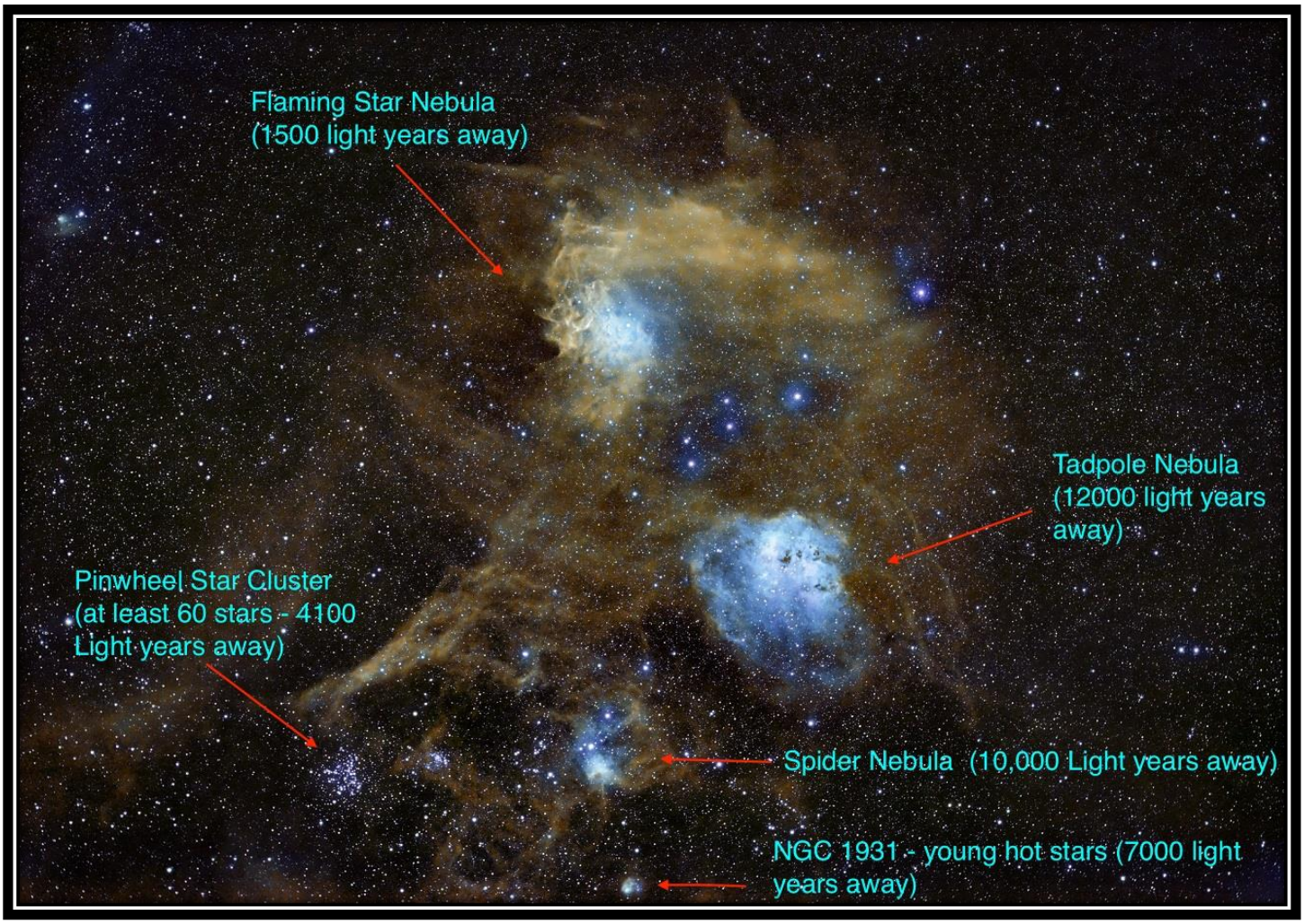
SKYNEWS



Flaming Star and Tadpole Nebulae, November 17-18th, 2022; by Lucky Budd

Artemis Rising

Technology may have advanced leaps and bounds since the original Apollo Program, but space is still hard. Sometimes adding to the complexity of systems to overcome problems does as much to add additional points of potential system failure as it does improve the system.

After the launch of Artemis 1 was delayed by leaking hydrogen fuel, it was in danger of being delayed again by the same problem. This time, NASA deployed the *Red Team*. A pair of cryogenic engineering technicians and a safety engineer drove out to the launch pad to tighten the bolts on the fuel lines. It's a highly specialized repair unit that tackles problems, while they're dealing with the hazards of a fully fuelled rocket that's ready to launch. Red Teams have been used multiple times by NASA on a number of different rockets and spacecraft, including working on a Saturn 5 rocket that was about to launch the Apollo 11 mission. The technicians saved the mission from what would have certainly been another long and embarrassing delay.

In space exploration, the only thing harder than launching humanity from the surface of our planet is negotiating with governments to fund and continue to fund these projects. There has always been a lot of desire to return to the Moon and move out further into the Solar System, but not necessarily from the rank and file of the US Congress. It's a tougher thing to sell to politicians, even if you start breaking up manufacturing into as many electoral districts as possible, which of course also increases the cost of space exploration by introducing politically based inefficiencies. When the US President made their big 2004 announcement that America was returning to the Moon, there was initial excitement, but soon after came the realizations about the lack of budget allocations to actually accomplish much. The program limped along, often on life support, and even had to contend with some budget sequesters and very nearly being cancelled. Battered and bruised by a series of governments, what would become the Artemis Program finally got to the point of being ready to begin launching some rockets towards the Moon.

A lot of people don't realize that years before the first landing on the Moon, Kennedy was already suggesting that NASA do a cooperative mission to the Moon with the USSR. The costs of the Vietnam War were becoming a runaway train and many members of the US Congress saw a lack of lunar constituents that merited the price for the space program to begin with. Because NASA don't tend to hide their space exploration activities, their budgets are much higher profile and easier to point at than less virtuous expenditures who do a better job at keeping a lower profile. If Khrushchev hadn't been deposed by Brezhnev, who pivoted the USSR back into being more of a hardline regime, we would have likely seen the two super powers team up in their quest for the Moon. The assassination of President John Kennedy also did a lot to derail that particular diplomatic avenue.

Artemis I has completed its first trial run without a crew and completed a transit around the Moon and safely back to the Earth. This was a goal achieved by the earlier Apollo missions, before the first crewed lunar transit during the Apollo 8 mission. There are some mixed reports as to whether *Shawn the Sheep* or *Snoopy* (stuffed toys doing double duty as gravity indicators) returned to Earth in the capsule that landed on December 11th. I might need to see some *proof of plushness*, including their serial numbers, before I'm completely convinced that they're the same ones that went into space. In the meantime, work continues in preparation for the next Artemis missions.

Bruce Lane

Editorial Remarks

2022 is coming to a close. While exciting scientific discoveries and events seem to be happening all the time, for a lot of amateur astronomers on Vancouver Island, December is usually time of low activity. Between the weather and getting caught up on the seasonal festivities, there's generally a lot less time and opportunities for observing and astrophotography. During this period of downtime, it might be a good moment to organize your gear that may or may not be spread out half-hazardly across several rooms. It's also a good time to pick up a book; possibly even picking up that copy of the RASC's Observer's Handbook laying around to have a read and to prepare for future outings. Maybe it's time to do some deeper post production work on an image you've been working on, provided your power doesn't go out. As I'm typing this right now, the snow is coming down in earnest out here in North Saanich. The Internet is down, likely due to an excess of people stuffing the *intertubes* with high resolution snow pics resulting in the utility provider *throttling* my service, but at least the power hasn't gone out quite yet.

In this issue of *SkyNews*, we'll have more recaps from our Centre's activities, an article about the last Apollo mission, images from the Apollo 17 mission, 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 December

We are members of this venerable institution because we share a bond of fascination with the wonders of the sky. I don't think any of us joined the Centre to worry about the details of how it runs.

These are the opening lines of an email I sent on December 10 to all the Members of the Victoria Centre of the Royal Astronomical Society of Canada. We are proposing a new *Constitution and Bylaws* to run the Victoria Centre. Did you receive it? Please read it! I hope we explain well enough why the amendments are necessary and how they will make our centre operate better.

The Victoria Centre of the Royal Astronomical Society of Canada was founded in 1914. We've been through a lot! But all organizations need to ride with the times. The fact that we now communicate electronically has to be acknowledged and embraced by our bylaws. But once we opened the doors to an amendment, then it became clear that there are many other issues to modernize or fix.

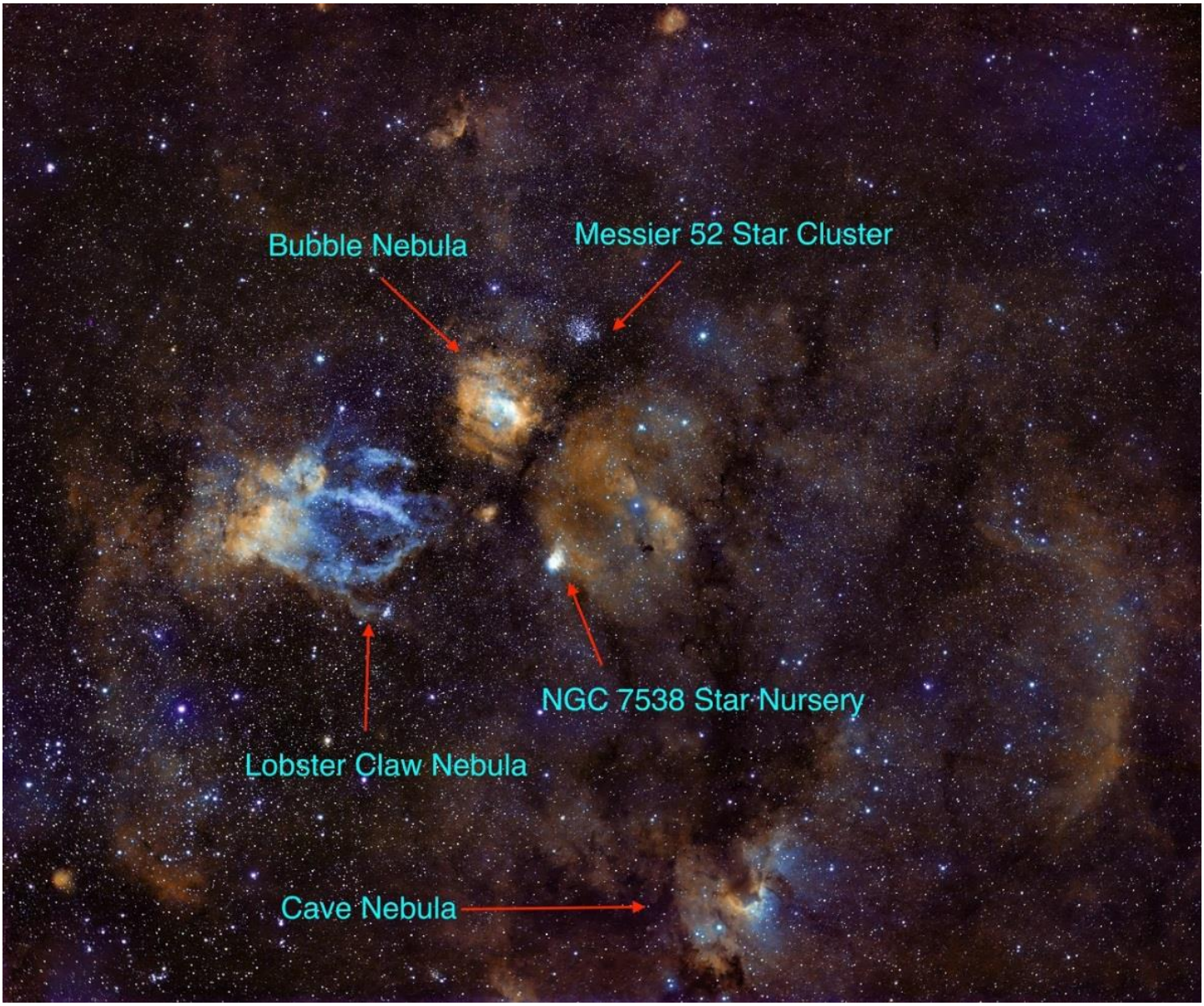
Fortunately we have some remarkable members in the Victoria Centre, who understand how constitutions and bylaws are supposed to be worded. The committee which produced the amendments was chaired by our vice president, Dave Payne, who has experience running non-profit organizations. The other members of the committee are our secretary, Jill Sinkwich, who had previously worked for the Ministry of Finance on the BC Societies Act; our Membership Chair, Chris Purse, who participated in writing the previous version of the bylaws and is a font of institutional memory; Dan Posey, who has experience writing provincial legislation; and me, president and cheerleader for this group of awesome hardworking members.

We request that you read and provide comments on the draft *Constitution and Bylaws* by January 15, 2023 to *Secretary@Victoria.RASC.ca*. We particularly need to know if there are issues that would prompt you to vote against adoption of the bylaws at the upcoming Special General Meeting, which will be scheduled in February. The Bbylaws must be passed with a special resolution of the centre by a 2/3 vote.

We know they are not perfect, but we feel that they are a significant improvement over what we are currently working under.

Look Up,

Randy Enkin, President@Victoria.RASC.ca



The Bubble Area, November 14-15th, 2022; by Lucky Budd

Astro Café: Hybrid Meetings

The weekly social gathering of amateur astronomers on Monday nights, known as Astro Café, was reduced to being an online gathering via Zoom for the beginning of the Pandemic. As with many groups, we were trying to find ways to still function as an astronomical society, without being able to meet in person. While the Pandemic isn't ending anytime soon, RASC Victoria has shifted from Astro Café being online only, to being a hybrid event. It's still accessible online, but RASC Victoria members can also attend this event live at the Fairfield & Gonzales Community Association centre. Of course this dual format means double the hosting requirements, so RASC Victoria will need more of a volunteer commitment, both online and onsite. You can access updates about Astro Café at the Virtual Astro Café at: https://www.victoria.rasc.ca/astronomy-cafe/

The first Astro Café of November was hosted by Chris Purse and kicked off with the membership talking about the not so great weather forecast for the upcoming lunar eclipse. Brock Johnston showed some astrophotography taken by RASC Victoria members; Joe Carr highlighted some websites linked to on the RASC Victoria Centre site; David Lee did a quick show and tell of the Stellarium app for desktop and smart devices; Randy Enkin reminded everyone about the upcoming RASC Victoria Council meeting and lamented in depth about the weather for the upcoming lunar eclipse and future eclipses; and Laurie Roche gave up update on road construction on Observatory Hill and the likelihood of the next FDAO public outreach event.

The second Astro Café was hosted by Brock. Dave Payne discussed next year's Island Star Party and showed some astrophotography; Chris Gainor gave an update on the upcoming Artemis and answered a question about the recent difficulties with the James Webb Space Telescope; Bill Weir led discussions about observing Mars near opposition and the problems that people are having with the RASC National website; Joe continued his tour of the RASC Victoria website, this time focusing on Special Interest Groups and email lists; Lauri gave an update about the monthly FDAO events and public access to Observatory Hill; and there was a public discussion arising from a question about the function of the Gonzales Observatory.

The next Astro Café was hosted by Jeff Pivnick and started with him giving some background information on the Artemis I mission and an overview of the Moon. Chris Gainor gave an update on Artemis I and Randy also talked about the current uncrewed lunar mission, before showing some of his lunar sketches; David Lee gave an update on the SIGs; and Peter Jedicke wrapped things up with presentation about a bollide meteor seen over Southern Ontario.

The last Astro Café started off with Jeff Pivnick making an announcement about this year's Astronomy Day, as well as a reminder to hold onto recent Observer's Handbooks and magazines for the RASC Victoria welcome table. Randy talked about decoupling the next Victoria Centre Annual General Meeting with the social portion of the evening, to have them both as separate events. There was a general discussion about the RASC Observer's Handbook; David Lee talked about upcoming SIGs; Randy discussed starting Astronomy Café earlier to accommodate cleaners, starting in the New Year; Chris Gainor gave another update on Artemis I; and Lauri Roche announced that the RASC calendars were on the way and talked about FDAO doing virtual public outreach events during the current road construction phase on Observatory Hill.

Bruce Lane

Special Interest Groups

Getting Started in Astronomy

The beginners SIG in December, having more new members, has started on reviewing basic astronomy terms. We covered the history of the magnitude scale and its use in comparing objects of different magnitudes of brightness. We discussed the significance of this for double star and variable star observations. We will continue next month with catalog systems and naming conventions.

There was also time to talk about the recent lunar occultation of Mars and how different members observed it, both remotely and through real in-person observations. For more information on this group, please contact David Lee at *david@victoria.rasc.ca*

Astrophotography

The astrophotography SIG continues to grow and foster all things about imaging the night sky. The group has started making presentations at Astro Cafe to show some of the work by the SIG members. Recently we enjoyed a description of Ron Fisher's astrophotography journey, with examples of his recent images. The astrophotography segments at Astro Cafe have proved very popular, invoking lots of discussion even amongst Victoria Centre members who are primarily visual observers. For more information about this group, please contact David Payne at *vp@victoria.rasc.ca*.

Electronically Assisted Astronomy

The EAA SIG has had light activity so we have discussed moving this initiative to the beginners group as technology changes warrant. 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 repair and development of astronomical equipment.

The development of a number of sensor based projects continues as David Lee provides updates on his progress. Discussion within the group will cover design concerns, prototypes, and building a final product. For more information about this group, please contact Jim Cliffe at *jim@victora.rasc.ca*.

Citizen Science SIG

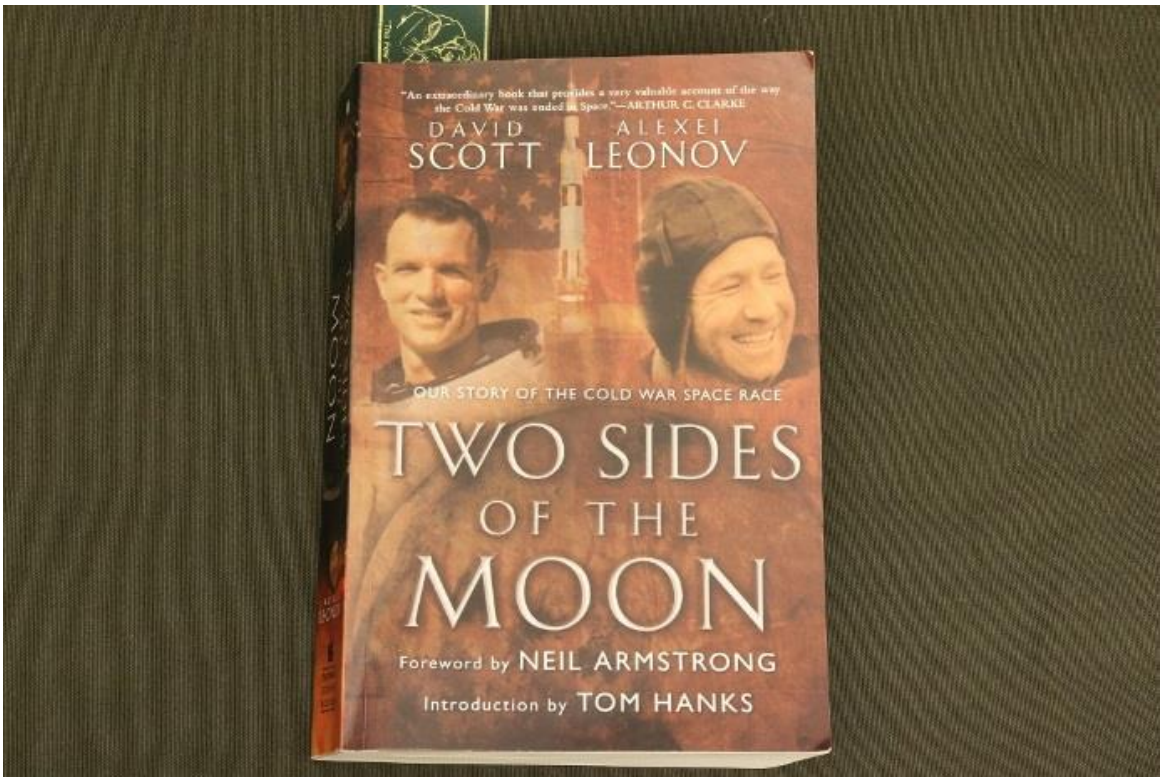
The Citizen Science SIG will be discussed at an Astro Cafe in January. David Lee will present a survey of historical and present day initiatives. The establishment of a SIG will follow. For more information on this group, please contact David Lee at *david@victoria.rasc.ca*

David Lee

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 or to make a book delivery request, please contact Alex Schmidt at: *librarian@victoria.rasc.ca*

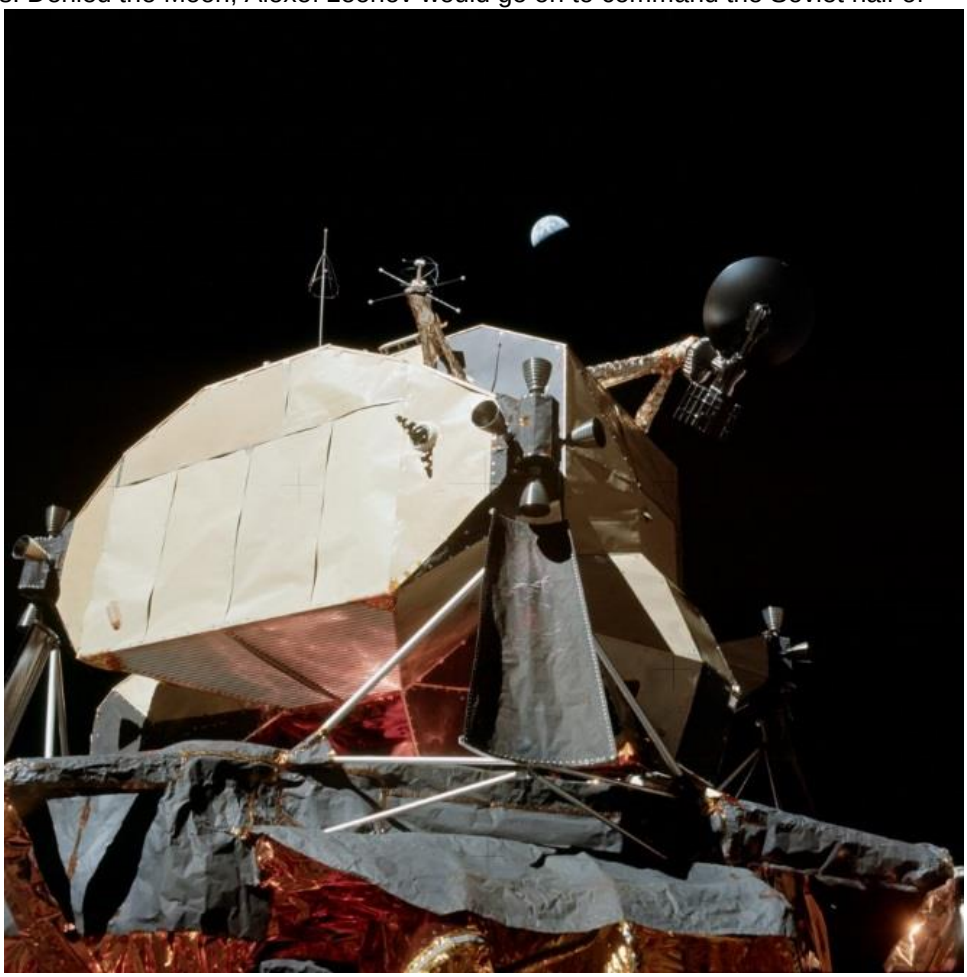
Our library covers many aspects of astronomy: observing, astrophotography, telescope construction, space exploration, astrophysics, and much more. Normally, the library is opened up during the social gatherings in the faculty lounge, after our monthly meetings, with coffee, juice, and cookies provided 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 *Two Sides of the Moon*, a joint autobiography by astronaut David Scott and cosmonaut Alexei Leonov. It's compelling to have two active participants in the *Space Race* have their experiences entwined in a single work like this, although it can be jarring to have them swap perspectives during the same chapter. It's a refreshing read to have two pilots on either side of the *Iron Curtain* reacting to world events and the opportunities of their space programs from their own individual perspectives.

You'll be introduced to the life of David Scott, who very nearly didn't fulfill his life's dream of becoming a test pilot, after receiving some bad advice to go to MIT to study engineering, at a time when astronautics was being introduced to the curriculum. Scott did his thesis on the celestial navigation that would be required during space travel and was initially placed in an administration role after graduation. He actually went to the Pentagon to protest and after being dressed down for his impudence, actually had his orders changed, something that rarely succeeds. Scott was sent to Edwards Air Force Base, where he was the top test pilot in his class. After a posting at the Aerospace Research Pilot School (ARPS), he signed on with the Gemini Program, flying on the hair raising mission with Neil Armstrong aboard Gemini 8. Scott went on to take part in the Apollo 9 and 15 missions. He would occasionally meet cosmonauts during events like the Paris Airshow (where both sides of the Iron Curtain were represented) or in more sanctioned diplomatic occurrences. In one exchange trip, where astronauts visited the USSR and cosmonauts traveled to the US, Scott got to know Alexei Leonov.

You'll also get to know Alexei Leonov, an aspiring artist who due to his inability to afford art college, dedicated himself to his second chosen vocation as a pilot. He was enrolled into the Pilot's College in Ukraine for two years and then two additional years at the Higher Military Pilot's School (also in Ukraine), where he started flying combat jets. After some quick thinking to avoiding a low altitude crash in a MiG, he was offered a position at test pilot school. He found himself making the cut of a special selection of 8 out of 3000 pilots, along with Yuri Gugarin, for what turned out to be the first cosmonaut program. Leonov was chosen for the first ever spacewalk, which became complicated by his space suit ballooning and very nearly denying him access back into the waiting Vosthod space capsule. Sergei Korolev chose Leonov to be on the crew that would perform the first translunar mission, but the death of the Soviet Space Program's *Chief Designer* and a number of rocket accidents put the brakes on that mission. Korolev's successor lacked the boldness required to win the race against America, sending unmanned mission after unmanned mission until they lost any initiative they had over their rivals. With the manned lunar missions cancelled due being beaten to the Moon by the Americans, the new focus was on building space stations. Denied the Moon, Alexei Leonov would go on to command the Soviet half of the Apollo-Soyuz Test Project docking mission in 1975. It was considered by many to be a moment of change in the relations between the two superpowers, but that moment of goodwill would soon be dashed by events of the Cold War back on Earth.



After retiring from the Air Force and NASA, David Scott founded the company: Scott Science and Technology. He went on to do a lot of consulting work, with both NASA and Hollywood. The Bulova wristwatch he wore on the Moon during Apollo 15, due to his Omega Speedmaster being broken, was later sold in 2015 for $1.65 million USD. The wearing of this watch on the Moon resulted in a court case when Bulova used Scott's name and image without his permission to launch a commemorative line of watches based on the Apollo 15 mission, but the lawsuit was eventually settled out of court. Bulova went on to release a 50th anniversary of their watch on the Moon in 2021.

While it proved useful, the Bulova wristwatch and stopwatch that David Scott took to the Moon were included in his kit without NASA's permission; although to be fair many astronauts wore a second wristwatch either as test pilots or on their missions into space. He got in a bit more hot water when Deke Slayton (Director of Flight Crew Operations) introduced him to businessman Walter Eiermann to take some stamp covers into space to be later resold on the collector market, with each of the astronauts getting a $6000 fund for their children's education. This souvenir smuggling had been going on for a while in the space program, but the Apollo 15 crew was the one to bear the brunt of the criticism when it became public. For his part, when things blew up, Scott refused any money from the venture, after Eiermann released the stamps well before the time agreed on.

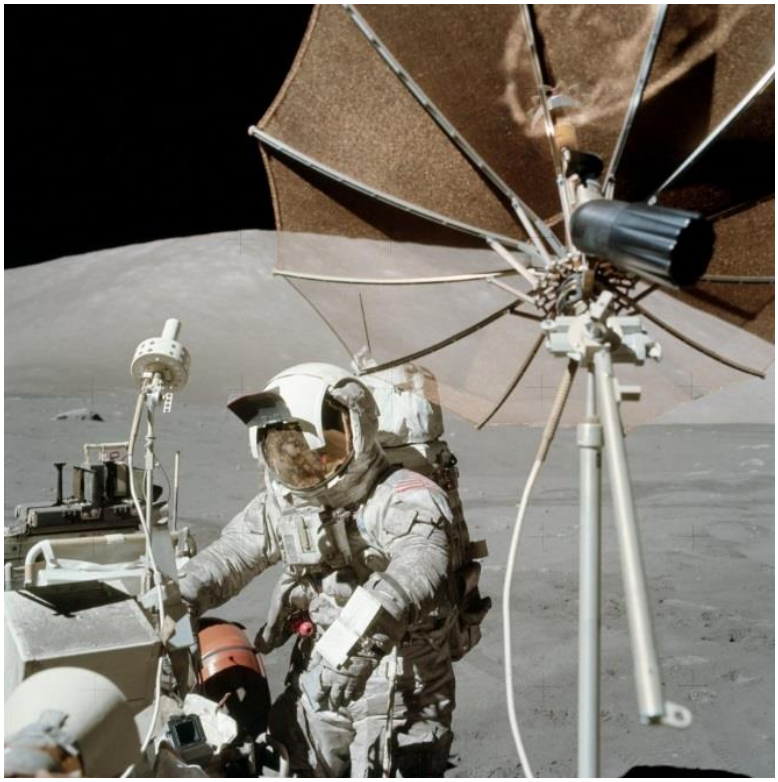
After retiring in 1992 as *Chief Cosmonaut* and deputy director of the *Yuri Gagarin Cosmonaut Training Center*, Alexei Leonov dedicated himself to his artwork and writing, as well as doing a stint as a bank vice president. He co-wrote the script for a Soviet science fiction movie (*The Orion Loop*) and advised Arthur C. Clarke, when he was writing *2010: Odyssey Two*. Arthur C. Clarke dedicated his *2010* novel to both Leonov and Soviet physicist, Andrei Sakharov. The book also had the spaceship named after the cosmonaut. Alexei Leonov died in Moscow at the age of 85 in 2019.

Two Sides of the Moon is must read for anyone interested in the history of the Space Race and space exploration in general, and it's available by order from your local bookstore. It's the story of two combat jet pilots, who each believed hard in their way of life and the countries they represented, who met during the competitions of their respective space programs, instead of while fighting over the skies of Europe.

Bruce Lane

California Nebula, imaged November 28th and December 3rd, 2022; by Lucky Budd

The Last Man on the Moon

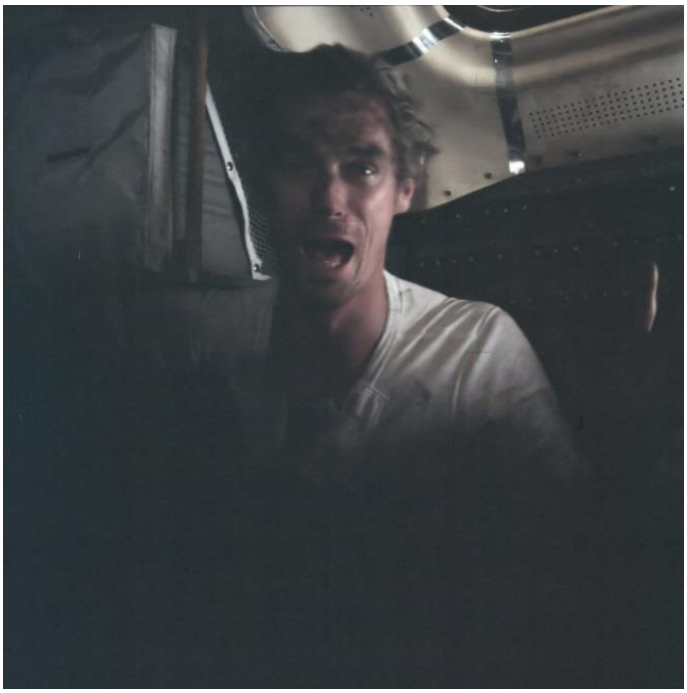


While the astronauts of the Apollo 17 mission were still training, they knew their mission would be the last manned lunar mission by NASA. There would be no Apollo 18. No Apollo 19. No establishment of a base on the Moon during the Apollo 20 mission. The focus was already on future NASA projects that would allow them to keep their space agency running. When David Scott was offered the choice between a spot on the back up crew of Apollo 17 and a role in the diplomatic orbital docking between an Apollo and Soyuz capsule, Scott knew his chances at going to the Moon again were slim to none and immediately chose the Apollo-Soyuz mission.

The American general public was less excited about planting flags on the Moon and there were no constituents on the Moon for members of the US Congress to lobby for donations. America had already won the race to the Moon against their Soviet rivals and driven home the point by landing there again four more times. Apollo 17 was very nearly also cancelled for nothing more than political considerations. The sitting president had genuine concerns about another crisis in space, comparable Apollo 13, affecting his re-election in November and seriously considered scrapping the mission altogether. NASA managed to convince the president into allowing them to do a December mission, after the election.

It's one of the great shames in the space program that the Apollo Program was being terminated just as it was switching to a more scientific focus. While there had been a lot of scientific experiments deployed on the Moon during previous missions, this would be the first to land a scientist on the lunar surface. Harrison Schmitt had already acted as a scientist-astronaut on the backup crew for Apollo 15. He would be the first geologist to walk on the lunar surface, but at the expense of astronaut Joe Engle who had been scheduled to be on the last Apollo mission.

The Apollo 17 mission went smoother than most, setting numerous records for time on surface and in orbit. They landed at the Taurus-Littrow Valley and drove their moon buggy further from the lander than any previous mission. Commander Gene Cernan and Harrison Schmitt brought back a record number of geologic specimens from the surface of the Moon, while Ronald Evans orbited in the command and support spacecraft. The astronauts returned safely to Earth and the president safely won his bid for re-election a month earlier; although that same president would be forced to resign from office nearly two years later to avoid being impeached.



The last man to walk on the Moon, Commander Gene Cernan, retired as an astronaut and naval aviator in 1976. He went into the private sector as an oil executive and later founded his own company. He joined Neil Armstrong to testify before Congress when the Constellation Program, to return to the Moon, faced cancellation in 2009. Gene Cernan died in 2017.

After piloting the command module during Apollo 17, Ronald Evans went on to serve on the back-up crew for the Soyuz-Apollo Test Project mission and then worked on the Space Shuttle Program until he retired in 1977. After a short stint in upper management of a coal mining company, he left to work for a company that made instrumentation for the Space Shuttle, and then went on to a couple other private industry ventures. Evans died in 1990 at the age of 56.

After his service as the lunar lander pilot on Apollo 17 and being the 2nd to last person to walk on the Moon, Harrison Schmitt went into politics and served a six year term in the US Senate. Despite being the first scientist to be sent to the Moon, in more recent years Schmitt has publically championed less than scientific causes. He resigned from the Planetary Society and as the chair of the NASA Advisory Council in 2008 over the two organizations being incompatible with his belief that Climate Change is a hoax. He continues to be a vocal critic of the existence of Climate Change and contends that there is no evidence that humans are responsible for changes to our climate, despite the mountain of evidence that scientists have presented on the subject. It's certainly something people booking the former astronaut as a guest speaker should be mindful of, as some institutions of learning have found out the hard way.

After losing his seat aboard Apollo 17 to a geologist, Joe Engle joined the Shuttle Program. Engle had previously qualified for his astronaut wings multiple times, while flying X-15s as a test pilot before joining the Apollo program, becoming the youngest American pilot to qualify as an astronaut. He chose flying shuttles over other the space agency opportunities available in part because he preferred something that was more like flying a plane. After serving as the back-up commander for STS-1, Engle commanded the STS-2 and STS-51-I missions, and became the only pilot to fly the shuttle manually from Mach 25 to a landing. In 1986, he finally left NASA and the US Air Force, to join the Kansas Air National Guard at the rank of major general. Engle took part in the Challenger Shuttle investigation and later worked as a private consultant on the Shuttle Program. Joe Engle has flown 185 different aircraft and spacecraft, logging over 14 850 hours of flying time, including 224 hours in space. He was the *Test Pilot Emeritus* at the US Air Force Test Pilot School and was still flying planes at an age when most people have their driver's licenses taken away. At age 90, he is the last surviving X-15 pilot and still active in the aerospace community. He is also a spokesman for Bushnell Performance Optics.

With the death of Korolev, the "*Chief Designer*" of the Soviet space program, the USSR would turn its focus to the more modest goal of building and operating space stations in low Earth orbit. After taking humanity further into space than ever before, America would also turn its back on the Moon. The even more challenging goal of a Mars landing had been cancelled even before Apollo 13 launched. All the engineers, technicians, astronauts, and dreamers that had been inspired by NASA's space program were to become orphans or learn to dream smaller dreams. The first Skylab mission was close to being ready to launch and the NASA's Shuttle Program was in the works. The US had collaborated with allied space agencies for their Apollo program, but the new goal of a space station and smaller budgets would have them wandering the halls of foreign bureaucracies with cap in hand to help fund it.

Bruce Lane

Hill and Dale (Observing on the Island)

The November skies were cloudy and cold, with a few breaks in weather and the odd clear night. Lucky Budd managed to squeeze the most out of a bad month for observing and astrophotography, as both seen on this month's cover image and with a pair of other images in this December issue of *SkyNews*. Bill Weir invited RASCals to join him at the beginning of the month at the Pearson Observatory, making note that there was a classroom to warm up in if that was needed. If anyone joined him that evening, it very likely was needed.

Access to the Victoria Centre Observatory is currently restricted due to road construction on Observatory Hill, with ongoing construction continuing on into the spring. 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 in the not too distant future.

Bruce Lane

David G. Bennett 1949 - 2022

Dave Bennett passed away at the end of November, about a year after being diagnosed with leukemia. He was a long-time member of RASC Victoria, an experienced observer, and a tireless public outreach volunteer. You'd see him as often at the events where everyone volunteered as at the events where few volunteers could be found. He will be missed.

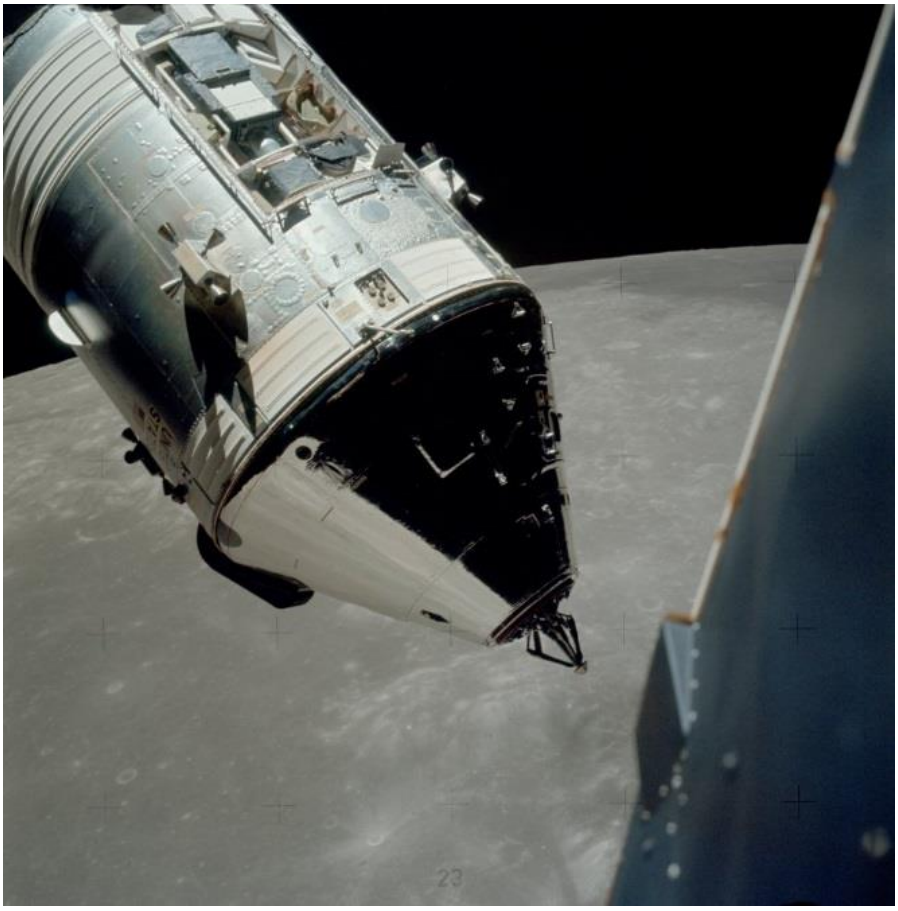
In Closing

It already feels like we've suffered through one of the worst winters in recorded history for Victoria and in fact the actual season of winter has only officially just begun. Many of us found ourselves spending more quality time with a snow shovel than we'd like or learning to navigate some less than ideal driving conditions in the *Garden City*. There were high winds, power outages, and in recent days we've finally returned the cold and rainy days that are more normal for this time of year. On the night of transition between snow and rain, it was raining ice crystals. I went outside to listen to the tinkling of the tiny crystals on the back deck for a while, which immediately made me think that it was a little like experiencing the rains on some of the Outer Planets or their moons. It was one of those magical moments in nature, made slightly less magical in the morning by the realization that those ice crystals had merged with the snow, making it a lot harder to shovel. As is almost the case every time, our inconvenient weather here means somewhere else people are suffering through catastrophic weather.

One of the realities of modern living is that it's easy to find yourself removed from the realities of the current healthcare crisis if you're not admitted to a hospital or a front line worker. Many of us don't know our neighbours and social media has become a superficial substitute for a community. The school I went to in the Gulf Islands was closed down at the beginning of December, with 75% of the students at home sick and not enough healthy staff to hold classes. Despite a complete relaxation of public health mandates designed to protect us, covid-19 didn't get the memo that we weren't playing anymore. Added to that we're having a worse than normal flu season and RSV (respiratory syncytial virus). There's even been a Haemophilus influenza type B (Hib) disease outbreak on Vancouver Island. Part of the problem is that when you have so many people getting covid-19 (some of them being infected multiple times), one of the side effects is the weakening of the immune system, which opens the door for other ailments or worse results when people get sick. Monkey pox cases are currently either declining in BC or not being properly identified. BC continues to be the worst province in Canada at collecting and reporting accurate data during this pandemic.

MERS (Middle-East Respiratory Syndrome), a coronavirus that threatened to become a global pandemic after SARS, was infecting fans, journalists, and players alike at the World Cup in Qatar. It probably doesn't help that the event took place at the same time as the Camel Mzayen Club's camel beauty pageant festival, when contact with camels is a well-known source of the virus. While MERS is much more deadly than either SARS or covid-19, it's not as infectious and it doesn't incubate as well. Fortunately for Canada, there have been no recorded cases of MERS here. Qatar is far away and most Canadians aren't as interested in soccer as they are in hockey, beyond the brief excitement in the country over our national team actually making it to the World Cup.

Yes. I said it. It's called *soccer*. It was called soccer when the game was first brought to North America and it's not our fault that England later changed the sport's name to football, because they thought the name "*soccer*" was too easily confused with rugby. Changing it here would cause actual confusion, what with the *football* sport that evolved in North America. It's not nearly as bad as someone from England telling someone from India that they have to stop using the term *chai* for tea, but it's getting there. What is now referred to as *American football* was invented in Canada and shared with the Americans in 1874, during a pair of matches between McGill and Harvard, with each university using their rules for one game. Our rules quickly caught on south of the border, including the adoption of the oval ball brought by the Canadian team.



Despite the lack of outdoor events this time of year, due to the weather, the regular meetings and virtual events hosted by other astronomical societies on Vancouver Island continue. The Centre of the Universe and Plaskett Telescope on Observatory Hill are hosting monthly events, but due to the physical site being closed to the public due to road construction this will be an online only event for the time being. These public outreach events on Observatory Hill are hosted by the National Research Council and Friends of the Dominion Astrophysical Telescope, with volunteers from the RASC Victoria Centre also taking part. The University of Victoria is hosting weekly Wednesday open house events at the Bob Wright Centre Observatory, from 8-10pm, but likely closed for the first Wednesday in January, until classes start back up again after the holiday break. The Nanaimo Astronomy Society have their next monthly meeting for members scheduled for January 26th. These events by the Nanaimo group are hybrid events, with both in person and online attendance via ZOOM. The Comox Valley Astronomy Club's next monthly meeting is at the Courtney Public Library on January 2nd.

Bruce Lane: SkyNews Editor

Photography Credits

Cover: Flaming Star and Tadpole, Nov 17-18, 2022; by Lucky Budd

Page 2: Apollo 17, *EVA-1 at the LM. Gene is standing east of the flag, holding the lower corner and saluting. Note the LM behind Gene and the LRV behind the flag. Red-blue anaglyph by Patrick Vantuyne*. Courtesy of NASA.

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

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

Page 4: The Bubble Area, Nov 14-15, 2022; by Lucky Budd

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

Page 5: Apollo 17 *launch viewed from the launch tower.* Scan by Kipp Teague. Courtesy of NASA.

Page 6: Apollo 17, *the second of three photos Gene took of Jack jumping into the LMP Rover seat. Good view of the segmented mirror on the top of the TV camera. Jack has the LRV sampler in his right hand. Note the seismic charge*

transporter mounted behind Gene's seat, just in front of the rake. Both the low-gain and high-gain antennas are pointed at Earth. The East Massif is in the distance. A labeled detail shows a Velcro strap used to secure the high-gain antenna lead to the high-gain mast. A second detail shows the low-gain antenna lead now secured to something on Gene's side of the console. Courtesy of NASA.

Page 7: Posed Book, "*Two Sides of the Moon*", taken in Editor's home on Dec 30, 2022, by Bruce Lane

Page 8: Apollo 17, *EVA-3 close-out at the LM. Excellent photograph of the Earth over the LM, showing a group of three-axis thrusters and the associated plume deflector. A view created with planetarium program Starry Night Deluxe shows how Earth would have looked with fewer clouds. Research by Ricardo Salamé.* Courtesy of NASA.

Page 9: Apollo 17-4, *EVA-1 at the LM. This is an excellent portrait of Jack with the U.S. flag and the Earth. We get a good view of Jack's chest-mounted RCU and the camera bracket. Using planetarium program Starry Night Deluxe, we see that, had cloud cover over the southwestern Pacific been lighter, Antarctica would have been visible at the left and Australia would have been coming into view over the top. Four hours later, Earth's rotation would bring Australia to center stage.* Courtesy of NASA.

Page 10: California Nebula Nov 28, Dec 3, 2022; by Lucky Budd

Page 11: Apollo 17, *this picture shows Jack working at the CDR's seat at the end of EVA-3. The photo show the high-gain sighting scope - the black object at the upper right. Jack has just removed magazine Karen from the camera equipped with the 500mm lens. Journal Contributor Ben Zarlingo notes that the open back of a camera can be seen at bottom center in 20472 - presumably the 500mm camera. Jack has the magazine he's just removed in his left hand.* Courtesy of NASA.

Page 11: Apollo 17-15, *Ron Evans with a pair of surgical scissors in the foreground, during the outbound trip. As Jack mentions in commentary following 115:30:55, Ron lost his scissors sometime before Gene and Jack went down to the lunar surface. To keep him from going hungry while they were gone, they gave him one of their pairs.* Courtesy of NASA.

Page 12: Apollo 17-13, *LM Interior. Open mouth photo of Gene.* Courtesy of NASA.

Page 13: Dave Bennett at the Centre of the Universe, Aug 24, 2013; by David Lee.

Page 14: Buff Orpington chicken, Nov 15, 2022; by Bruce Lane.

Page 15: Apollo 17, *close view of the Command Module and of the SIM (Scientific Instrument Module) Bay in the Service Module at rendezvous. CSM orbit 52. Crater Lick, Sea of Crisis.* Courtesy of NASA.

Page 17: Apollo 17, *two US Navy para-rescue men jump from recovery helicopter with spacecraft flotation collar which they later attached to Apollo 17 spacecraft. Photo filed 19 December 1972. Scan by Kipp Teague.* Courtesy of NASA.

Call for Article and Photo Submissions for the January Issue

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

RASC Victoria Centre Council 2022

Director Positions	Name	Email
Past President	Reg Dunkley	pastpres@victoria.rasc.ca
President	Randy Enkin	president@victoria.rasc.ca
1st Vice President	David Payne	vp@victoria.rasc.ca
2nd Vice President	Garry Sedun	vp2@victoria.rasc.ca
Treasurer	Deborah Crawford	treasurer@victoria.rasc.ca
Secretary	Jill Sinkwich	secretary@victoria.rasc.ca
Officer Positions		
Public Outreach	Malcolm Scrimger	outreach@victoria.rasc.ca
Schools Program/Telescopes	Sid Sidhu	telescopes@victoria.rasc.ca
Schools Program/FDAO Liaison	Laurie Roche	schools@victoria.rasc.ca
Observing Chairperson	Jim Stilburn	obschair@victoria.rasc.ca
Light Pollution Abatement	Dave Robinson	lighting@victoria.rasc.ca
Technical Committee Chair/Sys Admin	Matt Watson	admin@victoria.rasc.ca
Website Content	Joe Carr	web@victoria.rasc.ca
Librarian/UVic Liaison	Alex Schmid	librarian@victoria.rasc.ca
SkyNews Editor	Bruce Lane	editor@victoria.rasc.ca
Membership Coordinator	Chris Purse	membership@victoria.rasc.ca
National Representative/Pearson College Liaison	Bill Weir	Nationalrep2@victoria.rasc.ca
National Representative	Nathan Hellner-Mestelman	Nationalrep1@victoria.rasc.ca
NRC Liaison	James di Francesco	
Members at Large	Jim Hesser David Lee	John McDonald Jeff Pivnick
	Chris Gainor Dan Posey	Marjie Welchframe