson. Our Centre executive was introduced. Nov. 8th, elections for President, Vice-President and Treasurer will take place at our Annual Meeting. Position for President is open. Michael Bird is now Social Convenor. Bylaws will be updated next year.

David Levy read from Starlight Nights: Adventures of a Stargazer, by Leslie C. Peltier, a book which had a huge influence in David's youth.

What I did this past Summer! Speakers this month were RASC Centre Members and can be viewed on our YouTube channel.

A New Pier for Seaway Observatory, presented by Roger Hill. To remedy a moving concrete pier, Roger took us through his journey of hard work, lessons learned along the way and with step-by-step photos/illustrations of the process.

Bruce Elliott presented What's up in the Sky at Snug Harbour and beyond! End of August images were presented, including the Full Moon, Saturn, Jupiter, and Venus, during his time with family and sharing astro information with friends.

Rick Wagner: V3124 Cyg, a variable star, pulsating at two simultaneous frequencies. Rick shared an example of Python capabilities and the Jupyter Notebook to calculate the Pyriod analysis of this star's data.

Malcolm Park gave a Fall'N'Stars weather forecast, then shared photos and videos of Starfest, hosted by the NYAA and held in August with 650 attendees. Stunning images from some of winners of the Astrophotography Contest were shared.

Congratulations to Stephan Jackson, winner of the Most Improved in Astrophotography award.

Rick Wagner presents the Sky This Month – September 2023

16 Sep – QUO Open House
21 Sep – Jim Peebles – "Our Expanding Universe"
22 Sep – Jim Peebles – "Cosmology is well researched but could be better"
11 Oct – Kingston Centre next meeting
07 Oct – How-to webinar TBA

L&A DSVA (reserve in advance)

09 Sep – Astrophotographers Assemble
15/16 Sep – Laser-guided Sky Tour
23 Sep – Up Close with the Moon

Sky Events – September

12 Sep – zodiacal light pre-dawn
14 Sep – New Moon (21:40EDT)
16 Sep – daytime occultation of Mars by Moon
19 Sep – Venus at greatest illuminated extent
19 Sep – Neptune at opposition
22 Sep – Mercury at GEW in dawn sky
22 Sep – First Quarter Moon
23 Sep – autumnal equinox (02:50 EDT)
29 Sep – Full Moon (05:57EDT)
Sky Events – October
06 Oct – Last Quarter Moon
10 Oct – South Taurid meteor shower
14 Oct – partial solar eclipse

Major Planets

Mars (mag 1.7) is very very low in the western sky after sunset.

Saturn (mag 0.5) is well up in the SE by the end of twilight and transits just before midnight.

Neptune (mag 7.8) rises at sunset and transits about 01:15EDT.

Jupiter (mag -2.7) rises in the ENE sky during evening twilight and is 60 degrees (!!) up when it transits about 04:30 EDT.

Uranus (mag 5.7) follows Jupiter by just under 8 degrees and transits about 05:00EDT even higher in the sky than Jupiter.

Venus (mag -4.8) is 20 degrees above the eastern horizon when nautical twilight begins at 05:40EDT.

Mercury (mag -0.5) GEW on the 22nd. Best dawn apparition of this year.

Small Bodies

23 Sep – Bennu occultation
02 Oct – minor planet 29 Amphitrite at opposition (mag 8.7)

Member Observing Reports

Cathy H. made many attempts to see the comet but too low in the sky. Kevin W. visually observing with binoculars. Bruce E. helping 90-year old neighbour enjoy the full moon. Malcolm P. new astrophotography project with the double cluster, Heart and Soul. Peter J. enjoyed the comet in Arizona in Feb. Rose-Marie B. photographing thunderstorm with clear sky above.

Susan G. enjoying new pier and observing after having worked on her observatory all summer. John H. solar observing and looking forward to new observatory construction. Peggy H. enjoyed moon gazing with grandchildren. Enjoying new scope won at Starfest.

Rick W., along with Rose-Marie, volunteered at a Queen's U. event at Elbow Lake, early August with a talk by Rose-Marie and observing after. Newboro Locks, a week later, with Mark D. and Gary from Ottawa, outreach for Parks Canada, and enjoyed a talk then observing deep-sky objects. At home, imaging and working on mosaics of M33 and M31. Building an all-sky camera, ASI 678MC, with high IR sensitivity.

Jeanette W. enjoyed observing full moon end of August. Shelley J. enjoyed observing at Starfest and imaging at home. Stephan J. has upgraded his observatory with WIFI and welcomes advice on LX200 and running it from the house. Brian M. imaged the Perseid meteor shower, took 1,000 images and 14 had meteors. Keith N. solar observing and shared some images of his observatory and his solution for aligning the scope by placing his tripod on permanent pads placed in the ground. Two red dot finder scopes were purchased and working well. Tyler was welcomed to the group and looking forward to learning more.

Announcements by Kim Hay

Our next hybrid meeting, Zoom and onsite at Ellis Hall Room 226, will be Wed Oct 11th at 7 p.m. Every Wednesday (except 2nd Wed meeting night) we have the members Social Zoom Time – to join, let us know at kingston@rasc.ca On social media we are: Website at Kingston.rasc.ca. Facebook at RASC Kingston Centre Group. Twitter at @AstroKingston. YouTube at RASC Kingston Centre, tonight's and past meetings located here. Kim thanked all for attending and the meeting ended at 9:20 p.m.

The Royal Astronomical Society of Canada
Kingston Centre

RASC-KC
c/o 76 Colebrook Road, RR#1
Yarker, Ontario
K0K 3N0
Canada

Email: kingston@rasc.ca
Web: kingston.rasc.ca
Facebook: RASC Kingston Centre

2022-2023

NOTICE

Annual General Meeting Elections
Queen's University, Kingston, Ellis Hall Room 226 (and also on Zoom)
Wednesday November 8, 2023 7:00 pm

Register in advance for this meeting as this will be a hybrid meeting. Only members in good standing can vote on motions and the Elections. After registering you will receive a confirmation email containing information about joining the meeting. Voting will be counted in person and online.

AGM AGENDA

1. Welcome. Notes on videoconferencing and voting procedures (RASCKC members only) show of hands in video or participation windows)
2. Approval of Agenda
3. Approval of 2022 AGM 20211109 minutes (later in the newsletter)
4. Approval of Secretary's Annual Report
5. Approval of Treasurer's Annual Report
6. Approval of Auditor's Report
7. Centre Elections:
President
Vice President
Treasurer
8. Election of Auditor
9. Questions regarding other published reports: President, Vice President, Librarian, Editor, NC Rep, Webmaster, Equipment Loan
10. Adjourn with Thanks.

AGM November 9, 2022

Draft Minutes by Elena Zanetti

Meeting started at 7:04 p.m.

Queen's University, our past in-person meeting location, is situated on the territory of the Haudenosaunee and Anishinabek. We want to acknowledge that we are stewards of this land and respect the peoples and land we are on.

The Agenda for the Annual 2022 meeting was presented.

- For Motions and Elections only paid-up members of the RASC Kingston Centre will be able to vote. A show of hands in the video or participation windows will be accepted.
- Approval of Agenda
- Motion 2022110901 Moved by Kim Hay seconded by David Levy. Approved.
- Approval of Annual Meeting minutes November 10, 2021 (sent in October Regulus newsletter and on screen)
- Motion 2022110902 Moved by Elena Zanetti seconded by David Levy. Approved.
- Report of Secretary – Presented by Elena Zanetti
- Highlights of year read out to members. Motion 2022110903 Moved by Elena Zanetti seconded by Susan Gagnon. Approved. This report will be sent to National Office for the Annual Report 2022.
- Report of Treasurer & Financials, Auditors Report – Susan Gagnon
- Highlights were presented by Susan (report sent in October Regulus newsletter and on screen). Michael Birds' auditor's report (on screen) was shared. Motion 2022110904 Moved by Susan Gagnon seconded by John Hurley to accept the financials as presented. Approved.
- All other reports are located on our RASC KC website, you must be logged in as a member to view them.
- Kingston Centre elections. Nominees must be a member in good standing and be at least 18 years old.
- Vice-President: open
- Secretary: Elena Zanetti has come forward (2022-2024)
- Newsletter Editor: Andrew Godefroy has come forward
- National Council Rep: John Hurley has come forward
- Librarian: Kim Hay has come forward
- Auditor for 2022-2023: Michael Bird has come forward

Nominations from the floor were requested and none came forward. Positions stand as above. All other reports are located on the Website, you must be logged in as a member to view them. The remaining Board consists of: Kim Hay, President. Susan Gagnon, Treasurer. Past President, Rick Wagner. Equipment Co-ordinator, Kevin Kell. Web Team, Kevin Kell and Walter MacDonald. Vice-President remains open.

- Auditor for 2023
- Motion 2022110905 Moved by Rick Wagner seconded by Rose-Marie Burke that Michael Bird will audit the books for 2023. Approved.

Thank you to Kevin Kell for working on the Regulus newsletter as Editor for many years, much appreciated, along with all the contributors. We welcome Andrew Godefroy as Editor.

- Questions? None

Annual General Meeting and elections meeting adjournment with thanks at 7:24 p.m.

8.8 Terms Of Office

8.8.1 The terms of office of elected officers and councillors under Article 8.1 shall be 2 year(s). No person may hold the office of President or Vice-President for more than 3 consecutive terms.

8.8.2 * The term of office of a National Council Representative is two years. No person may hold the office of National Council Representative for more than three consecutive terms, but such person may be re-elected after a lapse of one year.

8.8.3 The term of office of every elected officer shall expire upon the election of a new holder of the office at the annual meeting held closest in time to the anniversary of his or her election.

8.8.4 The term of office of other appointed offices shall be one year. A person may hold any such appointed office for any number of consecutive terms.

8.8.5 The term of office of every other appointed officer shall expire at the Council meeting held closest in time to the anniversary of his or her appointment.

8.9 Duties Of The President

8.9.1 The President shall

8.9.1.1 * preside at all meetings of the Centre and the Council as provided by Articles 10.4 and 7.2.4,

8.9.1.2 represent and speak for the Centre when appropriate,

8.9.1.3 preside at all meetings of the Executive Committee referred to in Article 9.7, and

8.9.1.4 have such other duties as may be prescribed by the Council.

8.9.2 The President is a member of all committees of the Council, as prescribed in Article 9.3.

8.10 Duties Of The Vice-President

8.10.1 The Vice-President shall assist the President in the discharge of his or her duties, shall preside at meetings of the Council and of the Centre in the circumstances prescribed in Articles 7.2.4 and 10.4, and shall have such other duties as may be prescribed by the Council.

8.10.2 The Vice-President shall be a member of the Executive Committee as prescribed in Article 9.7.

8.12 Duties Of The Treasurer

8.12.1 The Treasurer shall

8.12.1.1 * prepare the annual financial statements of the Centre as specified by Article 11.2, present them to the Council for approval at a meeting prior to the next annual meeting of the Centre, and present the approved annual financial statements for adoption by the annual meeting of the Centre as prescribed in Article 10.1.3.3,

8.12.1.2 * submit the financial statements referred to in clause (a) to the Treasurer of the Society by January 15th in each membership year,

8.12.1.3 prepare and keep complete financial records of the business of the Centre, including books of receipts, disbursements, assets and liabilities,

8.12.1.4 receive and supervise the deposit of receipts,

8.12.1.5 supervise the disbursement of Centre funds,

8.12.1.6 supervise the safekeeping of the Centre's securities and other monetary assets,

8.12.1.7 in general conduct the financial business of the Centre in accordance with the direction of the Council, and

8.12.1.8 have such other duties as may be prescribed by the Council.

8.12.2 The Treasurer shall be a member of the Executive Committee as prescribed in Article 9.7.

Member's Photos

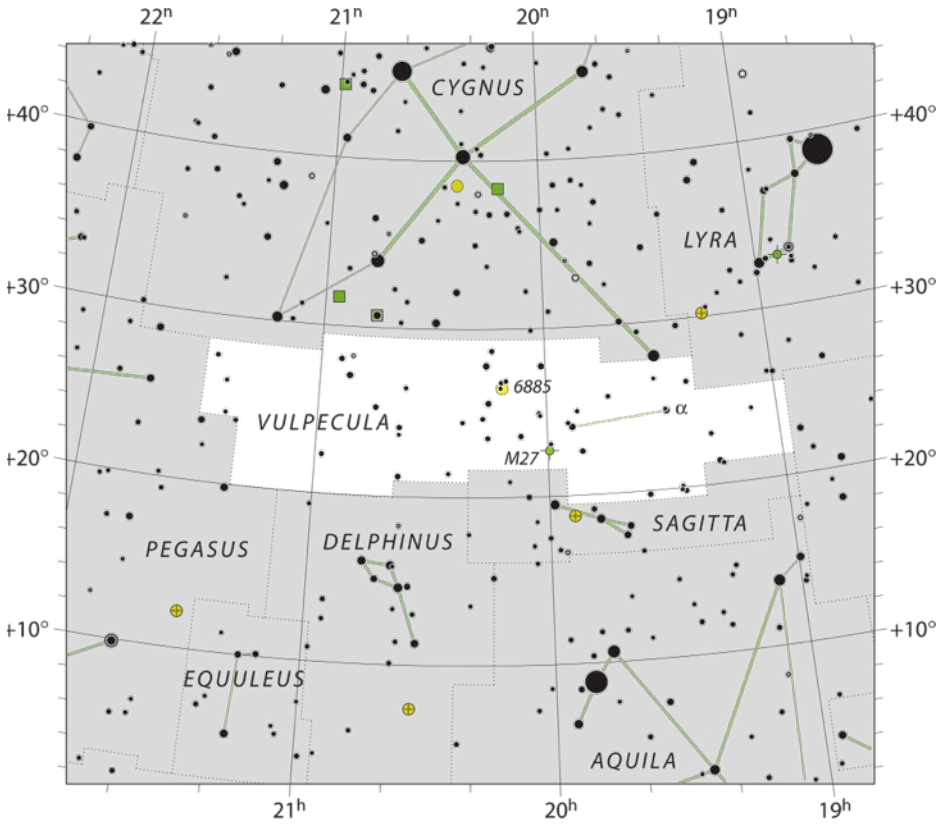
Above: Shelley Jackson collected 31 hours of integrated RGB Ha and O3 data to produce this expert portrait of two challenging targets - the Seahorse Nebula (Barnard 150) with the Flying Bat Nebula (Sharpless 129).

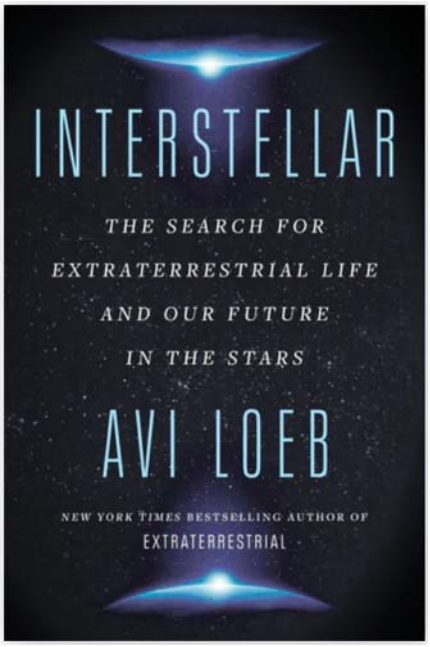
Left: Stephen Craig continues his campaign capturing galaxies and other deep sky objects, and recently shared this image of a barred spiral galaxy found in the constellation Cetus (NGC 1073) on the club's FaceBook page. This galaxy is estimated to be approximately 80,000 ly in diameter and roughly 55 million ly from Earth.

Member's Photos

*Above: Centre member and Past President **Rick Wagner** shares this fantastic image of the Dumbbell Nebula M27 produced from a stack of 47 x 120s exposures captured with the ZWO ASI2600MC. Pro binned 2x2 through the ZWO dual-band HA+OIII filter, on the Hankscope (Meade 0.25m f/4 Schmidt-Newtonian.) The stacking and cropping were done in Siril. Colour balance was performed using the Photometric Color Calibration tool which plate solves the image then looks up all stars in the image for which photometry is known and colour balances the image so as to best match the RGB signals against the photometric magnitudes.*

*Also sometimes known as the Apple Core Nebula **(M27 / NGC 6853)**, this planetary nebula in the constellation Vulpecula is about 1360 ly from Earth and has a visual magnitude of 7.5 and a diameter of approx. 8 arcminutes.*





Avi Loeb. Interstellar: The Search For Extraterrestrial Life and Our Future in the Stars. Boston: Mariner Books, 2023. 256pp. ISBN 978-0063250871.

This book by the head of the Astronomy Department at Harvard University (and according to the New York Times the "most famous practicing astronomer in the country") is about the future of humanity and the role that he thinks extraterrestrial civilizations may play in extending that future to billions of years and more out into the galaxy. It is clear that humanity will need to move beyond the solar system if it hopes to survive the expansion of the Sun in a few billion years. (It is not clear to me that our civilization will survive the next century, which the author barely acknowledges by classifying us as a 'D-Class' civilization - one which is still damaging the planet on which it depends for existence.) However, this book comes across more as a popularization of UFOs and aliens for fans.

Loeb suggests that humanity is now an interstellar civilization – we've sent five space probes on their way out of the solar system. "We are at the dawn of our interstellar future." Yet five little probes unlikely to reach another star system for eons seems like a very small start. Still, he suggests that it is time to continue pushing outwards, and proposes that we send thousands or even millions of self-replicating CubeSats off to neighbouring stars where they would seed appropriate planets with pre-biotic molecules like amino acids constructed with local elements. How exactly this would affect the continuance of humanity isn't made clear in the book. We should also start looking for incoming extrasolar probes (or even 'trash' – who uses interstellar trajectories to take the garbage out?) in the sky and on the surfaces of the planets and moons of our solar system. After all, if we've sent probes into interstellar space then older advanced civilizations certainly will have been able to do so.

To be fair, Loeb does advocate a scientific search for further evidence of extraterrestrial intelligence. He has founded the privately funded Galileo Project to watch the skies to identify otherwise unidentified anomalous phenomena (UAP - they've changed the name from UFO to distance themselves from the decades old tin-foil hat crowd), but he always describes the search in such a way as to imply that finding artifacts from other civilizations is very likely or even guaranteed. He writes "I hope before 2023 is over to find and hold evidence of an extraterrestrial artifact. And maybe, just maybe, when I do find it, it will have a button or two that I can push."

Loeb suggests that confirmation of the existence of aliens would make us better people – we would awaken to our potential role in the universe and as a result become more rational, more scientific. He suggests that we look to these extraterrestrials to give us a 'hand up' on advanced technologies and solutions to our own social problems. Unless we can solve our social ills by ourselves and soon, Loeb implies we are unlikely to survive long enough to enjoy contact with anyone else.

Essentially, Loeb has a wild imagination. In place of chemical rockets, he offers up the idea of deliberately warping spacetime, dark matter (we don't yet know what it is) or dark energy (we have no clue what it is) as means of propulsion. We could ask the next ETC passing through for the secrets of gravitational propulsion. He believes we are capable of constructing CubeSats which would be able to travel to another stellar system and then self-replicate using materials found there.

There are three objects which Loeb presents as from beyond our solar system and on which he bases much of his optimism. The extra-solar object 'Oumuamua passed through our solar system a few years ago exhibiting slightly unusual acceleration on its way out. It also had an unusually long and flat shape. Based on this he says "'Oumuamua is most likely extraterrestrial technology." In addition, two meteors have been detected by the US Space Command which may have had marginally hyperbolic speeds when intercepted by Earth and may have survived somewhat longer in the atmosphere than even normal iron meteoroids. He suggests that they are made of unusually strong material and may be extraterrestrial technology. Both of these meteorites fell into the ocean and his Galileo Project has tried unsuccessfully to retrieve one of them.

Is the book all bad? No. It has some interesting discussion of the scientific method, details the tyranny of the rocket equation (fuel requirements increase exponentially with desired speed and distance of travel), and as noted above, has some interesting but wild speculation on future technologies. In contrast with much of modern anti-science society he propounds the idea that only through rational and scientific effort can humanity survive in the long term.

Overall, this book has all the believability of trashy pulp science fiction with the narrative and story excitement of a physics textbook. Unless you're a wild-eyed UFO (sorry, UAP) believer I can't recommend it.

About Us

The Royal Astronomical Society of Canada

RASC is a national, non-profit, charitable organization devoted to the advancement of astronomy and related sciences. Founded in 1868, The Royal Astronomical Society of Canada is Canada's leading astronomy organization, bringing together over 5000 enthusiastic amateurs, educators, and professionals. In addition to many national services, our 30 Centres offer local programs across Canada.

The Royal Astronomical Society of Canada Kingston Centre (aka Kingston's Astronomy Club)

We are Kingston's Astronomy Club, a local centre of The Royal Astronomical Society of Canada, founded on June 2nd, 1961. We hold monthly meetings, on the 2nd Wednesday of each month (September-June), via zoom videoconferencing and in person, from 7:00-9:00pm Eastern Time.

* We do public outreach programs in the form of helping the Cubs and Guides, teachers, Science Fairs and many public Education and Public Outreach events.

* We help out our members with questions in astronomy and equipment use, and hold private observing sessions, and also with Queen's University Observatory Open House, on the third Saturday of each month, at Ellis Hall, Queen's University. https://www.queensu.ca/observatory/

* We support the local Frontenac, Lennox & Addington County Science Fair (FLASF) with a prize in astronomy.

* We are here to answer your questions on astronomy.

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The Royal Astronomical Society of Canada Kingston Centre provincially incorporated as a Not-For-Profit Corporation in September 2005 and has been a registered Charity with the Canada Revenue Agency since September 2006.

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RASC Central based benefits:

* Annual edition of the Observers Handbook
* Bi-monthly RASC Journal (digital)
* Monthly Bulletin of the RASC (digital)

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* Monthly videoconference meetings (open to the public)
* Equipment loan program