

SKYNEWS



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New Mexico Skies

Image of the Southern Sky during the 2011 All-Star Alberta Party held at the [Painted Pony Resort](#) in SW New Mexico.

by John McDonald

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NEXT MEETING

May 13th 2011
University of Victoria
Room 060 Elliot Bldg.

Speaker TBA on
RASC Website

www.victoria.rasc.ca

On The Cover

Date- March 30, 2011
 Conditions- Clear 12 deg C with no wind.
 Equipment- Tripod mounted Canon Ti1 with 17-50mm lens at 17mm focal length.
 Exposure 12 - 15s lights at ISO 3200 and f/2.8 with darks to match.
 Processing in Deep Sky Stacker, ImagesPlus and Photoshop.

April Speaker

Russell Robb

The New UVic 0.8 Meter Telescope



Russell Robb grew up marvelling at the dark skies of Southern Alberta. After completing a BSc at University of Calgary he worked at their Observatory for 8 very cold years. He has enjoyed working for the University of Victoria for the last 29 years. He has authored many articles on variable stars and asteroids.

A few years ago David D Balam named the asteroid 11955 Russrobb for him. Russell Robb presently spends much of his time teaching the first year Astronomy for Non-science Students course.

Abstract:

The University of Victoria purchased a new 0.8 meter DFM Cassegrain telescope and we installed it July 2010. I will review the history of the Climenhaga Observatory providing context for the new telescope. The philosophy of the telescope design and construction is to keep it simple. This, hopefully, makes the telescope system robust and worry free. Although there will be many advantages of the new telescope, it will have limitations due to its location and size. There are a multitude of projects that we will be able to do with the new telescope ranging from distant supernovae to absolute calibrations inside the dome.

Presidents Message

by Laurie Roche



My mom and dad always had me sit down and write thank you notes for Christmas and Birthday presents from relatives. I must admit I never really liked doing them and tried to print as little as I could get away with but the great gifts I received in the mail from my

grandmother and my aunts were well worth the few minutes of reluctant card-writing way back when. Well, this is a thank you note that I have no reluctance in writing at all. This is a thank you to every person in our organization who makes a contribution of one type or another to keep our RASC programs in Victoria vital and strong. Every organization needs members who come forward to do the jobs that need to be done, jobs that sometimes take a lot of time and expertise, some that don't require too much time at all but are equally important. It is like a big spider web with connections in all directions. The relationships between people are what make us stronger.

I started a list of the tasks that people do for the RASC, Victoria Centre, that are ongoing right now. I am absolutely sure I have missed some so I apologize right up front and will add more to the list as I am reminded. It is an amazing set of tasks! I am not adding any names of our members to the tasks. You all know who you are and on behalf of everyone who is a member, a new one or a seasoned veteran, I thank you for all the hard work, effort, time, talents and enthusiasm you have brought to local astronomy.

And when you see a colleague in the near future thank them, too.

Here's the list in no particular order at all:

Coffee and refreshments	Observing program organization
Astronomy Day preparation	Giving School programs

Liaising with UVIC	Telescope Loans, maintenance and inventory
Summer Star Party organization	Keeping council and general meeting minutes
Astronomy Café	Centre of the Universe Saturday evening events
Editing Skynews	Website Management
Pearson College contacts	HIA contacts
Being a VCO MIC	Special events scheduling and facilitating
Connections with National Office	Banking, budgets, certification and legal matters
Keeping track of our Library	Organizing and Supporting Light Pollution Initiatives
Obtaining event prizes	Organizing the annual AGM
Maintaining our Archives	Observatory maintenance, scheduling and tech support
Membership Coordinator	Helping new members and new observers
Victoria Calendar editing	Astrophotography group
Coordinating volunteers	Membership on National committees

Astronomy Public Talk Announcement
Professor. Falk Herwig.
Wed Apr 20th, 8:00pm
"Violent Interactions of Merging Stars"
Room SCI A104, Bob Wright Centre,
University of Victoria. Followed by star gazing with
the new 0.8 metre telescope (weather permitting).

Messier Marathon

Saturday April 2nd

In spite of the collapse of the Messier Marathon due to rain which was originally scheduled for April 1st and 2nd there was a brief clearing opportunity on Saturday night which prompted quick responses by email to coordinate a hurried hosted session at the Victoria Centre's Observatory. A handful of determined observers attended the VCO at 10:00 PM under newly cloudless and "somewhat transparent" skies, in the cold and damp, to scout out some Messier objects. The 14" SCT was pressed into service, as was the 12" Dobsonian and the 5" TeleVue of which is fixed upon the 14" SCT. Many galaxies were seen, along with the usual suspects (M57, M97, M3, M13, etc.). Saturn was spectacular, as always. Present were Diane Bell, Pam and Roger Norton, Lauri Roche, and Micah and Jim Alders, along with your humble narrator. We departed around 1:30 AM.

Nelson Walker

TO INFINITY – AND BEYOND !! (...with apologies to Buzz Lightyear)

By Diane Bell

I have had a life-long interest and love for astronomy. In my childhood days as a military brat in Cold Lake, Alberta, my Dad and I would head out with binoculars to the field in front of our house and look at the night sky. It didn't take me long to name the stars, constellations and some of the Messier objects - and I was hungry for more. Over the past 25 years, I had crossed the Equator three times and enjoyed viewing the treasures surrounding the Celestial South Pole. I planned a fourth crossing earlier this year with a friend, on a cruise along South America's eastern coastline – journeying to the Falkland Islands and further south, through Antarctica's waters. I was looking forward to seeing these beautiful skies again....

Meanwhile, I was encouraged by a recent article in Astronomy Magazine's January 2011 issue, written by Michael Covington. He shared techniques – and pictures – of the night sky with just a camera and a tripod. So, I showed up at Astronomy Cafe in January with a simple little camera in hand - a 9-year old Canon PowerShot A60 – hoping that one of our seasoned astrophotographers would "tweak" it so I could attempt some shots of the southern night sky. John McDonald

stepped up to the plate and adjusted the F-Stop to 2.8, the ISO setting to 400, with the maximum 15-second exposure.

So off we journeyed – the long flight connections took us to Buenos Aires, Argentina, lying at a latitude of 35 degrees South. My little camera, its simple tripod and my 20x80 binoculars were safely stored in various overhead bins on our three flights from Victoria to South America....

We met our ship – the “Celebrity Infinity” for the two week voyage on February 13th and were fortunate to get a stateroom with a large deck at the back of the ship. A HUGE area of sky awaited us – and no urban lights! My first observing night at sea was terrific –I turned to the north and there was Orion – upside down! To see this almost symmetrical constellation with blue Rigel at the top and the sword pointing upwards was an odd feeling indeed. Lepus the Hare was bright and almost overhead; somersaulting over Rigel and the Hunter’s feet. As Orion made his way westward, Leo rose in the east- upside down, like an African lion after a big feast

We climbed up to the top deck with the other passengers for their first look at Alpha Centauri, our stellar neighbour, and Beta Centauri - pointing the way to Crux (Southern Cross), rising higher in the southeast. The ship’s movement was minimal as we sailed south and I was able to take advantage of the light-gathering capability of the binoculars. I didn’t have a tripod so I often made use of a table to steady my hands. I turned my oversize binos toward the southeast, braced myself comfortably in a deck chair and encountered the awesome splendour of the Southern Milky Way. Carina, the Keel revealed her treasures – so many beautiful open star clusters, including the Southern Pleiades and NGC 3532, a stunning showpiece surrounded by an entourage of smaller clusters, dense but bright. Eta Carinae and the surrounding Carina Nebula glowed brightly nearby. A star-hop away from Beta and Epsilon Centauri in the northeast direction (47 degrees south in the sky) was another lovely treat. The globular star cluster Omega Centauri (NGC 5139) was a sight that literally took my breath away. Large and glorious, this masterpiece glowed like a celestial egg. With the large binos, I have never seen Omega so beautiful in such a dark sky....

I looked for the Large Magellanic Cloud in Dorado – between Canopus and the South Celestial Pole – and was awarded with a great view. I noticed the bar in the centre of this satellite galaxy and the Tarantula Nebula

(NGC 2070), although small, glowed brightly nearby. In the southwest glowed blue Achernar and its neighbour, the Small Magellanic Cloud. With averted vision, I was able to notice a slight wedge-shape to this small galaxy- but nearby I spotted an additional treasure. Lying at a latitude of 72 degrees South and elusive to our North American eyes, glowed 47 Tucanae (NGC 104), another showpiece of a globular cluster. At 4th magnitude, its core was bright with a faint halo of stars around the centre. A smaller globular, NGC 362, resided nearby on the other side of the SMC.

Crux, Centaurus and the Milky Way were nearly overhead in the early morning hours as we approached latitude 60 degrees south. The sky was remarkably clear and bright - and the sight of so many bright stars in a small area of the sky – again – took my breath away.

The “Infinity” did make it down to (almost) 63 degrees South near the top of the Antarctic Peninsula, but a major storm with high winds, high seas and zero visibility changed our course to the northwest. We crossed the Drake Passage a day earlier on our way to Ushuaia on the Beagle Channel, in the Tierra Del Fuego region. On the up-side, we had an extra day and one night in this beautiful city.

So – late that evening, out came the camera and tripod, and I took my first pictures of the night sky, beginning with Crux, the Milky Way and Carina. In the morning hours before dawn, Scorpius and Sagittarius rose in the northeast, tilted almost upside down at this latitude of 55 degrees south.

There was some moon interference on the trip during the two weeks at sea. Most of the observing was done after moonset during the first week and before moonrise in the last few days of the cruise. A few days before our return to Buenos Aires, Infinity’s passengers were rewarded with a wonderful lecture on the southern skies by Jim Zimbelman, from the Smithsonian Institute.

The crossing was rougher as we sailed north from Ushuaia – I would have to wait until our side trip to Iguazu Falls, Argentina (a few degrees south of the Tropic of Capricorn) to get more photographs. A platform on the roof of our hotel provided an awesome viewing area, as I searched for northern star sights in the vicinity of the Hunter.

All around, it was a wonderful experience. During my nights out on the deck and on the rooftop of the Iguazu

Hotel, I took time to imagine how Charles Messier would feel at these latitudes south of the Equator, as he searched for comets. If he was this far south, he would have had a field day expanding his "toss-out" list....

Vesta - Is it Really an Asteroid?

March 29, 2011: On March 29, 1807, German astronomer Heinrich Wilhelm Olbers spotted Vesta as a pinprick of light in the sky. Two hundred and four years later, as NASA's Dawn spacecraft prepares to begin orbiting this intriguing world, scientists now know how special this world is, even if there has been some debate on how to classify it.

Many astronomers call Vesta an asteroid because it lies in the main asteroid belt between Mars and Jupiter. But Vesta is not a typical member of that orbiting rubble patch. The vast majority of objects in the main belt are lightweights, 100 kilometers wide or smaller, compared with Vesta, which is a 530 kilometer-wide behemoth.

"I don't think Vesta should be called an asteroid," said Tom McCord, a Dawn co-investigator based at the Bear Fight Institute, Winthrop, Wash. "Not only is Vesta so much larger, but it's an evolved object, unlike most things we call asteroids."

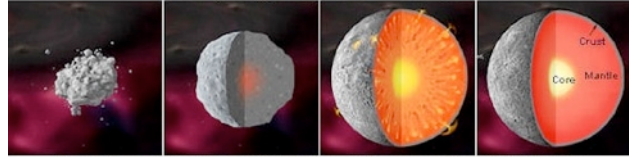
The layered structure of Vesta (core, mantle and crust) is the key trait that makes Vesta more like planets such as Earth, Venus and Mars than the other asteroids, McCord said. Like the planets, Vesta had sufficient radioactive material inside when it coalesced, releasing heat that melted rock and enabled lighter layers to float to the outside. Scientists call this process differentiation.

McCord and colleagues were the first to discover that Vesta was likely differentiated when special detectors on their telescopes in 1972 picked up the signature of basalt. That meant that the body had to have melted at one time.

Officially, Vesta is a "minor planet" -- a body that orbits the sun but is not a proper planet or comet. But there are more than 540,000 minor planets in our solar system, so the label doesn't give Vesta much distinction. Dwarf planets -- which include Dawn's second destination, Ceres -- are another category, but Vesta doesn't qualify as one of those. For one thing, Vesta isn't quite large enough.

Dawn scientists prefer to think of Vesta as a protoplanet

A Rocky Body Forms and Differentiates



(From Smithsonian National Museum of Natural History - http://www.mnh.si.edu/earth/text/5_1_4_0.html)

because it is a dense, layered body that orbits the sun and began in the same fashion as Mercury, Venus, Earth and Mars, but somehow never fully developed. In the swinging early history of the solar system, objects became planets by merging with other Vesta-sized objects. But Vesta never found a partner during the big dance, and the critical time passed. It may have had to do with the nearby presence of Jupiter, the neighborhood's gravitational superpower, disturbing the orbits of objects and hogging the dance partners.

Other space rocks have collided with Vesta and knocked off bits of it. Those became debris in the asteroid belt known as Vestoids, and even hundreds of meteorites that have ended up on Earth. But Vesta never collided with something of sufficient size to disrupt it, and it remained intact. As a result, Vesta is a time capsule from that earlier era.

"This gritty little protoplanet has survived bombardment in the asteroid belt for over 4.5 billion years, making its



This image shows a model of the Protoplanet Vesta

surface possibly the oldest planetary surface in the solar system," said Christopher Russell, Dawn's principal investigator, based at UCLA. "Studying Vesta will enable us to write a much better history of the solar system's turbulent youth."

Dawn's scientists and engineers have designed a master plan to investigate these special features of Vesta. When Dawn arrives at Vesta in July, the south pole will be in full sunlight, giving scientists a clear view of a huge crater at the south pole. That crater may reveal the layer cake of materials inside Vesta that will tell us how the body evolved after formation. The orbit design allows Dawn to map new terrain as the seasons progress over its 12-month visit. The spacecraft will make many measurements, including high-resolution data on surface composition, topography and texture. The

spacecraft will also measure the tug of Vesta's gravity to learn more about its internal structure.

"Dawn's ion thrusters are gently carrying us toward Vesta, and the spacecraft is getting ready for its big year of exploration," said Marc Rayman, Dawn's chief engineer at NASA's Jet Propulsion Laboratory, Pasadena, Calif. "We have designed our mission to get the most out of this opportunity to reveal the exciting secrets of this uncharted, exotic world."

Production Editor: Dr. Tony Phillips
Credit: Science@NASA

Further information can be read online.

http://science.nasa.gov/science-news/science-at-nasa/2011/29mar_vesta/

Dawn Approaches Asteroid Vesta

April 7, 2011: After 3 ½ years of thrusting silently through the void, NASA's Dawn spacecraft is on the threshold of a new world. It's deep in the asteroid belt, less than 4 months from giant asteroid Vesta. "We're closing in," says Marc Rayman, Dawn's chief engineer and mission manager. "And I'm getting more excited every day!"

Dawn will enter orbit around Vesta in July 2011, becoming the first spacecraft ever to orbit a body in the asteroid belt. After conducting a detailed study of the uncharted alien world for a year, the spacecraft will pull off an even more impressive first. It will leave Vesta, fly to dwarf planet Ceres, and enter orbit there.

"This is unprecedented," says Rayman. "No spacecraft has ever orbited two target bodies, much less worlds in the asteroid belt. A few probes have passed through this vast region of space, but not one could stop and develop an intimate portrait of its residents."

A conventional spacecraft gets a boost from a big rocket, then coasts to its target. Carrying enough fuel for making significant changes in speed or direction along the way would make it too heavy to launch. Dawn is far more fuel efficient. Spanning 65 feet, its solar arrays collect power from the sun to ionize atoms of xenon gas. These ions are expelled silently out the back of the spacecraft by a strong electric field, producing a gentle thrust. The weightless, frictionless conditions of space flight allow this gossamer force effect to build up, so the spacecraft continuously gains speed.

"This spacecraft ultimately achieves fantastically high velocity while consuming very little propellant -- using only a kilogram of xenon every 4 days, though its engines are almost constantly active."

With this system Dawn has been quietly, gradually reshaping its orbit around the sun, slowly spiraling out to its target, getting closer and closer as it loops around.

"By the time the spacecraft is in the vicinity of Vesta, its orbit will be very much like the asteroid's," explains Rayman. "So upon arrival, Dawn can slip into orbit as gently as it's been moving for 3 ½ years."*

A conventional spacecraft screeches into orbit in a single dramatic, nail biting instant. The mission team is usually gathered in the mission control room with their eyes riveted on the telemetry to see that the final critical maneuver goes smoothly.

"With Dawn, there is no one big maneuver, no fiery burn, no single critical moment. Dawn's entry into orbit will be no different from what the spacecraft does almost all the time, what it's doing as you read this article. In fact, when Dawn sidles into orbit, I might be asleep. Or if it's Friday night I'll be dancing, or if it's Saturday I might be out taking pictures of dragonflies." But you can bet he'll be in mission control when the pictures start coming in.

"It will be incredibly exciting to watch Dawn close in on Vesta. We'll witness the uninteresting smudge in the first distant images grow into a full-sized world as we loop closer and closer, ending up just 110 miles above the surface. That's closer than the ISS is to Earth! We'll be right there, and if there are no tall trees we'll be safe."



[Celebrate the beginning of Dawn's year-long exploration of new worlds with a Vesta Fiesta!](#)

After exploring Vesta for a year, Dawn will take leave of the rocky world as softly as it arrived there, climbing out along a spiral, gradually getting farther and farther away, the loops getting longer and longer, until the asteroid's gravity gently releases the spacecraft. Dawn will again be orbiting the sun on its own, just as it is now. It will complete about two thirds of a lap before arriving at Ceres.

There it will once again slide gently into orbit around a new world, guided by ion thrusters as silent as space itself.

"Even if we imagined a sound, it would be the faintest of whispers, the softest of sighs. Yet it tells us the secret of making an interplanetary spaceship that can travel to and explore distant, alien worlds, carrying with it the dreams of those on Earth who long to know the cosmos."

This article can be viewed online [here](#) which includes a video presentation.

Author: [Dauna Coulter](#) | Editor: [Dr. Tony Phillips](#)
Credit: Science@NASA

Two dying stars reborn as one

A pair of white dwarfs is on a collision path, and they will merge to create a single, new star.

By Harvard-Smithsonian Center for Astrophysics, Cambridge, Massachusetts Published: April 7, 2011

White dwarfs are dead stars that pack a Sun's-worth of matter into an Earth-sized ball. Astronomers have just discovered an amazing pair of white dwarfs whirling around each other once every 39 minutes. This is the shortest-period pair of white dwarfs now known. Moreover, in a few million years, they will collide and merge to create a single star.

"These stars have already lived a full life. When they merge, they'll essentially be 'reborn' and enjoy a second life," said Mukremin Kilic from the Harvard-Smithsonian Center for Astrophysics in Cambridge, Massachusetts.

Out of the 100 billion stars in the Milky Way, only a handful of merging white dwarf systems are known to exist. Kilic and his colleagues found more. The latest discovery will be the first of the group to merge and be reborn.

The newly identified binary star, designated SDSS J010657.39-100003.3, is located about 7,800 light-years away in the constellation Cetus. It consists of two white dwarfs — a visible star, and an unseen companion whose presence is betrayed by the visible star's motion around it. The visible white dwarf weighs about 17 percent as much as the Sun, while the second

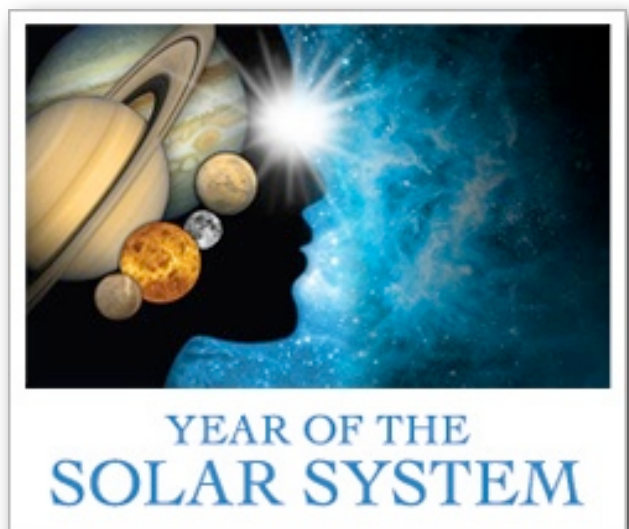
white dwarf weighs 43 percent as much. Astronomers believe that both are made of helium.

The two white dwarfs orbit each other at a distance of 140,000 miles (225,000 kilometers), less than the distance from Earth to the Moon. They whirl around at speeds of 1 million miles per hour (1.6 million km), completing one orbit in only 39 minutes.

The fate of these stars is already sealed. Because they wheel around so close to each other, the white dwarfs stir the space-time continuum, creating expanding ripples known as gravitational waves. Those waves carry away orbital energy, causing the stars to spiral closer and closer together. In about 37 million years, they will collide and merge.

When some white dwarfs collide, they explode as a supernova. However, to explode, the two combined have to weigh 40 percent more than our Sun. This white dwarf pair isn't heavy enough to go supernova. Instead, they will experience a second life. The merged remnant will begin fusing helium and shine like a normal star once more. We will witness starlight reborn.

This binary white dwarf was discovered as part of a survey program being conducted with the MMT Observatory on Mount Hopkins, Arizona. The survey has uncovered a dozen previously unknown white dwarf pairs. Half of those are merging and might explode as supernovae in the astronomically near future.



The Sky for April

April is a time of transition in the sky for mid-northern latitude observers; the winter milky way constellations are setting earlier now, gradually giving way to the darker, emptier regions rising higher in the east. Each offers it's own charm: the milky way, our own galaxy, offers nebulae and "open" star clusters - the relative voids of the east, far from the plane of our flat galaxy, offer us a good look at more remote targets such as the "globular" star clusters at the edge of our galaxy, and indeed thousands of other galactic systems far beyond. Fortunately, we have access to both scenes this month; milky way areas in the earlier evening, and intergalactic depths later. I suggest that telescopic observers be sure to spend the first hours of darkness getting in their last looks for the year at the Orion nebula, the Pleiades and Hyades star clusters in Taurus, and the many star clusters of Auriga, Gemini, and Canis Major. These areas are well placed for families with younger children with bedtimes to worry about, and also the more casual amateur who worries about getting up for work! For the moderate telescope (about 8 inches aperture), Leo is among your first destinations for other galaxies, especially M65 and 66 which reside there. A second pair of galaxies, M81 and 82, are now well placed near the ears of Ursa Major in the north. The post-midnight scene will offer countless more objects, but first let's turn to something everyone - youngster to professional - can enjoy at a convenient hour.

ASTRONOMY CAFE



Fairfield Community Centre

1330 Fairfield Rd. Victoria,
7:30pm - 11pm

Call Geoff at (250) 592-2264 for directions and information.

New comers are especially encouraged.



New Observers Group

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



Email Lists

Observer / CU Volunteers / Members

Contact Joe Carr to subscribe
web@victoria.rasc.ca

NEXT MEETING

Wednesday 11th - 7:30pm - Room 060 Uvic Elliott Building

RASC Victoria Council for 2010 / 2011

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