

# SKYNEWS



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## ***The Deer Lick Group***

**NGC 7331**

**Captured by RASCals  
Using the Plaskett 73 Inch  
Processed by Dan Posey**

## NEXT MEETING

**Next Monthly Meeting**  
Wed Dec 13th 2017  
Room A104 (May Change)  
Bob Wright Centre  
UVic Campus

[www.victoria.rasc.ca](http://www.victoria.rasc.ca)

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## On the Cover

### *The Deer Lick Group*

Image Captured by RASCals

Processed by Dan Posey

The beautiful spiral, NGC 3771, is the largest galaxy located in the constellation Pegasus. It is surrounded by an entourage of smaller galaxies sometimes referred to as the "fleas" that together comprise the "*Deer Lick Group*". Located 50 million light years away, NGC3771 is not gravitationally linked to the smaller galaxies which are actually about 10 times more distant.

NRC Herzberg kindly provided the Victoria Centre access to the 73 inch Plaskett reflector on September 23rd and 24th 2017. Victoria RASCals operated the scope and captured the image. Exposure time 1 hour 39 minutes. Dan Posey processed the image. The Victoria Centre is very fortunate to be situated near the DAO.

## President's Report

by *Chris Purse*

Another Victoria Centre milestone was reached in the past month with the installation of our new 16" Ritchey-Chrétien telescope at the Victoria Centre Observatory. So far, it is exceeding our high expectations and my initial impression is it was the right choice.

I was part of the group of active observers who met on the hill on Saturday, October 28 for its first light at a VCO evening. We had a look at a number of targets with varying magnifications and the views were impressive. A number of the group, including Charles Banville, Joe Carr, Bruce Lane, and John McDonald, took photographs through the telescope which turned out very well. Some of these were shared at Astro Café on Monday, October 30 and a number are posted to our Zenfolio site. The moon was in the waxing gibbous phase and proved to be a great subject for photography. A couple of the Messier objects, M13 and M57, were photographed as was Uranus. As there were so many members at the VCO, the

photographers were taking fewer exposures than normal to give everyone a chance to use the telescope. The quality of the results from last week show the great potential for our new telescope. Just imagine the detail that will be captured with even more photographs being stacked into a single image!

As a new member on one of my first visits to the VCO, I remember being told that the 14" Meade was a temporary scope. I wondered a bit about that as the 14" is an impressive telescope. It has a large primary mirror which reaches far into the dim night sky. How could that be surpassed except by an even larger telescope? As I have learned more, I can see why the telescope design matters as well. A Schmidt-Cassegrain, like the 14" Meade, is a good telescope and served us very well. However, a Ritchey-Chrétien telescope is an even better choice for an observatory such as ours. The advantage of a larger field without optical distortion is why most of the large, professional telescopes favour this design. Our 16" does not match the professional scopes in size but it does provide us with the same optical design. A heartfelt thank you goes to our technical committee for their efforts to research and choose this telescope. I look forward to using our new telescope on future visits to the VCO!



**M13 The First of Many with the 16 Inch! Joe Carr**

## AGM Meeting Presentation

Saturday Nov 18th Doors Open at 6 PM Cedar Hill Golf Course - 1400 Derby Road

### The James Webb Space Telescope: *the countdown is on!*

by Dr. Chris Willott

The James Webb Space Telescope is the successor to the prestigious Hubble Telescope. With a diameter of 6.5m, this infrared telescope will be launched 1.5 million kilometers from Earth for a scientific mission lasting 5 to 10+ years. Canada, one of the main partners in this project with the United States and Europe, provides one of the four scientific instruments and the guiding system. The development of Webb is well underway and the world astronomical community is actively preparing for the planned launch in early 2019. This presentation will provide an update on the state of the development of the telescope and give an overview of the scientific program of the Canadian science team that includes observations to detect galaxies in the early universe and determine the composition of the atmospheres of exoplanets similar to Earth. **Chris Willott** is a research astronomer at the Dominion Astrophysical Observatory in Victoria. He studies the most distant galaxies in the Universe to understand how stars and black holes formed soon after the Big Bang. In addition to research, he works at the Canadian Astronomy Data Centre as the Canada-France-Hawaii Telescope archive scientist and is the Canadian Project Scientist for the forthcoming James Webb Space Telescope.

### Upcoming Speakers

#### Wednesday December 13th 2017

Dr. Chris Pritchett. Supernovae: Type 1a

#### 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

## 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](mailto:vp@victoria.rasc.ca)



### Email Lists

#### Observer / CU Volunteers / Members

Contact Chris Purse to subscribe [membership@victoria.rasc.ca](mailto: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 November 2017

Total membership is currently **253**. There are 10 members in the grace period which means their membership has expired in the past 2 months. Please contact Chris Purse ([membership@victoria.rasc.ca](mailto:membership@victoria.rasc.ca)) if you would like to check the status of your membership.

## First Light at the VCO

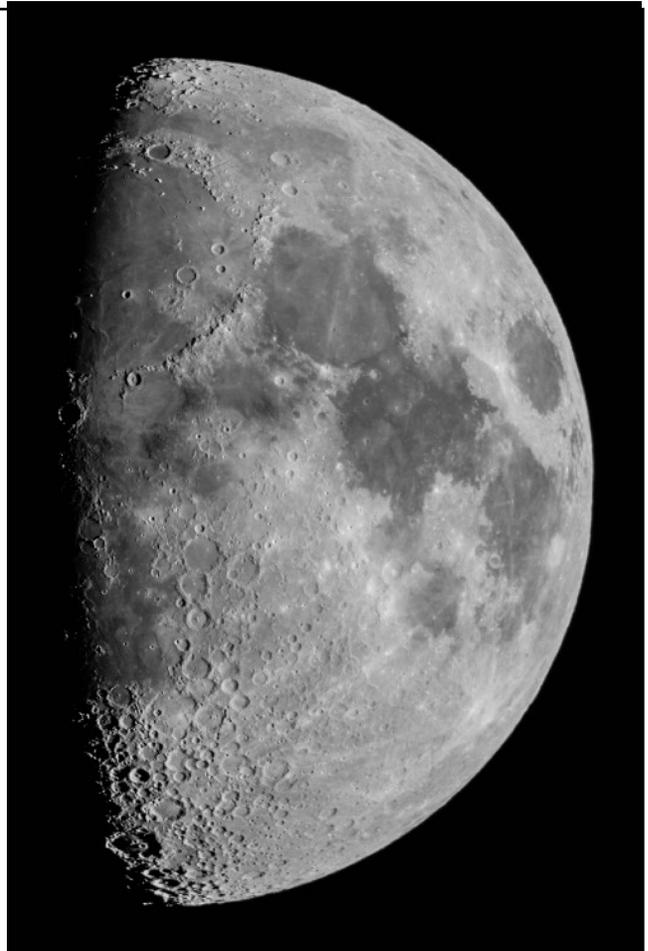
by Reg Dunkley

As discussed in Chris Purse's Presidents Message the new TPO 16 Inch Ritchey-Chrétien reflecting telescope is up and running. Congratulations to the Tech Team who are still configuring the system. Despite the larger aperture this arrangement is lighter. This, together with the simpler off axis guider and a recently ordered electronic focuser will improve pointing accuracy and may facilitate a remote control capacity. As first light images attest this scope is already performing well and the future looks promising.

Meanwhile there is some **surplus equipment to sell:**

- **Televue NP127is APO refractor**
- **14 inch Meade Schmidt Cassegrain**
- **Hyperstar** system converts SCT to f2
- **Freshly aluminized 20 inch mirror** for that Dobsonian of your dreams.

The sale process is being finalized but first offers will be reserved for Victoria Centre RASCals. Details will be sent via e-mail. Some items may be displayed at a future Astro Cafe.



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### Above:

A crisp "First Moon" image by Charles Banville illustrates that the Field of View of the 16 Inch is about 40 arc minutes.

### Left

Excited RASCals gather around the new TPO 16 Inch during First Light on Saturday October 28.



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The "First Ring" M57 with 16" by Joe Carr

## Letter to the Editor

I'm sorry that Melissa and I couldn't be there for the Great Eclipse After-parties at Astro Cafe, and while this submission is past your deadline Reg, we'd like offer it anyway for the club record.

## Our 2017 Eclipse Story

*by Melissa and Clint Tupper*

It proved easier to get to the eclipse sight, than it was to return from it. But we arrived a day in advance of the event to settle into our accommodations in Welches, and to reconnoiter potential observing sights further South. Having seen first hand the issues involved with the multitudes that had descended upon Madras, we opted to observe (as did many others) just off the highway out on the plains, about a 1/2 hour North of the town along U.S. Hwy 26. On eclipse day, we became concerned by a haze spreading from the smoke of forest fires that was approaching the Madras area, from the Southwest, and hoped to avoid any deterioration in seeing conditions that might result. So we pulled over the side of the highway, joining about dozen other people including several from Manitoba. Stopping sooner also gave us more time to set up our equipment and introduce ourselves to our neighbours. The plateau with it's unobstructed horizon framed by Mt. Jefferson to the Southwest, Mt. Hood to the Northwest, and the Mutton Mtn.s to the East was an ideal setting

for the event. As totality approached traffic along Hwy 26 disappeared.

The eclipse was nothing short of amazing: a multi-sensory experience! In the minutes leading up to totality a chilling wind picked up, the temperature dropped significantly, the birds became quiet, and we could hear crickets chirping. It became progressively darker and then the lights just went out! The sky took on the most curious shade of dark blue, and we could see stars and planets in the sky around the Sun/Moon. The Sun's corona became visible with delicate feathery wisps emanating from the black disc that waved slowly as if in a light breeze. We also could see 'diamonds' called Bailey's Beads, glimmering jewels of light coming through along the uneven surface of the eclipsing Moon. Some prominences, like red licks of fire coming off the surface of the sun, were also visible. We took a moment to look at the landscape around us, where we witnessed the most beautiful 360 degree sunset you could ever imagine, nearly all the colours of the rainbow painted the landscape. Then, all too quickly the experience of a lifetime as was over; a second diamond ring appear briefly as the Sun began to peek from behind it's lunar mask, and the sky brightened rapidly. We continued to observe the emerging disc of the Sun through the scope for while until the surge of North-bound traffic caught our attention, and we reluctantly packed up our gear.

While the camera didn't end up working as planned, we learned a lot about how to capture an eclipse for next time. But nothing compares to experiencing it in person. We had a fantastic experience and can't wait to see another one! Our return to Canada the next day while uneventful was a twelve hour motoring marathon! Traffic became increasingly congested with umbraphiles as we drove North to the border, frequently coming to a complete stop along the I-5. And although we'd left our lodgings early, it was almost Midnight before we reach our hotel in Vancouver.

Kind regards,

***Melissa & Clint Tupper***

## A Lunar Alpine Quest by Reg Dunkley

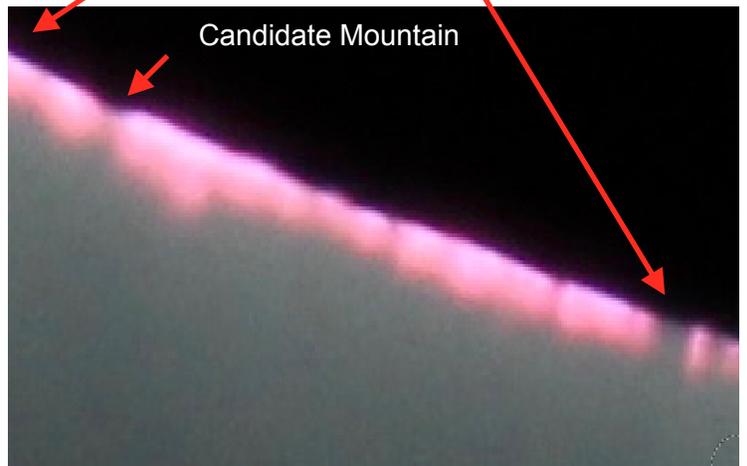
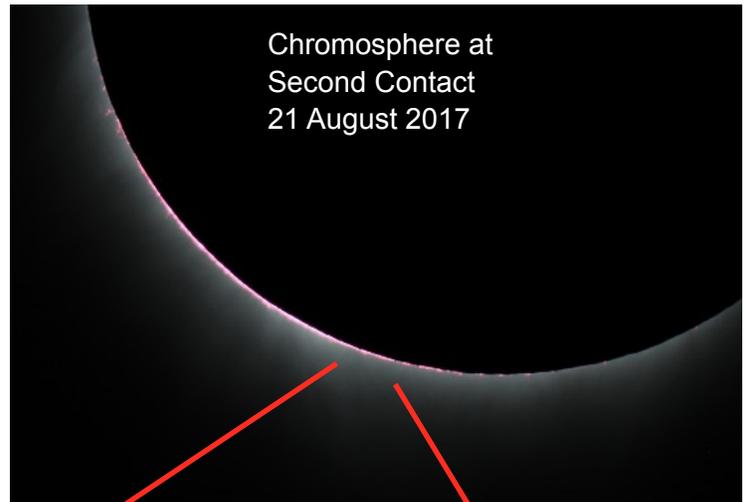
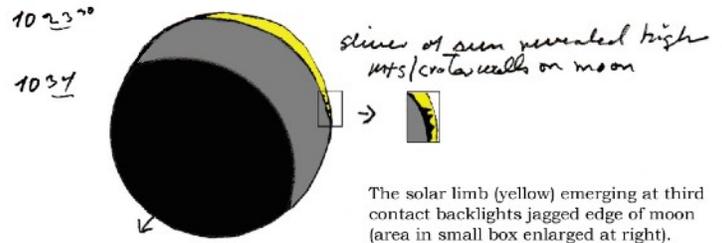
It all started with a sketch and a comment at the *Great Eclipse After Party*. Dorothy Paul observed the eclipse through an 80 mm refractor at 29 power. She casually mentioned that at 3rd contact she had glimpsed *several jagged peaks projecting from the edge of the moon*. She even included an enlarged box containing mountains in her associated sketch (on top right).

Wow! Imagine seeing mountain peaks a quarter of a million miles away! Maybe I could find some mountains in my eclipse photos. It might provide an opportunity for redemption. You see, on eclipse morning in Monmouth I found myself surrounded by experts. They were all equipped with slender instruments optimized to capture the delicate beauty of the Corona. I on the other hand, had dragged down my black Celestron C-8 SCT that stood out like blunderbuss. Forget about capturing the Corona. I couldn't even squeeze the full solar disk into my field of view! But through luck rather than skill I managed to catch a pretty good image of the chromosphere at second contact. And I had resolution on my side!

So immediately after returning from Astro Cafe I zoomed into my beautiful pink chromosphere and in no time at all I found some promising Alpine candidates. For one black triangular silhouette in particular the overlying chromosphere thinned out as if being blocked by higher terrain. It displayed the hallmarks of a mountain.

So I was pretty sure that I had found my mountain. In order to see if it was the correct scale I decided to try to **estimate it's height**. One of the nice things about a solar eclipse is that all sorts of people have determined quantities for that day including the distance to the Moon and the angular diameter of the Sun as well as the time of the first and second contact. If you can determine the angle **M** that the mountain subtends then the:

$$\text{height} = \text{distance to the moon} * \text{Sin}(M)$$



So the challenge is to determine the angle **M**. During the interval between first contact and second contact (71.7733 minutes) the limb of the Moon will traverse the angular diameter of the Sun (0.527018 deg). From this we find the **Moon travels at 0.440 arc seconds/sec**.

The image software [GIMP](#) has a useful tool for measuring length in pixels. The mountain was 4.1 pixels high. One of the nice things about this solar eclipse was that there were a number of beautiful sunspots. By measuring the distance from the lunar limb to the same

sunspot in two consecutive photos you can determine the speed of the lunar limb traversing an image in pixels per second. Applying this technique it was determined that the **Moon was travelling at 1.15 pixels per second**. In one second the Moon travels 0.440 arc seconds and 1.15 pixels. **We can calibrate the image: 1 pixel = 0.383 arc second**.

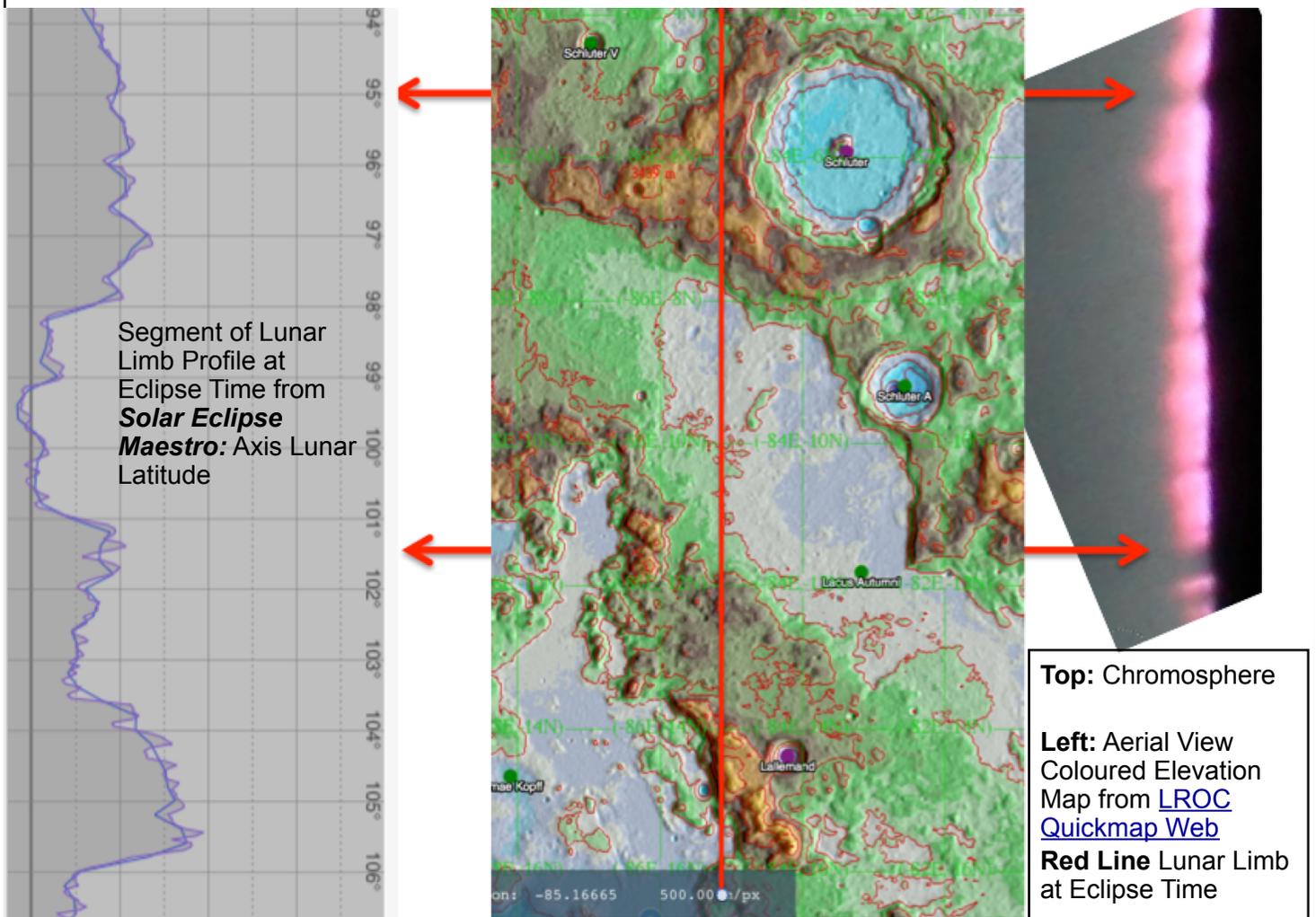
The 4.1 pixel high mountain therefore subtends an angle **M = 1.57 arc seconds**. The distance to the Moon on Eclipse day was 365600km. Plugging these values into the equation **the height of the mountain is estimated to be 2784 metres tall which is slightly lower than Mount Baker**. This is a reasonable value. Using the same technique we can estimate that the **lower bound for the height of the chromosphere is 3650 km**. This is close to the frequently cited value of 6000 km.

But let's not stop there. **Would it be possible to identify the actual mountain?** A fabulous freeware program called [Solar Eclipse Maestro](#) convinced me

to try. It produces the terrain profile of the lunar limb at eclipse time in seductive detail. After making a rudimentary estimate the lunar latitude of the mountain I was able to position the section of chromosphere next to the profile (see below). The level of agreement was disappointing.

I then went to the wonderful Lunar Reconnaissance Orbiter (LRO) [website](#) and extracted the aerial view of the surroundings. I placed the line (red) of the lunar limb at eclipse time and came to a realization. This exotic profile was highly dependant on the knife edge location of the limb and even a minor shift due to libration could lead to significantly different results. Perhaps my position estimate was not that bad after all.

I did notice that a nearby peak on the LRO survey topped 3400m. That seems a bit high when compared to my measurements. ... Do you think I should let NASA know?



## RASC Victoria Centre Council 2016 / 2017

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Nat RASC Anniversary Wrkg Group	Dr. James Hesser	<a href="mailto:james.Hesser@nrc-cnrc.gc.ca">james.Hesser@nrc-cnrc.gc.ca</a>
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

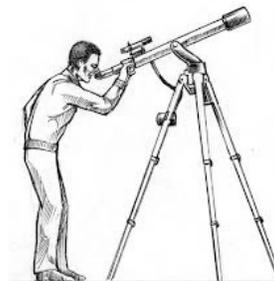
[Astronomy](#) Magazine

[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