

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

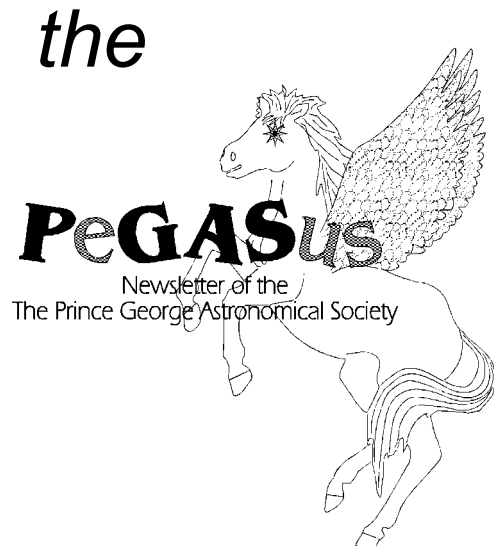
The RASC-PG meets next at 7:30 pm
Wednesday February 23
at The Observatory

Map on Page 2

February 2005

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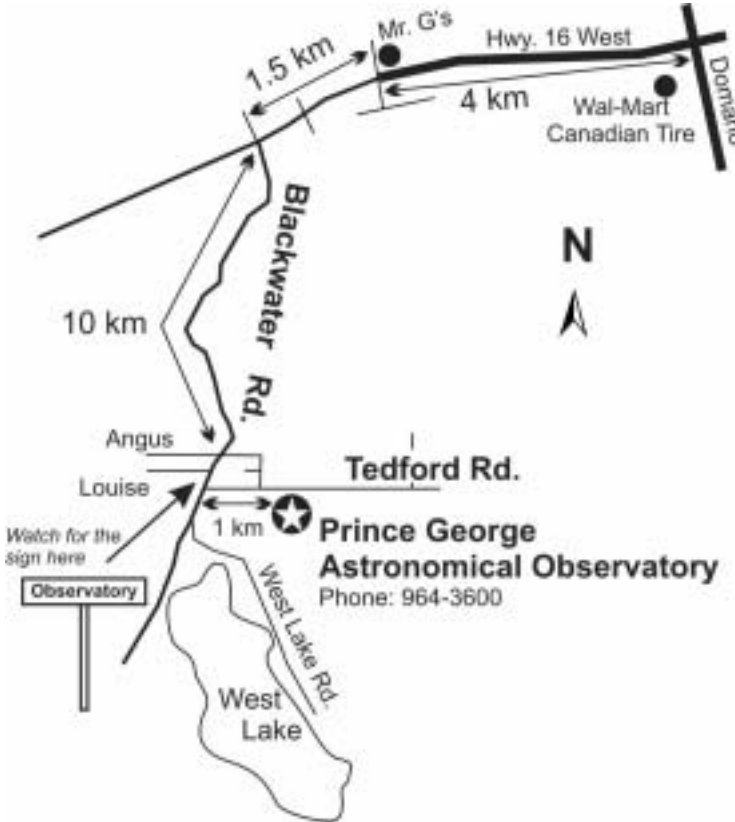
Down Under

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the PeGASus
is published monthly by the
Royal Astronomical Society Canada
Prince George Centre

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



Contributions to the newsletter are welcome.

Deadline for the next issue is

March 18 2005

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By Gil Self

I hope you won't read this as; "ah! here goes Gil again - another cheerleading editorial ". (*Epecially the Gil –again part*). But sometimes we just have to pat ourselves on the back for what we've accomplished. I also know there are many new members out there that haven't yet become really involved, this article is for them.

First; and without a doubt, the thing we are proudest of. We have an observatory **second to none** in the country! As the wide angle mods come on line, it will become even more unique. There may be larger and better equipped observatories, but we own this one and use it as we determine. Most observatories require an application for observing time. This application must have some scientific purpose and is reviewed based on it's merit and the reputation and ability of the applicant. Observing time is metered very carefully by a committee. When "your" night finally arrives, you could very well be clouded out. At the PG Centre, all you need is a key or the phone number of a key holder. I remember many evenings, just popping out to the observatory for a couple of hours. If there is someone already out—great! you've got company.

That leads me to the next pat on the back. The people we all count on to keep the equipment working properly, the building in good order and all the little details looked after. The people that fill and file the forms, calculate the balances. The members that prepare presentations, lead a class, host a tour or an open house. Folks that spend their time researching and writing articles for the newsletter, or an editor trying to improve his grammar. Do you know who keeps the water tank full? Do you know who cleaned the snow from the sidewalk or the dome? Who designed and built the gate? Who dumps the garbage? Members that plan meetings and activities , or spend hours manning a booth at the mall

Do you want to quick mount your scope on a pier, power it up, then send a control signal from the classroom and project the video from the camera on your scope onto the twenty foot screen in the classroom — we can do that. People with special skills that design and build all the extra goodies we enjoy. Try and buy some of these items of the shelf —it can't be done. Wait till you see what the flip mirror will do.

I didn't name any names here because that's one of the other things that's special about this group, I don't think anyone is doing these things for special credit. They are doing it because it needs doing, because they can afford the time or because they enjoy doing it. A lot of what you see happening is very much a group effort, a lot of planning goes into even small changes, and after the planning is done, people pick up the tools and supplies and get it done. Everyone does what they can, but I also don't think anyone feels any pressure.

We welcome everyone's involvement, if you haven't yet "jumped in" there is no shortage of things to do. Big jobs, small jobs, things you can do at home. There are always group projects — wait until you see what we are planning for the classroom!! Many members are working on ongoing projects and would welcome a hand.

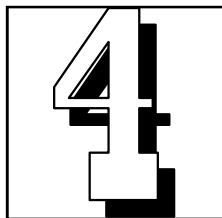
If you have some time and you want to lend a hand, just say the word.

(speak to any member of the executive)

See you at the next meeting! Come early - seating is limited :-)

Gil

Coming Events



Feb 19	NOVA workshop	7:30 pm	Observatory
Feb 23	General Meeting	7:30 pm	Observatory
Mar 2	Guide tour	6:30 pm	Observatory
Mar 5	Astronomy Booth	9:30 am	Pine Centre Mall
Mar 5	NOVA workshop	7:30 pm	Observatory
Mar 6	Astronomy Booth	12:00 noon	Pine Centre Mall
Mar 8	Bowron House Tour	7:30 pm	Observatory
Mar 9	Executive Meeting (SpeeDee, 5th & Brunswick)	7:30 pm	SpeeDee
Mar 12	Messier Marathon observing session (bring a potluck snack)	5:00 pm	Observatory
Mar 19	NOVA workshop	7:30 pm	Observatory
Mar 23	General Meeting	7:30 pm	Observatory
Mar 25	Cubs Tour	7:00 pm	Observatory

Open Houses run every Friday evening March through May

Members Nights run every Saturday evening (weather permitting) February through May

The Night Sky for March 2005

by Bob Nelson, PhD

Hi Folks,

Hi everyone! This is a busy season for me, travelling to Hawai'i at the end of February (thereby missing the monthly meeting), to New Mexico at the end of March for a meeting of the American Association of Variable Star Observers (AAVSO), and likely to Greece at the end of June for a conference on close binaries. I'll make the supreme effort to take some photos <grin>, which I hope I'll be able to share with you afterwards. In between, I hope to see you out at the observatory.

Here is what is happening in the sky next month:

MERCURY, according to the Observer's Handbook, "reaches greatest elongation east (18°) on March 12. It .. [becomes] the best evening apparition of the year for northern observers." This should be great target for all you photographers! Who can get a great photo of the planet? On that date, it will set almost 2 hours after the Sun. One hour after sunset its altitude will be only 6° , so a good western horizon and very clear skies are essential. (After that it fades quickly, reaching inferior conjunction on March 29.)

VENUS is lost in the glare of the Sun this month. It reaches superior conjunction on March 31.

MARS, in Sagittarius until March 19, when it moves into Capricorn, is a morning object, rising at mid-month about 2 hours before the Sun. It's a $5.6''$ disc of magnitude 1.0. We'll catch up to it in the fall.

JUPITER, in Virgo until 2005, is an evening object this month, rising at about 20:00 (PST) and is a $44''$ disk of magnitude -2.4. Best viewing will not occur after 22:00, when it will be more than 15° above the horizon. Stay up later or wait until next month!

SATURN, in Gemini until 2005, now is an evening object. At sunset, it is high in the south; it sets in the wee hours at 04:00, and so will be well placed for viewing. It's a $19''$ object of magnitude 5.9. Note that Saturn is not a sphere, but rather an oblate spheroid. Its equatorial diameter is $19.2''$ and its polar diameter is $15.6''$. [Consider three mutually perpendicular lines at the centre of a sphere. If you stretch the sphere along one line (the principal axis), you get a prolate spheroid (like a football). If instead you compress the sphere

through that axis, you get an oblate spheroid (like a discus). In both cases, any cut at right angles to the principal axis gives you a circle; any cut at right angle to that gives you an ellipse.] Saturn is a spheroid due to its rapid rotation – the length of a Saturnian day is only 10.5 hours! Question: Jupiter’s day (at 9.8 hours) is less than Saturn’s but it has only about ½ the flattening. Why is this so?

URANUS, in Aquarius until 2009, is lost in the glare of the Sun this month. As usual, it’s a 3.6” disk at about magnitude 5.7

NEPTUNE, in Capricornus until 2010, is a morning object this month, rising at mid-month about an hour before sunrise. As usual, it’s a 2.3” disk at about magnitude 8.0.

PLUTO, in Serpens until Sept 2006, is an early evening object this month, setting at mid-month about 2 hours after sunset. As usual, it’s a star-like object of magnitude 14.

March Equinox occurs on March 20th at 04:33, PST. Spring will make its second or third appearance then (hopefully).

CONSTELLATIONS to look for in March (at 9:00 PM, PST) are Pyxis, Puppis, Western Hydra, Cancer and Lynx.

Pyxis (“the compass on the Argo-

naut’s ship”) is visible on the extreme south at 9:30 PM on the 15th. It’s just at the edge of the Milky Way but contains little of interest (no open clusters, etc.).

Puppis (“the stern on the Argonaut’s ship”) is just to the northwest of Pyxis. Straddling the Milky Way, it contains numerous goodies including open clusters M46, M47, M93, NGC 2477 and others. M46 (at 7 deg south, and therefore visible in P.G.) is a rich open cluster, about 1/2 degree in diameter containing around 150 stars between magnitude 8 and 13 lying about 500 light years away. It also contains the planetary nebula NGC 2438 about 7' north of the cluster centre.

Hydra (“the Sea Serpent” - not to be confused with Hydrus, a small boring constellation) extends all the way up to declination +5°. The western part contains M48, another fine open cluster. It does contain the bright eclipsing binary KW Hya. This system, which has a period of 7.75 days and varies between 6.11 and 6.6 magnitudes, is one of the brightest Algols in the sky. While not a classical Algol (which is supposed to have the cooler star filling its Roche lobe), this contains two type A (hot) stars which are detached (completely separate).

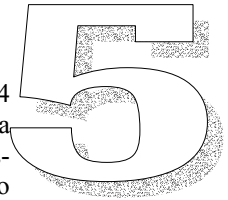
Cancer (“the Crab”) is more familiar to us northerners, lying as it does between Gemini and Leo. It contains the famous “Praesepe” or

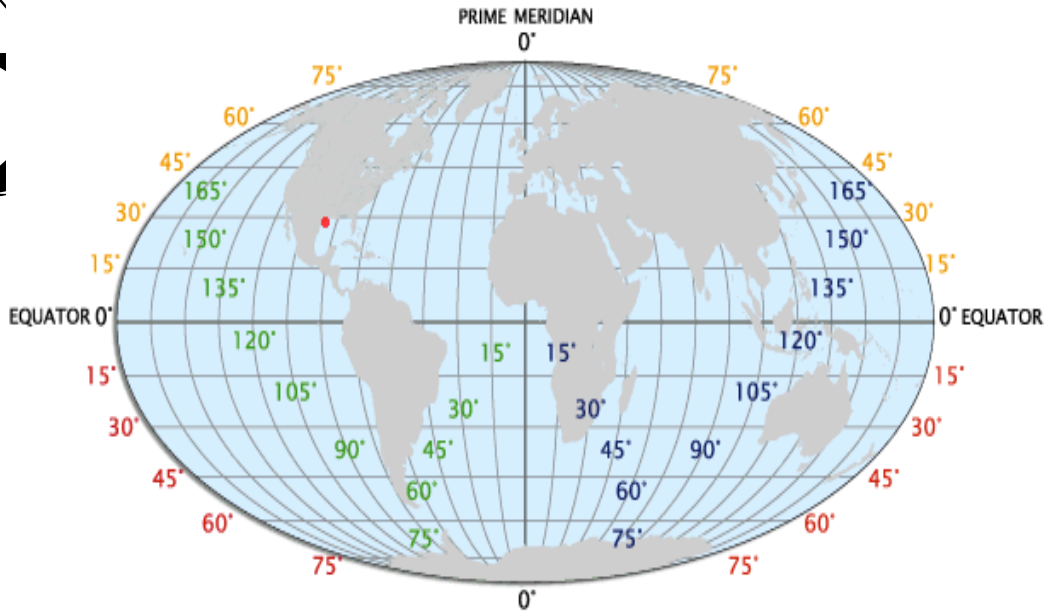
“Beehive” Cluster, M44 and M67, a rich old cluster. It also

contains RS Cancri, a RR Lyrae semi-regular variable star that is comprised of a type M6 supergiant star that pulsates in and out with a period of around 120 days.

Lynx (“the Lynx” -- gee!) lies to the north of Cancer, out of the Milky Way and contains only NGC 2419, the famous “Intergalactic Wanderer”, the most distant of the globular clusters. It was discovered in 1788 by William Herschel (and rediscovered by his son John in 1833), observed by Lord Rosse in 1861, and finally classified as a globular in 1922 when photos were taken by the 42" reflector at Lowell Observatory. The distance was determined by observing 31 RR Lyrae stars in the cluster; it’s some 182,000 light years (55,800 pc) from us (and 210,000 light years = 64,400 pc) from the galactic centre. This distance is comparable to that of the Magellanic Clouds and suggests that this cluster indeed is intergalactic.

Clear skies,
-Bob





Coordinates Systems

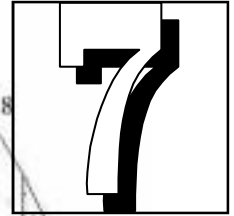
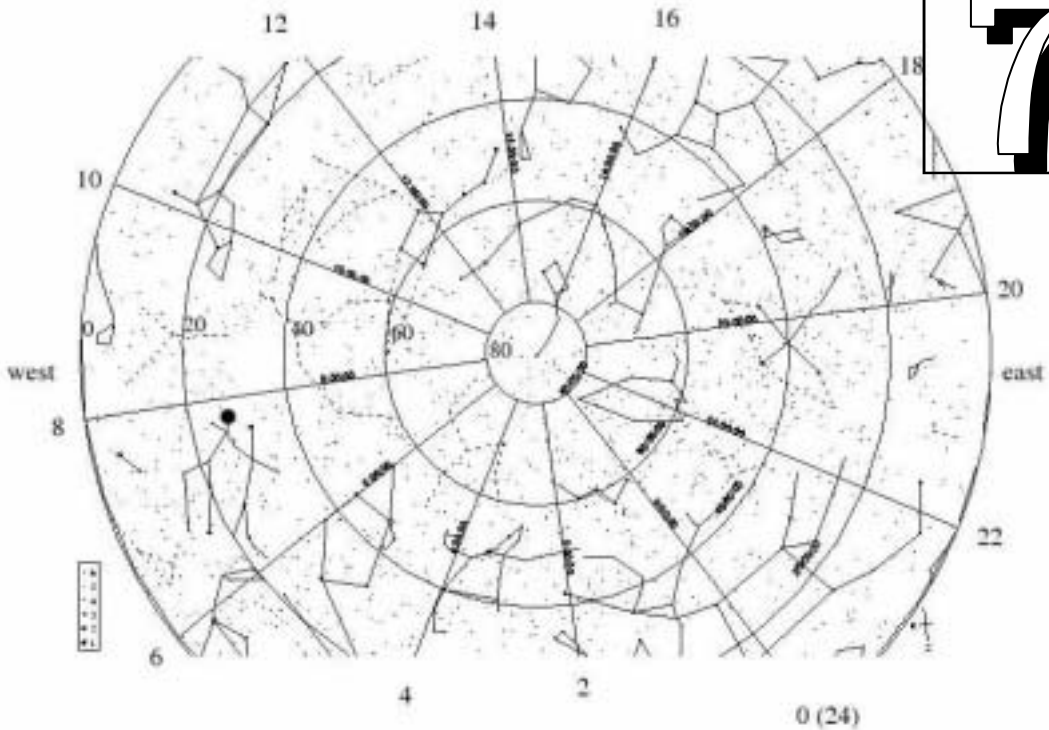
Part 2

Last month we learned about measuring the positions of stars by their altitude and azimuth. This is generally referred to as the alt-azimuth coordinate system. If you had a chance to observe some stars during the course of a night during this cloudy month you may have noticed that both the azimuth and the altitude of the stars change as the night wears on. The alt-azimuth coordinate system uses the Earth's horizon as a reference. But each observer, at a different latitude and longitude, has a different horizon. It is difficult for an astronomer in Roswell, New Mexico to share observations with another in Prince George, British Columbia.

Last month I asked you to brush up on your knowledge of latitude and longitude. Following is a diagram of the Earth with lines of latitude and longitude superimposed.

Each place on the Earth is specified by its latitude (north south) and longitude (east west). Notice the red dot in the picture. This is Houston, Texas. The yellow number 30 represents 30 degrees latitude (north). The green number corresponds to about 90 degrees longitude west of the prime meridian near London. That coordinate (30, 90) is pinned onto Houston. So, anyone, anytime, can find Houston by going to that coordinate.

In just the same manner astronomers have created a latitude and longitude system for the stars. But astronomers have given them different names. Declination corresponds to the concept of latitude. Right Ascension corresponds to the concept of longitude. Lets look at a star chart.



Polaris (north star) is in the center. The numbers going around the circle are right ascension (like longitude). Unlike longitude, which is measured in degrees, right ascension is measured in hours in a clockwise direction. It makes sense. Think of the sky as a big clock face with 24 hours instead of 12 hours. Now, the numbers that you see on the left, starting at 0 and moving inward toward to center, that is, 0, 20, 40, 60, 80, represent declination (like latitude). Polaris has a declination of 90 degrees.

In a similar fashion to the Earth's latitude and longitude system, this coordinate system is pasted to the sky. The big star (I drew it larger than it actually is), toward the left edge of the picture, is called Castor. It is part of the constellation Gemini, the twins (see the twin stick figures?). Very roughly speaking Castor is at right ascension 8 hours, and declination 30 N (N for north) degrees. So, (8,30) specifies where Castor is in the sky. That number is tacked onto the star. Even as the stars move through the sky during the course of the night their right ascension and declination numbers move with them. It's no different than roulette. The wheel spins and the numbers move with the wheel.

We now have a coordinate system that is fixed to the stars. Each star has its own address (coordinate). Next month we will see about connecting the rotating Earth with this right ascension – declination system. This is because our ultimate goal is to point a telescope. So give some thought to how you would make this work.

Robin Riordan

WEDDING BELLS

On the evening of January 22 Sterling proposed to Shar at the observatory. I am happy to say she said "yes!" Robin and I meet Sterling at the observatory at about 6:45 pm. I added a picture of Sterling and Shar along with the caption "Shar... will you marry me?" to the end of Gils' PowerPoint presentation. Sterling hid in the back room and waited for Shar and their friends to arrive. Sterling's story to get Shar out to the observatory without suspicion was that there was to be a public presentation at 7:00 pm. He then told her he would be a bit late due to work and he would meet her and their friends out there. When they came in Robin and I pretended like they had got the wrong night for the presentation (to explain way no one was there but us) but, we got them to stay and we would show them a presentation anyway. We played Gil's presentation, which they enjoyed, and then, after the Hubble Deep Field shot faded from the screen their picture popped up. She was totally surprised and Sterling came out of the backroom with the ring and proposed. It was all very romantic. Robin and I were happy to be a part of it. We wish Shar and Sterling all the best. ~ Brian Battersby



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New Observers to Visual Astronomy

NOVA Course



First Class :-)



Orbiting the "Sun" (round & round we go!)



Counterweight under construction !!



FIRST NOVA MEETING

On Saturday January 21, 2005 the club held the first meeting of the New Observers to Visual Astronomy workshop. The meeting lasted about 3 hours. The topic of this first meeting was "Observing". I gave a bit of a talk, showed my astronomy bag and had the class "observe" an image of M45 off the internet on the data projector. The event was deemed a success and I received several positive feedback emails the next day. Of the 18 people registered for the class 11 are new members! By the time the five month course is complete we will have a group of keen, knowledgeable amateur astronomers on our hands!

PS - We have now completed the second lesson and everyone really seems to be learning a lot. Four more people have signed up as well. The third lesson is scheduled for this Saturday (Feb 19, 2005)

Brian Battersby

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My Astronomy Experiences Down Under

by Doug Wayland

When my wife Shaun and I a hobby of mine and that I used Southern Cross, but soon were planning to go to it to view the night sky. One realized it was the false cross Australia, I debated taking my inspector, as if to check my which precedes the real one by ETX 90 and Celestron 15x70 explanation, asked how far I a few degrees. An hour or two binoculars along. At first I was could see and what could I see later I could see the real only going to take the binocs, with it. Another said "that's Southern Cross lower in the but in the end decided to take some optical tube you have southern sky. With the moon the ETX as well, a decision I'm there" and wanted me to open gone and the interior lights of glad I made. I used it it up. He swabbed it for the plane dimmed my eyes extensively for showing views chemical residue and asked became well dark adapted and of the moon and sun as well as what I used it for. I told him and I could easily see the Eta photographing both. It also he said, "is Mars really the red Carinae nebula situated 1/2 gave me some terrific views of planet?" Needless to say it way between the Southern some southern sky objects made going through the Cross and false cross. What a from the dark outback. Out security check-ins more sight it was. I couldn't really ID there the pristine dark skies interesting. It was really no much else out there, but I made up a lot for the small trouble to carry on as it fit well enjoyed the view. After a few aperture. We left PG November into all the overhead storage fitful naps I noticed the SE sky 21, 2004 and arrived back bins. starting to get red as dawn home January 23, 2005. approached. I could see

The longest leg of our flights monster clouds, probably the I packed the binoculars into my was from LA to Sydney which tops of thunderstorms, towering checked luggage and I took the was 14 hours, on board a 747, even higher than we were flying ETX as carry on in the small mostly at night. I couldn't sleep which was about 38,000 feet. back pack that I always have it much at all. I spent a lot of The sight was spectacular so I in. At all the airport securities time looking out the window at decided to try and capture it on we went through, the back pack the stars. At first the moon was film. The light was still very low was closely scrutinized, some up, washing out the sky, but so I pressed the camera to the inspectors let it go without after what seemed forever, as window to steady it so I could opening it, others wanted to we were following the moon take about a 1/8 second see what was inside. I had to making it stay up longer, it set. exposure. The result was better explain that it was a telescope By this time we were south of than I expected, see the photo and they would ask what I used the equator. Once when I attached. (top of page 11) it for. I said that astronomy was looked out I thought I saw the



We stayed at a friends place in Yass, about 50 kms N of Canberra. The second night there I set up my ETX and showed our hosts views of the nearly full moon, which wasn't very spectacular, but it seemed weird to me as it was "upside down" compared with our views from the northern hemisphere. Of course the constellations, that were common to both our skies, were upside down too. Orion was the most obvious with the sword pointing up. That is because, there you stand facing north to look at it, and here you stand facing south to look at it. In Australia they don't look at Orion and see the "belt and sword", rather they see the "saucepan". That night I also introduced our hosts to Iridium flares, seeing one as predicted on the Heavens Above web site. Other people were visiting one night, but had to go home before a bright IR flare prediction so I told them where to look once they got home. The next day they excitedly told

me they had seen it and were very amazed.

One day while driving around Canberra with our friends we decided to visit Mt. Stromlo, the observatory that was burned out during the terrible fires in Jan 2003. We were too late in the day and the gate was closed, we never got back. Mt. Stromlo had just reopened to the public in Oct 2004, after a long clean up and rebuilding process. Two of the large old classic telescopes that were destroyed have been left just as they are, in their burned out domes and are viewable to the public as monuments. There are new telescopes operating there now, mainly for public viewing I think. Mt. Stromlo is very close to the city of Canberra and was being adversely affected by the lights, so they decided rather than build large telescopes for research there, they would work remotely with other better located observatories. Mt.

Stromlo observatory is situated on a hill that used to be covered in a pine forest, which contributed to its demise. Now the hill is bare except for a couple patches of snags that they left behind when they cleared the majority of the burned trees off.

In late November after the moon was gone from the evening sky, I saw the large and small Magellanic Clouds for the first time while sitting in the back yard of our friends' house. Where they live, it's a small enough town that the light pollution isn't too bad. The Magellanic Clouds are small satellite galaxies of the Milky Way situated a couple hundred thousand light years away. To the naked eyes they were like puffs of detached Milky Way, a few degrees wide and about 20 degrees apart. Under dark skies they are very obvious and at first you might actually think they are small clouds in the sky.

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Viewing the small Magellanic Cloud in my binoculars I immediately

saw a fairly large circular glow tight on the west side. Referring to a star chart I realized I was seeing 47 Tucanae, a large globular cluster. This globular is much bigger and brighter than M13 which we are used to looking at. I vowed to check this one out in a scope later. In the Large Magellanic Cloud I could see the Tarantula nebula with my binocs as a large bright part of the cloud. The Southern Cross was scraping the southern horizon so it was not a good view at this time of the year in the evening. I did get a good view of the Eta Carinae nebula which was rising in the SE and I saw the southern Pleiades nearby that. I must say, the southern Pleiades, though a pretty open cluster, do not hold a candle to the Pleiades.

My friend George who never bothered to really look at the night sky before was becoming very interested and said he would like to be able to look up

and know what he was looking at. By the time we left their house I think he was becoming a sky enthusiast.

On December 1 we had a booking for an overnight stay at the Magellan Observatory about an hours drive away, but unfortunately the skies clouded over and we had to cancel, I was very disappointed.

December 9th, while scanning the Heavens Above web site, I noticed that mag 5.6 comet Machholz should be visible high overhead in Eridanus, south of Orion. I went out and after a short search found it with my binoculars. Over the next month I followed it each night that I was out as it moved toward the north. After about Jan 12 it got too low in the sky for Australia, now that I am back home it is high overhead again. I have had the unique opportunity to follow this comet for a long time as it progressed out of the southern skies and into the northern skies.

On Dec 10 we left Yass in a rental car, headed for a looping tour through the outback and to Adelaide. On the way we

stopped at Parks and visited the radio telescope there. It is a huge dish shaped antenna that is 64 meters in diameter. Besides observing galaxies etc. in deep space, it is used for receiving data from interplanetary probes, such as the spacecraft that have recently visited Halley's Comet, Neptune, Uranus and Jupiter. It was also used in receiving the first televised pictures from the moon in 1969 and was used in the rescue of the Apollo 13 astronauts.

One of the best places we visited was a town called Broken Hill, in the outback of Australia. It had a very dry desert climate and the sky was always clear, at least when we were there. It is an historic mining town with lots of things to see by day and great skies at night. There is a great restaurant situated above the town on a hill that is the old mine site. On Dec 13 we had dinner there and watched a spectacular desert sunset with an extremely thin crescent moon highlighting the sky. See the photos. (below)

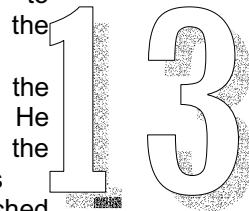


After dinner Shaun and I took the car and drove NW out into the desert to try and see some Geminid meteors. We just parked in a pullout beside the paved highway. There was very little traffic, maybe a car about every half hour or so and when one did go by we just closed our eyes to view, when I was startled by the sight of a kangaroo bounding across the road through my headlight beams. I remembered what the locals had said about the animals coming out at dusk and being a menace on the road. I was a lot more wary after that. About 20 kms out I turned off on a little dirt road and went about ½ km and stopped. As the very pleasant glow in the west faded into night I thought about the possibility of snakes or something out on this warm night. I soon forgot about that though as I got engrossed in the sky. The wind was less this night so I was able to use the ETX a lot more. The skies were so transparent I was able to detect M33 with averted vision and it was a large glow in the binos. Comet Machholz was again visible naked eye. M42 was stunning in the ETX with lots of nebulosity surrounding the trapezium. It is such a pleasure to observe these "winter objects" in the warmth of an Australian summer. This night I had a look at globular 47 Tuc in the ETX, what a view. It was stunning at 35x and even more so at 70x, partially resolving with a dense bright core. Eta Carinae was a big patchy bright nebula that filled

the low power field of view. The Tarantula nebula was another beautiful sight. I was even able to find and view the galaxy NGC 253 and globular NGC 288 in Sculptor from the southern hemisphere sky article in the Dec 04 Sky and Telescope magazine. I stood back from the scope and identified the dim southern constellations Phoenix, Hydrus, Tucana and Octans. I could see the mag 5.5 star, Sigma Octantis that is close to the south celestial pole. I could see a glowing patch with my naked eye in the Carina region that in the ETX turned out to be a fantastic large dense open cluster known as NGC 2516. It was probably around 23:30 when I headed back to town, what a night. This evening alone made it worth while carting the ETX all the way to Australia.

The next day it was on to Adelaide. In the evening I even managed to go out to a park across the street from our hotel and do some twilight viewing of a crescent moon with my binoculars. The crescent moon hung high in the western sky. Just after sunset I noticed two high flying jets heading our way from the west. They were a few minutes apart. The first one appeared to be heading right for the crescent moon. I looked in the binos and saw it just miss the moon, neat. The second one was going to do the same or even cross directly through the moon. There was a young man nearby flying a model airplane so I asked him if he

wanted to view the plane crossing the moon. He took the binoculars and watched



as the plane cut through the moon. He said wow and that he had never seen that before. What made it cooler was the fact that the plane was still in orange sunlight even though we were in dusk.

The following afternoon we caught a Virgin Blue flight to Perth and went to Shaun's brothers' place. We stayed almost 5 weeks and toured Western Australia from there. The next few evenings were prime moon viewing so I introduced Shaun's family to telescopic viewing of the sky. Their backyard was just big enough and sheltered enough from glaring light that I could view the sky was so clear and dark; the stars were shining like diamonds.

The winter Milky Way was a definite band of haze rising high into the eastern sky. I noticed a glow rising up from the west-southwest horizon and at first thought it was light pollution from some city way off somewhere, but realized that there was nothing out there but desert. Then it dawned on me I was seeing the Zodiacal light for the first time. Just as I had read, it was a large triangular glow centered on the ecliptic with the wide base of the triangle on the

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horizon and the point of the triangle reaching half way up the sky. I couldn't believe how vivid it was, I had in mind that it would be a lot less obvious. Later into the night it disappeared. While we were watching for meteors I set my 35mm camera on a small tri-pod and aimed near the south celestial pole. With the lens set at wide angle (35mm) and wide open (f 3.5), I locked the shutter open for 30 minutes. I succeeded in capturing a wire fence with a background of stars trailing around the pole. The lack of a bright star near the axis identifies this as the South Pole. See photo.



I did set up my ETX in alt, az mode on the trunk of the car, but the warm desert wind kept it shaking quite a bit so I mostly scanned with my binoculars. With my naked eyes I was able to see comet Machholz west of Lepus, it had moved a fair amount north since I last saw it. I did see two spectacular meteors that I thought were Geminids and a couple sporadics as well. Shaun, who doesn't normally spend a lot of time looking at the sky, spent quite awhile looking this night before retiring to the car to read her book, using my red light for illumination. I spent a bit more time scanning the sky and at about 2300 we headed back to town.

The next night, Dec 14, Shaun stayed behind in the motel and I headed back out into the desert at dusk, ready for another good night of observing. On the way out I was thinking about what to view, when I was startled by the sight of a kangaroo bounding across the road through my headlight beams. I remembered what the locals had said about the animals coming out at dusk and being a menace on the road. I was a lot more wary after that. About 20 kms out I turned off on a little dirt road and went about ½ km and stopped. As the very pleasant glow in the west faded into night I thought about the possibility of snakes or something out on this warm night. I soon forgot about that though as I got engrossed in the sky. The wind was less this night so I was able to use the ETX a lot more. The skies were so transparent I was able to detect M33 with averted vision and it was a large glow in the binos. Comet Machholz was again visible naked eye. M42 was stunning in the ETX with lots of nebulosity surrounding the trapezium. It is such a pleasure to observe these "winter objects" in the warmth of an Australian summer.

This night I had a look at globular 47 Tuc in the ETX, what a view. It was stunning at 35x and even more so at 70x, partially resolving with a dense bright core. Eta Carinae was a big patchy bright nebula that filled the low power field of view. The Tarantula nebula was another beautiful sight. I was even able to find and view the galaxy NGC 253 and globular NGC 288 in Sculptor from the southern hemisphere sky article in the Dec 04 Sky and Telescope magazine. I stood back from the scope and identified the dim southern constellations Phoenix, Hydrus, Tucana and Octans. I could see the mag 5.5 star, Sigma Octantis that is close to the south celestial pole. I could see a glowing patch with my naked eye in the Carina region that in the ETX turned out to be a fantastic large dense open cluster known as NGC 2516. It was probably around 23:30 when I headed back to town, what a night. This evening alone made it worth while carting the ETX all the way to Australia.

The next day it was on to Adelaide. In the evening I even managed to go out to a park across the street from our hotel and do some twilight viewing of a crescent moon with my binoculars. The crescent moon hung high in the western sky. Just after sunset I noticed two high flying jets heading our way from the west. They were a few minutes apart. The first one appeared to be heading right for the crescent moon. I looked in the binos and saw it just miss the moon, neat. The second one was going to do the same or even cross directly through the moon. There was a young man nearby flying a model airplane so I asked him if he wanted to view the plane crossing the moon. He took the binoculars and watched as the plane cut through the moon. He said wow and that he had never seen that before. What made it cooler was the fact that the plane was still in orange sunlight even though we were in dusk.

The following afternoon we caught a Virgin Blue flight to Perth and went to Shaun's brothers' place. We stayed almost 5 weeks and toured Western Australia from there. The next few evenings were prime moon viewing so I introduced Shaun's family to telescopic viewing of the sky. Their backyard was just big enough and sheltered enough from glaring light that I could view the moon and whatever objects were high in the overhead to northern and north western sky. That was OK, as each night the moon was a little further north or lower in the sky. The east and south were blocked. Most of the family wasn't too interested, but their 78 year old grandmother next door was very interested. She seemed to show up every time I set up the ETX. For 78 she was very sharp and had no trouble looking through the eyepiece and could identify a lot of features on the moon according to the lunar atlas I had. She said she had never looked through a telescope before and commented that before I left she would be an astronomer. I thought that was kind of neat. I also showed them some Iridium flares, which are always a hit. I find it satisfying to show people things they have never seen before or bring to their attention things they never even knew about.

Each evening I tracked comet Machholz as it moved north, on the west side of Orion, towards the Pleiades. It was easily visible with the binos despite the brightening moon and the sky glow from Perth. From the city, even though I couldn't see the Magellanic Clouds, I could easily see Tuc 47 in the binoculars.

(Doug spent several weeks in Australia , you have just read the first of a two part Astronomical diary Doug has written for those of us who have only ever seen Orion right side up— more next month — Gil)