

NOVA

NEWSLETTER OF THE VANCOUVER CENTRE RASC
VOLUME 2012 ISSUE 2 MARCH/APRIL 2012



Musings Under an Unfamiliar Sky

by Leigh Cummings

When I was a young man in my early 20s, I spent a couple of years backpacking my way around the eastern half of Australia. Part of that time I travelled with some old school friends in an old beat up VW. Despite having spongy brakes, no parking brake at all, and little creature comforts, we thought it gave us some freedom to see parts of Australia that the average tourists did not. One of those places was the Flinders Ranges and the desert north of them.

The Flinders Ranges are located north of Adelaide in South Australia. They are a beautiful range of “mountains” that border the Great Desert to the northeast. They act as a barrier that protects the south coast from the full brunt of the dry desert winds of the interior.

One night in particular still stands out to me to this day. It was a moonless night and I decided get away from our campfire and sleep under the stars. I took my sleeping

bag and climbed up out of the canyon we were camped in. The rock dome where I chose to spend the night was smooth and warmed by the day’s heat.

I laid out my sleeping bag on an old tarp we kept in the car, which usually came in handy for emergency repairs along the roadside. Being the young immortal that I was, I never considered the possibility that I was creating a warm respite in the desert night for all sorts of nocturnal company. Funny how cold-blooded animals find warm blooded animals so cozy to snuggle up to. Fortunately for me, that lesson would not be learned for a few more months. On this particular night, I was able to lie there undisturbed and, for the first time in my life, take in an unfamiliar southern sky in all its splendour.

Being a citizen of the northern hemisphere, I found the southern sky to be a bit disorienting. I grew up spoiled, always knowing where north was with a quick look to the

night sky to find good ol’ Polaris. Having no southern “polar star” was a little annoying for me. However, once I found the “Southern Cross,” I had some idea of where south was. I was surprised to find the familiar constellations to the north were upside down! It almost made me dizzy trying to twist my neck around to get a more familiar view of my old friends.

One unexpected effect that the “new” night sky had on me was it stimulated my imagination. I did not know my southern constellations at all. Viewing the night sights had a slightly different meaning to a 20-something than someone my current age might first think. Studying sky charts was not part of my preparation for my travels. My mind then was free to imagine the night sky like my very ancient ancestors must have.

It struck me that the sky would not have changed in any noticeable

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MARCH 8

Dr. Catherine Johnson of UBC Earth and Ocean Sciences: The First Results from MESSENGER at Mercury

UBC



APRIL 12

Larry Reeves, founder and President of Geocentrix Technologies: Introduction to the Canadian Satellite Design Challenge

BCIT

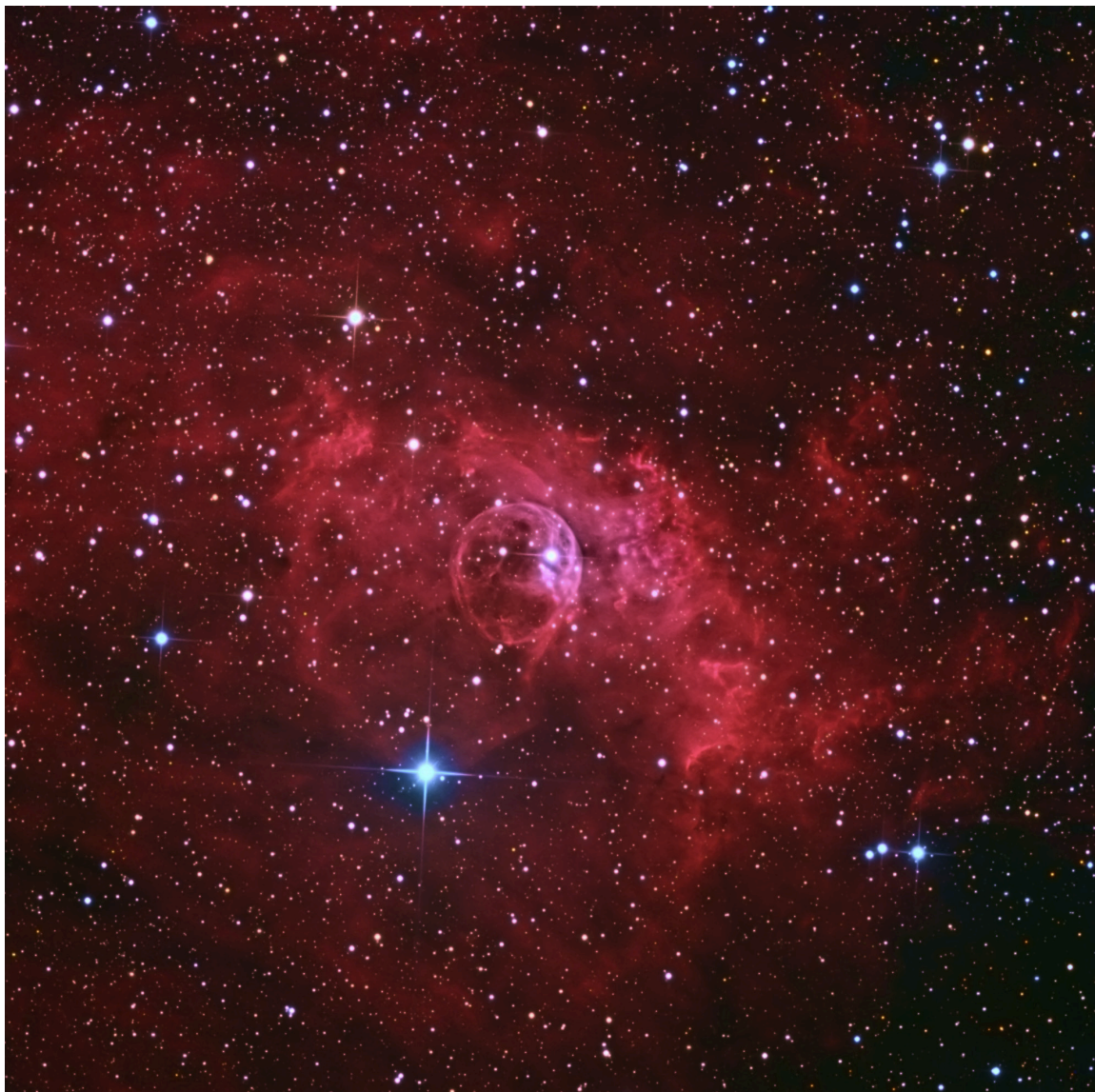


MAY 10

TBA. Check Meetup for details when they become available.

SFU





NGC 7635 (the Bubble Nebula) by Howard Trottier

This is the result of approximately 12 hours of exposure, with about 300 minutes in luminance (unbinned), and about 100 minutes in each of R, G, B, and Halpha (all with 2x2 binning). Ten-minute subframes were taken in all channels. The frames were captured over multiple

nights in July-September 2011, at the Cabin in the Sky Observatory, South Okanagan BC. Telescope: PlaneWave Instruments CDK17, operating with a focal reducer at f/4.5; Mount: Paramount ME; Camera: SBIG STL-4020M. Image capture was done with TheSkyX, MaxIm

DL, and FocusMax. Image processing was done with PixInsight and CCDInspector. The Halpha channel was blended into both the luminance and red channels, in order to get as much depth as possible in the extensive emission nebula, while trying to maintain a “natural” colour. ✨

President's Message

by Howard Trottier

If you have picked up this edition of NOVA at our March 9th public lecture, which is being hosted by the UBC Department of Physics and Astronomy, welcome! We are looking forward to an exciting and timely presentation by Dr. Catherine Johnson of the UBC Department of Earth and Ocean Sciences, and a Participating Scientist on NASA's MESSENGER mission. MESSENGER

is the first-ever spacecraft to orbit Mercury, and has already completed more than 700 orbits since its arrival in March 2011. According to NASA's MESSENGER web site, the spacecraft is providing "the first global perspective on the planet's geology, surface composition, topography, gravity and magnetic fields, exosphere, magnetosphere, and solar-wind interaction."

As is always the case with our monthly meetings, there will be a lot of socializing going on tonight, an excellent complement to our main event! Before the lecture, you might bump into friends and acquaintances as they arrive in the lobby of the Hennings Building, and you might stop at our reception tables to sign up for membership

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About RASC

The RASC Vancouver Centre meets at 7:30 PM on the second Thursday of every month at various locations in Metro Vancouver (see page 1 for meeting locations and page 4 for maps). Guests are always welcome. In addition, the Centre has an observing site where star parties are regularly scheduled.

Membership is currently \$73.00 per year (\$41.00 for persons under 21 years of age) and can be obtained by writing to

the Treasurer at the address on page 5. 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 room P8445.2 of the Physics wing of the Shrum Science Centre at SFU. Please contact a council member for directions.

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Library

The centre has a large library of books, magazines and old NOVAs for your enjoyment at the GMSO. 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

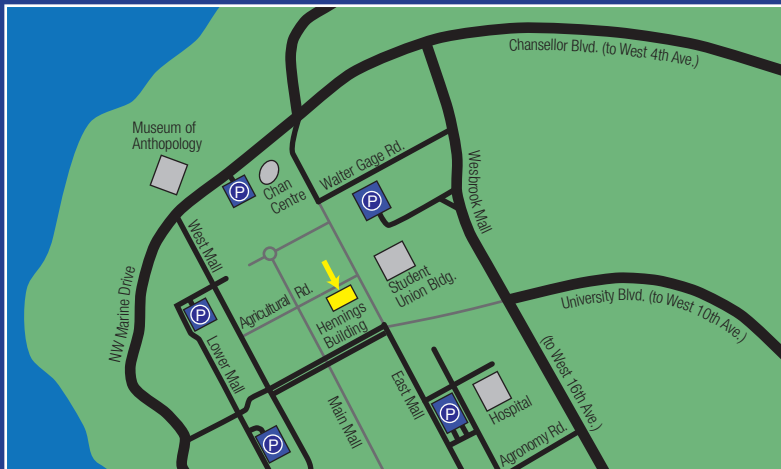
<http://rasc-vancouver.com> or
<http://www.rasc.ca/vancouver>
<http://astronomy.meetup.com/131/>

 @RASCvancouver

Mailing Address

RASC Vancouver Centre
PO Box 19115
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Vancouver, B.C.
V6K 4R8

Maps to Meeting Sites



UBC

Our UBC meeting site is in room 201 of the Hennings Building. The main entrance is off Agricultural Rd. (indicated by the arrow on the map at left). Room 201 is up the stairs and on the left.

Pay parking is available at several parkades located around campus (indicated as "P" on the map).

SFU and BCIT meeting room locations will be announced on Meetup.

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in Vancouver Centre, if you aren't already one (what are you waiting for?!), or to purchase a stylish RASC toque or an impressive 2012 calendar of Canadian astrophotography (proceeds go

to supporting Vancouver Centre's many activities). And be sure to stay after the lecture for informal yet stimulating conversation (fuelled by juice, coffee, cookies, and passion for astronomy and space science!) with tonight's speaker, and with other

members and guests of Vancouver Centre.

Vancouver Centre puts on a remarkable series of events and activities that are impressive in number, quality, and diversity,

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Reddy Kilowatt and his 150 watt nose bulb just weren't welcome at star parties



Word Search – Saturn

O A O S C G G S P X J D D T T
 B N Z U S U D A L E C N E O Q
 O K J O R M N P A V S R L L C
 R S H E S N O O M T I Q K N T
 R U S S R O C K E T S M J H R
 N P U A Y H Y A S V U M U E N
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 G F J P H O X B K F G K Y C T
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 V I R I E G Y V N X L W B S T
 A F Z A B A A S F D P E C S H
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 D U V Y A D R U T A S V I N S
 O S U K J P Q G F W F O H I I
 W N E G O R D Y H V E T E K Q

CASSINI
 ENCELADUS
 GASEOUS
 HUYGENS
 HYDROGEN
 MOONS
 PHOEBE
 ROCKETS
 SATURDAY
 TITAN

by Suzanna Nagy

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and which run throughout the year. This year promises to be one of our most ambitious and consequential in quite sometime (one particularly consequential event is in the planning stages for May, but I can't tell you about that one just yet!). Two standout events for March, besides tonight's lecture: On Saturday, March 24, we will participate in Metro Vancouver Parks' annual "Night Quest," which takes place in Pacific Spirit Regional Park, from 7-10PM, a wonderful family-oriented evening of (very safe) exploration in the forest, including a 2-km lantern-lit trail populated by "discovery" stations that feature nocturnal wild life, and a specially-designated clearing for Vancouver Centre, where we will be out in force with many telescopes. And on Saturday, March 31, we will hold an observing evening at Boundary Bay Regional Park, as we will be doing on the last Saturday of every month (weather permitting!), only part of our reinvigorated observing program. As with all of our events, please check our Meetup site for details: <http://www.meetup.com/astronomy-131/>

Which reminds me—Vancouver Centre now has a Twitter feed (thanks to your Public Relations Chair, Scott McGillvary): [@RASCvancouver](https://twitter.com/RASCvancouver). Your council is already actively using our new Twitter feed to keep in real-time contact with our membership and the public, part of a broader effort to bring greater value to our membership, and to further our reach with the public, which in this case includes the fostering of a greater awareness of and participation in an organization that is truly always up to something interesting and exciting! Our Twitter feed will be especially useful for providing real-time updates on observing nights—this is how we will inform you should there be a cancellation in case of bad weather, and when the last council member packs up to go home (we can only guarantee access to some of the sites that we will be using while a council member is present). Good reasons to start following us on Twitter, ASAP!

And this brings me at last to the most important part of this President's message. Our activities do not organize themselves: they require the dedicated efforts of

Vancouver Centre members just like you—and if you aren't already a member, now's the time to become one! You can join on-line through the National RASC web site, at <http://rasc.ca/>—be sure to specify Vancouver Centre for your local affiliation! Vancouver Centre council members lead by the example of their especially deep commitment, but we can't do it alone: we need your help, both financially, through membership and donations, and by participation, as a volunteer at one or more of our many events. To volunteer, contact your masterful Events Coordinator, Suzanna Nagy, at events.rascvancouver@gmail.com.

I think we have an extraordinary team on this year's council, including many new members who have many new and creative ideas, and lots of beans for getting things done ;). You probably don't know your new councillors very well, if at all, and you may not even know those of us who have been at it for a while. So with this edition of NOVA, I intend to use my President's message to make introductions—actually, I'm asking council members to write

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Membership has its Privileges!

New members, did you know? The Vancouver Centre has 8 telescopes available for loan free of charge! We have telescopes ranging from 60mm to 10" diameter. For more information see the Director of Telescopes in the meeting room of the GMSO after the members meeting. All telescopes are to be picked up and returned at the GMSO. The loaner period is for one month, to be returned after the next meeting. Telescopes are

not allowed to circulate outside of these meetings. You can now reserve two different telescopes per year and use what is left at the end of the meeting anytime.

Your greatest opportunity as a member of the RASC is to take advantage of the company of other enthusiasts to increase your knowledge, enjoyment and skill in astronomy.

The best thing you can do to gain the most from your membership is to get ac-

tive! Take in the club meetings; engage other members with questions; come out to observing sessions (also known as "star parties"), and, by all means, volunteer to take part in our many public events.

For the usual observing sites and times, visit our website at <http://rasc-vancouver.com/observing-sites/> or contact the Observing Chair at observing.rascvancouver@gmail.com.

Upcoming Events

March

24 – Night Quest at Pacific Spirit Park (7-10pm)
31 – Observing at Bounday Bay (weather permitting)

April

28 – International Astronomy Day

June

5 – Transit of Venus

August

11 - 19 – Mt. Kobau Star Party

September

8 - 15 – Merritt Star Quest
22 – International Observe the Moon Day

December

8 – AGM

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way since one of my forbearers wrapped in furs stared up at the stars and wondered what they were and why they moved as they did. I imagined myself as a hunter far away from his home trying to make sense of what his eyes were seeing. What did he think? Was he afraid of what he could not know? What stories did his mother and father tell him to explain these lights in the otherwise dark skies? Did he take comfort in the stability that the “unchanging” night sky offered him? His daily life would have been filled with unknown risks every day. Would he find food? Would he kill or be killed by what he found? Would he find a friend or would he find an enemy? Nothing but questions. Answers were always for the next day. It must have taken courage to face each new day.

In his life, the dance of the stars changed not at all. Unlike the Moon that showed a different face every night, the stars took several Moon faces before any change was noticeable. Although the stars always made their way across the sky in the same direction and with the same pattern, they seemed to prefer certain seasons to do their dance. The elders could tell when to expect

the great migrations of food by which familiar stars were in the sky at night. His father had stayed up for an entire night waiting for “the Great Hunter” to climb over the eastern horizon, chasing the birds and deer through his people’s traditional hunting grounds. If the hunt he is on is successful, he will have to thank his sky-bound hunting companion.

Then there were those “Mysterious Wanderers,” but even they seemed to come and go with some predictability as well. A couple of them liked to revisit the same patterns of stars for reasons only they could know. Others moved very little. He remembered one elder telling him of a “Wanderer” that was powerful enough to travel in the opposite direction for a short while but turned bright red from the exertion, similar to how his skin changes colour when paddling up a river’s rapids. Maybe the great dark sky was a river of some sorts that the stars floated upon. Were the Wanderers some sort of beings like ourselves who would sometimes want to travel up-river? Some of the ancient elders even tried to keep track of their movement to try to predict the future. Did the hunter imagine himself trying to understand the patterns? Did he take comfort from the thought?

If something ever appeared that the elders had never seen or the songs didn’t tell him about, would their world be in great danger? Before the hunter was born, his father had witnessed a great star with a long tail slowly travel across the night sky for many Moon faces. Shortly afterward, the earth shook and the trees swayed. His father hoped to never see another star with a tail. They must be very powerful beings.

My wanderings through my prehistory under my strange sky came to an abrupt end with a flashlight intruding on my wonderful darkness. One of my buddies (“mates” in Australian) had brewed up some “Billy” tea and was doing me a favour by bringing me a warm-up drink and a biscuit. He sat with me for a while taking in the sight of thousands of stars, but after our tea was gone he bid me “Goodnight you crazy bastard,” and made his way back to camp.

I snuggled into my sleeping bag and continued to stare up into the endless sea of stars, trying to sink back into my imaginary world until I blinked the last blink of the night and the next thing I knew I was awake with a blazing star glaring down at me.

Fair Dinkum, mates! ✨

My Astronomical Indulgences

by Ciara Morgan-Feir

In high school, the fear of social isolation was enough to end my flirtation with astronomy before it ever got off the ground. My oversized high school in Northern Ireland had a small but faithful astronomy club that met on Friday nights to talk about recent advances and gaze into the infinite darkness with their oversized telescope. I was curious but afraid, so despite religiously reading up on the weekly meeting minutes I never ventured out to the dome for a meeting.

A few years later, I have found myself drawn back to astronomy with an unavoidable intensity. The gravitational pull it has on me is like the sun on Halley's comet: no matter how far I stray, I'll always come hurtling back. Needless to say, my flirtation with astronomy has since become a full-blown courtship.

While my choices regarding my devotion to astronomy have changed, their effects of isolation have somewhat remained. However,

the hierarchical high school view of what's cool and what's not is no longer what isolates me from my peer group. I have met very few other students with as intense a passion for a hobby as I feel for astronomy. I can't count the number of times I have skipped calling a friend because the skies were clear; or shivered outside on a Saturday night looking at amazing, wonderful things.

I spend countless volunteer hours passing my love for astronomy (and science in general) to the next generation. The people who ask me why I bother are the people I no longer fear isolation from and the reason for that is that I can't imagine anything more fulfilling than the look on a child's face when they come to understand a major theme in science. I consider a child's epiphany far more fulfilling than a pay cheque. On another note, the children I teach often end up teaching me. The unassuming intuition and the simplistic view of the universe, the solar system and our spiritual relationship to both of those

never cease to leave me gaping with hopefulness and gratification.

My solitary view of my relationship with astronomy began to change when I began to attend RASC monthly meetings. Over the past year, I have become progressively more and more involved in RASC Vancouver. Through RASC and the SFU Astronomy Club, I have come to know some amazingly inspirational people who, instead of watching TV on a Friday night, cart their telescopes to very public locations and in a whirlwind of scientific passion marry my two favourite things: teaching and astronomy. At RASC, I have been inspired to feed my hunger for astronomy, no matter how many people I bore along the way, and the next generation has been too.

Currently, my best friend is the vice president of the SFU Astronomy Club and at RASC, I have met friends who I am certain I will take with me wherever I go on this path of passion. *

The Lion

Leo the Lion is one of the best-known constellations and its appearance on the meridian is an emblem of spring, like flowers' cautious buddings. Leo represents the lion Hercules slew in Greek myth. This was the first of the strong man's labours and the Lion is called the first of the constellations because the sun entered here on June 21, the summer solstice. That this claim is obviously false today points to the antiquity of this grouping; the statement was true 4000 years ago. Leo often confuses

beginning sky watchers and I've had moans both at star parties and in the planetarium from those struggling to recognize the Lionise pattern. The tough slog is due to the compound nature of Leo. It's made of two asterisms that don't fit together. The leading portion of Leo is the sickle, a sort of backward question mark with bright Regulus as the point at the bottom. While the east, or trailing side of Leo has a right angled triangle featuring Denebola at the tail. The Chinese solved this dual nature by

dividing what we call Leo into two smaller constellations. We don't have this luxury, so practice is the only remedy. As distraction, the planet Mars is now very bright within the Lion's realm.

Regulus, our Lion's only first-magnitude star, is located quite near the ecliptic and from time to time it is occulted by the Moon. This is an unforgettable sight in telescopes. Occultations are particularly fun to watch and the Table of Total Lunar

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a short profile of themselves: why are they into astronomy, and what brought them to Vancouver Centre, and to serve on council. We'll have two or three profiles in each of the next several editions.

We start with three new council members, part of the new cohort who have taken a deep plunge into service. I hope you'll take a few minutes to read their profiles, and next time you see one of them, walk up, introduce yourself, and have a conversation!

Howard Trottier
President, RASC-Van
Professor of Physics, SFU

Diedre Sportak, Merchandise Chair

Hello, I'm Diedre Sportack, the friendly face who sells raffle tickets and other merchandise at each monthly meeting. I first became interested in astronomy around age 10, mostly because I thought it would be cool to be able to tell which way was north at night without a compass. As an adult, I held a *Sky News* magazine subscription for 3 years before I decided it was time to stop being such an armchair astronomer. I convinced my husband to spend a night at the Mt. Kobau Star Party during a road trip in 2009, armed with a modest pair of binoculars, and we had a blast! He surprised me that Christmas with my first telescope, a 6" Maksutov. I immediately decided to join the RASC in order to get connected and learn from others and make the most of this exciting gift.

My husband and I enjoy planning

summer vacations around using our two big "toys": the telescope and our canoe. We also volunteer at the Starry Nights outreach program at SFU whenever we can. This past fall, Howard asked if I would consider



letting my name stand for a role on the RASC council. I haven't done much observing since becoming the mother of an extremely sleep-resistant (but very joyful) baby girl in April 2011, so I thought that taking on a new role in the astronomy community would be a great way to still contribute to the amateur astronomy scene and also to encourage me to return to more active observing. I have just purchased the *Isabel Williamson Lunar Observing Program* as this is something I'll be able to work on from my city sidewalk within baby monitor range, and I hope to begin the next time the skies are clear!

Oleg Mazurenko, Observing Chair

I'm Oleg Mazurenko, Observing Chair at RASC Vancouver. I have had a passion for astronomy since

I was 12. I started an astronomy club in Odessa, Ukraine and while still in high school, our members performed scientific and amateur observations at the Odessa Astronomical Observatory, under the guidance of the Department of Physics and Astronomy of Odessa State University. Once I came to Canada I joined the RASC, and now that I serve on Vancouver Centre



council, I hope to use my knowledge and experience to find new ways to encourage other members to jump deeper into this wonderful science.

My own astronomy activities include making observations of the occultation of stars, of variable stars, and solar system objects, and I publish the results in well-known astronomical journals. I have several telescopes that I regularly use for these observations, and for astrophotography. I also organize international total solar eclipse expeditions, with amateur and professional astronomers. We have

observed eclipses in Egypt (2006), Russia (2008), and French Polynesia (2010), and we are planning an expedition to Australia for the total solar eclipse in November of this year. We bring hundreds of kilograms of specialized equipment on these expeditions, and the results of our observations can be used to model the solar corona, and to characterize the Moon's shape. While on these trips, I volunteer to give presentations to local groups that we meet about the eclipse and to promote local interest in astronomy. Our expeditions have been featured in local TV and films, and in a number of magazines and newspapers.

As a member of Vancouver Centre, I'm working with other members of council to develop new observing programs at our observatory in Maple Ridge, the Antony Overton Memorial Observatory (AOMO), which is chaired by Leigh Cummings. In addition to our imaging program, we plan to begin work this year on photometry.

If you are a member, whether a beginner or experienced observer, please consider participating in one of our many observing programs. And if you are not yet a member of Vancouver Centre, please join our club, and we'll help you to discover for yourself how brilliant and infinite the skies are!

Scott McGillvary, Public Relations Chair

Growing up in the Okanagan near the White Lake Observatory, I owned a small refractor telescope and hoped to pursue a career in astronomy. After some valuable career counselling I was pushed toward "more employable" sciences and eventually found work in the video game industry (I was right, Mom and Dad). I forgot about astronomy until 2009 when I came across a RASC observing night in Aldergrove. At first, the vast knowledge amongst the astronomers was intimidating, but I soon noticed most RASC members had more questions than answers. RASC is simply a club for anyone curious about space.

After joining RASC, I began

reading about the cosmos and space flight, something I had not done since junior high. I have given several presentations at RASC events, often with a Russian Space Program theme. I do not own a telescope, since the RASC membership includes an excellent telescope loaner program. I try to observe the stars a few hours every month and with a little help from RASC members I've seen some amazing things. My latest interest is "small budget astrophotography." For a few bucks I bought a camera adapter that will fit most of the RASC loaner telescopes. My early results are far from spectacular, but lunar images are easy for beginners and look great in a frame on my wall. I don't know much about astronomy, but I'm having fun and discovering something new every day. ✨



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Occultations section of the *RASC Observers Handbook* is one of the first things I consult upon receiving my copy. Regulus is hard to see as it approaches the Moon but the smallest

telescope reveals the star sitting at the limb awaiting the cover-up. The time of the actual disappearance can be readily known without tables and calculations. If you are watching and are distracted or leave the scope to

refill your coffee cup, it happens just then.

Regulus itself has much to cheer about. It was called one of the four royal stars of early times that marked

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the changing seasons along with Aldebaran, Antares and Fomalhaut. Regulus is a shiny bright white disk, very different than the planets, such as Mars and Jupiter, that sail by and are known by a yellowish or straw-coloured hue. Oddly, the older observing guides call Regulus a bluish star which is not, in my experience, the claim of any contemporary sky watcher. Records in old books call many stars blue which we would label colourless and white. It seems that the founders of observational astronomy must have had blue on the brain. Is there another explanation? A clue came to me one evening at the 99 Mile Motel in BC's Cariboo. I had been giving school kids astronomy lessons using a portable planetarium and after class was standing outside my room watching the Moon in my 10X50 mm binoculars. The Maria seemed very greenish, and I thought this very odd. There have been reports of greenish colour on the Moon, again, usually records of more than a century old. Looking around, I noticed that the courtyard of the motel was bathed in the glow of a series of incandescent bare bulbs in a string (it's not a five star hotel) and that these lights formed the foreground illumination of the scene. It occurred to me that it was the lights that were responsible for the oddly greenish Maria. Standard bulbs are very bright in the reddish end of the spectrum. In a scene under red light, the eye is called "rested" for any shade that is the opposite on the colour wheel. This is why coloured double stars appear much the same; yellow and blue and red and green. Since my eye was under a

red scene, the Moonlight's blue green hue was exaggerated and the lunar seas, the darker area of the Moon and thus coloured since not totally overwhelmed by light, appeared green. Much the same eye physiology must have been at work in the 19th century when stars suddenly appeared more blue than us moderns will admit. The early observatory, unlike our own, had little in the way of urban light pollution to fight. It was dark at night. But the increasing sophistication of the facilities meant small lights were needed by observers to read dials on setting circles, charts and to facilitate the recording of data. Small lamps, fired by coal oil and its derivatives, came to be used in the dome and at the eyepiece. These sources are very strongly red, and thus, the observers saw many blue stars. These reports ebb and decline in the 20th Century when electrical lights become standard and the light is not as red as the units they replace. Suddenly the same stars appear white.

A line of stars north of Regulus is called the sickle. The brightest star of this curved line is gamma, a wonderful double star in small glasses. Both stars appear yellow or greenish. A second coloured treat in the Lion is R Leonis. This reddish star is an easy variable for binocular or small telescope users. It's located about five degrees west of Regulus. This is a long-period variable that changes from about magnitude five to 10 in just over 300 days. It was the first variable learned by Leslie Peltier (1900-1980) author of the *Guide to the Stars* and other works inspiring novice sky watchers.

Off the end of the sickle is the wonderful galaxy NGC 2903. The

object is fairly big and looks like a round dim patch of light in binoculars or finder scopes. Larger scopes show a fine spiral galaxy. NGC 2903 is the Lion's Tongue galaxy. It's easily seen in binoculars on clear moonless nights as a pale patch of light just forward of the head of Leo. This large galaxy is easily viewed in smaller telescopes, or large binoculars, as an ellipse with a slightly dense middle. The galaxy is bright enough to have joined the famous Messier list of deep sky favourites but the French comet chaser missed this one. Slightly larger, but still small scopes show fuzzy swirls in this spiral galaxy with very prominent dusty arms. It's a favourite of photographers due to its pleasing look. It measures up to our notions of what a spiral galaxy should look like. In 250 mm scopes, some bright and dimmer features in the arms are seen and a bright nucleus viewed. Pinpoints of light cover the object. One can almost imagine the galaxies' stars are on display. More than one 19th Century observer thought this. But the stars are in our galaxy. Mere foreground objects with an immense chasm of space separating us from this other island universe.

M65 is a bright galaxy near the back feet of Leo the Lion. It forms a pair with M66 which is nearby. M65 is a bright, tilted spiral galaxy and looks rather like a smaller and dimmer version of the Andromeda Galaxy. It can be picked out with a good pair of binoculars along with M66 on moonless nights and in locations far from streetlights and auto headlamps. Small telescopes show the galaxy to be elongated since we see M65 like a dinner plate held at an angle. Larger scopes, in the 200 mm range, show

mottling and evidence of dusty arms circling the bright centre.

M66 is a bright galaxy near the back leg of Leo. It is found in the same field as M65. Both galaxies can be viewed at the same time with an eyepiece giving a magnification of 50 times or less. M66 is a spiral-structured object which we see at an angle. In small scopes, it looks like the head of a comet but 150 mm or larger instruments shows hints of the familiar spiral structure. Pictures of M66 often adorn Astronomy textbooks or are made into posters since it resembles what the general public has come to identify as the classic astronomy picture.

M95 is a barred spiral galaxy in Leo. This galaxy is in the same low powered field as M96. They stride along with the Lion about 10 degrees east of Regulus. In small scopes, M95 is a tiny

dot but already showing an uneven surface. Larger instruments show a faint circle forming about M95, making it look like the Greek letter Theta (Θ). M95 is a member of the Leo group of galaxies which includes several other bright galaxies in this area under the Lion's gaze.

M96 is a bright spiral galaxy within the middle of the base of the Lion and in the same low powered view as M95. It is bright and visible in a 60 mm refractor as a dim lozenge of white. Larger scopes show an elliptical disk with hints of irregular veins of dark

intruding from the spiral arms.

M96 is one of the brighter members of the Leo galaxy group and includes several other galaxies within range of modest telescopes. For those with 250 mm or larger scopes, no fewer than 100 galaxies are visible within Leo. A computer assisted scope can have a field day here. ✨



NGC 2903, found just forward of the head of Leo

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