PeGASus
Newsletter of the
Royal Astronomical Society of Canada
Prince George Centre

# April 2007

Our pursuits are out of this world.
Our activities are astronomical.
Our aim is the sky.

In Issue # 159



***the PeGASus***
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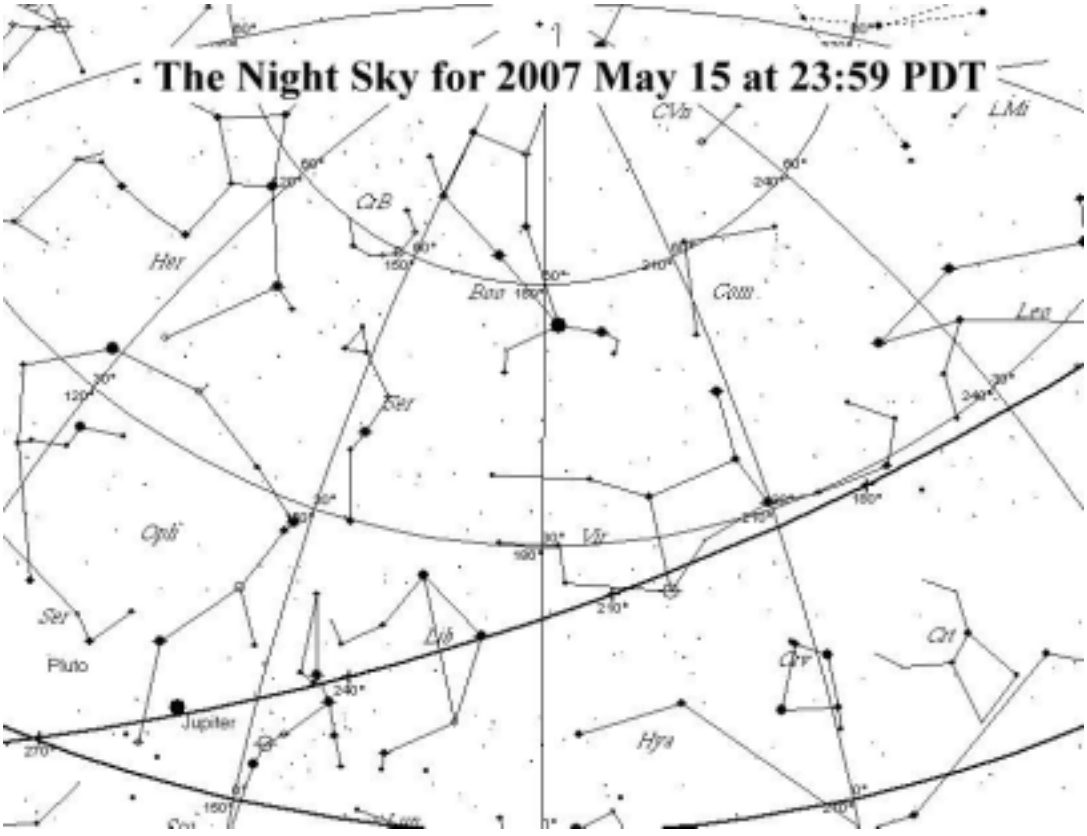
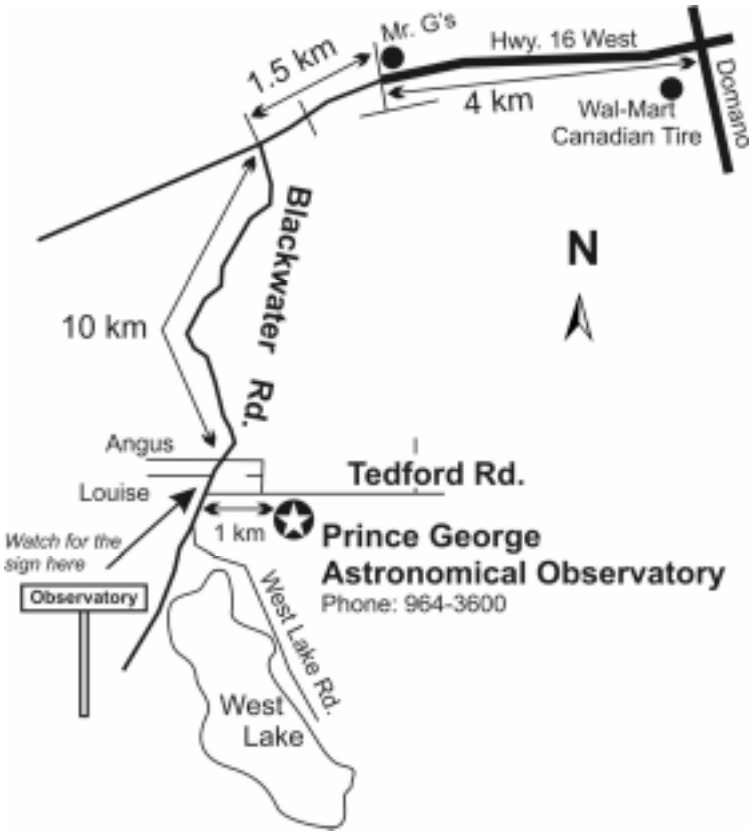
**Royal Astronomical Society Canada**
**Prince George Centre**
**www.rasc.ca/princegeorge**

**The RASC-PG meets next,**
**Saturday April 28th 7:00pm for a Social Evening**
**All members and their guests welcome**






Contributions to the newsletter are welcome.

***Deadline for the next issue is***

## *May 18 2007*

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**Brian Battersby**

## Coming Events/Volunteer Schedule

| Event | Time | Place | Volunteer |
|---|---|---|---|
| Open House | April 20 @ 20:00 | Observatory | Brian B, Denise S |
| Open House | April 27 @ 20:00 | Observatory | Doug W, *HELP* |
| Cubs Tour and Open House | May 4 @ 20:30 | Observatory | Brian B, Denise S, Bill G, Blair S |
| Telescope Workshop | May 5 @ 19:00 | Observatory | Brian, Wayne, *HELP* |
| Open House | May 11 @ 20:30 | Observatory | *HELP* |
| Open House | May 18 @ 20:30 | Observatory | Blair, *HELP* |
| Open House | May 25 @ 20:30 | Observatory | *HELP* |
| Annual Club BBQ | June, TBA @ 19:00 | Observatory | Gil, et al, *HELP* |

***To Volunteer to help run an event please contact Brian Battersby.***
**brianbattersby73@yahoo.ca**
***Phone: 561-8138 (day) 614-3316 (msg.)***

# Editorial

I am booked as the guest speaker for the Edmonton centre of the RASC in May. I will be speaking about my favorite topic, The Prince George Centre. I look forward to this as it's an opportunity to speak about our many accomplishments. We have had the good fortune over the years to draw on the talents of many people. I suspect that there are many people in the national organization that are somewhat curious about this little center. If you have anything you think should be included in this talk, I welcome your input. They are interested in hearing about how we built our facility, and about our public programs, so if you have an event or a tour or some memorable anecdote, I would like to include your story. Pictures would be especially helpful. Time is a little tight, if you have something to add please let me know as soon as possible, I need to finish my presentation in the next week.

Have you visited our website recently? Our website has always been exceptional, a popular much visited site, that's good, but if your not using it regularly your missing out on a lot of helpful stuff. Its not just another pretty website. If you haven't been there yet , lets go there now!

Open a browser, Type in

http://www.vts.bc.ca/pgrasc/

Right of the bat the home page has some good information . Upcoming events halfway down the page shows you the events occurring in the near future. If you want to know about other coming events , look on the blue main navigation bar on the left. Five items down is "Events Calendar". Click on this link and you will see a box that you can select whatever month you would like to know about. There is one more link related to upcoming events, on the blue bar at the bottom is the members area, click on that and the page that opens shows several events in the next few weeks. This is where you find out who has volunteered as a host and also where your help is needed. If you haven't helped out on an open house or a tour , your missing the fun part of our public programs. If you want to get involved just click on "Brian" and drop a note to our tour coordinator. Several other items are worth a look on this page , check out the operating procedures, pretty much everything you might need help with out at the observatory is included here. If your having a problem or simply want to know how to use something , this is where to go.

Back to the navigation bar, the part I use the most is the "observing / weather link." When you open this page you are greeted with an almost real time image of the sun. Clicking on the solar image leads you to some very up to the minute information on sun-state. Click back, the links on this page are all very useful but the "star" is probably the "Clear Sky Clock". The clear sky clock in my experience is as close as I've ever seen to accurate. I have followed it some times when its been spot on day after day to about one half hour accuracy. Handy even if your planning a Sunday afternoon picnic. I'm running out of room, and still haven't told you about the excellent satellite image link or the weather link. There are lots of links to good learning resources, club materials that are available for loan. The newsletter archive, learning centre, lots of downloads. Check it out you may find that you will be using it all the time and wonder how you ever did and astronomy without it.. Brian is looking for your suggestions to continue improving our website. If you have astronomy links you use a lot please forward them to Brian and help keep OUR website interesting and relevant.

GS

# The Night Sky for May 2007

by Bob Nelson, PhD

Hi Folks,

Another month, another column. As I write this, spring made a brief appearance last week, but apparently has gone back to bed. When you read this, perhaps spring has come for good! The open house nights and tours have started again (yeah!) and the big public telescope tuneup event May 5th will have come and gone. I hope that it will have been a roaring success.

Hopefully also, the 0.61 metre telescope upgrade will be proceeding. As I write this, there is a holdup in obtaining worm gear specs that would hold up our resident engineer Blair from designing the worm mounts. Another holdup is that Doug George (or Maxim DL fame) has had some serious bugs in the controller board software that he/they are trying to solve. The upgrade will happen when it happens, I suppose. At this end, we will do what we have to do to keep it moving.
Anyway, here is what will be happening in Prince George skies this month:

MERCURY is an evening object this month. It reaches superior conjunction on May 3 and hereafter is east (left) of the Sun At month's end, it lies some 23° east of the Sun and lies some 13° above the WNW horizon at sunset; it sets about 1.5 hours later. (Sadly, we could see it much better if we were further south – owing to our high latitude, the lines of equal declination are heavily inclined to the horizon at the west point and Mercury would be much higher up at more southerly locales.) Anyway, it's a 5.8" disk at about magnitude -0.9. Have a go, chaps!

VENUS is an evening object all month. And what an evening object it is, lying mid-month some 31° above the western sky at sunset and remaining up until about 01:00. (The Sky 6 says it sets at 01:05 and Guide 8, at 01:14.) The observer's Handbook for 2007 tells us that its elongation from the Sun increases to about 45° by the end of the month (and reaches greatest eastern elongation on June 9). At mid-month, it's an 18.5" disk at about magnitude -4.2 and is 61% illuminated. (By the end of the month, it is still in the gibbous phase, but then only illuminated by 54% -- close to half.)

MARS, in Aquarius until the 9th, when it passes into Pisces (until the 24th, when it passes into Cetus, and until the 29th, when it passes back into Pisces again) is a morning object this month. At mid-month, it rises at 05:24 and at sunrise lies at 11° above the ESE horizon. It's a 5.5" gibbous blob (90% illuminated) at about magnitude 0.9. It's still quite small.

JUPITER, in Ophiuchus until late 2007, is a late evening and morning object in May. At mid-month, it rises at 22:44 (PDT) and transits at 02:50. At sunrise it lies some 7° above the southwest horizon. It's a 45" disk at about magnitude -2.5, in other words, huge!!

SATURN, in Leo until 2009, is an evening object this month. At mid-month at sunset, it lies some 45° above the southwest horizon; it sets at 02:46 in the early morning. It's an 18" disk of magnitude 0.5.

URANUS, in Aquarius until 2009, is a morning object all month. At mid-month, it rises at 03:16 (PDT) and at sunrise it lies some 14° above the ESE horizon. As usual, it's a 3.6" disk at about magnitude 5.8.

NEPTUNE, in Capricornus until 2010,.is mostly a morning object this month, rising mid-month at about 23:00 (PDT). At sunrise, it lies some 16° above the SE horizon. As usual, it's a 2.3" disk at about magnitude 8.0.

CONSTELLATIONS to look for in May (at 11:00 PM PDT) are Eastern Hydra, Corvus (Crv), Virgo, Coma Berenices, Bootes and Canes Venatici

Corvus ("The Crow") is the small lectern-shaped constellation southeast of Leo (the top two stars point up and left towards Spica to the northeast). It contains NGC 4782, a galaxy located halfway towards Spica and NGC 4361, a planetary nebula inside the figure. Messier 104 is just over the north boundary in Virgo. It also contains NGC 4038 - the "Ring-Tail Galaxy" about 3.7° WSW from Gamma Corvi. (Follow the top two pointer stars for about the same distance down and to the right.) According to Burnham's Celestial Handbook, it's 'sometimes' regarded as a gravitationally interacting (or actually colliding) pair of galaxies. (Today, I think there's no doubt that they are colliding galaxies.) Deep images (and RealSky does a good job) show a kidney- shaped object with two curved tails extending north and south. Radial velocity measurements show that the system lies about 90 million light years distant, giving it a diameter of 100,000 light years and total luminosity of 20 billion suns. There is also another galaxy (NGC 4027) lying 0.7 degrees away that is "almost certainly" gravitationally linked. This should be an easy target, next time you are out at the observatory.

Hydra ("The Sea Serpent") is a sprawling constellation running from 8 hours to 15 hours right ascension and from -35 to +5 degrees declination. In this month's region of interest, there is globular cluster M68, lying 3.8 degrees southeast of Beta Corvi (the star at the lower left corner of Corvus), and several galaxies, M83, NGCs 5061, 3923, and 3821. It also contains NGC 5694, one of the more remote globular clusters that are still part of our galaxy. It lies at the eastern end of the 'tail'. It was discovered by Sir William Herschel in 1784, recognized as a globular by Clyde Tombaugh and friend at Lowell Observatory in 1932. Measurements soon after, and also later, reveal that it is about 100,000 light years away on the far side of our galaxy and about 85,000 from the galactic centre. Its stars are hard to resolve and furthermore, at declination -26°, it is a difficult object for us to see. Brian, Doug?

Virgo ("The Virgin") and Coma Berenices ("Bernice's Hair"), lying to the east of Leo, are the regions of the sky rich in galaxies. Virgo contains 11 Messier objects, all galaxies and many NGC objects too numerous to mention. These are part of the giant Virgo cluster of galaxies lying some 20 megapasecs (65 million light years) from Earth. This contains some 1000 galaxies and shines with the light of 10^14 suns. It is thought that the local group (containing the Milky Way Galaxy, M31, M33 and others) may be falling towards the Vigo Cluster. Nearby in the sky, but much more distant is the even larger Coma cluster which lies some 150 megaparsecs (500 million light years) away. It contains some 10,000 galaxies and shines with the light of 10^15 suns.

Also in western Coma Berenices lie the globular clusters M53 and NGC 5053, about 1 degree apart. In Canes Venatici, about 15 degrees to the northeast, lies M3, one of the three finest globular clusters in the northern sky, (the others are M13 and M5). Discovered by Messier in 1764, it glows with the apparent magnitude of a 6th magnitude star and lies about 35,000 light years distant.

Another event, on about May 5, is the Eta Aquarid meteor shower (in Aquarius, of course). As usual, it's best after midnight. See the Observer's Handbook for details.

Clear skies,
-Bob

***I missed including this mail note from Doug last months newsletter. The night referred to was the open house at the end of March. If you have not attended an open house you should drop by next chance you get, its always a good time, Thanks Doug***
***GS***

## March 30 Open House

*by Doug Wayland*

Hi All,
I had a great night at the observatory last night. There were several members present and quite a few public. It was good to see some new members, out as well as the long time members.
The evening was very good,
mostly clear skies, however the bright gibbous moon diminished views of some objects. Saturn was a crowd pleaser as usual and of course so was the moon itself. After the public had mostly gone, around 11 pm, I used the star charts from skytonight.com as well as Sky Tools charts customized for my scope set up to track down Asteroid 2006 VV2. It took a bit of work as the very bright moon was close by, but my 12x80 correct image finder scope really helped. It took about 10 minutes to get on the right field, then after a few minutes of watching I could see one of the "stars" moving down, in a southerly direction in the field of view. Wow, was that cool, to think we were watching a 2 mile wide piece of rock, just under 4,000,000 km away moving amongst the stars. Several members had a look and noted the asteroids movement. It was relatively bright and easy to see despite the sky glow from the moon. It was brighter than most of the background stars it was passing. Brian was just confirming the asteroid in his own scope as I was leaving a little after midnight. Finding that really capped off the night.

It was great to have a good night of observing, as it is snowing this morning. Sorry to hear your scope got covered in snow Brian, last night it sure didn't look like it would be snowing this morning.

Doug

# WHAT'S OUT THERE

## Native Suns, All?

*by Fae Collins Mooney*

**Follow the arc to Arcturus…**
**That's how we locate the brightest star in the night sky's northern hemisphere, isn't it? We follow the arc of the Big Dipper's handle and extend the arc to glittering, copper-gold, magnitude -0.05 Arcturus.**

**This dazzling topaz beauty is an amazing star, in ways we are just beginning to discover and understand; and if there is one star worthy of our earthly speculations it is this one.**

**Also known as *alpha* Bootis, Arcturus, a spectral K-type star, is one of our Sun's closer neighbours in space at a distance of 36 or 37 light years and, instant by instant is moving ever closer to our region of space. It possesses one of the largest proper motions of any of the first magnitude stars (it has a variable velocity of 5 km/second) and, as described in *Burnham's Celestial Handbook*, "is a member of the great spherical halo which is centered on the hub of our galaxy. This explains the large apparent motion, and the rapid passage through our part of the heavens; Arcturus is moving in a highly inclined orbit around the center of the galaxy, and is presently cutting through the galactic plane. The Sun, on the other hand, is moving with the general 'stream of traffic' in the plane of the galaxy; thus the large relative motion between the two objects. From the viewpoint of an Arcturian, it would be the Sun and the rest of the general stream which is moving so rapidly."**

***The Atlas of the Universe* adds that as long ago as 1718 Edmond Halley found that its position relative to the background stars had shifted appreciably since ancient times. Several thousand years from now it will pass by us and start to recede, moving from Bootes into Virgo and, in half a million years or so, it will drop below naked-eye visibility.**

**In the meantime, on a clear night, we can look up and appreciate the sight of Arcturus, and those countless tiny specks of pastel light in the black expanse, each one marking its place in our vast Milky Way Galaxy, each one a native sun… each star having evolved out of a stellar nursery somewhere within the confines or our home galaxy, living out its life as it leisurely circles the galactic core… or so we have always believed!**

**"It is natural to think of the stars in our sky as native suns, born and bred within the confines of the Milky Way," an article in the April *Scientific American* relates.**

**"But then what do you make of Arcturus," it asks. Arcturus, as already stated, moves in a subtly different way and – rather suspiciously – "has a slightly different chemical composition from that of most stars in the Milky Way; it shares its curious properties with a few other stellar mavericks scattered throughout the galaxy…"**

**Hmmm… What does this mean?**

**"By applying sophisticated forensic techniques akin to those employed elsewhere in the sciences," the *Scientific American* article continues, "astronomers have discovered in recent years that… a surprisingly large number of the anomalies, including Arcturus, are genuine immigrants." Astronomers believe that these stars were born into smaller galaxies that the Milky Way gravitationally captured and assimilated. Over time, our home galaxy may have absorbed hundreds of its smaller galactic neighbours, their former inhabitants now intermingling with our Milky Way's natives and retaining only fading memories of their own native home.**

**"Spotting stellar immigrants takes a sharp eye," the article states. "In principle, they give themselves away by lining up in long streams… Many streams lead back in a starry path to a globular star cluster or one of the Milky Way's satellite galaxies – presumably the original home of the stars in the stream or what is left of it…"**

**The Arcturus stream was discovered in 1971, composed of old stars deficient in heavy elements. Its probable origin is a defunct dwarf galaxy whose statistics remain to be teased out by these teams of forensic astronomers. In time we can hope that the whole story of this adopted sun's past will be revealed. For now, we can simply enjoy the view.**

**Interesting side note from *Burnham's Celestial Handbook*: Arcturus was the first star on record to be observed in daylight with a telescope, accomplished in 1635 – "a feat which may be duplicated by any amateur today with a good small telescope and properly aligned setting circles."**

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# Occultation Events for the Beginner, Intermediate Observer

*By Wayne Sanders*

**This coming week April 25 and 26 we have two events both being very easy to observe with the naked eye or photograph using simple equipment. Both of the events are unique as they are both observed best and perhaps only from western Canada and Alaska. We in Prince George are in a most favored position for these goodies.**
**The moon occults the planet Saturn, then the next day the star Regulus.**

**Event one April 25**
**Moon occults Saturn**

**Time April 25 03:18.21 Am local time. NOTE this is Tuesday night Wednesday morning.**
**Saturn disappears on the left side of the moon at about the 7 o'clock position the unlit side. Simple equipment will record this event. A home Camcorder will work just fine. A radio tuned to WWV on 5.00 - 10.00 MHz placed near the Camcorder so the audio gets recorded along with the event is a nice addition.**
**From my location at 776 meters elevation I don't believe I will see the exit as the moon is setting just then but I will try.**
**To see this event you need a clear horizon to the west at 292 degrees and a 5.5degree elevation. Choose your location wisely. From my 2nd observing location I have a great south and west horizon. May not be able to get to it because of mud. But aim to try.**

**Event Two April 26**
**Moon occults Regulus**

**Time April 26 2:16:21 am. Note this is Wednesday night Thursday morning.**
**Star disappears on the left side or dark side of the moon time 02:16.21 Am.**
**Reappears on the bright side of the moon "right" side at 3:15:21 Am**
**Moon / Regulus are found at 16 degrees elevation and 268 degrees azimuth. Good and high.**

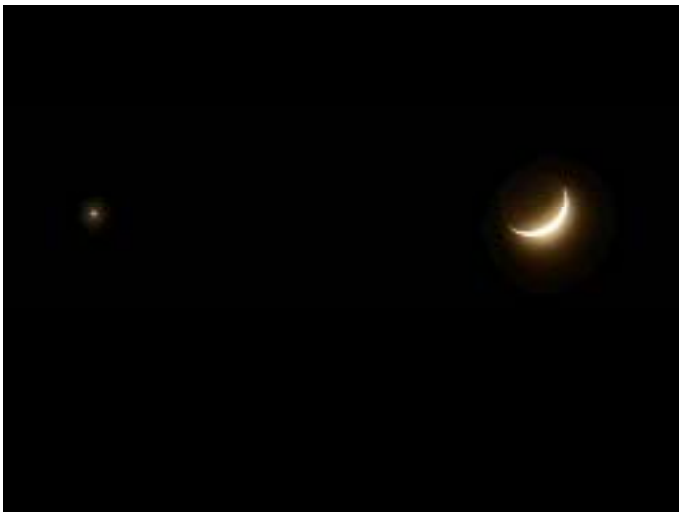
**Regulus is a bright star easily seen with naked eye. Mag. 1.4, the event is also easy to image using a home type Camcorder. If you have a radio that is capable of receiving WWV time signals it is nice to have it on so the Camcorder picks up the audio and records it onto the tape at same time as the event is recorded.**

**If you do attempt to record these events and manage to get video of them I would be more than a little willing to attempt a workshop to get timing information for the ingress and egress.**

**I have just completed a gps based timing unit accurate to 1/100 of a second or better it can be used as a stand alone or integrated unit for event timing.**

**Why do observing of Occultation's. It can be fun, it can and does have real science values.**

Two pictures of the moon and Venus by Bob Nelson
Taken Thursday April 19  approx 22:00 hrs
Slightly different exposures to highlight  Venus and the moon



Moon and Mars over Italian castle
Date:  2003-10-06
Time:  18:55 UT (?)  Might be an hour out
Exposure:  1/30 s at f/8
Camera:  Canon Powershot G3  4 M pixel Digital
Focal length:  unknown
Location:  Porto San Ste-fano, Argentario Penninsula, Italy
Latitude  42°26'06" N
Longitude:  11°07'30" E

Moon and Venus tonight
Exposure: 1/1.6 at f/4for the longer exposure, and
1/5 at f/5.6

Effective focal length was close to 400 mm  (35 mm equiv.)