

SKYNEWS



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Next Monthly Meeting
Wed Jan 10th 2018
Room A104
Bob Wright Centre
UVic Campus

www.victoria.rasc.ca

At the Cave Creek Canyon

Near Portal, Arizona

by John McDonald

John bravely scaled a hill frequented by bob cats to capture the Milky Way against the mountains at Vista Point in Cave Creek Canyon. It was so dark that the mountains were illuminated by starlight alone. It was well worth the effort as John's stunning photo received the 2017 Victoria Centre Award of Excellence in Astrophotography. Taken on March 1 2017 using a Canon 6D mounted on an Ioptron Sky Tracker with a Sigma 15 mm lens operating at f/2.8 and ISO 3200. Exposure time 60 sec. Processing in Adobe Camera Raw and Photoshop.

President's Report

by Chris Purse

With 2018 on the horizon, we have two events to celebrate in the New Year.

The first is the sesquicentennial of the Royal Astronomical Society of Canada. RASC commissioned a history of the society, *Looking Up: A History of the Royal Astronomical Society of Canada* that was written by R. Peter Broughton and published in 1994. It is available on the RASC website at rasc.ca/looking for those who would like to know more about the history of our society.

The society traces its roots to the year after confederation when a group of friends formed the Toronto Astronomical Club in 1868. The club was renamed as a society in 1869. Around 1884, the name of the society was changed to The Astronomical and Physical Society of Toronto; the society was formally incorporated in Ontario in 1890. In 1900, the name reverted to the 1869 version, namely, The Toronto Astronomical Society. Two factors resulted in this name only being used for three more years. The first was that astronomical clubs were forming in other Canadian cities and a number of clubs elsewhere in Ontario had affiliated with the Toronto society. It was realized that having Toronto in the name was too restrictive. The second was the 1901 visit of the Duke and Duchess of York, later to become King George V and Queen Mary. Their visit increased interest in the monarchy and led to the suggestion that

the society become a royal society. After much debate, the society decided to petition King Edward VII for The Toronto Astronomical Society to become the Royal Astronomical Society of Canada. The formal request to change the name of the society was granted on March 3, 1903.

Additional centres formed over the years with our own centre being founded in 1914. If you look at the centre list, that does make us one of the original six! Much has happened in the 150 years since a group of friends with an interest in astronomy decided to form a club. A wonderful **logo** (page 7) has been created to help celebrate this anniversary drawing on highlights of Canadian astronomy. Make sure you have a look at the RASC sesquicentennial site, rasc.ca/2018, to learn more.

There will be a number of celebrations during 2018 in honour of this anniversary. The first will be held on Saturday, January 27. The RASC 2018 committee is proposing a cross-country Star Party that will combine solar and lunar observing (weather permitting), starting on the Atlantic coast and reaching westward and northward to encompass all Centres as the afternoon progresses. The logistics of the local Star Party will be at each Centre's discretion but the committee proposes a start time of 3 p.m. local time. Technology permitting, the Star Parties will be linked via Google Hangouts and the link will be shared publicly allowing anyone to witness the sun, moon, and the local celebrations. We are looking at holding our event at the University of Victoria as that would provide us with the technological support and space needed. More details will be announced as they become available.

The second anniversary of note is the centennial of the Dominion Astrophysical Observatory. It was announced in 1914 that the observatory would be built on Little Saanich Mountain but it would take 4 years for the observatory to see first light on May 6, 1918. There are plans underway to celebrate this historic anniversary and further details will be shared as they become available.

On behalf of the Council of the Victoria Centre, I wish each of you a happy holiday season and all the best for 2018!

December Meeting Presentation Supernovae and the Meaning of Life by Dr. Chris Pritchett

Wednesday December 13th 2017 at 7:30 PM
Room A104, Bob Wright Centre.

Supernovae are among the most energetic, extreme and interesting objects in the Universe. This talk will focus on the nature of supernovae, their cause and properties, and especially on how supernovae affect our very existence.

Bio: Chris Pritchett is an Emeritus Professor in the Department of Physics and Astronomy at the University of Victoria, where he has been a faculty member since 1982. He studies supernova explosions across vast reaches of the Universe, and was the Coordinator of the "Supernova Legacy Survey" - an observational quest for the nature of the mysterious "dark energy" that fills the Universe. Outside astronomy, his passions are music, canoeing, back-country skiing, and film.



Crab Nebula Supernova Remnant

Messier #1 has been expanding since it exploded in 1054AD. Image by Dan Posey using 1.8m Plaskett Telescope

Upcoming Speakers

Wednesday January 10th 2018

Dr. Pat Hall. Quasars: Black Holes That You Can "See"

Wednesday February 14th 2018

Guillaume Thomas. Dark Matter ... Why Do We Need It?

Wednesday March 14th 2018

Vincent Henault-Brunet. Globular Clusters as Astrophysical Laboratories

Wednesday April 11th 2018

Dr. Henry Ngo. Exoplanet Overview

Wednesday May 9th, 2018

Karun Thanjavur, Gravitational Lensing

ASTRONOMY CAFE



Our weekly **Astronomy Cafe** is an excellent, informal, way to meet us. New comers are especially encouraged. **Renovations are completed and we are back in our traditional Portable.** 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 Saturday Evening

*Open to those on the Active
Observers list only*

Weather permitting. Note that the
road may be slippery in winter driving
conditions. Exercise caution.



UVic 32 Inch Telescope

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

Membership Report December 2017

Total membership is currently **253**. There are 7 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.

The 2017 Annual General Meeting

On Saturday November 18th, 46 people gathered at the Cedar Hill Golf Course for a delicious buffet and dessert. Afterwards, several more RASCals joined the audience as Dr Chris Willott, Canadian Project Scientist on the *James Webb Space Telescope* provided a most interesting overview of the mission. Dr. Willott also highlighted the two Canadian contributions which are critical to the success of the project. The *Fine Guidance Sensor* will keep the telescope on target. The *Near-InfraRed Imager and Slitless Spectrograph* is capable of studying some of the most distant galaxies as well as the atmospheres of near by exoplanets. The sense of drama builds as the Spring 2019 launch date of this elaborate instrument approaches. Just think what it will be like for Dr. Willott who has devoted the last 11 years to this project.

The meeting then got down to business as Chris Purse read the minutes from the previous AGM and Reg Dunkley presented the 2017 Annual Report. Bruce Lane then delivered the Treasurers Financial Report and Nelson Walker provided an overview of National RASC priorities.

Then the **2017 Annual Victoria Centre Awards** were presented.

Certificates of Appreciation for their outstanding support and engagement in solar viewing during the solar eclipse on August 21, 2017 –

Mount Tolmie: Ken Mallory, Jean Mallory, Jennifer Bigelow, Deb Crawford, Dan Posey
Royal BC Museum: Sid Sidhu, Jim Stillburn, Li-Ann Skibo, Michael Wheatly, Marjie Welchframe, Prem Chainani, Fatimah Al Sharyah, Erin Britton

Metchosin Cricket Pitch: Sherry Buttner, Michel Michaud, Bruce Lane

Ernie Pfannenschmidt Award in Amateur Telescope awarded for his outstanding achievement in designing and building of a custom field power pack complete with innovative digital and analog features – **Chris Purse**



Above: **Award of Excellence in Astrophotography** awarded for the photograph of the Milky Way taken at the Vista Point of Cave Creek Canyon near Portal, Arizona on March 1, 2017 – presented to **John McDonald** by **Chris Purse**

Certificate of Excellence presented in appreciation for his organization, leadership, and guidance as SkyNews editor and Astro Café host – **Reg Dunkley**

Below **Special Award Plaque of Excellence** for the design and fabrication of the Astro Café TV cabinet – presented to **Terry Ryals** by **Chris Purse**





Left: **Special Award Plaque of Excellence** for his contributions as Plaskett Telescope Operator for the Summer Star Parties at the DAO and for Centre viewing sessions – presented to **Michel Michaud** by **Chris Purse**

Following the presentations, officers and other members of the Victoria Centre Council of 2017-2018 were elected. Their positions are listed in the final page of the Newsletter.

2017 was a banner year for the Victoria Centre. The list of major events and accomplishments is too lengthy to itemize here. **Many thanks must go to all the Victoria Centre RASCals who through their extraordinary volunteer contributions made it happen.**



Above : **Newton Ball Service Award** presented for many years of exercising the equipment at the Victoria Centre Observatory, acting as Members in Charge, tending to VCO maintenance, excellence in astrophotography and achieving a major milestone this year with the technical planning, selection, and installation of a new 16” Ritchey–Chrétien truss telescope – presented to **Matt Watson (left) and Dan Posey (right) by Chris Purse**

The Ritchey-Chretien Design

by Reg Dunkley

You may have heard that the Victoria Centre recently acquired a 16 inch Ritchey-Chretien reflector telescope. **A Ritchey - What?** you ask. So you don't know either! Well I thought "What a great time to fill in a knowledge gap." But when I hopped onto the internet my initial search soon had me mired up to the axle in algebra. Then I remembered an excellent historical article on Ritchey by Ted Rafferty in the *October 2016 Sky and Telescope*.

George Willis Ritchey, a cabinet maker from Ohio crossed paths with the wealthy George Ellery Hale in 1891 and together they built three iconic telescopes: the Yerkes 24 inch reflector and the Mount Wilson 60 inch and 100 inch Cassegrain reflectors. Both Mount Wilson scopes had relatively fast f5 parabolic primary mirrors which exhibited coma; an aberration which distorted star images into radial comet shapes as one moved away from the optical axis. This limited the usable field of view of the telescope.

In 1910 Ritchey met Henri Chretien, a visiting astronomer from Nice Observatory. While swapping out different secondary mirrors on the Mount Wilson 60 inch, they noticed that certain hyperbolic shaped secondaries reduced coma. Under the direction of Ritchey, Chretien discovered an "algebraic sweet spot" which substantially minimized coma and allowed a much wider field of view.

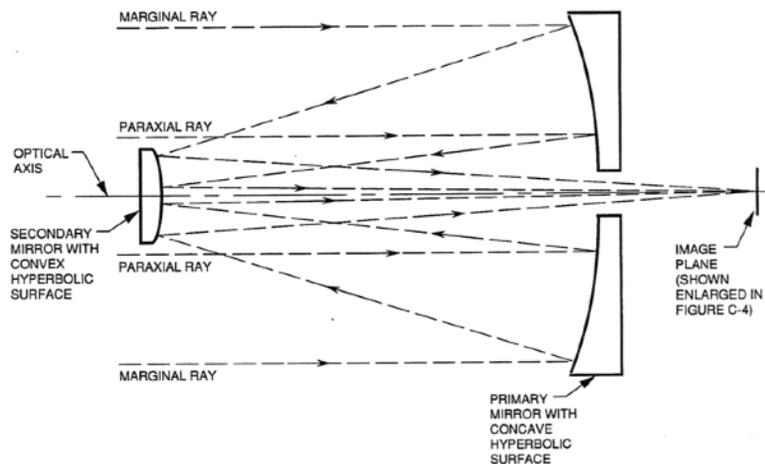
In this new "Ritchey-Chretien" (R-C) design, both primary and secondary mirrors are hyperbolic. In a Cassegrain the primary mirror is parabolic. Hyperbolic shapes however were more difficult to grind and align. When the strong willed Ritchey insisted that the 100 inch scope should employ this new experimental design, Hale refused and in 1919 they parted company.

Ritchey would eventually build a 20 inch R-C for the Paris Observatory in 1927 and a 40 inch R-C for the United States Naval Observatory in Washington in 1935. There were issues with both of these scopes. In particular they required a curved photographic plate that had to be custom made. Ritchey was then fired

and died in 1945 a broken man. He would be vindicated today, however, because almost all of the largest research grade telescopes ranging from the 2.4m Hubble Space Telescope to the 10 metre Keck Telescopes employ the Ritchey-Chretien design and capture wide star fields with minimal distortion. The 6.5 metre James Webb Space Telescope is also a R-C design.

Due to the difficulty in figuring, testing and aligning hyperbolic mirrors R-C telescopes are a rarity in amateur observatories and they are considered high end instruments. A special laser collimator has been ordered to ensure the VCO R-C remains in alignment. A field flattener has also been acquired that will compensate for the curved focal plane associated with the R-C design.

The Hubble Space Telescope is an infamous example of a failure to correctly shape a R-C mirror. The diagram below of the R-C design is obtained from the [Hubble Space Telescope Optical Systems Failure Report](#). It is an interesting document which reveals that due to a 1.3 mm error in the position of a test lens the shape of the primary mirror was seriously flawed. Rather than technological arrogance the problem arose due to a tiny chip of anti-reflective coating that flaked off a cap. This confirms that the *Devil is in the details*. The diagnosis and correction of the problem was brilliant, heroic and expensive. Fortunately minor tweaks of the VCO Ritchey-Chretien will not involve the Space Shuttle or Space walks.





Components of the 150th Anniversary LOGO

by R.A. Rosenfeld

The **aurora borealis** is a quintessentially Canadian space-weather phenomenon, one shared with other high latitude cultures. RASC members have contributed to the **scientific, historical, and artistic** investigation of the northern lights, and have promoted their recreational enjoyment.

The **Manicouagan astrobleme** (214 ± 1 Ma) represents the major discovery of sites of impact cratering in the Canadian Shield, an effort **pioneered** by astrophysicists and geophysicists at the Dominion Observatory (ca. 1950-), many of whom were RASC members. This world-impacting research played a **crucial role** in changing scientific and popular perceptions of crater-forming mechanisms, solar-system history, and planetary geology. The representation of the crater also acknowledges **Canadian excellence in meteor dynamics, meteorite petrology, meteorite curation**, and the RASC's **long-standing interest in such work**.

The **stars** represent the major Canadian contributions to stellar spectroscopy done at the **Dominion Observatory**, the **Dominion Astrophysical Observatory** (also see [this](#)), the **David Dunlap Observatory**, (additionally refer to [this](#)) and elsewhere (ca. 1905-), whose major contributors were also RASC members (such as **J.S. Plaskett [1865-1941], the first Canadian astrophysicist of international repute**). The stars

also symbolize the asteroseismology, exoplanet transits and eclipses, and investigations into stellar variability through precise photometry achieved by the **Microvariability and Oscillations of STars space telescope** (MOST, 2003-). The **globular cluster** recognizes the field of **Helen Sawyer Hogg's** (1905-1993) greatest scientific contributions (ca. 1926-ca. 1993), and the Helen Sawyer Hogg Telescope (HSHT) at the **University of Toronto Southern Observatory at Cerro Las Campanas**, one of Canada's first ventures (1971-1997) in exploring off-shore astronomical installations, which has born lasting fruit in international cooperative installations

exploring the full range of astrophysical phenomena, such as the **Canada-France-Hawaii Telescope** (CFHT, 1979-), the **James Clerk Maxwell Telescope** (JCMT, 1986-2015 [period of direct Canadian involvement & funding]), the **Gemini Telescopes** (North 1999-, South 2000-), the **Atacama Large Millimetre Array** (ALMA, 2011/2013-), the **Square Kilometre Array** (SKA, 2020-), and the **Thirty Metre Telescope** (TMT, ca. 2022-).

The **spiral galaxy** represents both the work of Canadian observational cosmologists (e.g., **Sidney van den Bergh's** classification of Galaxy morphology, **Laura Ferrarese's** work on the morphology & dynamics of early type galaxies), as well as the efforts of **amateur Canadian observers** of deep-sky objects (DSOs), and imagers. The **comet** stands for the contributions to cometography by Canadian comet discoverers, such as **David Levy, Rolf Meier, and Chris Wilson**. The **Moon** symbolizes an object important for **first nations' calendrics**, and the **earliest recorded observations by Europeans in Canada** (17th century lunar reports, and lunar eclipse reports). The Moon together with the stars symbolizes the practice of **navigational astronomy** on land and water, which was crucial to the formation of Canada. Finally, the Moon is as popular an object for **RASC members** to share with the public when doing outreach as it was 150 years ago

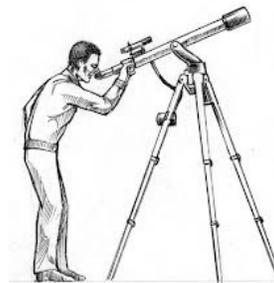
RASC Victoria Centre Council 2017 / 2018

POSITION	NAME	E-Mail
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First Vice President	Reg Dunkley	vp@victoria.rasc.ca
Second Vice President	Deb Crawford	vp2@victoria.rasc.ca
Treasurer	Bruce Lane	treasurer@victoria.rasc.ca
Secretary	VACANT	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
FDAO Liaison	Laurie Roche	
UVic Liaison	Alex Schmid	
Observing	David Lee	
	Li-Anne Skibo	
	Dan Posey	

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 above.