

NOVA

NEWSLETTER OF THE VANCOUVER CENTRE RASC
VOLUME 2018 ISSUE 3 MAY JUNE ASTRONOMY DAY 2018



Southern Belle

by J. Karl Miller

Rain, rain, rain... my astronomical activities are certainly taking a bath right now. Fortunately, in this age of the internet, I can hook up with some remote-control telescopes, located in areas which are much more likely to have clear skies. One such telescope is located in Chile and is made available to members of slooh.com, an organization oriented to the world-wide astronomical community.

Some of the most impressive astronomical objects are locat-

ed in the southern sky, visible at night only from areas close to, and south of, the Earth's



A wide-field view of (η) Eta Carina

equator. One of those objects is Eta Carina.

Here is a quote from Wikipedia, the free encyclopedia:

The Carina Nebula (catalogued as NGC 3372; also known as the Grand Nebula, Great Nebula in Carina, or Eta Carinae Nebula) is a large, complex area of bright and dark nebulosity in the constellation Carina, and is located in the Carina-Sagittarius Arm of our galaxy (Milky Way). It has an estimated distance between 6,500 and 10,000 light-years (2,000 and 3,100 parsecs) from Earth.

The nebula contains many

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MAY 10

Dr. William Wall presents The Large Millimeter Telescope Alfonso Serrano, the largest scientific project in Mexico. Room AQ3159.

SFU

SFU

JUNE 14

Alan McConnachie from Victoria. See Meetup for details. Room AQ3159.

SFU

SFU

JULY 12

Members' Night. See Meetup for details. Room AQ3159.

SFU

SFU

Astronomy Day Lectures at SFU

Room AQ3150, Academic Quadrangle

11:00	Robert Conrad	The use of Stellarium (free & easy to use astronomy software) to scan the skies
12:30	Ted Stroman	Moon 101
1:00	Kenneth Lui	The Global Space Community
2:00	Robert Conrad	How to locate deep sky objects and 'doomsday' asteroids

Astronomy Day Activities

East Concourse, Academic Quadrangle

11:00am to 3:00pm

- Apollo Rockets and Mission display
- RASC's Jim Bernath collection
- Solar system and Our Planets display
- Planetary Society display
- Solar telescopes (outside the Trottier Observatory, weather-permitting)
- 3 craft tables for the children including alien figures, rocket ships, and phases of the Moon with Oreo cookies.
- Space survival suit to try on
- Solar System Walk and bag toss
- Light pollution abatement display

The Trottier Observatory will also be open for tours throughout the afternoon!



President's Message

Greetings fellow star gazers! Once again we will be holding our Astronomy Day in conjunction with Simon Fraser University's Science Rendezvous on Saturday, May 12th. We will be occupying most of the Academic Quadrangle's east corridor with our displays and activity tables. Our small but dedicated army of volunteers will be on hand

to bring their love of astronomy to the many guests of SFU. We will also have solar telescopes set up next to the Trottier Observatory just in case that elusive Sol graces us with an appearance. Please look for more detailed information contained in this special edition of NOVA.

Recently I spent an evening doing "sidewalk astronomy" in front of

by Leigh Cummings

my local Save-On-Foods store. The Moon was one day past first quarter, so it made an interesting, and easily viewed, target. I set up my telescope, zeroed in on the Moon, and put on a lunar filter and eyepiece. I aimed at a nice spot along the terminator (the day night divide) where the craters and mountains seem to pop up at

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About RASC

The RASC Vancouver Centre meets at 7:30 PM on the second Thursday of every month at SFU's Burnaby campus (see map on page 4). Guests are always welcome. In addition, the Centre has an observing site where star parties are regularly scheduled.

Membership is currently \$81.00 per year (\$47.00 for persons under 21 years of age; family memberships also available) and can be obtained online, at a meeting, or by writing

to the Treasurer at the address below. 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 nec-

essarily 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 the Trottier Studio in the Chemistry wing of the Shrum Science Centre at SFU. Please contact a council member for directions.

2018 Vancouver Centre Officers

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Trustee Pompana Martinez
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Library

The centre has a large library of books, magazines and old NOVAs for your enjoyment. 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/>
<http://www.facebook.com/RASC.Van>

 @RASC Vancouver

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Map to Meeting Site



Our May-Jul meetings are in room AQ3159, located near the southeast corner of the Academic Quadrangle as indicated by the arrow on the map.

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

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you. When I invited people to take a look at the Moon up close, some reacted with scepticism at what they would see. When they started to look through the telescope, there was this doubtful look on some people's faces that quickly changed to awestruck when they saw the Moon's magnificent craters up close for the first time. Others were more surprised I was not going to charge them for the wonderful experience. And for some, it was obvious to me that they hardly ever looked up at the night sky, for they were unaware the Moon was visible at all. The people that took the time to have a good look, and talk to me for awhile, left with smiles on their faces and questions in their minds. To me, that is mission accomplished. It is the same reason that we at RASC are so enthusiastic to bring our passion to Astronomy Day.

For the vast majority of human history, people have been able to view the night sky in all its splendour, uninhibited by artificial light.

People could not help but study the night sky (it was the only *channel* available), and soon would come to know it like they knew the faces of their family members. The night sky became their calendar, clock, and story book every night it was clear. The patterns they could imagine became linked to the changing of the seasons and the rhythms of their lives. It was an intimate relationship.

As civilizations developed, the stories became more sophisticated and developed into myths and religions. People that studied the movement of the stars and "wanderers" (planets) became important councillors to leaders because of their ability to predict the seasons and to some extent the weather patterns that accompanied them. Due to people's limited ability to see what the objects in the night sky really were and how far away they were, astrology took hold as leaders demanded to know events yet to happen and find out why good and bad luck fell upon them. Unusual events such as comets, bolides and

eclipses became omens of good or bad depending on events that happened around the same time. When Galileo first pointed a new invention called a telescope at the Moon and Jupiter, Astronomy was born as a science and astrology as a science was destined to land in the dust bin of mythology.

With Galileo's first sketches, it became apparent that Copernicus's view of the solar system was more correct than all the previous models. The Earth is not the centre of the solar system. Of course it took a few years and a few lost lives for the idea to take hold in general, but the nail had been put in the coffin of a geocentric universe. As telescopes continued to develop, more did our universe grow and our Earth shrink. We now know that the Milky Way is an island of stars (1.7 billion according to the most recent findings) and the Milky Way is just one of trillions of galaxies in the viewable universe.

Every time technology takes a step forward, astronomers find

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themselves faced with more questions about the universe. Radio telescopes opened up a new window to objects not visible to our eyes. Some questions were answered while new mysteries presented themselves. We have discovered the Microwave Background Radiation which strengthens the theory of the “Big Bang.” We now have space telescopes that view the universe in a wide variety of wavelengths of the electromagnetic spectrum. We can now see through veils of dust and gasses to see the birthplace of stars as well as the remains of dead stars. Even amateur astronomers have access to narrow band and radio observing.

And just recently, over 100 years after they were predicted by Albert Einstein, we are now detecting gravity waves. We are on the cusp of a whole new method of observing the Universe. This will probably unlock more questions and answers to the next generation of astronomers.

What a wonderful time for a young person to take an interest in astronomy. The next decades will see some truly amazing discoveries and who can tell if one of our wide-eyed guests will be one of the discoverers?

But what about those who didn't know the Moon was visible the night I was viewing it? We live in a very busy civilization, with the ability to stay connected more than ever before. Most of us have the virtual universe at our fingertips, some even on our phones. What need do we have of a night sky to look up at? What function do the stars and planets play in our modern life? I hope that on Astronomy Day, some people will have these questions answered for them.

It is only in recent history that we humans have had artificial light limit the view of the night sky. In some ways this has disconnected us from a very important part of nature. The sad thing is that so many young people do not even realize

what they are missing. There is an unreal perspective of the night sky brought on by being able to view images online and on television that are not representative of the reality of being under the stars on a truly dark night. The experience of having unimaginably old photons hitting our eyes from millions to billions of kilometres away is humbling to say the least. It puts us back to the time of our pre-historic ancestors who used the stars to navigate and predict seasons to better their chance of survival and becoming us. Our better understanding of these objects in the night sky does not remove the awe and splendour that they can instill in us. There is nothing quite like laying under the sky on a dark night and just taking it all in.

I hope that all our visitors have a fun and stimulating visit on Astronomy/Science Rendezvous Day. Let us look after our only habitable planet and consider reclaiming the night sky for our generations yet to come. ✨

Membership has its Privileges!

Are you tired of looking at the same objects again and again (planets, moon, etc.)? Is your telescope collecting dust because it's hard to locate deep sky objects? Would you like to bring your observing to a stellar level? Robert Conrad, our new observing director, revived the Vancouver RASC observing group and invites you to join by sending him an email at observing@rasc-vancouver.com. Some of the benefits of belonging to this group include:

- Hands on training on how to operate the sfu Trottier observatory
- Weekly observing sessions at the observatory or at dark sky locations
- One-one-one coaching on how to locate thousands of objects in the night sky
- Attend small interactive seminars delivered by Robert on a range of topics including failsafe star-hopping, charting challenging objects and understanding the motions of the cosmos
- Learn to make your telescope dance by locating objects such as asteroids, nova, and supernovae
- Spectroscopy and imaging training from Howard Trottier and an opportunity to collaborate on observatory research projects
- Updates on observable sky events happening during the week like asteroid/comet/deep sky conjunctions
- Access to observing guides and lists that Robert created that took hundreds of hours to create and will help with planning observing sessions
- Knowledge and expertise from other observing group members
- Learn how to quickly and efficiently find and star-hop to deep sky objects using a range of binoculars and telescopes

Upcoming Events

May

12 – Astronomy Day at SFU

June

28 - July 2 – RASC General Assembly in Calgary

July

28 – Mars close approach at Science World

August

4 - 12 – Mt. Kobau Star Party

September

8 - 16 – Merritt Star Quest

December

13 – AGM

The Story of the Twins

by Toria Kindersley

The story of Castor and Pollux starts the same way many Greek legends do: with a beautiful woman and a weird shape-shifting decision by Zeus. This time around, the shape

was a swan and the woman's name was Leda. In an improbable but somehow not unexpected twist of biology, Leda became pregnant with the children of her husband and

swan Zeus at the same time. Naturally, when she eventually gave birth, it was to two eggs, each containing a set of twins. One egg contained
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other objects, from the intrinsically brightest star in our galaxy to several star clusters, gaseous star-forming regions, and other interesting sights. It is one of the largest diffuse nebulae in our skies. Although it is some four times as large and even brighter than the fa-

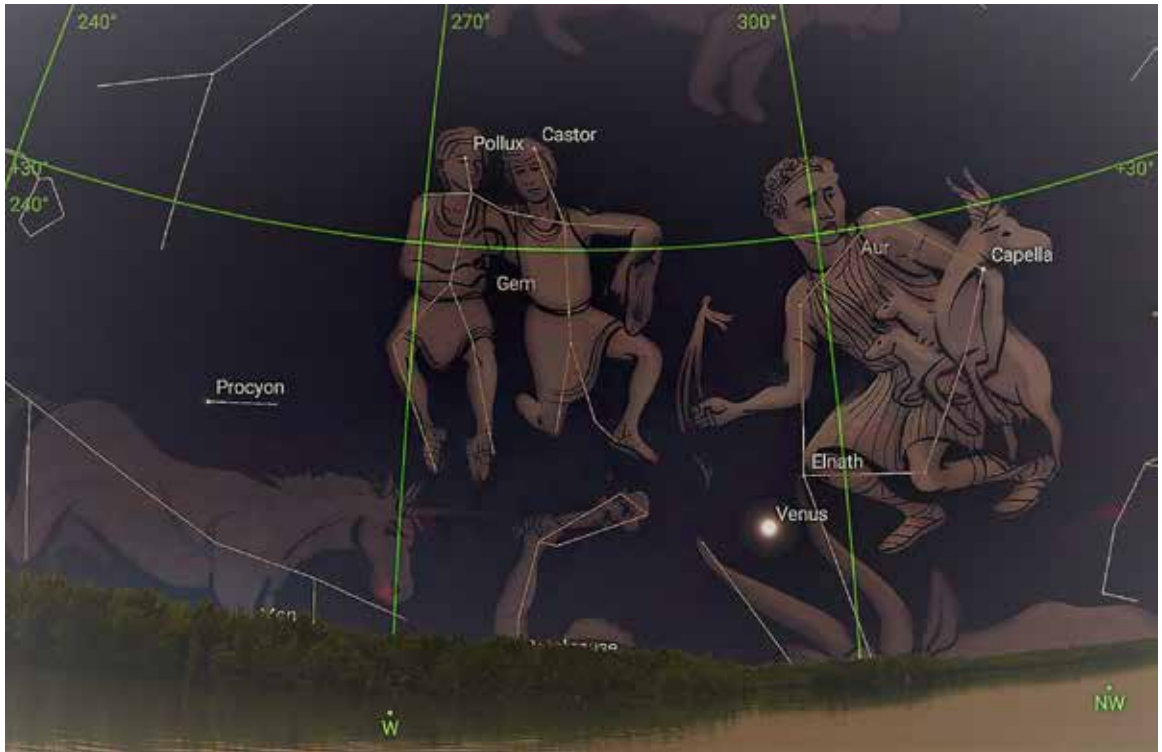
mous Orion Nebula, the Carina Nebula is much less well known due to its location in the southern sky. It was discovered by Nicolas-Louis de Lacaille in 1752 from the Cape of Good Hope.

Here's a larger image (below) of Eta Carina Nebula's core.

At this time, we have no

plans to travel south; from a narrow point of view, to take a photo of this nebula/star assembly remotely saves the money. Nonetheless, it would be nice to see this southern belle directly; it is a beauty even in binoculars, though you won't see the colours seen in these two images. ✨





Castor and Pollux are the two brightest stars in the constellation Gemini, visible from Vancouver towards the west, about 35° above the horizon on May 12th, 2018 at 10:00pm

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Pollux and Helen (of Troy fame), the demigod offspring of Zeus. The other egg contained Castor and the slightly less widely known Clytemnestra, the mortal children of Leda's husband.

As it is a pretty dumb and dangerous idea to argue with Zeus, everyone was fine with this and the brothers grew up and trained together. They became widely renowned for their skills—Castor for his horsemanship and Pollux for his boxing—and had these skills tested when they rescued their sister Helen from abduction by Theseus (a completely separate abduction from the

later one by Paris that would kick off the Trojan war). They were also Argonauts, and sailed with Jason on his ill-fated quest for the golden fleece.

Their many historic deeds did not include helping to rescue their sister from Troy, as by the time Paris kidnapped her they were already dead over some cattle disputes. The brothers had decided that they would marry two women that just happened to be betrothed to their cousins, Idas and Lynceus. Not stopping there, Castor and Pollux also decided to rob their cousins of a herd of cows they had all stolen together from Arcadia, because the brothers felt that they had been

cheated of their fair share of the loot. During their incredibly well thought out and well-planned cow raid, the brothers were caught. In the ensuing fight, Idas killed Castor, Pollux killed Idas, and just as Lynceus was about to kill Pollux, Zeus finally decided to step in and struck him down.

Wild with grief at the death of his brother, Pollux begged Zeus to make Castor immortal like him. Zeus was swayed, and allowed Pollux to share his immortality with his brother. The story is that now the brothers have an eternity together, spending half the year in Olympus and half the year in the Underworld. ★

My Evening with Stephen Hawking

by Scott McGillivray

It was spring of 1996. Stephen Hawking was headed to my alma mater, the University of Portland, to give a public lecture on "Life in the Universe." I was in my second year of a physics degree at the small university which was known for nursing, business, and engineering... definitely not physics. A small school with a tiny physics program meant that the 30 or so physics students were given a special opportunity to meet Dr. Hawking in person at a reception the night before.

The event started small with just students and professors, maybe 50 of us in the room, with the guest of honour set to arrive at 7pm. Sure enough, at exactly 7, the main doors opened and a bunch of support staff entered, followed by Stephen Hawking in his motorized chair.

My first impression... dang, he has a lot of handlers. There had to be 30 people in suits, not so much security detail, more like business associates who were clearly there to serve Dr. Hawking. Second impression, it's pretty clear I won't be having a conversation or even get close to the man as I had hoped. Hey, I was 19, I didn't know better. I had prepared to walk right up and debate my theory of event horizons and hoped he could explain why I was wrong, but

the night wasn't to go that way.

One of Dr. Hawking's staff opened the evening with an overview of the agenda. He explained how Dr. Hawking's equipment worked, the process of speaking, conversations, giving a lecture, and



even navigating the chair. He also told us of the special lecture we'd hear that evening in lieu of conversation, specially prepared just for the physics students.

Remember, it's 1996. Many of us hadn't seen the internet yet or would see a cell phone for another 5 years. Our first flip-phones with T9-Word were another 8 years in the future. Do you remember how amazing T9-Word was? You didn't have to cycle through all those letter anymore! You just needed a few of them

and your words would auto-complete with maybe 1 in 20 being completely wrong so you'd correct them as you go. Now turn technology back 8 years before T9-Word and try typing every word you say through eye movement and facial twitches. When it takes several minutes to compose a single sentence, it's pretty clear why Dr. Hawking's valuable time is never spent in a 2 way conversation. If he were to respond to a question, it could take 5 or more minutes for an answer.

Fortunately, he could pre-record sentences and speak fluidly by queueing up each recorded message. String many sentences together, that's how he gives his lectures while having the option to control the tempo if he has to pause while the audience laughs, etc. In the context of our reception, all this meant he would talk at us, not with us. Fine by me, it's a unique lecture for us physics students.

I'll never forget what he said. He told us our general physics degrees were useless, and "*in order to succeed, you must specialize in something.*" It is impossible to know everything about everything. His example is the amount of text humans have produced. The sheer magnitude is diffi-

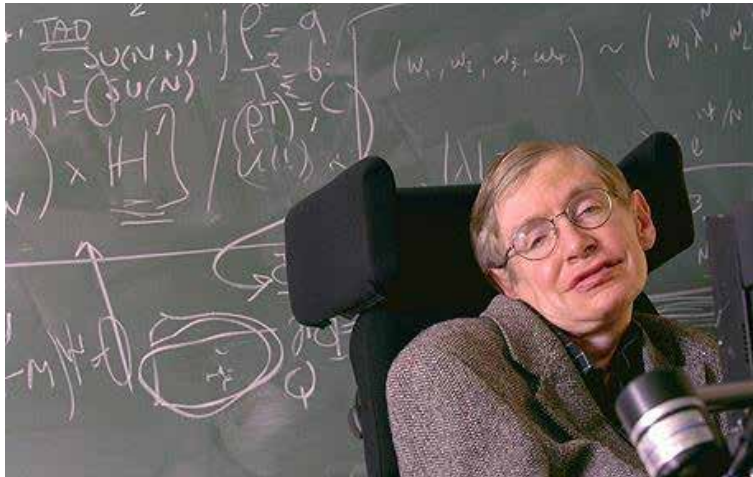
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cult to imagine. To read every book ever written, a person would have to read thousands of pages per second for their entire lifetime. But if a person focuses exclusively on one subject, they can become an expert in just a few years of school. As a physics student, I was learning a little bit about everything. I knew the basics of structural physics, fluid dynamics, electronics, etc., but as Dr. Hawking pointed out, my knowledge went nowhere near the depth of my engineering friends. When the government needs to build a bridge, they're going to hire a civil engineer, not some physics grad who took a couple classes in structural engineering.

So, the Saturday lecture, "Life in the Universe." A stadium of 20,000 seats was packed to hear Dr. Hawking's thoughts on the most commonly asked question in astronomy... are we alone? Just like imagining how many written words humans have ever produced, it's very difficult to grasp how big space really is. A human existence is limited

to a 6500 km radius. None of us will travel more than 13000km from our starting point. That's less than 1 billionth of the distance to the next star... in a galaxy with a few hundred billion stars... in an observable universe with a trillion galaxies. Even knowing those numbers, our minds are incapable of comprehending how large the universe is, how many stars there are, how vast is the nothingness, and how insignificant the Earth really is.



Getting back to what we discussed earlier...

Did I specialize in something? No. I wanted to tell Stephen Hawking he had contradicted himself. He's a world class theoretical physicist, that's his specialty. He's not a career counsellor and has never held a corporate job in his life. Many employees including myself are successful by being "good enough" at

a lot of things, going wide instead of deep.

Do aliens exist? Of course they do. There are so many stars that intelligent life must be all throughout the universe. Will we ever make contact? Of course not. Space is unfathomably large. There is no chance we could ever communicate over those distances, let alone travel. And even if we could transit that distance, there are too many other places to visit that aliens won't bother to show up here.

Some final words: Stephen Hawking is my favourite author. His greatest joy was pondering how the universe actually worked. He may have asked a lot of questions and given few answers, but these are

questions nobody had figured out to ask. If you have never read a Stephen Hawking book, I suggest you start with *Black Holes and Baby Universes*. Whether you know what a black hole, dark matter, or dark energy are, Dr. Hawking's books will frame those big questions in a way any curious mind can dream about the true foundation of our universe. *

Space and Fashion

by Hayley Miller

A fascination with everything celestial could be a side effect of the digital age we live in and the state of the Earth. If tech innovators like Elon Musk are making life on another planet seem like a possibility in our not-so-distant

future, then fashion designers do not want to be left behind.

It could be that fashion designers and artists like myself realize that symbols of the universe—like stars, galaxies and planets—evoke a certain kind of

feeling in us: a feeling of endlessness. There seems to be a common sense that if you cannot fly to the Moon, the best way to reach for the stars is by wearing them. I predict this trend is here to stay for a while! ✨



Members' Gallery



Partially eclipsed sunset

by Andrew Krysa

Here is a picture of a partially eclipsed setting sun I took with my Sony NEX-VG10 DSLR camera near Huntsville Ontario in the Muskokas north of Toronto. It was in May 2012. It was so cool because the sun was so near the horizon and it was kind of hazy out so we were able to look right at it (I'm not blind 6 years later so it must have been ok, lol).



The Trifid Nebula (M20) by Ken Jackson

The colourful Trifid Nebula taken from Hood River, Oregon with a Nikon D5100 DSLR through a Skywatcher Esprit 80mm scope. Total exposure of 50 min (10 x 5 min subs).



M13 - The Great Globular Cluster in Hercules

by Ken Jackson

Taken from my backyard in Coquitlam with a Nikon D5100 DSLR through a Celestron EdgeHD 8 telescope. Total exposure of 28 min (14 x 2 min subs).