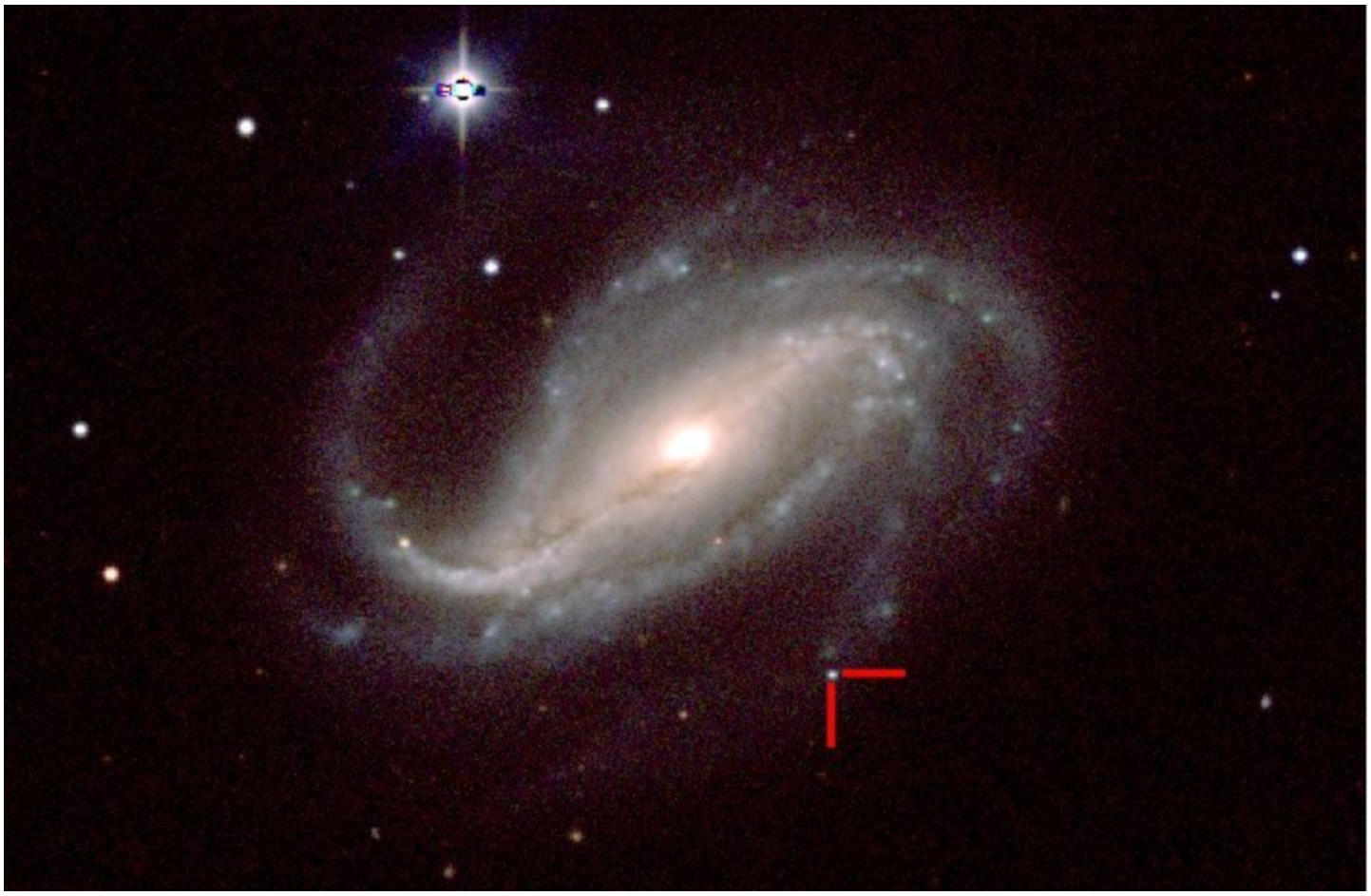
ROYAL ASTRONOMICAL SOCIETY OF CANADA - VICTORIA CENTRE

SKYNEWS



IN THIS ISSUE

NGC 613 and SN2016gkg

An Amateur Astronomers Timely Discovery of a Supernova

NEXT MEETING

Next Monthly Meeting
Wed April 11th 2018
Room 167
Elliot Building
UVic Campus

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On the Cover
NGC 613 and SN2016gkg
With Swope Telescope Las Campanas Observatory, Chile

C. Kilpatrick of UC Santa Cruz and Carnegie Institution for Science took this image of SN2016gkg using the Henrietta Swope 1m telescope of Las Campanas Observatory, Chile (for location see February 2018 SkyNews p 6). This image was taken shortly after Argentinian amateur astronomer Victor Buso's timely discovery of supernova SN2016gkg. Buso captured a number of images near the instant that a star went supernova. This contribution was of great scientific value. Read the article called ***In the Nick of Time*** on page 4 to learn more about this exciting story.

President's Report
by Chris Purse

As the spring and summer approaches, planning is underway for our annual season of outreach events. The first event of the season is Astronomy Day on Saturday, April 21 at the Royal BC Museum. We will require volunteers to help with this event including people for the information table, people to do a show and tell with telescopes and their astrophotography, and some solar viewing as well if the skies cooperate. If you have not already been contacted and wish to help out, please contact Ken (outreach@victoria.rasc.ca) to put your name on the list as an outreach volunteer.

We will be holding another season of Star Parties at the Dominion Astrophysical Observatory on Saturday evenings. The first of these evenings will be on Astronomy Day. The season will continue until Saturday, September 1 for a total of twenty evenings. Planning is underway for some special evenings including Saturday, May 5 to coincide with the 100th anniversary of first light of the Plaskett Telescope that was on May 6, 1918. Again we will need people to be on hand to direct the visitors, provide views of the sky with telescopes, and other duties. We have a contact list of volunteers but if you are not on the list already and would like to be added please contact Chris(president@victoria.rasc.ca).

The annual general meeting of the Canadian Astronomical Society (CASCA) is taking place in Victoria this year. The conference title is A New Century for Canadian Astrophysics and it will be at the convention centre from May 22 to 26. Through a special arrangement with the organizing committee, members of RASC may register to attend. The options for RASC members are a one day rate or four day rate; the early bird rates are in effect until April 6. Complete details about the meeting, including a list of invited, centenary, and education and public outreach speakers, an outline of the graduate student workshop program, and special events, can be found on the CASCA 2018 website (http://casca2018.ca/). One of the speakers, former RASC president R. Peter Broughton, is the author of new book about John Stanley Plaskett founder of the Dominion Astrophysical Observatory. Entitled Northern Star J.S. Plaskett, it is now available from the RASC store (https://secure.rasc.ca/Portal/Shop/RASC/Store/StoreMain.aspx?).

NGC 1024 Arp 333 by John McDonald with Garry Sedun's 20" Newtonian f4.4

March Meeting Presentation

The Hunt for Black Holes in Globular Clusters

by Dr. Vincent Hénault-Brunet

Wednesday March 14th 2017 at 7:30 PM
Room A104, Bob Wright Centre.

Globular clusters have long been used to test theories of stellar evolution, stellar dynamics, and galaxy formation. In recent years, these old clusters have emerged as fertile grounds to search for black holes and understand their formation. “Intermediate-mass” black holes have been proposed to lurk in their centres and could represent seeds from which super-massive black holes grow in the early universe. Dynamical formation of stellar-mass black hole binaries in the dense cores of globular clusters has also been suggested as a main formation channel for the sources of gravitational waves recently detected by the LIGO experiment. I will give an overview of the recent successes (and failures) of astronomers’ exciting hunt for black holes in globular clusters.

Bio: Vincent Hénault-Brunet recently joined NRC Herzberg as a Plaskett Fellow. He was born in Montreal, where he completed his BSc in physics from McGill and MSc in astrophysics from Université de Montréal. He then obtained his PhD from the Institute for Astronomy at the University of Edinburgh (UK), and was a research fellow at the University of Surrey (UK) and Radboud University (Netherlands) before moving to Victoria. His research focuses on stellar populations and globular clusters, in particular on the dynamics of stars in these systems.

Upcoming Speakers

Wednesday April 11th 2018
Dr. Henry Ngo. *Exoplanet Overview*
Wednesday May 9th, 2018
Karun Thanjavur, *Gravitational Lensing*
Wednesday June 13th 2018
TBD
Wednesday September 12th 2018
TBD
Wednesday October 10th 2018
Dr Reka Winslow *Planetary Magnetism*

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. Contact: Reg Dunkley for further details: vp@victoria.rasc.ca

Every Monday at 7:30 PM Beginning

Email Lists

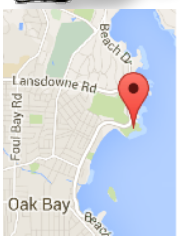
Observer / CU Volunteers / Members

Contact Chris Purse to subscribe

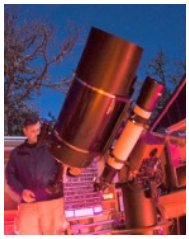
membership@victoria.rasc.ca

New Observers Group

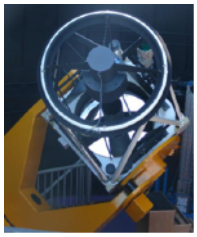
Hosted by Sid Sidhu - 1642 Davies Road, Highlands. Call 250.391-0540 for information and directions.



Cattle Point observing in Victoria’s own Urban Dark Sky Park.
Click the link for the date and time of the next scheduled session
http://victoria.rasc.ca/events/rascals-cattle-point/



Victoria Centre Observatory: Every Saturday Evening
*Open to those on **the Active Observers list only***
Weather permitting. Note that the road may be slippery in winter driving conditions. Exercise caution.



UVic 32 Inch Telescope
RASC Victoria Centre Session 2nd Friday of Month. Meet by the Elevator in the Bob Wright Centre at 7PM

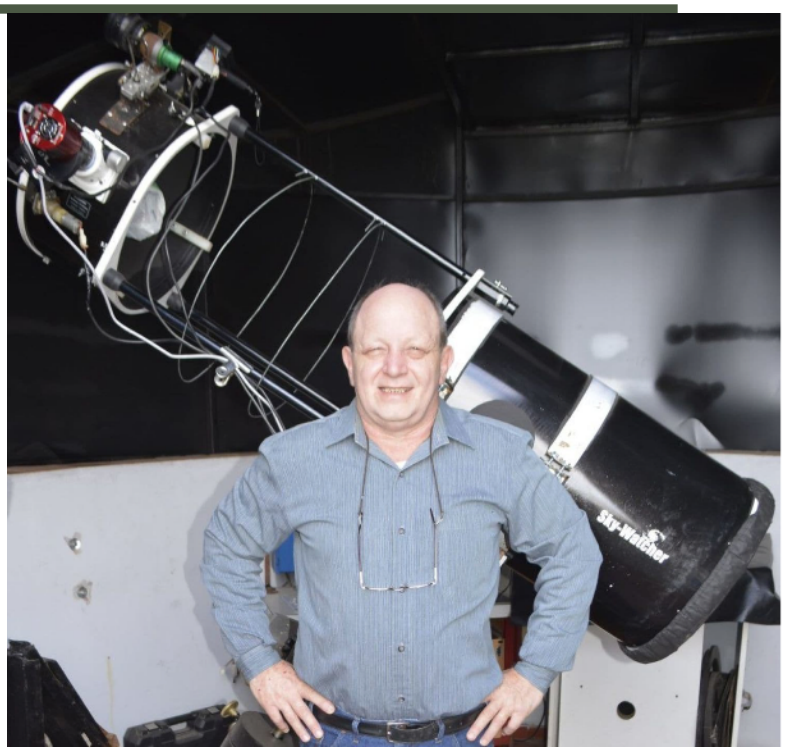
Membership Report March 2018

Total membership is currently **263.** There are 14 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.

In the Nick of Time

By Reg Dunkley

On September 20th 2016, Victor Buso, an amateur astronomer from Rosario Argentina had just installed a new astro camera on his 16 inch SkyWatcher Newtonian telescope. He was eager to test things out and pointed his scope at a distant galaxy, NGC 613 that was near the zenith. To avoid saturation from city lights he limited exposures to 20 seconds. After collecting imagery for 20 minutes he checked things out and was encouraged by the spiral shape of NGC 613. So, 45 minutes later he began another 25 minute sequence of exposures. When he examined this set he noticed a new star like object on the images that got brighter with time. He soon realized that this may be a supernova and contacted professional astronomers. They began an intensive series of observations the following night.

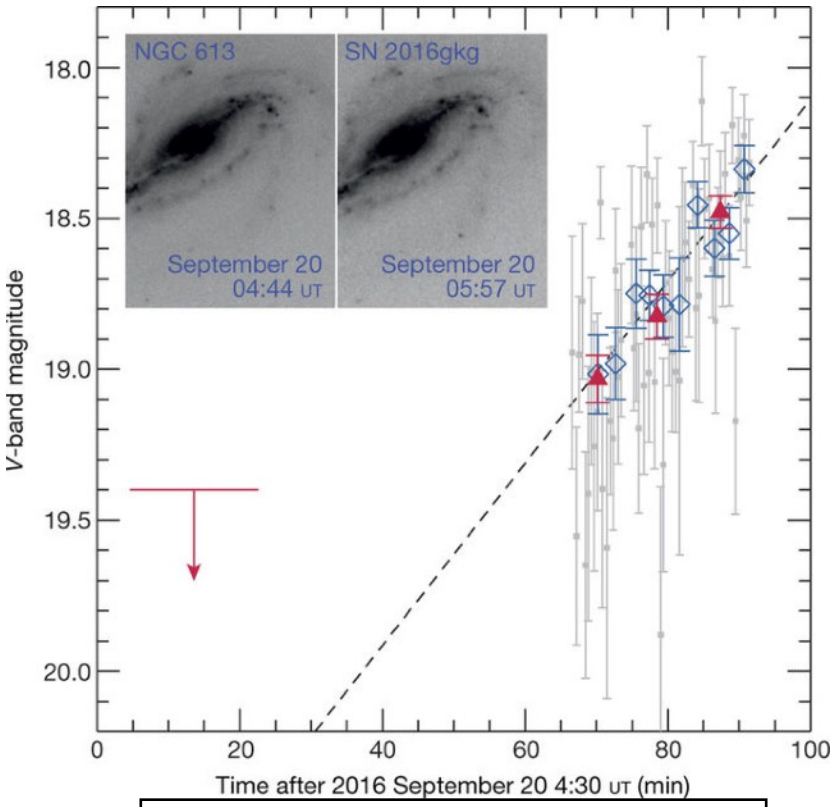


Amateur Astronomer Victor Buso with his 16 inch scope

The professionals realized that Victor had detected a Type II supernova within 45 minutes of its “birth”. The magnitude of the supernova could be obtained from each 20 second exposure. He captured an unprecedented measurement of the rate of brightening of a supernova at a fine temporal resolution. By comparing these observations with theoretical models astronomers were able to obtain valuable insight into the initial “shock breakout” phase of the supernova. The odds of capturing this event were estimated to be one in ten million!

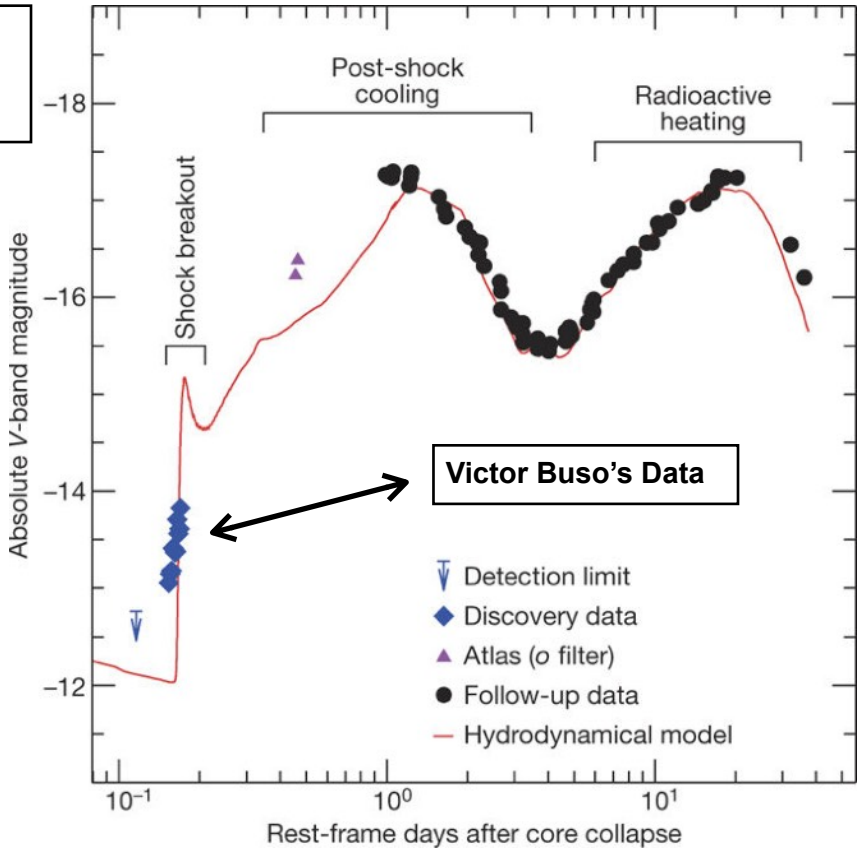
When this discovery was published in Nature on February 22nd 2018, it made headlines around the world and Victor’s contribution was recognized and celebrated. Links to associated papers in that Nature article provide ready access to detailed analysis of this supernova. This is a wonderful illustration of the significant scientific potential of the digital data captured by amateurs. It also demonstrates the importance of detecting transient astronomical events early.

In 2017 the 48 inch Palomar Schmidt telescope was repurposed with a new camera and called the Zwicky Transient Facility (ZTF). It conducts a rapid survey of the night sky monitoring for transients such as supernovae,



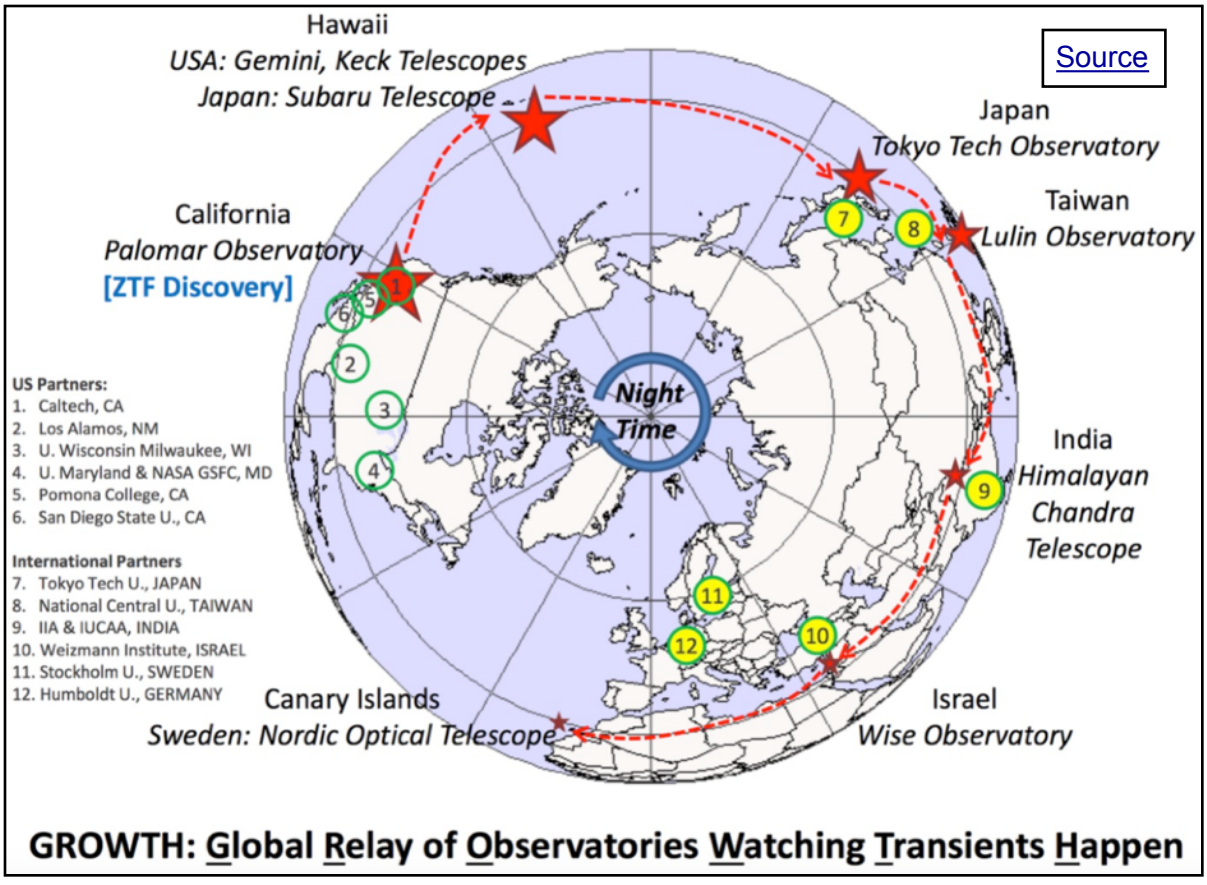
Photometry of SN 2016gkg at discovery
Within 25 minutes the brightness doubled.
Telescope Limiting Magnitude 19.4
Graph from Nature

Right: Luminosity Variation of SN 2016gkg Note that Victor's data confirmed for the first time the Shock Breakout Phase. **Source**



gamma ray bursts, near earth asteroids and multi messenger events like the recent collision of neutron stars. Software will rapidly analyze images for changes and generate alerts for astronomers. These alerts will be followed up by networks such as GROWTH (see diagram). A much larger version of the Zwicky Transient Facility, called the Large Synoptic Survey Telescope (LSST) will go into service on Cerro Pachon in Chile in 2022. Very short focal length primary mirror rapidly slewing telescopes are being proposed to quickly followup discoveries detected by the LSST.

So the data captured by amateur Victor Buso validated the strategy of these much larger and more powerful transient instruments. With the success he garnered with his system I reckon than Victor will hold on to his new camera!



An Observers Travels: Arizona Skies

By Diane Bell

There is something so appealing about those star-studded skies glowing happily at Latitude 32 degrees north! Last February - Lauri Roche, Joe Carr, John McDonald and I took up Garry Sedun's invitation to join him at his home and Observatory just west of the Dragoon Range in Southern Arizona. So, with suitcases and camera equipment in hand - Joe, John and I left on Friday, February 9th on different flights to Tucson. Arriving in the late evening, we overnighted there and made plans to pick up Lauri at Tucson's airport that next afternoon.

We were having lunch at a market cafe in Old Tucson when we got the phone call from Garry. A human-caused fire had started on one of the properties on the Dragoon Ranch Estate where he resides, and seemed to be out of control! The fire crew were on hand to contain it, but the worst-case scenario was a possible evacuation.

Thankfully, the hard-working crew got the brush fire under control over the next day, but not before 3,000 acres were burnt. Fortunately, the homes nearby were undamaged. However, as beneficial and welcoming the forecasted rains were to the area, the clouds had shortened our viewing time in the Observatory. We had just two (but wonderful) nights with Garry's 25" F/2.8 observing 'scope and the 20" Newtonian imaging scope. To say that we milked those two nights for all they were worth, was an understatement indeed.

Here are some of my thoughts on the two nights we observed**....**

"*Oh, to stand underneath the sky, watching Orion march high overhead with his two dogs - and the Hare he was pursuing. So many stars, and some new ones above the southern horizon - hidden from our Canadian latitudes. Canopus, the second brightest star in our night sky, greeted us low in the south, along with the constellations of Vela and Puppis.*

And after midnight on February 12th, Arcturus and Spica rose in the east and southeast around the same time. Corvus the Crow, was tilted like a lopsided diamond on his way up in the southeast. Wait a couple of hours and Yes, there it was, Omega Centauri, the Grand Dame of all the globular clusters, looking like a bloated blue-grey egg in my 25x100 binoculars. Lauri got up at 4 am, and we continued our sky-tour out on the southern porch. We huddled under blankets and watched the whole of the Scorpion rise, embedded in the southern Milky Way. We watched the lovely open clusters emerge from behind the Dragoon Mountains, as well as the "False Comet" in Scorpius' tail.

But wait....there was another star very low in the south - twinkling red and amber, red and amber. A look at our map and a quick star-hop, and there it was....Gamma Crucis or Gacrux, the top star in the Southern Cross! There it was, by chance, between two tiny but pointy hills on a perfect horizon, on a near-perfect night.

Oh, but we enjoyed those two nights! Garry opened his Observatory and John, Joe, Lauri and I happily observed on the 25" 'scope. The camera was placed onto the 20" 'scope to capture the beauty of those sky-treasures - galaxy clusters - and the Angel Nebula, an unusual but beautiful emission/reflection showpiece, was tweaked into a thing of beauty.

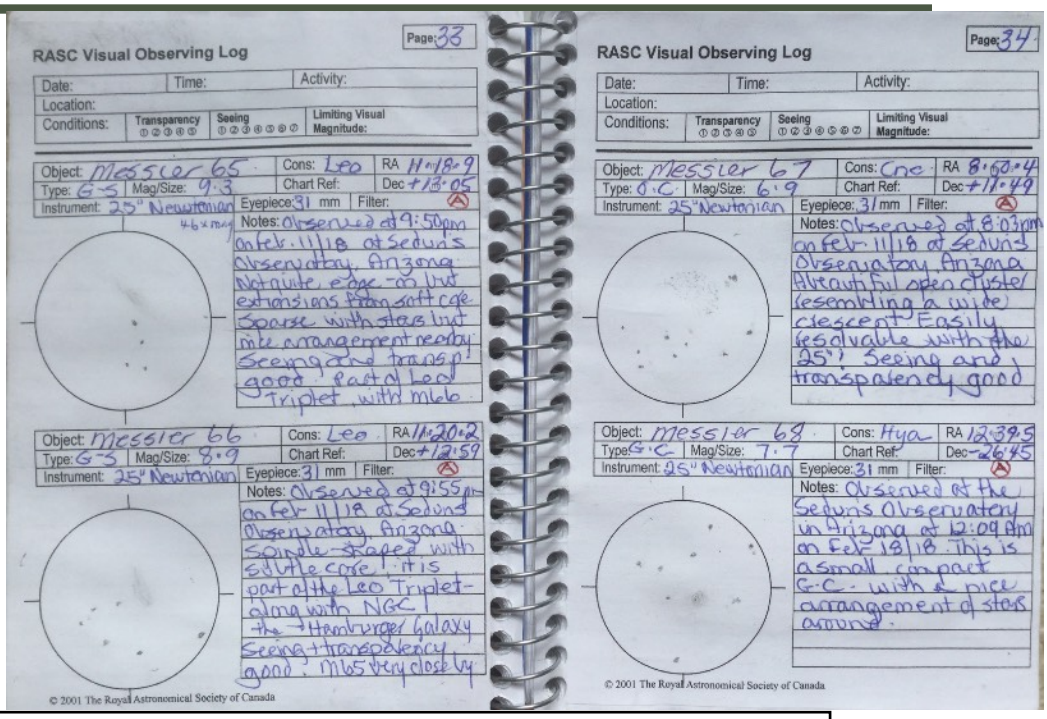
As for myself, I came with a goal in mind - to sketch and to describe 30 Messier objects through the 25" 'scope. I sketched 21 Messiers on the night of February 11th and 12th, powering through the Orion area, then Leo and Virgo. I was one with the huge ladder, finding a comfortable pose as I viewed and drew. A near-perfect sky! With strength and patience, I positioned and repositioned the ladder before slewing to the next target.

After a number of cloudy nights - and the Winter Olympics to keep us entertained - we were gifted with our second clear night from February 17th to 18th. Yes, I was going to power through again. I raised my goal to 40 Messiers in total. I sketched 17 new ones on this night, in the Hydra, Coma Berenices and Canes Venatici areas. I was overjoyed to add 38 new Messiers to my sketch book, on the clear nights of our Arizona visit!"

We did some day visiting and travel during our time here. We enjoyed a hike through the Council Rocks at the base of the Dragoon Range. On Valentines Day, we visited the Sonora Desert Museum west of Tucson, near the Saguaro National Park. Afterward, we joined Peter and Dianne Jedicke in Tucson for a lovely dinner. And before our week was up, we had a wonderful tour through the Queen Mine and the

town of Bisbee, before stopping in the nearby town of Tombstone.

Again, we offer our *PROFOUND* thanks to our host, Garry Sedun, for opening up home and Observatory to us on this 2018 visit! He was happy for us to take over his kitchen and to offer some tasty self-catered meals, and cookie baking, thanks to Lauri. And we made sure his larder was full after we left. And grateful thanks to him for offering his imaging expertise over those nights. A great gift for the visitors from the North.



RASC Visual Observing Log — Page: 33

Date: | Time: | Activity:
Location:
Conditions: | Transparency | Seeing | Limiting Visual Magnitude:

Object: Messier 65 | Cons: Leo | RA 11:18:9
Type: G-S | Mag/Size: 9.3 | Chart Ref: | Dec +13:05
Instrument: 25" Newtonian | Eyepiece: 31 mm | Filter:
Notes: Observed at 9:50pm on Feb. 11/18 at Sedun's Observatory, Arizona. Not quite edge-on but extensions [illegible] soft core. Sparse with stars but nice arrangement nearby. Seeing and transp good. Part of Leo Triplet with M66.

Object: Messier 66 | Cons: Leo | RA 11:20:2
Type: G-S | Mag/Size: 8.9 | Chart Ref: | Dec +12:59
Instrument: 25" Newtonian | Eyepiece: 31 mm | Filter:
Notes: Observed at 9:55pm on Feb 11/18 at Sedun's Observatory, Arizona. Spindle-shaped with subtle core. It is part of the Leo Triplet - along with NGC [illegible] the Hamburger Galaxy. Seeing + transparency good. M65 very close by.

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RASC Visual Observing Log — Page: 34

Date: | Time: | Activity:
Location:
Conditions: | Transparency | Seeing | Limiting Visual Magnitude:

Object: Messier 67 | Cons: Cnc | RA 8:50:4
Type: O.C. | Mag/Size: 6.9 | Chart Ref: | Dec +11:49
Instrument: 25" Newtonian | Eyepiece: 31 mm | Filter:
Notes: Observed at 8:03pm on Feb. 11/18 at Sedun's Observatory, Arizona. A beautiful open cluster resembling a wide crescent. Easily resolvable with the 25". Seeing and transparency good.

Object: Messier 68 | Cons: Hya | RA 12:39:5
Type: G.C. | Mag/Size: 7.7 | Chart Ref: | Dec -26:45
Instrument: 25" Newtonian | Eyepiece: 31 mm | Filter:
Notes: Observed at the Sedun's Observatory in Arizona at 12:09 Am on Feb 18/18. This is a small compact G.C. with a nice arrangement of stars around.

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Above: Pages from the Messier Log of Diane Bell

Below: NGC 2170 Angel Nebula is upper member of a group of 3 emission/reflection nebulae. By Joe Carr using Garry Sedun's 20" Newtonian f4.4 & Moravian 1600 CCD

RASC Victoria Centre Council 2017 / 2018

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Second Vice President	Deb Crawford	vp2@victoria.rasc.ca
Treasurer	Bruce Lane	treasurer@victoria.rasc.ca
Secretary	VACANT	secretary@victoria.rasc.ca
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Astro Cafe	John McDonald	
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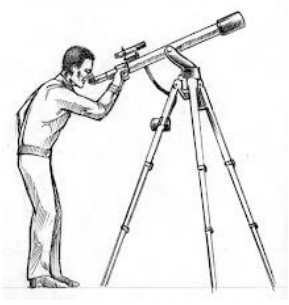
Nat RASC Anniversary Wrkg Group	Dr. James Hesser	james.Hesser@nrc-cnrc.gc.ca
FDAO Liaison	Laurie Roche	
UVic Liaison	Alex Schmid	
Observing	David Lee	
	Li-Anne Skibo	
	Dan Posey	

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.