

NOVA

NEWSLETTER OF THE VANCOUVER CENTRE RASC | VOLUME 2008 ISSUE 3 | MAY/JUNE/ASTRONOMY DAY 2008

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About Astronomy Day

Founded in 1973 by Doug Berger, former president of the Astronomical Association of Northern California, Astronomy Day's goal is "to promote the forerunner of all scientific endeavors and to provide information, resources, and encouragement in all facets of astronomy." On this day, professional and amateur astronomers the world over host events which bring this oldest and most accessible of sciences to the public.

Join us today for talks, displays and activities for adults and children. Weather permitting, we will also be observing the sun through members' telescopes and the night sky through the GMSO's 0.5-metre telescope.

Information about the RASC, our services, and how to join can be found on page 5.

Looking Ahead

May 8: Mark Halpern of UBC: WMAP update or a first report on Atacama Cosmological Telescope results.

The Chris Graham Robotic Telescope

by Craig Breckenridge

There has been a rather substantial change in the CGRT program in the last couple of months. In January, I advised the

quite underutilized. We had mastered the issues that arose during normal operation and if it wasn't for the weather's



image by Bob Peary

The Lagoon Nebula (M8) from Pingelly, Australia

Centre that Chris would be winding down the operations in New Mexico due to the rather unfavourable weather we have been experiencing over the last year. While this was a bit of a let down as we had just managed to learn the operation of Scheduler, the CGRT Committee felt that Chris was well justified as the scope was

unpredictability, we could have made the entire operation truly robotic and ran only through scripts generated largely by Chris.

In the middle of February, Chris received an offer for the purchase of the entire operation that he couldn't refuse. Since we had been planning to shut the

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It seems as if a lot has happened since our last Nova issue! Unfortunately, much of it has involved administration work, rather than actual astronomy tinkering. However, I am pleased to report that your Council has made significant progress towards establishing Vancouver Centre's independent charitable status. Bruce MacDonald, our Treasurer, filed our application in mid-April and we expect to have a resolution on this within about three months. I would like to again thank Bruce MacDonald, Ron Jerome and Norman Song for their hard work in completing our application.

As you may remember, we have historically provided charitable tax receipts for any donations to Vancouver Centre through the National RASC. As of late 2007, this practice has been discontinued to conform to required tax guidelines. Any donations now made to Vancouver Centre will not be issued tax receipts until we have our own charitable status and can issue them directly. James McBeath, of Owen Bird, was kind enough to provide an update to Council on requirements of Directors under charitable status. He summarized that our obligations are very much what is currently required by us as a not-for-profit board—i.e. hold regular, minuted meetings, act in good faith, spend money to fulfill our mandate, file documentation on time, etc. I wanted to thank James for donating his expertise and time and, since he is interested

in astronomy, hope that we can show our appreciation with an observing session in North Vancouver sometime soon.

Perhaps my biggest disappointment was the resignation of our National President, Scott Young, over differences with the Executive Committee in the handling of disclosure to the CRA. Dave Lane has stepped in as Acting President until such time as he is confirmed at the upcoming General Assembly. As well, more change at National will see our hard-working administrator, Bonnie Bird, taking a well-earned retirement. I have thanked Bonnie on behalf of Vancouver Centre for her many years of gracious and effective service.

Rain or shine, bring your family and friends out on Saturday, May 10th to celebrate International Astronomy Day 2008. All events, which include talks throughout the day, are free. There will be goodies on hand as well as coffee and hot chocolate. If the weather is half-decent, bring your telescope out for some evening observing. All events will take place at the H.R. MacMillan Space Centre.

Later on Monday, May 26th, we will collaborate with UBC to host Dr. Jayanne English who will speak on Hubble images. You can check her bio out at: http://www.cascaeducation.ca/files/cdn_profile_english.html. Dr. English is an accomplished astronomer who is an expert at cre-

ating colour images from astronomy data. **Join us at UBC in the Physics building Hennings 201 Room at 7:30pm on Monday, May 26th.**

We have had unusually cold weather, but that has brought some clear nights for observing. Saturn has been pretty nice. A few weeks ago, when we had our telescope out by the Roundhouse in Yaletown, people were positively gleeful to get a glimpse of this wonderful planet. My next goal is to get more imaging done on the Pingelly robotic telescope in Australia. About three weeks ago, Bob and I took dozens of colour images of M16, M60 and the dark Pipe nebula. Our upcoming target objects are the Large Magellanic Cloud and the Tarantula Nebula.

Here is hoping for clear skies!

– Pomponia ✨



Apollo 17 astronaut Harrison Schmitt (right) speaking at BCIT's "Return to the Moon" event in April (co-presented by RASC-Vancouver Centre).

SCHEDULE OF EVENTS

- **VISIT DISPLAYS – Touch a piece of Mars rock!** – Jim Bernath & Ted Stroman **Space Centre**
- **KIDS ACTIVITIES**
- **COFFEE AND SNACKS**
- **BOOK SALE**
- **OBSERVING** at the Gordon MacMillan Southam Observatory (weather permitting) **GMSO**

11:00 ROBOTIC TELESCOPE Observing in Pingelly, Australia (weather permitting) **GMSO**

12:00 TELESCOPE WORKSHOP – Bob Parry/Bruce MacDonald **GMSO**

- *Learn the basics of telescopes and how to use them*
- *Bring your old or new scope and get a check up and usage tips!*

1:30 SOLAR ECLIPSES – Gil Biderman **GMSO**

2:00 “A” IS FOR ASTEROID – David Dodge **GMSO**

3:00 NORTHERN CONSTELLATIONS OF OUR SKY – Ron Jerome **GMSO**

3:30 HOW YOU CAN HELP PROTECT OUR NIGHT SKY – Vic Baker **GMSO**

4:00 WHAT’S UP IN THE NIGHT SKY – Featuring Saturn! – Bill Burnyeat **GMSO**

5:00 USING YOUR BINOCULARS AT NIGHT – Wayne Lyons **GMSO**

6:30 ASTRO PHOTOS WITH A DIGITAL CAMERA – Jason Rickerby **GMSO**

*Depending on demand, some of the day’s talks may be held again in the evening
All talks are approximately 30 minutes each*

8:30 NIGHT OBSERVING (weather permitting) – See Saturn! **GMSO**

- *Enjoy the night sky through the GMSO Dome scope or one of the many RASC telescopes or join us with your own binoculars or telescope!*

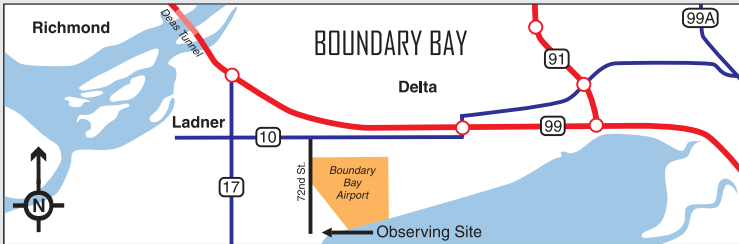
DOOR PRIZE TICKETS FOR A CHANCE TO WIN ASTRONOMY PRIZES!

KIDS – ENTER TO WIN A FREE YOUTH RASC MEMBERSHIP!

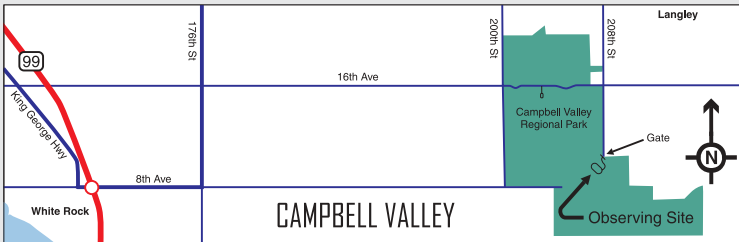
Kindly donated by: Vancouver Telescope Centre, Celestron and the RASC – Vancouver Centre!

Draw at 6:00 pm

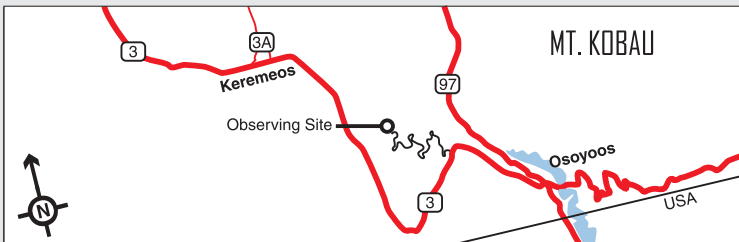
OBSERVING SITES



Site of the regular Saturday night star party. On the dike at the foot of 72nd St.



Our alternate observing site. Contact Bruce MacDonald (604-882-3820) to see if this site is in use.



Site of the annual Mt. Kobau Star Party organized by the Mount Kobau Astronomical Society

For Sale

14" Reflector on Dobsonian mounting, Sky Instruments
 - F/4.3 with 2.6" secondary
 - one piece aluminum tube
 - 2" Tectron Rack and pinion focuser
 - one person portable and set-up
 - \$650.00 Obo

4.1" F/10 Refractor Tube assembly, Antares
 - comes with custom wooden stained carrying case
 - Vixen research-grade objective
 - \$250.00 Obo

80mm Maksutov Cass. Spotting Scope
 - \$50.00 Obo

Call Ralph
 - 604-572-1084 - Home
 - 604-540-7258 - Work
 - E-mail ralph_rush@lightspeed.ca

ABOUT RASC

The Vancouver Centre, RASC meets at 7:30 PM in the auditorium of the H.R. MacMillan Space Centre at 1100 Chestnut St., Vancouver, on the second Thursday of every month. Guests are always welcome. In addition, the Centre has an observing site where star parties are regularly scheduled.

Membership is currently \$58.00 per year (\$34.25 for persons under 21 years of age) and can be obtained by writing to the Treasurer at the address above. Annual membership includes the invaluable *Observer's Handbook*, six issues of the *RASC Journal* and *SkyNews*, 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.

LIBRARY

The centre has a large library of books, magazines and old NOVAs for your enjoyment at the GSO. Please take advantage of this club service and visit often to check out the new purchases. Suggestions for future library acquisitions are appreciated.

RASC-VC on the Internet

<http://www.pcis.com/rascvan/> or
<http://www.rasc.ca/vancouver>

H.R. MACMILLAN SPACE CENTRE

The Pacific Space Centre Society is a non-profit organization which operates the H.R. MacMillan Space Centre and Gordon M. Southam Observatory. Annual Membership (\$30 Individual, \$80 Family) includes a newsletter, discounts on Space Camps, special programs and lectures, Vancouver Museum discounts, and free admission to the Space Centre. Admission to the Space Centre includes: Astronomy shows, Motion Simulator rides, multimedia shows in GroundStation Canada, and access to the Cosmic Courtyard Exhibit Gallery. For Membership information, call Mahi Jordao at 604-738-7827, local 237 for information. You can also reach them on the Internet at www.hrmacmillanspacecentre.com

MEMBERSHIP HAS ITS PRIVILEGES!

Membership in the Vancouver Centre entitles you to the use of our telescope loan program. This program gives prospective telescope owners a chance to use an example of the telescope of your dreams or borrow a telescope for the family vacation.

The Vancouver Centre is one of 28 chapters of the Royal Astronomical Society of Canada and membership in our centre brings benefits from the our national body including: The *Observer's Handbook*, regarded by many as the most sought after annual astronomical publications in the world, subscriptions to the *National Newsletter* and *SkyNews*; Canada's national astronomical magazine. Annual Meetings of the society are held in different cities and are opportunities for Canadian amateur and professional astronomers to

share experiences, observing tips and to exchange ideas on astronomy in general.

Aside from the regular meetings of the Centre, where world-class astronomy speakers and knowledgeable amateurs add to our understanding of the universe, there are monthly 'star parties'—places where we go to observe the night sky. Of course Vancouver suffers from sky glow, but we've found a place near the Boundary Bay Airport that is relatively dark. The Centre owns an observatory in the forests north of Haney and it has an association with an owner of a remotely operated telescope in New Mexico. Members can train to use either of these telescopes for photographing the thousands of galaxies, nebulae and other objects in the night sky. For really dark skies and camaraderie, there are two major star parties in BC: the Merritt Star Quest, held near Merritt, and The Mount Kobau Star Party, held on Mt. Kobau, just west of Osoyoos. The Vancouver Centre also has outreach programs such as today's International Astronomy Day where we set up our telescopes, or hold a 'meteor watch' in urban locations to show 'the locals' what's up. The Centre also has an association with the H.R. MacMillan Space Centre that affords us opportunities to use the Gordon Southam Observatory telescope and other instruments the Space Centre owns. When we do sit down for a meeting, they are a wonderful mix of professional and amateur astronomy content. Being close to a number of institutes of higher learning, we are able to draw from a huge number of professionals at the cutting edge of their fields. The 'amateur' content is a mix of 'fact and fantasy': business and observing.

UPCOMING EVENTS

May

5-11 – International Astronomy Week

10 – Astronomy Day

26 – Dr. Jayanne English: Hubble Heritage Project.

Location: Hennings 201 @ UBC

June

27-July 1 – GA 2008 in Toronto

August

2-10 – Mt. Kobau Star Party

12 – Perseid meteor shower

30-Sept. 7 – Merritt Star Quest

September

20 – Sidewalk Astronomy at the Inukshuk at Sunset Beach

December

11 – AGM

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scope down at the end of March, this was only a little earlier than originally planned. The Pingelly

the Pingelly telescope from about 3:00 AM to about 11:00 AM our time. No need to sit up all night to perform an observing run when

about 200 km southeast of Perth and so is a bit of a rural area. While we could easily run the scope with the scripts developed for New Mexico, we don't have enough capability to transmit that amount of data to our FTP server. Remember that each image is over 12 MB and that doesn't change regardless of exposure time.

The Pingelly telescope is housed in a Pod. This means we no longer have to worry about controlling a dome. The telescope is a Takahashi Epsilon 210 and is mounted on a Paramount MME German Equatorial Mount. Currently we are using an SBIG STL-6303E Class 1 camera (2k x 3k 9-micron pixels) and a SBIG 5-position filter wheel with R G B L and Ha filters installed. Chris is contemplating changing the camera to an SBIG ST-4000XCM (2k x 2k pixels) but hasn't made that decision yet.

We are controlling the scope with TheSky 6 and the camera with Maxim DL. We have DC3 Dreams Astronomer's Control Panel and DC3 Dreams Scheduler installed and will use them once the bandwidth improves. The whole thing runs on a HP XP4300 Dual

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The CGRT scope (centre) in Pingelly, Australia

operation will be kept running so the RASC still has access through the CGRT program to an excellent imaging system (more on this later). The Pingelly site complements Vancouver weather wise with their worst observing during the time when we get our best and vice versa. There is an added bonus in that we can operate

you can do it over morning coffee!

The Pingelly telescope is an excellent wide field instrument that has provided us with some great images already and we are just getting started. Operation of the scope is manual right now as there is a limit to the amount of bandwidth we can use from Western Australia. Pingelly is

I was recently talking to one of our long time members, Dan Collier, and he asked if I had attempted to image the Ursa Major Double Quasar. Of course I didn't know anything about it but I did a bit of homework and located this binary quasar just a bit northeast of the galaxy NGC 3079

Once I found out a bit more information about this object, I knew I had to attempt to get an image. The Binary Quasar (actually just a single quasar) is being gravitationally lensed by a galaxy approximately four billion light years from the Milky Way Galaxy and is itself over eight billion light years from our home. If I could image this quasar, I knew it would probably be the most distant object I will ever locate.

On April 21, 2008, I finally got the opportunity to attempt an image of this object. The skies cleared off early in the day and with a forecast of clouds returning for our regular Tuesday evening training session I quickly e-mailed our observers group for

a Monday evening observing session.

At 7:30, I headed up to the observatory to take a number of dusk flat field images. The sky needed to be bright enough to expose the camera pixels at about 30% to 50% of their saturation



value. Once I was satisfied with the flats, I had a bit of time to acquire bias and dark frames for the evening's images.

After a winter of struggling to keep dew off the observing equipment, the weather really turned out great. The air was dry and trans-

parency was above average.

With calibration images out of the way and being really excited about my targets for the evening, I quickly slewed the telescope to a small and interesting edge-on spiral galaxy (NGC 3079) a mere 50 million light years from my observatory. My evenings target was only 14 arc seconds northeast of this galaxy but another eight billion light years further away.

It was now 22:00 hrs and I rushed through taking a few images to determine a good exposure time and to centre the galaxy. I was OK to take 120 second exposures and decided to see what kind of images I could get of this galaxy with our Finger Lakes CM9 imager.

I returned to the office and set the camera to take a sequence of ten exposures. While these were being taken, I kept busy doing a bit of image processing in the office. With the image sequence completed, I went back to the telescope to make sure it was not

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Core P4 workstation and we use Radmin Remote Desktop to access it.

Data for images are downloaded from Pingelly to either our Windows computer or our LINUX FTP server that are located at SFU. Members can access the data there by requesting access from the CGRT Committee. In the very near future, we will be

transferring data from the SFU computers to the Canadian Astronomical Database Centre at the Hertzberg Institute for Astrophysics (located at the Dominion Astrophysical Observatory on Vancouver Island) as soon as we finalize the transfer scripts.

All the images that accompany the article are 30-second or less exposures.

Processing has been by Chris Graham, Wayne Lyons, Bob Parry or Craig Breckenridge. These are just quickly processed images; we have several hundred GB of images available for processing by members if they choose. ★

On Thursday, May 15 at 7:30 PM until 11:00 PM, the Vancouver Centre of the RASC and the Vancouver Telescope Centre will be holding an informal telescope workshop for novice amateur astronomers and the general public at the GMSO.

The aim of this workshop will be to help novice astronomers and the general public to learn how to get the most out of their personal equipment.

If you have any questions about how to get the most out of your equipment please bring them

to our workshop and one of members will be happy to help you out.

Long-time members are welcome to come down and assist newcomers with the most common difficulties they will come across (cleaning optical surfaces, collimation, polar alignment, drift alignment).

For those members interested, there will be a short demonstration on the setup, use and care of some of our club's larger telescopes

Vancouver Telescope Centre will be on hand to demonstrate proper collimation of a Schmidt-

Cassegrain telescope.

This event is an opportunity for those new members or any novice amateur astronomers to come out and learn from some of our long-time volunteers. ✨

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being obstructed by the dome. Two more image sequences were taken for a total of 35 images.

Oops, it was now 23:30 hrs. I was beginning to realize my second mistake of the night—time was running out. Now I really had to scramble to locate and image the Double Quasar.

After studying the star field from an internet image taken by Jay McNeil (http://wkaa.net/gallery2/main.php?g2_itemId=531), I hurried to locate a distinctive asterism of 14th-magnitude stars.

With the camera sequenced to take a set of five 120-second images, I once again returned to the office and decided to start processing the images of NGC 3079.

It was now I found out my first mistake of the night. In my rush to get calibration images and try to get a long integrated exposure time for the galaxy I had forgotten to

check the telescope's focus. The stars in my images were not sharp round beads but rather coma-



NGC 4862 (M64)

shaped mushrooms.

After over two hours of imaging I managed to walk away from the observatory at 00:30 hrs the following day with unfocused images of my prey. I will be returning to this object soon to see if our camera can split this double

quasar.

With a return of our long run of bad winter weather it wasn't until the following week that I was able to return to the observatory with Brett Spratt and Jim Martin and properly focus the telescope. That evening we managed to leave with an image of NGC 4826 (M 64) – the Black Eye Galaxy.

Please remember that training sessions are being held at the observatory weekly on Tuesday evenings. Besides the operation of the telescope and image processing, we will also be working to get the most from the equipment we have. Observing sessions are posted on our website, usually with short notice depending on weather conditions and availability of a qualified operator. All members of RASC Vancouver Centre are welcome to attend anytime by contacting me prior to a session. ✨

Summer is the time for Star Parties. The weather is usually good, although I have been to Mt. Kobau in bad weather. But most of the time the weather is good.

This year we are starting a little earlier than usual with a local Star Party in Fort Langley from July 25th until July 27th. That's a week before the Mt. Kobau Star party. We are hoping to get people fired up for the summer observing season.

The site will be Fort Camping in Brae Island. You can book on line at www.fortcamping.com.

There are RV sites and tent sites available but you should book quickly as it will fill up fast. The cost for the RV site is \$85.06 for the weekend. This includes power and water. I don't know the price of the tent sites but I am sure they are not as much.

If you want to come out just to observe you can park in the visitor parking lot until 10:00 pm; after that they lock the gate and you have to park on the road. There is a \$2.00 fee for visiting.

We don't have a lot of activities planned as this is the first year

but there is a restaurant on site and we are walking distance from historic Fort Langley so there will be lots to do. The camp site also boasts showers, so not exactly roughing it like Kobau or Manning East Gate in the old days. The sky is not really dark but is close to town and darker than in Vancouver so it should be a good observing weekend.

This is one of the sites already reserved by myself and Bob Parry.

★





Eta Carinae
Craig Breckenridge



NGC 650
Wayne Lyons



Witch Head Nebula

Chris Graham

Omega Centauri

Craig Breckenridge



M 46

Craig Breckenridge

Proud To Serve Vancouver's Astronomical Community



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The entire system was designed as an economical robotic facility to be installed at remote sites throughout the world. There are seven major system components: optics, optical tube assembly, CCD camera, telescope mount, enclosure, environmental sensing and protection, and data acquisition. Each is described in turn in the hope that the techniques developed here will be useful in similar contexts elsewhere. @inproceedings{Akerlof2003TheRR, title={The ROTSEâ€III Robotic Telescope System}, author={Carl William Akerlof and Michel C. B. Ashley and D. E. Casperson and Harland W. Epps and Robert L. Kehoe and Scott L. Marshall and Katherine E. McGowan and Timothy A. McKay and Mick A. Phillips and Eli S. Rykoff and Jan Schier and David A.R. Smith and.