SKYNEWS

Markarian Chain by Lucky Budd; April 16, 2021

# Obfuscated Occultation

Like so many astronomical events observed on the *Wet Coast*, the anticipated occultation of the star nu Virginis by the Moon was cancelled by the weather. The clouds rolled in on cue and that was that. As is often the case, a day earlier or later than April 23rd and the weather wouldn't have been a problem.

Bright star occultations by the Moon are fairly common, but require the observer being at the right spot on Earth to properly see it. Only four day later, there was the occultation of an even brighter star with the Moon, but sadly for Victorians, you had to be located in South Africa or Madagascar to observe it.

The next bright star occultation of the Moon, one that can be viewed locally, will be at 10:59 (PST) on September 15th, when Phi Sagittarii travels behind the Moon. With any luck we'll have better weather when it does.

*Bruce Lane*

## Editorial Remarks

One of the things that our RASC Centre presidents have been able to do is to raise the profile of their individual perspectives and experience with regards to amateur astronomy. While star gazers tend to pay a lot of attention to the weather, our Past President, Reg Dunkley has been responsible for members of RASC Victoria gaining more appreciation for meteorology than ever before. Many of us are now making regular use of new resources to help us plan our astronomy activities and sharing those resources with others. On several occasions, these extra resources have meant the difference between proceeding with public outreach and observing, or events being cancelled, because looking out the window doesn't give you the full picture. The University of Washington's Department of Atmospheric Sciences has since become one of the most used bookmarks on my computer browser.

Our current president is an enthusiastic spokesperson on behalf of the often overlooked Moon. For many astrophotographers and observers of deep space, the Moon has found itself reduced to being just another annoying source of light pollution they have to contend with. It's certainly refreshing to have someone championing lunar observations, at a time when so many of us have taken our closest celestial neighbour for granted. There are just so many more observable details on the Moon than any of the other individual observing targets, so it really deserves to be regarded as more than just a source of light pollution.

As a big showstopper in a few days, we have a lunar eclipse scheduled late at night on Tuesday or extremely early in the morning on Wednesday, depending on how you perceive time. Weather permitting we'll be able to see the beginning, middle, and part of the end of the eclipse, before the Moon sets into the morning sky at 5:30am. The eclipse starts for observers in Victoria at 01:47am, with the Earth's shadow beginning to fall on the Moon. Our lunar neighbour begins getting red at 02:44 and is fully eclipsed by 04:11. The total eclipse of the Moon ends at 04:25 and we'll see the best parts of the other side until the Moon sets, provided you've got an unobstructed horizon. That said, you're going to want to find an unobstructed view of the south-west horizon or you're not going to see much of anything at all. That means either going high enough to get a favourable angle on any obstructions or find a good waterfront view.

In this issue of *SkyNews*, we'll have more recaps from our Centre's activities, more NASA archive images in our look back at the Apollo missions from 50 years ago, as well as all the astrophotography and articles you've come to expect from the *Victoria Centre SkyNews*.

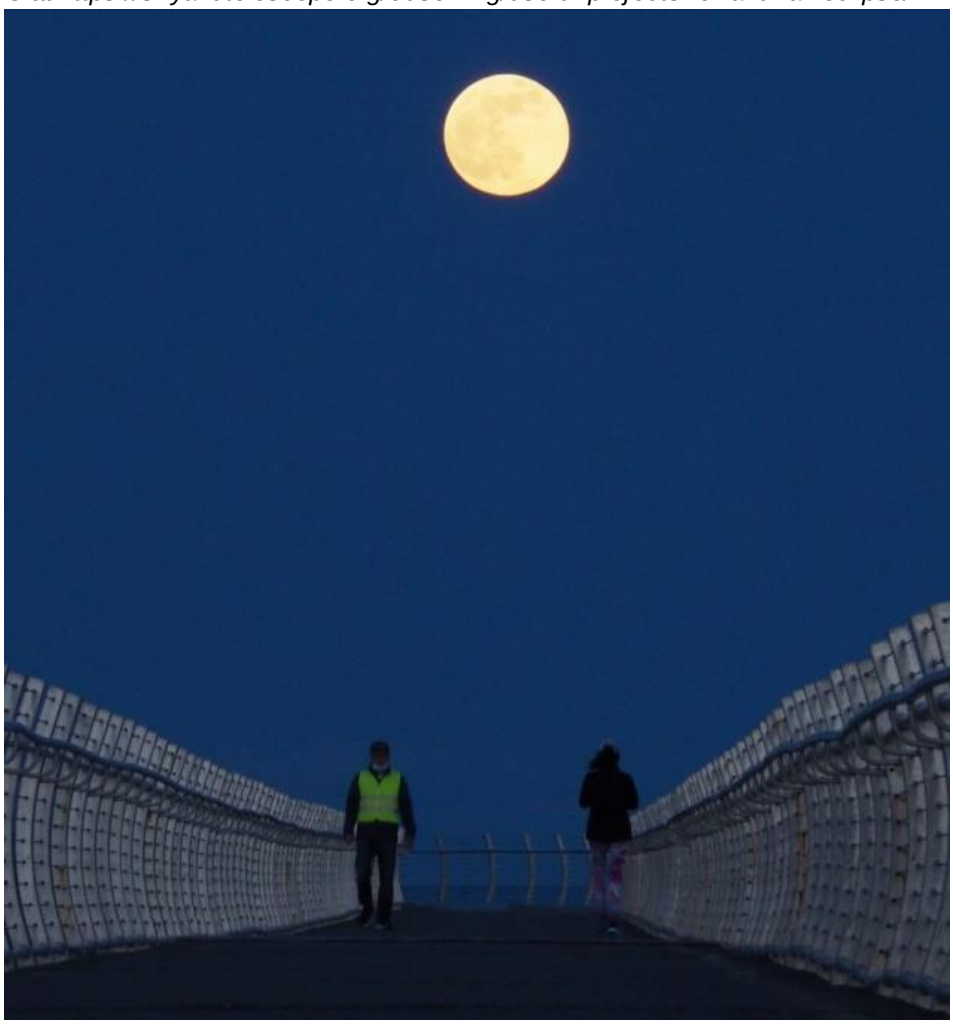
*Bruce Lane: SkyNews Editor*

## President's Message for May

Part of the fun of amateur astronomy is getting caught up in "rabbit holes". You see something on Facebook, that gets you looking up articles in the popular press, and then into academic publications, and they lead you in a different direction and everything is so fascinating and time just rushes by…

My current example is looking into the timing of craters on the moon – when they enter and exit the umbra or full shade of the Earth. It was an important way to figure out the time, and therefore one's longitude, before reliable clocks were made. In the 18th century, astronomers recognized that there is a problem (La Hire, *Tabulae Astronomicae*, Paris 1707); the earth's shadow is over 100 km bigger than expected. The anomaly is bigger than can be explained easily with the atmosphere. One would think this is a simple geometric problem that is fully understood, but it is still under study!

Amateur astronomers are helping collect the necessary data. *Sky and Telescope* publishes predicted times for when the shadow is expected to cross 24 prominent craters, and they request people to email in their observed times. For the upcoming May 26, 2021, eclipse, the info is at *https://skyandtelescope.org/observing/useful-projects-for-a-lunar-eclipse/*. Up to 2011, their database includes 22,539 observations by 764 different people.



If the sky is clear between 02:52 and 05:48 on Wednesday May 26, I hope to add my name to the list!

The point is, we are a community of interesting and interested people. We set challenges for ourselves. Some are simple; some are very difficult. Get your telescope to track better. Process an image to show more detail. Understand black holes a bit more. Learn another myth of a constellation. And then we get together (virtually, these days) and support each other in these pursuits.

*Look Up,*

*Randy Enkin,*
*President@Victoria.RASC.ca*

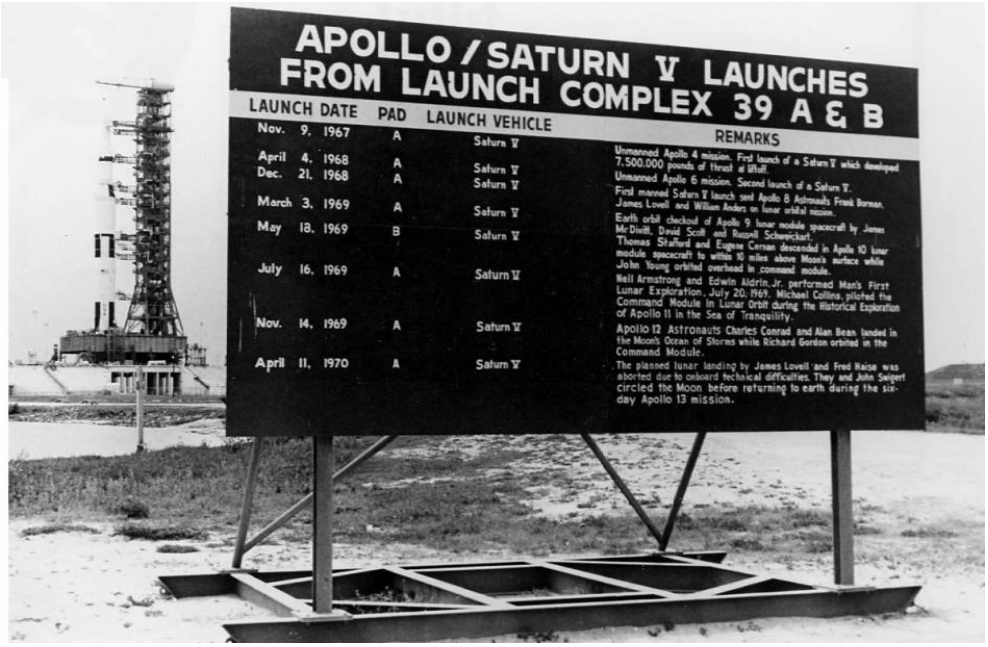
## Astro Café: Continues Online


The weekly social gathering of amateur astronomers on Monday nights, known as Astro Café, is now online. As with many groups, we're trying to find ways to still function as a Centre, 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 April was hosted by Chris Purse. Dorothy Paul gave a talk on *Galactic-scale Gas Wave in the Solar Neighbourhood - The Radcliffe Wave*; Dave Robinson showed some images from RASC Edmonton; Randy Enkin presented Jukka-Pekka Metsavainio's Milky Way mosaic over 12 years; David Lee gave an update about SIGs and the upcoming lunar occultation; Brendon Roy, from Thunder Bay, discussed his role on the RASC Board of Directors and planning issues for the Annular Eclipse; and Jim Cliffe ended the evening talking more about planning for the upcoming lunar occultation.

The second Astro Café of the month had John McDonald give a talk on *Leo the Lion Constellation: Galaxy hunting with just a camera (no telescope)*; Randy discussed the Daguerre crater; Reg Dunkley talked about the weather; Dave Robinson showed some more images from RASC Edmonton; David Lee and Brock Johnston went over imaging from the EAA group (Electronically Assisted Astronomy); David went into more detail about the upcoming Nu Virginis occultation by the Moon; Marjie Welchframe showed off her astronomy course certificate from Kalamazoo; Lauri Roche and Chris Purse discussed the *Moon at Noon* RASC program; Bill Weir talked about the news of a helicopter on Mars; and Alex Schmid announced his plans to reopen the RASC Library as a shut-in library, complete with pickups and deliveries.

The last Astro Café of April started with Chris Purse, Randy Enkin, and John McDonald discussing the evening's observing events, with Randy and John both live streaming from separate locations. Chris Purse gave an update from RASC National, with the focus on the much maligned membership registration system; John talked about the last cycle of Moon phases; Randy shared an Astronomy *XKCD* webcomic strip; Dorothy Paul talked about new All-Sky Map of Milky Way's Outer Reaches; David gave updates on occultations and special interest groups; Joe Carr talked about his new printer for astrophotography, led a brief discussion about printing, and shared some highlights from RASC National online events. The session concluded with Chris Gainor giving a preview of his upcoming talk to RASC Halifax Centre about amateur astronomers who have used the Hubble Space Telescope.




*Bruce Lane*


Apollo 15 training: Dick Gordon, the backup CDR, is standing next to the LMP seat of the 1g LRV trainer. May 12, 1971

## Special Interest Groups

### Getting Started in Astronomy

This SIG is led by David Lee (david@victoria.rasc.ca) and meet via Zoom on the 1st Tuesday of each month, at 7:30 PM. They recently had a virtual telescope walk so that people could get a feel for what different telescope types are good best suited for, followed by a session on what you could expect to see looking through different types of telescopes.

### Astrophotography

This SIG currently is led by John McDonald (john@victoria.rasc.ca) and meet via Zoom on the 4th Wednesday of each month, at 7:30 PM. They have members who are new to astro-imaging, those with some experience, and others who have been at it long enough to be able to offer help to the others. It's fair to say everyone in the group has learned things from the discussions. Topics have ranged from basic camera settings and processing, to remote imaging using *Slooh*, and a demo of the new *do everything* Asiair devise.

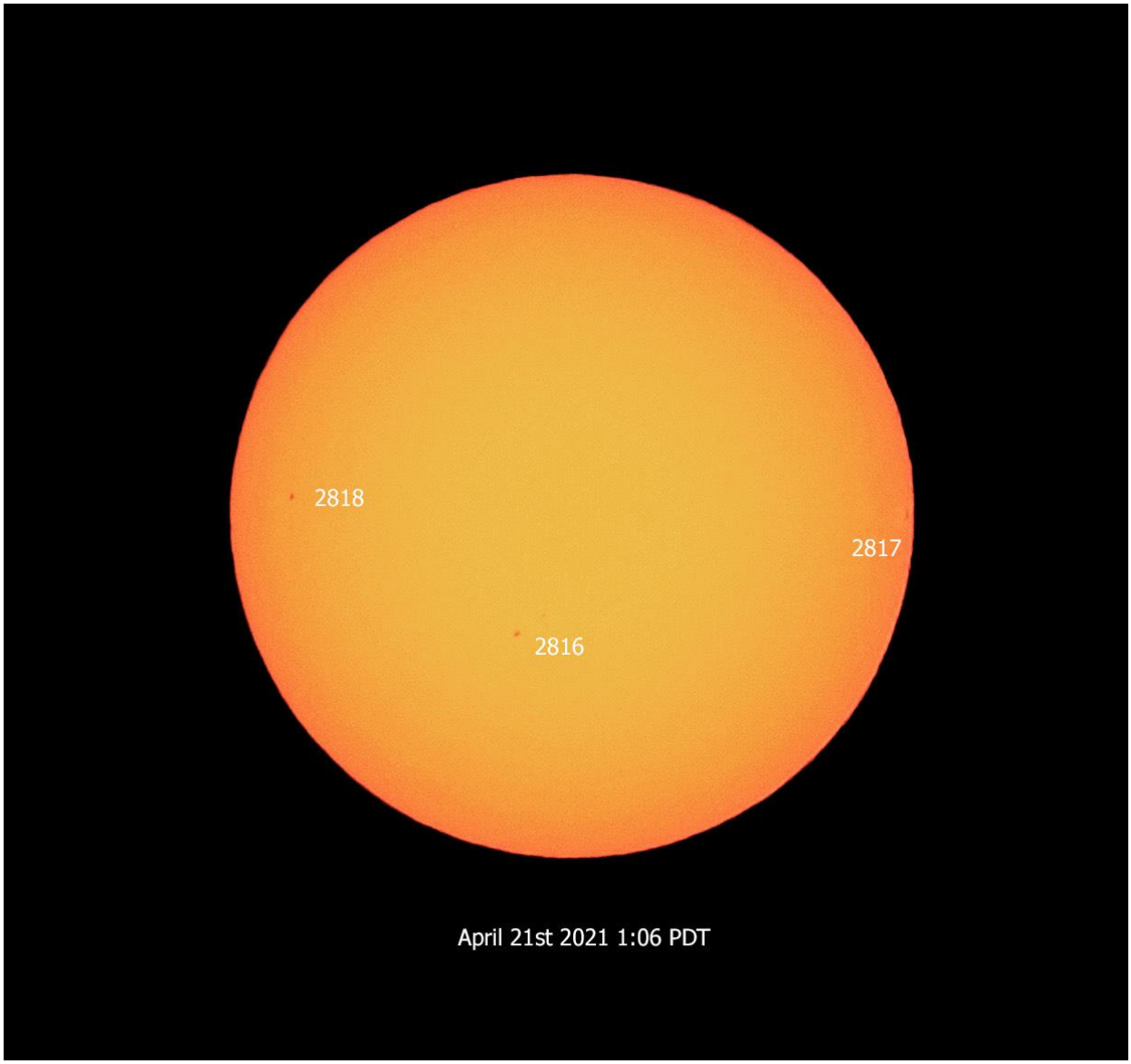
**Electronically Assisted Astronomy**

This SIG is led by David Lee (david@victoria.rasc.ca) and meet via Zoom on the 1st Thursday of each month, at 7:30 PM. Members of this group have been actively experimenting with Livestacking; to share what they are learning about equipment, software, and technique. The goal is to develop a workflow for broadcasting EAA sessions in support of this summer's virtual star parties. In addition, a library of object livestack videos is being built as a contingency for bad weather. The broadcasts will be a collaborative effort between the EAA group and students from the UVIC Astronomy Open House group.

**Astro Makers**

This SIG is led by Jim Cliffe (jim@victora.rasc.ca) and meet via Zoom on the 3rd Thursday of each month, at 7:30 PM. This SIG has met a few times to discuss the sourcing of parts and tools needed for Maker activities. It has been suggested that skills based workshops will be the focus of future meetings.

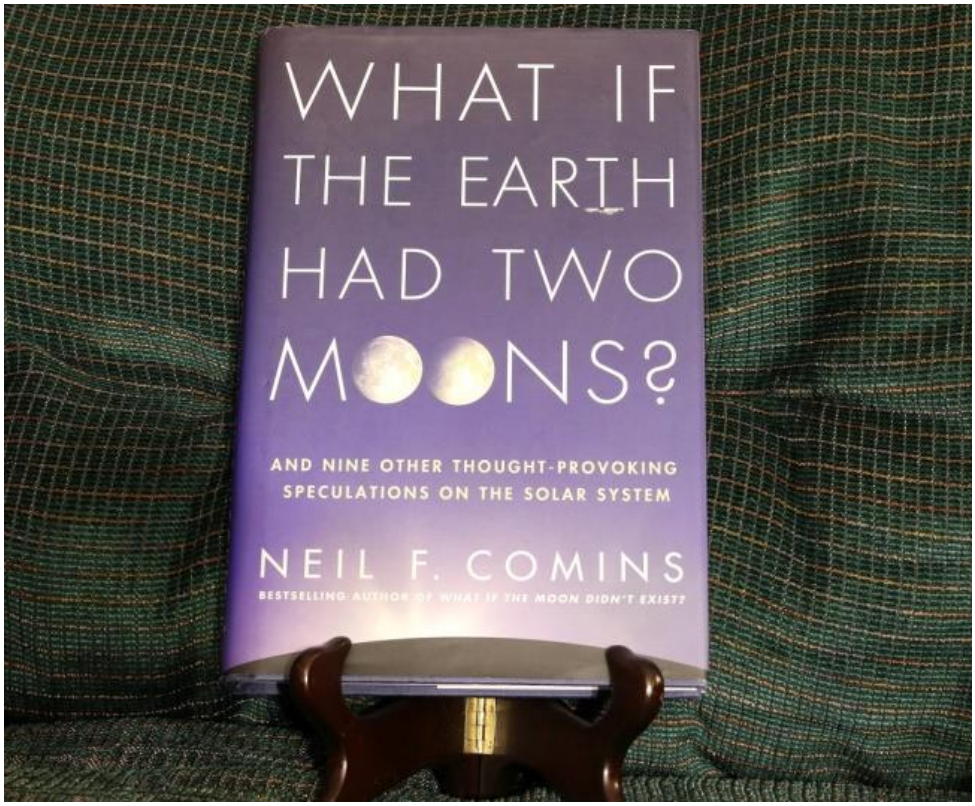
*David Lee and John McDonald*




Sunspots by David Lee, April 21, 2021.

## From the Library

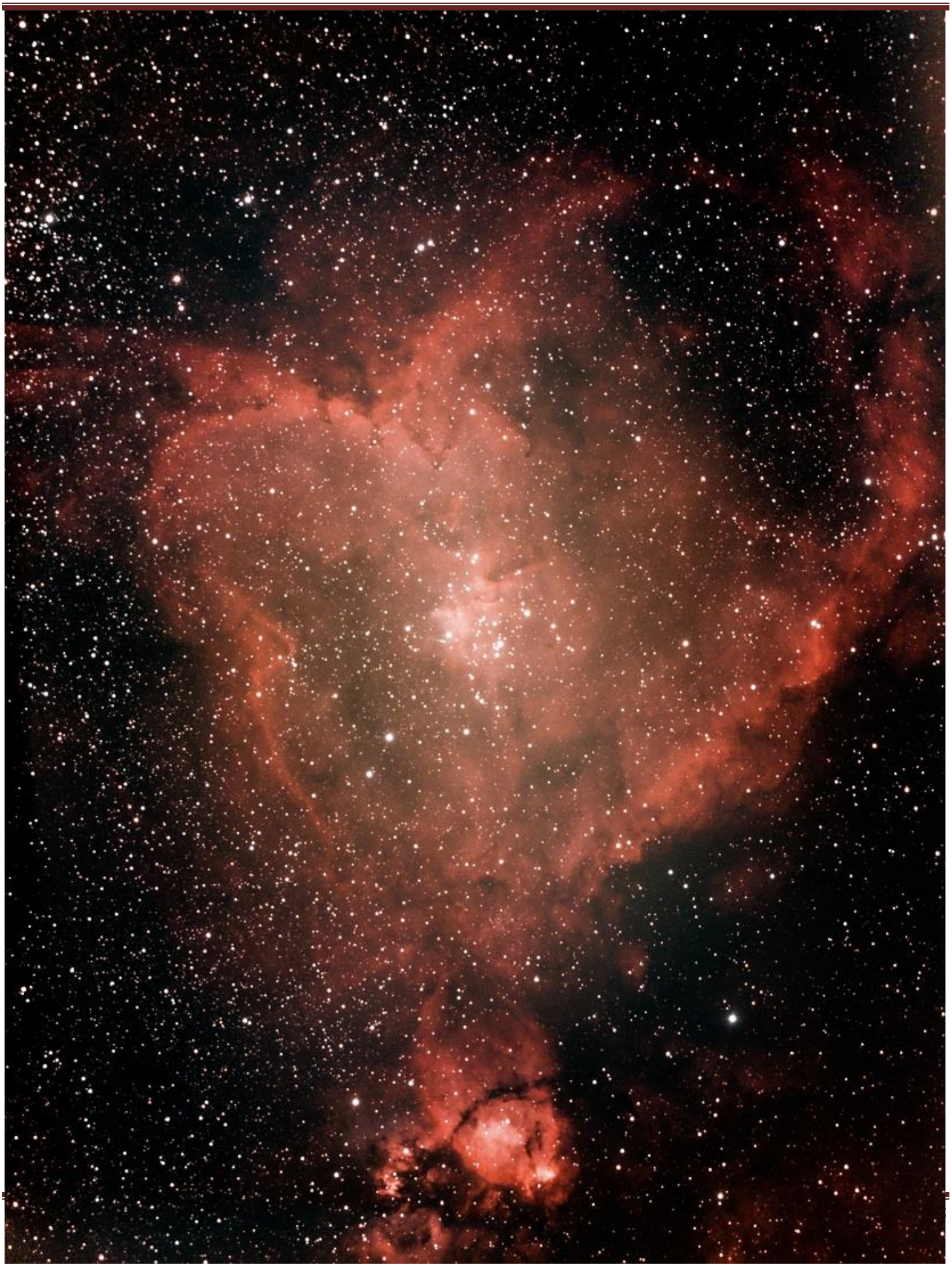
The RASC Victoria Centre Library is housed in the Astronomy Department's faculty lounge, located on the 4th floor of the Elliott Building, at the University of Victoria. It contains over 500 titles, curated by Alex Schmid, our RASC Victoria Librarian. Our library covers many aspects of astronomy: observing, 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. 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 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 *What if the Earth had Two Moons*, by Neil F. Comins. The author is both an astrophysicist and astronomer. Comins has published over twenty books and numerous magazine articles on the subject of astronomy, and is currently employed as a professor at the University of Maine. His website suggests that he is available for bookings to do talks.

This book sat on my bookshelf for a number of years, undisturbed beyond the occasional glance. It was certainly eye catching enough to get me to buy it, but the idea of a *what if* book about the solar system was always going to be a bit less appealing than all the other science books on my shelf that focused more on attempting to be less speculative, in fields that where absolute truths are difficult enough to find, without going out of your way to mix things up further. What I didn't appreciate, before reading this book, was just how much nuts and bolts astronomy was included in the ten speculative scenarios about our solar system. *What if the Earth had Two Moons* is worth reading just for the explanation of how the lunar tides work, which is often incorrectly understood, including by his own admission, by the author for many of his years as an academic. *What if the Earth had Two Moons* is very good read and it's available by order from your local bookstore.

*Bruce Lane*



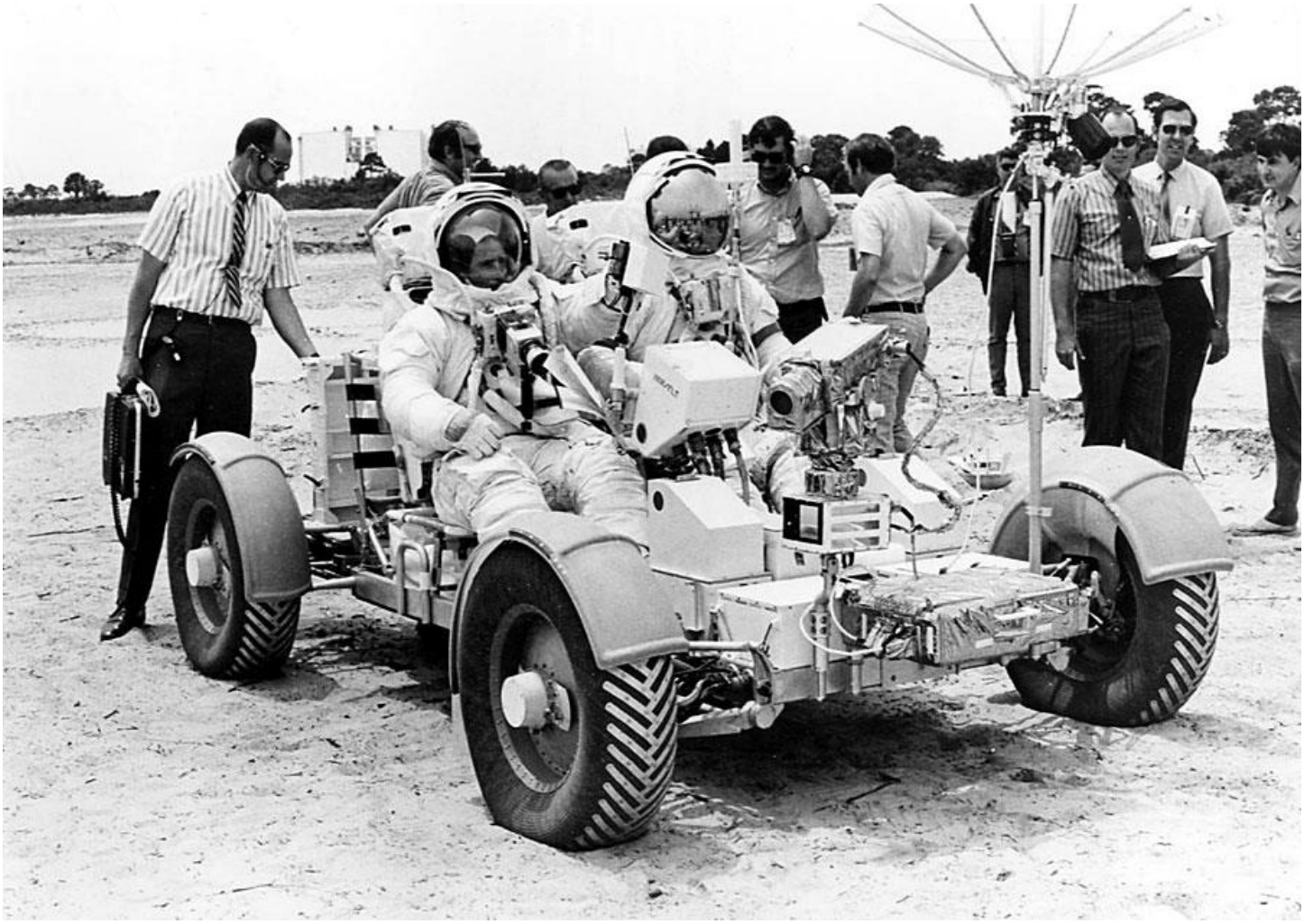
## Hill and Dale (Observing on the Island)

We enjoyed one of the best stretches of weather during April and are still getting a lot of clear skies well into May. Despite things not going well for the anticipated occultation, there were many opportunities to enjoy the night sky (*as seen by Lucky Budd's image of the Heart Nebula IC 1805 on the previous page*). There was even some decent solar observing; like when three sunspots were available on April 21st. It was remarkable enough, with three sunspots during a solar minimum, to have Sid Sidhu calling some solar astronomers about it. Members of the Victoria Centre were also taking part in RASC National's *Moon at Noon* program, to observe, sketch, and image the Moon in the middle of the day.

The current restrictions up on Observatory Hill, with four observers allowed at the VCO and another two set up at the Plaskett telescope parking lot, are the norm for the foreseeable future. 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, with both weekly scheduled and unscheduled sessions run by our MiCs (Members in Charge). 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) *membership@rasc.victoria.ca* and we'll see you up there on the Hill some night soon.

*Bruce Lane*



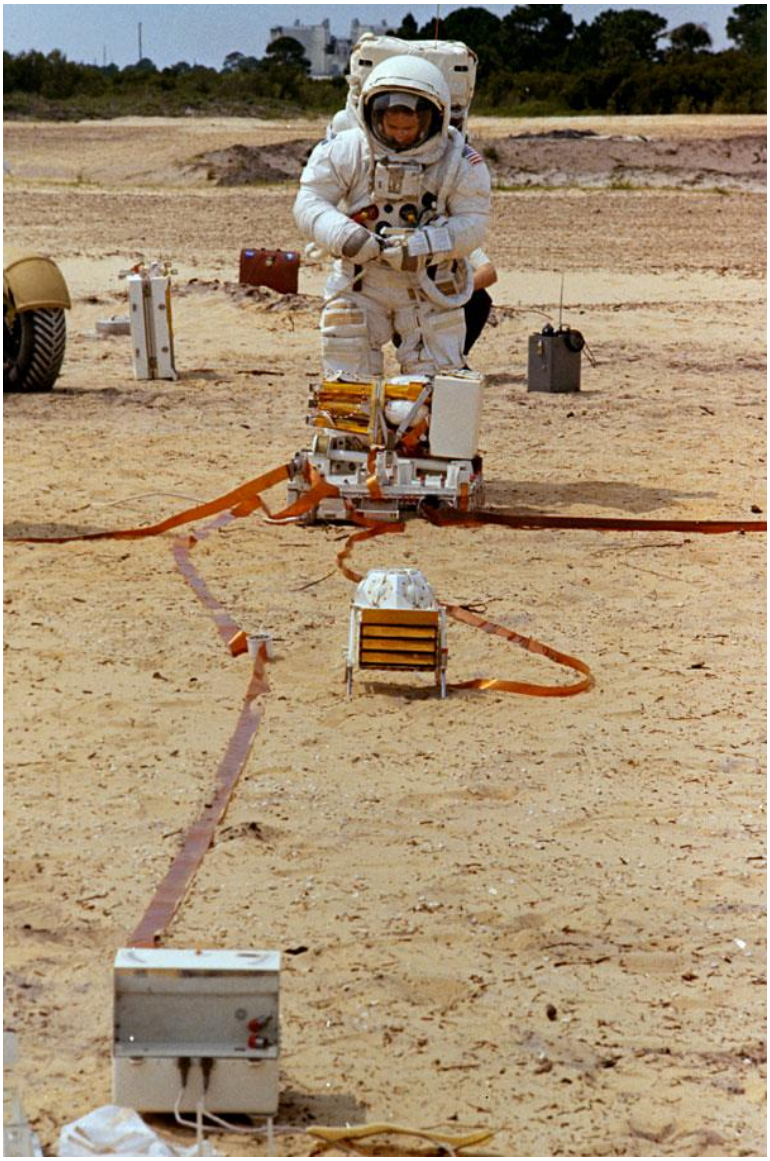
## Astronomical Term of the Month: Polar Scope

When using an equatorial mount, amateur astronomers and in particular astrophotographers will want their telescope to perfectly track objects across the night sky, while they observe and image them. Levelling and star alignments with a computerized mount will get you most of the way there, but at some point you're going to want to use a polar scope, especially for longer camera exposures.

Polar scopes are tiny telescopes that are either included as a component of an equatorial mount or sold as accessories to upgrade them. Most are located inside the mount pier, but some are externally attached to the mount, similar to how a finderscope is attached to a telescope.

When you line up your mount on the polar axis, to look north through the polar scope at Polaris, the reticle will have a super-imposed circle on which you adjust the position of the North Star. This is the moment that a lot of people suddenly feel lied to, because the North Star isn't perfectly north, but instead moves in a tiny circle around north over a twenty-four period. The trick now is to know exactly where on that circle it is at the time you're doing your polar alignment.

Some polar scopes include super imposed images of the Big Dipper and Cassiopeia constellations, for when you're in the northern hemisphere, so you can line them up without relying on anything else. For use in the southern hemisphere, it's a bit trickier without the southern sky equivalent of Polaris, but they'll often include a super-imposed image of the Crux constellation (often referred to as the *Southern Cross*) to help align the telescope. A lot of polar scope reticles don't have those constellation pictures to rely on. Instead, you're expected to use one of numerous websites and apps as calculators (*Ed. I prefer PolarFinder*). I personally prefer it without the constellation helper on the reticle, using the online tool to know the exact position of Polaris on the circle in more of a clock style method. Once you've done a proper polar alignment of your equatorial mount, you can now take those long exposures with your camera, which for many people was the main reason to get an equatorial mount in the first place.



This is also the stage of alignment when you're most likely to kick the leg of the mount, but you probably shouldn't include it in your routine, because it means having to start the process over again. If you do a lot of polar alignments and even if you don't, at some point you or someone else is going to kick a tripod leg or bump into the telescope, when you're out under the night sky. Let's face it; humans aren't the most adept creatures at moving around in the dark. If you've ever had a cat, it likely wondered how you managed to live this long when you're such a klutz. Cats can be so judgy that way.

*Bruce Lane*

## In Closing

It's another International Astronomy Week during the Pandemic, so our connections are still being done online. Members of RASC Victoria, the FDAO, University of Victoria Astronomy Department, and staff at the Dominion Astrophysics Observatory made their preparations for one of the finer online events during these challenging times, which *SkyNews* will go into greater detail about in next month's issue.

At the time this was written, half of Canadians have had their first vaccination against covid-19, which is to say 90% of our Centre's members. Of them, a fair number are likely already in the que for their second dose. I recently got juiced up with some mRNA vaccine myself and like everyone else, immediately had to tell the world about it on social media. It's a topical subject these days. When you talk to people about getting vaccinated, it's a little like being on the Hollywood red carpet, in that everyone wants to know what brand you're wearing or in this case injected with. Some people are hesitant about some vaccines, but after looking forward to getting a needle for the first time in my life, I was enthusiastically taking whatever they had on tap without complaint. Sputnik V? Let me just roll up that sleeve for you. Since my vaccination, I've taken to counting time by hours of antibodies building in my system. It doesn't mean an end to the cycle of excessive handwashing, social distancing, and mask wearing. It doesn't mean going on vacation this holiday weekend to help undo a lot of work and put more stress on our healthcare system. What it does mean though is that we're another step closer to returning to some sense of normality a little bit sooner and a little less later.

In the next couple of months we're headed for warmer weather, but an ever increasing amount of daylight each day. It's great for gardening, especially for the weeds that want to grow there, but bad for most astronomy. While solar astronomy might be just the thing to get a person through the nights of diminished darkness, we are continuing to emerge from the solar minimum of 2019 and still a ways away from the solar maximum in 2025, so there likely won't be a lot of sunspot activity to look forward to. The Moon and planets are a bit more forgiving about the need of total darkness for observing them, so that might be a better option. I hear RASC National has some great observing programs for the Moon, if you're looking for some structure to keep you focused as an amateur observer, in these times of solitude.

*Bruce Lane: SkyNews Editor*

## Photography Credits

Cover: Markarian Chain by Lucky Budd, Apr 16, 2021. Taken from my back yard with my 8" Edge HD on Evo Mount with hyperstar3 and no filters with an ASI294MC pro. 260 lights, 50 flats and dark flats, 20 darks, stacked in APP and played with in Lightroom. Pretty cool! I see 27 galaxies in this image!

Page 2: Crop of Bruce Lane (SkyNews Editor) at 2013 RASCal Star Party in Metchosin, by Chris Gainor

Page 2: Apollo 15 training, Dave Scott practices with the drill at the Cape. The buried can probably contains material with properties closer to lunar regolith than Cape sand. The drill-stem rack is at the lower right. As shown in a detail, Dave has a Universal Handling Tool (UHT) attached to his waist-mounted yo-yo. A yellow loop of wire attached to the drill can be

used to put the drill on the ground, handles down, when not is use and to pick it up again. Note, also, the curvature of the spiral binding of Dave's checklist. Scan by J. L. Pickering. Courtesy of NASA.

Page 3: Randy Enkin (RASC Victoria President) with Sextant, Feb 20, 2021, by Eva Bild.

Page 3: Super Moon over Breakwater, by Randy Enkin, Apr 26, 2021. Image was taken, while attending Astro Café via live stream.

Page 4: Photograph and Design of Astro Cafe Mug, by Joe Carr

Page 4: Apollo/Saturn V launch statistics board, with the Apollo 15 Saturn V on pad 39-A in the background. Image filed 14 May 1971. Scan by J.L. Pickering. Courtesy of NASA.

Page 5: Apollo 15 training, Dick Gordon, the backup CDR, is standing next to the LMP seat of the 1g LRV trainer. He is examining his cuff checklist during a training exercise at the Cape. Note that the map in front of him shows a training traverse. The box-like object on the post by his left hand is a mock-up of the 16-mm DAC and the low-gain antenna can be seen on the corresponding post on CDR's side of the Rover console. This photo also gives a clear view of the OPS actuator on the side of Dick's RCU and of his Hasselblad camera. Image filed 14 May 1971; probable date 12 May 1971. Jim Irwin mentions exercises of this type in the discussion following 120:06:38. Scan by Ed Hengeveld. Courtesy of NASA.

Page 6: Posed Book, "What if the Earth had Two Moons", taken in Editor's home on July 15, 2020, by Bruce Lane

Page 7: Sunspots, by David Lee, April 21, 2021. I caught a white solar image with the Pronto but I found it difficult to focus sharply. The Baader Astrosolar is a lot sharper but I was using the glass Thousand Oaks filter. For a single frame I would not expect it to be that sharp but you can see the 3 main areas.

Page 8: Heart Nebula (IC 1805) by Lucky Budd; April, 2021.

Page 9: Apollo 15 training, Jim Irwin (left) and Dave Scott drive the 1-g trainer to the 'rock pile' for an EVA time line study. Image filed 14 May 1971. Scan by J.L. Pickering. Courtesy of NASA.

Page 10: Apollo 15 training, Jim Irwin works at the Central Station during a training exercise at the Cape. Jim is about to remove and deploy the Lunar Surface Magnetometer, with its distinctive gold arms, which is still stowed on the top of the Central Station. The short instrument about halfway between the Central Station and the bottom of the picture is the Solar Wind Spectrometer (SWS) and the instrument at the bottom of the picture is the Heat Flow Electronics (HFE) package. The ribbon cable going out of the picture to the right connects the Passive Seismometer Experiment (PSE) and the cable going out of the picture to the left connects the Radioisotopic Thermoelectric Generator (RTG). The green box behind Jim to the right is probably a communications unit. The Laser Ranging Retro-Reflector is at top left next to the front wheel of the one-g LRV trainer. Scan by J. L. Pickering. Courtesy of NASA.

Page 11: "Blacky" the Black Astralorp Chicken by Bruce Lane; May 17th, 2021.

Page 13: Apollo 15 training, Jim Irwin (left with raised visor) and Dave Scott sit in the back of a truck as they prepare to return to the KSC crew training building at the conclusion of an outdoor EVA training session. 11 May 1971. Scan by J. L. Pickering. Courtesy of NASA.

**Call for Article and Photo Submissions for the June Issue**

SkyNews is looking for submissions of astronomy photos and articles for the June issue of our Victoria Centre's magazine. Send your submissions to editor@victoria.rasc.ca

## RASC Victoria Centre Council 2021

| Director Positions | Name | Email |
|---|---|---|
| Past President | Reg Dunkley | pastpres@victoria.rasc.ca |
| President | Randy Enkin | president@victoria.rasc.ca |
| 1st Vice President (Acting) | Sherry Buttnor | vp@victoria.rasc.ca |
| 2nd Vice President | Marjie Welchframe | vp2@victoria.rasc.ca |
| Treasurer | Deborah Crawford | treasurer@victoria.rasc.ca |
| Secretary | Barbara Lane | secretary@victoria.rasc.ca |
| **Officer Positions** | | |
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| Technical Comm Chair/Sys Admin | Matt Watson | admin@victoria.rasc.ca |
| Skynews Editor | Bruce Lane | editor@victoria.rasc.ca |
| Public Outreach | Malcolm Scrimger | outreach@victoria.rasc.ca |
| Schools Program | Sid Sidhu | schools@victoria.rasc.ca |
| Telescopes | Sid Sidhu | telescopes@victoria.rasc.ca |
| National Representative/Pearson College Liaison | Bill Weir | nationalrep@victoria.rasc.ca |
| National Representative | Sherry Buttnor | Nationalrep2@victoria.rasc.ca |
| Light Pollution Abatement | Dave Robinson | lighting@victoria.rasc.ca |
| Membership Coordinator | Chris Purse | membership@victoria.rasc.ca |
| Observing Chairperson | Jim Stillburn | obschair@victoria.rasc.ca |
| Website Content | Joe Carr | web@victoria.rasc.ca |
| NRC Liaison | James di Francesco | |
| FDAO Liaison | Laurie Roche | |
| **Members at Large** | Jim Hesser | David Lee |
| | Chris Gainor | John McDonald |