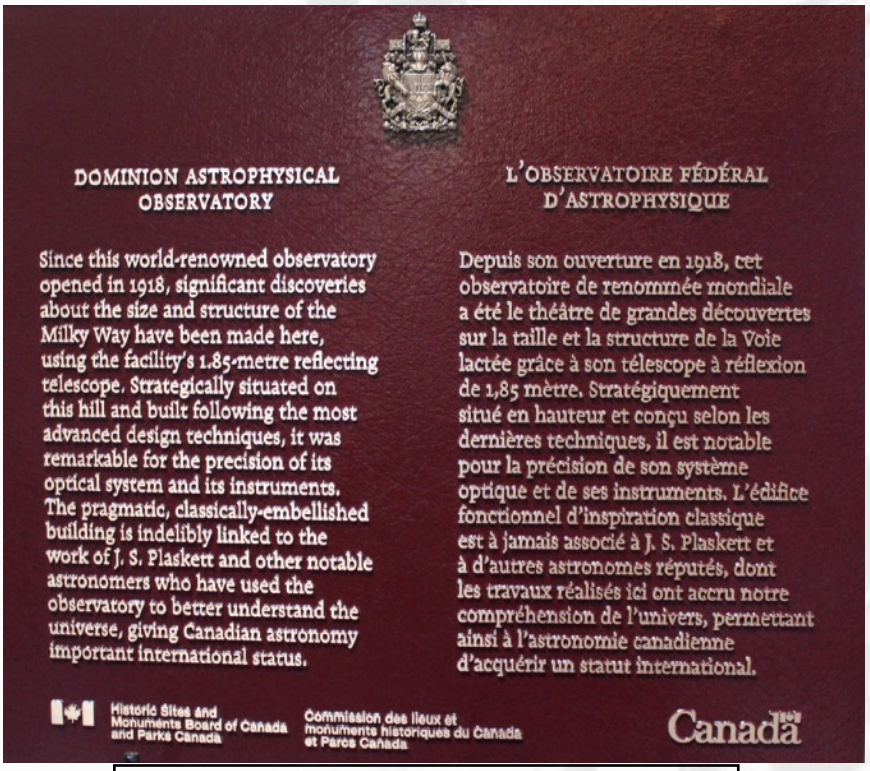
SKYNEWS



This plaque unveiled on May 3rd 2018 designated the DAO as a national historic site

Dr. J.S. Plaskett

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The Plaskett Turns 100

NEXT MEETING

Next Monthly Meeting
Wed June 13th 2018
Room 124 Engineering & Computer Science Building
UVic Campus

President's Report

by Chris Purse

May has started with an incredible celebration. The Plaskett Telescope turns 100 this month and the plaque designating the DAO as a National Historic Site of Canada has been unveiled. I was asked to speak on behalf of the Centre at this event. Here is a summary of the speech I made.

In addition to the centenary of the Dominion Astrophysical Observatory, 2018 marks the sesquicentennial of the Royal Astronomical Society of Canada or RASC. Founded in Toronto by a group of astronomy enthusiasts, RASC has grown to be a national, coast to coast organization. With the addition of the Yukon Centre in 2016, the society is moving toward becoming truly coast to coast to coast.

The Victoria Centre joined the Royal Astronomical Society of Canada in 1914. Centre historians have discovered that the 1914 founding was not the first attempt by astronomy enthusiasts in Victoria to join RASC. In 1909, efforts were made to start a centre here which were unsuccessful. However, just five years later, the effort was successful. Why was that?

I think a critical piece that was missing in Victoria of 1909 was an anchor for an astronomy group. In the pre-information age, the success of societies such as RASC was greatly increased when there were locally available, high quality resources to support the efforts of the amateur members. Typically, this would be a research university. A university would provide faculty and staff members who might have expertise in astronomy, current publications in the library, and, perhaps most importantly, access to high quality equipment. By 1914, what had been missing in Victoria was starting to take shape.

The selection of Victoria as the home of the Dominion Astrophysical Observatory meant that Victoria became the centre of astronomy in Canada. Having a top notch research institution is the best possible support a RASC centre could hope for. Just look at the telescope that came with this observatory! No one else had anything like that. As a result, the location of the DAO in Victoria was instrumental in the founding and success of the Victoria Centre. It is likely that Victoria would not have a 104 year old RASC centre had this observatory been built somewhere else.

A particular strength of the DAO continues to be public outreach. From the very early days, the public were welcomed to look through the telescope. A centre member studying its history discovered that the DAO was a leading tourist attraction in Victoria of the 1920s; records show that more than 30,000 visitors per year came to the hill. If you ask almost anyone who grew up in Victoria, they can describe a visit to the observatory so this facility certainly made an impression. For 100 years, it has been part of the fabric that makes Victoria an outstanding place to live.

Our centre benefits greatly from our relationship with the Dominion Astrophysical Observatory. From the employees who are active RASC members to the many who volunteer to speak at our monthly meetings, we are a stronger centre because of the Dominion Astrophysical Observatory. In addition, the Victoria Centre has a larger membership that many other centres in Canada that have greater surrounding populations. I attribute some of that to the interest in astronomy that is generated by the presence of the Dominion Astrophysical Observatory.

May Meeting Presentation: ***Peering through Nature's telescope – Gravitational Lensing as a window into the distant universe.***

by Dr. Karun Thanjavur

Wednesday May 9th, 2018 at 7:30 PM Room A104 Bob Wright Centre UVic

Gravitational lensing, the "bending" of light in a gravitational field is one of the many awe inspiring phenomena predicted by Einstein's theory of General Relativity, and which have since been unambiguously borne out by observations. Since the first confirmation of a gravitational lens in 1979 -nearly 45 years after it was hypothesized- the catalog of confirmed lenses now runs to a few hundreds. Aided by the rapid advances in telescope and instrumentation technologies, the magnification boost provided by gravitational lensing – Nature's telescope – is now being harnessed to probe astrophysical processes in extremely distant, faint objects even in the very early universe with a level of detail that would otherwise be exceedingly challenging. My presentation aims to explain the principles of gravitational lensing using basic physics, trace its development as a powerful observational tool, and present two applications and related results drawn from my own research.

Karun Thanjuvar: As an observational cosmologist, discovering new gravitational lenses and developing innovative techniques to harness them as observational tools are amongst my diverse research interests. As part of my doctoral thesis at UVic in 2009, I developed an automated technique to search for lenses in wide field, pan-chromatic imaging. These explorations of the distant universe come after a full career as a mechanical engineer, specializing in control systems and robotics. Born and raised in a small town in South India, I completed my education up to a bachelor's degree in mechanical engineering there, before moving to Canada to pursue graduate studies first in Robotics, and later in Astrophysics. After my PhD from UVic, I worked as a Resident Astronomer at CFHT in Hawaii for three years, before returning to UVic to accept a position as a senior lab instructor in astronomy. Even though undergraduate teaching is the focus of my current position, I continue to pursue various research projects. I also enjoy sharing the excitement of science with the public.

Our weekly **Astronomy Cafe** is an excellent, informal, way to meet us. New comers are especially encouraged. Click the link for location:. http://victoria.rasc.ca/events/astro-cafe/
Fairfield Community Centre - 1330 Fairfield Rd. Victoria.
Every Monday at 7:30pm. NOTE: Astro Cafe will be closed June through August. Contact Reg for further details: vp@victoria.rasc.ca

Email Lists

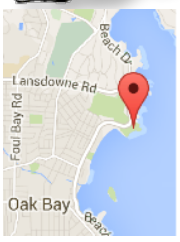
Observer / CU Volunteers / Members

Contact Chris Purse to subscribe

membership@victoria.rasc.ca

New Observers Group

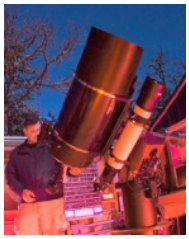
Hosted by Sid Sidhu - 1642 Davies Road, Highlands. Call 250.391-0540 for information and directions.



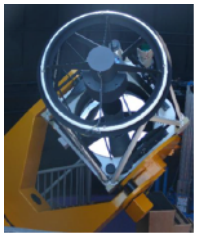
Cattle Point observing in Victoria's own Urban Dark Sky Park.

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

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



Victoria Centre Observatory: Friday evenings shifting to Saturday evenings in September
Open to those on ***the Active Observers list only***
Weather permitting.



UVic 32 Inch Telescope

RASC Victoria Centre Sessions have ended for Summer but will resume in October.

Membership Report May 2018

Total membership is currently **275.** There are 13 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.

Reflecting on the Reflector

By Reg Dunkley

Spend more money on the mount - and less on the camera. That advice is often given to newcomers by veteran RASC astrophotographers. There is no better validation of that design philosophy than the 72 inch (1.8 m) Plaskett reflecting telescope which celebrated 100 years of service this month. With a stout pier and a sturdy mount, this system has provided a stable platform for both the optics and instruments for a century. Innovations in electronics and optical design have enabled spectacular improvements in the performance of the Plaskett over that period. As a result this telescope continues to collect valuable scientific data. When you think that most computers and cellphones become obsolete within 5 years that is an amazing achievement.

When the 72 inch scope captured it's first stellar spectrograph on May 6th 1918, the 100 inch Hooker telescope on Mt. Wilson had already glimpsed first light. It was, however, a sorry sight as the 100 inch was plagued with optical problems and the 72 inch reigned as the *largest operational telescope* in the world for a period of 6 months.

Dr. John Stanley Plaskett optimized the design of this instrument to obtain stellar spectrographs of the highest quality. Radial velocities from the Dominion Astrophysical Observatory were revered quantities in the astronomical community. It just so happened that a device with this capability arrived on the scene in the nick of time.

To put this in context let's step back to 1918. At that time there was a raging controversy about the nature of *spiral nebulae*. Were objects such as Andromeda small nearby features or were they distant "island universes"? This was the subject of a Great Debate between astronomers Shapley and Curtis in 1920. Using the Mt. Wilson observatory, in 1924 Edwin Hubble detected Cepheid variables in Andromeda which proved that it was indeed a vastly distant "island universe" or galaxy. In an instant our concept of the scale of the Universe increased dramatically.

Since the Milky Way was indeed a galaxy, Plaskett and his colleague Dr. Joseph Pearce devised a strategy to measure some of it's properties. They concentrated on type O and B stars which are intrinsically the hottest and most luminous. This enabled them to obtain spectra and radial velocities of very distant stars. After each stellar spectrum was captured the position of absorption lines had to be measured with great precision. A meticulous data reduction process was then applied before the radial velocities were determined. By 1935, after a sustained campaign lasting almost a decade, Plaskett and Pearce had assembled a dataset of over 500 radial velocities of the highest quality.

They combined this Victoria data with measurements from the Southern Hemisphere and other observatories for a total of 849 radial velocities from type O and B stars. They applied this data to a framework of equations that Jan Oort developed in 1927 which addressed the differential rotation within a galaxy. This confirmed that the Milky Way indeed rotates and yielded the following quantities:

Sun to Galactic Centre = 10,000 parsecs
Diameter of galaxy = 30,000 parsecs
Rotational velocity at Sun = 275 km/sec
Period of rotation at Sun = 228 million years
Total mass of galaxy M = 165 billion suns

Many of these values differed significantly from estimates made by their contemporaries but they have withstood the test of time … not unlike the 72 inch telescope itself. So this work made a major contribution to understanding the scale and structure of the Milky Way as well as determining our position within the galaxy. This was an outstanding return on Canada's investment in Astronomy.

I gained a greater appreciation of their achievement by reviewing a paper Plaskett and Pearce published in 1934. I was struck with the clarity of writing, the scientific rigour, the tables of measurements and the quality of the graphics. This was done without the aid of computers to assist in the calculations, formatting the document and preparing the charts … with no backspace key or spell check! When you have a moment check it out. I think that you will be impressed. I felt a quiet Canadian pride in their accomplishment.

RASCals at the Unveiling

Pride was also on display during the first week of May as several events celebrating the achievements and impact of the Plaskett Telescope took place. On the morning of Thursday May 3rd there was a ceremony in the Dome to unveil the plaque designating the Plaskett Telescope as a National Historic Site. Iain Stewart, the President of the National Research Council, Dr. Greg Fahlman, Director General of the NRC Herzberg Astronomy and Astrophysics and Dr. Dennis Crabtree, Director of the Dominion Astrophysical Observatory made short speeches highlighting the impact of the Plaskett Telescope on Canadian Astronomy. Chris Purse did the Victoria Centre proud during his remarks (See Presidents message Page 2) and Don Moffat representing the Friends of the DAO described how the Plaskett Telescope inspired his life long interest in Astronomy. The most stellar performance, however, was delivered via video by Her Excellency, Julie Payette, the Governor General of Canada who recalled her visits to the DAO in 2002 and 2009. She also made mention of the replica of the first stellar spectrographic plate taken by the DAO one hundred years ago which she took on the Space Shuttle to the International Space Station.

This plate played an important role during a special event in the Dome during the May 5th Saturday Night Star Party. Dressed in the period attire, Don Moffat, Dan Posey and Dr. Dave Balam set the historical context for a re-enactment of the first spectrograph captured by the Plaskett. Michel Michaud steered the scope to Beta Canum Venaticorum and started the exposure. Instead of taking 29 minutes as it did in 1918 it only took 3 seconds one hundred years later! After cheers from the crowd Dave Balam, a world expert on Near Earth Objects, presented a plaque naming the asteroid 383417DAO in honour of the observatory. Afterwards the crowd assembled at the base of the telescope and posed for a picture … in the same position that the first crowd to the DAO did one hundred years ago. It was a wonderful way to celebrate the Plaskett.

But what would Plaskett make of all this fuss. I am certain that he would have been thrilled to see the 72 inch still in active service and astonished by all of the advances in astrophysics. But I don't know what he would think about his picture gracing the label of a beer bottle! Let's raise a glass in the memory of John Stanley Plaskett.

Gathering at the Plaskett Telescope Before it Became Operational in 1918

Gathering at the Plaskett on May 5 2018 After Re-enactment of First Light. Photo by Chris Gainor

Astronomy Day 2018

Photos by Chris Gainor

Upcoming Speakers
Wednesday June 13th 2018
Dr. Joanna Woo,
The Mysterious Death of Galaxies
Wednesday September 12th 2018
Dr. Nienke van der Marel, Planets: How they form and where to find them
Wednesday October 10th 2018
Dr Reka Winslow *Planetary Magnetism*

You are Invited! ***Join the Friends of the DAO to March in the 120th Victoria Day Parade on May 21st!***
Anyone who signs up in and marches at the parade will get a 100th Anniversary Dominion Astrophysical Observatory T-shirt at 25% off to wear in the parade!
To sign up to march in the parade, go to http://signup.com/go/meZMQKA and reserve your spot now!

RASC Victoria Centre Council 2017 / 2018

POSITION	NAME	E-Mail
Past President:	Sherry Buttnor	pastpres@victoria.rasc.ca
President	Chris Purse	president@victoria.rasc.ca
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	Joe Carr	secretary@victoria.rasc.ca
Librarian	Michel Michaud (Diane Bell)	librarian@victoria.rasc.ca
Technical Comm Chair/Sys Admin	Matt Watson	admin@victoria.rasc.ca
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School Outreach	Laurie Roche / Sid Sidhu	
Telescopes	Sid Sidhu	telescopes@victoria.rasc.ca
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Members at Large		
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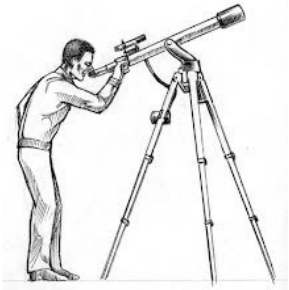
Astro Cafe	John McDonald	
NRC Liaison	James di Francesco	
Nat RASC Anniversary Wrkg Group	Dr. James Hesser	james.Hesser@nrc-cnrc.gc.ca
FDAO Liaison	Laurie Roche	
UVic Liaison	Alex Schmid	
Observing	David Lee	
	Li-Anne Skibo	
	Dan Posey	

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.