SKYNEWS

Lunar Eclipse Penumbral Phase May 15 2022 ©2022 David Lee

Super Blood Flower Clouds

On the evening of May 15th, amateur astronomers got the opportunity to witness a lunar eclipse. As with all astronomical events, the weather has a lot to say about whether or not we get a good view of other objects in our solar system and beyond. I seem to recall three outstanding lunar eclipses in the last decade and a larger number of events that were somewhat less than outstanding. Despite the bleak weather forecasts, a lot of us at least went through the effort of preparing our astronomical instruments and gear, before canceling our evening outing.

For those who soldiered on, in an attempt to wait out the bad weather and catch a glimpse of the lunar eclipse, they did catch that glimpse. Lunar eclipse watching in Greater Victoria more than not is an Aristotelian tragedy, where you are confronted by fear (wet optics) and pity (clouds), before coming away with some kind of catharsis (experience or data) for your efforts. A number of RASCals on the South Island recorded their lunar eclipse experience for the evening.

Chris Gainor was out in Sidney and in his words: "*The forecasts of clouds and rain for eclipse night governed my expectations for the evening, but I looked out the front window in Sidney several times around moonrise in hopes of finding a break in the clouds. I had no plans to take any photos, even if the eclipsed Moon did appear. Shortly after 10:30 pm, long after I had given up thoughts of seeing anything that evening, my wife Audrey told me that she could see the Moon from her office window. Since I thought I might be the only RASC Victoria member to actually see the eclipse, I decided to grab my camera to document the event* (seen above)*. Outside I experienced some gentle rain, while the partially eclipsed Moon darted between breaks in the clouds. I took this photo around 10:39 pm. Happily, others did catch the eclipse at about the same time.*"

David Lee set out for the urban star park at Cattle Point, but then weather happened: "*Many of us had all but given up on the recent total lunar eclipse. Hopes of seeing a flower blood moon seemed remote, although many seasoned observers encouraged going out anyways. I had taken this approach and my equipment was ready to go out the door an hour before the event. The eclipsed moon would rise above the horizon line just before 9pm Victoria local time. I chose Cattle Point, a favourable site that I've used for many of my images of lunar eclipses. As the reports rolled in, we soon found out how specific your location needed to be in order to get even glimpses. My attempt failed as I was met with cloud near the horizon. Returning home as I unpacked, the Moon emerged through the parade of clouds. I'm not sure if the blood moon was responsible for the bronzy glow of the surrounding sky.*"

Nathan Hellner-Mestelman (*seen right*) spent the lunar eclipse at the home of probably the most enthusiastic Moon observer I've ever met: our RASC Centre President, Randy Enkin. According to Nathan: "*We set up on Randy's porch and were hoping (we do a lot of hoping as astronomers, don't we) that the clouds would clear around moonrise, to show a fully-eclipsed moon. Unfortunately, that didn't happen (not that I was expecting it to). I did have a list of crater timings to fill in and entered the first box as [rain] [all the time]. Luckily, there was a break in the clouds around 10:20 pm, conveniently where the moon was, that lasted for around 40 mins. It allowed for viewing of the second-half partial phases from around 70% to 20% eclipsed. We got some crater timings down, so at least we can say we got data! I also managed to get some images with my Dobsonian and iPhone. No totality, sadly, but hey – there's always November (knock on wood).*"

For those willing to stick it out and perhaps endure a bit of rain, they were rewarded with at least a few moments of the lunar eclipse, despite the challenging conditions. We'll do this again on the very early morning of November 8th (just after midnight), where we'll hopefully have some nicer weather to view this astronomical wonder.

Bruce Lane

Lunar Eclipse, May 15th, 2022; by Nathan Hellner-Mestelman.

Editorial Remarks

The Royal Astronomical Society of Canada just wrapped up our National General Assembly a few days ago and it was an enjoyable event for those who took advantage of the online experience. Everyone who registered is even getting a swag bag in the mail at some point in the near future. The GA was once again a virtual experience, owing to the global pandemic, and given the state of the airline travel these days, a lot of people were saved a lot of grief at airports. It's not always easy to attend all the lectures and events you want to when you're working through most of the weekend, especially when the General Assembly is on Toronto time. Hopefully, we'll get a chance to see any of the talks and tours we missed, when RASC National makes them temporarily available for those who registered.

I really enjoyed the tour of the SNOLAB (Sudbury Neutrino Observatory Laboratory). SNOLAB is one of those places you're extremely unlikely to ever get the chance to wander around in unless you're employed there, due to the delicate nature of the work being done and the fact that it's located at the site of an active mining operation. The pressurized scientific facility is located 2km below the entrance to the Creighton nickel mine in Sudbury, Ontario. This underground laboratory is prominently featured in the award winning, Canadian science fiction series *The Neanderthal Parallax*, written by Robert J. Sawyer. For a while, you could have said that there was nothing like this site anywhere else in the world, but a dozen year ago, China constructed the Jinping Underground Laboratory at a hydro-electric dam. Both facilities examine neutrinos, search for dark matter, and conduct a number of other experiments.

In this issue of *SkyNews*, we'll have more recaps from our Centre's activities, an update on NASA's progress to getting new spacesuits, an article about horology and the space program, 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 June

This week, the citizens of the Earth were given a wonderful present. The Gaia Data Release 3 was publicized at 9 UT, June 13. And yes I was awake at 2 in the morning to watch the event. The Gaia satellite has been mapping 2 billion (!!!) points of lights in the sky – stars, galaxies, quasars, and solar system objects. They are measuring positions, distances, motions, colours, and spectra. For an Astro Café talk I prepared about the Gaia Data Release 2, I displayed a plot of the number and angular precision of catalogued stars. From the Hipparchus' catalog of 1000 stars in 150 BCE to the best Earth-based collections from last century, there was a continuous but slow improvement. But with space-based measurements over the last 20 years, the catalogs have improved by orders of magnitude! And Gaia should continue collecting data through to 2025 to continue this trend.

The branch of amateur astronomy pejoratively labeled "*armchair astronomy*" sounds very passive, but we delight in the personal journey to discovery, which the professional astronomers afford us by collecting and analysing these extreme data sets. One of my passions is following the trajectory of knowledge from the early astronomical observations to the present. For example, I love to learn how the first stellar spectra measured in the 19th century led to Annie Jump Cannon's stellar classifications (*Only Bad Astronomers Forget Generally Known Mnemonics*), leading to the Hertzsprung-Russell colour-magnitude diagram, and further leading to amazing insights such as the age of stars. And now such analyses can be extended to hundreds of millions of stars with the public release of the Gaia data.

The Gaia mission is akin to a gothic cathedral. It is a huge edifice, erected with major societal investment that was accomplished by many, many ordinary people who each do their small part. This edifice is a public good which inspires, and makes us bigger and better human beings.

Look Up,

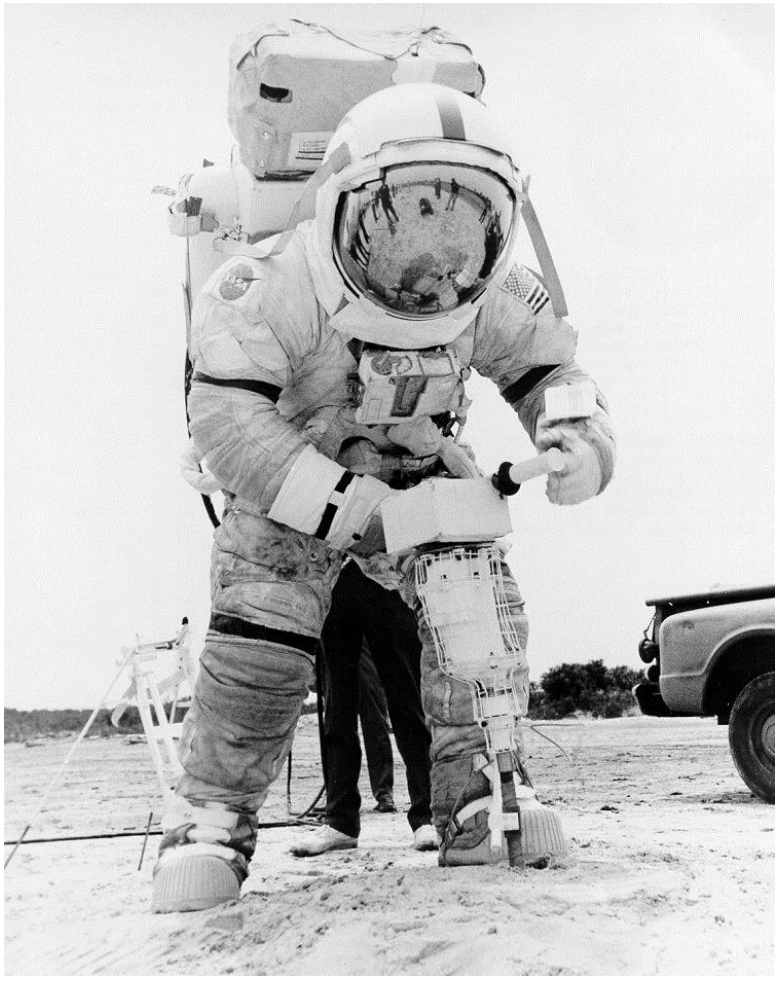
Randy Enkin, President@Victoria.RASC.ca

Astro Café: Continues Online

The weekly social gathering of amateur astronomers on Monday nights, known as Astro Café, has been continuing online. As with many groups, we were trying to find ways to still function as an astronomy society, without meeting in person, but that's changed now with hybrid sessions. Now we have dual hosts, one handling the in-person side and another dealing with the virtual experience. Members are posting their astrophotography, short articles, as well as links to astronomy stories from the Internet. You can access the *Virtual Astro Café* at: https://www.victoria.rasc.ca/astronomy-cafe/

The first Astro Café of May was the second hybrid event hosted from the Fernwood Gonzales Community Centre, while simultaneously being attended online. David Lee talked about Astronomy Day and upcoming Special Interest Group meetings. Randy Enkin introduced the winners of the RASC awards at the Vancouver Island Science Fair: Beata Ariana-Minniti (Thermoelectric Generator for Bus Stop Lighting) and Nathan Hellner-Mestelman (Lower CubeSat orbit could Protect Space Infrastructure from Collisions with Space Debris), who both showed their presentations from the science fair. John McDonald showed some images created from data take by Garry Sedun, at his observatory in Arizona; Randy Enkin talked about lunar eclipse crater timing; and Chris Gainor gave an update on the James Webb Space Telescope.

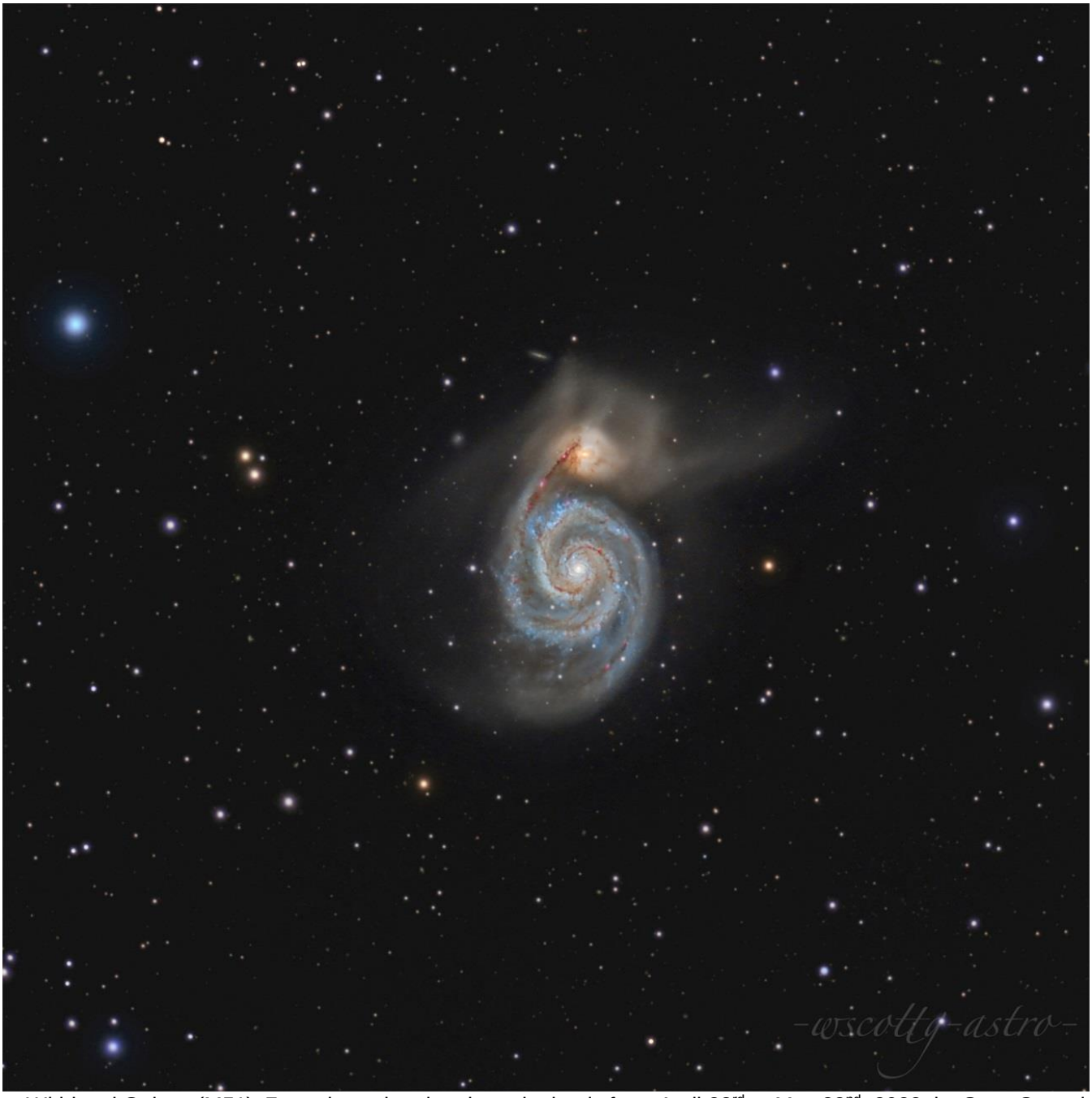
The next Astro Café was hosted by Chris Purse. Laurie Roche and David Lee gave a debriefing on the Astronomy Day event; Randy Enkin and John McDonald revisited the M33 Triangulum Galaxy image that was shown the previous week; Chris Gainor gave another James Webb progress report; and Randy Enkin talked about the upcoming Special General Meeting to update our society's bylaws and the need for more volunteers for Astronomy Café. Lauri Roche wrapped up the evening, discussing upcoming *Summer Saturdays* at Observatory Hill and the RASC National General Assembly (June 24-27).



The third Astro Café did double duty as a RASC administrative meeting, to present and vote on updates to our bylaws. Lauri Roche discussed upcoming *Summer Saturdays* hosted by the FDAO up on Observatory Hill; Janeane MacGillivray (Nanaimo Astronomy Society) thanked RASC Victoria for posting their president's presentation on our RASC Victoria YouTube channel and for David Lee's upcoming presentation for Nanaimo; and lunar eclipse reports were given by David Lee, Randy Enkin, Nathan Hellmen-Mestleman, Dave Robinson, and Chris Gainor. Dan Posey discussed the Plaskett data and showed some images; Bruce Lane talked about SkyNews magazine; and Randy Enkin gave a presentation about the image of the event horizon of the black hole at the centre of our galaxy.

For the last Astro Café until September, things started off with David Lee talking about the PixInsight workshop he attended, his presentation to the Nanaimo Astronomy Society about the reopening of the Kitt Peak Observatory, and mentioned the telescopes at the Victoria Centre Observatory and those available for loan (on behalf of Sid Sidhu). Ken Atkinson discussed a magazine article about a *Zooniverse* citizen scientist project; Randy Enkin talked about upcoming amateur astronomy events and gave a presentation about a meteor shower happening that very night; and Lauri Roche talked more about the RASC General Assembly and the FDAO *Summer Saturday* events on Observatory Hill. Nathan Hellner-Mestelman wrapped things up with short presentation of his Galactic Poster, showing the Earth relative to our place in the solar system, galaxy, and the Universe.

Bruce Lane



Whirlpool Galaxy (M51), 7 sessions shooting through clouds from April 23rd to May 22nd, 2022; by Scott Garrod.

The Hamburger Galaxy (NGC 3628), May 2022 by Lucky Budd

Special Interest Groups

Getting Started in Astronomy

In June, the beginners program resumed its regular session of reviewing constellations, this time with Virgo. Home to the Virgo Cluster and the Markarian Chain, there was a lot of discussion about galaxies and those that would be visible in smaller telescopes. There was discussion about ad hoc observing sessions during the summer, perhaps at Cattle Point and maybe at Island View Beach. The constellation program resumes next month, with Marjie leading discussion on the Sagittarius constellation. For more information about this group, please contact David Lee at *david@victoria.rasc.ca*.

Astrophotography

At the last SIG, Brock gave an excellent presentation on image formation. In the July SIG, we will welcome Casey Good (Kitt Peak Observatory) to talk about his imaging setup and workflow. Casey offers courses through Kitt Peak and is an accomplished astrophotographer, with a number of APODs (NASA Astronomy Picture of the Day) to his credit. For more information about this group, please contact David Payne at *vp@victoria.rasc.ca*.

Electronically Assisted Astronomy

David Lee gave an update on the maintenance of the CPC telescopes at the Centre of the Universe. The intent is to restore their function, to enable the EAA initiative at FDAO *Star Parties* this summer. For more information on this group, please contact David Lee at *david@victoria.rasc.ca.*

Makers

The Makers SIG is open for business to discuss member projects and to answer questions associated with the repair and development of astronomical equipment. For more information about this group, please contact Jim Cliffe at *jim@victora.rasc.ca*.

David Lee

Suit Up!

There was some exciting news in space exploration this month! Well there was some exciting news in aerospace. All right, there was some interesting news about NASA wrapping up their competition for who was supplying their next spacesuit. After the failure of the xEMU in-house program to replace the aging spacesuits from the shuttle program for the upcoming the Artemis missions, NASA was ready to move on. xEMU wasn't the first program to replace the shuttle era spacesuits. It was just the latest to get cancelled.

It seemed like every facet of the xEMU was plagued by serious difficulties and many of them were by design. The problems of managing 27 different contractors to build 1 suit bogged the whole process down in development hell. They had 2 different companies just working on the boots, begging the question of whether or not one vendor was making the right boot and the other the left boot. The xEMU program were also hampered by ever changing bureaucracy, with control of the project switching every few years, as administrations and programs changed hands. Another problem with creating two different spacesuits is that they have to be able to interface with the onboard systems of the International Space Station and Orion spacecraft. In the case of the ISS you have a moving target, with the systems in a continual state of evolving and upgrading, during the design process of the new suit. Suit designers also have to have the interface compatible with the eventual Axiom Space Station that is planned to replace the ISS. Things were a bit easier with regards to making something compatible with the Orion spacecraft, which is less of a *Frankenstein's monster* in space than the ISS. Between the runaway budget of the spacesuit program, far exceeding what it was supposed to cost, and the fact that it was unlikely to be ready for use in time for the missions it was designed for, the patience of NASA brass and stakeholders had been exceeded.

After the failure of the in-house programs, NASA put the contract out for competition between commercial vendors. NASA just wrapped up its private sector contest for the next space suits a few days ago and many people are surprised by the approach that they're taking. A lot of us are familiar with idea of renting a suit for graduation or weddings, but NASA is taking that to a new level and definitely not doing it in a way to save money. The rental suits are going to be made by Axiom Space and Collins Aerospace. There is also an opening for additional spacesuits to be added by NASA, given the need to match spacesuits with spacecraft. NASA have contracted SpaceX to conduct a moon landing with the Starship Gazer and SpaceX will almost certainly have their own spacesuits for that mission.

This NASA announcement about new spacesuits might seem to be a bit like talking about fall fashion before school resumes, but at the smallest unit of space travel, these are the personal spacecraft that will be worn onboard future incarnations of the International Space Station and take Humanity back to the Moon and beyond. We will no longer have to be content with just maintaining a tiny outpost in low earth orbit. The grandchildren of Apollo are returning to space, to fire the imaginations of the generations that follow them.

Bruce Lane

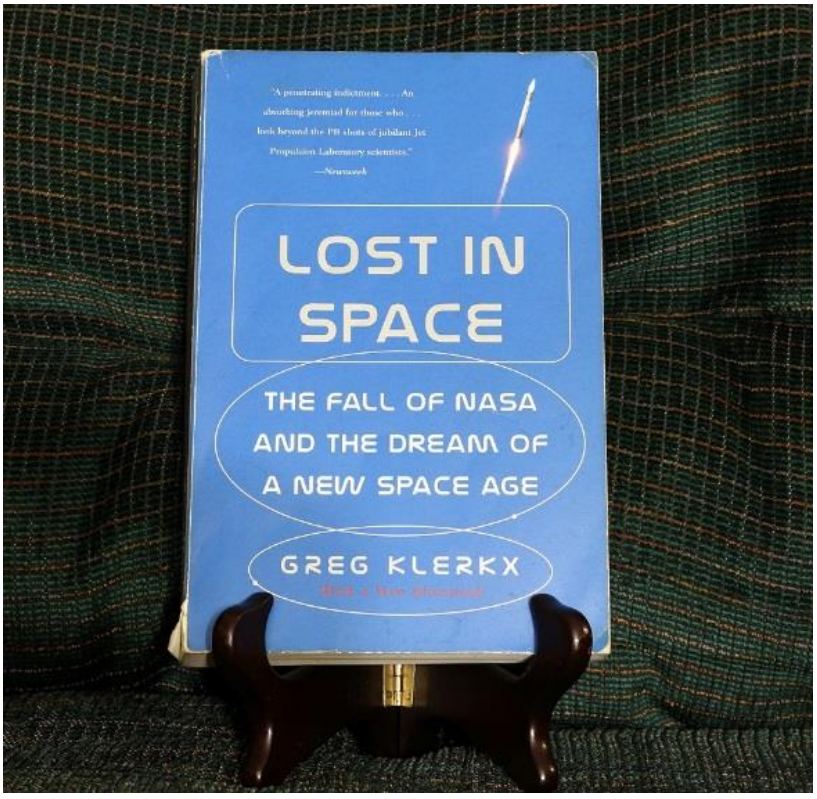
Moon, May 8th, 2022, by Lucky Budd

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 mostly 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 *Lost in Space: the Fall of NASA and the Dream of a New Space Age*, by Greg Klerkx. Klerkx was once the director of SETI (Search for Extraterrestrial Intelligence), and has had an award winning career in journalism and science/art advocacy. Since 2006, Greg Klerkx, along with Samantha Holdsworth, have been co-leading Nimble Fish: an organization that exist to be enablers, promoters, and developers of arts and culture in the United Kingdom.



If it wasn't clear by this book's title, *Lost in Space: the Fall of NASA and the Dream of a New Space Age* isn't a love story. A lot of it comes from the frustration of a space program tethered to low earth orbit, following a series of outstanding missions to the Moon. It's a condemnation of NASA's management and its tendency to favour select vendors (*let's call them Boeing and Lockheed Martin*) to the point where these venders are referred to as *the cousins*. It covers the interference that scuttled an American-Russian company taking over MIR as a private space station; the serious problems with the space shuttle program; and the promising careers of scientists crushed under heel of a bureaucracy struggling to find its way after the Apollo Program.

Daniel Goldinto's NASA 1993 philosophy of *faster, better, cheaper* always felt like NASA was trying find a way to still run a relevant space program, on a less than stellar budget than that of their Apollo Program predecessors. Some critics sarcastically referred to this motto as *cheaper, cheaper, cheaper*. *Faster, better, cheaper* is not a terrible thing to aspire to, but it's problematic when you apply philosophy to a technical process without quantifying what you mean. *Faster* can result in higher risk, due to reduced planning and testing. *Cheaper* can mean cutting corners, relying on computer simulators for testing instead of physically testing components, using less experienced or less qualified staff, and result in many promising projects suddenly ending due to running into an arbitrary budget line. *Better* then becomes a roll of the dice. Early on, the dice rolls weren't great, but they weren't horrible. Then in 1999, four out of five missions failed. The *faster, better, cheaper* policy was held to blame, but it there was a lot more to it. What was desperately needed was to apply some mathematics to quantify the logic of their philosophy, so the engineers would have had a system to work with that could be adjusted to create a higher mission success rate, instead of just being stifled by a penny pinching bureaucracy. When properly applied, philosophy really can be used for more than just figuring out whether or not chairs and tables exist.

In the *afterward*, updated in 2004 for my copy of this book, the author held out some hope with some encouraging signs of change he saw taking place in the aerospace industry. Mojave Aerospace Ventures' SpaceShipOne made several successful flights, resulting in them winning the Ansari X Prize. Also that year, President Bush Jr. announced that NASA was back in the Moon landing business. There was even some hope from the emergence of a new generation of space entrepreneurs, like Elon Musk, who might succeed where others had found themselves blocked from competing for NASA contracts.

Since then a lot has changed. While SpaceShipOne was retired a year after its first successful flight, the company behind it merged with Virgin Galactic to create a passenger ship to fly to the edge of space. During last summer's spectacle of billionaires in space, Richard Branson was among those on its first passenger flight. The promised new Moon landing program started off poorly, with a lot of flashy marketing and a lack of budget allocated to make anything happen in a timely fashion. It's been a long and rocky road, but we're now seeing the Artemis Program finally preparing to return to the Moon. Axiom Space is in the process of designing and building the modules of its commercial space station, which will merge with and then replace the International Space Station. Last month, Axiom private sector astronauts completed a seventeen day mission to the ISS and the company started construction of their facilities back on Earth. As for *the cousins*, NASA was put on notice by the Obama administration and told that there really are more than two vendors (*sometimes three when Northrop Grumman got in on the action*) to choose from whenever a major project is put out to tender. NASA put up a lot of resistance, but we're now seeing newcomers in the aerospace industry who are actually capable of doing things *faster, better, and cheaper* than their older rivals. *Lost in Space: the Fall of NASA and the Dream of a New Space Age* is an eye opening book that's well written and researched, and it's available by order from your local bookstore.

Bruce Lane

Witches Broom (NGC6960), May 21st, 2022; by Scott Garrod.

Hill and Dale (Observing on the Island)

May might have brought us shorter nights and longer days, but they were mostly cloudy, wet, and cold. It rained a lot, including on the night of the lunar eclipse. There were still a few evenings or portions of evenings available for observing and astrophotography, which RASCals like Scott Garrod took full advantage of (see above). It's hardly been ideal weather though for those of us trying to get some time under the night sky before the minimal darkness around the Summer Solstice. Other than those doing solar astronomy, for a lot of amateur astronomers the weeks around the longest day of the year are a good time to get outside to *touch the grass* for more than just setting up your optics.

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. 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, please 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

Space Time

On April 13th, 1970, an explosion aboard the spacecraft on route to the Moon, derailed the Apollo 13 mission and damaged the ship's systems necessary to sustain the lives of crewmen: Jim Lovell, Fred Haise, and Jack Swigert. The landing near the Fra Mauro crater and the opportunity to deploy all of the scientific experiments were lost. The Apollo 13 crew and Ground Control (as well as everyone applicable at NASA and their relevant vendors) were mobilized, with the focus now on bringing the crew home safely back to Earth.

With systems critically underpowered or damaged, astronauts had to rely on backup Omega Speedmaster wristwatches to time two critical engine burns: once to shorten their trip back home and the other to slow them down for re-entry. The first burn helped ensure they won the race against their failing life support systems. The second burn not only slowed them down, but also ensured that they entered the Earth's atmosphere at the right angle. Coming in at too steep an angle and they'd burn up, too shallow an angle and they'd bounce off the atmosphere, only to die in space. That critical 14 second burn was timed by Jack Swigert, using Jim Lovell's Omega Speedmaster chronograph. Lovell's watch was chosen because it was the one most recently serviced of the three, so he felt it would be the most accurate. The burn was good and astronauts successfully returned to Earth, ensuring that the Apollo program didn't end in disaster.

It was never confirmed whether Swigert used the chronograph (stopwatch) function or counted the seconds on the main dial, but given that the astronauts were trained to use the chronograph, it's almost certain he used the chronograph function. Jack Swigert (*seen above*) also wore a Rolex *Pepsi* (GMT Master), commonly worn by American test pilots since 1954, on his other wrist. This has resulted in numerous people in the Rolex community suggesting he used the second hand on the GMT watch, which is also unlikely. A lot of the astronauts who wore second watches (often a Rolex) on missions had them set for Central Daylight Time in Houston, Texas. Dave Scott wore a second watch (a Bulova in his case) during Apollo 15 and wore it on the Moon, because he broke his Omega Speedmaster before he landed. After the Apollo 13 crew was back on terra firma, Swigert gave his Rolex to the CEO of Rolex, Rene Jeanneret, with a note of thanks. The watch became part of Jeanneret's collection and the head of Rolex returned the favour, giving Jack Swigert a Rolex Mocha GMT Master, with an 18 karat gold mount and bracelet. When Swigert posed for his official NASA astronaut photo in 1971, he was wearing the Rolex given to him by Rene Jeanneret. That watch was sold in an auction by the family estate in 2017 for over twenty thousand dollars. The Omega chronograph that Swigert wore during the Apollo 13 mission is currently the US National Air and Space Museum, along with Jim Lovell's Omega wristwatch: the one actually used to time that famous burn.

Some of the representatives of the top Western wristwatch manufacturers were likely a bit confused when they were first called on for a top secret procurement during the Cold War: Project Alaska. The contract for a new dive watch for navy divers certainly wouldn't have been handled by aerospace engineer and some of the specifications for this chronograph competition didn't sound like something you'd need in the Arctic. In 1965, Rolex, Omega, Longines, and Hamilton each presented their wristwatches to NASA for months of testing. The Hamilton offering was one of its military watches and immediately disqualified because it didn't have a chronograph. Of the remaining three entrants only the Omega Speedmaster successfully passed NASA's rigorous standards that included resistance for both extreme heat and extreme cold, surviving high and low pressures, and exposure to shock and vibrations. Even before the watch competition was held, Walter Schirra had worn his personal Omega Speedmaster while on his 1962 Mercury program mission in orbit around the Earth. The first Omega watches contracted by NASA were worn aboard Gemini 3 in 1965 by Gus Grissom and John Young. Later the same year Ed White wore his during the first American spacewalk during the Gemini 4 mission. John Young went onto command Apollo 16 and the first shuttle launch. Both Gus Grissom and Ed White were killed in the tragic fire aboard Apollo 1 in 1967.

The Omega Speedmaster was already routinely used by astronauts by the time humanity took its first steps on the Moon. Buzz Aldrin might have been the second human to set foot on the surface of the Moon, but his watch was the first one out the airlock. Due to problems they were having with the lander's onboard electronic timer, Neil Armstrong decided that it was best that one of their watches stayed on the lunar lander, to protect it in case the watch was needed as a backup timer for their take off and re-docking with the command module in lunar orbit. Neil Armstrong's watch is currently the property of the National Air and Space Museum, where its current status is either *on loan or in storage*.

Like many things in the life of Buzz Aldrin, the transfer of his Omega Speedmaster Professional to the government didn't go as smoothly as it was supposed to. Aldrin thought the right thing to do was donate his watch to the Smithsonian Institute. NASA contracted special couriers to collect and deliver the watch, which promptly went missing on route. What annoyed Buzz Aldrin most about the loss of the watch was that it resulted in NASA immediately demanding the return of all issued astronaut watches, depriving many of his companions of their treasured souvenirs from the space program. A lot of astronauts got agitated just at the thought of their watch going into the shop for maintenance and were insistent about getting the same one back that they flew with. NASA treating them as a temporary kit issue wasn't a popular move for pilots. The space agency got a bit heavy handed by threatening to withhold flight time on Northrop T-38 supersonic jet trainers to anyone not handing their issued mission watch back in. While any of these stray watches are still considered property of the American government, including any that astronauts kept as souvenirs, this changed in 2012, when the US passed a law that made any space memorabilia still in the possession of elderly astronauts from the Mercury, Gemini, and Apollo programs theirs to keep (with the exception of geological samples and space suits).

There have been numerous fraudulent claims over the years of people saying that they were in possession of Buzz Aldrin's *lost* watch, but they have all been dismissed as frauds. In one case, a claimant filed a legal case against the US government to demand that not only that his watch be declared his property, but to have the government support his claim of authenticity. *Finding* lost works or art or relics and turning around to sell fakes is an old con, long predating bits of saints sold to churches for their reliquaries. A number of living artists have also suffered persecution by con artists looking to flip a *lost work* at their expense, demanding they support their claim. Peter Doig, a Scottish artist famous for his paintings of Canadian landscapes, recently won a lengthy court case after being mercilessly persecuted for years by a claimant, who fabricated a criminal past of the painter, and then demanded he authenticate a forgery so he could cash in.

Orbiting up in the command module of the Apollo 11 mission, Michael Collins was also wearing a NASA issued Omega Speedmaster Professional. The fact that Collins often wore his Rolex Turn-o-Graph (forerunner of the Rolex Submariner), especially during mission training and then in his official *white suit* astronaut photo, is something the fine people at Rolex will never let anyone forget. Michael Collins was among those on hand for a banquet dinner in November of 1969, where Omega representatives presented nineteen astronauts, as well as some others associated with the Moon landing, with the first in the limited series of solid gold commemorative chronograph watches. Unlike the US president and vice-president, who were unable to accept the gifts, Michael Collins kept his until he died last year. The 18 karat gold Omega Speedmaster that Collins admitted to seldom wearing and only winding once a decade, sold at auction a few weeks ago for over three quarters of a million dollars to a wealthy collector who is no doubt over the Moon. That might seem like an obscene price for some space program memorabilia, until you realize that Paul Newman's Rolex Daytona sold for nearly $5.5 million.

On the other side of the *Iron Curtain*, the Soviets were also faced with having to kit out their cosmonauts with watches, but like their dive watches they were made in Russia. In 1961, Yuri Gugarin was launched into space with a Sturmanskie watch on his wrist. It wasn't specially made for the Soviet Space Program, but it was the same watch that was a special issue for pilots in the Soviet Air Force. Like the popular Vostok Amphibia dive watch, these Soviet military watches have taken on a more ominous tone due to events this year, after decades of being collected as Cold War kitsch.

Several Soviet cosmonauts were photographed wearing the same Rolex GMT watches that were favoured by many American pilots. Andriyan Nikolayev was photographed wearing his Rolex GMT in 1965, which was actually before any Americans wore them as astronauts. Other Soviet cosmonauts wore the Omega Speedmaster. Hans Widmer, from Omega, had a lot to do with these watches getting into the Soviet space program (*more about him later in this article*). During the 1975 handshake between the opposing mission commanders of the Cold War, after the docking of the Apollo and Soyuz capsules, both of them were wearing Omega Speedmasters. Not long after this historic meeting in orbit, the Soviets made the Omega Speedmaster the official watch of their space program, despite the fact that it was made in Switzerland.

The advent of smart phones was predicted to herald the end of wrist watches in society, but the increased interest in watch collecting (promoted by social media) and rise of conspicuous consumerism in recent years has seen a renaissance of the luxury watch market. In many jobs and outdoor hobbies, watches still have a lot of value as time keeping tools, where continually accessing your phone is either impractical or seen to be unprofessional. You certainly wouldn't want to be looking up at a paramedic, who pulled out their smartphone to time your pulse, only to see them scrolling through a bunch of social media notifications that were waiting for them. That cat video can probably wait until they deliver you to the hospital. At the same time, for a lot of people, wrist watches only exist as fashion accessories and there is a generational divide where many people are unable to read the time on a traditional watch face.

On several occasions NASA was pressured by domestic watchmakers to replace the Omega with a watch that was made in the USA. This resulted in additional lab testing by NASA, but none of these domestic brands managed to usurp the place of the Omega. For those seeking to own a representation of the watch from the lunar landings the primary focus is always going to be on the Omega Speedmaster. The 42mm classic *Moonwatch* has a hesalite crystal cover and higher dome over the watch face. Hesalite (acrylic) was chosen for the watch 'glass' because of it was less likely to shatter on impact, which could result in sharp debris floating around inside the spacecraft, causing collateral system damage. It's also less reflective, which has value in some of the extreme environments astronauts were working in. No matter what angle you view the watch face from, you get a clear view through the hesalite. The big downside to hesalite crystals (watch dial covers) is that they scratch easily. Anyone buying a watch with a hesalite crystal would be well advised to get a tube of Polywatch for scratch repairs. Some people use toothpaste, but that can cause additional scratches while trying to repair the hesalite surface or worse, it can get inside the watch. A lot of people prefer the *First Omega in Space* Omega Speedmaster, because it has a sapphire crystal that is less prone to scratches when worn by terrestrial owners who will likely never have the opportunity to wear them in space. While fragmentation can happen when the sapphire crystal breaks, it's significantly harder than the hesalite, so it's much less likely to occur. One problem with the sapphire crystal is that while the direct view of the watch face is sharper, it can be hazy when viewed from the side. There's also the *Sapphire Sandwich* model, with the mechanical watch movements of the watch made visible through an additional back sapphire crystal. A serious downside to all of these watches is that they cost as much as the more expensive apochromatic refractor telescopes available to amateur astronomers.

The biggest news in the watch market this year was the release of the Omega MoonSwatch on March 26th, with Swatch working together with Omega to create a series of much more affordable wristwatches, celebrating the space program and our solar system. There are eleven different models, representing the nine planets, the Sun, and the Moon. That's right, *nine* planets. It seems that the people at Omega and Swatch are well aware that Pluto has a lot of fans, and weren't about to have the *ninth planet* ignored. It's a contentious point for many, especially onboard the two Pioneer spacecraft, which are unlikely to get a golden plaque edit anytime soon.

The MoonSwatch is made using the same mold that is used to create the body of the Omega Speedmaster, but instead of metal it's made out of a composite material comprised of ceramics and bio-plastic. The battery cover on the back has a painted image of the solar system object that particular model represents, so unlike the Omega Speedmaster it's also not an automatic watch that's powered by your movements or by winding a spring. It comes with some astronomical information, included in a pamphlet, which has to be one of the more expensive ways to do astronomy public outreach. The marketing campaign for these

watches resulted in a frenzy, but given that you could only buy it at watch retailers and it wasn't available online, there was the equivalent of *Soviet bread lines* outside of watch stores and there wasn't nearly enough stock to meet the demand. After the backlash over their supply problems during the initial release, the Omega Watch Company made a statement that the MoonSwatches were by not planned as a limited release and that they would soon be available online. The first attempt at an online release was immediately halted, due to a lot of irregular bot activity. While some serious watch collectors feel that the MoonSwatch is a publicity stunt that devalues the Omega brand, it put Omega watches on the wrists of people who would have never previously been able to afford them, introduced watch collecting to a younger demographic, and created a lot of excitement in the industry.

Snoopy was made the official safety mascot of NASA, with the permission of Charles Schultz, after the tragic fire aboard Apollo 1. Schultz even had some of the *Peanuts* comics feature Snoopy in *astro-beagle* themed comic strips. The Silver Snoopy Award is a highly prized safety award *for service above and beyond*, chosen and awarded by the astronauts to NASA employees, contract workers, and vendors. After the Apollo 13 mission it was awarded to the Omega Watch Company for the Omega Speedmaster that timed their critical burns. The award was accepted by Hans Widmer, Omega's technical manager (not to be confused with the Hans Widmer who founded Omega). Surprisingly, Omega didn't put an image of Snoopy on any of their watches until a 2003 release of their Speedmaster *Speedy-Snoopy* model. The Snoopy award continues to be an important tradition at NASA. When the Artemis Program returns to the Moon, there will be a Snoopy plush toy aboard, wearing an Orion spacesuit costume, acting as both mascot and gravity indicator.

Bruce Lane

In Closing

June started off with the same bad weather we've become accustomed to for the first week, hinting at warmer weather as we made our way into the second week. I've always gone with the date of June 20th for when I feel confident about putting my winter clothes into storage, other than the ones used for going outside under the night sky, but the last few years have made me want to keep more cold weather clothes handy for a bit longer into what are supposed to be the warmer months. We got a sudden jolt of summer weather at the end the month, but trusting that we don't get another cooler than usual July is probably asking a bit too much.

A lot of star parties across Canada aren't coming back this summer, either due to organizational difficulties or concerns about the continuing global pandemic. The Cowichan Valley Starfinders are still planning to go ahead with the return of their annual star party this year, on August 26-27th, at Bright Angel Park. The RASC Victoria Council has moved to suspend having our own star party, in favour of supporting the Cowichan Valley Starfinders for their star party, both for this year and in the years that follow. On the BC Mainland, the Mount Kobau Star Party is scheduled for August 20-28th. There has even been some talk from the Nanaimo Astronomy Society about hosting their own star party. If you are planning to travel to a star party this summer, please ensure you keep informed on the status of wildfires around your travel route and destination.

On the Island, the FDAO *Summer Saturday* public outreach events are continuing to be held on Observatory Hill (July 9th, 16th, and 23rd). These Saturday nights, at the Dominion Astrophysics Observatory and Centre of the Universe public outreach facility, are free of charge but do require event tickets (available online) to ensure crowd capacities are not exceeded. RASC Victoria Centre is planning to have a tent and tables, as well as solar observing, for this year's Saanich Fair at the beginning of September. Given we're at the *choose your own adventure* stage of government health mandates, make good decisions about hygiene and personal protection, when you attend public outreach events and star parties. Nobody wants any of these wondrous gatherings to be remembered as super spreader events.

As Canada Day will soon be upon us, I'm reminded of the fact that Canada is a nation we spend more time being worried about than proud of. Between the fragile state of our federation's institutions and democratic values, along with our proximity to the world's largest super power, there's a lot to be concerned about. With eyes on both sides of the border glued to the January 6th Hearings, Americans are getting to experience fear and apprehension about the future of their own nation, due to a failed coup. We don't even have the luxury of being smug about it on our side of the border, after the conspiracy theory fuelled protests this year, taking place across our country, demanded the removal of our own democratically elected government. Another protest, again demanding the removal of our elected government, has been planned for Canada Day in Ottawa. For Canadians, they should take some time this Canada Day to ask some difficult questions about what is going on in our democracy that we have largely taken for granted and to reclaim the flag of our nation that has become tarnished by anti-science protesters, both at home and abroad. During these troubled times, the signoff from CBC Radio's *Dead Dog Comedy Hour* comes to mind: "*Stay calm! Be brave! Wait for the signs!*".

Bruce Lane: SkyNews Editor

Photography Credits

Cover: Lunar Eclipse Montage, May 15, 2022; by David Lee.

Page 2: Lunar Eclipse, May 15, 2022; by Chris Gainor.

Page 2: Nathan observing Lunar Eclipse, May 15, 2022; by Randy Enkin.

Page 3: Lunar Eclipse, May 15, 2022; by Nathan Hellner-Mestelman.

Page 3: Crop of Bruce Lane (SkyNews Editor) at 2013 RASCal Star Party in Metchosin, by Chris Gainor

Page 4: Randy Enkin (RASC Victoria President) with Sextant, Feb 20, 2021, by Eva Bild.

Page 5: Photograph and Design of Astro Cafe Mug, by Joe Carr

Page 5: Apollo 17 Training. *Gene Cernan detaches the drill from a drill stem. He has probably attached a wrench to the stem and has blocked the handle with his foot to prevent the stem from turning in the hole while he rotates the drill by its handles. Two techs can be seen behind Gene holding his water and air hoses and his comm cable. The drill stem rack is in the background at the left.* Photo filed Jun 8, 1972. Scan by Kipp Teague. Courtesy of NASA.

Page 6: Whirlpool Galaxy (M51), 7 sessions shooting through clouds from Apr 23 to May 22, 2022; by Scott Garrod. 86 x 300 seconds (7hr 10') AT130/ ZWO asi533/ iOptron CEM70

Page 7: NGC 3628, the Hamburger Galaxy, May 2022 by Lucky Budd. *A super faint spiral galaxy that we see edge-on as a band of cosmic dust!*

The reddish color indicates that the stars are extremely old. It took 35 million years for this light to hit my yard in Victoria, BC. I used an 8" edge hd on an evolution alt-az using a .7 focal reducer. No guiding. No filters. Asi294mc pro over 2 nights. 625 30 second subs (reused master dark/flat and dark flat from previous session). Stacked in APP - starnet ++, photoshop and then Lightroom. No saturation added.

Page 8: Apollo 17 Training. *Jack Schmitt prepares to enter CM at start of seven-hour altitude chamber test*. Jun 15, 1972. Scan by J.L. Pickering. Courtesy of NASA.

Page 9: Moon, May 8, 2022, by Lucky Budd. 8" Edge HD on Evolution mount with 0.7 focal reducer, no filters, and asi294 mc pro camera. Two separate 500 frame avi's (top 3/4 of moon, bottom 3/4 because the entire Moon couldn't fit into the frame). Stacked best 75% in autostackkert, waves in Registax, stitched the two TIF files together in photostitcher, and then processed in Photoshop

Page 10: Posed Book, "Lost in Space", taken in Editor's home on Jul 15, 2020, by Bruce Lane

Page 11: Apollo 17 Preparations. *Technicians from NASA and the Boeing Company unpack the flight Rover at the Cape.* Jun 5, 1972. Scan by J.L. Pickering. Courtesy of NASA.

Page 12: Witches Broom (NGC6960), May 21, 2022; by Scott Garrod. 70 x 120 seconds, unguided AT130/ ZWO asi533/ Optolong l-Extreme/ iOptron CEM70.

Page 13: Apollo 13, *Jack Swigert during suit-up (note he is wearing his personal Rolex GMT on his left wrist)*. Apr 11, 1970. Scan by Ed Hengeveld. Courtesy of NASA.

Page 14: Apollo 13, *Jim Lovell during suit-up on launch day (note he is wearing his Omega Speedmaster on his right wrist)*. Apr 11, 1970. Scan by Ed Hengeveld. Courtesy of NASA.

Page 15: Wrist watch Shturmanskie 1949 (First Moscow Watch Factory) Russian stamp. Image created May 28, 2010. Public Domain.

Page 16: Apollo 16, *Ken Mattingly checks his wristwatch* (Omega Speedmaster) *during suit-up for launch*. I find it amusing, when there's a clock on the wall behind them, but it might not be as accurate or even set at the desired time zone. That or this is a picture of two people comparing watches. Apr 16, 1972. Scan by Ed Hengeveld. Courtesy of NASA.

Page 17: One-eyed Barred Owl, Jun 17, 2022, by Bruce Lane. It's been a frequent visitor to my yard over the last few years and I first noticed its eye injury, after there was a fight with another owl.

Page 20: Apollo 17 Training. *Gene Cernan (right) and Jack Schmitt deploy a Rover mockup in the Crew Training Building at the Cape. Note the less-than-roadworthy tires. A tech can be seen at the right keeping Gene's hoses clear.* Jun 8, 1972. Scan by J.L. Pickering. Courtesy of NASA.

Call for Article and Photo Submissions for the July Issue

SkyNews is looking for submissions of astronomy photos and articles for the July issue of our Victoria Centre's magazine, which will be the hiking and camping issue. Please send your submissions to editor@victoria.rasc.ca by July 15th.

RASC Victoria Centre Council 2022

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