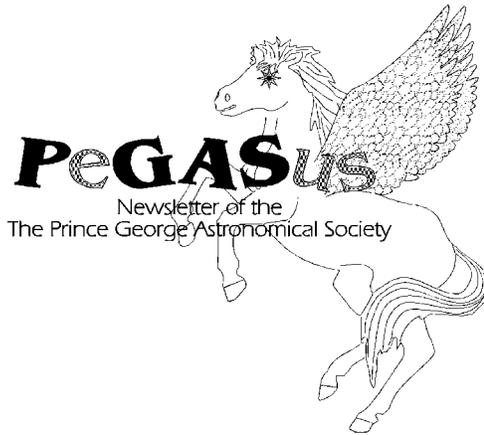


PeGASus  
Newsletter of the  
Royal Astronomical Society of Canada  
Prince George Centre

# January 2007

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

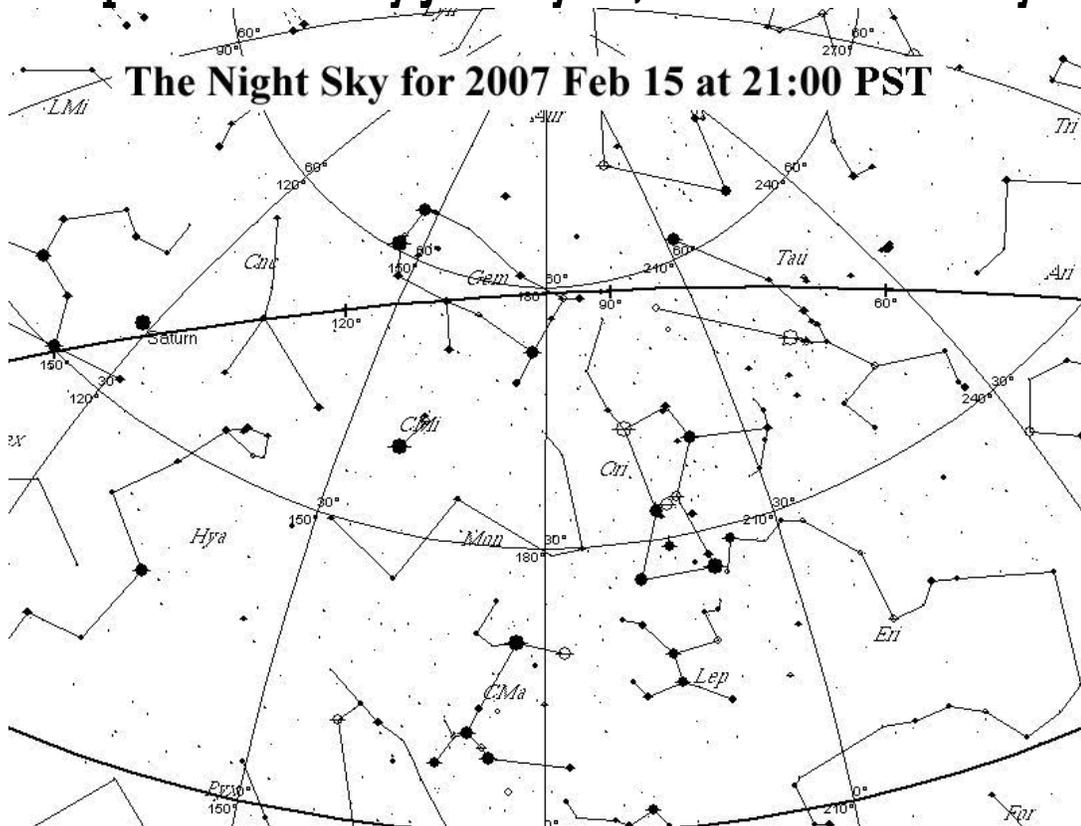


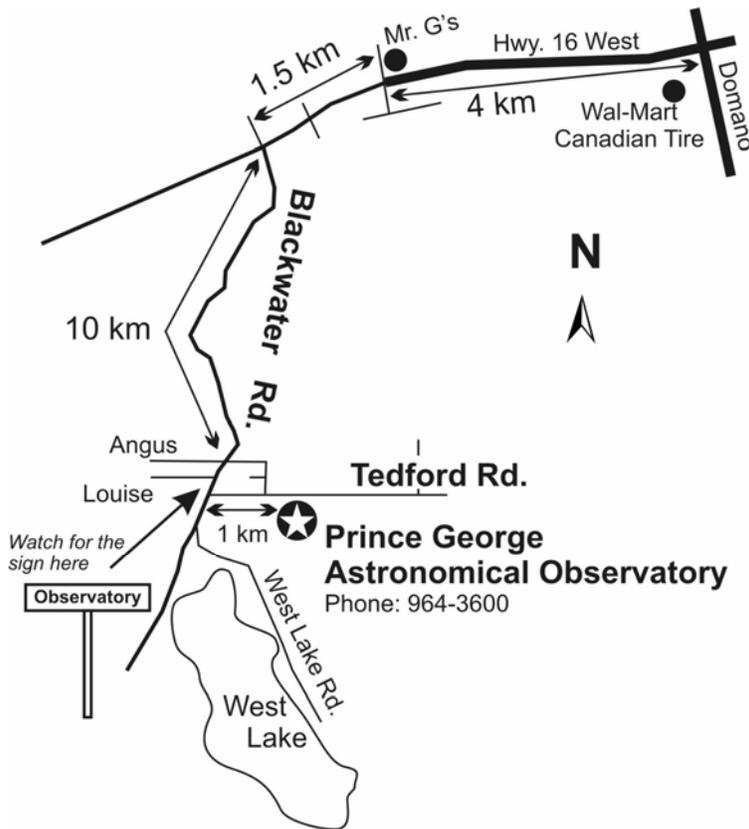
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**The RASC-PG meets next,  
7:30pm Wednesday January 31, at The Observatory**





Contributions to the newsletter are welcome.

**Deadline for the next issue is**

**February 16 2007**

**PeGASus Editor**

**Gil Self** selfpg@telus.net

Send correspondence to  
**Prince George RASC**  
**7365 Tedford Road**  
**Prince George B.C.**  
**V2N 6S2 phone:964-3600**

**RASCPG**  
**Executive, 2006/2007**

**President**

**Gil Self**

964-7279  
 selfpg@telus.net

**Vice President**

**Maurice Sluka**

563-3337  
 msluka@telus.net

**Secretary**

**Glen Harris**

562-4488  
 g\_harris@telus.net

**Treasurer**

**Bob Nelson**

563-6928  
 bob.nelson@shaw.ca

**National Council Rep**

**Alan Whitman**

**Members at Large**

**Jim Arnold**

**Fae Mooney**

**Hugh Kennedy**

**Jim Toews**

**Doug Wayland**

**Blair Stunder**

**Past President**

**Brian Battersby**

**General Meeting 7:30 pm January 31**  
**At The Observatory**

**Regularly scheduled Open House and Members nights**  
**Every Friday and Saturday evening**  
**Starting again in March**

Can anyone help Brian Potts out?? Here is an e-mail I received,

Hi Gil. What I want to do is run my telescope wireless from inside the house. I am looking at buying a sky watcher HEQ5 pro (goto) mount for my meade 8" Newtonian. I am also looking at the Meade LPI imager, I understand that the autostar suite program that comes with the camera has telescope control functions that will only work with a meade autostar mount. I need to know if there is any software out there that will work with the skywatcher mount. My main interest is asteroid tracking. I am open to any other combination of mounts and cameras that would work together. Thanks Brian Potts

## Editorial

Gil Self

The coming year will see our observatory modernized the likes of which we only read about in Sky and Telescope ten years ago. Today's access to relatively low cost high technology is allowing us to upgrade the drives to the very latest available. The drive improvements should be complete in plenty of time for spring open house beginning in March. The support bearings for the dome will be all new and the dome should move very easily. When we are done the dome will keep out of the way automatically and the scope will move to targets with only a mouse click -- from the nice warm control room. I have already told you about the Newtonian flip mirror and the new F/4 focal point. With drive improvements and the optics working closer to their designed abilities, it's time to start thinking what you would like to do with this new telescope. I for one, have been itching to do some deep sky colour images. This is not as easy as it sounds and I'm looking forward to learning the process, join me if you would like.

Being able to use our equipment to it's potential is really something I don't think we have ever really tried. Most of the very active core group finds themselves "run right out of time" I think. Just keeping the doors open requires a tremendous amount of work each month. Aside from the somewhat invisible tasks like cleaning and repairing, the largest time consumer for all of us is volunteering for tours, courses and open house. There is almost no time left for leisure astronomy, let alone trying to master something new or complex.

Please Help

We all want to enjoy our hobby and learn new skills. If we could train three or four more hosts this year, we could all have more time to enjoy the observatory. Please speak to any member of the executive-- we would welcome your help, you will be surprised how easy it is and as it turns out; it's also very enjoyable.

I would like to ask for your help a second time this month. I have been asked to speak to the Edmonton RASC in May. They are considering building an observatory and they would like to hear about our West Lake Observatory. They would be interested in the evolution of the building and the equipment and how we operate the facility. I am asking for any thing you have, pictures primarily but short articles relating interesting events you have participated in. I would very much appreciate pictures from the events away from the observatory as well. I hope to be flooded with material during February and that will give me march to sort through it - ( that's a cleverly disguised way of saying please get your material to me before March :-)

Is there anyone out there that would like to produce an Editorial for next month. Don't let the word editorial put you off, I'm not looking for in depth political comment. Just you opinion, maybe your impressions of our club or your interest for the club in the coming year. I don't think this space should only present my opinion, I would like to hear from you.

GS

# The Night Sky for February 2007

by Bob Nelson, PhD

Hi Folks,

As I write this, it's New Year's Day, I am not hung over (although my wife and I did go out last night) and all seems well with the world. Blair and I hope to mount the new worm gear on the declination shaft on January 3, so hopefully the great task will be all complete by the time you read this. (I am NOT superstitious, so I can say what I want!) Also, by the time you read this, my wife and I will be tanning our buns in Maui (it's a tough life!), getting back on Jan 23rd. I hope to do some more SCUBA diving there, take many pictures and share what I can when I get back.

Anyway, here is what is happening in our skies next month.

## PLANET ROUNDUP

MERCURY is an evening object for much of this month. At month's start, it sets some hour and a half after sunset (as a 6.1" gibbous blob at magnitude -0.9), and by the 8<sup>th</sup>, it sets a maximum of 1 hour 48 minutes after the Sun. It reaches greatest eastern elongation (of 18°) on the 17<sup>th</sup> when it lies almost 10° above the WSW horizon at sunset. (It then sets about 1 hour later.) On that day it is a 9.6" half illuminated disk of magnitude 2.4 (since the Earth-Mercury-Sun angle is almost exactly 90°). After that, it moves closer in the sky to the Sun, reaching inferior conjunction on the 23<sup>rd</sup> when it sets at sunset. After that, it's a morning object! Have a go at finding it in binoculars first; it should then be visible to the naked eye once you know where to look. Needless to say, you need very clear skies and a good western horizon.

VENUS, is an early evening object all month. On the first, it sets over two hours after the Sun; by month's end this has risen to 2:48. For most of the month, it's a 11.4" gibbous disk at about magnitude -3.9. A fine and beautiful object.

MARS, in Sagittarius until the 25<sup>th</sup> (when it passes into Capricornus), is an early morning object, rising at mid-month about an hour before sunrise. It's a 4.3" disk of magnitude 1.3. Better viewing lies in the months ahead, when it will grow in size and brightness.

JUPITER, in Ophiuchus until late 2007, is an early morning object, rising at mid-month at about 03:30. It's a 35" disk at about magnitude -2.0. Something for you early birds out there.

SATURN, in Leo until 2009, is highly visible this month. At mid-month, it rises about an hour before sunrise and is up all night. It's a 20" disk of magnitude 0.0

URANUS, in Aquarius until 2009, is an evening object this month. At midmonth, it lies almost 12° above the SW horizon at sunset and sets about 1.5 hours later. As usual, Uranus is a 3.6" disk at about magnitude 5.8. **On February 7<sup>th</sup>, Venus and Uranus make a conjunction, passing within about 41' of each other.** This should make for some wonderful photographs [hint, hint].

NEPTUNE, in Capricornus until 2010, is lost in the glare of the Sun this month.

**CONSTELLATIONS** to look for in February (at 9:00 PM, PST) are Taurus, Auriga, Orion, Lepus, Canis Major, and Monoceros. It's all new this month.

**Taurus (the Bull)** contains two well-known clusters: the Hyades (the horns of the bull) and the Pleiades (M45), plus the famous Crab Nebula, M1. All have been discussed previously. New is S147, discussed in Burnham's Celestial Encyclopedia. It's an obvious supernova remnant much like the Veil Nebula, but fainter. It was discovered in 1952 by astronomers at the Crimean Observatory in the course of a photographic survey using their 25-inch Schmidt camera. It was also discovered independently at about the same time on red plates taken by the 48-inch Schmidt camera at Palomar. It was later discovered to be a source of radio energy, at about half the intensity of the Veil. The distance to S147 is hard to determine, but estimates from 2600 to 3600 light years (ly) have been made. If an average distance of 3000 ly is accepted, the diameter is over 400 light years – larger than that of the Veil and much larger than the Crab nebula. The filaments are thought to be shaped by electric and magnetic fields; however, no star has been identified as the source of the re-radiated energy. Images of the object are easy to find by Google Image Search and the object was featured on Astronomy Picture of the Day (available at [antwrp.gsfc.nasa.gov/apod](http://antwrp.gsfc.nasa.gov/apod)) for 2005 Nov 29. Its area is some 70 times that of the full moon -- and therefore difficult to photograph. However, my 6" refractor mounted on the 24" guided telescope and using filters with a digital camera might do the trick. It's food for thought.

**Auriga (the Charioteer)** has Capella (Alpha Aur) for its brightest star. At 0.06 magnitude, it's the 6<sup>th</sup> brightest star in the night sky and with a spectral classification of G6 III, it's considered solar-type – by its temperature and composition. (The Sun is classified as G2 V – at 5770 K, it's somewhat hotter than Capella and on the main sequence). Capella, on the other hand, has a surface temperature of 5300 K and is classified as a giant (evolved) star. It lies at some 25 light years and has a luminosity of 160 solar units. The remarkable thing about Capella is that it is a double system, discovered spectroscopically at Lick Observatory in 1899. The separation (of 0.04") was measured in 1919 by an interferometer mounted on the 100" telescope at Mt Wilson. The secondary is hotter at G2 II; the orbit is almost circular, and the period is 104 days. The system has a third star – Capella H – which shares in the motion of the inner pair and is itself double. Burnham sets up the following scale model: Capella A and B are represented by two spheres 33 and 18 cm in diameter separated by 3 metres; the components of Capella H would be 18 mm in diameter separated by 128 m and lying 34 km away! Say after me – “The universe is vast”.

**Orion (the Hunter)** contains (need we say?) the famous Orion Nebula, M42, which is probably the most spectacular object you can look at in our 24" telescope. Another famous object is Betelgeuse = Alpha Orionis (visual mag 0.45, Sp. M2 Iab). This star, the 11<sup>th</sup> brightest in the night sky, has been observed since antiquity and – needless to say -- has much lore associated with it. Burnham says that its name in Arabic means “Armpit of the Giant” or “Arm of the Central One” (although there are other translations as well). The remarkable thing about Betelgeuse is its immense size. If Betelgeuse were our star, we would be inside it, as its orbit would extend well outside Mars' orbit. Since its distance is about 520 ly, its angular size is quite large and was first measure by the same stellar interferometer mentioned above. (As of around 1980, starspots on its surface have been mapped using modern techniques.) The density of its outer layers, though, is tiny, having a value only about one-ten thousandth of the air we breathe (that makes it a pretty good vacuum!). Although the “surface” temperature is quite low – only about 3200 K, the immense size of Betelgeuse means that it radiates a lot of power – equal to the output of about 14,000 Suns!! Betelgeuse lies within the instability strip and therefore pulsates, varying its energy output (which lies mainly in the infrared). The pulsation period is around 5.7 years (although there are many sub-cycles) and the brightness may vary by up to a magnitude. Think of it as an immense floppy object!

**Lepus (the Leper? No, no -- the Hare)** is a strange little constellation to the south of Orion with little to see except M79, a fine globular cluster. Discovered in 1780 by Mechain and reobserved by Messier in the same year, it lies on a line from Alpha to Beta Leporis (oh, those Latin endings!) extending south about the same distance (4 degrees). It is about 7.8' in diameter, lies about 50,000 ly from us and therefore has a true diameter of about 110 ly. Its absolute magnitude is -7.6 and therefore has a luminosity of some 90,000 Suns. It's worth having a go at finding.

**Canis Major (the Big Dog)** contains of course Sirius, the brightest star in the night sky (at -1.46 mags). It's quite close, at 9 light years, and has a white dwarf companion that we can't see right now. This has been the subject of much study – I'll talk about it next year. There is an important eclipsing binary in the area – UV CMA. This consists of a pair of 19- and 23-solar mass stars in a close (24 AU) orbit of period 4.39 days. The motion is so rapid and the stars so close that they are distorted into egg-shaped blobs. The primary is thought to be an O6 (temp 40,000 K!) star that is ejecting mass into the surrounding area by means of a gas stream (lost to both stars). This stream obscures the two stars making studies difficult. The distance is around 3600 ly. CMA also contains the open cluster M41, visible to the naked eye (according to Burnham) and containing some 100 stars. Another object is NGC 2362, a young cluster surrounding the star Tau CMA. When the luminosity and temperature of each star is plotted (this is the famous Hertzsprung- Russell diagram), many stars are found to lie to the right and above the main sequence (of stable hydrogen-burning stars). They are therefore newly formed and have not had the chance to reach the main sequence. At the age of around 1 million years (this is known from theoretical calculations of star formation), the cluster is one of the youngest known. However, there is little dust lying around – this is thought to have been blown away.

Monoceros (the Unicorn) lies in the Milky Way and contains Plaskett's Star (named after the pioneer at the DAO in Victoria, back in the 1920s and '30s. Plaskett's Star is a giant binary system consisting of a 40- and a 60-solar mass star in a tight orbit (of period 14 days). Both stars are amongst the hottest you can get (type O) and emit gas streams, like UV CMA above. The masses of the primary and secondary seem to be reversed; this may have come about by mass transfer in their past sometime. The distance is about 2700 ly. Monoceros also contains M50, a fine open cluster. More later.

Clear skies,  
-Bob



**JimT. At work**

# WHAT'S OUT THERE

## Who's Out There

### Part II

By Fae Collins Mooney

"If you could have the answer to one unknown thing in the world, what would it be?" A friend challenged me with this question a few weeks ago.

I didn't think to ask the executive members such a great question when I interviewed them for this column. But the answers I received from the questions I did ask have been great.

Here are the profiles of the rest of this year's executive members, starting with our National Council Representative:

Alan Whitman: Alan joined the PGAS in 1992 "at the beginning of the second observatory building project," he tells me. His membership continued until his retirement move south four years later. However, in 2004, at the request of Brian Battersby, president of the society at that time, Alan rejoined.

An amateur astronomer for half a century, his main interests are "eclipse-chasing, deep-sky observing, and writing for *Sky & Telescope* and other magazines". He now writes "The Sky Month by Month" section of the RASC *Observer's Handbook*.

Alan has "fond memories of the work parties on the observatory building project that Bob Nelson organized weekend after weekend in the early '90s".

A Lamplighter Moment for Alan "was chasing 50 km south of Prince George for clear skies on July 20, 1994, and being rewarded with seeing a brief flare of light rise above Jupiter's limb." He was "one of only three people in the world known to have witnessed the impact of Fragment R of Comet Shoemaker-Levy 9 just behind Jupiter's limb".

"Lamplighter Moments are defined as subtle events," he relates, "and the flare of light was so faint and brief" in his 8-inch Dobsonian that he wasn't certain that he had seen it until months later when spacecraft and a Hawaiian observer confirmed his time for the impact fireball. "In contrast to the brief impact fireballs, the six black or brown scars on the Jovian clouds at the impact sites were very prominent and were easily seen by all observers for several memorable weeks."

### Introducing our Members at Large:

Jim Arnold: (interview not received)

Hugh Kennedy: Membership in the PGAS/RASC for Hugh began 2 years ago but for him interest in astronomy dates back to childhood. "Viewing new things," Hugh says, is his favourite aspect of astronomy.

Hugh's Lamplighter Moment: "Saturn, first time and every time I see it."

Hopes for the centre this coming year include making "the club more accessible to all members (new and old)" and helping to "keep their interest up."

Blair Stunder: Blair has been a member for just over a year but his interest in astronomy goes back 35 years. He lists his favourite aspect of astronomy as “visual observing but the recent advancements in CCD has brought the level digital ‘photographic’ to the level of large observatories not that long ago.” Replying to how membership in the PGAS/RASC has assisted him in his personal astronomical pursuits, Blair says “the shared level on knowledge is invaluable.”

A Lamplighter Moment for Blair was “looking through my used Busnell at age 10/11 with Jim Toews at the moon.”

Blair’s hope for the centre this coming year is “to increase its stature and awareness in the community and surrounding area as a learning centre and a resource for the night sky.”

Jim Toews: Jim’s membership began about 3 years ago, but like Blair his interest in astronomy spans about 35 years. Optics are Jim’s favourite aspect of astronomy, and in answer to how membership has been beneficial Jim says he has “learned a lot from my fellow members.”

For Jim, a Lamplighter Moment was “seeing craters on the moon for the first time when I was around 11 years old.”

His hope for the centre this coming year is that “all proposed projects are able to be completed.”

Doug Wayland: Doug has been a member of the PGAS/RASC since 1999. “I have always had an interest since childhood, laying out under the stars while camping,” Doug explains. “Until 1999, I never knew the constellations, or understood the seasonal changes of the night sky. I read *Night Watch* by Terence Dickinson and was immediately consumed. Most of what I know, I picked out of books, I read anything on observational astronomy and learned a lot about telescopes before I took the plunge and bought one myself.” Doug’s favourite aspect of astronomy is “simply observing and doing some film astrophotography. Planetary and deep sky. I most enjoy seeing things move up there, such as close asteroids and comets, transits. I enjoy seeing new (to me) objects.” Doug feels that one way membership has assisted him in his personal astronomical pursuits is simply that “I enjoy being with other members and observing or doing astrophotography.”

I asked Doug to tell us about a Lamplighter Moment he experienced: “During the comet Hale Bop apparition of 1997, I went out to the PGAS to see it. They were showing other objects in the 24” and I happened to look in the eyepiece when it was locked on the Orion Nebula with the Trapezium stars shining brightly at the centre of the mist. I was floored, thinking what that telescope had pulled out of the abyss.”

Doug’s hopes for the centre this coming year are plain and simple: “I hope there are many just plain get together for observing. I like the simple aspects of astronomy.”

Fae Mooney: Because I introduced myself in the April 2006 issue, there really isn’t anything I need to say. Instead, I will ask a question – the same question my friend asked me:

If you could have the answer to one unknown thing in the world – astronomically speaking – what would it be? To get you thinking about it, here is how I answered my friend:

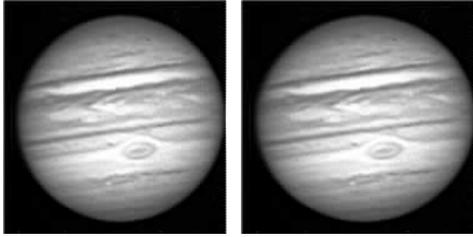
“Only one thing??? Let’s see... OK - to understand – completely – the evolution of the Universe from the moment of the Big Bang to the present, thus being able to also understand everything in the natural world, from sub-atomic particles to super clusters of galaxies, and life itself.” (I’m a very curious person.)

Now it’s your turn—

F.M.

## My attempt to get local astronomers imaging with simple cameras and software

It matters not that it is just creating pretty pictures and is doing no real science. Oh but it is fun. The described software can do real science if you know how to use it. It just doesn't cost as much, nor look as good but it is FUN.

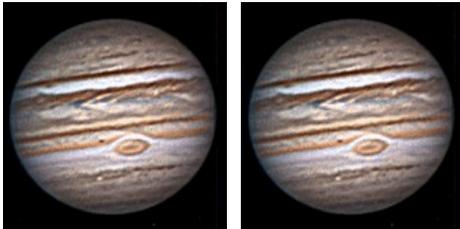


An article by Jennifer West of the Winnipeg Center in this month's RASC journal touting a here-to-for unknown processing tool (ImageJ) has led me to drag out some of my earlier attempts of planetary imaging. ImageJ is a medical imaging software tool in its own right but Jennifer has turned it into a simple powerful Astro tool. An archived web camera image was selected. This was processed in a very early version of RegiStax giving the results seen below. The image may have been a bit over processed due to inexperience.

I was and am still very pleased with the result even though it can be better.

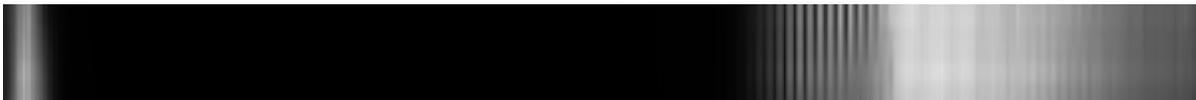
The Freebie software was down loaded and installed on the computer. Hey this is a cross platform program it will run on a Mac, Linux, Unix platform as well as a PC windows base.

The recommended plug-ins were added and a stab was taken at reprocessing the image of Jupiter taken way back. The results are to my eye very pleasing as they are very close to what I have seen since. The AVI stream was run into the program as a stack, the better slices were processed as R G B, and then aligned with the results shown.



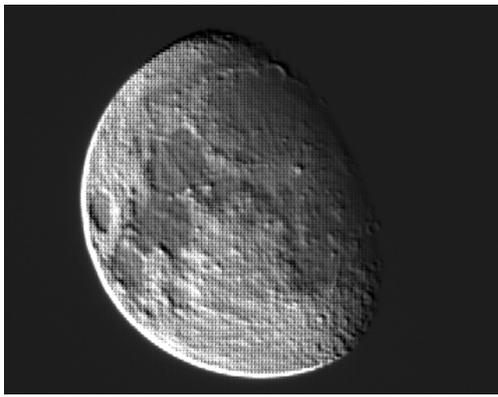
This photo is one taken of the crash of the space probe into the moon taken by my youngest son scaled down and de-speckled to remove hot pixels using some of the plug-ins available for this software. We got clouded out that night as well. It clearly demos the use of this software for normal photos.

The same ImageJ software was used on some recent spectra images with the following results.



The target star Vega is on the left-hand side, the spectrum is to the right.

The solution was very good on this image but that is another story and software package



Imaged with a DSI c camera and a 100 mm telephoto lens, ImageJ allowed me to add some shadow to the west to add more depth to this image.

This software is very easy to use. A great many times it will replace my Photo Shop 7 as my imaging editor. As a Freebie it is one of the better ones as it will replace Photo Shop, Gimp, RegiStax, MaxIm DL and of course the Envisage software that Meade supplies with their DSI/LPI cameras.

The program ImageJ does not have camera capture software currently in it but there are software writers among the amateur astronomy community. Java is not a hard script to learn.

This article I hope has tweaked an arm, a nose or something to get you out some evening and take some astrophotos, a simple star trail, or more, and share in the enthusiasm and enjoyment of doing something that is slightly out of the ordinary.

I was in several pawnshops and goodwill stores over the last weekend they had web cameras for \$6.00 that will take planetary images just fine. Add a simple adapter to put it on your telescope, and down load some free software on to your computer.

If there is interest I can be reached at (250) 967-4401

Wayne

---

#### SkyNews photo of the week , by Doug Wayland



Here is the photo I got the evening of Dec 19 at around 18:00 PST, when the shuttle and ISS were just cresting the murk to the south of us. I couldn't believe my eyes when this -7 IR flare bloomed within the fov of my camera while I was taking the photo. It really complemented the shot. The only touching up I did was darken the photo a little to cut down the excessive sky glow. Those worm track looking things on the photo came from the photo lab. Given the conditions, I couldn't be happier with the shot.



Another photo from Doug W. The moon in the Pleiades

Comet McNaught was a very pleasant surprise the second week of January. There was quite a lot of e-mail traffic, I don't have room here to include it all. I Think Allan Whitman says it best in this short article he sent me after his encounter with Comet McNaught GS

Gretchen and I succeeded with Great Comet McNaught Sunday afternoon, January 7th, after driving up to the ridge east of Penticton. There was general cloud cover, but there was a long narrow subsidence break above the ridge-line on the western side of the Okanagan Valley as is very often the case. What we couldn't see from the valley floor was that all of the mountains to the west were enshrouded in small convective clouds with snow showers which meant that we couldn't see to as low an altitude as I had hoped.

The stationary subsidence break above the shower clouds was only two to three degrees wide, but I figured that the comet had to pass down through the long ragged swath of clear sky (if it wasn't already below it, as I suspected). I started sweeping back and forth with 7x50 binoculars a few minutes after sunset and picked the comet up in binoculars at 4:45 pm, only 27 minutes after sunset. Four minutes later it was visible to the unaided eye. Its naked-eye visibility only half an hour after sunset in the brightest part of the twilight sky above the sun supports a magnitude estimate of -1 or perhaps -1.5 and that makes it very definitely The Great Comet of 2007.

The head of the comet (the coma) was intensely bright and at 7x had a brighter bar within it sloping towards the upper left (south of vertical). The vertical tail fanned slightly and was visible for 3/4 of a degree against the bright twilight sky. Gretchen and I both enjoyed our 15 minutes with the comet before it set into clouds at 5:00 pm. I should have brought a telescope and will next time.

Venus didn't descend into the subsidence break until after I found the comet. Anyways, if you spread your right hand out at arms length and put Venus at the tip of your thumb, then the comet will be at the tip of your little finger!

It will be a fun week if this comet keeps brightening as rapidly as it has.

Best,

Alan

