Cover images from the Symposium on Wide View Astrophotography
by John Cleverdon

SCORPIUS

THE JOURNAL OF THE
MORNINGTON PENINSULA ASTRONOMICAL SOCIETY INC.

Volume XXIV, No 6 (November / December)

The Mornington Peninsula Astronomical Society (formerly the Astronomical Society of Frankston) was founded in 1969 with the aim of fostering the study and understanding of Astronomy by amateurs and promoting the hobby of amateurs Astronomy to the general community at all levels.

The Society holds a focused general meeting each month for the exchange of ideas and information. Regular public and private observing nights are arranges to observe currently available celestial objects and phenomena. In addition, the society encourages the service of its members for education presentations and observing nights for schools and community groups.

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SCORPIUS The journal of the Mornington Peninsula Astronomical Society

Newsletter Disclaimer

Society News

By Greg Walton

Eastbourne Primary in Rosebud on 2nd September - Peter Lowe walked them through the solar system (and answered UFO questions) by hand-held microphone while it drizzled outside, then they looked through Peter Skilton's telescope inside the hall to learn about magnification and image inversion, before preparing to camp the night in the hall. Apparently this was an annual "space camp" event. Despite not being able to see the sky, they seemed to enjoy it. Thanks to Greg Walton and Fiona Murray for attending with telescopes and waiting until the end, just in case. The evening finished early prior to 8pm. Regards, *Peter Skilton*

September public night - We had a bumper crowd at The Briars last night with 97 inside, plus members outside, and it included not only the public but also a small group of about twenty 2nd Mornington Scouts. We really seem to be on the Scout organisers' radar this year across the entire Peninsula, and I guess that means quite a few Astronomy Badges are being achieved. Quite a number had found out about us from the Guinness Record attempt and had come along to collect their reserved commemorative telescope, then decided to join in the public evening events. On that subject, we're yet to hear whether the across-Australia record was officially broken, so we're keeping fingers crossed. Unfortunately it was 99% clouded all evening, so no telescope viewing was possible, and even a very light drizzle occurred towards the end. A Moon talk was given inside by Peter Lowe, and helping outside were Chris and Peter Skilton, Fiona Murray, John and Marj Cleverdon, David Stock, Simon Hamm, Robert Dahni, Greg Walton, Ash Cameron, Jason Heath and a few other members who might have overlooked signing the log book inside. If I missed you, and I know I must have, please don't feel shy to post back here. Despite being clouded, the group appeared to enjoy the evening immensely. Regards, *Peter Skilton*

Symposium on "Wide View Astrophotography" - As I sit in my chair typing this thread it is hard to realise the Camera Club Session is finally over. We started planning this event three months ago and since then I have nothing but help and support from both the Committee and membership from the club. This was a big event and required commitment and a large number of volunteers to make it work. I am proud to say I was impressed with the professionalism, organisation and the willingness of the members who did so. The hard work started from organising the four clubs, presenters and the flow of the day and most importantly the actual preparation of the club rooms and site. I would personally and on the behalf of the Committee. Thank Greg Walton for his efforts on a excellent presentation and preparation of the clubs room and gardening. Pia Pedersen on her OUTSTANDING purchasing, organising and catering efforts, not to mention the awesome Salads. Leanne Rolfe Head Chef who drives a wicked BBQ and had James Pole and I working hard!. David Rolfe on an impressive presentation, moral officer and furniture mover. Steve (I will wing it) Mohr preparation and Plate serving skills Simon Hamm did a wonderful job as a all rounder happy to do anything. Phil Holt who helped with the registration, preparation and again another all rounder. Helmuth who had setup many telescopes and generated quite a bit of interest among the attendees. James Pole who provided, catered and cooked the BBQ, not to mention his excellent presentation and general willingness to do anything to help. Rowan who was another all rounder, club event photographer. John Cleverdon another club photographer. Peter Lowe who provided a great example of presidential leadership and gave us a regal touch to the day in general. Fiona Murray with her video recording the day and presentations. Lastly I would like to thank the members would turned out and supported the day both financially (because this was a fee for entry event) and by numbers. Finally to everyone who helped out on the field and created a excellent rapport with the member of the camera clubs. I think, Peter was saying we have generated some new members to the clubs as well. It was a huge day for everyone and again the event could not have been such an success without your help. If I have forgotten anyone I apologies. Regards *Paul Albers*

By John Cleverdon

Sorry I've been a bit slow at this but we must recognise the great effort by Paul Albers and his Team, in particular Pia's efforts providing a meal for more than 100 people and Leanne for juggling double BBQ's simultaneously. This was an event of VASTROC proportions and everything went on-time and to plan. The sky even cleared on time (thanks to some high tech cloud-clearing procedures - or was that Paul doing an anti-rain dance on the observing field) I haven't seen so many people, tripods and cameras at the Briars in ages. I received numerous congratulations from the attendees. Well Done to All. Cheers *Peter Lowe*

See time Lapse of the event - https://vimeo.com/138609891

http://youtu.be/oKX0CTUnSGc

September Society Meeting - 20 members were in attendance. Peter Lowe (President) chaired the meeting. Our guest speaker, Geoff Sharp talked on how the outer planets affect the suns cycles, you can learn more at his website, Geoff Sharp http://www.landscheidt.info/ Then Greg Walton did "sky for the month", showed time lapse & images from the Symposium on Wide View Astrophotography & Comet Catalina. Members chatted over coffee.

September members BBQ - 20 members in attended. Thank you to Peter Lowe (President) for buying in all the food and thanks Jamie Pole for help with the cooking. Also thanks to the members for setting up the food and the cleaning up afterwards. The sky was clear with only a 4 day old crescent Moon. Most got to see comet Catalina 2013 through the 18 inch Dobsonian (Sky Drover).

October public night - Saw 15 members and about 80 public in attendance, Peter Lowe (President) did the talk in the shed, while member set up there telescopes under a clear Moon less sky, everyone got to see Saturn & the usual deep sky objects, also many seen Uranus & Neptune.

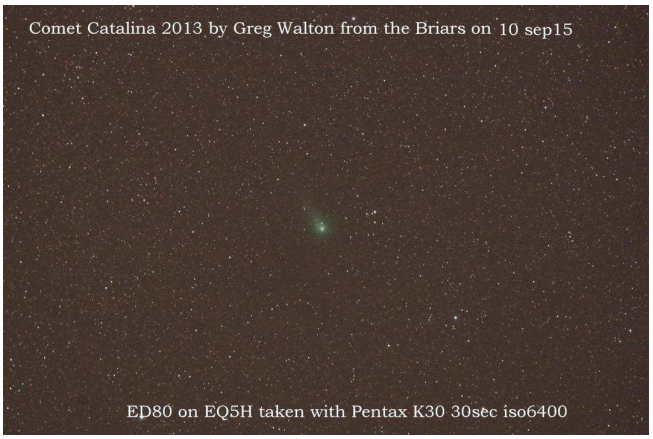
October Society Meeting - 28 members were in attendance. Peter Lowe (President) chaired the meeting. Our guest speaker Dr Daniel Price, a senior lecturer at the Monash Centre for Astrophysics, discuss how the whole topic of planet formation is currently being revolutionised by new observations from the Atacama Large Millimetre/submillimetre Array (ALMA) telescope in Chile. Daniel said, almost all the models & theories about planet formation are now wrong & new models need to be created. Then members chatted over coffee.

Viewing Night for Flinders Community College in Carrum Downs went ahead as planned, with 73 year 7 pupils and teachers present. Peter Lowe gave the solar system talk inside, while outside in the weather with telescopes were Mark Stephens, Colin Armour, Sky Murphy, Fiona Murray and Peter Skilton. Although almost 100% clouded all evening, a gap did emerge after the talk, enabling the Moon to be seen by most of the students. The others saw terrestrial objects in the distance, such as the dimples on distant street light globes, and the buildings of Melbourne in the distance. Regards, *Peter Skilton*

October Members BBQ - 25 members in attended. Thank you to Peter Lowe (President) for buying in all the food and thanks Jamie Pole for help with the cooking. Also thanks to the members for setting up the food and the cleaning up afterwards. Many telescope were set up under a mostly clear sky with a 3/4 illuminated Moon, because of the warm night many member stayed till late.

Photo Left from October Public night by John Cleverdon.

Catalina 2013 video https://youtu.be/88TLlqrojxI



New Members Welcome

Megan Ryan

Farhad Billimoria

A word from the Scorpius editing team.

Members please write a story about your astronomy experiences and add some pictures.

Send them to:
Greg Walton
gwmpas@gmail.com

Brett Bajada
Peter Lowe
Bruce Renowden

PUBLIC NIGHT THANK-YOU

Recent public viewing nights and school viewing nights have continue to be very well received by the attendees. It is no coincidence that this is due to the efforts put in by the members that help out at these events. To everyone that has helped out over the past months, a very big thank-you goes to you all. Your efforts are very much appreciated, and are being very well received.

2015 SUBSCRIPTIONS DUE

The ticking over of the New Year also means that society fees are now due to be paid. The society has worked hard to ensure that 2015 fees are still the same as last years prices.
So to assist the society in maintaining the facilities and service we provide, we appreciate your prompt payment for the 2015-year ahead.
As a reminder, the following structure of the fees are:

SOCIETY FEES

$50 – Full Member
$45 – Pensioner Member
$65 – Family Membership
$60 – Family Pensioner Membership

Subscriptions can be paid in a number of ways:

- **Direct Cash payments to a committee member**
- **Send a cheque or mail order to the society mail box MPAS. P O Box 596, Frankston 3199**
- **Make a direct electronic payment into the society working bank account.**

The account details are BSB 033-272 Account 162207. Remember to add your name and details to the transfer so we can identify the payment in the bank records.
If you have any concerns please talk to a committee member.

Under the new government regulations, a list of financial member is required for insurance purposes, so please make certain your membership renewals are on time.

MPAS Guinness World Record attempt round up,

Hi everyone, I was informed today by Dr. Brad Tucker of ANU that we now officially hold the title for the Most People Stargazing across Multiple Sites in a country. Congratulations on achieving the world record at The Briars on Friday 21st August, 2015. It took a long time to receive official endorsement, but it was achieved eventually. After disqualifications, and sites that were clouded/rained out, we ended up with 7,960 observers across 37 sites. The previous record holder was Mexico with 3,006 observers over 33 sites. So the record was smashed by Australia. For interested attendees that night, we should soon be informed about how to get hold of a participation certificate from Guinness, if you so wish, probably from their website. Regards, *Peter Skilton* (MPAS - Secretary)

To Go or Not To Go???? Mad Lunar Raving, a telltale sign, *by Sky Aug-2015*

"*This is insane. Completely insane*", I thought aloud as I drove during that bleak cloudy night, following a bleak total-cloud day, with a dashboard indicator alerting me to a problem. "*Why oh why am I doing this!*" The cloud-cloaked dark destination was the Briars Astronomy Centre, for the dubious national-event of some world record attempt at the highest number of people observing the moon through telescopes or binoculars.

Completely objecting to such aims, I however like to support people who get up and do something they believe goes towards a worthwhile end, knowing full well what that's like. Other people also said they really didn't want to come but had said they would so kept their word – I like that too. The best help would be to silently and efficiently do whatever was requested; so my eyes were glued earnestly observing the faintly-bright patch in the clouds. The car horn blared. And Hey Presto the moon craters were superbly sharply in focus.

Sweet ten minutes of feeling over the moon being *with* the moon, plus some to give a margin for the video just in case someone's atomic clock time didn't tally with the video time stamp. Not tired of such a beautiful sight anyway. I looked up and saw Scorpius at a totally weird aspect again after having adjusted to the +37 lat. viewpoint -and now back and looking the wrong way crossing roads. The sky was unexpectedly disorientating and the bright moonlight earlier on, however lovely, didn't help either. But all those constellations sans the moon! And all those features the 5 kg volumes of text only briefly outlined. Thought I gotta go to a dark sky site on clear dark sky nights. Actually… I gotta move house -who says astronomy can get expensive. My mind's eyes turned yet again to some decommissioned lighthouses…. and that silo on the Briars.

When considering whether to go or not to go, to contribute to an MPAS event, see what can happen.

"*This is glorious. Completely glorious*", I thought as I drove home during that lovely clear night. "*Why oh why wouldn't anyone do this*.

Hi All, We are about to order the ASTRONOMY 2016 books.
Members can pre-order their copies at $23 each (The RP is $28)
We are only ordering a few this year because we seem to always end up with an over stock.
Those members wanting to purchase their copy please email back your needs.
You need to be quick to get them for the Annual General Meeting in November.
Cheers, *Peter Lowe* aggro@hotkey.net.au

Under the Society regulations the Annual Society Meeting elections are to be held in November.

If you feel you would like to get involved in the society business or have a particular skill you think would be useful to the society as a whole pleases give some thought to becoming a Office Bearer or committee member.

The Annual General Meeting will be held on Wednesday, 18th of November 2015. In this edition of Scorpius there is a 'Committee Election Form' that can be used for the submission of nominations for the next committee. This can be posted to MPAS. PO Box 596, Frankston 3199. Alternatively nominations can also be submitted electronically to welcome@mpas.asn.au by stating which position on the committee you would like to nominate for.

Mornington Peninsula Astronomical Society Inc.
ANNUAL SOCIETY MEETING ELECTIONS

Nominee: _____
Proposer: _____
Seconder: _____
} Must be current financial members

Position: (tick 1 or more*)
Office Bearers: ☐ President ☐ Vice President ☐ Treasurer ☐ Secretary
Ordinaries: ☐ Ordinary Committee Member (5 of these)

Acceptance Signature of Nominee: _____

Submit 1 day prior to the Annual General Meeting. *Post to M.P.A.S., PO Box 596, Frankston, VIC. 3199.*

** Note : (1) That one person cannot nominate for multiple Office Bearer positions. (2) The committee is responsible for the development and operation of the society according to the MPAS Constitution.To support this, all committee members are expected to take responsibility for some aspect of society business*

MPAS - Buy, swap & sell

For Sale Saxon ED80 refractor. I have used this telescope for both observation and imaging. This telescope package comes with the Orion X0.85 focal reducer and field flattener, 2" quartz diagonal, tube rings and the matching dovetail bar, a bahtinov focusing mask and Aluminium case. This package is in excellent condition I am asking for $800

Please call me if you're interested - Best Regards Paul 0418574370

CALENDAR November / 2015

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	**Cup Day** 3 **Last Quarter** **Mars & Venus 0.7 degrees apart**	4	5	**VicSouth** 6 **Public Night 8pm**	**VicSouth** 7 **Jupiter left of the Moon**
VicSouth 8 **Venus left of the Moon**	**VicSouth** 9	10	11 ASV Meeting	12 **New Moon**	13 **Saturn left of the Moon**	14
15	16	17	18 **Annual Society Meeting 8pm**	19 **First Quarter**	20	21 **Members Night BBQ 6pm**
22	23 **Uranus 0.9 Deg's N of the Moon 5am**	24	25 Committee Meeting 8pm	26 **Full Moon**	27	28
29	30 **Venus below Spica**					

Monthly Events & High Lights. ***VicSouth 2015 from Friday November 6th to Monday November 9th***
Public nights 6th, 8pm start - **Society Meeting** at 8pm on 18th @ the Peninsula School
Members Night BBQ 6pm @ the Briars 21st
Evening - Saturn left of the Moon on the 13th
Dawn - Mars & Venus 0.7 apart 3rd, Jupiter left of the Moon 7th, Venus left of the Moon 8th, Venus below Spica 30th

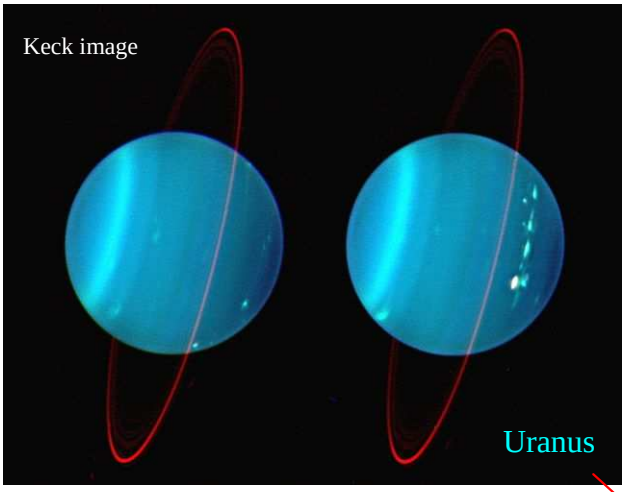
CALENDAR December / 2015

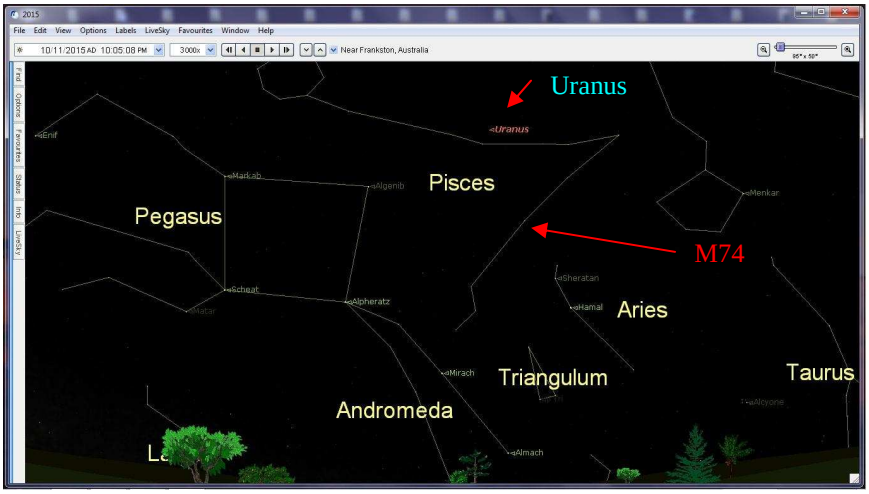
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3 **Last Quarter**	4 **Public Night 8pm**	5 **Jupiter left of the Moon**
6 **Mars right of the Moon**	7	8 **Venus above the Moon**	9 ASV Meeting	10	11 **New Moon**	12 **Members Night Xmas BBQ 6pm**
13 **Mercury left of the Moon**	14	15	16	17	18	19 **First Quarter**
20 **Uranus 0.5 deg's below the Moon**	**21**	**22** **Solstice**	**23** **Mars 3 deg's below Spica**	**24**	**25** **Full Moon**	**26**
27	**28**	**29**	**30**	**31**		

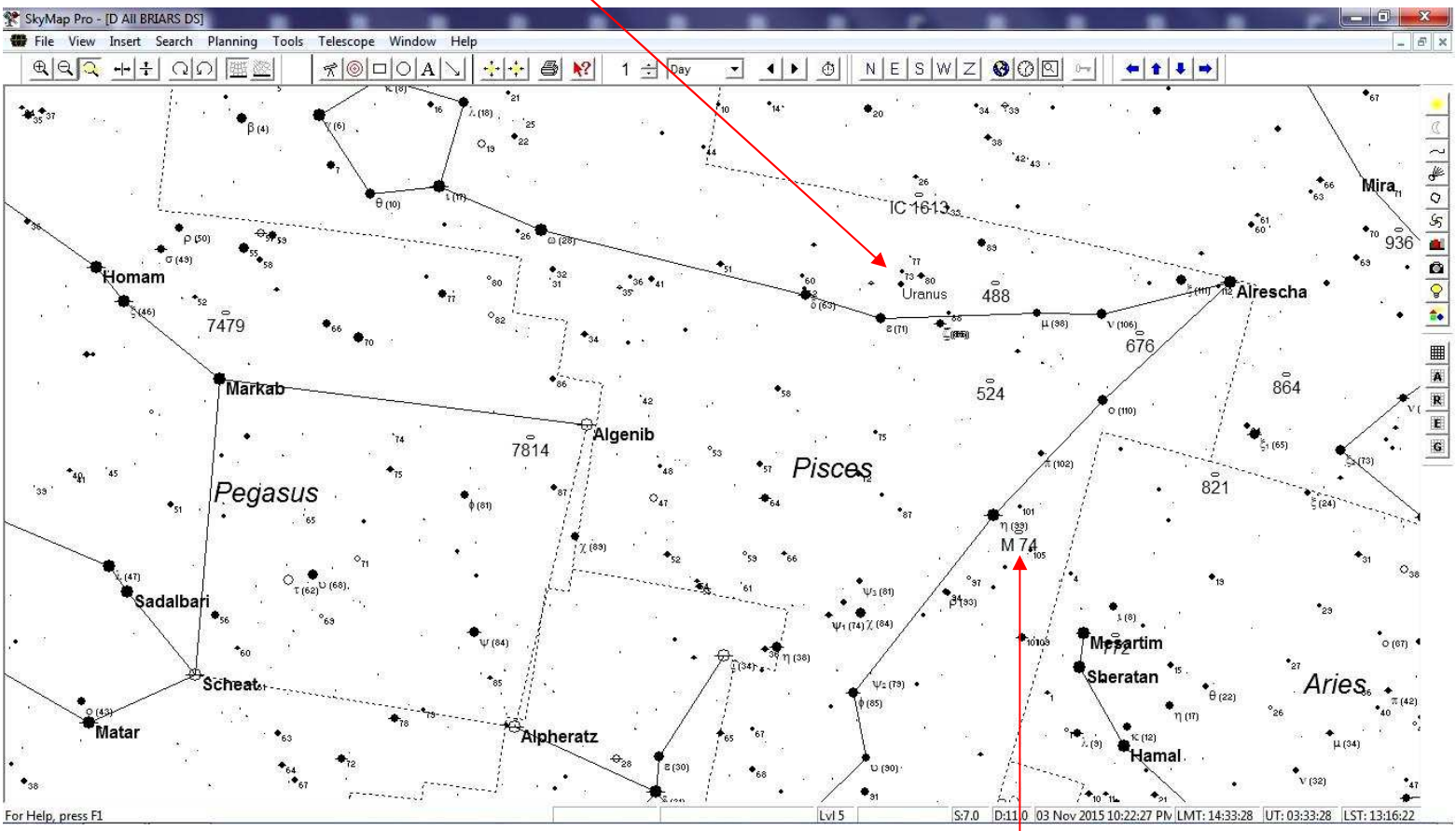
Monthly Events & High Lights. **Red Days** indicates School Holidays - **Watch out for Auroras**
Public nights 4th 8pm start - **NO Society Meeting in December**
Members Night Xmas BBQ 6pm @ the Briars 12th
Evening - Mercury left of a thin crescent Moon 13th, Uranus 0.5 deg's below the Moon 20th 10:45pm
Dawn - Jupiter right of the Moon 4th, Jupiter left of the Moon 5th, Mars right of the Moon 6th, Venus above the Moon 8th
Please note we have 3 public viewing night in January 8th, 15th, 22nd?

Note this years the Members night BBQ's will be the first Saturday after the Society Meeting.
Also General Meetings will be called Society Meetings under the new regulations.

Sky for November/December we will look north at Pisces the fishes, just to the right of the square of Pegasus.
Uranus was at opposition on the 12th October, so now is the time to make the effort to find it.
Uranus can be spotted with a pair of binoculars, but you will need a telescope to see its light blue colour.
Also in Pisces a bright face on spiral gallixie M74, just below a bright star making it eazy to find.







Produced on Starry Night & Sky Map *by Greg Walton*

ASTRO NEWS

By Peter Lowe

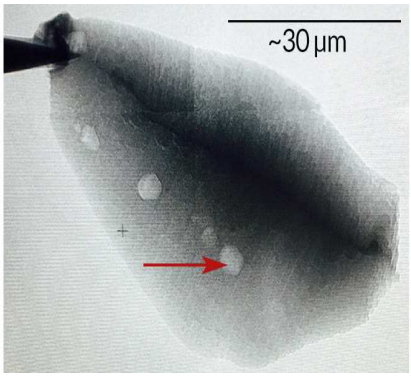
The Bar is Open on ISS.

After four years in space a vial of whisky sent to the ISS as part of an aging experiment has returned to earth with a distinctly different flavour and character. The Ardbeg Distillery on Islay sent a vial of unmatured malt whisky to the International Space Station in October 2011, along with particles of charred oak. Another vial of the same whisky was kept at the distillery for comparison. The experiment was designed to find out how near-zero gravity would affect the behaviour of terpenes - compounds that give flavour to many foods, wines and spirits. After a series of tests, the space samples were 'noticeably different' to those reference samples held on earth and the results could have significant implications for the whisky industry. During the aging process wood extractions establish the characteristic taste of the whisky type, hence wooden barrels. The age of the whisky controls the ratio of these compounds. The distillery sent the unmatured malt whisky into space to study the effect of near-zero gravity on flavour and has described its findings as "groundbreaking". There could be a whole new range of space based whisky types available for marketing soon. I'll drink to that !!

Daily Views of Earth on New NASA Website

NASA has launched a new website so the world can see images of the full, sunlit side of the Earth every day. As the Earth rotates through an entire day the Deep Space Climate Observatory (DSCOVR) spacecraft captures 22 still images. These are displayed as an interactive animation, which can be accessed at http://epic.gsfc.nasa.gov/ Every day NASA posts at least a dozen new colour images of Earth acquired from 12 to 36 hours earlier by NASA's Earth Polychromatic Imaging Camera (EPIC). Each daily sequence of images shows the Earth as it rotates, thus revealing the whole globe over the course of a day. The new website also features an archive of EPIC images searchable by date and continent. EPIC is a four megapixel CCD camera and telescope. The colour Earth images are created by combining three separate single-colour images to create a photographic-quality image equivalent to a 12-megapixel camera. The camera takes a series of 10 images using different narrowband filters - from ultraviolet to near infrared - to produce a variety of science products. The red, green and blue channel images are used to create the colour images. Each image is about 3 megabytes in size. The DSCOVR spacecraft orbits around the L1 Lagrange point directly between Earth and the sun. This orbit keeps the spacecraft near the L1 point and requires only occasional small manoeuvres to keep it on station, but its orbit can vary from 4 to 15 degrees away from the sun-Earth line over several years.

Early Earth Life (4.1 Billion Years Ago)



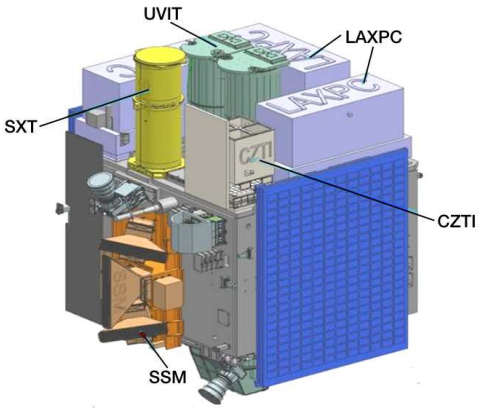
The Earth formed 4.54 billion years ago. The earliest known fossils date from around 3.65 billion years ago, not long after the end of the massive bombardment of the inner solar system that formed the moon's largest craters 3.9 billion years ago. Studies of zircon crystals found in West Australia now suggest that life actually started much earlier. It had been thought that no life could have existed during this bombardment phase in Earth's history because the heavy bombardment would have sterilised the entire Earth's surface. The speculation was that life formed only after the Earth had cooled sufficiently to allow permanent water and required several hundred million years to develop. Alternatively it has been suggested as the Earth cooled during the bombardment phase water could collect locally in small lakes and life might form there very fast only to be exterminated by another impact. There may thus have been numerous examples of life forming/destroying events before the Earth had cooled sufficiently to allow permanent water. After examining more than 10,000 zircon crystals collected in West Australia researchers found 656 samples containing dark specks and analysed 79 of them using Raman spectroscopy, a technique that shows the molecular and chemical structure of ancient microorganisms in three dimensions. One of the zircon samples was found to contain graphite carbon suggesting life may have begun shortly after the Earth formed.

Zircons are heavy, durable minerals that can capture and preserve their immediate environment, meaning they can serve as time capsules. The age of the zircon is 4.1 billion years based on the ratio of uranium to lead however all that can be said of the graphite is that it is older than the zircon. The graphite carbon has a characteristic signature - a specific ratio of carbon-12 to carbon-13 - that indicates the presence of photosynthetic life. This suggests that life on Earth may have started almost instantaneously given the right ingredients and conditions. Life it seems forms very fast. The research suggests life in the universe could be extremely abundant and simple life appears to have formed as the Earth was cooling, but it likely took many millions of years for that very simple life to evolve the ability to photosynthesize.

China's Space Program Continues

In preparation for the Chinese Space Station it is expect China will launch Tiangong 2 space laboratory during next year then to be followed by three astronauts on a Shenzhou 11 spacecraft. Although details have not yet been released the Tiangong 2 is expected to be a small space station, just like its predecessor, Tiangong 1. With its long flights and complex tasks, the Tiangong program is designed to prove the technologies required for the Chinese Space Station (CSS). The CSS is expected to be a large, modular complex and the Tiangong is thought to be an intermediate step between undocked human space missions and a permanent foothold in space. China is becoming increasingly confident in its schedule for the Chinese Space Station. At the 2015 International Astronautical Congress, China was promoting 2018 as the year for launching the core module of the station. Other modules would follow progressively, until the station is essentially complete around 2022. The future for the CSS allows more international participation and could eventually rival the ISS.

India Launches its First Orbiting Observatory



As part of its overall technological improvement program, India has successfully launched its first high-tech telescope into orbit to study the high-energy stellar processes. The launch is another major step in its ambitious, low-cost space programme. The rocket carrying the 150-tonne mini space observatory called Astrosat, along with six foreign satellites, blasted off on schedule from India's main southern spaceport of Sriharikota placing the observatory in the intended orbit The launch comes one year after India became the first Asian country to successfully orbit a space probe mission around Mars to study the Red Planet and sparking an outpouring of national pride.
The unmanned probe, still orbiting Mars continues to operate flawlessly Astrosat reportedly cost 1.8 billion rupees ($27 million) to build and has a planned five-year life span. Astrosat includes several X-Ray and UV telescopes and is to orbit 650 kilometres above the Earth. Its first commissioning target was The Crab Nebula, a known neutron star and after becoming fully operational will send back data from other high-energy sources.

The Milky Way Black Hole Stirs

Like a sleeping giant the black hole at the centre of our galaxy is normally quiescent and only really detectable by its gravitational influence on nearby stars. Over the last 15 years astronomers using the Chandra and XMM-Newton space observatories have noted an increase in the rate and brightness of flares from Sgr A* after the closest approach of a large gas cloud known as G2 to the huge black hole. The orbiting X-ray telescopes detected an increased rate of X-ray flares from the usually quiet giant black hole after new long-term monitoring. Scientists are trying to learn whether this is normal behaviour that was unnoticed due to limited monitoring, or these flares are triggered by the recent close passage of the mysterious, dusty object. The super massive black hole, a.k.a. Sagittarius A*, weighs in at slightly more than 4 million times the mass of the Sun and produces X-rays from hot gas inflows. Normally Sgr A* flares in X-rays about every ten days but this has increased to about every day over the last year. The increase coincided with the close approach of a mysterious object called G2. Originally thought to be a cloud of gas and dust the new data suggests it is likely a star cocooned in a gas/dust cloud. It's too soon to say if the increase flare activity is due to the close passage of the G2 cloud or whether it is just a natural variation in black hole behaviour. If the G2 explanation proves correct, the spike in bright X-ray flares would be the first sign of excess material falling onto the black hole because of the cloud's close passage. Further follow up observation are planned.

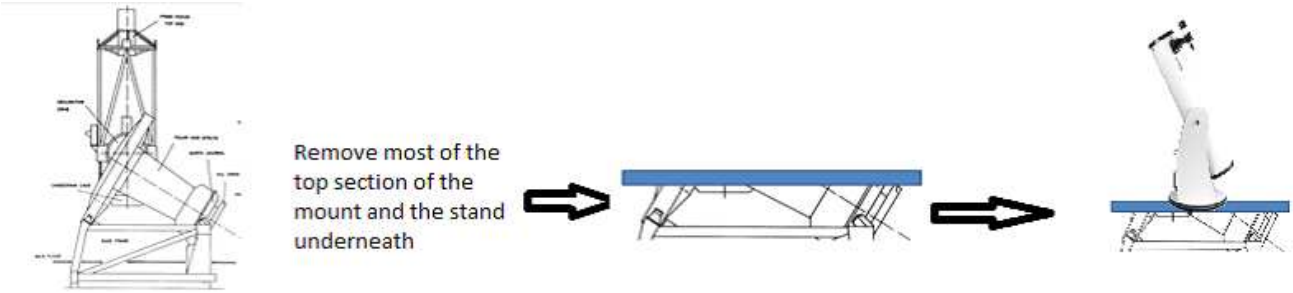
Equatorial platform *by Rod Brackenridge*

Introduction - Ever wanted to make your Dobsonian telescope track? There are two obvious ways to do this – add a goto system with stepper motors / servo motors and gears. The other option is to build an equatorial platform. I have built goto systems for my 12 inch Dob and learnt a lot from doing so. An equatorial platform is a much simpler option and is a great DIY project for someone with basic tools. Over the last 18 months, Geoff Dudley and I have built three equatorial platforms together.

Geoff's 8 inch telescope on the platform we built.

What is an equatorial platform?
An Equatorial platform allows altazimuth mounts - like Dobsonians, to track stars for a limited time - usually between 30 and 90 minutes depending on the platform's size and design. Equatorial platforms can be bought but are usually expensive. The largest platform I have read about was for a 32-inch telescope.

The easiest way to conceptualise a platform is to think of an equatorial mount like this one below. After removing most of the mount, the remaining section will still track albeit for a much shorter time.



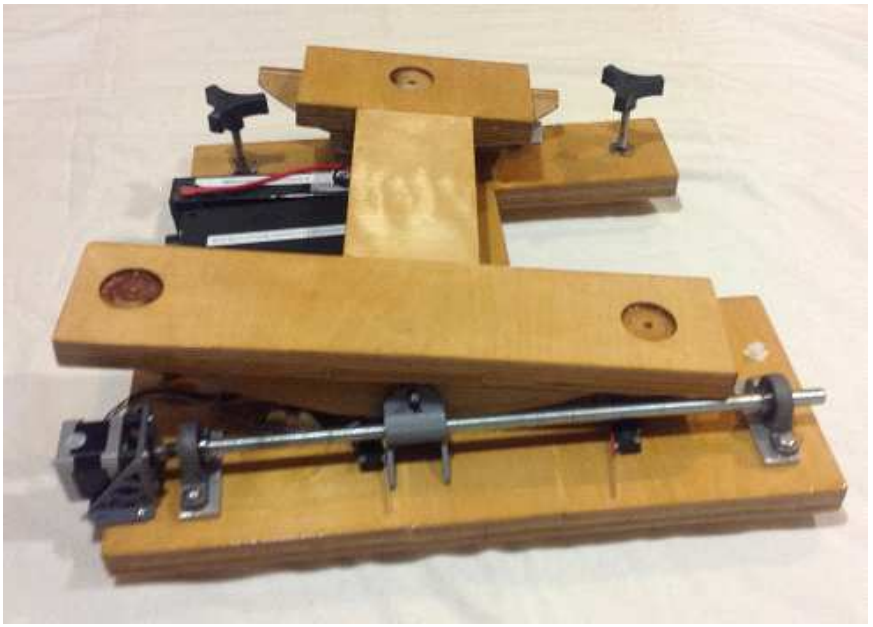
Advantages:

- Tracking enables higher magnifications to be used comfortably without continually nudging the scope
- Showing objects to the public is much easier - no continual re- centring
- Some photography is also possible

Disadvantages:

- Tracking time is limited
- The scope sits at an angle of between 5 and 11 degrees at the extremes of the platform's tracking range. This can reduce mount stability
- Platforms increase the mount height typically by 75 to 125 mm
- It can only be used within a few degrees of the latitude for which it was designed

Our first platform was a prototype and we learnt a lot from building it. It was based on a design by Warren Peters and Chuck Shaw but tracking was not entirely accurate. We built two more which were based on Ed Jones' design as shown here: http://opticaleds.com/custom-made-equatorial-platforms/



One of our completed platforms with mounting holes for stability on the top surface

Drive considerations

There are many ways to drive a platform.
A simple dc motor and gearbox is a common choice.

A variable resistor can be used to adjust the motor speed. Geoff built a stepper driver using a Freetronics board.

The code was written by Nils Olof Carlin:

http://web.telia.com/~u41105032/Stepper/sketch_EQ_Platform_driver.txt

Some of the advantages of Nil's motor controller design are:

- Greater accuracy (than a dc motor)
- Automatic rewind
- End of travel warning beeper
- Low voltage warning
- Built in correction for the (small) error introduced by using a horizontal drive screw

We gratefully acknowledge Nils' help as we worked on our platforms.

Conclusion

An equatorial platform can be built by anyone with basic woodwork or metal work skills. Simple tools are all that is necessary, although a drill press and a router are handy. Geoff and I are members of the ASV's Instrument Making Section. Several members intend to build their own platforms in the near future so, if people from MPAS want to build their own, this would be a good group to join. Two members have recently brought their 3 D printers to meetings and Stefan Buda recently printed parts for our platforms. If any members would like to build equatorial platforms, I would be happy to hear from them.

My son David's telescope on its equatorial platform at right.

Left - M8 by Andrew Nilsson

2 x 5min ISO 800
4 x 5min ISO 400
2 or 3 darks each, no flats or anything that sophisticated

Canon 20D (unmodified), ED80, HEQ5Pro, ZWO ASI-120M as guider. Guide graph looked horrible, but pleasantly surprised by the results. Processed in GIMP, and deepskystacker. Both software are free.

Planetarium at the Katherine museum

You never know were you will find something to do with astronomy. While Pia & I were wondering around the Katherine museum we came across a home made mobile planetarium built by Russian born Germogen Sergeef. Not quite my idea of a planetarium, but still interesting to see how things are done in the country. *Greg Walton*

The Planetarium

One of the more memorable people in Katherine was Russian born Germogen Sergeef, who was called Galloping Jack because of his excellent horsemanship. A versatile man who could play any instrument, he had a keen interest in the planets, accompanied by a talent for recycling. His daily diet of tinned sardines left him with a large amount of fish tins and other junk which he made into various creations. Hundreds of mobiles, often associated with space travel, and weather-vanes adorned his backyard.

An oddity in the hard-working rural community, Galloping Jack was driven by a creative urge to express himself using whatever material came to hand. This extraordinary artwork, with themes of popular culture and astronomy, remains a testimony to the creative spirit.

Images & Videos *By Greg Walton*

Right - Lyrup Flats time lapse video - Lyrup Flats https://vimeo.com/141611871

Below - Uluru time lapse video - Uluru https://vimeo.com/140608844

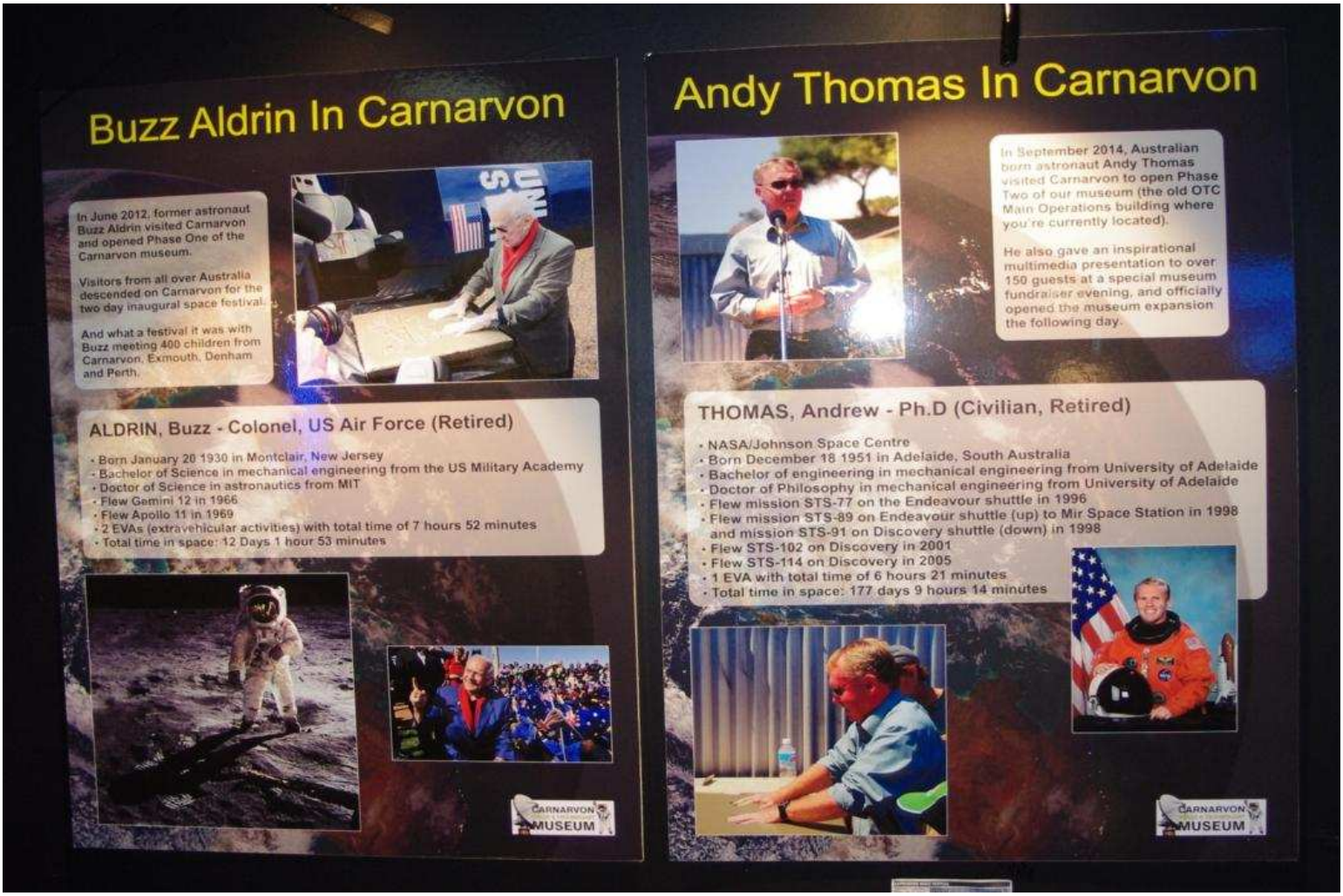
Below - Saturn & Scorpius above Uluru taken with 20mm Lens

Carnarvon Space & Technology Museum, *By Greg Walton*

On the west coast of Australia we stumbled across a place called Carnarvon & found 2 large radio dishes sitting not far off the Highway. We asked about the dishes at the Carnarvon info centre. They said, there is a new museum there & open till 4pm. So we headed there straight away & found a fantastic display of space travel memorabilia. The museum was opened by Buzz Aldrin (second man to walk on the Moon) in June 2012 & a second stage of the museum was opened by Andy Thomas (Australian astronaut) in September 2014
Remarkably the whole museum was put together & is run by volunteers.

Above - Buzz Aldrin & Andy Thomas' hand prints set in concrete.
Below - Buzz Aldrin opening the Museum in 2012
Below - Andy Thomas opening stage 2 of the Museum in 2014

Carnarvon's OTC dish (Earth tracking station) was built in conjunction with NASA in 1966 as a satellite communications & tracking station. The station was involved in the Apollo space missions. The dish is 29.6 metres in diameter & weights 300 tons & is no longer used. All the original NASA building have been removed.



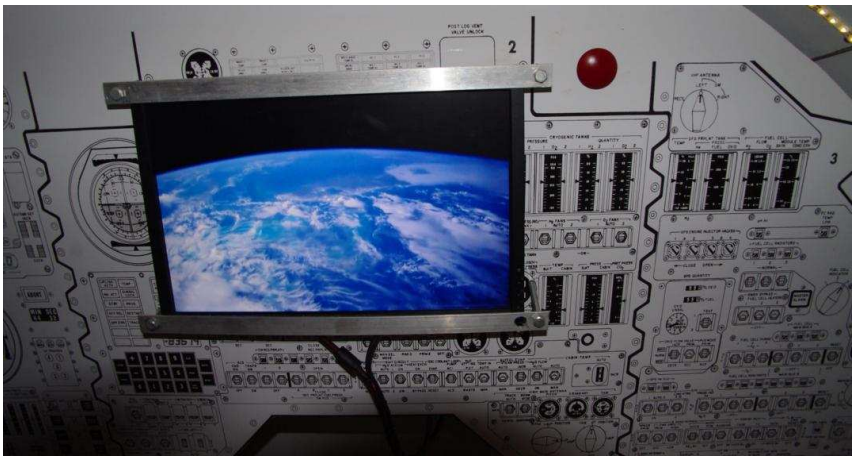
Carnarvon tracking station played many major roles ... From the Mercury & Apollo missions, to tracking the European Space Agency's Giotto Spacecraft from its launch on July 2nd 1985, until its interception of Halley's Comet. After eight months & 700 million kilometres, the Giotto craft came within 540 kilometres of the nucleus, flying through Halley's Comet's tail collecting data, then transmitting it back to Earth.

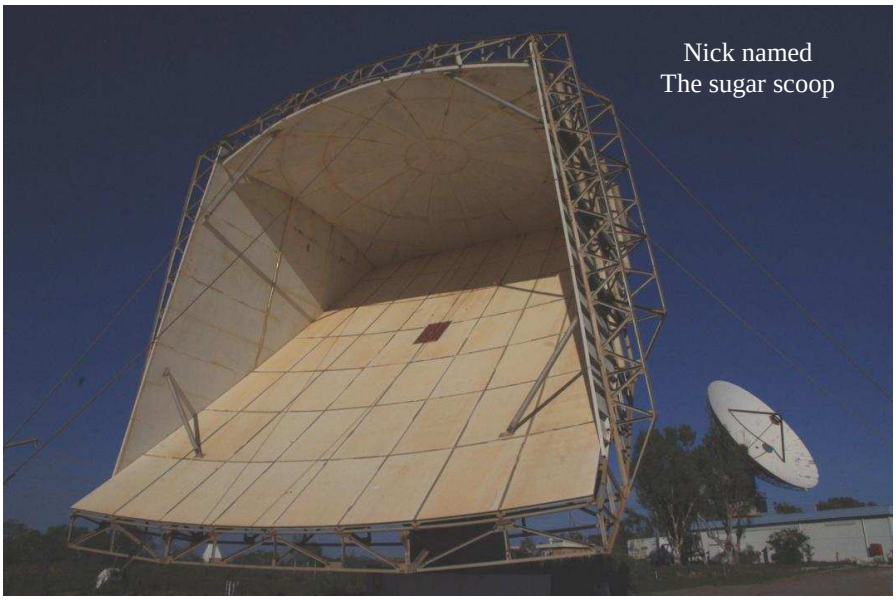

The Giotto Spacecraft

All photos by Pia Pedersen & Greg Walton


Control panel for monitoring space craft systems

Above - Carnarvon Tracking Station involvement with Apollo missions
Top Right - Gemini space craft operations Handbooks
Centre left - Apollo capsule launch simulator (7 minute ride into space)
Centre right - Inside the simulator, in space looking down on Earth
Bottom right - Pia & I doing a space walk at the ISS




Nick named
The sugar scoop

The other big aerial on the site was used to transmit & receive radio signals from satellites. Used to beam the first TV signal to England from Carnarvon, two sister were able to see & talk to each other. Its odd shape meant it had a very narrow beam, to stop interferences from earth & space. Sadly this dish is no longer used. It's last major function was the prime command role for the Gotto mission to rendezvous with Halley's comet in march 1986
The smaller dish in the back ground is a new dish for the nation broad band network.

Some of the other interesting things that can be seen at the Carnarvon museum.

Above - The Museum has it's own cinema
Centre below – Astronauts, you can test your skills

You must move the steel loop around the maze without touching the copper bar, if you touch it the red light switches on.

Bottom centre - Space junk found near Morawa
Below left - Piece of Skylab 800mm x 350mm

See more http://www.carnarvonmuseum.org.au/

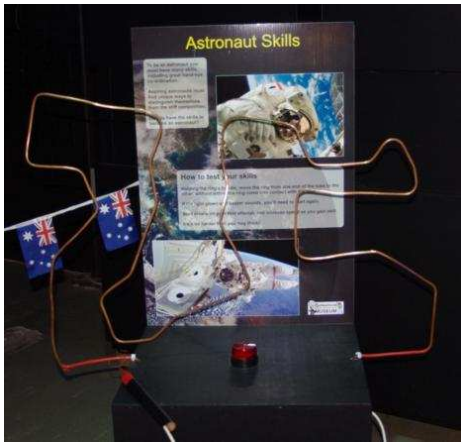
President Jimmy Carter sent a message to the Prime Minister of Australia, Mr. Malcolm Fraser:

"Dear Malcolm,
I was concerned to learn that fragments of Skylab may have landed in Australia. I am relieved to hear your Government's preliminary assessment that no injuries have resulted. Nevertheless, I have instructed the Department of State to be in touch with your Government immediately, and to offer any assistance you may need.
Sincerely Jimmy Carter."

Prime Minister Fraser's reply:
"Dear Jimmy,
Thank you very much for your message. It appears we can all breathe a sigh of relief. While receiving Skylab is an honour we would have happily forgone, it is the end of a magnificent technological achievement by the United States, and the events of the past few days should not obscure this. If we find the pieces, I shall happily trade them for additions to the beef quota.
Warm personal regards,
Malcolm Fraser."

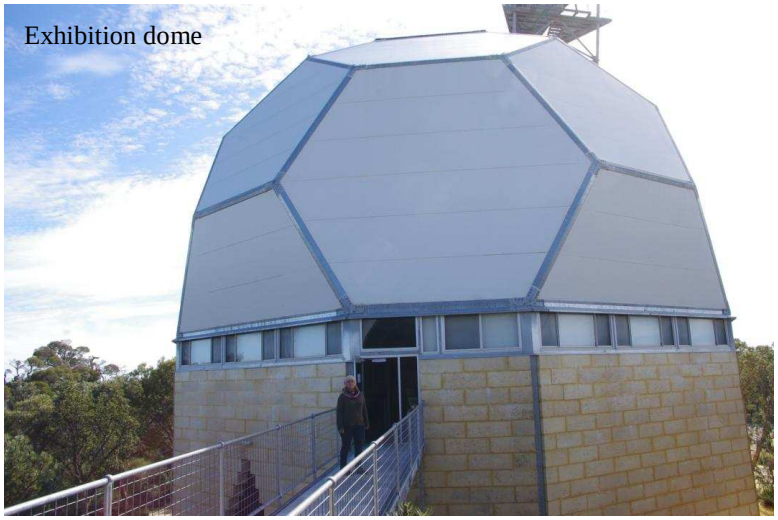
One of the many control panels

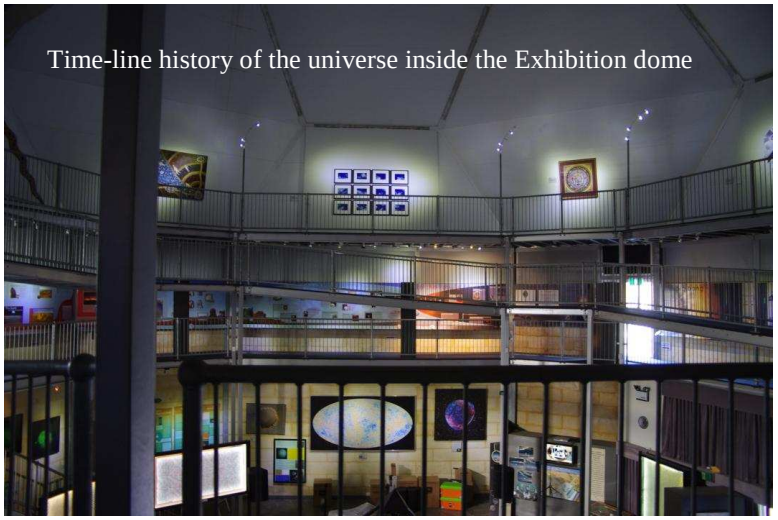
The Museum has a Café & gift shop

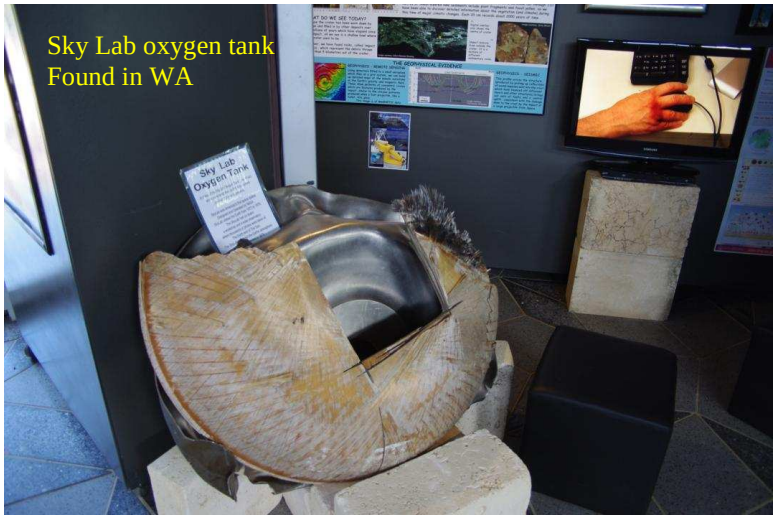


AIGO Gravity Centre at Gingin, *By Greg Walton*

One hour's drive north of Perth, we came cross a sign saying gravity centre & thought we should have a look. We ended up spent most of the days there. The AIGO gravity centre was set up to find gravity waves, but it was soon realized the detected was not long enough (800 metres). Now its purpose is to design, build & test components for the larger gravity waves detectors, located in USA & Japan. Also the site has an education centre were you can learn about gravity, with lots of very interesting interactive displays.
The first thing we saw was a large leaning tower used to demonstrate the different speeds that things fall. We were given some balloons & told to fill them with water, then drop them from the top of the tower & see which balloon hits the ground first. By the time Pia & I got to the top, our legs were really hurting. It was an impressive view over the country side, with very few man made structures - why it was built there. Normally, each day, bus loads of school students overrun the centre. Lucky for us it was school holidays!





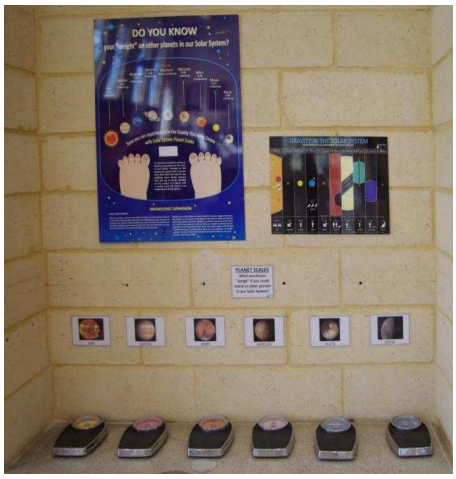


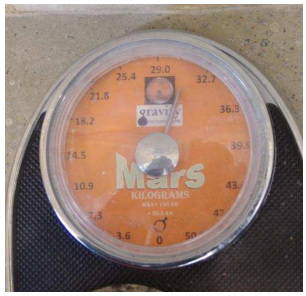
More things to do at Gravity Centre.

Here you can find out how much you weigh on another planet ... & the Sun.

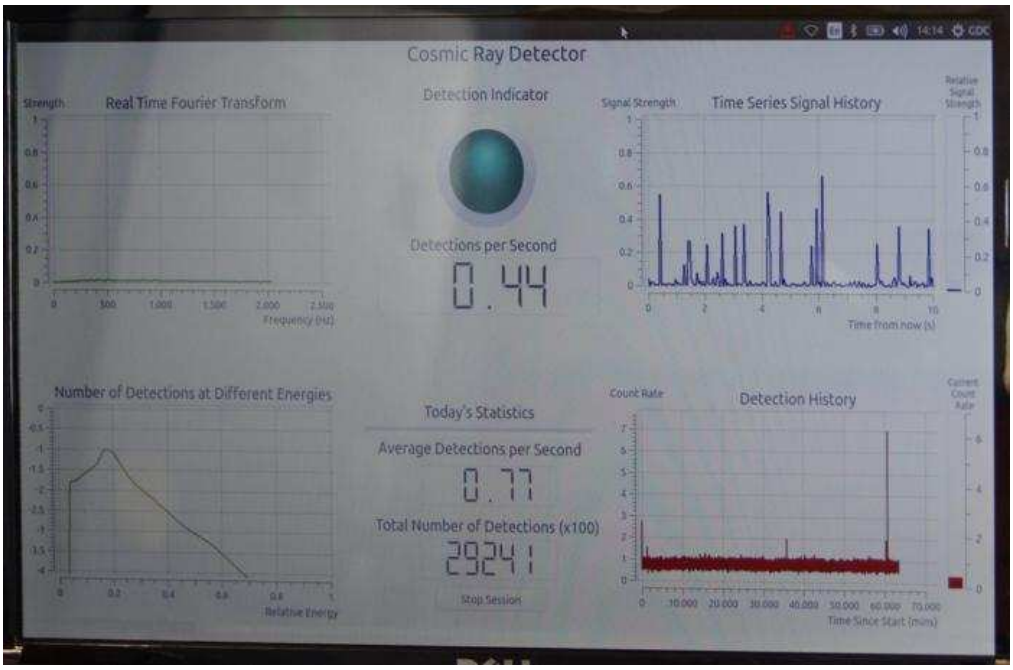
On Earth I weigh about 80kg

On the Moon I only weigh a mere 7.3kg
On Mercury I weighed 28kg
On Mars I weighed 31kg
On Jupiter I weighed 183kg
On the Sun I weighed a stagging 2300kg
On Pluto I weighed only 5.6kg

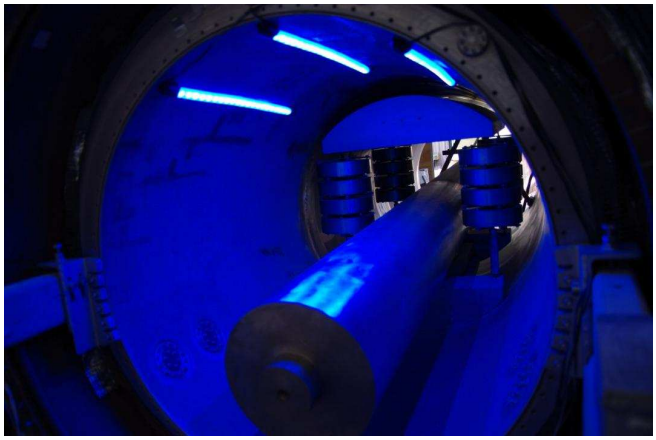




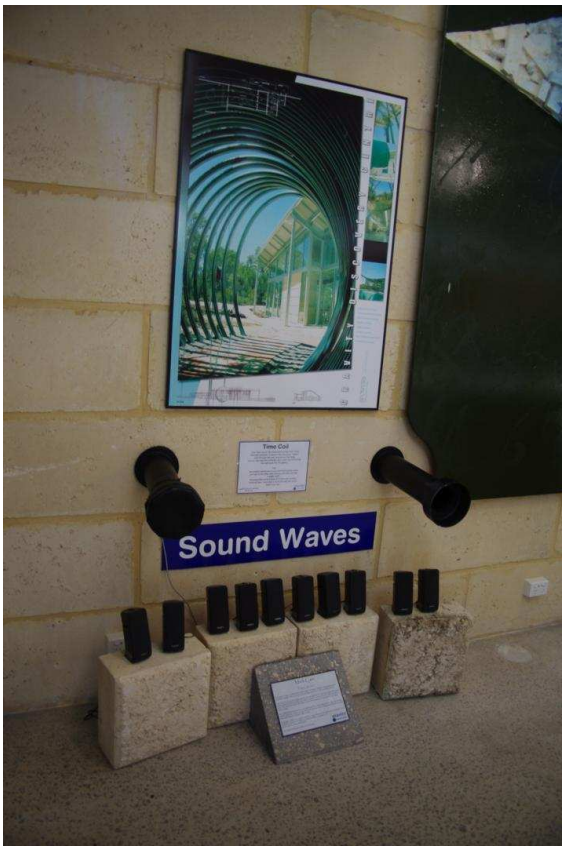
Below - Cosmic Ray Detector see video on YouTube - Cosmos Ray https://youtu.be/A9zKDKYeTuI



Below & Right - Inside an obsolete gravity wave detector. Looks like a lot of work went into making this detector. The hardest part is to isolate the world from the detector. Many other discarded parts lay around the grounds.



This **Time Coil** is 1 km long & made from 10cm diameter poly-pipe.
The pipe starts & finishes in side the building. When you tap the rubber membrane then place your ear to the other end of the pipe, you will hear a slight "PUFF"
Knowing that sound travels at 0.33km per second, it should take 3 seconds to travel through the coil to reach your ear.
Speed of sound at sea level is 340.29 metres per second.



Below & right - Pia passes her finger through this Magnetic levitation device to check for hidden strings.

Below - A 1km solar system walk with Pia were the sun should be. The sun is the paved circle.

Left - One of the observatories on the site, this one is for public viewing..... the other one operated by the University of Western Australia

Gravity fountain https://youtu.be/okLI-9ZsQMs

See more http://gravitycentre.com.au/

MPAS Gallery

Aurora Images taken by Paul Albers on the 7th October 2015

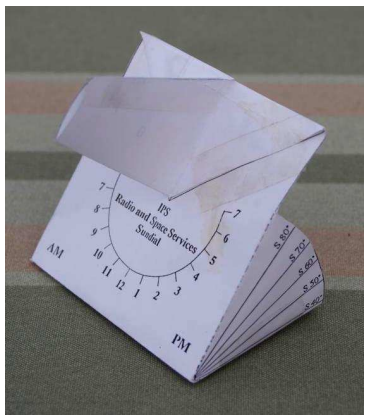
Aurora Images taken by Jamie Pole on the 7th October 2015 See also Time Lapse .. Jamie Pole's Aurora https://vimeo.com/141717864

CULGOORA SOLAR OBSERVATORY

Mini Sundial Kit

The sun has been used to tell the time for thousands of years. By following the instructions below, you can build your own sundial that will work anywhere in the southern hemisphere.

1. Cut out the sundial, fold the dashed lines (– – – – –) away from you and the dotted lines (·····) towards you.
2. Fold the lines labeled with your latitude away from you (if you don't know your latitude you can look it up in an atlas).
3. Glue the flaps you have just folded to the back of the base so that your sundial can rest on its base with its dial tilted.
4. Glue the gnomon (the part that casts a shadow on the dial) together as shown and your sundial will be ready to use.



SOCIETY INFORMATION


Peter Lowe


Dave Rolfe


Peter Skilton


Jamie Pole


Trevor Hand


Paul Albers


Paula Ritchens


Clemens Unger


Greg Walton

OFFICE BEARERS OF THE MORNINGTON PENINSULA ASTRONOMICAL SOCIETY

President: Peter Lowe
Vice President: David Rolfe
Committee: Trevor Hand, Fiona Murray, Paul Albers, Paula Ritchens, Clemens Unger.
Phone Contact: Peter Skilton - 0419 253 252

Secretary: Peter Skilton
Treasurer: Jamie Pole
Web Master: Steven Mohr
Scorpius Editor: Greg Walton
Library: Fiona Murray

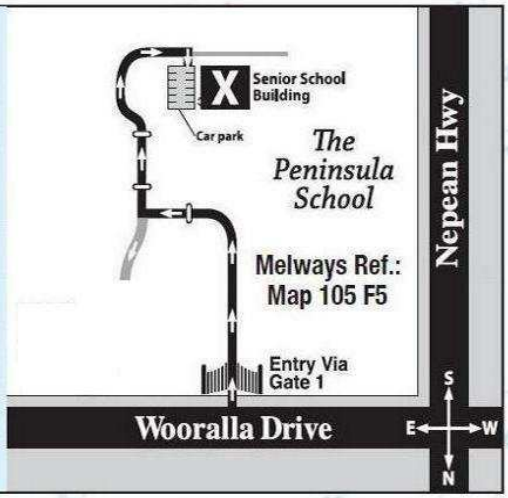
SOCIETY MEETINGS

Meeting Venue: **The Peninsula School**, Wooralla Drive, Mt. Eliza, (Melways ref. 105/F5) in the Senior School at 8pm, on the 3rd Wednesday of each month (*except December*). Entry is via the main gate, off Wooralla Drive. (*see map*).

For additional details:

Internet: http://www.mpas.asn.au
email: welcome@mpas.asn.au

Phone: 0419 253 252
Mail: P.O. Box 596, Frankston 3199, Victoria, Australia.



LIBRARY


Fiona Murray

The Society also has books and videos for loan from it's library, made available on most members nights at The Briars site, contact Fiona Murray.

E-SCORPIUS NEWSGROUP

M.P.A.S. main line of communication is the online newsgroup called E-Scorpius. Here you will be kept up to date with the latest M.P.A.S. news and event information as well as being able to join in discussions and ask questions with other members.

To join, go to: http://groups.com/group/e-scorpius and sign up to Yahoo groups - *You require to sign up to Yahoo groups to join E-Scorpius.* Once you have signed up at Yahoo groups, email welcome@mpas.asn.au saying that you want to join E-Scorpius and you will be added to the E-Scorpius list.

VIEWING NIGHTS - MEMBERS ONLY

Any night, at The Briars, Nepean Hwy, Mt. Martha, starting at dusk. Members visiting The Briars for the first time must contact Greg Walton on either 9776 2074 or 0415 172 503 if they need help in getting to the site. Upon arrival at the site, remember to sign the attendance book in the observatory building.

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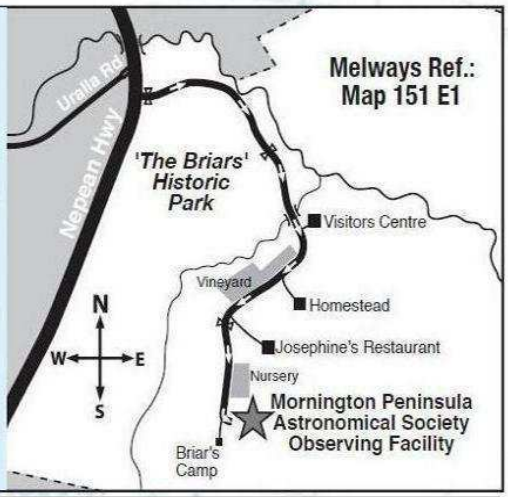

Members please write a story about your astronomy experiences and add some pictures.
Send them to: Greg Walton gwmpas@gmail.com