

NOVA

NEWSLETTER OF THE VANCOUVER CENTRE RASC | VOLUME 2011 ISSUE 6 | NOVEMBER/DECEMBER 2011

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Looking Ahead

Remember, you are always welcome to attend meetings of Council, held on the first Thursday of every month at 7:30pm in the Ray Whittick Lounge.

Nov. 10: Jaymie Matthews of UBC: A Brief History of (the End of) Time.

Dec. 8: AGM, followed by John Nemy on the 2012 transit of Venus.

Next Issue Deadline

Material for the January Nova should be submitted by Monday, Jan. 2, 2012. Please send submissions to:

novaeditor.rascvancouver@gmail.com

Title image: Jason Rickerby

Confessions of a Large Dob User

by Bill Burnyeat

As the leader of the Community Astronomy telescope-in-the-parks program, I suppose I have come to be known as a big scope guy. The current 16-inch Dobsonian is the smallest of a list of telescopes used in the summer time program that has included a 25-incher.

Yet, when at home and the clouds clear briefly, it is not a massive scope that I make use of generally but a small refractor—fast and convenient and able to deliver rich views.

Some time ago, I was looking outside and it looked like it might rain. About 8 pm I looked again and saw a clearing in the east. The Moon was standing above Jupiter and a few stars were in sight here and there visible from my front yard. I didn't want to set up a large telescope but grabbed my 60mm Tasco refractor from its place of honour in the dining room. Visitors think it's a decoration but, as you will hear, it's still in use.

It took literally a moment to step

outside, turn off the porch light, spread the tripod legs and find Jupiter. My usual eyepiece is a 9mm which gives about 78X. The four moons were spread out two-by-two with Jupiter in the middle. I noticed at once the absence of the second belt



which observers had been watching for many months. The moons appeared very small and point-like, much different than in my 16-inch scope. A small moon size means the seeing is good. It was one of those nights where the transparency was poor but the air very steady. A tiny black dot, coming in and out of visibility, was near the giant planet's leading edge. The telltale sign of a shadow transit in progress. I decided to put in a 4mm eyepiece, which would give 175X. Jupiter was now a plump pale yellow grape with its dominant band showing a wavy and slightly mottled structure, hints of the things below the limits of resolution. I

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The Ghost Nebula

by Howard Trotter

This image of the Ghost Nebula is the result of approximately 15 hours of total exposure, with about 6 hours in luminance (unbinned), and about 3 hours in each of R, G, and B (with 2x2 binning). The frames

were taken between August 6 and 26 2011. The field of view is about half a degree, and the unbinned pixel size is about $0.78''$. The ghost nebula is the 141st object in Canadian astronomer Sidney van den Bergh's

catalog of reflection nebula, and so is referred to as vdB 141. It is about 1200 light years away in the kingly constellation of Cepheus, and at that distance this field of view spans about 10 light years.

President's Message

This edition of NOVA rounds out our series for 2011, and so it presents a natural forum in which to take a look back on a year of astronomy at Vancouver Centre.

The first thing that I did in preparing to write this message was to go back to the first edition of NOVA for this year, and there, in my first President's message, I found a list that I recorded of the goals that your council had set for itself, and our society, for the coming year (finding that list came as a bit of a surprise—which does not speak well for my memory!). Happily, I think I can say that we did very well, accomplishing almost all of what we set out to do, with one very important exception—a goal that will be first on our plate for next year (more on that at the end).

Top of the list in that article was to ensure a successful year of monthly lectures. Our Speaker Coordinator, Barry Shanko, set the bar very high with our first lecture of the year, when we hosted Dr. John Mather of the Goddard Space Flight Centre, co-recipient of the 2006 Nobel Prize in physics, for a talk on the James Webb Space Telescope. That January lecture was standing room only in the auditorium at the Space Centre! Although we did not fill the auditorium to bursting again this year, we had a series of top-notch speakers on a diverse range of topics, which helped to generate a consistently high attendance record, topping 150 people on two other occasions, and getting in the

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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 \$73.00 per year (\$41.00 for persons under 21 years of age) and can be obtained by writing to the Treasurer at the address on page 5. Annual membership includes the invaluable Observer's Handbook, six issues of the RASC Journal, and, of course, access to all of the club events and projects.

For more information regarding the Centre and its activities, please contact our P.R. Director.

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

Material on any aspect of astronomy should be e-mailed to the editor or mailed to the address on page 5.

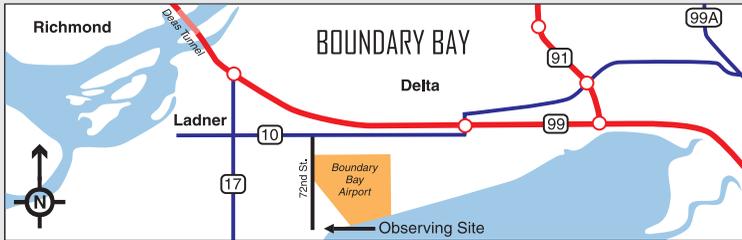
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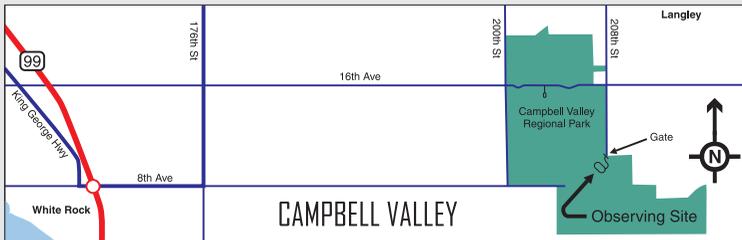
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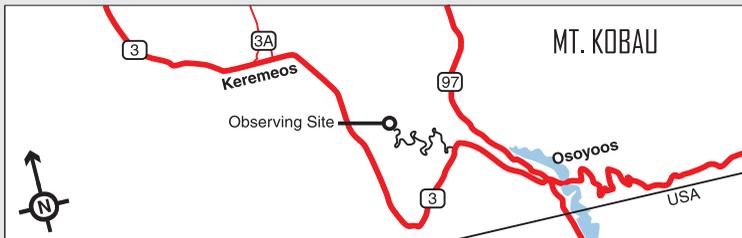
OBSERVING SITES



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

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neighbourhood of 100 on a few others. These other high water marks included our annual Paul Sykes lecture, held in October at SFU, when we hosted Jon Lomberg, astronomy artist and long-time collaborator with Carl Sagan; and Kaspar von Braun of Caltech, a world leader in the exo-planet business, who we hosted at UBC.

Another major goal for 2011 was to strengthen our partnerships with other regional groups committed to astronomy outreach, and we

vigorously worked this objective throughout the year! Our major partners were Metro-Vancouver Parks, Simon Fraser University, the International Lunar Observatory Association, the NRC/Herzberg Institute of Astrophysics, the Vancouver Telescope Centre, and Canadian Telescopes. In particular, we held multiple events with Metro-Parks all across the greater Vancouver area, from Pacific Spirit Park on the west side, through Deas Island Park in Delta, and out east to Aldergrove Lake Regional Park (where we held

our very rainy Astronomy Day in May). All of our collaborative efforts were in addition to our own very active program of community-based outreach, which included multiple presentations at the Roundhouse in Yaletown, at the Maple Ridge Public Library, and at malls, schools and community centres across town.

These events represent the collective work of council members and volunteers from the membership at large, and were managed under the direction of your outstanding

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Events Coordinator, Suzanna Nagy, who deserves special mention for her creative and tireless work, including her successful efforts to enlist new volunteers. Another particular mention goes to your Education Chair, Bill Burnyeat, who this summer once again travelled to numerous provincial parks and campgrounds throughout BC, to bring observational astronomy to the public under dark skies. In addition to support from council for this effort, Bill received a prestigious grant from NSERC PromoScience, a federal government agency that promotes science outreach initiatives (and I can tell you from personal experience that they don't fool around when it comes to allocating support!).

Council also set the goal of reaching novice astronomers, especially young ones! To this end, we instituted a new "What's Up?" segment, 20-minute presentations that were held before many of our monthly lectures. These were very successful, turning out many newcomers to Vancouver Centre, thanks in part to Simon Fraser University's extensive contacts with parents and teachers who have attended its grade school oriented astronomy workshop program. (As an aside, for 2012 council intends to pick a few monthly meetings to devote entirely to a "What's Up?", rather than staggering short segments ahead of our lectures, as we did this year, since our presentations are generally too tough for a young audience.) Our

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LIBRARY

The centre has a large library of books, magazines and old NOVA's for your enjoyment at the GMSO. 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://rasc-vancouver.com> or
<http://www.rasc.ca/vancouver>

Details of upcoming meetings and events can be found at our Meetup group at:

<http://astronomy.meetup.com/131/>

H.R. MACMILLAN SPACE CENTRE

The H.R. MacMillan Space Centre Society is a non-profit organization operating the H.R. MacMillan Space Centre and the Gordon M. Southam Observatory. Annual membership (\$30 individual; \$80 family) includes newsletter, discounts on Space Camps, birthday parties, lectures, Museum of Vancouver admission, plus free admission to the Space Centre. Admission includes: multi-media Planetarium productions, interactive demonstrations and hands-on exhibits. For membership, contact Gayle Seaman 604-738-7827 (ext 221) or star@spacecentre.ca

<http://www.spacecentre.ca>

MEMBERSHIP HAS ITS PRIVILEGES!

New members, did you know? The Vancouver Centre has 8 telescopes available for loan free of charge! We have telescopes ranging from 60mm to 10" diameter. For more information see the Director of Telescopes in the meeting room of the GMSO after the members meeting. All telescopes are to be picked up and returned at the GMSO. The loaner period is for one month, to be returned after the next meeting. Telescopes are not allowed to circulate outside of these meetings. You can now reserve two different telescopes per year and use what is left at the end of the meeting anytime.

Your greatest opportunity as a member of the RASC 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 Boundary Bay on the dike at the south end of 72nd St. in Delta (see map on p. 4). We are there most clear Friday/Saturday nights. Contact Jason Rickerby at 604-502-8158.

RASC
1100 Chestnut Street
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V6J 3J9
604-738-2855

November

19 – **Traveling the research path... from campus life to life on Mars.** Are we ready to live and work in confined spaces on Mars? Should we fear the microbialites on the red planet? Can we prepare to send our astronauts for the

extreme conditions of deep space? NASA Ames Research Center geobiologist Dr. Darlene Lim discusses the analogue work done at Lake Pavilion to address such questions and more. Saturday November 19, 8:00pm at the H.R. MacMillan Space Centre. Tickets: general

\$10.75; members \$8.75. (604) 738-7827 or info@spacecentre.ca. Visit www.spacecentre.ca for more details.

December

8 – AGM

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turned to the Moon and watched the Aristarchus region and the winding, river-like Schroeder valley with lots of detail. Finally, inserting a 20mm eyepiece, giving 35X, I turned to gamma of Aries, a well-known double that is perfect for the small-scope user. The two components, looking like the headlights of a very distance car, are both bright. The separation of the pair is enough to be

resolved with the tiniest glass.

All of this in a 60mm scope from the front porch; I was literally five feet from the door. Sometimes amateurs think large scopes, tech toys and trips to Arizona are the only way to experience the delights above. Don't believe it. Let's think a bit about the 60mm glass. The human eye, well adapted, is about 6mm in diameter. The little Tasco is ten times as wide, and therefore enjoys

100 times the light gathering area over the eye. To make a similar jump in light-grasp of 100 times over the 60mm scope requires a 60cm glass; a 24 inch scope!

So, the small scope has a huge advantage over the eye, or binoculars which have fixed and very low magnifications. That's why, although I use large reflecting telescopes, I have never retired my handy little Tasco. In fact, I have two of them. *

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“What's Up?” segments included practical tips on observing the night sky, and educational morsels (light but filling!) on a variety of topics, from what amateur astronomers actually do, to unsolved mysteries at the cutting-edge of astronomy and space science, and a light-hearted hands-on, do it yourself expanding universe!

In connection with our efforts to reach young people, a very notable development this year came in the form of a new sponsor: Canadian Telescopes. Babak Sedehi, the owner of this very successful startup in the business of on-line telescope shopping, was an enthusiastic and very generous supporter of just about every one of our activities

that were directed to young people. This included a telescope door prize at every one of our “What's Up?” segments, and a top-quality 8” Dobsonian telescope at our Paul Sykes lecture (only kids were eligible!). But Babak didn't stop there. He generously subsidized publication of NOVA for much of the year, insisting that this include four pages in colour! And he offered new members of Vancouver Centre a \$20 gift certificate from CanadianTelescopes.com.

Rounding out the goals that we set and met this year, we continued to develop our web site, which has a professional look, a well-organized structure, and new content, thanks in particular to our Webmaster and IT Chair, Harvey Dueck; our LPA Chair,

Mark Eburne, made substantive progress on this important issue, working his contacts in the media and municipal government; and good progress was reported at the AOMO, including work on a guide scope and increased use by members and the public, thanks to co-Chairs Leigh Cummings and Mark Eburne.

We fell down on our goals in only two areas: establishing a Twitter presence, and a Biggie: membership. Our numbers are down this year, despite the many new faces that we've seen at our many events. Tackling the dual challenges of retaining our existing membership and attracting new ones will be job #1 for 2012. Bearing this in mind, at our annual planning meeting

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in October, Council established a short but carefully chosen list of priorities in which to focus our efforts and resources for next year (this process owes especially to the leadership of your Webmaster and IT Chair Harvey Dueck, and your Secretary Alan Jones). Details on our 2012 priorities will be found in my President's message in the January 2012 edition of NOVA.

I think there is much cause for optimism for a successful 2012 at

Vancouver Centre, including for a strong return on our planned all-out assault on the membership challenge. My optimism is further stoked by the fact that there will be eight newcomers to council for 2012. Some familiar faces will be stepping down from Council, some after very many years of service, and I want to record here the deep indebtedness of Vancouver Centre towards these dedicated members—in alphabetical order: Doug Montgomery, Gavin McLeod, Pomponia Martinez, and

Wayne Lyons. In their place, the eight incoming council members have chosen to follow the example set by the outgoing councillors, in the service of the membership at large, and our public—and I can tell you, the newbies are full of beans! Introductions will have to wait for ratification at the December AGM ;). I can't wait! ✨

Howard Trottier
President, RASC-Van
Professor of Physics, SFU

Aries

by Bill Burnyeat

The Ram, at first glance, is somewhat of a disappointment. The constellation is a small group of three stars west of the Pleiades and its lights seem hidden, crowded into a corner, under the splendid arrays of the Milky Way in Perseus and Andromeda.

In the past, Aries had more fans. Called the Prince of the Constellations, it was the leader of the twelve zodiac signs and one of the original forty-eight constellations. Since it was on the path of the Sun, Moon and planets, Aries was a stop on the trip of these objects around the sky. At one time, this seems to have been taken literally. Around the ecliptic were twenty-eight equally located asterisms called the Lunar Mansions. These were resting places for the Moon as it went around the sky at a rate of about 13° per day. It's somewhat similar to the "houses" up the BC Fraser Canyon and Cariboo in which travellers to the gold fields in Barkerville stayed the night on their long and uncertain

journey through the wilderness. A few of these stops evolved into towns which keep the name such as 100 Mile House. The Moon, too, after its sortie against the stars, was thought to pause at the Mansions, perhaps to change clothes and have a bite to eat. The twenty-eight stops were also called mansil, a word which indicates the noon day rest of a traveller and camel across the Middle Eastern wastes of sand. The idea of rest from travel is the same. The first of these rest stops was the Pleiades and the last was within Aries, where the Moon came back to its starting point again.

Standing outside and looking at Aries, one sees crowded on the west edge of this group two fairly bright stars plus a fainter one that together make a lopsided triangle.

The leader of the triangle and most easterly is Hamal. The name means "head of the sheep" and it is only as bright as the pole star. Called a red giant, a term thrown around loosely, Hamal is pale yellow as can be verified by a pair

of binoculars. Next, nearly as bright and to the west of Hamal, is Sheratan, "the sign" and a star that is colourless. Now, take these two stars together and imagine a line drawn between them. Find the middle of the line and then erect a perpendicular north. At the point where an equal-sided triangle is constructed you should see a star. The new comer is called Lambda. It's an odd name, but it's the 11th letter of the Greek alphabet. The stars of a constellation are given Greek letters to identify them. They are given in order of brightness although there are many exceptions. Thus Hamal is also called Alpha Arietis, since it is the brightest star in the Ram and Sheratan is called Beta Arietis as second brightest. It's a little confusing, a bit like being introduced to someone at a party and then hearing them called by a nickname for the rest of the evening. Having found the star Lambda Arietis, now look with a pair of binoculars and the single star

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Yesterday, Saturday November 5, I had the privilege once again of helping out my friend and fellow RASC member Wayne Lyons host a presentation and telescope workshop at the Maple Ridge Public Library. We have held a few events with the support of the wonderful staff of our local library and found the experiences very rewarding.

A new twist this time was having the weather cooperate. It was amazing to be able to show the sky off to the public instead of only being able to talk

about it and show pictures.

We started the day off in the adjacent Peace Memorial Park. I set up the RASC solar telescope on my camera tripod and almost right away had people dropping by to have a look at our closest star. Mark Eburne had generously lent me his new 90 mm Coronado Telescope to mount on my EQ3 to double the number of telescopes for people to look through. Because I am still feeling the effects of my recent work injury, I had to wait for help before setting up the heavier scope and mount. I didn't have long to wait before Scott McGillivray and his girlfriend, Andra Dogaru, arrived to give me a

hand. A thanks to Scott and Wayne for some helpful lifting.

Harvey Dueck arrived and visited at the solar scopes before heading into the library to help Wayne with the workshop. Shortly after, Scott and Andra went in to join Wayne and

were two groups of sunspots that varied in intensity from hour to hour and several prominences that got the appropriate oohs and ahhs from the public. Mark's scope offered some stunning views at even the highest magnification, reaffirming

Harvey's claim that size does matter, even when viewing the sun.

Scott used his new camera to take his very first astro images through Mark's solar scope. I will be looking forward to seeing the results. The security guard who was



Harvey. Bill Burnyeat kindly brought a home-built Dobson mounted Newtonian for even more variety. Clive Williams came by to help out at the solar scopes and ended up spending the rest of the day with us. A little later, Rohit came by with a friend to join us as well. It was nice to have so many helping hands at our local event. With so many volunteers, the people attending the workshop were able to receive some real quality help with their telescopes and questions.

The sun was putting on a good show throughout the day and managed to stay just ahead of the clouds that chased it around. There

working in the park area all afternoon liked what he saw on Scott's camera so much that he took several images with his cell phone. I have to say, at first blush his pictures looked quite impressive. In the evening the security guard dropped by again and took some equally impressive images of the moon through various telescopes. I heard that he posted them on his Facebook page and got quite a lot of feedback about them.

We kept observing the sun until it slipped behind the bandstand, after which Clive helped me switch telescopes on the EQ3 to get ready for our evening viewing. Clive also

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Photo by Clive Williams

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lifted my entire mount and moved it to a better location to observe Jupiter rising in the east. Another thank you. We were also joined by Wayne, Scott and Andra by this time, which helped with answering dozens of questions regarding the Moon,

Jupiter and the night sky in general.

We also had a couple of members in attendance from the Maple Ridge Secondary School astronomy club, one of whom, Amy, is their president. The club started up just last year and, even though they are small in numbers so far, they have great

enthusiasm and we look forward to lending them a hand in the future. Amy showed her observing skills by being the first to spot Io as it moved out from in front of Jupiter's disc. Ah, to have young eyes again.

One lady from Pitt Meadows
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blossoms into two. My old, heavy and much scarred 10X50s separate these twin suns well. The brighter star appears white or very pale yellow while the fainter companion is bluish, greenish or azure, some version of blue. The effects are subtle but they are present. After watching the coloured suns (what sunsets would be enjoyed on planets nearby?), notice another unrelated star just one degree directly west. This is RR Arietis. It's the brightest star close by Lambda, but just when the reader was getting used to Greek star names now, frustration galore, there's something else. A star with Latin capital letters as a prefix is almost certainly a variable star. This is the case with RR Arietis. It is a dwarf star, not too different than the Sun, yet seems to undergo irregular dips in brightness. It is an unclassified variable and little is known about it. Usually it sits at just about magnitude six, or, as bright as the faintest star seen without optical aid. To check, see if it is in the middle, brightest wise, of the two components of Lambda. Next, select Lambda and Hamal again and imagine a triangle with a new apex to the north of the two and equal sided. You will see the star 10 Arietis. This star is the first of a

string of stars, about three degrees long, leading east and whose names are 10, 11, 14, 16, 20 and 21. The group can be spotted in binoculars by placing Hamal at the bottom of the field. The string of numbered stars will be near the top of the field. The numbers identify the stars by an alternate system over the Greek letters. Can you guess why? The Greek alphabet has only 24 letters, while the stars are much more numerous. Stars are numbered in order of increasing distance from the western edge of their home constellation. The system of star identifications, far from being a plot hatched by number-mad scientists, is actually a code telling the nature, history and sometimes the location of the object. In astronomy, it's not true that a rose by any other name would remain the same. Change a name and the nature of the beast is changed. Scanning the stars of this little row, note particularly the last one that is slightly south of its neighbours. Is there a faint star immediately next to 21? If so, you are seeing R Arietis. This is a large star that pulsates with a period of about six months. At some point in this variation it is about seventh magnitude, well within range of binoculars. Yet, at its faintest it may be more than 100 times fainter and

disappear from sight. If in view, note the strong orange colour that typically marks these stars.

Continuing east, as expected the stars' numbers get larger. Move about five degrees, roughly the field of view of average binoculars, and the star number 30 Arietis is in view. This is a wide and pleasant double in binoculars and small telescopes. The primary star is yellowish and the smaller companion is usually seen as blue or as faint purple, or lilac. Studies show both stars are similar and therefore should appear yellowish white. Yet the fainter of a pair like this often appears blue by a colour contrast with the primary. Once, curious about these lilac secondary stars, I collected a list of a dozen and looked up their spectral types in the literature. Some of the stars were blue, some yellow and some red. The lilac is in the act of cognition and is not a true measure of a property of the star.

Pressing on, move north a few degrees and a small triangle comes into view. This is the northern edge of Aries and the brightest star is 41 Arietis. Along with its two neighbours, this little triangle can be glimpsed with the unaided eye. It caused at least one observer to suppose this tiny group might enjoy

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the status of its own constellation. Thus Musca Borealis was born. The northern fly enjoyed a brief novelty but the name never stuck. Chart makers couldn't make up their minds if a fly a bee or a wasp was indicated. So, the insect, of whatever species, flitted away, and is now found as Musca near the southern pole, never seen from Canadian skies. Now drop straight south about ten degrees, or two binocular fields, and meet Pi Arietis. This star is friendly to both binoculars and telescopes. For the field glass there is a wide component that, although faint, can be managed in 10X50 binos on a dark night. Closer to the primary, a second star may be seen with the higher power available

in a small telescope. The wider of the two companions is definitely the fainter, yet in 1782 William Herschel saw them as reversed with the wider one brighter. Strange. It's fascinating to watch the stars here that, presumably, are little changed since Herschel's day. If someone offered us a chance to see the instruments of Faraday, the writing desk of Einstein or the lab where Max Planck worked, how quickly would we respond. Yet, with a small refractor, on any clear night we can see what Herschel saw, and voyage amongst the same views as inspired the first astronomers. And without leaving the back yard.

Move straight west and we come to gamma. This is the third brightest star in Aries, the westerly

of the three that makes the obvious triangle. In 1664, Robert Hooke was following a comet when he chanced to look at this star. It is a double in small glasses, although too close for the usual binoculars it is plainly seen in my little 60 mm refractor at 35 x.

Finally, just to the east is our last object of this little survey, NGC 772. The three letters, for New General Catalogue, label this as a cluster, nebula or, in this case, an external galaxy. The galaxy is faint in small telescopes and requires an eight-inch to see clearly, where it resembles a faint smudge. The galaxy is a large spiral system more than 100 million light years away.

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had her son with her and had a look at the Moon through my Vixen Mak90. Both were very excited and later the same lady showed up with her daughter, who is in grade three. Her class is just starting to

her very own eyes. That is the sort of thing that makes doing sidewalk astronomy so much fun.

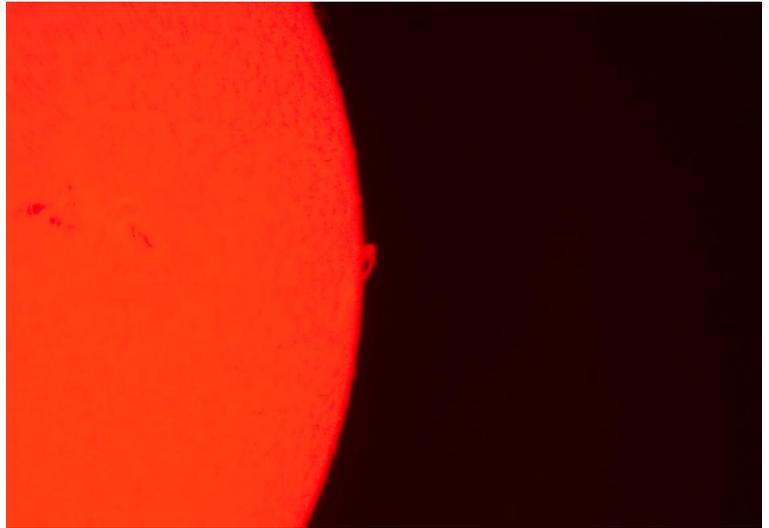
Wayne and I want to thank all our volunteers as well as the staff at the

library for all their help in making our day in Maple Ridge a success. I can also pull some pins out of that little meteorologist doll of mine. ✨

Photos by Robin Bloch (moon) and Scott McGillivray (sun)



study the planets so she asked her mother if she could come and have a look at Jupiter. She had the biggest grin because now she could tell her classmates that she saw Jupiter with



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