

SKYNEWS



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August 21 2017
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Next Monthly Meeting
Wed Oct 11th 2017
Rm A104
Bob Wright Centre
UVic Campus

www.victoria.rasc.ca

On the Cover

The Solar Corona

By John McDonald

John captured the subtle details of the solar corona from Monmouth Oregon on August 21st. He used a Canon T3i (modified for H-alpha) with an Orion ED80T CF 80mm refractor. This is a composite of 9 exposures ranging from 0.8s to 1/2000 s using an advanced radial blur technique. Some of the features of this beautiful but complex image are discussed on page 4.

President's Report

by Chris Purse

The summer of 2017 will be noted for a relatively rare event, a solar eclipse visible across North America. Many Victoria Centre members travelled to see totality including me. That was my first total eclipse and it was an extraordinary experience. I now understand why many members of the club make it a priority to view total solar eclipses. The totality was all too short but even that 2 minute experience made the trip worthwhile.

I viewed the eclipse at the home of friends in western Idaho; in all, 22 of us set up to watch the eclipse. We put chairs in front of their garage as that faces east and got ready for the eclipse to begin. With the garage door open, we had a shaded space where we could get out of the sun's heat as needed. As the eclipse progressed, we noticed that we did not need that shade as the sun's rays no longer felt hot. That happened some time before the amount of

light was reduced so it was an interesting sensation.

We looked around for objects projecting the sun and it was great to see the effect of the spaces between leaves as the sun became an increasingly narrow crescent. We had my solar telescopes set up to provide a view of the sunspots and prominences. I noticed that the progress of the eclipse was more evident with the magnification of the telescope than through eclipse glasses. We also put out a white sheet to see if we could see the shadow bands. We did see them at both ends of totality.

Totality was amazing. Having that all too brief diamond ring and then the sudden appearance of the sun's corona was magical. I had a good look to see if I could see some of the stars but I only saw Venus. As the seconds ticked by, we knew it would soon be over, but did our best to enjoy the spectacle. Sure enough, another diamond ring appeared and the light started coming back. It was a letdown that it was over but the experience is not to be forgotten.

Now we are back into the "regular" time of the year monthly meetings resume on Wednesday, September 13 at 7:30 p.m. in room A104 in the Bob Wright Centre at UVic. Astro Café resumes at 7:30 p.m. on Monday, September 11 in a temporary location while our regular room is renovated. We will be posting the schedule of other events as they are completed. As a reminder, the November meeting is our AGM. That will be held on the evening of Saturday, November 18 at the Cedar Hill Golf Course. Please keep an eye on the website for details about upcoming events.



Eclipse Crowds at Mount Tolmie Reservoir on August 21st. See the Outreach Article on Page 6 Photo by Dan Posey

Sept 13th Meeting Presentation

Formation, Development & Geology of the Moon

by Ted Stroman 7:30 PM:Rm A104 - Bob Wright Centre, Uvic

The Apollo program boosted our understanding of the Moon. However the latest robotic missions and new research has brought new data and our view of the Moon has been transformed.

The Moon has complex geochemical history, amazing formations and hold the keys to knowledge of how the Earth and the Solar System developed. With new missions and technological progress a lot has changed over the last 50 years, yet many questions and mysteries remain.

Come and hear the dramatic story of how the Moon was formed, how it developed and how new approaches are unveiling its secrets. Knowing this you may find a better understanding of what future Moon missions may accomplish and some of the challenges of a permanent moon base.

Ted Stroman is a long standing member of RASC Vancouver. His 1st Moon Landing Program was started in the 1990s and have brought the excitement and awe of the Apollo missions & and the moon to many classrooms and public events throughout the province. He is an avid reader/ researcher on the Moons development, geology and future space missions. The moon is his favorite observation target on a night but also follows the planets and DSOs with his Giant Binoculars & 4.5" reflector.

He has a background in Health sciences and works for Worksafebc. He is married and has one daughter.

See Page 6 for Upcoming Speakers



ASTRONOMY CAFE



Our weekly **Astronomy Cafe** is an excellent, informal, way to meet us. New comers are especially encouraged. **Due to renovations it is being held in an alternate venue until November.** Click the link for location:.. <http://victoria.rasc.ca/events/astro-cafe/>

Fairfield Community Centre - 1330 Fairfield Rd. Victoria.

Every Monday at 7:30pm. Contact: Reg Dunkley for further details: vp@victoria.rasc.ca



Email Lists

Observer / CU Volunteers / Members

Contact Chris Purse to subscribe membership@victoria.rasc.ca



New Observers Group

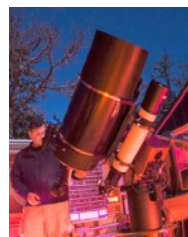
Hosted by Sid Sidhu - 1642 Davies Road, Highlands. Call 250.391-0540 for information and directions.



Cattle Point observing in Victoria's own Urban Dark Sky Park.

Click the link for the date and time of the next scheduled session

<http://victoria.rasc.ca/events/rascals-cattle-point/>



Victoria Centre Observatory: Every Friday Evening changing to Every Saturday Evening on Sept 30th.

Open to those on the Active Observers list only

Weather permitting.



UVic 32 Inch Telescope

RASC Victoria Centre Session
2nd Friday of Month. Resuming in the Fall. Meet by the Elevator in the Bob Wright Centre at 7PM

Membership Report - Sept 2017

Total membership is currently **263**. There are 20 members in the grace period which means their membership has expired in the past 2 months. Please contact Chris Purse (membership@victoria.rasc.ca) if you would like to check the status of your membership.

All About the Corona

by Reg Dunkley

In the lead up to the “Great American Eclipse” there was much discussion about Diamond Rings and Baily’s Beads but these turned out to be fleeting side shows. The Corona was the “main event” and occupied central stage for two minutes. So post totality conversation was *all about the Corona*. John McDonald’s beautiful cover image captured it’s irregular shape and delicate features which raises the question “what is going on there?”

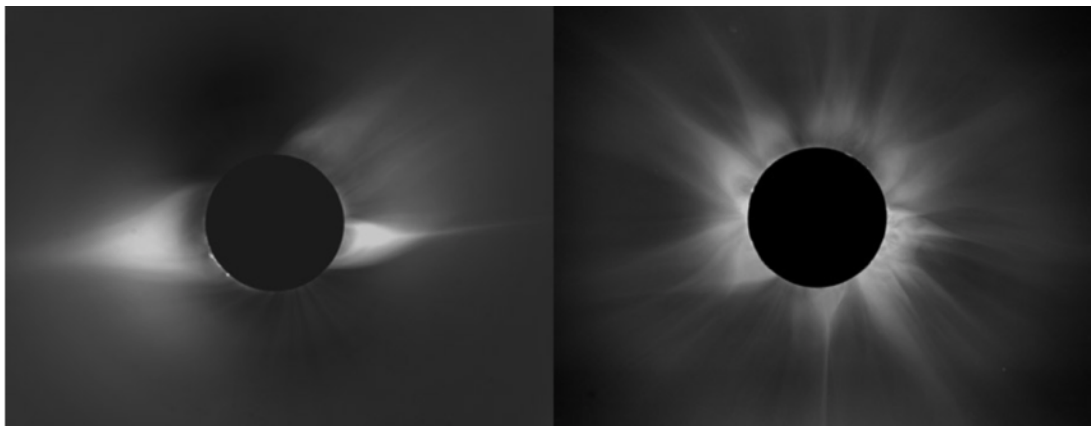
First of all, what is the Corona made of? It is distinct from the familiar yellow disk of roiling fluid called the photosphere. And it is more rarefied than the relatively shallow layer of gas and plasma called the chromosphere which obtains it’s name and pink hue from hydrogen alpha emissions. Visually the Corona extends about two solar radii beyond the Sun’s surface but space borne instruments can detect a fainter presence up to twelve solar radii away. It turns out it is much much hotter than the underlying photosphere (6000 degrees Kelvin) and chromosphere. So hot in fact that all of the electrons have been totally stripped away from the nuclei of the lighter elements. Spectra of the Corona revealed distinct colours or emission lines, not associated with any known element. This was a great mystery and for a while it was speculated that there was a new element dubbed *Coronium*. In 1940 the puzzle was solved when the unique green colour in question could be explained by Iron that been stripped of 13 electrons. Such an extreme degree of ionization involves temperatures above 1 million degrees Kelvin! Why would the

Corona be millions of degrees hotter than the underlying Solar surface? This is referred to as the *Coronal heating problem* and remains unsolved and an area of active research.

At such extreme temperatures we would be instantly incinerated if the Corona was dense. Fortunately it is 100 billion times **less dense** than the Earth’s atmosphere at sea level. The source of the Coronal light that we are observing is actually light from the photosphere that is scattered by electrons as it passes through the extremely rarified Corona. The brighter areas correspond to denser regions of charged particles.

The appearance and structure of the Corona varies significantly from eclipse to eclipse. The beautiful polar plumes captured in John’s image resemble the alignment of iron filings distributed around a bar magnet and reveal the large scale magnetic poles and field of the Sun. This pattern is typical for an eclipse that occurs during the quiet period of the 22 year solar cycle when sun spots are found closer to the solar equator.

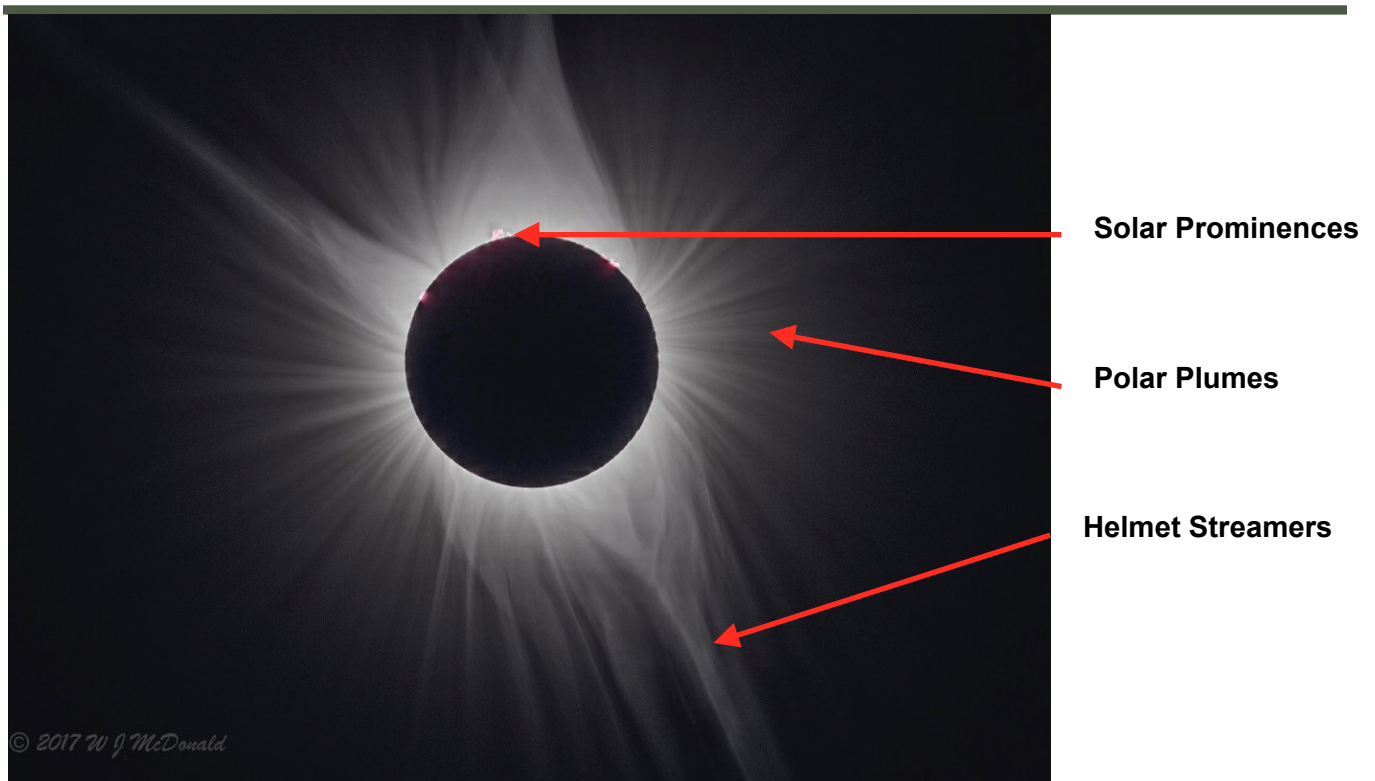
The pronounced brighter areas extending radially outward are referred to as [helmet streamers](#). They are usually situated over closed magnetic loops that are associated with features such as sun spots, coronal loops, filaments and solar prominences. These magnetic loops can confine electrons and increase their density in these regions and enhance the brightness. The pointed tips of the streamers and the narrow lines of polar plumes are thought to shaped by the solar wind.



Helmet Streamers
Are More Abundant
When Eclipses Occur
During the Active
Portion of the Solar
Cycle

Left: Solar Min 1994

Right: Solar Max 1980
[Source](#)



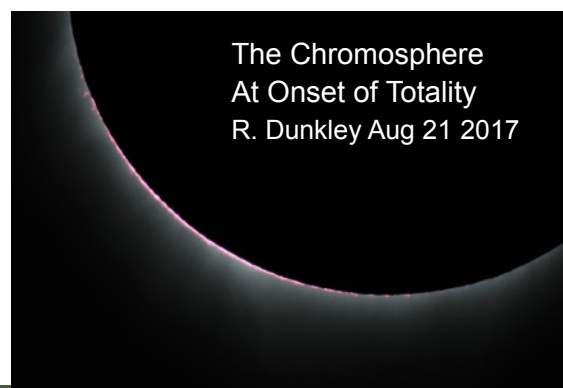
During an eclipse that occurs near the maximum portion of the solar cycle, the helmet streamers are more numerous and extend closer to the poles. This reflects a larger number and wider distribution of sunspots. The polar plumes are often obscured during this phase.

Notice in John's image that the helmet streamers are translucent and there are other streamers in the foreground and background. With the [online archive](#) of solar monitoring from space telescopes such as SDO and SOHO it might be possible to relate specific helmet streamers to corresponding surface features.

Magnetism plays a huge role in the behaviour of the Sun. Due to high temperatures the solar atmosphere is in a plasma state ... a slurry of electrons and charged nuclei. The motion of the charged particles creates magnetic fields and leads to interactions of mind boggling complexity. The field which describes and predicts the behaviour of plasma has the frightening title of *magnetohydrodynamics*. Associated supercomputer models are providing insights to the behaviour of the solar plasma. Using such models, solar scientists have recently developed a [single mechanism](#)

which may explain solar eruptions of all sizes ranging from solar flares to coronal mass ejections. It involves twisting and reconnecting those all important magnetic fields.

The behaviour of the Sun is a fascinating, complex and important area of study. Improvements in continuous monitoring of the Sun from space together with advances in computer modelling are improving our understanding of our nearest star. The recent total eclipse had a strong and in many cases a spiritual impact on an enormous segment of our population. In just two minutes it delivered a powerful reminder of the important role the Sun plays in our lives. Perhaps it will also inspire a new generation to study the stars.



An Epic Summer of Reaching Out

by Reg Dunkley

Many organizations pack it in for the Summer but the Victoria Centre of RASC has a tradition of ramping up as they participate in major outreach programs and special events. The dominant program involved a series of **Star Parties** held Saturday evenings at the **DAO**. This year the Star Parties commenced on April 29th which also coincides with Astronomy Day, our premier outreach event of the year. By Labour Day Victoria RASCals had participated in 17 Star Parties with three more scheduled before the season ends on September 23rd.

At each event RASCals generously shared their time, expertise, knowledge and precious telescopes with an amazed and grateful Public. RASCals worked closely with their colleagues from Friends of the DAO. It was an extraordinary contribution by all. Many RASCals actually hold "dual citizenship" in both organizations. **David Lee**, a member of both groups organized and introduced the speaker program for the entire series. It was a remarkable commitment!

There were also a number of other traditional events. On July 28th to 30th RASC held their annual **Metchosin Star Party**. On Friday and Saturday night speakers made interesting and entertaining presentations to overflow crowds. The dark skies cooperated but the gale force westerlies roared through Juan de Fuca Strait and buffeted the scopes.

By early August wildfires were out of control in the BC Interior and an offshore flow shrouded the coast with smoke. This cast an eerie spell over Victoria through much of the month. On

August 11th, however, partial clearing occurred just in time for a wonderful event at **Fort Rodd Hill**. Parks Canada promoted a Star Party that coincided with the peak of the Perseid meteor shower. The public responded and over 300 people attended with many camping out. They savoured the view through 11 RASC telescopes. It was a joyous family occasion and a perfect venue for astronomical outreach.

And then there was the **Solar Eclipse**. Heavily promoted by the media the Victorian response to a "free" event was overwhelming. Many RASCals abandoned ship and headed for the path of totality. This left a few key RASCals holding the bag. **Ken Mallory** was the lead at the Mount Tolmie reservoir which drew a crowd of 1500. **Sid Sidhu** was the point man at the BC Museum where another 1500 people showed up. Meanwhile **Sherri Buttnor** had to contend with a throng of 500 at the relatively remote Metchosin Cricket field. There was a strong appetite for rare solar glasses. Riots were averted when the public realized that this was a slow motion event and all could enjoy by sharing. At Mount Tolmie Ken had to acquire a permit and hire two flag people to control traffic and parking. He conducted 12 media interviews before the event and 4 live interviews from Mount Tolmie!

To top it off another 2000 people visited the RASC booth at the **Saanich Fall Fair** on Labour Day Weekend. So epic levels of Astronomical Outreach were delivered by Victoria Centre RASCals. These events do not occur spontaneously. Kudos must go to our new RASC Outreach Coordinator Ken Mallory. He survived a baptism of fire and his organizational skills were key to a successful season. So please respond to his future requests for volunteers with enthusiasm!

Upcoming Speakers

Wednesday October 11th 2017

At UVic: Wendell Shuster. Historical Supernovae

Saturday November 18th 2017

AGM at Cedar Hill Golf Course:
Dr Chris Willott. The James Webb Space Telescope

Wednesday December 13th 2017

Dr. Chris Pritchett. Supernovae: 1a



Overflow Crowd at Metchosin Star Party listen intently

Don't Miss The 22nd Island Star Party
at Bright Angel Park September 15th and 16th
[Click Here for Details](#)

Breaking News
The Grand Opening of CHIME

occurred on Thursday Sept 8th
Does That Sound Vaguely Familiar?
Check out the article on CHIME in the
February edition of SkyNews

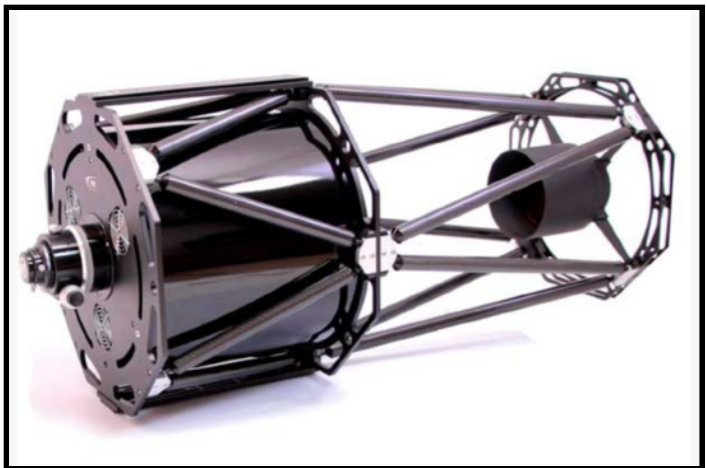
[Click Here for Video](#)



More Breaking News
Victoria Centre Observatory's
New Telescope is Enroute!

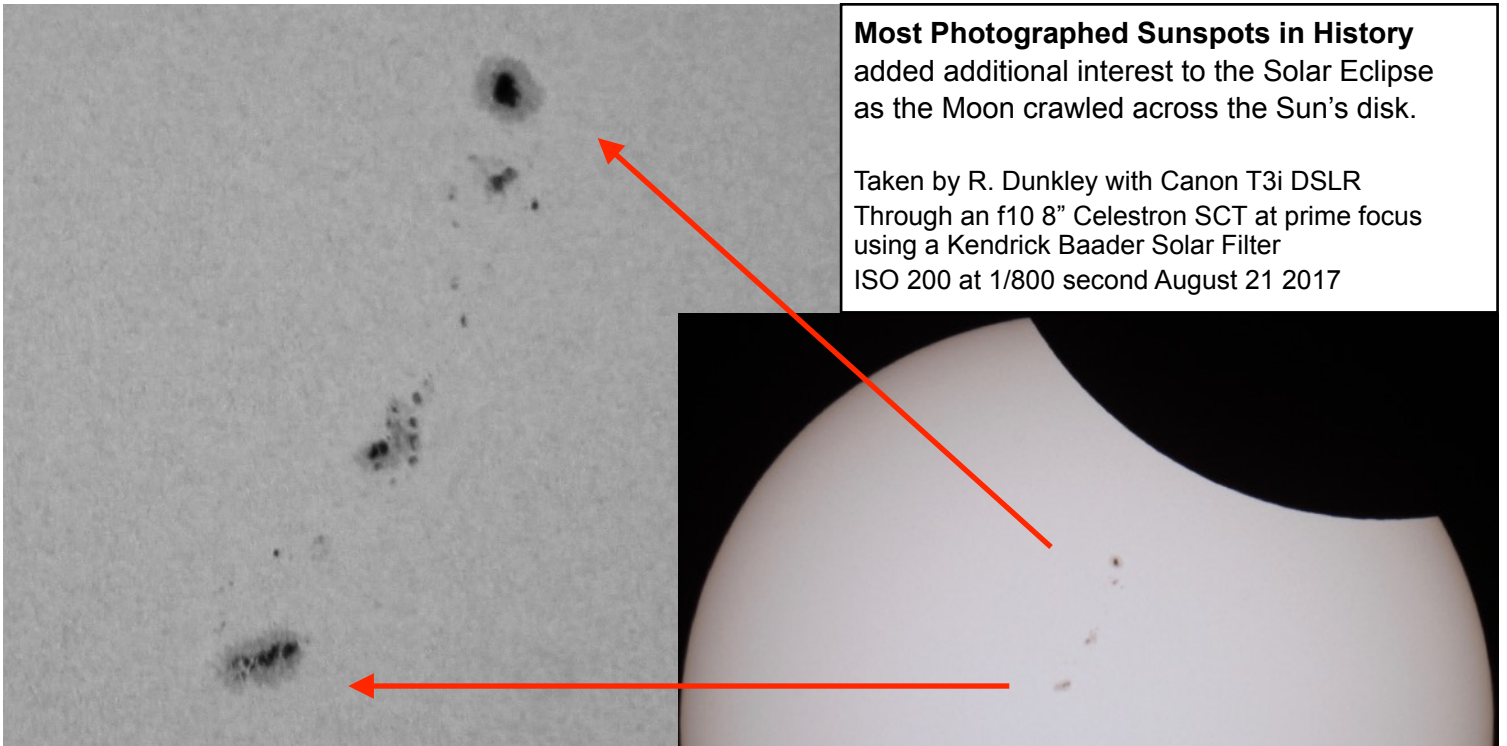
The 16 inch Richey Chretien Astrograph will
replace the 14 inch Meade SCT which has
served the Centre for 10 years.
The new scope will result in improved:
Cool Down Time
Guiding and Pointing Accuracy
Light Gathering and Resolution

[Click Here for Details](#)



Most Photographed Sunspots in History
added additional interest to the Solar Eclipse
as the Moon crawled across the Sun's disk.

Taken by R. Dunkley with Canon T3i DSLR
Through an f10 8" Celestron SCT at prime focus
using a Kendrick Baader Solar Filter
ISO 200 at 1/800 second August 21 2017



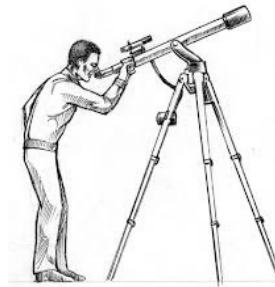
RASC Victoria Centre Council 2016 / 2017

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President	Chris Purse	president@victoria.rasc.ca
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Second Vice President	Deb Crawford	vp2@victoria.rasc.ca
Treasurer	Bruce Lane	treasurer@victoria.rasc.ca
Secretary	Leslie Welsh	secretary@victoria.rasc.ca
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Astro Cafe	John McDonald	
NRC Liaison	James di Francesco	
Nat RASC Anniversary Wrkg Group	Dr. James Hesser	james.Hesser@nrc-cnrc.gc.ca
Nat RASC Anniversary Wrkg Group	Laurie Roche	
UVic Liaison	Alex Schmid	
Observing	David Lee	
Historian	Bill Almond	

Online Resources

Magazines

[SkyNews](#) Our National RASC Newsletter
[Sky & Telescope](#) Magazine
[Astronomy](#) Magazine
[Astronomy Now](#) Astronomy in the UK
[Amateur Astronomy](#) Magazine
[Astrophotography](#) Magazine



Borrowing Telescopes

The centre has telescopes for new and seasoned observers that members can use. Contact Sid Sidhu from the email list