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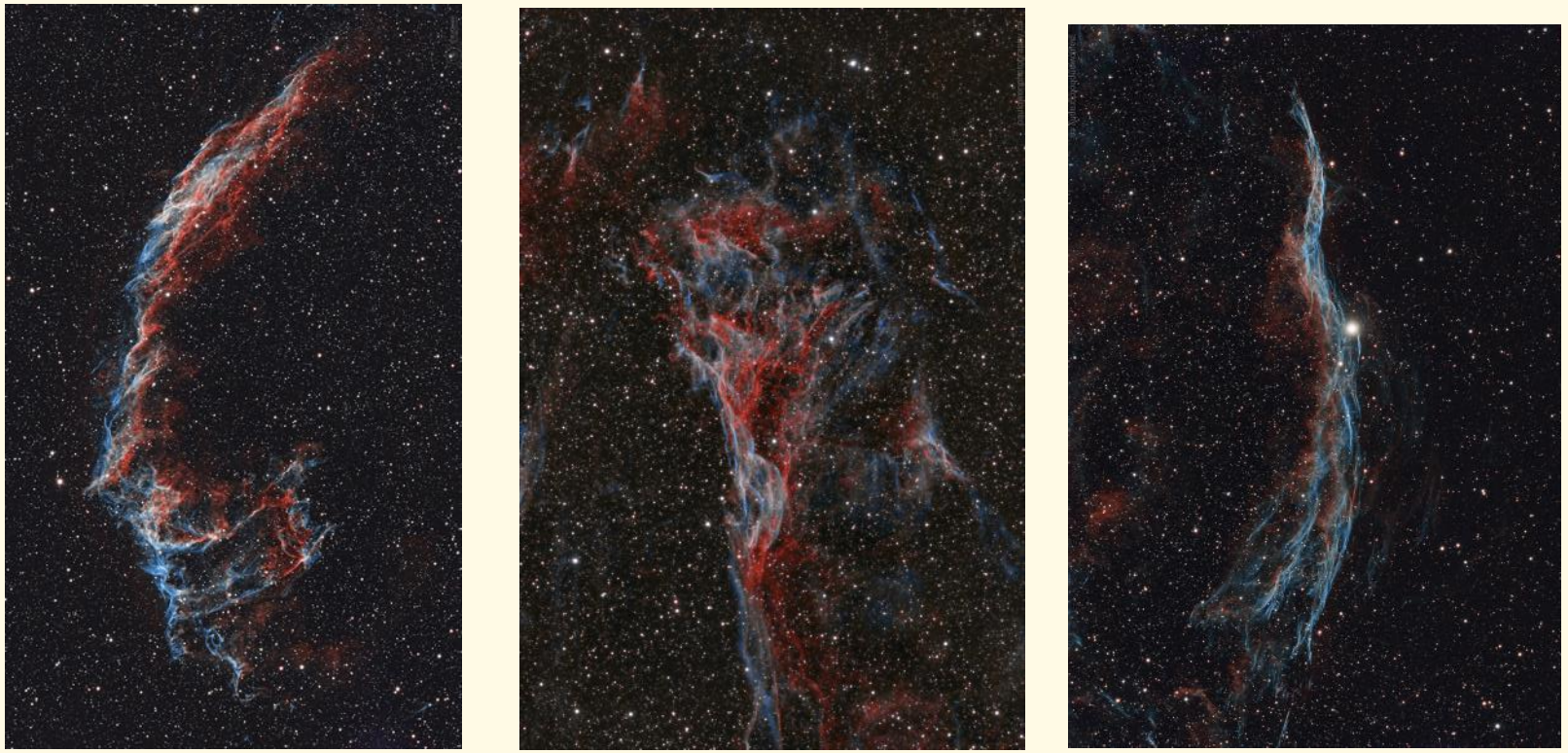
HORIZON

LA SOCIÉTÉ ROYALE D'ASTRONOMIE DU CANADA
New Brunswick Centre du Nouveau-Brunswick
THE ROYAL ASTRONOMICAL SOCIETY OF CANADA

Dance of the Three Veils

Paul Owen



Left: Eastern Veil Nebula composed of NGC 6992, NGC 6995 and IC 1340
Middle: Northeastern part of the Western Veil with NGC 6979 and NGC 6974 at top
Right: Western edge of Western Veil (Witch's Broom) - NGC 6960 and 52 Cygni

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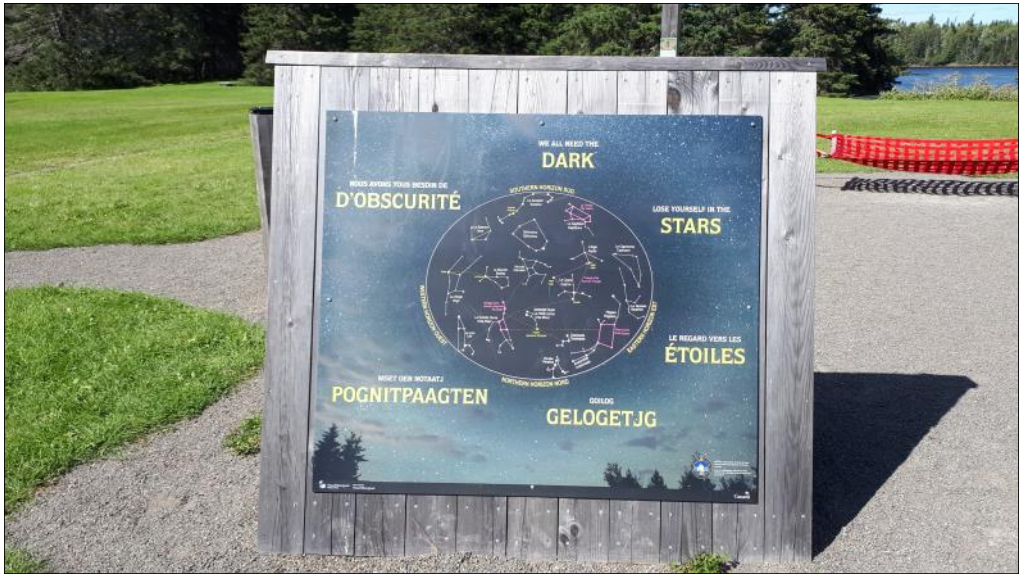
Astronomy Upgrades at Kouchibouguac National Park

A Photo Essay by Mary King

Emile Cormier played a significant role in the design of these trilingual South and North facing planispheres



Book Review

Rosanna Armstrong

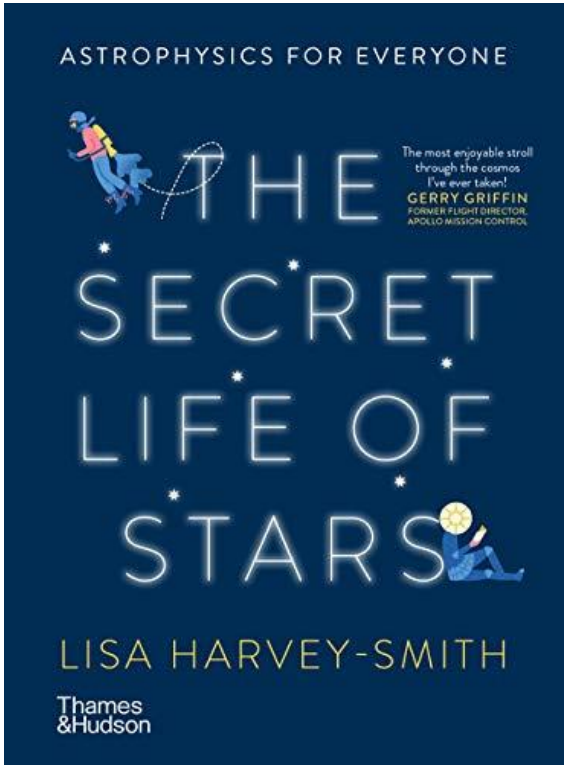
The Secret Life of Stars
by Lisa Harvey-Smith
Thames & Hudson
ISBN 9781760761585

On the day of New Brunswick's most recent eclipse, June 10, 2021, I was given a delightful book entitled *The Secret Life of Stars* by Lisa Harvey-Smith. The book was released on September 29, 2020 so although much of science is steadily rewritten this small 182 page volume is filled with current news not being quite a year old.

Lisa Harvey-Smith is currently Australia's Women In STEM Ambassador and I am now on her fan list. Her passion for astrophysics is in every sentence and her use of humour to inform and educate her readers is charming and memorable. Humour activates the brain's dopamine reward system. Even a serious science subject can benefit from a positive, light approach; the release of dopamine often stimulates goal oriented motivation and long term memory with a rewarding rise in retention in students of all ages. Lisa is also working towards gender equality in relation to STEM careers and projects. Here is a link to a podcast interview:

https://www.foodanddrinkbusiness.com.au/podcast/food-and-drink-business-podcast-women-in-stem

But back to this book. Its subtitle is *Astrophysics for Everyone* and truly it is an engaging, open read for almost anyone ages 14 and up. The dedication page states "To the children, whose eyes are wide open. And to the adults who refuse to grow up." Even if you have good, solid knowledge on many of her topics—Przybylski's Star, Pulsars, S5-HVS1, the fastest star ever discovered (so far)—you will enjoy her approach and the way she ties in plenty of information with modern culture.



There are 14 chapters, each with a small humorous illustration by Eirian Chapman at the start. Googling Eirian led me to her partner Chris Flynn whose third mostly true novel is told from the perspective of a 13,000 year old woolly mammoth, which sounds like a fun read too.

Returning from that rabbit hole, I don't want to give away too much of this book. We start with the Sun, then the Red Dwarfs, Cannibals, Families, Enigmas, Variables, Giants and so on ending with Black Holes and a final chapter entitled Goodnight. There is also a page of "Further Inspiration" with a list of websites and smartphone apps. The Goodnight chapter is a summary of encouragement for the reader by way as to how Lisa began her journey in astronomy. She finishes with "Don't take my word for it, though. Go and see for yourself."

So I would have to borrow those last two sentences and apply it to this review. Buy or borrow a copy and see for yourself. You won't be able to stop smiling.

Astro Anagram

The answer is one astronomical word formed by rearranging the letters of the other word.

Clue: **Tycho Therapy**

□□□□□ □□□□□

Answer to previous Astro Anagram:
CEPHEUS' QUADS:

DELTA DEALT

What's Up for Autumn

Curt Nason

The observing highlight for the months of September to November will be a partial lunar eclipse on the morning of November 19. A couple of weeks before that is a challenge event I look forward to observing: A daylight lunar occultation of Mercury.

Sun: It is time to dust off those solar filters because Solar Cycle 25 has begun with a bang. Early September has seen as many as six active regions (AR) on the Sun at one time, with some ARs growing numerous sunspots, I even caught a C8 flare in my PST on 10 September. At 16:21 on September 22 the Sun crosses the equator to begin the autumn season.

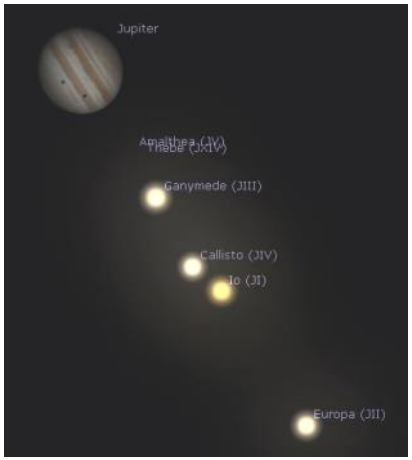
Moon: New Moon dates are October 6 and November 4. The full Harvest Moon falls on September 20, the Hunter's Moon on October 20, and at 06:04 on November 19 the Moon is 97% within Earth's shadow. The umbral portion of the eclipse begins at 04:19 and ends at 07:47, shortly after moonset in most of New Brunswick except for the extreme northwestern areas.

Mercury reaches inferior conjunction on October 8 and soon after begins its best morning apparition for the year. On October 25 it is 18º from the Sun at greatest western elongation, rising 100 minutes before sunrise and standing 10º above the horizon 40 minutes before sunrise. The very slim crescent Moon, just 26 hours from new, occults Mercury on November 3 from 16:43 to 17:38 as it sets. From Saint John they will be 9º high and 15º west of the Sun when the occultation begins. With luck you might be able to find a location where the Sun is blocked by trees or a building, and at magnitude –0.8 Mercury will be easier to spot in a telescope than the Moon. This challenging observation will require planning to select a location, a transparent sky and caution to avoid the Sun. Mercury is in superior conjunction on November 29.

Venus: As autumn begins Venus is 40º east of the Sun but only 13º above the horizon at sunset, due to the shallow angle of the evening ecliptic and Venus's location below the ecliptic. It is just above Antares on October 16, and at greatest elongation on October 29 when it is still only 19º high at sunset. Venus remains about that altitude at sunset throughout November.

Mars is in conjunction on October 8 and remains out of sight until December.

Jupiter is well-placed for evening observing in autumn, fading somewhat from magnitude –2.8 to –2.4 and setting by midnight in early November. Check the What's Up calendar on our website or Facebook for times of Red Spot transits (seen best for one hour before and after), and also for times of transits, shadow transits, occultations and eclipses of Jupiter's moons. Of note is a double shadow transit of Ganymede and Callisto on November 23 from 19:58 until Jupiter sets around 23:00. Jupiter reaches its second stationary point on October 18, after which it resumes eastward motion relative to the stars.



Saturn leads Jupiter across the sky by approximately one hour, and it reaches its second stationary point on the evening of October 10. Over the next couple of months it fades from magnitude 0.4 to 0.7. The rings are open about 19º to the north.

Uranus is in retrograde motion in Aries and it passes 0.2º above equally bright Omicron Arietis on October 12-13. It reaches opposition on the evening of November 4 when it will show a 3.7" disc at magnitude 5.6.

Neptune is at opposition in Aquarius on September 14 when it sports a 2.3" disc at magnitude 7.8. It is in retrograde until the end of November, within 4º-5º east of Phi Aquarii.

Comet 67P/Churyumov-Gerasimenko, orbited by the Rosetta mission and its lander Philae in 2014, might be the best bet for comet observing this autumn. It passes above the Hyades cluster in Taurus later this month and could reach magnitude 10 at perihelion in early November.

The **Orionids** peak on the night of October 20/21, the **Leonids** on November 16/17, both with the Moon at or near full.

Presidential News and Inspiration

June MacDonald

Our AGM is scheduled for Saturday, October 16. A venue has been tentatively booked; St. Columba's Church Hall in the west side of Saint John. We are watching the progress of Covid in the province and will make a final decision on an in-person meeting versus a Zoom-only meeting. The plan was to have both options, but that will depend on the state of Covid variants here. There will be the usual annual business meeting in the morning, followed by a presentation meeting in the afternoon. More information will follow at the beginning of October.

Looking into next year, it is an election year for our Board/Council. Please consider joining the Council and contribute to maintaining and growing our Centre. There is so much potential and much to do. The Council cannot do it alone; we need all the help we can get. We need members who will become the future of RASC NB. We need new ideas, fresher minds, people to continue the RASC mandate and vision of sharing astronomy with everyone, educating the uninitiated about the cosmos around us. As Helen Sawyer Hogg said, "The stars belong to everyone." Help us plan for the future. Get interested, get involved.

The new RASC website is up and running and offers opportunities to learn about astronomy, experience the wonder, connect with other amateur astronomers and become involved in challenges and projects. Sign up for the newsletter, join the discussion lists, get tips on astrophotography, listen to podcasts, find out what Centres are having speakers at their meetings and listen in online. There's even a section for children: Creation Station.

When was the last time you were excited? A while? Maybe now's the time to build some enthusiasm and energy. Restrictions have ended, although we must still be alert and careful, and the freedom we have now can translate into astronomical experience! We have returned to a more normal schedule, with kids back at school, and businesses and organisations building back to a regular routine. As amateur astronomers, we can build back to a routine as well.

The days are getting shorter and the nights longer. That's a signal to rev up for some observing. More dark time, more opportunity to look up and around us. Cooler evenings, less heat rising in waves from the ground, less fog. We can feel freer to get out there and enjoy the night sky. The sky during the day will be clearer and more enjoyable without the humidity and 30^{o} heat, and that makes for great solar observing.

The ability to get together with a few friends to talk astronomy and do some observing is a great opportunity. It's time to begin again! Think about the things you'll learn, things you'll discover, projects you've wanted to do. If you'd like to learn a few things or refresh your memory, or get tips on projects or astroimaging, check out some online resources. They will get your astronomy juices flowing.

The RASC website offers all kinds of information. You just have to look. Try these RASC links and some others I've found (you may have already seen some of these):

rasc.ca/insiders-guide	viewspace.org
rasc.ca/e-reader-our-archives	planetary.org
rasc.ca/etuonline	skyandtelescope.org
rasc.ca/online	universetoday.com
rasc.ca/creationstation	http://worldwidetelescope.org
rasc.ca/websites-and-apps	http://worldwidetelescope.org/use/educators/
rasc.ca/other-useful-resources	pbs.org/seeinginthedark/resources-links/websites-to-explore.html
rasc.ca/Astro-podcasts	gemini.edu
rasc.ca/astronomy-events	gws.ala.org/category/sciences/astronomy-space (especially for kids)
rasc.ca/new-members	astronomy.com
rasc.ca/moonatnoon	galaxyzoo.org
rasc.ca/rasc-programs	telescopius.com (astrophotography)
space.com	nasa.gov
stellarium.org	solarsystem.nasa.gov

nasa.gov/audience/forstudents/k-4/finditfast/K-8_Alpha_Index.html

A Newtonian Finds a Home

Len Larkin

Last winter, Francis Casey came across a 114 mm f/8 Newtonian optical tube assembly (OTA) with unclear ownership or history. He suggested I take it and try to make it functional. Well, here was a chance to put together my first Dobsonian! I agreed.

After perusing a couple of simpler telescope build pages, I came upon Stellafane's *Building a Dobsonian Telescope* website. Some of you may have used this already as it is an excellent step-by-step guide with good instructions and options. I was now able to sort out many details and, most importantly, calculate the size of the mount.

The cradle, rocker box and base construction went well other than some difficulty finding the recommended bearing materials for the altitude and azimuth motions. I didn't find much available on the web so I improvised with a few hardware store items, finally choosing material from a child's snow-slider sheet mated with chair glider fittings that were either PTFE or Teflon.

Final Fixes:

1. The OTA was equipped with a focuser that seemed like a standard 1¼" diameter but fitted with a 0.965" tube (for small eyepieces) which was mated to an adaptor for 1¼". Not surprisingly, my older eyepieces refused to work in this setup. With some hacksaw work, epoxy (and an odd coupling made from wood) the eyepieces were finally able to reach focus.

2. The small 6x30 finder (with chromatically flamboyant optics!) was replaced with a Rigel Quickfinder.

3. It was during final testing that I discovered one last problem. The parts did fit together well and the alt/az movements performed adequately (with magnifications under 100x anyway), but the scope was too low even for my usual seated position. Oops. I sorted this out by adding 150 mm extension legs to the base which had an extra benefit - the telescope now resembled a 1950's style rocket!

This has made it a bit tippy and wider leg extensions are needed for best stability (as suggested by Francis) but it works fine on my back deck.

So, when I am observing with it and wishing I had built the mount around a more capable 200 mm or larger diameter Newtonian (yes, twinges of aperture fever), I am reminded that I've never used such a great little carefree "grab 'n go" instrument as this.

This "lite bucket" has inspired Len to take up observing again

Constellation Limericks

Yolanda Kippers

Some may call her Cassiopeia
That fool Queen of Ethiopia
Because of a boast
Her daughter was toast
And burned because of myopia.

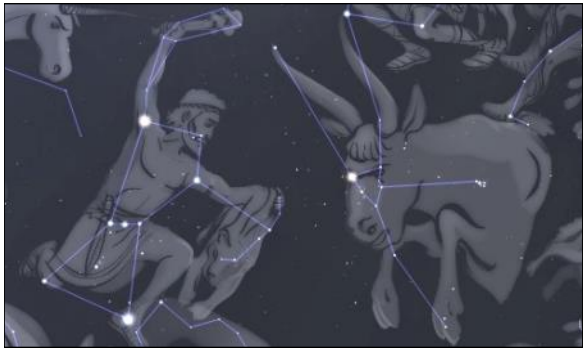
Andromeda, the most beautiful girl
Was left amid rocks just to swirl
He came 'long by chance
And took his great stance
Now 'cross the dark sky they both twirl.

Perseus, please tell us the truth, Sah.
You say you're the son of great Zeus, Uh?
Conceived amid gold
And being quite bold
You now hold the head of Medusa.

There once was a house built of cards
Whose King left the family in shards
Cepheus might have been weak
But they're now at the peak
And their stars sing out like the bards.

Ted Dunphy

There once was a hunter named Orion
Who boasted to kill even the Lion
Sweet Artemis sent Scorpius
To bring down this nemesis
Now the critters are saved from dyin'.



Rosanna Armstrong

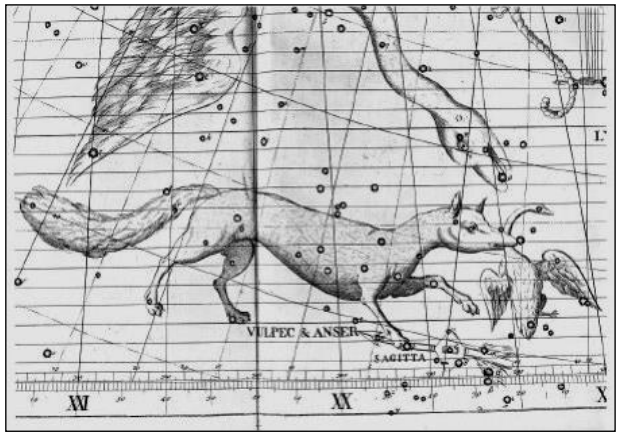
There once was a hunter Orion
who wished to kill prey or die tryin'
Seven Sisters spied, they ran and they cried
Zeus gave them wings, they're still flyin'.

There was a young man set on a trail
with friends on Argo's poop, keel and sail
facing fiery bulls, then dragon's teeth rules
Golden Fleece fetched, Jason did not fail.

Orpheus could sing and a lyre play
from the Sirens he kept Jason away
A backward glance then ruined his chance
A night sky bird keeps the lyre today.

Curt Nason

The sky fox with no taste for Cancer
Preferred dining on the goose Anser
He asked IAU
Forever to chew
Vulpecula got no for an answer.



Non-Constellation Limericks

Ted Dunphy
There was a young lad named Hawking
Who let a computer to do his talking
He studied the black holes
With a man named Penrose
Now a Singularity, they be hocking.

Don Kelly
Our Moon is a marvelous place
Some say that it has a man's face
Or is it a lady
A rabbit or Elvis
Or a beetle that crawled into space.

Twenty twenty-four will be fun
It's a total eclipse of the Sun
We'll need a clear day
So rain-STAY AWAY!!!!
Or at least 'til its over and done.

Mary King
There once was a man on the Moon
Who wondered if folks'd return soon
He made Lunar Xs and Os
Crater highs and crater lows
While he dusted and sanded, whistled tunes.

There are reflectors, refractors and Schmidt Cassegrains
Which non-astronomy buffs find a pain
But Messier's one hundred plus
Gives you reason to fuss
And that makes your interest not wain.

If your passion is how to feel small
Astronomy will demand your all
Buy binos, lenses, and scopes
Brave flies or cold with high hopes
With strangers in the dark have a ball.

Yolanda Kippers
The great blue Earth has one big ball
Mars has two, but they are small
The Giants, it's true
Have more than a few
Mercury? Well, he has no balls at all.

All in all it's just a
Great pic of The Wall

The Cygnus Wall in NGC 7000
Image by Paul Owen

Rejoice

Yolanda Kippers

Ahh...September. Back to school. Back to the 3 R's: Reading, Writing, 'Rithmetic. Longer night skies. Cooler weather. Hopefully, this will mean less mugginess and moisture, which in turn should mean fewer bugs, better seeing conditions, and less dew on our equipment. Oh, the problems of summer.

Soon we will hear complaints of "It's too cold," the bother of making one's way through snow and over ice, and any number of other excuses.

So now is an excellent time to get out to see the night sky. It is now reasonably dark before most of us go to bed; and for early-birds there is still darkness without getting up before 4 a.m. And all that beautiful darkness in between.

Don't lament the end of summer. Celebrate the return of autumn. It gets only better as the nights keep getting longer.

Ahh...September. Back outside at night.
Back to the 3 R's:
Relax on your seating of choice.
Rotate toward your area of interest.
Reflect on the beauty of the autumnal skies.

Congratulations to Yolanda for earning her RASC Explore the Universe observing certificate and pin. We rejoice in her success and inspiring words.

Book Review

Mary E. King

Extraterrestrial: The First Sign of Intelligent Life Beyond Earth
Loeb, A. (2021).
Boston: Houghton Mifflin Harcourt
222 pages

The night sky object that became known as Oumuamua was detected in 2017 by an observatory in Hawaii; hence the name "oumuamua," meaning "messenger." It intrigued observers because it was not an asteroid or comet (no trail of gas or debris and an unusual orbit). Furthermore, its speed indicated it came from another star because its trajectory clearly showed it was not bound our Sun's gravity. The first popular depiction of the object, unfortunately, became the definitive one: a long, cylindrical, cigar-shaped object.

Another interpretation of the same data, one that acknowledges the extreme dimensions of the object (a length five to ten times greater than its width) portrays the shape another way, as pancake-like. This pancake shape is ideal for space travel because it is the ideal shape for a lightsail, and a lightsail device could only by made by an advanced, extraterrestrial society.

It just so happened that at the time Oumuamua was detected, Dr. Avi Loeb, the Frank B. Laird Jr. Professor of Science at Harvard University and a theoretical physicist and cosmologist, was working on a just such a project here on Earth: The Starshot Initiative. Loeb and his team were in the process of developing a solar sail, a lightweight spacecraft attached to a reflecting sail, or mirror. This concept was centuries old, from Kepler and Galileo's time, but the technical knowhow, the miniature electronics and the modern optical designs, were not available until recently. The expense would be on the order of constructing another James Webb Telescope or another Large Hadron Collider at CERN. The objective was to send probes of this design to Proxima Centauri with an arrival timeline of twenty years.

With this we have the convergence of an observed stellar phenomenon and—some might say laughable—projections of a senior academic. The book Loeb has written here grounds his hypothesis on Oumuamua squarely in the rational. Much of the book is what I thought of as filler; his days growing up on a farm in Israel and his work building his career. In retrospect, these details make him normal and his thesis one of merit. I appreciated that he made his arguments without talking down to the reader, even if he had to simplify concepts for a general audience. Loeb's conviction is such that he is willing to take the hits to his credibility, a credibility he has taken a lifetime to achieve, on the subject of extraterrestrial life. It is doubtful a scientist of Loeb's stature would try to cash in on notoriety by linking his project to ideas that have no scientific foundation.

The topic of extraterrestrial life is a problematic one in astronomy, especially if the life is deemed advanced or intelligent. Readers might like to dismiss Loeb's book outright, but others might like to delve in to his reasoning. Just to conclude with a note: The US Defense and Intelligence officials recently released declassified information in a nine-page report on UAPs (Unidentified Aerial Phenomenon), with more releases to come.

Miramichi Mary performing astronomy outreach in Elm Park at the Mayor's Welcome BBQ for Newcomers