



# NOVA

NEWSLETTER OF THE VANCOUVER CENTRE RASC

VOLUME 2000 ISSUE 5

SEPTEMBER/OCTOBER 2000

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## Looking Ahead

Remember, you are always welcome to attend meetings of Council, held on the first Tuesday of every month at 7:30pm in the G.S.O.

**September:** Dr. Douglas Scott, UBC cosmology and dark matter expert: "If it isn't Dark, it doesn't Matter"

**October:** Lee Johnson's Amateur Hour

## Next Issue Deadline

Material for the November Nova should be submitted by Monday, October 31, 2000. Please send submissions to:

Gordon Farrell  
(gfarrell@home.com)

or Bob Parry  
(robpar@ballard.com)

## Millennium General Assembly: Proceedings

by Dan Collier

Our emcee for the paper sessions was Jay Anderson of the host Centre, Winnipeg. Readers may recall a solemn Jay, in his daytime incarnation as an Environment Canada weather forecaster, speaking on CBC-TV just after the Pine Lake (Alta.) twister. Jay's addiction is eclipses, and his talk was concerned with the many eclipse cycles that range in period between 29.53 and 902,425.2 days. Jay's contribution has been the use of graphic arts to illustrate the relationship of total, annular and hybrid solar eclipses.

### *Comets and Asteroids — Since Halley*

Steve Edberg is a planetary scientist on the Cassini-Huygens project, though he is also known to amateurs as the man behind the Riverside telescope-making conference. His talk surveyed the Solar System's minor bodies and was concerned with such oddities as X-ray emissions from comets, sodium vapour in comet tails, and an asteroid that began to think it was a comet and developed a tail! He also discussed an unpublished 1982 radar study of Comet Encke, and the mission of the NEAR spacecraft, now renamed *Shoemaker* and circling the asteroid Eros.

### *Buck Naked — Eyeballs Out*

Using only his unaided eyes, David Turner of St. Mary's University (*JRASC* editor emeritus) produced amazingly accurate light curves for Delta Cep, Zeta Gem, Eta Aql and other bright Cepheid variables. He concluded, surprisingly, that the eye is better off without optical aid in this

work. The period of a Cepheid tends to change, providing clever astrophysicists with an indication of the onset of helium burning, though David's "instruments" were not in operation long enough to detect this effect.

### *Post-Modern Astronomy*

Outgoing National Presidents give strange (i.e. interesting) lectures. Anything goes—Randy Attwood shared his interest in philately with this talk on astronomy stamps. The mini-countries that seem to export nothing *but* stamps predictably took centre stage. Eclipses and space exploration themes were the most common subjects. It may surprise you that Canadian astronomy stamps are practically non-existent. In fact, Canada Post rejected a recent petition to put Nova Scotia-born astronomer Simon Newcomb on a stamp when they learned that Newcomb worked in the United States for most of his career.

### *Each Equation Puts Half the Audience to Sleep*

David Orenstein (Toronto) is a high school teacher and RASC's Educator. His talk about the proper motion of nearby stars was a dozer, but I will concede that an understanding of vectors is crucial for the student who wishes to study technology. He had his students work out the paths of Lyra's stars in space and how the shape of this constellation will evolve over

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## Adventures in Child Entertaining at Mount Kobau

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by Craig Breckenridge

This year I broke with a longstanding tradition that I have had with Mount Kobau. My annual trek has always been a solitary one at least until I arrived at the top of the mountain where I met my fellow stargazers. The passage up to Osoyoos from Vancouver has always been like a trip down memory lane; I grew up in Princeton and Kobau was one of the places I used to go to with my father in the late sixties. To arrive at the top of the mountain and partake of the evening sky has always brought back fond memories of the times I would do the same thing with just my dad and the nocturnal wildlife, definitely a time for reflection. As I said, this year I broke with tradition.

I have always braved the weather with my tent, tarp and sub-zero sleeping bag, but the last few years have not been kind to my joints so in June I purchased a 13' Trillium trailer. Since this marvel of engineering comes complete with a furnace, my wife made the announcement that she and my two sons would come with me this year. Great, there go my days of relaxation and nights of reflection... On Tuesday the 1<sup>st</sup> Jill and one son rode up in our van while I pulled the trailer with my Ranger and the other son regaled me with tales of Pokemon and Dragonball Z. We arrived at the top of the mountain after an eight hour drive and proceeded to find a pretty good spot on the mid-level of the site. We set up opposite Bob Parry, our president, and Pomponia Martin with their new truck tent and tried to make as much noise as possible. I thought that maybe everyone would be tired enough to let me view in peace. This was not to be as Jill, Teague and Dar all wanted to view through the scope. With crisp clear skies still overhead, I packed it in at 12:00.

The next morning the thing I most dreaded happened. Teague, my oldest, awoke at 6:00 am. He had slept in; quite often when I get up at 6:00 for work he is sitting in the kitchen read-

ing the paper or a magazine. Teague does not know what quiet means. By 7:30 he had us all awake and Jill and I were trying to keep them silent enough to let the rest of the mountain sleep. We hurried through breakfast and headed off to Osoyoos to do some shopping. That would wear them down we thought. Little did we know. I think it was Wednesday that our party was joined by Bryan Kelso and his wife in their van.

Wednesday night was a bit of a sucker hole night. There were patches of clear sky that were playing hide and seek with us. Teague went to bed by 10:00 but Dar, my youngest, stayed up till 12:00. Jill and Dar went to bed having tired of hearing me complain about the difficulties of this type of viewing. I braved it out until 1:00 then joined them.

Thursday Jill and I took the boys to the Pocket Desert just outside of town. I had been there many times as a child and was amazed to see how much this fragile area has changed over 35 years. The work that is being done now to protect the rare ecosystem is first-rate and the boys thoroughly enjoyed themselves. As if that weren't enough for one day, we also went to Rattlesnake Canyon Mini-golf where our sons taught us a new meaning in poor sportsmanship. I guess they were getting tired and hot. Temperatures were in the high 30's. We all still had energy enough to make the short hike over to the ranger station and have a short chat with Bill, his girlfriend and to play with his dogs. He has been there almost every time I have been to Kobau for the last ten years.

Thursday night promised to be good. Teague stayed up until 11:00 taking a quick look at whatever I had in the eyepiece now and then. Dar had made friends with Colin, the son of one of the event organizers, and Colin and Dar were content to sit in a couple of lawn chairs and talk. They looked at every object I set the scope on and I was amazed at Dar's ability to remember objects we had looked at on the

previous nights. Jill finally put Dar to bed at 12:30 and she rejoined me. Since the night was clear, I picked off the remaining summer and fall objects I had to find on my Messier list and we only had to search out Lee Johnson for one object (M74). My thanks go to Lee and Jim Failes for confirmation on this faint galaxy. Jill made her way to bed at 2:00 and I observed until 3:00, re-visiting all my old friends in the southern sky.

Friday was the day we had planned to visit the lake itself so by 10:00am we were on our way down the mountain again. I can't get enough of that road, I don't think they have done anything to it since it was built in the sixties. The boys, Jill and I all swam in the lake until around 3:00 when we headed back up to set up for the night. Since we arrived too early for dinner, we took the long hike to the lake and the boys enjoyed themselves thoroughly. After a quick dinner we set down to observe for the night in near proximity to the cement pad for the old generator shed. As many of you know, Mount Kobau was to be the site of the Queen Elizabeth II observatory and a fairly serious camp was set up to monitor the site for suitability. Mount Kobau was regarded as one of the best observing sites in Canada but unfortunately the project was cancelled in favour of another location; the top of Mauna Kea in Hawaii. Friday night was very much an eye candy night as I had accomplished the observing I wanted on Thursday. Jill, Teague, Dar, Colin and another RASC member, Dave, looked at so many objects, I can't remember them all. Dave was previously a Vancouver chapter member but has moved to Kelowna last April. Again Jill put the boys to bed around 12:00 and she stayed up until 1:00. Dave and I observed until 3:00 at which time I packed up the scope and returned to the trailer to get my camera. The northern lights were making an appearance and I wanted to try and catch something on film. I eventually went to bed at 4:00.

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## President's Message

My tenure as President of the Vancouver RASC is winding down and at this point I would like to take some time and talk about what will be happening in the near future. First, Angela and myself will be approaching members to join the council with us. This year there will be a changing of the guard, with my leaving the "chair" and Bryan retiring; and if he sells his house he will be leaving us for the fine climate of Vernon. I would like to extend my wishes for a great retirement and thanks for his services to the RASC VC. I have talked Craig Breckenridge into the Vice-President's position and the club will be very well served when he takes over the reins. This would be a good opportunity for new members to learn how the club operates and to get to know those who have more experience in astronomy. This was the greatest benefit to me of serving on the council. I will not be going too far, as I have been approached to take over the position of National Representative, as Dan Collier who has done such a good job for the last two years steps aside after the maximum term length. There a number of positions available as councilors-at-large which allows you to take part in the operation of the club. I hope that new members will consider this as an opportunity because like any organization we need new faces, ideas and points of view.

Upcoming events are our "Sidewalk Astronomy" where we setup as many scopes as we can along the beach in English Bay near Davie and Denman. This is always enjoyable for me and the other participants in this event. This year we have chosen Friday Oct 6<sup>th</sup> as our date, with a rainout date of Oct 7<sup>th</sup>. It was not noted at the time that this was Thanksgiving, but since all our other observing events this year have been on long weekends this seems perfectly normal. If you are remaining in town and would like to join us please do so starting at 7:00 PM and lasting 'til about 11:00.

The other "happening" this month was a meeting of the CARO Commit-

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## 2000 Vancouver Center Officers

<b>President</b> Bob Parry robpar@ballard.com	215-8844
<b>Vice-President</b> vacant	
<b>Secretary/Webmaster</b> Bill Ronald ronaldb@home.com	733-7036
<b>Treasurer</b> Bryan Kelso bryan.kelso@telus.net	261-8292
<b>Librarian</b> William Fearon	939-3154
<b>National Rep./Membership</b> Dan Collier	732-6046
<b>Chair, CARO Committee</b> Duncan Munro dmunro@sfu.ca	826-9523
<b>Telescopes</b> Phil Morris	734-8708
<b>Public Relations</b> Angela Squires esquire@vcn.bc.ca	734-9726
<b>Speakers</b> Barry Shanko barry.mail@intouch.bc.ca	271-0615
<b>Nova Editor</b> Gordon Farrell gfarrell@home.com	734-0326
<b>Councillors</b> Dan Grimard Doug Montgomery Marcellus Redmond Norman Song Marc Verschueren	438-5780 596-7058 533-1830 299-7924 986-1485
<b>Trustees</b> Sally Baker Lee Johnson	324-3309 941-5364
<b>CARO</b> Tony Overton	463-2358

## Advertising

Nova encourages free use of its classified ads for members with items for sale or swap. Notify the Editor if you wish your ad to run in more than one issue.

## Commerical Rates

1/2 Page: \$25.00 per issue  
Full Page: \$40.00 per issue  
Rates are for camera-ready, or electronic files. Payment, by cheque, must accompany ad material. Make cheque payable to:  
RASC Vancouver Centre.

## About RASC

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

Membership is currently \$45.00 per year (\$22.50 for persons under 21 years of age) and can be obtained 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 us at the address or phone below.

NOVA, the newsletter of the Vancouver Centre, Royal Astronomical Society of Canada, is published on odd numbered months. Opinions expressed herein are not necessarily those of the Vancouver Centre.

Material on any aspect of astronomy should be e-mailed to the Editor, mailed to the address below, or downloaded via SpaceBase™ at 473-9357, 58, 59.

## Web Site

<http://pacific-space-center.bc.ca/rasc.html>  
or <http://www.rasc.ca> and follow the link to **Vancouver**.

**RASC**  
**1100 Chestnut Street**  
**Vancouver, B.C.**  
**V6J 3J9**  
**(604) 738-2855**

## Venus Occultation

by David A. Rodger

I live in a pleasant North Vancouver townhouse complex. When my wife and I first moved here in 1981, we had good viewing in almost every direction. The tiny birch and evergreen trees that were barely visible then have now grown into monsters, however. The result is that doing any astronomical viewing from my north-facing patio is like looking up from a well.

Late on the afternoon of July 31, I recalled that there was to be an occultation of Venus by the one-day old moon. On the off-chance that I could find Venus in the narrow slot that is open to the western sky between the trees and our building, I started scanning with my binoculars. Within moments I had found it. What's more, the large trees in our garden that I complained about conveniently blocked the sun, which lay further to the northwest but was still well above the horizon!

I raced to the basement, brought up my Celestron 8, plugged in the motor drive and, using a 20mm Clave eyepiece, aimed it where I had seen Venus. It took a few minutes to find,

all the while Venus slipped ever northward and lower in the sky and its inevitable disappearance from my westward viewing slot. Suddenly, at 7:20, there was Venus.

I tracked Venus until the predicted moment of the occultation. Sure enough, at 7:33 PM, Venus slowly changed from being a circular disc to a quarter to a crescent—and then was gone. It took about 20 seconds to vanish.

I knew that there was no chance of seeing it re-emerge because, by then, it would be behind the giant trees that had sheltered me from the sun. But at 9pm, just moments after sunset, I walked to the end of our street to a place where I had a clear western horizon, blocked only by the distant crest of Cypress and Hollyburn Mountains.

I found Venus quickly. And there, just to its left in my binoculars, was the thinnest sliver of a moon I had ever seen—almost exactly 24 hours past conjunction with the sun (remember that just one day earlier, there was a partial eclipse of the sun). I've looked through my observing notes all the way

back to 1963 (!) and can find no mention of my seeing such a young crescent moon.

Eventually, before it set, I was able to see Venus with the naked eye, but not so the crescent moon. ★



All it takes is the right sliver of sky to capture a rare celestial event.

## Imagination

by Marc Verschueren

Somewhere along the beach there was a beautiful sundial. Assembled in an elegant shape in bronze and granite, time was indicated by a very fine slit of light, projected onto the dial. It was close to the XI. If you looked carefully enough, you could see the sliver of light move towards the XI. You could see the sun move—no you could see the earth move. We all know this, we have all seen this, but it always still strikes me as magic. I still have a child-like fascination with this. I can see the earth move! It is my imagination that tells me I am seeing the earth move—my imagination and my knowledge as an astronomer. If all that did not come together there would be nothing there of interest, just a narrow band of light shining on a piece of metal. I would not even look for motion.

In a telescope, all we really see are

some dots of light scattered over a small disc. Some of the dots are not really dots but have a bit of a shape to them. You look at the open sky and all you see, as far as you can tell, is a dark sphere with small lights on it. Not all that interesting. People, many centuries ago, when they first started to look at the sky with some attention must originally have seen just that, but then they look more closely. These lights do not all have the same brightness. With a bit of imagination, the brighter lights form interesting designs, you can see figures in them, we can give them names. Some early civilizations built whole mythologies in the sky. They let their lives depend on it. Imagination can run wild. And there is motion. It becomes even more interesting when one notices that some objects do not move in the same regular daily pattern with all the others. That does not fit.

That must mean something.

Approximately five centuries ago, some learned people tried in earnest to make sense of all this. Some acquired the confidence that one could invent a geometrical system that would describe these motions. We learned to calculate orbits. An orbit exists in space. We learned that we do not look at a sphere with little lights attached to it, but at space. It is a majestic idea to accept that there is a very large space out there, not the inside of a sphere. We can try to measure some distances in space. Now observing becomes a lot more interesting. You are now really looking at something. The planets have form, they have surfaces with detail. Maybe there is even life on them. And we find this space to be larger and larger and we reach the stars. When we look now, we can observe with im-

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## “Kludging” a Star Pointer

by Dan Collier

In the beginning, there was the Telrad. The Telrad was a “zero-power” reflex finder that helped you sweep up targets in a dark sky without eyestrain. It worked so well that now we have to deal with a raft of Telrad imitators. These all feature a tubular sighting tunnel containing a lens instead of a tilted glass. They carry the usual lame names like EZee-Finder, Mars-Eye Finder, and so on—the one I’ve got here is a “Star Pointer”—but they all seem to come from the same plastic factory in Asia. These Star Pointers, to give them a generic name, are supplied with a dovetail fitting that looks suspiciously like the base for a Weaver rifle scope. You attach the dovetail to your telescope with sticky tape, clamp on the Star Pointer, and fiddle with alignment screws to bring the target spot and the eyepiece field into alignment.

The reflex concept has run up a long record of assistance to humanity as a gun aimer. If you look inside a warplane cockpit, you will often see a device in the pilot’s forward vision that resembles a Telrad with its tilted glass plate. What makes the device useful is its collimating lens, without which the reticle’s image would jump all over the sky whenever the pilot’s head was jostled. With the lens, the reticle stays “glued” to infinity (or to some lesser distance at which the bullets converge) regardless of head motion.

What you see in the Star Pointer is a small point of light masquerading as a faraway star. My unit has an untinted red LED, size T-3/4, excited by a CR-2032 lithium battery, along with a switch and a dimmer that can only be adjusted using a screwdriver. About 300 microamps flows with the dimmer at midtravel, enough to drain the battery flat in a few days if you forget to switch it off. The dimmer was really dippy and I would have replaced it with something more

user-friendly if other events had not diverted me. Let me explain.

The idea behind the reflex sight is to place a source of light at the focus of a lens and to somehow project the collimated rays into the observer’s line of sight. In the Telrad, the rays come out through a lens in the top of the case and are perceived against the sky in a tilted glass plate. Provided the focus condition



is met, the rays all emerge from the lens in parallel paths, and the extension of any ray passes through a common point at infinity (i.e. star or planet). If the light source is slightly inside the lens’s focus, however, the exit rays diverge just a tad, and if you extended them toward the sky they actually seem to issue from a “virtual” image point hovering in front of the device.

A tiny LED-illuminated pinhole at one end of the Star Pointer throws light at a lens at the other end. The lens is a negative meniscus singlet, 14 millimetres in diameter, with its concave surface producing the necessary collimating action as it reflects the light from the LED back to the eye. To enhance the weak first-surface reflection, some sort of coating has been applied to the lens; unfortunately, this coating seriously attenuates starlight. (Someone told me it will come off if soaked in vinegar. Has anyone else heard this?)

The Star Pointer, as it turns out, was adapted from a reflex sight for a low-accuracy weapon like a BB gun or pis-

tol. Since even the dumbest pistol shooter knows enough to engage targets only at short range, the close-in virtual image is acceptable. In astronomy, however, it is very undesirable. The problem can be corrected by changing the separation between lens and light source, but as the lens is cemented into the shroud there is no option other than to cut off the shroud and glue it back in the correct position. Happily, the plastic is very soft. I used a sharp knife to score the body along the bottom edges of the shroud, then cut it off with an X-acto saw. Then I strapped the shroud on temporarily with elastic bands and pointed it out the window at Jupiter to experiment with different separations.

The shroud in its original position was too close to the LED, causing Jupiter to move away from the spot in the same direction as head motion. To cancel this tendency it was necessary to move the shroud further out—but if moved too far, Jupiter would start reacting the opposite way. With the shroud in the correct place, head motions would not dislodge Jupiter from the spot. The shroud and LED are now 90 millimetres apart, five and a half millimetres more than before. Since the virtual image is now at infinity, 90 millimetres is equal to the reflecting surface’s focal length,  $f$ . In the unmodified sight, the virtual image of the spot would have been  $f^2/5.5 - f = 1380$  millimeters in front of the lens.

Lastly I applied a plastic solvent to the shroud and “smushed” it back onto the body, taking care to keep the axis of the lens aligned with body. My Star Pointer’s lens is so accurately collimated now that if I turn my clock drive off, I can detect the motion of a star away from the LED spot after only a few seconds.

When I tried out my Star Pointer at Mount Kobau, it proved useless. I could not see more than a handful of stars through the lens coating even when the

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time.

### *Shooting the Moon -- with a Photometer*

Richard Schmude Jr., an American from Gordon College and proud father of an 18-month boy who can already identify the Moon by name (“Moo! Moo!”), has been studying its light with a photometer and a (very) small telescope. He laments how his studies at phase angles below 1 degree are always interrupted by lunar eclipses! Richard’s next project will be watching for flashes on the unilluminated part of the Moon during the next Leonid meteor shower.

### *A Meteor’s Chance on a Frozen Lake*

Just before dawn last January 18th, a 200-tonne, minivan-sized C-chondrite meteoroid from the asteroid belt screamed in over the Yukon and exploded, scattering myriads of fragments over the ice of Tagish Lake in northern B.C. Many hundreds of meteorites were recovered in pristine condition, first by a man from the Tagish Lake settlement who had the good sense to bring along clean plastic bags, and later by meteorite specialist Phil McCausland and his grabby teammates from UWO and U of Calgary. Phil and his gang literally—well, not *literally*, but you know what I mean—combed the ice with 4-wheel ATVs collecting specimens ranging in size from 2 kg to specks. Later finds had to be chipped from inside the ice because the Sun’s heat caused them to melt down into it. Eyewitness accounts of the so-called simultaneous noises, and an interesting “nose-witness” report of a burning smell, are being taken seriously by researchers.

### *CCDs and Mars Watch*

Amateurs have watched Mars continuously for 25 years under the aegis of the International Mars Patrol. Don Parker, an anaesthesiologist from Florida who didn’t put us to sleep, is probably the foremost among them. His sense of humour is broad: as he tells the story of NASA’s entrance on the Mars watching scene, he puts up a

slide of Wile E. Coyote lighting a huge firework rocket strapped to his back. Then he reveals his proposal for a politically-correct Mars symbol—a circle with a flaccid arrow. And stuff like that. While most IMP work is visual, Don turned to one of the early Lynxx CCDs and continues to use it today because he “understands it.” He may be forgiven for technophobia; his images rival Hubble’s for sheer “wow” content. He’s resolving features as small as one-sixth of an arc second! Martian dust and weather are the main items of interest, though recent allegations that the North Polar Cap has been shrinking for the last half century have attracted interest among those who study Earth’s global warming trends. His other talk at the CCD workshop merits its own article in a future NOVA.

### *Have Starlab — Will Travel*

Yep, itinerant astronomers are roaming from school to school, making a living on their inflatable planetaria. Mary Lou Whitehorne has hit the road to improve astronomy education. Astronomy has become a hot topic in school curricula now that dollars from the peace dividend are putting space on TV every day, and it’s scaring science teachers stiff! Mary Lou is leading them out of the woods with her well-organized teaching materials. The lore of the sky is a prominent subject in her courses.

### *RegiStar*

... is the name of the new software package by Rajiv Gupta (Vancouver) that allows astrophotographers to stack exposures of the same object made on different films, different cameras, or even different telescopes. RegiStar does it all. Download a trial version from his web site ([www.aurigaimaging.com](http://www.aurigaimaging.com) is the URL).

### *From Yugoslavia with Love*

Dr. Vesna Zdjelar emigrated to Canada to pursue her studies in cosmology. Using data from microlensing surveys, she has shown that the Milky Way’s unseen halo is flattened rather than spherical. Her overview of gravi-

tational lenses, WIMPs, MACHOs, and EROs linked the relatively small—i.e., microlenses—with the largest of the large, the cosmos itself. The multitalented Zdjelar also tabled a poster presentation entitled “Van Gogh and the Starry Sky.”

### *Hubble’s Variable Nebula — The Movie*

Why this nebula (NGC 2261) varies at all was not understood until it was realized that the light from the star inside it is periodically blocked by clouds of dust going around the star,

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## **RASC President’s Circle Tours**

(Coordinated by Alan Whitman, Okanagan Centre)

Thursday, October 19th, 7.30pm  
HRMSC Auditorium

Dr Robert F. Garrison

“The Process of Discovery: Supernovae, Comets, and Extraterrestrial Life”

NB: Dr Garrison indicated that his title is general and gives him lots of flexibility to tailor his talk to a specific group. VC members will be asked for their input at our regular meeting.

Dr. Bob Garrison is Professor of Astronomy at the University of Toronto and President of the Royal Astronomical Society of Canada. Professor Garrison has a Ph.D. in Astronomy and Astrophysics from the University of Chicago and was a Research Associate at Mt. Wilson and Palomar Observatories for two years before joining the faculty at the University of Toronto. For 26 years, in addition to his teaching duties, he directed the University’s observatory in Chile where Canadian Ian Shelton discovered the brightest supernova since 1604 (Kepler’s). One of his courses to 2nd year science students, “Life on Other Worlds”, has packed the classroom to capacity every time since it began in 1973. ★

## **FOR SALE**

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80 MM F-5 Short tube refractor. Comes with 17mm plossl, 90 degree diagonal, tube rings 30mm finder scope. Will mount on your camera tripod. Lens has very minor coating blemish, but does not affect the image at all. Makes a great travel scope or Super large finder for your Big scope. First \$175 takes it. Call Steve during office hours only. 294-2244

For sale: 10" Meade OTA mounted on a heavily modified German Equatorial Mount. All HD components. Proven optics. For examples of photos taken with this setup see: <http://persweb.direct.ca/dunmunro> Includes ac/dc drive corrector and 2" diagonal. \$4000. Call Duncan at 604-826-9523 (Mission) or email to [dmunro@sfu.ca](mailto:dmunro@sfu.ca)

## **2001 Calendars**

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Yes, the 2001 RASC Observer's Calendar is now available! They can be purchased in the GSO after the meeting for \$12.

## **Sidewalk Astronomy**

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There will be a Sidewalk Astronomy event held on Friday, October 6 in English Bay at the foot of Davie Street near the Bathhouse. If the weather fails us on the 6th, the event will be moved to the 7th. Come on down for a little urban astronomy.

## **ASTROCOMPUTING**

**SpaceBase™** (473-9357). Affiliated since 1992 with RASC Vancouver, our link to RASC Net, RASC Members only chat area. Future data distribution hub for CARO Project. Features include latest HST images, current world space news and astronomy programs. Provides a file uploading facility for submitting articles and imagery to Nova.

## **LIBRARY**

The centre has a large library of books, magazines and old Nova's 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.

### **RASCVC on the Internet**

[http://members.home.net/ronaldwp/rasc\\_vc/index.html](http://members.home.net/ronaldwp/rasc_vc/index.html)

## **H.R. MACMILLAN SPACE CENTRE**

The Pacific Space Centre Society is a non-profit organization which operates the H.R. MacMillan Planetarium and Gordon M. Southam Observatory. Annual Membership (\$30 Individual, \$65 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 Pacific 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 738-7827, local 237 for information. You can also reach them on the Internet at <http://www.pacific-space-centre.bc.ca/>

## **MEMBERSHIP HAS ITS PRIVILEGES!**

New members, did you know? The Vancouver Centre has 6 telescopes available for loan free of charge! We have telescopes ranging from 3" to 10" diameter. For more information call Phil Morris, Director of Telescopes at 734-8708, or see him in the lobby of the GSO after the members meeting. The loaner period is for one month only. All telescopes are to be picked up and returned after the members meeting. No telescope will be allowed to circulate outside of these meetings!

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

The best thing you can do to gain the most from your membership is to get active! Take in the club meetings; engage other members with questions; come out to observing sessions (also known as "star parties"), and, by all means, volunteer to take part in our many public events.

Observing takes place at the Dale McNabb Observatory in the Aldergrove Lake Park, located in Langley, on 8th Avenue, just east of 272nd Street. We are there most clear nights. Contact Mike Penndelton at 888-1505 or Howard Morgan at 856-9186.

# What I Did On My Summer Vacation

by Gordon Farrell

Last time, I promised to discuss the dark skies of Qualicum Beach. Well, maybe next time. Instead, let me tell you about a little trip I took last month. I had been planning to visit a friend of mine who moved to Hawaii last year; I just had to pick a date to go. Looking at the calendar, I noticed the July 16<sup>th</sup> lunar eclipse was coming up, and totality would be visible from Hawaii. So I had my date, I had my destination—I was ready to go!

Seeing as I had never been to Hawaii before, I thought it would be a good idea to get in touch with someone who knew what might be happening on the night of the eclipse. Since my friend has little interest in astronomy, I got on the web and found the Hawaiian Astronomical Society (<http://www.hawastsoc.org/>). I swapped a few e-mails with their president, John Sandor, who was quite helpful. He told me they were going to be observing that night at Dillingham Airfield, near the northwest corner of Oahu. The only catch was that the gates to the field are locked at 7:00pm, after which time you need to either know the combination or have a kind soul let you in. John suggested I rent a cell phone and call his pager when I reached the gate. He warned me that it might be difficult to find in the dark, especially since I had never been there before, but I thought I could manage it all right. We would soon see...

*Welcome to... uh... sunny Hawaii*

I arrived at Honolulu airport at around 9:30 Saturday night. You're probably thinking that's cutting things a little close, and I'd agree, but in our new climate of "competition" in Canadian skies, that was the only option that wouldn't require a co-signer before they gave me the tickets. Looking out the window of the plane, I couldn't help but notice how shiny the tarmac looked. Yes, it was raining, but the clouds were breaking up so I still had some hope.

My next stop was the rental car

agency. Being late at night, there wasn't much of a line, so I breezed right through and got to my car. I piled all my gear in the back and got out the map. I noticed that after I closed the car door, the dome light was still on. I thought that was a little odd, and looked for the switch that controlled the light. There was none, and the light turned itself off after a minute or two. I didn't think much of it at the time, but this light would come back to haunt me.

I arrived at the hotel around 11:30, checked in, and set about unpacking and assembling my gear. Of the four bags I had packed, only one had clothes in it. By the time I was satisfied everything was set to go, it was going up to 1:00am. I had been up for about 20 hours, so I decided to take a nap before heading out. I figured I had the time, since the moon wasn't supposed to start to enter the umbra until about 3:00am and it would take about an hour to get to the airfield. I awoke at 2:00, probably only getting about 15 minutes of sleep anyway, and looked out the window to check on the moon. Well, apparently my calculations were a bit off, because the eclipse was already under way! I grabbed my stuff, got in the car, and started driving.

John had warned me I might have trouble finding the airfield, but he never said anything about finding the highway. It probably would have been easier if I could figure out how to turn on the dome light in the car so I could read the map (the door seemed to be the only trigger), but I managed to make do by stopping periodically under street lights. I eventually found the highway, and it was smooth sailing from then on.

As I drove along, I kept looking over my shoulder at the moon, watching as it slowly disappeared along with my hopes of observing it. I did finally arrive at the airfield at around 3:30, delayed by my confusion getting out of Honolulu. I found the third gate, the one with the lock, and pulled out the cell phone to call John and ask him to

let me in. I punched in his number, but nothing happened. I looked at the phone and my heart sank at the two words displayed on the screen: "NO COVERAGE." Even worse, the clouds were rolling in again and I had lost sight of the moon. I began to weigh my options. I could turn back or try to find a dark spot outside of the airfield. I had come this far, so I thought I'd try to find a spot and set up. There were some beachside parks in the area, so I started cruising the parking lots. All I found were rows upon rows of drunken college students camping out—not exactly optimal observing conditions. As I drove back up the road a little further, I passed by the first gate into the airfield. Looking into the darkness, I noticed something that I hadn't before: *this* gate was open! I was in!

*You never get a second chance to make a first impression*

Now I just had to find my way to the observing site. By this time it was going up to 4:00, well into totality, so time was running short. The map from the HAS web site was quite clear, so I had little trouble finding them.

The observing site was next to a parking lot, just over a slight rise near the main road. Now there's nothing that will endear you less to a group of observers than driving into the middle of their site with your headlights on. As with cars here in Canada, Hawaiian cars are equipped with daytime running lights, which can't be turned off... or can they? The HAS web site had instructions on how to subvert the headlights. By pulling up on the emergency brake a couple of clicks, you can trick the headlights into turning off (sadly, this doesn't work on Canadian cars). I gave the emergency brake a pull, and the headlights blinked out. It worked! As I crested the hill and entered the parking lot, to my horror, the lights came back on! My sleep-deprived mind panicked and I started grabbing at things, trying to turn the lights back off. Not thinking clearly, I

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grabbed the headlight control knob and turned it, turning off the daytime light and turning *on* the regular headlights, blinding as many people as possible. I believe it was around this time that I ruined somebody's photo (sorry). My mind finally cleared and I got the lights off again, and hoped this time they would stay off.

I parked the car and got out. Of course, the evil dome light stayed on. People were yelling at me to turn it off, but I had to explain that I couldn't. It finally turned off of its own accord, at which point I turned on my *red* flashlight and looked for John.

I found John and introduced myself, and he was pleased to see I had actually made it out there. I apologised about the car, and about the further disturbances that would be caused when I opened the door again to get my scope out of the car. We both went back to the car and carefully peered in the windows, trying to find any kind of controls for the light, but there didn't seem to be any, so I grabbed my stuff as fast as I could and prepared to set up.

### *Brief but beautiful*

The clouds were starting to break up, so at least I knew what direction to point the scope in. While we all waited for a clear view of the moon, the skies were clear to the north and a couple of scopes were trained on comet LINEAR. At this point in time it was still pretty dim, but it was quite easy to pick up through an 8" Dobsonian that someone had brought. The sky overhead was clear, too, and the Milky Way was quite impressive. Yes, that means that the only clouds were the ones obscuring the moon, but they had finally seen fit to give us a glimpse of the thing we had all come to see.

I had intended to take some pictures, so I needed to polar-align the scope. I looked around, but couldn't for the life of me find Polaris. I couldn't see Ursa Major, either. Totally lost, I finally asked for some help and was directed to a star hovering low on the horizon. It's amazing the difference 28° of latitude makes! Still, after gauging the situation, I decided there wasn't much point in trying to take pictures. The moon would be disappearing behind the mountains pretty soon, and I

couldn't count on the clouds staying parted long enough to take any decent shots. Instead, I did a quick and dirty alignment and started to observe.

And there it was, the first total lunar eclipse I had ever seen. It was a pale yellow colour overall, with more intense, yellow-orange colour at the bottom. But the most remarkable thing, for someone who's never seen a total lunar eclipse before, were the stars. Looking directly at the moon through the scope, I could see stars all around it. It was quite the sight.

I continued to observe for another ten minutes or so until the clouds rolled in again. We all stuck around for a while longer, hoping to see the moon poke back out as it re-entered the penumbra, but it was not to be. The sky was starting to lighten up in the east—the night was over. We all started to pack up our cars, and I said my thanks (and sorrys) and good byes, went back to the hotel and got some much-needed sleep.

It wasn't quite all I had hoped for, but it was still worth the trip... not to mention the whole rest of the week I spent in Hawaii. ★

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tee along with several volunteers. The meeting concentrated on what it takes to get CARO up and running continuously and dependably. There have been a number of hardware problems that have prevented continuous observing runs since last winter. As well there have not been enough people in key positions to prevent overwork and burn out. This has been addressed with Eric Fuller stepping in to take a prominent

role in maintaining and supporting CARO, thus sharing the load with Duncan Munro. The committee actioned a number of concerns. The Cookbook Camera has not been dependable; Eric will do what is needed to get the existing camera repaired and made dependable. Dan Collier will do the same with the second Cookbook camera under construction. As well there are electrical and wiring problems that have been assigned to vol-

unteers that will make the dome a better looking, neater and electrically better environment. Dan Collier made a good point, when he said that Observatories require about 1 hour of maintenance for each hour of observation. All in all we have started to get a hold of the problems at CARO and I can see this observatory finally living up to its potential.

Clear Skies  
Bob Parry ★

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Saturday has always been the day I leave Mount Kobau. I have only stayed until Sunday once in all the times I have been there. Since Bryan was going to be staying, Bob and I gave him our door prize tickets and I was quite surprised when Bryan sent me an email saying I had won a Deepmap 600 from Perceptor in Ontario. Thanks

Bryan for picking it up for me.

As you can tell, I didn't attend any of the talks this year. Keeping my sons and wife entertained was my prime objective this year, but next year they are going to do things my way. The talks this year were by a variety of speakers and from what I heard were excellent as always. For the uninitiated, the Mount Kobau Star Party

should be experienced at least once. I think we had some of the best nights we have ever had this year, as the air was quite steady and clear. This year definitely made up for the rain last year. ★

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like shadow puppets. Chris Brown (Winnipeg) combined a number of CCD images with WinMIPS and IRIS software into a time-lapse “movie” that showed this shadow-puppet effect. Wild!

#### *MaxIm DL*

... is the very successful software product designed by Doug George (Ottawa) that combines image processing with all the “donkeyware” that runs a computerized telescope and its CCD sensor, autoguider and filter wheel. He showed a stunning image of NGC 4565 that his package wrung from a lowly Lynxx CCD. Highly recommended.

#### *I Want My MPC!!*

“Observer 681” on the Minor Planet Centre’s list of asteroid catchers is Gary Billings (Calgary). He’s discovered several from his light-polluted site and studies hundreds more using an amateur-grade CCD and “Starlink,” a public-domain photometry program (software for variable-star studies is also being developed in Linux). One of his sobering CCD images had *three different asteroids* on it. Another captured a little guy whizzing along at 12 arc-seconds per minute as it passed only 0.05 AU from Earth.

#### *Helen Hogg Lecture*

Toronto-born Wendy Freedman has joined a list of luminaries, headed by Edwin Hubble, who have participated in the Carnegie Observatories’ project on the expansion of the Universe. In this keynote G.A. lecture, she related some of the history of this project along with a few personal anecdotes, like being stranded in the CFHT observing cage by a machinery breakdown—an incident that her male rescuers never allowed her to forget. We learn that George Hale was not only a builder of observatories but also a founder of Caltech, the *Astrophysical Journal*, and the U.S. National Academy of Sciences; that Henrietta Leavitt of Cepheid fame was deaf, and never lived to see the paradigm shift of the expanding Universe; and that Wendy

considered Helen Hogg a key mentor and source of inspiration. She went on to explain how early measurements of Hubble’s constant were thrown out when Sandage noticed that HII regions were being taken for Cepheids. Supernova observations from the Hubble Telescope along with data from Tully-Fisher and other techniques are, in her opinion, closing in on the constant’s true value: 70 km/sec per megaparsec. However, she is less sure about the age of the Universe, hinging as it does on its density and whether Einstein’s cosmological repulsor is involved in the expansion. Values between 9 and 12 billion years are consistent with observations; an older Universe is possible only if the repulsor is invoked. Wendy reminded us to consider these numbers against solid astrophysical evidence for stars *at least* 13 billion years old. At that instant a thousand eyes beheld a slide of Einstein sticking out his tongue! Rajiv Gupta, now the RASC’s first Vice President, thanked Wendy. Referring to another of her anecdotes about early career struggles, he quipped, “You have progressed from getting a key to the library to almost getting the key to the Universe.”

#### *FOUR Nights — in Winnipeg??*

My spies at the banquet inform me that Vancouver’s own Sally Baker was most surprised when presented with a certificate for her 38 years of membership. Vancouver did well in the awards department, though modesty precludes my naming the individual recipient. However, many readers already know that a very valuable prize, an ETX-125 telescope donated by Meade Instruments, was awarded to our Centre. Unfortunately it was defective and had to be shipped back for service.

Murphy Night is the (pick one) highlight-lowlight of any G.A. We were treated to the Seven Sisters (Less Three) singing a corrupt “Mrs. Robinson,” Dave Orenstein gasping “Mon Ciel, C’est La Pluie” to the tune of “Mon Pays,” and Orla Aauquist attempting “Contact: The Song” with cues from Power Point. Then it was

time for Murphy Slides. First off was Richard Schmude showing off his growing collection of astronomical Tweety Birds. Michael Watson and Randy Attwood brought back pictures of the 1999 eclipse from the side of a gridlocked motorway near Paris, and Murray Paulson presented some deep-sky-killing auroral displays. Last up was Stan Runge (a G.A. organizer, rhymes with “grunge”) and his startling video footage of local tornadoes. Coincidentally, a most violent electrical storm pounded Winnipeg that night and put out the lights.

Winnipeg Centre went out of their way to make the delegates feel at home. Volunteers drove us to Glenlea Observatory, where the Centre operates a 16” Cass superannated by the DAO along with a Celestron 14. On July 1st we were bussed downtown for dinner and a share in the Canada Day entertainments at the “Forks.” I think half the people in Winnipeg were there too! This outing also granted me my one and only opportunity of ever standing at Portage and Main. Needless to say, a cold wind sent me packing before the fireworks got under way. The 2001 G.A. is in London, and the 2002 event is likely to be at McGill U. in Montreal. As for 2003, who knows? ★

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LED was dimmed way down. The next day, Gary Wolanski arrived with his 16-inch aluminium scope, and I noted that he had mounted a similar device on it. When I explained my problem to Gary, he told me he uses both eyes and fuses the images in his head. Like many other skills, this comes easily to him. He only grunted when I showed him my eyeglasses, which have a positive lens on one side and a negative one on the other. In other words, I’m seeing double every minute of my life! And yes, the government did issue me a driver’s license! ★

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agination—imagination inspired by our knowledge.

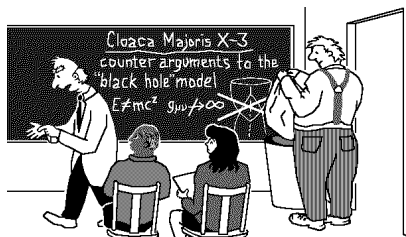
Everybody who observes does this to some extent. We observe a celestial object and surround it with our imagination. And it depends on how much we know and on how much we want to know. You certainly do not have to be a scientist to see the magic of the sky. On the contrary, too much science can dull the magic. But then again, science has its own magic. But you must stay sensitive in your fantasy to keep seeing the beauty. Even somebody who has never looked through a telescope and comes across somebody who is observing will often ask to have a look. They hope to see some magic. It is as if they know there is something there, and often they find it. It is the joy of sidewalk astronomy. Observing without imagining what we are looking at would not be much fun. It is up to anyone's taste and talent how much knowledge we need to fire up the imagination.

The imagination needs astronomy, the basic pillar of our modern concept of the universe. From pure imagination a few centuries ago, we are now capable of talking, with confidence, about the first few fractions of a second in the life of the universe. This is now part of our basic human culture. Therefore, a country like Canada, like every civilized society, must contribute to the further development of our

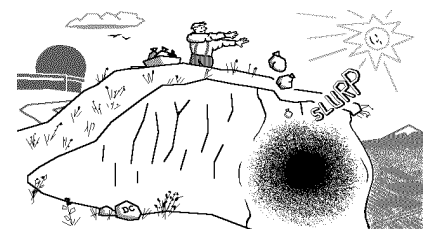
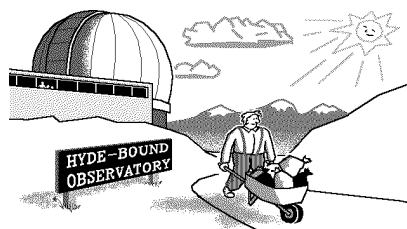
vision of the universe. Recently, the scientific astronomy community in Canada formulated a new long-range plan for the future. The origin of the universe is the basic focal point. The long-range plan has been written about in *Nova* a few times lately, and it is one of the major topics in the last mailing of the national association in Toronto. There is a strong request for our support. If we can help, we must certainly do so. We, as amateur astronomers, can fully grasp the importance of this new equipment for Canadian astronomy. At the same time, we are closer to the community at large than our professional colleagues. This gives us a special task. It is possible to exercise influence in our community. We must help to make our environment aware of this need. In a world where economical events loom much larger than the problems of astronomers, this is going to take some effort. It is going to be very difficult in a world where one is not sure that enough funds are available for health and education. Our interest in astronomical research is part of this complex world. It should not be pushed aside because our world is so complex.

It has been suggested that we write our MP. I am never fully convinced that this a reasonable thing to do. Political people must get so many demands for support. It is probably clear to them that some of these write-in campaigns are orchestrated. But on the other hand,

not to write is an obvious sign of neglect. It would mean we are not really interested. I will write. It would be better, if possible, to use one's own expression, not a form letter. My main argument will be simple. It is a question of basic culture and civilization of the country. Can we really afford that gradually there will be fewer and fewer Canadians who can contribute in a meaningful way to a basic knowledge? Can we allow it to happen that fewer and fewer Canadian astronomers will be able to have discussions as equals with their colleagues from other parts of the world because they do not have access to the same level of observation? The total financial effort is not that great. We must have people in our community working to help us understand the universe better. If the equipment is not available, astronomy on a high level will fade away in this country. We live in this universe, we are very much part of it. Observing this universe and trying to understand it must be part of our society. All the healthcare plans and all the economic progress and all the education would not mean very much if we do not have a strong tie with the immensity of our universe. We must collaborate with the world community to look at our universe, appreciate it, enjoy our presence in it and help solve its enigmas. That is imagination. \*



“... and so, we can easily account for the observed emissions without invoking an exotic compact object. Such sensational theories belong in the realm of science fiction unless supported by evidence of the utmost persuasiveness. Until then, workers should not be detracted from the consideration of more serious astrophysical questions . . .”



Dan Collier

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