NOVA
NEWSLETTER OF THE VANCOUVER CENTRE RASC
VOLUME 2021 ISSUE 5 SEPTEMBER OCTOBER 2021

AOMO Update

by Alan Jones

Since last writing, we have advanced from anticipating arrival of a new dome to installation reaching completion. This is thanks to generous donations of time, funding and equipment. We owe a debt of thanks to Carl Bandura for countless hours of researching dome assembly, preparing for tasks as well as many days on-site effort with his own tools deconstructing, planning, hoisting, drilling, tarping, untarping—all with great enthusiasm and optimism I appreciate very much.

Removing the old dome from the observatory

Past president Mark Eburne arranged and paid for customs clearance for our shipment and did the same for transportation from the terminal to the site. It was a surprise to us both to learn the crate was 3 feet longer in one dimension and 400 pounds heavier than expected. All in stride, we borrowed tools from the terminal and figured out a way to transport the dome to its new location; thank-you Mark.

I am also very grateful for the hospitality given me by Howard and Loula Trottier when I travelled to Osoyoos to pick up their gift of the telescope acknowledged by Gordon in a recent newsletter. I am inspired and amazed by their generosity.

We also had help from Preston Thompson on a weekend with some heavy lifting and cleanup. More welcome help came from Rick Gregory mounting the essential drip

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SEPTEMBER 9 **Zoom**	**OCTOBER 14** **Zoom**	**NOVEMBER 11** **Zoom**
Our LPA chair, Leigh Cummings, presents "Environmental Impacts of Light Pollution." See Meetup for Zoom details.	Speaker TBA. Please see Meetup for updates.	Speaker TBA. Please see Meetup for updates.

M51 by Phil Lobo

Messier 51, also known as the Whirlpool Galaxy, is located near end of the handle of the Big Dipper, though actually in the constellation Canes Venatici. The spiral structure was discovered by Lord Rosse in 1851 through his 1.8-metre telescope and was described as a 'spiral nebula' before galaxies were understood. The spiral structure is visible in telescopes about 150mm or larger. The two galaxy cores are visible in binoculars. The companion galaxy, NGC 5195, appears to be behind M51 and might be reponsible for M51's pronounced spiral arms. It is believed that NGC 5195 passes through M51 in an orbit taking about 500 million years. (70 minute exposure, 200mm f3.9 newtonion, QHY163M)

President's Message

by Gordon Farrell

As summer winds down and the nights get longer and cooler, the mind starts to turn more to the night sky. The long sunsets and twilight of the last few months begin to fade and true darkness again offers up its treasures. Also factoring into the change of season this year are all the wildfires that burned huge swaths of our province, destroying homes, businesses, and even an entire town in their path. For the local astronomy community, another casualty was the Mt. Kobau Star Party, cancelled due to the extreme wildfire danger in the south Okanagan. A wise precaution, considering everyone was evacuated off the mountain in 2015 when a lightning strike sparked a fire that was dangerously close. Sadly, smoky summers are becoming commonplace in BC, with the smoke sometimes becoming so thick as to be a health hazard. I've heard the term "smoke season" bandied about in recent years, but I believe that's a dangerous term. It normalizes these fires, and those of us who had the luxury of attending the Mt. Kobau or Merritt star parties over the years know that it wasn't that long ago that the risk of

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About RASC

The RASC Vancouver Centre meets at 7:30 PM on the second Thursday of every month at SFU's Burnaby campus (see map on page 4). Guests are always welcome. In addition, the Centre has an observing site where star parties are regularly scheduled.

Membership is currently $89.00 per year ($52.00 for persons under 21 years of age; family memberships also available) and can be obtained online, at a meeting, or by writing to the Treasurer at the address below. Annual membership includes the invaluable Observer's Handbook, six issues of the RASC Journal, and, of course, access to all of the club events and projects.

For more information regarding the Centre and its activities, please contact our P.R. Director.

NOVA, the newsletter of the Vancouver Centre, RASC, is published on odd-numbered months. Opinions expressed herein are not necessarily those of the Vancouver Centre.

Material on any aspect of astronomy should be e-mailed to the editor or mailed to the address below.

Remember, you are always welcome to attend meetings of Council, held on the first Thursday of every month at 7:30pm in the Trottier Studio in the Chemistry wing of the Shrum Science Centre at SFU. Please contact a council member for directions.

2021 Vancouver Centre Officers

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Honourary President	J. Karl Miller

Library

The centre has a large library of books, magazines and old NOVAs for your enjoyment. Please take advantage of this club service and visit often to check out the new purchases. Suggestions for future library acquisitions are appreciated.

On the Internet

rasc-vancouver.com
astronomy.meetup.com/131/
www.facebook.com/RASC.Van
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these events being smoked-out was well down the list of worries (rain or even snow being far more likely spoilers). The effects of human-caused global warming are upon us and continued inaction will only make it worse.

Speaking of the Merritt Star Quest, it, too, was cancelled this year but for very different reasons. The Loon Lake Road gravel pit, where the event has taken place for years, has been decommissioned and management of it has moved from one government department to another, the net result being the sudden cancellation of the permit for the event. Given this, the future of the Merritt Star Quest is still being figured out, and whether it will be back at the gravel pit or needs to move to a new location is an open question that the Merritt Astronomical Society is exploring. We'll keep an eye on their progress and hope for the best!

On a happier note, last month we participated in our first in-person event since the pandemic began! The Perseid Meteor Shower event at Aldergrove Regional Park returned, albeit as a scaled-down event with proper precautions in place. See Suzanna's article below for more details of how it went.

And we will have our next in-person event at the Manning Park Dark Sky Weekend on October 15-17. The details are still being finalized (and it will also be scaled down from years past) but we should have more information, soon.

Our monthly meetings will continue online until SFU deems it is safe to allow external events on campus. Once this happens, we'll be sure to notify everyone of the change but in the meantime, see you all on Zoom! ✸

2021 Perseid Meteor Shower

by Suzanna Nagy

This is a report on our first public event in a year and a half. Our last in-person event was March 7, 2020 when we participated in a Women's Day event with Girl Guides of Canada. Already then, everything was being sanitized, but mask wearing was not yet the norm. A week later, the country shut down for COVID.

Since then, all of our events have been virtual so when Metro Parks announced that they were going to be proceeding with a scaled-down Perseid Meteor Shower event, pre-registration only, and invited us to participate as they do every year, we could not say no. Having recently upgraded the Jim Bernath Meteorite Collection with new display boxes and our recently built radio telescope, we were excited to give both a first run.

Pre-COVID, the annual Meteor event would have brought together hundreds of families for a Saturday evening of events, fire-side stories, star gazing, meteor gazing, lectures, displays, and overnight camping. As a result of COVID, Metro Parks scaled down the event and spread it out over five nights. RASC was scheduled to attend on Tuesday, Thursday, and Saturday.

Tuesday, August 10 was a Zoom webinar hosted by Metro Parks, which we participated in with two presentations: Leigh Cummings presented a PowerPoint on Meteors and myself (Suzanna Nagy) showed the Jim Bernath Meteorite Collection using a pen-like microscope attached to my laptop.

Wednesday through Saturday were scheduled in-person stargazing (limited to 30 families each night) at Aldergrove Regional Park with RASC planning to attend with telescopes, the Jim Bernath Meteorite Collection, and our new radio telescope. Wednesday night proceeded as planned, but Thursday and Friday nights had to be cancelled due to the influx of wildfire smoke and the extreme health hazard that occurred in the Fraser Valley for those two days. Unfortunately, the radio telescope which had been scheduled for the Thursday had to be cancelled. It was a big question if we were going to be able to proceed on the scheduled Saturday but by that morning the smoke was clearing due to high winds and the forecast for the evening was for clear but hazy skies. Metro Parks announced at 11 am that the evening's event was proceeding as planned.

I attended the event on Saturday evening with my fellow volunteers, Hayley Miller and Disha Patel. The plan was to set up the Jim Bernath Meteorite Collection to complement the activities being planned by Metro Parks staff. We arrived at 8:30 pm for a 9:30 pm start but before we were even able to start setting up the meteorite display, members of the public were already arriving. We scrambled quickly to set up as there was a line forming to get a look at the meteorites. With COVID, we three were wearing masks as were most of the public. Items being touched and examined were being sanitized.

Approximately 30 families participated in the Saturday event with about 100 people in attendance. In addition to our display, Metro Parks staff were directing the public to the open field where they were invited to lay down

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ring that extends the dome drip line away from the building.

We have accomplished a great deal one day at a time, setting achievable goals each session. I would like to thank council and executive for their support of undertaking this ambitious project. There is still much to do before first light and many hands make light work. We can use your help in many ways. Email me: AOMO@RASC-Vancouver.com to join in the fun of working with fellow astronomers on a great project to get this facility back into operation even sooner. ✸

Tarped and ready to receive the new dome

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on their blankets (physically distanced) for story time and a tour of the constellations. With the sky still hazy, only the brightest stars of the constellations were visible and only the brightest meteor tails—but there was one so bright that it streaked across the entire sky and brought loud oohs and aahs from the crowd.

Vanessa Lee of Metro Parks shared a couple of comments made by participants:

"... it's a rare opportunity to be able to witness stars shooting in the sky so close to the urban areas. Thank you so much for your work! It brought us unforgettable memories."

"All of it beautifully put together, the walk, the field, the stories, great sound system, constellations really really great. Keep doing these programs important for everyone—seniors to toddlers."

Vanessa thanked the RASC volunteers by saying:

"Much gratitude and thanks for partnering with us to create nights filled with wonder and star-tacular performances for many families!"

We at RASC are looking forward to more post-COVID events in the future. ✸

Membership has its Privileges!

Are you tired of looking at the same objects again and again (planets, moon, etc.)? Is your telescope collecting dust because it's hard to locate deep sky objects? Would you like to bring your observing to a stellar level? Robert Conrad, our new observing director, revived the Vancouver RASC observing group and invites you to join by sending him an email at observing@rasc-vancouver.com. Some of the benefits of belonging to this group include:

- Hands on training on how to operate the SFU Trottier observatory
- Weekly observing sessions at the observatory or at dark sky locations
- One-one-one coaching on how to locate thousands of objects in the night sky
- Attend small interactive seminars delivered by Robert on a range of topics including failsafe star-hopping, charting challenging objects and understanding the motions of the cosmos
- Learn to make your telescope dance by locating objects such as asteroids, nova, and supernovae
- Spectroscopy and imaging training from Howard Trottier and an opportunity to collaborate on observatory research projects
- Updates on observable sky events happening during the week like asteroid/comet/deep sky conjunctions
- Access to observing guides and lists that Robert created that took hundreds of hours to create and will help with planning observing sessions
- Knowledge and expertise from other observing group members
- Learn how to quickly and efficiently find and star-hop to deep sky objects using a range of binoculars and telescopes

Upcoming Events

October
15 - 17 – Manning Park Dark Sky Weekend

December
12 – AGM

They Paved Paradise

by Michael Levy

It is late August evening in 2014. I am at Merritt Star Quest for the first time. My tent is up, and my telescope is assembled. When enough stars are visible, I do a three-star alignment. From my balcony in Yaletown, I have started becoming familiar with the brightest constellations. Cassiopeia, the Big Dipper and especially Cygnus, the Swan. I am eager, now that I am in dark skies, to explore some deep sky objects like the North American Nebula just a degree or so away from Deneb, the bright star at the tail of the swan. Impatiently, I wait for the skies to darken. Then I stall, my observing plans momentarily forgotten as the Milky Way emerges in all its incredible glory from the dark sky. But where is my friend the swan? I panic—it is lost in the blaze of light from the billions of stars in the Milky Way.

Luckily, my telescope is aligned, and its go-to computer is completely unfazed by this unfamiliar spectacle.

I grew up in the northern suburbs of Johannesburg, and the Milky Way was visible and prominent in skies. When I arrived in Waterloo, Ontario in 1975, there was no Milky Way. I assumed this must be because I was too far north to see it, but I soon realized that it had been drowned out by light pollution. I think of Joni Mitchell's song, Big Yellow Taxi: "they paved paradise and put up a parking lot." Worse than that, the parking lot is dotted with so much light that you probably need sunglasses to find your car.

I have to admit that trying to tackle light pollution seems like an impossible task. But we have to try. Light pollution is just one part of the damage that we humans are inflicting on our world, and we must start acting together to mitigate the damage that has been done.

As part of this effort, our society, at the national level, has created a program called "The Dark-Sky Site Program". The objective of the program is to preserve the remaining dark spaces in the country, and, importantly, to educate the general public about light pollution. There are three categories of dark-sky sites. A Dark Sky Preserve is a place with no visible artificial light, minimal sky glow, but which allows nighttime access. A Nocturnal Preserve is an area where artificial lighting is strictly controlled, and which is primarily designed to protect the nocturnal environment. After dark access is not a requirement. Finally, an Urban Star Park is an area with strictly controlled artificial light, within reach of urban centres and with measures in place to educate the public and promote the reduction of light pollution in the surrounding areas. Such a site should also encourage the public to visit at night specifically for the purpose of observing the night sky unimpeded by artificial light.

The Vancouver Parks Board have worked with us to try and have Beaver Lake in Stanley Park designated as an Urban Star Park. However, at present it does not qualify, mainly because it is just not dark enough. When we went there on August 12th to see the Perseids, the problem became obvious. The pathways to the lake were dark, because of the tree canopy, but we found that we could walk around the lake without a flashlight, just from the light caused by skyglow. (There was no moon that night.) It is possible that some of this glow came from the works yard which is directly south of the lake. With luck, on a suitable night, and when the coyotes are not around, we hope to persuade the parks board to turn off the lights for a couple of hours so that we can measure the difference in sky glow.

There are approximately 25 designated Dark-Sky sites in Canada, but only two so far in BC: MacDonald Park near Abbotsford, and Cattle Point in Victoria. With all of our effort, and in cooperation with municipal and provincial authorities, we hope to change this. ✸

Radio Station Andromeda?

by J. Karl Miller

I take a daily half-hour walk, sometimes inside our house, or the back yard, or around several blocks in our neighbourhood. While doing that, most of the time I listen to the radio or music library on my cell phone. I've set the music to be played in random sequence. It seems to make the time go faster.

One of the tracks is called "Radio Andromeda" (electronic music by Michael Walthius). Seven minutes long, it has just the right tempo for a good walk. The other day, walking, and fantasizing that this melody was actually a transmission sent by a civilization living somewhere in the Andromeda Galaxy, and imagining my receiving it just now on my radio. It would imply a much-advanced intelligence but with a technology in some way compatible with ours.

This image approximates how the Andromeda Galaxy shows in binoculars under a dark sky

We know of nothing in our physical world that can move faster than the speed of light. The interesting aspect of my fantasy would be that this music would have had to be transmitted about 2,400,000 years ago, since the Andromeda Galaxy is 2.4 million light years distant. It also means that these "Andromedans" will have had 2,400,000 years to evolve since then (approximately the time it has taken for humans to evolve from Australopithecus to Homo Sapiens). If they exist, would we even be able to recognize them?

There is another field of physics, the mathematical and observational basis of how the world around us works: it is called Quantum Mechanics. Personally, I find it difficult to wrap my mind around many of the concepts of this discipline. Perhaps the "Andromedans" have mastered the art of making use of its quantum entanglement and superposition effects, and have somehow circumvented its no-communication theorem. That might give them the ability to be aware of who we are and what we do in "real time," even from a distance as far away as the Andromeda Galaxy. (*NO, I don't take "social" drugs, or smoke anything. I do have the occasional glass of red wine, though not before my daily walk.*)

This fantasizing is, of course, just my brain freewheeling. Quite aside from that, I look at the Andromeda Galaxy through binoculars often, preferably from an area with no or little light pollution. It looks nothing like its long-exposure, colourful photos. Our visual perception of it is colourless. The light emitted from all the stars in that galaxy is too faint to stimulate the colour receptors in our eyes.

As an example, look at our own galaxy, the Milky Way. We can't see it in our light-polluted cities at all; in dark areas it just appears to be, well, faintly "milky"—no colour. Consider that we actually live inside our galaxy, in comparison, at its distance, it's no wonder the Andromeda Galaxy appears so faint. And yet, it is larger than our Milky Way and bright enough under a clear, dark sky to be visible with the naked eye as a grey patch. The best view I've had of the Andromeda Galaxy was in 1993 under a very dark sky at Crater Lake, Oregon.

I've written in earlier posts how useful binoculars are in astronomy; if you know the sky reasonably well, a whole evening can pass looking at or searching for many objects, using only binoculars. Interesting views of those, i.e. the Orion Nebula, M13 (the global cluster in the constellation Hercules), the Milky Way in our southern sky with several gaseous nebulae and star clusters, and numerous stars; several nebulae in the Cygnus area overhead; all are bright enough to be visible at this time of year. The wide field of view in binoculars make them ideal for objects that cover a wider area in the sky. Stars bright enough to actually show some colour are also enhanced when looking at them through binoculars.

A comfortable reclining chair greatly enhances an experience similar to actually being "in space." You may even want to listen to a radio while you're exploring the sky, perhaps looking at the Andromeda Galaxy. Who knows what you might hear...? ✸

The Horsehead and Flame Nebulae by Robert G. Lyons

I made this image with 17 hours of 5-minute exposures from my rooftop in Vancouver. I used the Redcat51 telescope riding on the SkyWatcher AZ-GTi mount and an ASI 183MM Pro camera. The Ha, Sii, and Oiii narrowband filters helped cut through all the light pollution of the city. This image was made in December, 2020 and I'm looking forward to shooting it again this year and reprocessing the data for an even better result.