Night Sky

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AURORA !

Ray Johnston

Auroras occur near the magnetic poles, commonly at the equinoxes. They can be seen high overhead near the magnetic poles. From further away they illuminate the horizon with a green or occasionally a faint red glow. Aurorae often display magnetic field lines as curtain-like structures, and may change within seconds or glow unchanging for hours, most often in fluorescent green. Aurorae are caused by the collision of energetic charged particles with atoms at the edge of the atmosphere.

Astronomy tours are nothing new. They have operating for years, but have been to special events .... eclipses, transits and the like. That doyen of the airwaves, Prof Fred Watson AM, in partnership with Marnie Ogg of Thrive Travel, has hit on something new. Fred's tours are to places of astronomical interest and are so structured that they cater for the astronomer in the family as well as the not so enthusiastic partner. There are plenty of astronomical sites, telescopes and the like for the astronomer as well as sightseeing and shopping for the partner. These tours are gathering something of a cult following with many having done two or more trips. Libby and I have just returned from the latest offering ... Fire in the Sky .. a journey through the depths of an Arctic winter in Scandinavia and Iceland. What on earth were we doing way above the Arctic Circle freezing our butts off? Chasing "The Tricky Lady" ... the Northern Lights.

The tour commenced at the top of Norway where we stayed in a fairy tale lodge fronting a dramatic fjord and here the Sun rose a full one degree above the horizon to light the sky for about four hours. Then, the Lights performed for us ... six nights in a row! Absolute magic, particularly on one evening where they danced and flickered, covering the whole sky and sending our cameras into meltdown. We then travelled into central Sweden on the most beautiful train journey where the scenery was dramatic and unrolled like an almost never ending Christmas card. The temperature at Kiruna was a balmy -27C as we visited the Esrange Space Centre from which many satellites are controlled. We were allowed into the Control Room to see an orbit being refined to an incredible 1/10th of a second. Then a highlight.... dog sledding. We charged through the forest in the dead of night behind ten of the most enthusiastic dogs you could ever imagine.

The Esrange Space Center is a rocket range and research centre, located 200 km north of the Arctic Circle near Kiruna in northern Sweden. It is a base for scientific research with high altitude balloons, investigation of the aurora borealis, sounding rocket launches, and satellite tracking.

The very atmosphere flashed as the light from the handler's headlight was reflected in a million points of light. Now, that was an experience never to be forgotten. On to Stockholm where we visited the Kvistaberg Observatory which contains a sister telescope to the UK Schmidt that Fred operates at Siding Spring. It was pleasing to visit the Nobel Museum and see a display recognising our own Brian Schmitt for his Nobel Prize for Science. Other visits were made to the Viking Museum and the Vasa ... a 16th century man o war which sailed for exactly 20 minutes before it capsized and sank.

A marvellous experience was the visit to the island of Hven where the great Tycho Brahe had his observatories .. underground.. because the island was so windy. The observatories have been rebuilt and a fine museum houses some of his instruments. Something new to most of us was the island ferry crashing its way through the sea ice as we made our way to and from the island.

Copenhagen was our next stop where we relaxed with a city tour and a look around before we flew to Iceland.

Our arrival in Iceland was memorable! It was raining and a screaming wind blowing. Because of the wind, we could not access the airbridges to leave the plane and we sat on the tarmac for three hours before we were able to taxi into the terminal. In true Aussie style, we drank the plane dry ... all complimentary, of course.

How to describe Iceland ... dramatic ... wet ... rugged ... wet ... volcanic ... wet. It rained for most of our tour, but that didn't dampen our spirits. Iceland has certainly capitalised on the eruption of the volcano that stopped the world in 2010, Eyjafjallajokull. Guess what? We can even pronounce it now! Every shop has something relating to the volcano and that is fair enough when you see the enormous damage that was caused. We worried about a few days of aircraft disruption, but a huge part of Iceland's farmland was wiped out by the flood caused by the melting of the glacier under which the volcano erupted. All of this was explained by our special guest, Prof Nick Pettiford, a volcanologist who accompanied us during this part of the tour. We clawed our way across lava flows and up glaciers in Superjeeps which are custom built FWDs with enormous tyres and then relaxed in the geothermally heated Blue Lagoon. We visited geysers blowing huge clouds of steam and water high into the air, but the most dramatic scene was the rift where two tectonic plates are moving apart literally tearing Iceland into two parts.. one headed towards America and the other towards Europe.

An extraordinary experience complemented by the most professional organisation and, yes... the most delicious food. If you want a tour that is enriching, enlightening and a barrel of fun, try Tours at fredwatson.com.au

Ray Johnston

IN THIS ISSUE

3 Column

Lots of things starting to happen now that the nights are getting a bit longer. See Page 4 for a few interesting events. I'd recommend Earth Night for starters. The more lights get turned off at night the better we see the stars. Encourage it. Participate. Sneak over to the neighbour's place and unscrew that 'security' light that floods your backyard with useless light at unearthly hours. While you're at it, do **you** have a security light that irritates ?

* * *

I remember once meeting Sir Patrick Moore at Sydney Observatory. I was quite taken aback by his ability to talk non-stop for an hour without appearing to draw breath. His subject matter was the Moon and he recited lists of features he'd observed in much the same way a train-spotter will recite engine numbers. A very strange man. Therefore you shouldn't be surprised if I've reprinted an article by Canadian amateur astronomer Alister Ling who takes a shot at the Caldwell Catalog (or Catalogue, if you prefer the French spelling).

* * *

We will be changing the format of the Night Sky later in the year when it has changed from being a printed A3 format to an internet and/or pdf format. It will probably revert to an A4 format... but will include colour... yes folks, we'll be hitting the 21st century with all cylinders firing! Any suggestions as to what you'd like to see included in the format and line-up will be received with appreciation and will be acknowledged. Send me your suggestions. mike@bintel.com.au or you could even write me a letter c/- The Binocular and Telescope Shop in Sydney.

* * *

Astronomy clubs/groups/societies/ are all subject to the vagaries of membership increases and decreases... just like any other interest groups. They're also subject to good governance and bad governance... just like countries around the world. Why should they be any different? Same sorts of people. If you're not happy with the way your country is being run... change the government. Or go somewhere else and create a new country and run it the way you think it should be done..

AN INTERESTING VIEW OF THE CALDWELL CATALOG

Alister Ling plays devil's advocate . . . or is that just 'devil'?

The Caldwell Catalog. A Good Idea Gone Bad - Besides, Several Good Ideas Already Exist. ***by Alister Ling (first published 1995, revised 2012 for the Night Sky)***

It cannot be argued that there is a need and a place for deep-sky references to go beyond the Messier list. The Caldwell Catalog however, should definitively not be one of those references, for reasons stated farther below.

Newcomers to the deep-sky who have seen a majority of M-objects typically fall into one of two classes: 1) Where do I go for more? I just need a list. 2) I need help in going deeper; can you show me? I answer with my favourite references (not an exhaustive list, just the ones I have seen and liked):

- The Finest NGC Objects. 110 objects, chosen by Alan Dyer, are published in a small section in the fantastic annual observing reference Royal Astronomical Society of Canada's "Observer's Handbook". The selection is for observers at mid-northern latitudes, available at http://rasc.ca/observing/finest-ngc-observing-certificate. There are a couple of paragraphs of observing hints that accompany the list.
- A 600 strong all-sky list of brightest deep-sky objects including doubles and interesting variables compiled by Brian Skiff, is an integral part of Wil Tirion's Bright Star Atlas.
- The Herschel 400 is a post-Messier handbook promoted by the Astronomical League, honouring the greatest deep-sky observer, William Herschel, who discovered some 2,500 galaxies, nebulae, and clusters! These are the top 400.
- Star-Hopping for Backyard Astronomers, by Alan MacRobert. (Sky Publishing). This is a collection of absolutely outstanding observing articles, the benchmark to which I compare any other observing reference for the newcomer. One cannot say enough good things about MacRobert's starhops. Some experienced observers may point out that the starhops don't go really really deep, but I'd say these observers have forgotten to check out the interesting flora between the roses and the lichen!

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Why Patrick Moore's "Beyond Messier: The Caldwell Catalog" is a bad idea.

Although it is very laudable of Moore to encourage amateurs to look past the Messiers into the greater - and occasionally more interesting - depths of the night sky, his method is quite inappropriate. If it was simply "Moore's Favourites" or "Moore's Top 100", then fine. What really bugged me was a combination of numerous sloppy errors in the data table and a perception of presumptuousness and apparent self-aggrandisement on Moore's part - I hope that was unintentional.

My disbelief and distaste grew as I continued to read Moore's article. "Caldwell 11, the Bubble Nebula..." Who is ever going to remember the Bubble Nebula as a new number? Who needs to? "The Hyades...appears here as C41." Sure, it's a great idea to popularize some lesser-known objects, but did Roger Tory Peterson rename birds in his Field Guides? "The Bald Eagle here appears as Peterson 42..." What would people think of you if you tried that? Where's the promotion here, the objects or him? "Moore, like Messier, begins with`M.' Fortunately, my surname is actually hyphenated - Caldwell-Moore. So let us use C for my catalog."

Moore took most of the already popular non-Messier NGC objects, like the North American, the Eskimo, the Cocoon, the Rosette, the Veil, and re-christened them with C-numbers. Excuse me, he said "lesser known"! They've got names, man! Even Hubble's Variable Nebula has been renamed! 31 objects on that list have familiar names. 25 other objects have well-known NGC numbers, like 891, 2419, 4565 or IC entries like 342. You don't see Houston, MacRobert, Webb, or Smyth objects in magazines. William Herschel did not re-catalog the Messier list when he published his lists of deep-sky objects, out of respect.

Moore is a veteran amateur astronomer and a dynamic television personality, yet I was left to wonder how much deep-sky experience he really has. He lists IC 405, the Flaming Star Nebula, as "bright", and at 6th magnitude! Obviously it looks interesting in pictures but he either hasn't seen it or made a double typo with the magnitude and with the associated word.

I'm surprised that Moore (and the editors at Sky & Telescope) perpetuated an historical myth by stating "Yet there are many other objects of equal or greater interest...that Messier did not include, perhaps because there was little chance of confusing them with his beloved comets."

Alister Ling with David Levy, comet discoverer.

The Messier catalogue is not a could-be-confused-with-a-comet" list, although non-comets were the driving force behind Messier's compilation. The proper (translated) title is "Catalogue of Nebulae and Star Clusters." Without exception, all open star clusters were resolved and correctly identified as such by Messier. Granted many objects listed by Moore are more interesting than Messier's, but they are definitely not as bright. All the northern objects in the C-list (except for the Hyades) are too faint for Messier to have found with his little telescope.

Moore claims to present interesting objects that are "neglected" because they are not on the Messier list. Southern hemisphere observers must be shaking their heads in disbelief since magnificent objects like Eta Carinae and Omega Centauri on "his" list make any Messier object pale by comparison. The Coal Sack, neglected? Even non-astronomers have heard of it! All southern objects in Moore's list would have been easy targets for Messier - alas he did not observe the southern skies at the time. 13 of the 32 (below France's horizon) are visible to the naked eye. I'm at a complete loss in understanding the logic of including the Hyades but not the Magellanic Clouds. The Large Cloud alone contains more interesting stuff than all of Cygnus but packed into an area the size of the Scutum starcloud! Maybe it makes more sense if the list is not for the locals in the colonies but for those wishing to visit.

The Caldwell Catalog as originally published contained numerous errors, since corrected, but I mention a few here that an observer with one year of experience would have caught: the very bright Eta Carinae Nebula was given a magnitude of 6.2, while the Tarantula Nebula was listed at first magnitude! The size column, labeled arcminutes (') at the top, actually contained a hodgepodge of object sizes in degrees, arcminutes, or arcseconds. Many of the planetary nebulae have (unexplained in the text) a secondary size on that list, the one measured on long exposure photographs, invisible even to large scope visual observers. I was disappointed at this shoddiness given the quality and accessibility of measurements in machine-readable databases in the mid-1990s.

The goal of getting observers to look past the Messiers is a good one, but my reception, and perception, of Moore's approach left me reminiscing of a Douglas Adams line from Zaphod Beeblebrox in "A Hitchhiker's Guide to the Universe" : "He's so unhip it's a wonder his buns don't fall off." Thankfully C-numbers will be difficult to memorize - let us bury them deep where the stars do not shine, and promote the already excellent deep-sky references noted at the top of this article.

Alister Ling

Sir Patrick Alfred Caldwell-Moore, CBE, FRS, FRAS

SUNNY CORNER with Harry Roberts

MEN WHO STARE AT SPECTRA . . . .

Incredible Vanishing Spectrum! Harry Roberts

When the Baader Spectroscope was new, about twenty years ago, I viewed the spectrum of Eta Carinae, but nothing was seen apart from the continuous spectrum. Follow-up views confirmed the disappointing lack of spectral detail in this most active star.

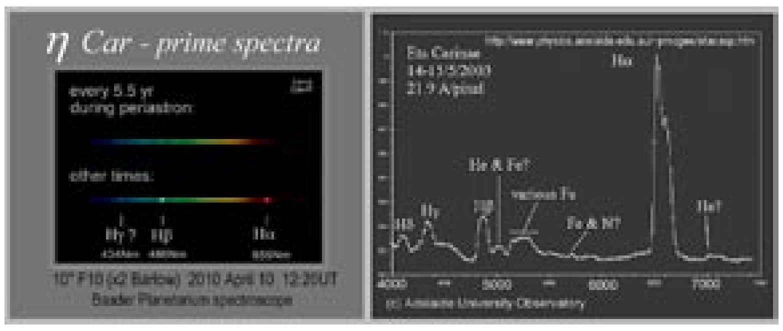
Surprisingly however, in 2010, a view with the ten-inch 'Dob' clearly showed a bright emission line, H-beta of the Balmer Series! Detail was now seen, but what had changed?

When later viewed as a prime spectrum , both blue H-beta and red H-alpha were seen as bright emission points, with possibly violet H-gamma also. This was a big surprise – and was attributed (wrongly, it seems) to the steady brightening of Eta Car over decades.

More recently however, in a 2004 Oct "S&T" article by Robert Naeye I read:

"The binary idea received a boost in 1996, when Augusto Camineli pointed out that Eta Carinae's optical spectrum changes every 5.5 years, when emission lines from highly excited atoms disappear for several months" (my emphasis).

This led Camineli to suggest an extreme UV binary companion that excites surrounding gas to emit in the optical band, but which, on approaching the primary's stronger stellar winds, is suppressed by them – and the emissions temporarily cease.



This "idea was bolstered in late 1997 and early 1998, when previous spectral changes recurred on cue" (P44).

The next "vanishing" was due in 2003 when the emission lines again faded in July, to reappear some months later. Yet they were still clear in an Adelaide Observatory plot just two months earlier (Fig, rhs). This, and other data including X-rays "proved consistent with a binary model".

Presumably in late 2008 to early 2009 the lines again vanished. Yet they were strong in 2010 April in the ten inch Dobson, when I was amazed to first see them. It now seems my earlier negative observations were (by chance) made at times when the emission lines had vanished.

"Even though the spectral and x-ray events recur with regularity, no two cycles are exactly the same"(P45). And others in the field found the shape of the strong H-alpha line was much changed since 1997 and that Eta Carinae had brightened threefold since that time. This was in 2003, and the star has brightened further over the last 8 years, it's currently at 4.5mg. This brightening is attributed to the rapid clearing of dust shells around the stars – for unknown reasons.

It's noteworthy that the prime spectrum of star Eta (Fig, lhs) shows the emission points are no bigger than the Airy disc of the star (~1 second of arc). That is, they are not due to the large "Homunculus" nebula, but to a small dust shell around the binary pair. A one arc second shell 7000Ly away would be at most 10 light days or ~2000AU diameter, but probably much smaller. The very eccentric orbit of companion Eta Car B is, Camineli suggests, ~ 50 AU in diameter (ibid). The twin spheres of dust called the Homunculus are each ~1⁄4Ly diameter, or 16,000AU. The source of the bright spectral lines is at most one eighth the size – and may be the equatorial disc between the two spheres, or a part of it.

That the emission lines can vanish implies they are products of the disc (i.e. a nebula) and not of either star. The lack of OIII lines however shows the nebula may be low in "metals", unlike say the Orion Nebula.

Eta Car is likely the most interesting star in the sky, and the spectroscope shows unique details of processes inside its strange dusty nebula. It is now almost three years since the last event – will the lines again vanish in two years time?

We must wait and see. Around mid-2014 the emission bands in Eta Carinae's spectrum will, most likely, disappear again as the companion nears the primary. Between times the star will be monitored as it brightens - and I hope to watch the "incredible vanishing spectrum" as it actually happens - and that will be a truly amazing thing!

Harry Roberts
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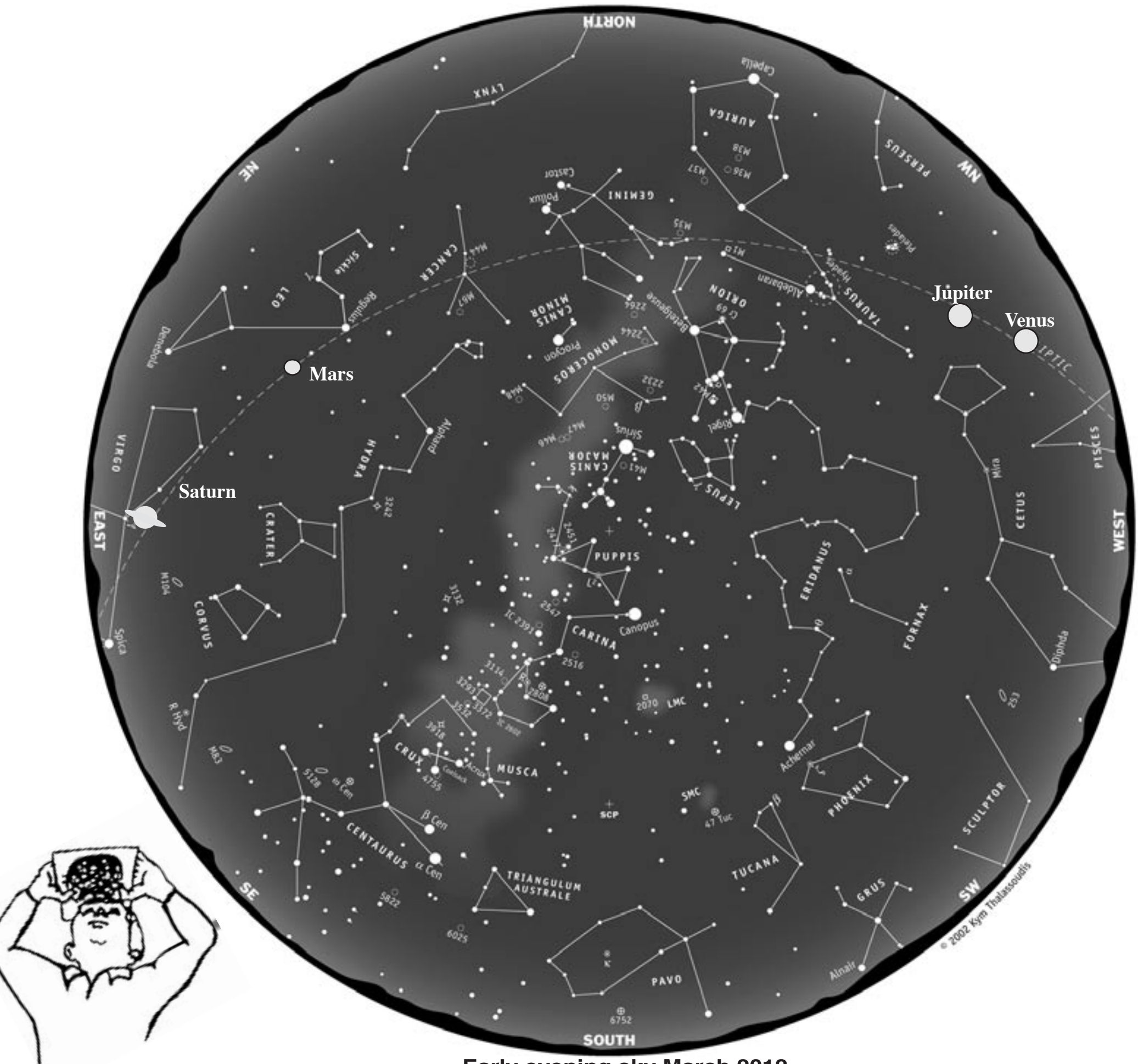

Early evening sky March 2012

The Moon

Surveyor 6 touched down on the Moon in November 1967. The spacecraft took a series of pictures and soil samples. Then, on November 17, controllers ordered the spacecraft's engines to fire, lifting Surveyor 6 almost three metres and setting it down a few metres away. The spacecraft then took pictures of the former landing site, checking for evidence of a crater caused by the rocket's exhaust. No crater was found, indicating that the Moon's surface was solid.

1st	First Quarter
8th	Full Moon
10th	Perigee
15th	Last Quarter
23rd	New Moon
31st	First Quarter.

The Solar System

Mercury: Is low in the western evening sky then moves between the Earth and the Sun late in the month disappearing in the Sun's glare.

Venus: Well worth watching as Venus and Jupiter perform a slow dance in the evening sky. Jupiter moves south-westerly and passes Venus

Mars rises about 6pm in Leo and will be reasonable after 8pm. At Opposition on the 4th. Not a great view this year but snowcaps should be seen.

Jupiter is in Aries, low in the western sky early in the evening. Sets in the west at about 9pm. Get yer last good views!

Saturn rises in the East in Virgo about 8pm. Good viewing by 10pm as its rings are tilted to a decent angle relative to our point of view. Better viewing than Mars... it has rings!

Uranus: Is in conjunction at the moment and won't be available till next month.

Neptune: Is in Aquarius and puts in an appearance in the pre-dawn sky if you're interested. A squidgey greenish spot is all you'll see.

Pluto: Cheese on toast! Got it badly wrong last month! The Mexican whupped the Cane Toad, who hopefully will retire to the real world to earn squillions as an investment banker/adviser. Hang on, that's not the real world either, is it?

Comets etc...

Meteor showers are a bit thin on the ground, so to speak... for March. Best bet is to look for the gamma-normids around mid month. Best bet is to look about halfway between the Southern Cross and the horizon around midnight. Slightly to the left of that position will be Norma. Get warm, be comfortable and waith for medium-fast flashes of light coming from the area. A good one every ten or fifteen minutes will be the reward.

Ah, for the Perseids in August, and the Geminids in December, meteors every minute or so. The big daddy of them all wuold be the Leonids! But they don't come till November... and they only perform well every thirty three years -or thereabouts. But when they do, the Leonids are king. Up to hundreds per minute have been recorded. Meanwhile, keep happy with the gamma-Normas.

Deep Sky

The Sombrero Galaxy (Messier 104) is a spiral galaxy in the constellation Virgo located 28 million light years from Earth. It has a bright nucleus, an unusually large central bulge, and a prominent dust lane in the middle of its disk. The dark dust lane and the bulge give this galaxy the appearance of a sombrero through amateur telescopes. Have a butcher's hook, it's a little way above Saturn!

ASTRO societies

Macarthur Astronomical Society Inc: NSW
☎ 0402 479 776 Trevor Rhoades www.macastro.org.au
Sutherland Astronomical Society Inc: NSW
☎ (02)9832 4082 Brett McMillan.www.sasi.net.au
Northern Sydney Astronomical Society Inc:
☎ Bob Fuller 0423 971374 www.nsas.org.au
Sydney City Skywatchers (BAA) (NSW)
☎ 9398 9705 www.sydneycityskywatchers.asn.au
The Astronomical Society of NSW.
☎ 0428 965 249 John O'Brien www.asnsw.com
The Western Sydney Amateur Astro Group Inc
☎ Gerry Aarts 0416 292 020 www.wsaag.org.au
www4.tpgi.com.au/users/wsaag
Sydney Northwest Astronomical Society
☎ (02) 9634 1736 Ken Petersen
The Hawkesbury Astronomical Association:
☎ (02) 4572 1568 Adrian Saw .
The Wollongong Astronomy Club. NSW
☎ (02) 4261 9369 Paul Brown
The Illawarra Astronomical Society: NSW
☎ (02) 4276 3199 Peter McKinnon
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☎ 0419 253 252 Peter Skilton for details.
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www.sas.org.au
Astronomical Association of Queensland, Qld
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South East Queensland Astronomical Society,
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Ingham Amateur Astronomers Club
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Bundaberg Astronomical Soc. Qld
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Astronomical Society of South Australia, SA
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Astronomical Society of Alice Springs N.T.
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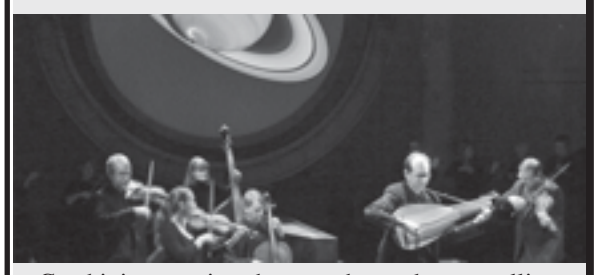
Darwin Astronomy Group NT
☎ (0420 238 663 Matt Barton
www.darwinastronomy.com
Gove Amateur Astronomers, NT
☎ 0417 601 490 Ian Maclean for information.
Astronomical Society of Western Australia, WA
http://www.aswa.info
☎ (08) 9364 9603
Astronomical Society of The South-West, W.A.
☎ (08) 9721 1586 Phil Smith.

Tafelmusik - The Galileo Project
Sydney, 5 March 2012 – 10 March



Combining music, photography and story-telling the Galileo Project brings to life the brilliant minds of the early astronomers and the music that inspired them; Bach, Handel, Monteverdi and Vivaldi.
In Sydney:Mon 5 Mar, 7:00pm Sat 10 Mar, 2:00pm
City Recital Hall, 2 Angel Place, Sydney
See website for other cities and times.
www.musicaviva.com.au

BENDIGO MOVIE NIGHT

"Say hello to my little telescope"

Bendigo District Astronomical Society Inc.
"Globe at Night" & 'The City Dark' Movie Night
Wednesday 7 March 7:30pm
Discovery Science & Technology Centre. 7 Railway Place, Bendigo. (next to Bendigo Marketplace).
As a lead up to the BDAS Star Hunt night, the award winning documentary 'The City Dark' will be screened at Discovery. The City Dark is a feature documentary about light pollution and the disappearing night sky. It premiered in competition at the 2011 South by Southwest Film Festival, where it won the Jury Prize for Best Score/ Music. More details ..... Peter Mead, 0407 631 971.

Held each year at 8:30pm on the last Saturday in March, Earth Hour is a WWF initiative which symbolises the collective power of individuals, businesses and governments to reduce our environmental impact on this one and only planet we call home.
From it's beginnings in one city -Sydney- in one country - Australia - Earth Hour has grown to millions of people in over 5000 cities across 135 countries, a truly global community committed to creating a more sustainable planet. Hundreds of millions of people switching off their lights for one hour, on the same night, all around the world to signal their care for the amazing planet we call home.

Here in Australia in 2011, icons in every corner of the country switched off for the hour, from the Australian War Memorial to Parliament House to Perth Concert Hall to the Sydney Opera House and Harbour Bridge. Almost 2,000 businesses, 334 schools and colleges, 154 councils, all 130 government departments (and 4 Arctic stations!) also joined the celebration of the planet.So where did it all begin?
In 2007, WWF-Australia inspired Sydney-siders to show their support for action on climate change in the first ever Earth Hour event. It showed that everyone, from children to CEOs and politicians, has the power to change the world they live in.
More than 2 million individuals and 2,000 businesses in Sydney took part in this first year. Many Sydney icons also switched off for the hour including the Harbour Bridge, the Sydney Opera House sails and the Luna Park face. The Coca-Cola sign at Kings Cross was switched off intentionally for the first time since the 1970s.

HEADS UP FOR STAR PARTIES!

Star Parties! Where amateur astronomers get to meet old friends, look at the skies, learn, listen to talks and see the latest equipment in use. Here's a few for 2012.
South Pacific Star Party (Wiruna) 19-22 April
National Australian Convention of Amateur Astronomers (Brisbane) 19-22 April
Central West Astrofest (Parkes) 14-15 July
Queensland Astrofest (Duckadang) 10-19 August
Border Stargaze (Albury Wodonga) 15-19 August
Vic South Desert Spring Star Party 12-14 October.
All are listed on the 'net!

Cairns Solar Eclipse

SASI Solar Eclipse Cairns Exploration Tour

11 November – 18 November 2012

Sutherland Astronomical Society has teamed up with CBT Holidays to offer a fully arranged tour to Cairns in time to watch the Total Solar Eclipse in November. Previous SASI tours have been sell-outs. Contact Sophia or Jimmy at CBT Holidays 02 9262 1555 or info@cbtholidays.com.au

Astronomical Association Queensland

NACAA XXV BRISBANE

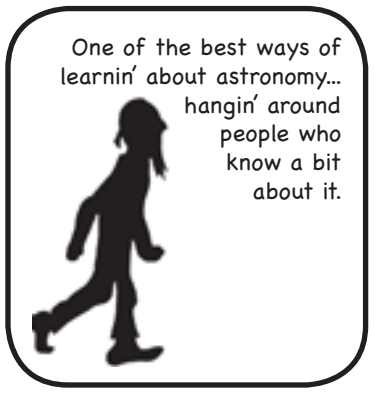
The National Australian Convention of Amateur Astronomers has been held around Australia since 1967, and has become a significant national forum at which amateur astronomers can exchange experiences, stay abreast of the latest trends, foster co-operative activities between individuals, societies and the professional sphere, and network amongst their peers throughout Australia and beyond.
Registrations close on March 23.
www.nacaa.org.au.

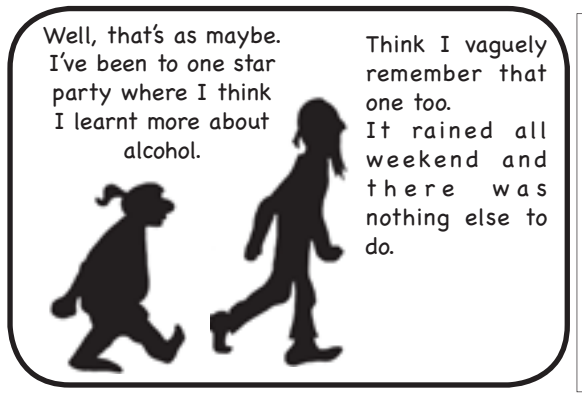
Nervo Shatterini February Quiz

His Eminence Professor Dr Nervo Shatterini, Director Emeritus of the Spangles Home for Retired Mesdames De La Nuit asks you to cast an appreciative eye over his latest offering du jour.
(1) Which constellation would the Spanish call Balanza?
(2) What does the Global Oscillation Network Group study?
(3) What's another couple of names for the Kappa Crucis Cluster?
(4) Which are the brightest trio of globular clusters?
(5) Which constellation is at solar conjunction in March?
(6) What would you find in Gould's belt?
(7) What's the lion's head in Leo often called?
(8) What lies between Mare Humorum and Mare Imbrium?
(9) What's another name for Asterion and Chara?
(10) In which constellation would you find the star called Ak?
(11) Who was called the Father of Southern Astronomy?
(12) Who was wine waiter to the Greek gods?
(13) Which constellation is squeezed between Cygnus and Andromeda?
(14) Who threw his wife's crown into the sky, creating Corona Borealis?
(15) How many stars are called Zuben Hakrabi?
(16) Where is the Herschel Space Observatory?
(17) Charles' Oak (Rubur Carolinum) made timbers for which ship?
(18) The Greeks are broke now but who was their charioteer king in mythology?
(19) Which Aussie band had a huge hit with 'Bombora' in '63?
(20) What's interesting about Kapteyn's Star?
Reckon you know the answers? Okay then, see if you got any right....

(1) Libra.
(2) The Sun's pulsations.
(3) The Jewel Box or NGC 4755
(4) Omega Centauri, 47 Tuc and M13 in Hercules.
(5) Tucana.
(6) a) Gould's trousers or b) hot young Type O and B stars.
(7) The sickle.
(8) Oceanus Procellarum.
(9) Canes Venatici.
(10) Ursa Major.
(11) Nicholas Louis de Lacaille.
(12) Aquarius (Ganymede) .
(13) Lacerta the lizard.
(14) Bacchus, the drunken sot..
(15) Two. One in Scorpius and one in Libra.
(16) In space obviously. (at the the second Lagrange point of the Sun-Earth system)
(17) Argo Navis, of course.
(18) Auriga.
(19) The Atlantics.
(20) Its proper motion of 8.7 seconds of arc per year.

Mick 'n Don





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