SKYNEWS

RASC Victoria tent at Fall Fairfield event, Sep 27, 2021, by Brian Barber

Afternoon Astronomy under a Tent at Fall Fairfield

Rain did not dampen enthusiasm at the RASC Victoria Centre's first in-person public outreach event since the Pandemic began. Three telescopes and three Rascals under a tent attracted visitors of all ages throughout the rainy afternoon. Randy Enkin, Sid Sidu, and I chalked up 120 visitors (or *Galileo moments**); tallying everyone who stopped by to look or chat however briefly, most taking at least one of our numerous handouts.

A typical example of engagement I chanced to catch was of Sid deftly snagging two, initially expressionless brothers, of ages perhaps 6 and 8 or 9 years, who were hanging back while their parents talked with Randy about telescopes. Picking up two bookmarks (*seen below right*) from the table, Sid turned to the younger one and asked: "Do you read? Do you like books?"

Immediate answer, while staring at the table legs: "No. No".

Syd: "Here. Have a bookmark", putting one in his hand.

His older brother's answers to the same questions before Sid finished speaking were emphatic: "I like reading; I love books" – as he reached for a bookmark and came up to see what else was on the table. These two-sided bookmarks summarize/illustrate the RASC's message: *Look up – Discover the Universe* and *Look around – Discover our planet*.

Randy drew passers-by in to explain why we had telescopes set up on a rainy afternoon and the differences between the three scopes: an 8" SkyWatcher Dobsonian reflector, a 60mm refractor, and a tabletop Sun Spotter. Of course, the solar filters stayed in their boxes, but we explained how they would have allowed safe viewing of the sun – if it had only been visible! Randy showed some *hot-off-the-press* illustrations that were made the previous evening, detailing craters on the Moon to show how amateur astronomers record what they see through their telescope eyepiece, by sketching and photography, along with taking notes.

The 3-panel display board covered on both sides with graphics and information about light, spanning the electromagnetic spectrum, but with heavy

emphasis on the visible part, caught the eye of people of all ages. So did the picture cards (designed for all ages), with information about good and bad light on the back side. After a lengthy sorting through the box of the nine different cards trying to decide which to take, a little girl finally chose one after I pointed out that it might be her looking at the moon; her mother smiled and complimented her daughter's choice.

It was gratifying to see that quite a few people went off with the Centres' four-page brochure: **ARE YOU DOING YOUR PART TO PROMOTE SAFE AND HEALTHY OUTDOOR LIGHTING IN YOUR COMMUNITY?** (Tips for Outdoor Lighting on Night Lighting at RASC Victoria: *https://www.victoria.rasc.ca/night-lighting/*). One person asked to take an extra brochure to give to their landlord who, despite the renters' strongly expressed objections, remained determined to install driveway lighting. A family of four hung around, after having taken in most everything we had to offer, as though reluctant to leave. I suggested a family membership. One daughter immediately turned to her parents and announced: "That's what I want for Christmas; a family membership".

Few, if any, departed empty-handed, taking flyers about the centre and how to join the RASC, astronomy picture cards, information about good and bad light, about the Moon, and more. As always, the most fun thing was to explain and send visitors off with the planispheres, with constellations and directions for finding their own way around the night sky. One of the youngest visitors had her first encounter with a reflector telescope and was entranced by the inward view through the tube (*seen right*). Hopefully, our Centre's low-keyed public appearance at Fair Fairfield 2021 will be seen as marking the beginning of society's slow advance toward the *new normal*. Time will tell.

Footnote: **The RASC National introduced the phrase 'Galileo moment' for tallying the number of visitors at Centres' events during the 2009 International Year of Astronomy to commemorate the 400th anniversary of Galileo Galilei' seminal telescopic observations of the sky. The RASC Victoria Centre continued to use it for the next decade, through 2019, until paused by the pandemic.*

Dorothy Paul

Editorial Remarks

RASC Victoria Centre had its first public outreach event since everything was shut down by a global pandemic that just keeps on going strong. While many of us have adapted to the new reality we've found ourselves in, a lot of people are still living in March of 2020. The Fall Fairfield is an event that our centre has participated in for a long time, with the exception of last year's unavoidable cancellation. Given that this fall fair tends to mark the end of the public outreach summer season, this is more likely a one-off or step towards future event participation than the start of a flurry of public outreach events. The issue of not being able to safely share eyepieces will continue make it difficult to conduct public outreach. We can set up a tent and hand out material, but our telescope interactions are limited to solar projections on a piece of paper. This is exactly what the plan was for the Fall Fairfield but sadly, the weather was in a state of non-compliance for solar astronomy. The volunteers (Randy Enkin, Sid Sidu, and Dorothy Paul) put in a solid effort on behalf of the Centre, despite the sold effort by the weather to try to ruin the event. For at least the remainder of this year and likely beyond, I would expect to continue to have more of the same virtual astronomy social interactions and more quality time with your own telescopes.

It's the Halloween issue of *SkyNews*, but for most of us this holiday just feels like more of the same, after over a year and a half of wearing masks in public and likely already eating far too much candy for our own good. For those of you thinking of *rocking* a plague doctor costume this Halloween, I'm afraid you're a year too late. With the exception of a few *special* people, who should seek immediate psychiatric help, we all know we're living through a global pandemic. Besides, if you're trying to be trendy you'll be dressing up like characters from *The Squid Game,* like all the other cool kids out there. Plague doctor masks are so 17th century.

In this *spooky (Ed. look we're trying here)* issue of *SkyNews*, we'll have more recaps from our Centre's activities, a short article about imaging stars in other galaxies by David Payne, as well as all the astrophotography and articles you've come to expect from the *Victoria Centre SkyNews*.

Bruce Lane: SkyNews Editor

President's Message for October

Questions, Answers, and Questions

One satisfaction of astronomy is the sense of continuity with astronomers from all over the world and spanning the decades, centuries, and millennia. The wonders of the sky fill us with awe and provoke so many questions. I appreciate the multidisciplinary approach to answering these questions.

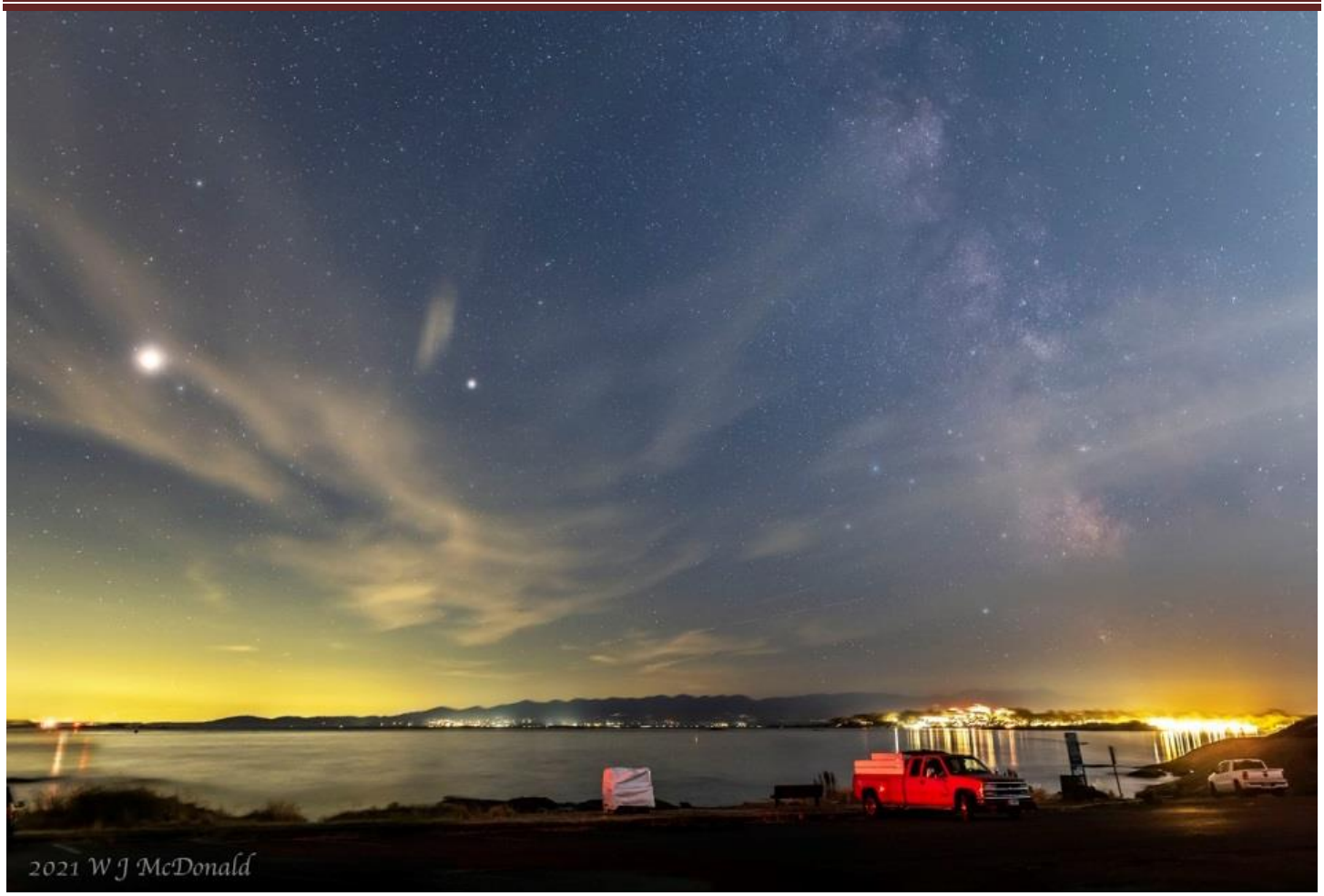
Today's anecdote concerns an article published this week, with 25 authors from 5 countries (*https://www.science.org/doi/10.1126/science.abl7957).* The Chinese Chang'e 5 probe brought back to Earth the first lunar samples in 4 decades. They targeted a place on the Moon that was suspected of being young, due to the region's low density of craters. Galileo observed craters on the moon 400 years ago, but it was only in the 1960s that meteor impacts were confirmed to be the dominant mechanism of their origin. The observational and theoretical development of celestial mechanics, universal gravitation, the solar nebula, and planetary accretion were all required to understand dating planetary surfaces, by measuring the size and number of craters. We also needed telescopes, rockets, robotics, petrology, geochemistry, and geochronology to complement the study. The Moon is the only planetary body where impact crater ages have been calibrated with radiometric dating, but there had been no samples so far measured that are between 3.2 and 0.8 billion years old. The new samples were dated at 1.96±.06 billion years, sitting in the middle of that gap and forcing a revision of the current crater dating method. The new date is very young for the Moon's surface and brings up new questions, like why the Moon was still melting crust so recently.

I'm filled with a sense of connection with my fellow humans who can conceive of such questions, work on them from many different aspects over the centuries, answer some, and end up with even more questions. And I look up at the sky with happiness.

Ring Nebula, by Lucky Budd, imaged Aug31-Sep1, 2021

Look Up,

Randy Enkin, President@VictoriaRASC.ca



Jupiter, Saturn, and the Milky Way at Cattle Point, by John McDonald, September 2nd, 2021

Astro Café: Continues Online

The weekly social gathering of amateur astronomers on Monday nights, known as Astro Café, has been continuing online. As with many groups, we're trying to find ways to still function as an astronomy society, without meeting in person. Members are posting their astrophotography, short articles, as well as links to astronomy stories from the Internet. Sadly, you'll have to make your own coffee and the only cookies are those your browser picks up when you visit our website. You can access the *Virtual Astro Café* at: https://www.victoria.rasc.ca/astronomy-cafe/

The first Astro Café of the month wasn't until September 13th, owing the Labour Day weekend and Marjie Welchframe kicked things off with a short presentation on *Women in Astronomy.* David Lee talked about his process of finding and observing RS Oph, and gave some background about recurrent novae; Randy Enkin talked about the astrophysics of RS Ophiuchus; Nathan and Bryan Mestelman gave an astronomy themed presentation about their road trip to Winnipeg; Dave Payne showed an image of the stars in Andromeda and gave a book review of Richard Feynman's *QED: The Strange Theory of Light and Matter*; and Dave Robinson showed some astrophotography from RASC Edmonton.

The next Astro Cafe happened on election night and began with David Lee talking about the passing of local amateur astronomer Ed Maxfield. Nathan Hellner-Mestelman gave a presentation on *Earth: Potentially Habitable Planet*; Reg Dunkley discussed M33 (the Triangulum Galaxy) and showed some astrophotography of it, including his own; John McDonald showed some images of the Deer Lick Group, Stefan's Quintet, and Eta Carina; Dave shared some more images from RASC Edmonton; Brock Johnston gave a short presentation on the Hubble deep field photo; and some upcoming events were discussed (SIG meetings and the Fall Fairfield).

The third and last Astro Cafe of September began with Marjie Welchframe giving the next instalment of *Women Astronomers*, this time featuring Dr. Michelle Kunimoto; Nathan Hellner-Mestelman showed some Lunar Eclipse photos from 2020 that he's still experimenting with post production work on; Randy gave a Fairfield Fair recap, as well as showing Mike Nash's Moon photo and his own lunar sketch; Chris Purse pointed out the upcoming *100 Hours of Astronomy* and Harvard Radcliffe events; Dave showed more astrophotography from RASC Edmonton; David gave a presentation on *Building an Astroberry Server*; Jeff was introduced as a RASC Calgary member who has moved here; John McDonald showed a reprocessed image of the North America Nebula; Brock Johnson showed how he has been using SIRIL astronomy open source software for astrophotography; and Chris Gainor gave an update on the James Web Space Telescope.

Bruce Lane

Apollo 16 Training: Charles Duke enters the Altitude Chamber, October 15th, 1971

Special Interest Groups

Getting Started in Astronomy

Members of this group are exploring objects of interest by constellation. This month we covered Cassiopeia and explained how to find the Andromeda Galaxy and the ET Cluster (NGC 457). Members also shared recent observations. For more information on this group, please contact David Lee at *david@victoria.rasc.ca*

Astrophotography

The Astrophotography SIG reviewed member images of the Andromeda Galaxy. It was noted that this is a good time to image the planets Jupiter and Saturn. For more information about this group, please contact John McDonald at *john@victoria.rasc.ca*.

Electronically Assisted Astronomy

The EAA group continues to talk about techniques and equipment that can support observing electronically assisted. For more information on this group, please contact David Lee at *david@victoria.rasc.ca*

Makers

The Makers SIG continues to focus on member projects. David gave an update on the creation of a home built Raspberry Pi based on the Indi library, focused on supporting imaging functions such as autoguiding. This will augment the functions provided by commercial products, such as the ASI Air Pro, which is primarily focussed on ZWO product support. For more information about this group, please contact Jim Cliffe at *jim@victora.rasc.ca*.

David Lee

Apollo 16 Training: Charles Duke formal mission portrait, October 1st, 1971

Stars in Andromeda, by Dave Payne, imaged late August/early September 2021

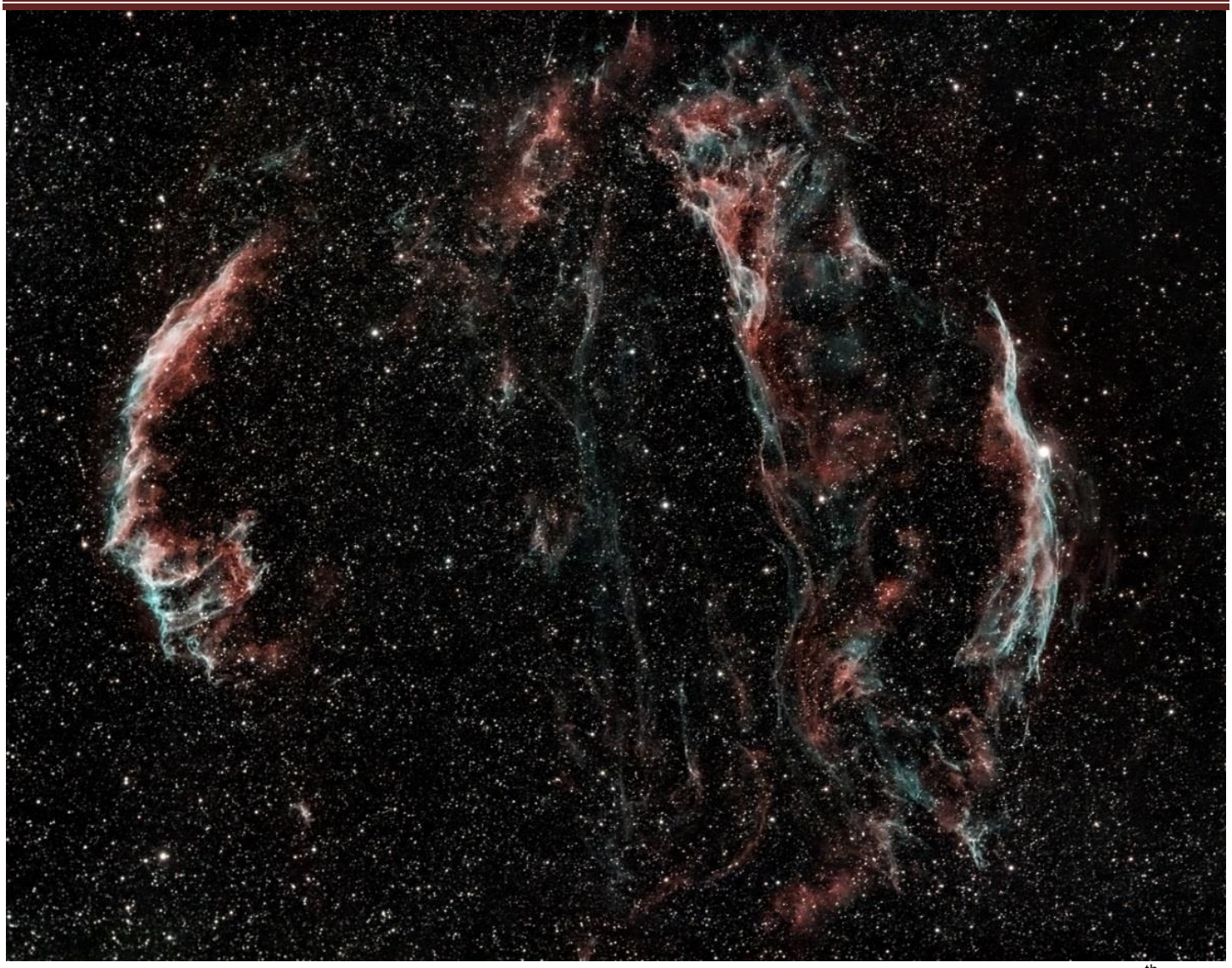
The Stars of Andromeda

A fellow Victoria Centre RASC member recently asked me if the Andromedian stars, particularly those in the NGC206 star-field region in the centre of this intra-Andromeda image, were visible in a mosaic image of the galaxy I had recently taken from my back yard with my 5 inch refractor. I couldn't answer at the time, as most of the images I had viewed employed short focal length telescopes, which are required to capture the whole galaxy in a single frame, but too short to resolve individual stars, even in our closest galactic neighbour: Andromeda. They looked like stars, but could they be star clusters? Certainly, I was used to saying "All the individual stars you see in my images belong to the Milky Way", whenever showing a backyard image.

This LRGB image, taken with a Planewave CDK 12.5 inch back yard reflector telescope on an A-P 1100GTO AE mount with an ASI6200MM camera, was my attempt to resolve the question. The result was a double surprise to me. First, individual stars can clearly be seen, not only within NGC206, but throughout the outer arms of the galaxy. They almost seemed painted in a pointillism style, as there were too many stars to be individual clusters. Some of the stars are in fact clusters, but some are blue giant stars with >25 solar masses, like those within NGG206, that are resolvable with a modest refractor. In this image, individual stars were even visible toward the galactic centre, where eventually the background gets too bright and dense with stars to make out individuals. Therefore, the answer is *yes*, we can resolve extra-Milky Way stars even with backyard-scale telescopes!

The second surprise is the beautiful vista that can emerge by *going deep* on a large target with a long focal length (2540 mm for the CDK). This image employed 30 frames of 3.5 minutes each, through each of RGB filters, and 30 frames of 3 minutes each through a luminance filter, for a total integration time of 6.75 hours taken over four nights in September and October of 2021, from Maple Bay, BC. Processing was performed using PixInsight. Next on the list of questions is: "Can we see stars in M33, the next closest, Triangulum Galaxy, or even more distant or exo-galactic stars?"

Dave Payne



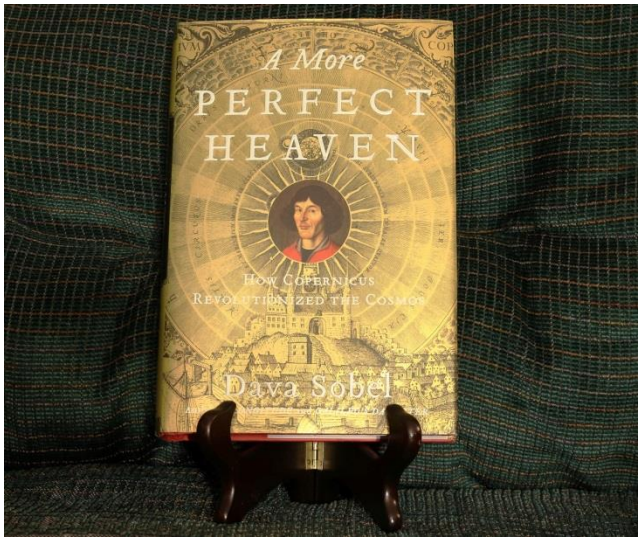
Cygnus Loop, by Lucky Budd, imaged September 10-15th, 2021

From the Library

The RASC Victoria Centre Library is housed in the Astronomy Department's faculty lounge, located on the 4th floor of the Elliott Building, at the University of Victoria. It contains over 500 titles, curated by Alex Schmid, our RASC Victoria Centre Librarian. Alex is currently running our library in the same way the Greater Victoria Public Library runs its shut-in branch, driving around to do deliveries and pickups for our membership to provide access to books from the collection. For more information and to make a book delivery request, please contact Alex Schmidt at: *librarian@victoria.rasc.ca*

Our library covers many aspects of astronomy: observing, astrophotography, telescope construction, space exploration, astrophysics, and much more. Normally, the library is opened up during the social gatherings in the faculty lounge, after our monthly meetings, with coffee, juice, and cookies provided by our centre. In the past I've been doing book reviews of the contents of our centre's library, but until the resumption of our monthly meetings at the University of Victoria, I'll be mostly doing reviews of the astronomy books from my personal library, ones that can be purchased online or better yet at your local bookstore.

This month we're taking a closer look at *A More Perfect Heaven*, by Dava Sobel. This author has written many books, including several about prominent personalities in the history of astronomy and navigation: *Galileo's Daughter, the Glass Universe, the Planets,* and *Longitude*. Dava Sobel is a lifelong reader of Scientific American and now writes a science poetry column for the magazine, in homage to the articles from the earliest editions that combined poetry and astronomy. *Asteroid 30935 Davasobel* was named in her honour.



A More Perfect Heaven is the story of Nicholaus Copernicus, who spent most of his life as a high ranking Catholic church administrator in Poland. Copernicus was schooled as a physician but groomed to become a bishop. Despite the career path planned by his family, he was never ordained, but still rose to the rank of canon, owing to the fact that at that time many who held this office weren't priests. Far from a peaceful time, he was responsible for overseeing church lands that were under constant threat from Teutonic knights and practising careful political sensitivities during the increased paranoia among the clergy during the Lutheran Reformation.

I found a few similarities to the lives of Copernicus and Newton. Both were semi-monastic and both deeply religious, but seeking a deeper understanding of the Universe through scientific methods. Both were men of some means, with a wide variety of interests, who were obsessed with the workings of finance. Newton for his time in the Royal Mint and Copernicus as a dedicated administrator, who wrote an important economic treatise: *On the Minting of* Coin. Both scientific geniuses took a lot of convincing to publish their great works, which is where the similarities start to end. The publishing of Newton's *Principia* is considered to be the beginning of the Enlightenment and earned him great praise and status in the scientific community. The rough reception that Copernicus got, from earlier publishing the fact that the Earth rotated on its axis, made him hesitant to publish an even more ground breaking scientific truth. Only through the unlikely intervention of a Lutheran admirer and a close friend in the clergy, was he finally convinced to finish *On the Revolutions of the Celestial Spheres.* Like *Principia,* this work also touched off a scientific revolution, but Copernicus was neither around to witness it or be personally subject to the wrath of the Catholic church; not that the Lutheran Church was a fan of his cosmology ideas either. The Catholic Church only got serious about it as heresy, decades later when Italian astronomers began quoting his work, resulting in it being added to the *Index of Prohibited Books* (along with the works of Kepler).

A More Perfect Heaven is unlike any other scientific biography I've come across, because this book tells the story of the decision to publish *On the Revolutions* with a play, presented in the form of a script. It's a unique choice, but it works. My only criticism of this book is that it didn't quite know where to end. The parts dealing with Kepler and others, were a bit choppy and should have either been shortened or been the basis of another book on the subject. The latter would have been my preference, because then we'd get another book to read by Dava Sobel. Like any of Dava Sobel's works, *A More Perfect Heaven* is a well written and engaging read, and it's available by order from your local bookstore.

Bruce Lane

Lagoon Nebula (M8) by Daniel Posey, imaged August-September, 2021

Hill and Dale (Observing on the Island)

The weather in September was a bit of a *mixed bag*, but there were plenty of clear nights available for observers and astrophotographers. We also seem to be slowly crawling out of the solar minimum, if John McDonald's recent images are any indication; including a picture of solar prominences on the Sun (*seen next page*). Matt Watson and Dan Posey of the Technical Committee were up at the Victoria Centre Observatory, on the evening of September 10th, to do more testing and fine tuning of our new telescopes. Dan also finished off a multiple week project of imaging the Lagoon Nebula (*seen above*) from his balcony. Lucky Budd was out imaging with a small refractor atop a Star Adventurer (mini equatorial mount), capturing some big images of the Cygnus Loop and Ring Nebula. Bill Weir has been out observing at the Pearson Observatory with some state of the art gear and then out at the Metchosin Cricket Pitch purposefully observing with a less modern telescope, with optics that hearken back to the days of Galileo, as part of a personal project.

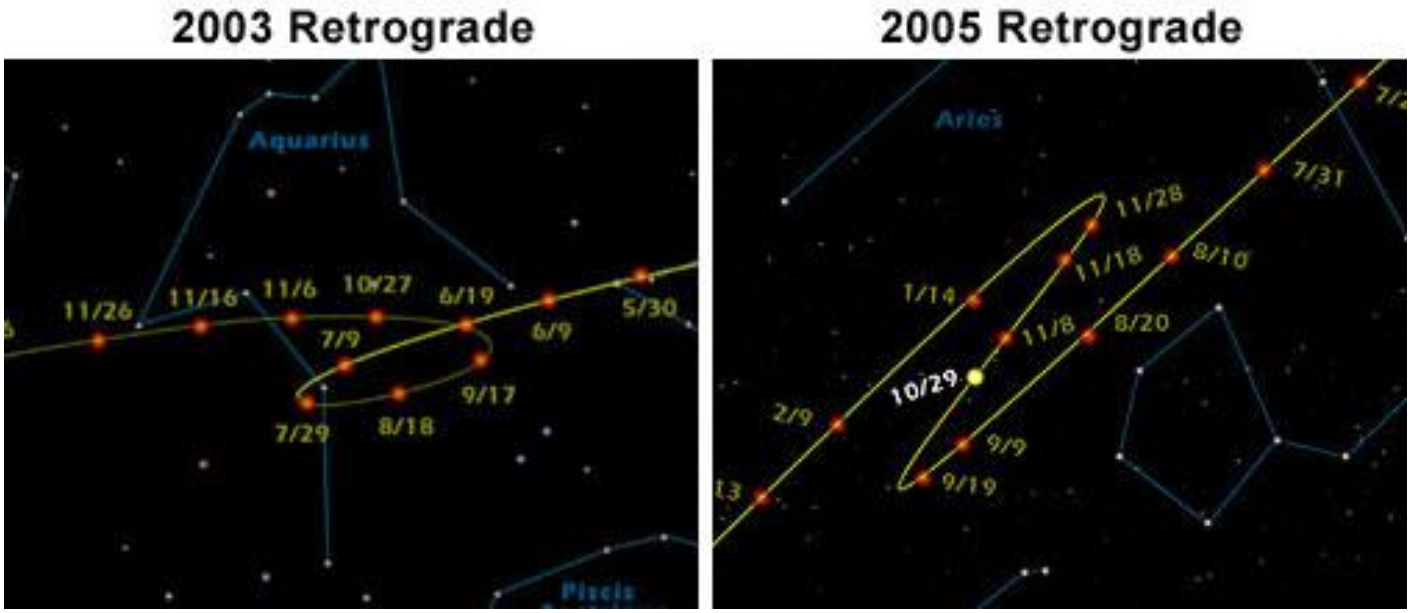
The current restrictions up on Observatory Hill, with four socially distanced observers allowed at the VCO and another two set up at the Plaskett telescope parking lot, are likely the norm for some time to come. For obvious reason, we won't be allowed to share views through eyepieces. Pandemic health restrictions are subject to change though, so if you're on the VCO observer's email list, watch for continuing updates.

A reminder that although the VCO belongs to and is for the use of the members of the RASC Victoria Centre. In the *Before Times*, MiCs (Members in Charge) ran both weekly scheduled and unscheduled sessions to take advantage of the weather, but for the foreseeable future observing sessions will be a lot less scheduled and less frequent. The VCO is located on National Research Council property. This means that all visitors to our observatory must be on our observer list and registered with the NRC. To get on the list, just contact Chris Purse (Membership Coordinator) at *membership@rasc.victoria.ca* and we'll see you up there on the Hill one of these nights.

Bruce Lane

Astronomical Term of the Month: Retrograde Motion

In planetary observing, we say a planet is in retrograde motion when it appears to be moving backwards in its orbit around the Sun, when viewed from Earth or from another planet located closer to the Sun. When the Earth is passing by another planet in its larger orbit, there will be a series of positions it appears in the night sky, based on the angle it's observed from the Earth. As the closest planet, Mars (*seen below*) will appear to move in the largest retrograde loop. The outer planets further away from our orbit will have a decreasing number of positions and smaller apparent retrograde motion. If there was a large planet far beyond the position of Pluto, at some point of distance its apparent retrograde motion would be so minimal that it would appear to be standing still, as we approached and left opposition with that notional planet.



This movement to the east and then looping back to the west in the night sky caught the attention of ancient observers. Along with their brightness and moving through the night sky without being part of the firmament of the deep space star field, this strange retrograde motion had the planets singled out as special objects of wonder. When astronomers began creating models for our solar system, from the time of ancient civilizations until the middle of the Renaissance, one of the biggest points of contention was how to account for the retrograde motion of the planets. While there were ancient astronomers who stated that the Sun was at the centre of our solar system as early as Aristarchus in 240 BCE, his voice wasn't as loud as the thinkers who stated that the Earth was the centre of all. Mathematics and observations continued to be twisted and warped to try to justify a flawed model that supported a geocentric solar system, despite failing to properly represent the retrograde motion of Mars. Then Copernicus had his heliocentric model published, while he was on his deathbed, disproving the geocentric model. The fact that the author wasn't alive to argue his point or be tortured and burned at the stake for that matter, was one reason why his ideas took a few decades to gain traction in the scientific community.

This moment of evidence based astronomy in cosmology was naturally condemned by both the Catholic and Lutheran Church, because it contradicted literal interpretations of the stories in the Bible, as were Kepler's later improvements on the new heliocentric model. Joshua can't exactly command the Sun to stand still if it's the Earth moving around the Sun. Forced to choose between a literal interpretation of an etiological myth from the Bronze Age and the scientific publication by one of the greatest cosmologists of his time, the highest ranking church authorities acted much as they had done for centuries before and for centuries afterwards. They were not astronomers. They were ideologues. When scholars insist on a literal translation of an ancient legends from a group of people that are among the identifying stories they tell each other about how things are the way they are, you get not only bad science, but bad religion in the bargain. It's a bit like having scholars, centuries from now, insisting that the nursery rhyme of *Rock-a-bye baby* is a parenting manual, proving that we put baby cradles in trees as a form of ritual testing of the tribal young.

Bruce Lane

In Closing

Hello winter coat my old friend. *I had hoped to ignore you in the closet for just a little bit longer*. We had a bit of a cold snap to start October, where it felt more like December than autumn. We're also apparently not having much of a drought this autumn, like we've had in recent years, which makes me glad that I have a waterproof winter jacket. It's that or be dipped into a vat of Gortex like some modern *Wet Coast Achilles*. Despite the cold and dampness there's still been some clear nights, if you've got the winter clothes to still be comfortable under the night sky. Other Canadians don't know the pain of having so little of our wardrobe dedicated to *actual* Canadian winter weather. There's bound to be a lot more clear skies in the coming months, but since we're not the people who to try to con everyone about joining them outside because it's a *dry cold*, you're going to need to layer up like it's a lot colder than it is.

The fourth wave of the Pandemic is well underway, largely fuelled by the selfishness, carelessness, and wilful ignorance of a small minority of Canadians. While border restrictions are being relaxed, the numerous variants of covid-19 haven't,

so unnecessary travel is one of those things that come under the heading of: *just because you can do something, doesn't mean that you should*. Nobody wants you to bring back a pandemic souvenir from your vacation, for the sake of getting new content to boost the flagging numbers of your Instagram account. There's still a global problem with vaccine nationalism being practised by the First World, including us, hoarding vaccines while other countries have next to nothing to use for their own population. That and mentally unstable populists is how you get more variants, and I'd very much not like to race through the entire Greek alphabet by the end of this year.

Back to the subject of freezing to death, while clinging to your cold metal telescopes, there's a partial lunar eclipse scheduled late on the evening of November 18th or very early on November 19th, depending on how you perceive time. As opposed to some partial lunar eclipses where we only see the underwhelming and barely noticeable penumbral portion of the eclipse, this one will be very close to a full eclipse experience, with just a tiny slice of the Moon not completely eclipsed by 1:02am. The Moon will be just 1.7 days away from apogee, the furthest it is from the Earth in its orbit, so that might be a deciding factor in what camera lens, tele-converter, or telescope to use for imaging the event. For asteroid watchers, Ceres will be in opposition at 11:06pm on November 26th. There are also a couple meteor showers to look forward to in November. The annual Taurid (Nov 4-5th) and Leonid (Nov 17-18th) meteor showers serve as appetizers for the Geminids meteor shower on December 13-14th. Without knowing how many clear nights we're going to have between now and the springtime, it's good to take advantage of the clear nights when they happen, but just remember to dress for weather and have a happy Halloween!

Bruce Lane: SkyNews Editor

Photography Credits

Cover: RASC Victoria tent at Fall Fairfield event, Sep 27, 2021, by Brian Barber.

Page 2: RASC Victoria public outreach at Fall Fairfield event, Sep 27, 2021, by Brian Barber.

Page 2: RASC Bookmarks, unaccredited photo

Page 3: Visitor at RASC Victoria tent at Fall Fairfield event, Sep 27, 2021, by Brian Barber.

Page 4: Crop of Bruce Lane (SkyNews Editor) at 2013 RASCal Star Party in Metchosin, by Chris Gainor

Page 4: Halloween by Nancy Sticke, Oct 12, 2017, courtesy of Pixabay

Page 5: Randy Enkin (RASC Victoria President) with Sextant, Feb 20, 2021, by Eva Bild.

Page 5: Ring Nebula by Lucky Budd, imaged Aug 31 and Sep 1, 2021.

Page 6: Jupiter, Saturn, and the Milky way at Cattle Point, by John McDonald, Sep 2, 2021. Shot using Canon Ra camera, with 24mm Sigma A series lens mounted on Ioptron Skytracker. 6X18 second frames at ISO 2000 at f.2.8. Image processed in ACR and Photoshop.

Page 6: Photograph and Design of Astro Cafe Mug, by Joe Carr

Page 7: Halloween by Benjamin Balazs, Nov 1, 2017, courtesy of Pixabay

Page 7: Apollo 16 Training, Charles Duke enters altitude chamber. Oct 15, 1971. Scan by JL Pickering. Courtesy of NASA.

Page 8: Apollo 16, Charlie Duke formal Apollo 16 portrait. October 1, 1971. Scan by Kipp Teague. Courtesy of NASA.

Page 9: Stars in Andromeda, focused on NGC 206, by Dave Payne, imaged in late Aug/early Sep 2021. Taken with a ASI6200MM Pro camera on Planewave CDK12.5" aperture telescope, mounted on an Astro-Physics 1100GTO AE; using Optolong LRGB filter. This image was taken as part of the monthly challenge of the Astrophotography SIG to focus on the Andromeda Galaxy, determining if and how many stars can resolved outside of the Milky Way.

Page 10: Cygnus Loop by Lucky Budd, imaged Sep 10 and 15, 2021. Taken with Sharpstar61, mounted on a SkyWatcher Star Adventurer. 480X45 second exposures.

Page 11: Posed Book, "A More Perfect Heaven", taken in Editor's home on July 15, 2020, by Bruce Lane

Page 12: Lagoon Nebula (M8) by Daniel Posey, Aug-Sep, 2021. 19x8 minutes OIII filter (8.5nm), 37x8 minutes Ha filter (7nm), and 25x8 minutes SII filter (8nm) of exposures, using an SBIG 8300m at -20*C with Baader filters, and shot through an AskarFRA600 at f3.85

Page 13: Solar Prominences by John McDonald, Sep 1, 2021. Lunt 60mm w/ 50mm double stacked filter and ZWO ASI120MM-S camera. Image composed from 10 000 light frames, varied with exposure, alternating to show prominences and surface details. Stacked best 1000 frames in each case and blended, using Astrostakkert, Registax and Photoshop.

Page 13: Mars Retrograde Movement (2003 and 2005), courtesy of NASA/JPL-Caltech.

Page 14: La Mouche in the Rose Garden (Ameraucana chicken), by Bruce Lane, Aug 27, 2021.

Page 15: Halloween by Robert Davis, Oct 30, 2012, courtesy of Pixabay

Page 17: Apollo 16 Training, Back-up Commander Fred Haise prepares to enter the LM for an altitude chamber run. Oct 15 1971. Scan by Ed Hengeveld. Courtesy of NASA.

Call for Article and Photo Submissions for the November Issue

SkyNews is looking for submissions of astronomy photos and articles for the November issue of our Victoria Centre's magazine, including experienced observers contributing to our not yet launched *Star Hop* column. Send your submissions to editor@victoria.rasc.ca

RASC Victoria Centre Council 2021

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Treasurer	Deborah Crawford	treasurer@victoria.rasc.ca
Secretary	Barbara Lane	secretary@victoria.rasc.ca
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