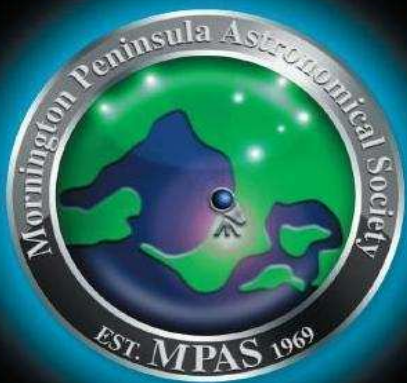


Cover image: The Fox Fur Nebula (Sharpless 273), Christmas Tree Cluster and the Cone Nebula NGC 2264 describes several objects in the constellation Monoceros lying about 2,700 light-years from Earth. *By Steve Mohr*



SCORPIUS

THE JOURNAL OF THE
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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 amateur 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 arranged to observe currently available celestial objects and phenomena. In addition, the Society encourages the service of its members for on-site or off-site educational presentations and observing nights for schools and community groups.



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Mornington Peninsula Astronomical Society

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SOCIETY NEWS

By Greg Walton



The quarterly SCAG night (Scout, Cubs And Guides) went ahead on 24th August, with 81 in attendance from groups in Chelsea, Carrum and Werribee. The evening was cool but clear outside enabling a view of the planets both before and after the talk. The talk was given inside by Peter Skilton, with help outside with the instruments and general people wrangling by Robin Broberg, Philip Rea, Greg Walton, Peter Lowe, Simon Hamm and Nerida Langcake. *Regards, Peter Skilton*

Working Bee 25th August - pouring the concrete for the Sirius observatory. First we whipper snipped the grass to ground level and finished setting up the wooden formwork. We made a last minute decision to add a path connecting to the existing path. Then electrical conduits and reo mesh were fitted, just before the concrete truck arrived. Then it was all hands on deck shovelling and smoothing. We put a curve in the slab to stop water from seeping into the dome. We also did some work on new signs. Helping out were Mark Hillen, Mark Stephens, Roland Knabe, and Will, while Valda and friend made the coffee. *VP Greg Walton*



August 25th saw 10 people from the YMCA's Youth Leadership and Development Unit visit the Briars, travelling from Melbourne. This unit does quite a bit of work with Camp Manyung where we, too, visit fairly regularly during the year. Conditions were cool, with fog emerging in the valley and starting to fill it. Despite the M of YMCA being "Men's", the majority of the visiting young leaders were actually young women and this time also some had hearing impairment or were deaf, adding a new dimension to the talks inside the observatory and inside the auditorium. The evening started with Peter Skilton and Greg Walton showing the visitors the night sky inside the observatory, and giving them a tour of the planets, Omega Centauri and some of the constellations on offer. The jaw-dropping look on the face of one of them when she saw Saturn for the first time was priceless. It was really impressive to see the sign-language interpreter listening in the dark to my astronomy jargon and then somehow turning it in real time into something understandable for the deaf visitors. Talk about thinking on your feet. Following this, Peter Lowe gave an abridged version of the solar system talk inside in the warm for about 25 minutes before they had to leave for the drive back to Melbourne. *Regards, Peter Skilton*

August 26th The Coolart astro-photo exhibition officially closed today, after its 2 week extension by PrimeSCI and Parks Vic due to overwhelming popular demand. The final tally of visitors was 9,624 since we first started setting it up on July 14th, and this was the largest number of visitors experienced by Coolart for any exhibition since they started in the 1980's.

At the stroke of 3:30 pm, Nerida Langcake, Pia Pedersen, Greg Walton and Peter Skilton began the tasks of emptying the cabinets, carefully taking down the frames, bubble wrapping them, and taking them out to the cars for transporting to the Briars for storage for the time being. A ute and a wagon were sufficient to hold them all in one trip. With an effort that could only be called frantic and aerobic due to trying to meet the Sunday deadline for exiting before 5 pm, everything was done in time except for the tallest glass cabinet holding the rocket and moon rock where the key didn't open the Abloy lock properly. Its the right key, just the spring mechanism seemed stuck. A spray or two of WD40 will be tried tomorrow.

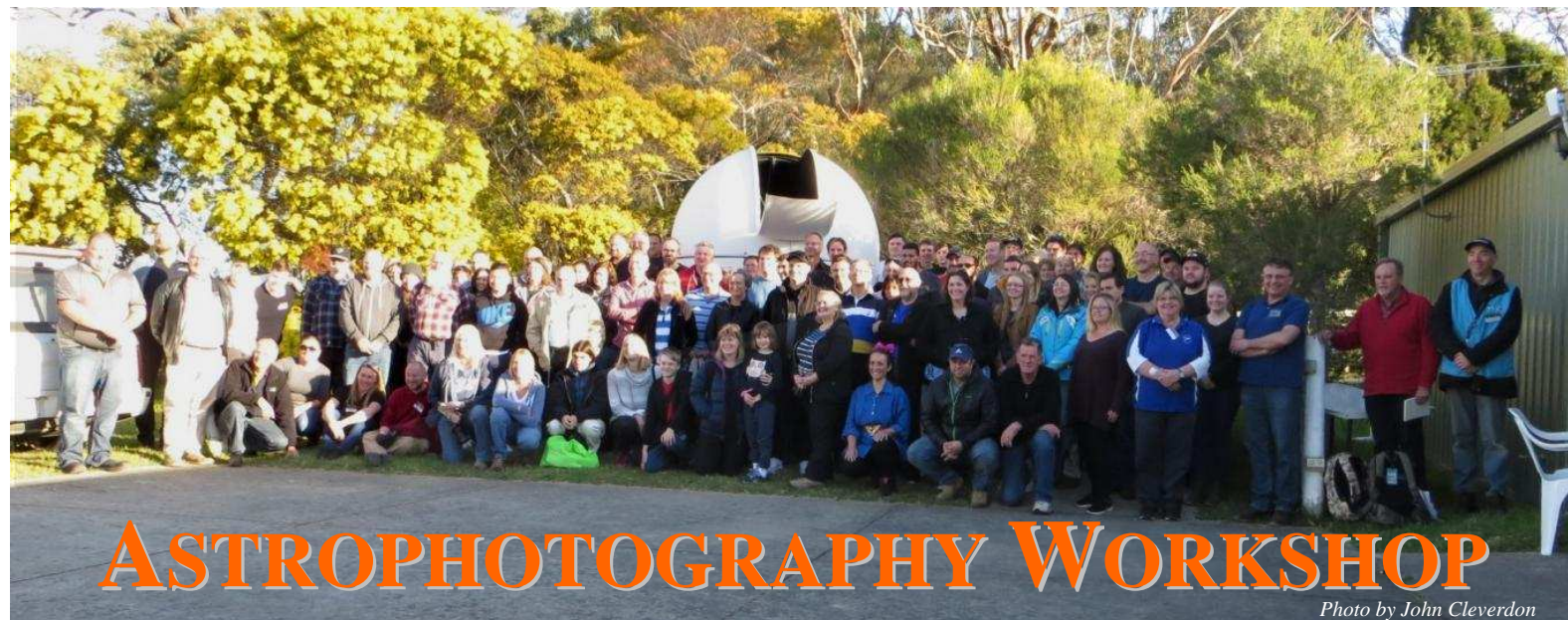
Babysitting the exhibition had some highlights this weekend. One couple travelled from Geelong on the ferry to get there. A mother with two pre-teen boys became so engrossed in the stories behind the photos and asking all about photography that she didn't at first notice that her sons had quietly disappeared out to the lawn and were playing ninjas with sticks. Just as well the Ranger on duty didn't see them. We may see her at a future public night as she was unaware of us at The Briars and was very interested in astronomy and photography.

The biggest surprise today was a visit by a bubbly University history student from Bremen in Germany who was about to start her Masters in German and history, but also had a year of astrophysics under her belt. In total it takes them over 6 years before they are allowed to be a teacher in schools. She was also very keenly into astrophotography and had been a volunteer presenter at The Bremen Planetarium for years. She was going to Melbourne Planetarium tomorrow. She'd cycled down to Coolart from Melbourne during the week, saw the exhibition and enquired about us at the Visitors Centre because it wasn't attended from Monday to Friday. The Rangers told her we'd be there this weekend if she wanted to ask us any questions. So she duly cycled back to Melbourne and came down once again today by bike! I spoke with her for over an hour, before she hopped on the bike once again and disappeared. She really, really wanted to do the upcoming Astrophotography workshop when I told her about it but, alas, was flying out before then, but is coming back in early October. So we might see her at our October public night at the Briars. That much cycling was an incredibly keen thing to do in order to ask us about the exhibition and see it again with a guided tour this time. And her favourite photo?

Working Bee 1st September - First job was to remove the formwork and level the ground, while Dave Rolfe finished connecting the electrical wiring and filling in the trench. Then we moved the 6 wall sections to the slab and bolted them together, we found we had to pack the walls in just one place to get the observatory round. Then we picked up the dome and sat it on the walls. Next working from the inside we attached 3 fibreglass sections which stop the dome from blowing away. After checking that the dome moves freely we drill the concrete and Dynabolted the walls to the slab. Kevin fitted a new door handle, while I fitted 6 cover strips which hid the joins in the walls. Pia cleaned and painted the coffee making table. When walking in from the visitor car park the Sirius observatory looks like it has always been there. Thank you Manfred, Dave, Kevin, Wil, Pia & Greg



Public Night September 7th - Clear conditions greeted the 83 who attended the September stargazing evening last Friday. This was 50% more than actually booked, but we were ready with plenty of members and telescopes. One Malaysian family came from Bundoora just to be shown the Milky Way for the first time, which must be pretty hard for them to see back home. Fortunately, the Moon was absent and the skies were clear and so they all had a good gander. The solar system talk indoors was given by Peter Lowe who had to field lots of questions of a religious persuasion from the audience. Meanwhile outside under the heavens were Dominic Lucarelli, Steve Mohr, Rohan and Matilda Baumann, Philip Holt, Bob Heale, Peter Skilton, Nerida Langcake, Ashley and Jamie Grierson, Simon Hamm, Greg Walton, Dave and Jamie Rolfe, Jamie Pole, John and Marj Cleverdon, Fred Crump and possibly others I've missed. *Regards, Peter Skilton*



ASTROPHOTOGRAPHY WORKSHOP

Photo by John Cleverdon

APW 8th September - Next day saw the fourth Astrophotography workshop annual event at the Briars, and this was the third time it was opened up to the public. It was short sleeves weather, at least during the daytime. Many camera club enthusiasts were evident again this year. The number of attendees who showed on the day was 95, with at least 24 members in attendance. The day ended up very successful as usual, despite cloud cover becoming total by mid-evening. Last year had 91 and the year before 89 (plus helper members), so we are consistently able to fill the room each year. Talks were given by Jamie Pole, Greg Walton, Dave Rolfe, Alex Cherney, Anders Hamilton and Steve Mohr. As usual the site was spotless and the gourmet food delicious thanks to the tireless preparatory efforts of Pia Pedersen and Greg Walton. And the new fridge proved its worth at handling the capacity. Even the tables had tablecloths



Photo by John Cleverdon



Photo by Rohan Baumann

and flowers on them for a nice touch. Outside directing traffic, wrangling people, answering roaming enquiries, selling plenty of merchandise, cooking on the BBQ, being kitchen hands and general helpers were a team of other members including Simon Hamm, Fred Crump, John Cleverdon, Nerida Langcake, Peter Skilton and of course many of the speakers with their sleeves rolled up. Other members came as participants or to help others out after dark when the place became full of shutterbugs sprinkled around the site looking for that perfect composition. Several attendees drove over 2 hours to reach the workshop, but the honour of being the furthest has to go to a lady from Sydney who flew down the day before and checked into a hotel, before flying back the day after the workshop. With so many people wandering around in the dark,



Photo by Nerida Langcake

and so many bags of camera gear on-site, it was surprising that only one camera tripod turned up as lost property. One wedding ring was found and reunited with its owner before interesting explanations had to occur back home. Due to thick cloud arrival, the site was packed up and cleared by 9:30 pm. We saw a few memberships arising from both the public night and the workshop. So nothing but praise for those involved in bringing it all about.

Regards, Peter Skilton

Thanks for documenting some of the action, Rohan, Nerida & John! It was a full on day as per usual. Big thanks to everybody who contributed in any way from presentations, to helping move chairs, and wrangle all the visitors on the day. Well done team MPAS! A special mention to Pia Pedersen who worked extremely hard on the catering for all. *Jamie Pole*



Photo by Nerida Langcake

Society Meeting 19th September - saw 40 members in attendance. Peter Lowe (right) chaired the meeting and updated members on recent events. Dr Daniel Price (left) from Monash University talked on the discovery of baby planets. Daniel explained that as professional telescopes have become better, astronomers are now able to detect and image the dust clouds around new planets. But what they're seeing is nothing like current models of planet formation. New planets quickly form dust rings. Daniel also answered many questions on a wide range of astronomical topics. Then members chatted over coffee, while we gave Daniel a tour of the observatory. Many members stayed on to view the planets at 300 times magnification with the 350mm Meade telescope in the observatory.

Members BBQ 22nd September - saw 44 members in attendance. The largest turn out at a members BBQ we have had for a long time. Many members brought along a large array of deserts. Many thanks to all the members helping out in the kitchen. Special thanks to Bonny who set up the tables and washed a mountain of dishes. We did open the observatory but cloud and fine rain shut all viewing down for about an hour, then the sky cleared so we reopened the observatory. But the clear sky did not last and after an hour the stars were gone again.

Lego Astronomy Morning at The Briars 3rd October - We had a group of about a dozen primary school-aged Lego fanatics, and their eager mothers, visit the Briars this morning hoping to see the third quarter waning Moon as part of a team project they'd all embarked upon. Alas the sky was completely cloud covered. They were a team of friends from across the Peninsula who are trying to enter the FIRST Lego League Junior Expo being held next month at Swinburne University, with the theme being "Mission Moon". Although we couldn't point out the Moon, nevertheless they saw inside the observatory, had their photos taken with the 14 inch, and were given a talk about the Moon, the Apollo missions and some of the things a Moonbase designer would need to know to help ensure survival of its occupants from the many dangers in the environment. Moon photos snapped by Nerida Langcake on her trusty Samsung phone were shown as part of my talk, nicely illustrating craters, maria and other features on the lunar surface. Piper, Ashley and Jamie Grierson were also there, bravely alerting us to incursions of the local fauna through the open roller door. I also showed a Lego Saturn V rocket with its 1,969 pieces that still need assembling (notice the number of pieces is the year of the Apollo 11 landing). For those who've been in MPAS a while, a previous National Science Week international visitor to The Briars, Canadian space historian and video blogger, Amy Teitel, has assembled one of these impressive models herself on youtube on her Vintage Space channel that contains a lot of fascinating, little known space travel facts in her many short videos there. Part 1 of her Lego construction journey is here: www.youtube.com/watch?v=6z7mMISNEy0 We will see some of these visitors for sure come to the next public night for a glimpse of the planets as well, though the Moon won't be visible in the evening for that.

Regards, Peter Skilton

Frankston Youth viewing night 4th October - Last night we had a small group of 10 Frankston teens plus 4 staff members set up at the Frankston South Community Centre in a small room, across the road from Overport Primary and adjacent to Frankston High School. This is a council initiative to enable interested youths to socialise in a supportive environment and provide some parental respite probably. Although the skies were completely overcast to begin with, and threatening rain, a hole miraculously opened enabling four planets to be seen by eye before the telescopes could be fully up and running. The group then moved into the warm to hear Peter Skilton talk mostly about the Moon and meteorites before the questions and commentary about them arose like a meteor storm. Peter Lowe was also inside, and pointed out that the very first public night held by the Society in 1969 was only about 200 metres away from where we were, at the time when we were called the Astronomical Society of Frankston. The eclectic bunch had a passing curious resemblance to the cast of the TV programme called The Big Bang Theory. Some might argue it applied to both the audience and the members there, but I leave it up to the imagination as to who maps to whom. There were a couple who seemed to be towards one side of the non-electromagnetic spectrum, but they sure knew their facts in very savant-like manner and took delight in leaping to their feet and coming up face-to-face to share astronomical facts they'd heard in the past. Wonderful enthusiasm to see, and no doubt the presentation was remembered verbatim and will be told to fortunate others in the future. There was also one who brought his own telescope along and had been to a few of our previous public nights, so he was already a convert, just still waiting for his parents to read his mind and take out a membership. And one lass spent most of the time multi-tasking on the couch listening and nodding occasionally, but simultaneously doing a crossword on her phone and toggling back and forth looking at funny cat pictures online. After having heroically reached the third slide by the end of the hour, and had every second sentence punctuated with at least one question to be answered, the skies completely cleared enabling unfettered views of the planets. So on went the coats and outside everyone was ushered. Philip Rea had his computer-guided SCT, Nerida Langcake had a loaned Dobsonian from Philip, and one of the youths had his 4-inch alt-az spotting scope. It was a successful evening, with a few audible oohs and ahs, even though this age group is usually the most challenging to get engaged with anything that might be remotely labelled as "nerdy".

Regards, Peter Skilton

We had a viewing event for the Frankston Youth Services last night. This is a small group of teenagers with various social difficulties and events such as ours provide respite services for the parents. I didn't see all those members who attended because I couldn't climb up the hill to get to the telescope area. So thank you to those members who attended. I was really amazed at Peter Skilton's presentation. It must have set new record for the shortest presentation ever. He put up one slide and then hit a wall of questions. Those guys really knew their stuff. Peter battled on bravely but ran out of time at slide three. The whole night went very well. Despite raining at the start of the evening the skies cleared on time at the end of Peter's presentation. When I left there were still Ooh's and Aah's coming from the scopes. Interestingly where we set up was only about 200m from the very first PVN held by the Frankston Astronomical Society in 1969.

Cheers Peter Lowe



Photo by John Cleverdon

Public Night October 5th - It was another bumper public night at The Briars with 136 in attendance, plus lots of members. On the welcoming desk, looking after the money, were Piper and Jamie Grierson and Jamie Rolfe, helping Peter Skilton and David Rolfe. The skies were clear which probably helped boost the number of unbooked drop-ins significantly. Quite a bit of merchandise was sold thanks to the sales skills of the young welcomers. Trevor Hand, just back from cruising the high seas, gave the talk indoors on Astronomical Phenomena, with the room quite packed (Fred Crump was ushering people to spare seats) and toasty warm as the air conditioning had accidentally been left in the heat-only mode. Or perhaps it was done on purpose so as to mimic onboard conditions in the Pacific to help acclimatisation of the speaker back to Melbourne conditions. We had a visitor from Bremen Planetarium in Germany, Isobel Endemann, who was given her first ever view of the southern night sky and was most impressed with the facilities, the ability for the public to ask questions and get help with setting up their telescopes, and the general friendliness and buzz of the entire evening. There were too many members present to thank individually, but a special thank you to those looking after the setting up and operation of the telescopes inside the observatory and on both concrete pads. *Regards, Peter Skilton*

On a Moonless night Venus shone brightly in the west and when viewed through the telescopes showed a thin crescent which intrigued the public as most did not expect to see Venus looking like that. The seeing conditions were very poor on the night due to the mild north breeze; Jupiter cloud belts were barely visible and Saturn looked ok with its rings but still a bit fuzzy. With the big shed filled to capacity many chose to stay outside to look through the telescopes and talk to the members. Luckily we had enough members to man all the society's telescopes. That left me free to walk around and talk to the public, before I too set up a small telescope in the new dome observatory. I used a red light to lure the public into the dome and showed Mars at 100 times magnification. Mars passed opposition 2 months ago and already it has shrunk in size; we could just make out one dark patch on its surface. Many said the dome was very cosy and felt warmer in the dome. Last of the public left just after 11pm. *Greg Walton*

8 Planets in the sky Friday October 12th - MPAS at Frankston foreshore at the base of Oliver's Hill.

The Sun sets about 7:30pm. If you manage to find us at Frankston, then you can tick Earth off your list of planets already. One down.

Mercury sets about 8:45pm. It will be featureless, somewhat yellow, and slightly gibbous disc in shape.

Venus sets about 9:35pm. It will be featureless, a bit yellow, quite large, and a thin crescent disc in shape.

Jupiter sets about 10:30pm. It will show its usual disc, bands and moons.

Saturn sets about 1:35am. It will show its usual disc, rings and moon Titan and be somewhat yellow.

Mars sets about 4:10am. It will show its usual red disc and probably not the polar caps and canals.

Uranus rises about 8:25pm. It will be featureless, somewhat aqua and a disc in shape.

Neptune rises about 4:35pm. It will be featureless and darker blue and a disc in shape.

Pluto sets about 2:40am. It will be white and appear like a faint background star.

The stars and planets take 24 hours to appear to go once around the sky (360 degrees). So that means they move at close to 15 degrees per hour, which is roughly a handspan with the fingers closed together.

So at 7:45pm, Mercury will be about 15 degrees above the West horizon (so 1 handspan above the bay).

At 8pm, Venus will be 22 degrees above the same point in the West. So 1.5 handspans up.

At 8:30pm, Jupiter will be 30 degrees above the West. So 2 handspans up.

At 9pm, Saturn will be 68 degrees above the West. So 4 handspans up.

At 9pm, Mars will be 105 degrees above the West. So about 1 handspan east of the Zenith (i.e. looking straight up).

The Moon sets about 10:46pm, so its light interference should subside as it starts to set.

At 10:25pm, Uranus will be 30 degrees above the East, which should clear the hill at Frankston. So about 2 handspans up from the East.

At 10:30pm, Neptune will be 90 degrees above the East, which is up at the Zenith.

At 10:30pm, Pluto will be 60 degrees above the West horizon.

Information from the night.

Under cloudless skies, there was a good view of all the planets plus one at Frankston foreshore last night at the foot of Oliver's Hill. There were about 40 members of the public who ventured a look at various times of the evening. One father and son came from the other side of the Bay after seeing a Facebook post about it. Quite a few members also stayed, with their partners and families arriving at different times. Four telescopes were set up next to the sea wall. Also a few pairs of sizeable binoculars were tried during the evening. Nerida Langcake had her EQ6 10-inch Newtonian, Peter Skilton had his 10-inch GPS SCT, Dave Rolfe had about a 4 inch refractor I think, and one other newer member had a small instrument set up as well (my apologies for forgetting her name). As the light faded and the instruments moved from one planet to the next, passers-by on the footpath had to avoid being scythed by the slewing telescopes. First spotted in daylight by eye was Venus, sporting a large crescent phase in the telescopes, then Jupiter with 2 moons visible on either side through the instruments gave clear dark bands as well while it was near the crescent waxing Moon. Then Mars was spotted by eye, and it seemed to show broad dark markings on its orange disc at 100 times magnification but no sign of its white polar caps. Then Saturn was found by eye, high in the sky over the Bay. Its rings and major moon, Titan, didn't fail to impress when seen through the telescopes. Then Mercury was found by eye as it entered the bright orange/yellow glow where the Sun had just set near the edge of Oliver's Hill. Its small, slightly gibbous disc boiled and writhed in the turbulent atmosphere when seen through the telescopes, giving lots of false colourings due to the refraction, but was nevertheless unmistakably a planetary disc.

Photo by Nerida Langcake



Then the instruments slewed across to tiny Neptune in Aquarius in the direction of Frankston pier, showing a small disc that was about a quarter the diameter of Mercury, but nevertheless having a definite darker blue colour to it to almost everyone who viewed it. At magnitude 7.83 it was detectable in binoculars as well. Uranus was last to rise inland in the constellation of Aries and, as it did so above the bright glare of Frankston's streetlights in the foreground, it was effortlessly acquired by the computer-controlled telescopes about 5 degrees up as it moved above the buildings and Nepean Highway lights and showed a distinctive minty-green, aqua colour disc through the eyepiece, though Ashley Grierson felt it was grey in appearance. At a brighter magnitude 5.68 it should have been visible in binoculars, but the lighting would have made it very difficult to star hop towards. It was reminiscent of the difficulties exoplanet hunters have, trying to find a faint planet orbiting near to a very bright parent star. At magnitude 5.68 it could also have been seen by unaided eye at The Briars on a dark night, but no hope of that so close to Frankston. Last for the evening was Pluto, a former planet and now dwarf planet. A much, much harder challenge. At magnitude 14.34, high in the sky in Sagittarius away from the lights, and half a Moon-diameter away from a couple of magnitude-6 bright stars in that constellation, the instruments locked onto the field. Many members had a look, assured that it was "in there somewhere". While Pluto's brightness of magnitude 14 was well within reach of the 10-inch instruments, even in the proximity to the city of Frankston, it was in quite a dense star field (Sagittarius is near the centre of the Milky Way). So to be 100% sure of identifying it, it would require a sketch or photo to be taken, then another retaken a few days later to spot which object had moved. Nevertheless, the members who stayed to see it came away in the knowledge that they'd seen it in the sense that some of its photons had just reached their eye even if they couldn't be sure of which faint point of light in the centre of the eyepiece field they were from. Several smartphones tried taking images through the big Newtonian to varying degrees of success. It was a fun, somewhat impromptu evening and a chance to meet some members who aren't usually able to get to other society events. *Regards, Peter Skilton*

Society Meeting at the Briars October 17th - saw 26 members in attendance. Dave Rolfe chaired the meeting and gave 2 presentations, first one on how long you could survive for on the other planets in the solar system. The second presentation was on the deep-sky tracking network which included Tidbinbilla near Canberra. Dave showed the deep sky net website where you can see which radio telescopes are transmitting and receiving from which satellites. Greg Walton did sky for the month and showed photos of new works from the ASV's LMDSS near Heathcote. Also shown were photos of the new 40 inch SDM Dobsonian telescope in the new roll off observatory and photos of parts for the new 10 metre radio telescope which is soon to be assembled at LMDSS. Afterwards, members chatted over coffee and demonstrated the telescopes in the observatory to new members. There was no viewing due to clouds. *VP Greg Walton*

Photo by Nerida Langcake

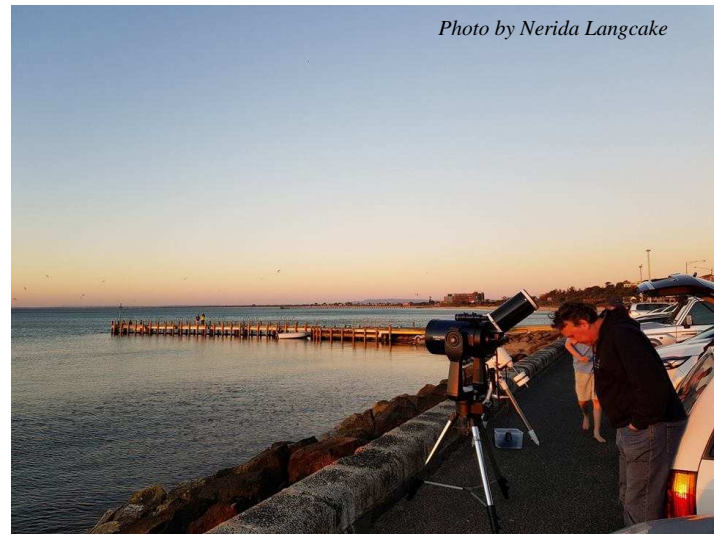
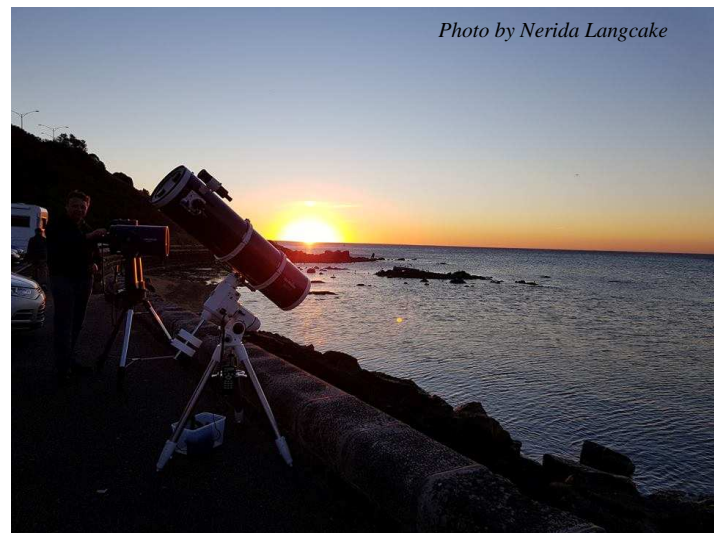


Photo by Nerida Langcake



Camp Manyung viewing night 19th October - MPAS did a viewing night for 38 Brainwave Australia children with various brain conditions plus parents/siblings. The sky was almost a 100% cloud cover, the children only succeeding to look at the Moon through the telescopes. They then returned inside to hear a brief talk on the solar system by Peter Lowe. Members on telescopes were Fred Crump, Nerida Langcake, Mark Stephen, Simon Hamm, Peter Skilton and Greg Walton.

Members Society Dinner Saturday October 20th - saw more than 55 members in attendance. This yearly event is very popular with a large roast dinner put on by MPAS for its members. The late Fiona Murray's family were also present as we dedicated and named the MPAS MURRAY LIBRARY with a plaque. Peter Lowe made a short speech about Fiona being a long time member attending most MPAS events, also being on committee and taking care of the library. Fiona's family made a speech and donated a book to the library. Then we all went outside for a group photo, before enjoying a large array of deserts brought along by MPAS member. We opened both observatories and looked at the planets and the Moon. Some members set up telescopes on the upper slab and we also helped new members with setting up and operating their telescopes. Many thanks to all the volunteers who helped set up the tables and chairs, arranged the food and did the massive clean up afterwards. VP Greg Walton



Photo by Nerida Langcake



Photo by Pia Pedersen



Photo by Dave Rolfe

Photo by John Cleverdon

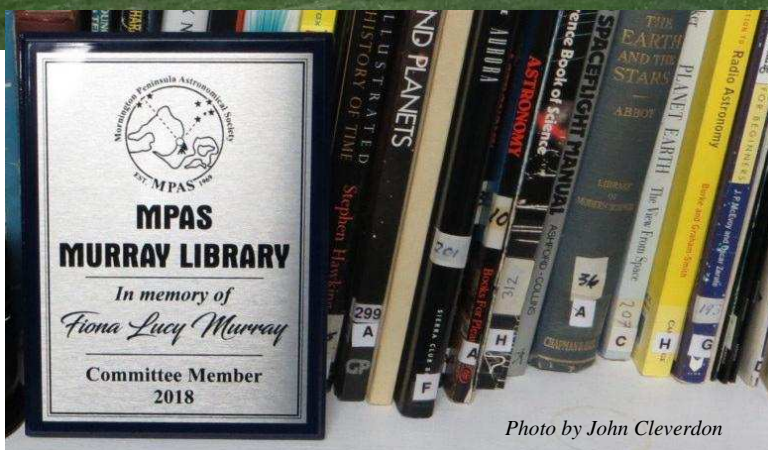


Photo by John Cleverdon



Photo by John Cleverdon

MPAS site setting in the bush, taken with a telephoto lens from afar.

Photo by Rohan Baumann



New Members Welcome

Karen, Brodie, Aimee, Brianne Patterson & Chris Hobbs.
 Carl, Michael, Jonathan Le & Maria Marshall.
 Alina, Ion, Maria, Anna & Catrina Dumitru.
 Jo, Andy, Maddy, Tom, Natalie, Samuel & William Chamberlain.
 Karen, Michael, Luke, Caitlin & Asher Bouwmeester.
 Elena Vikhrova & John Adams.
 Michael, Aristotle, Natasha Sioukas & Monica Teng.
 Glenn Patterson.
 Haidee Findlay & Daniel Gottliebse.
 Nicholas, Melanie, Leon & Louis Baptiste.
 Hana, Salim, Mohamad & Omar Basalamah.

Eden White.
 Alison, Joshua & Tahlia Walsh.
 Helen Russo.
 James Dowty & Damien Rundell.
 Andrew Parsons.
 Danielle Nicholas.
 Sharelle & Daniel Newman.
 Casey Lee & Crystal Hutton.
 Jamie Dalton.
 Tom Daley.



PUBLIC NIGHT THANK-YOU



Recent public viewing nights and school viewing nights have continued 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.



Scorpius editing team.

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

Send them to: **Greg Walton**
 gwmpas@gmail.com

MPAS SUBSCRIPTIONS 2018

Each ticking over of the New Year also means that Society fees are due to be paid. The committee has worked hard to ensure that 2018 fees are still the same as the previous many years' prices. So to assist the society in maintaining the facilities and services we provide and share, we appreciate your prompt payment for each and every year ahead.

As a reminder, the following structure of the 2018 fees is:

SOCIETY FEES

Subscriptions can be paid in a number of ways:

- Cash payments to a committee member
- Send a cheque, made out to "Mornington Peninsula Astronomical Society", to 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.

Click on the link for further information - https://drive.google.com/file/d/0BjvkvxZGI9g_NXZ4cWxHbERTdEE/view?usp=sharing

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

You can now renew your membership online. See link below. Click on Members then JOIN NOW at the bottom of the page. Then just fill in your detail on Try-booking.
<http://www.mpas.asn.au/members.html>



Full Member	\$50
Pensioner	\$45
Family	\$65
Family Pensioner	\$60

CALENDAR		November / 2018					Red Days indicate School Holidays
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
				1 Last Quarter	2 Public Night 8pm VicSouth	3 VicSouth	
4 VicSouth	5 VicSouth	6 Melbourne Cup VicSouth	7	8 New Moon	9	10	
11 Saturn above the Moon Remembrance Day	12	13	14 ASV Meeting	15 Venus Left of Spica	16 First Quarter Mars Left of the Moon	17	
18	19	20	21 Society Meeting 8pm	22	23 Full Moon	24 Members Night BBQ 6pm	
25	26	27	28	29	30 Last Quarter		

Monthly Events

Public nights - 8pm start on the 2nd @ the Briars

Society Meeting - 8pm to 10pm on the 21st @ the Briars

Members Night BBQ - 6pm on the 24th @ the Briars

VicSouth Star Party - 2nd to 6th @ Little Desert Lodge Nhill (Booking required @ the ASV web site)

CALENDAR		December / 2018					Red Days indicate School Holidays
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
30	31 New Years Eve					1	
2	3	4 Venus right of a thin crescent Moon Dawn	5	6	7 New Moon Public Night 8pm	8	
9 Saturn left of thin crescent Moon	10	11	12 ASV Meeting	13	14 Mars right of the Moon	15 First Quarter Members Night Xmas BBQ 6pm	
16	17	18	19 Scorpius Deadline	20	21	22 Jupiter and Mercury close Dawn	
23 Full Moon	24	25 Xmas Day	26 Boxing Day	27	28	29 Last Quarter	

Monthly Events

Southern Comets website - <http://members.westnet.com.au/mmatti/sc.htm>

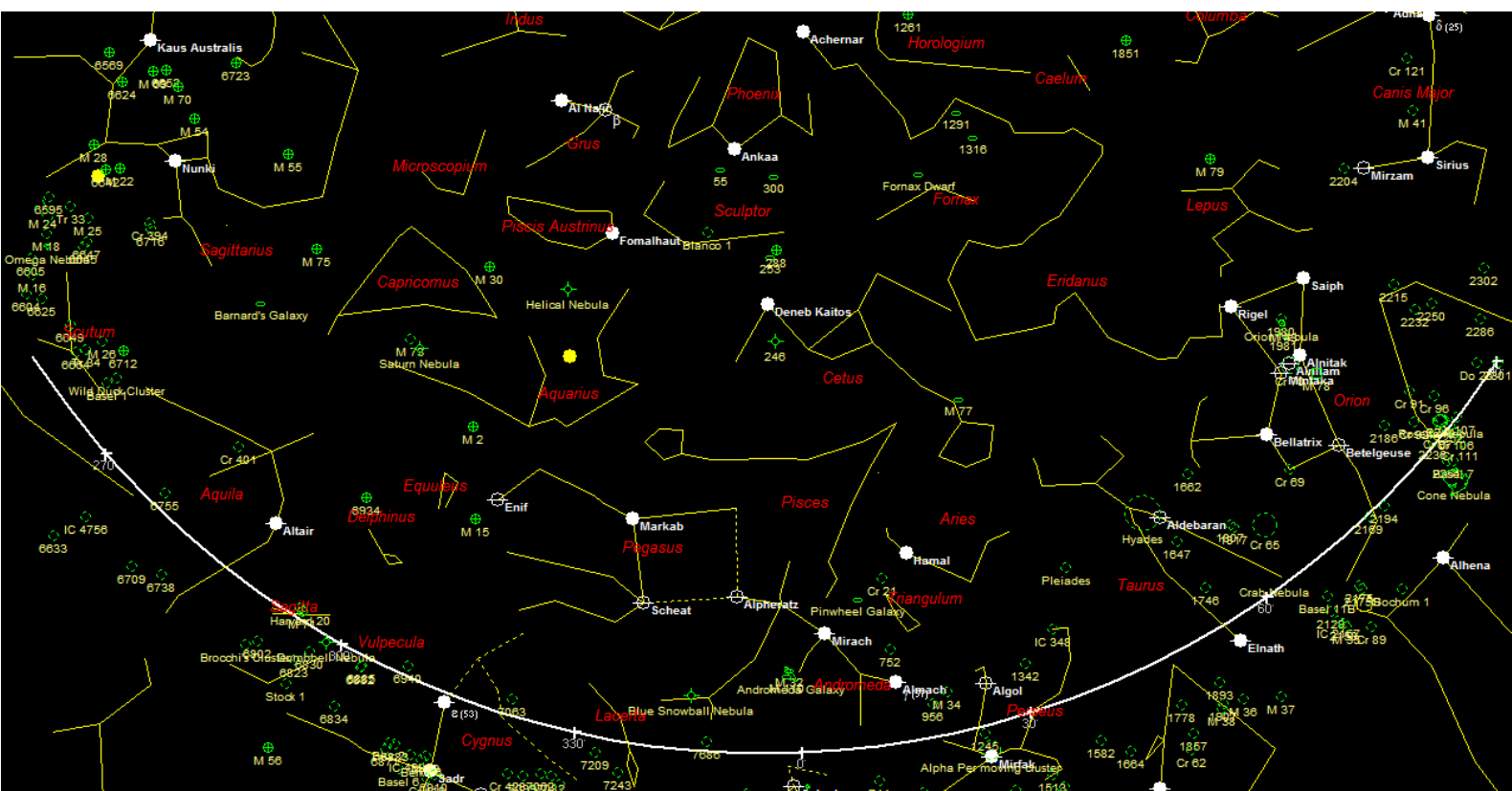
Public nights - 8pm start on the 7th @ the Briars

Society Meeting - No meeting in December

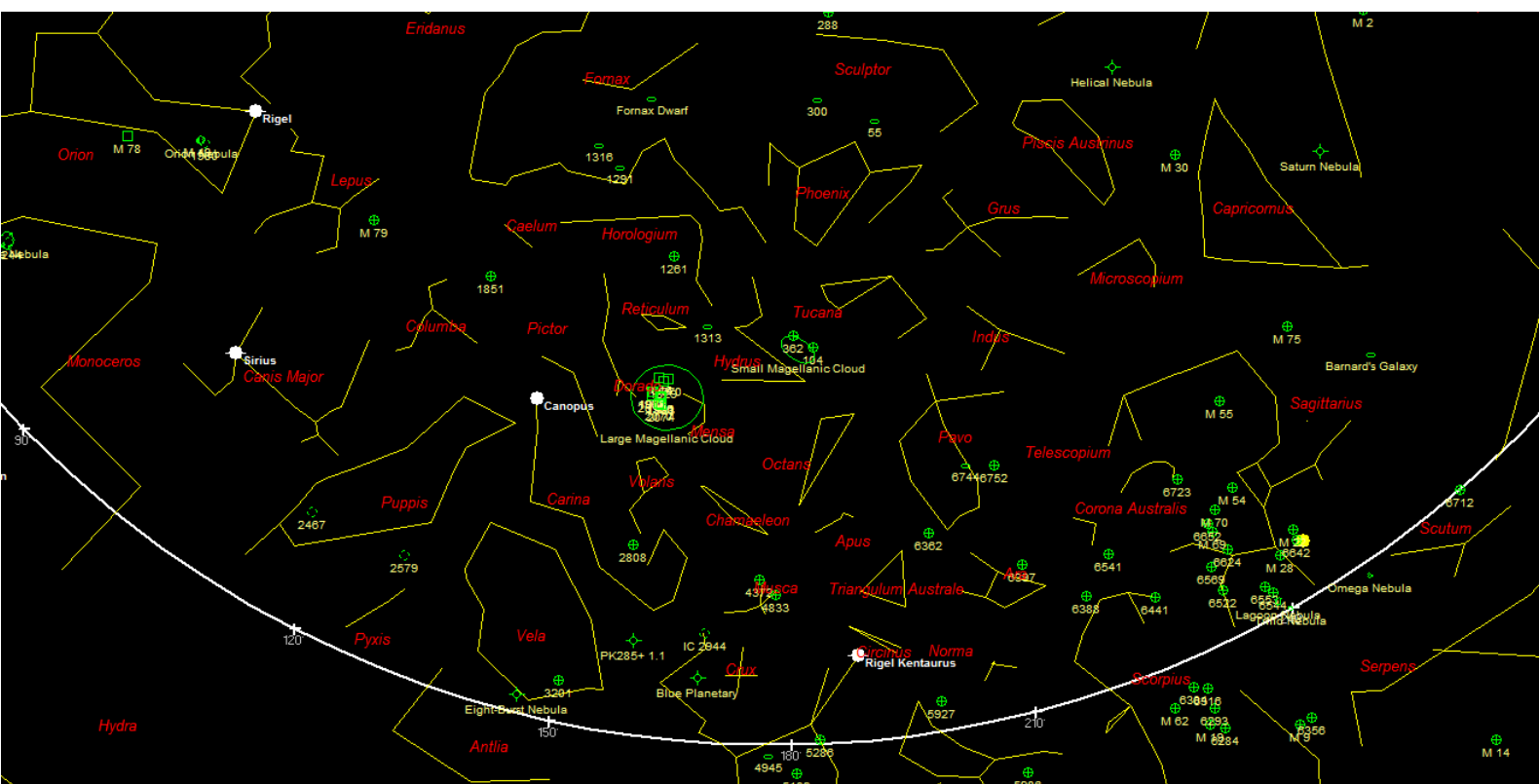
Members Night Xmas BBQ - 6pm on the 15th @ the Briars

Please... we need helpers to keep the MPAS Observatory open to members on all Saturday nights.
If you can help, contact Greg Walton on 0415172503 or email - gwpas@gmail.com

November / December is the best time to see the Andromeda galaxy. Always a challenge to find in the city glow. Looking North 8 degrees above the horizon using binoculars from the MPAS upper slab at the Briars. M31 Andromeda galaxy will look like a fuzzy blob and will not look much better with a telescope.



November / December looking South the large and small Magellanic clouds are as high in the sky as they can get. Old favourite Orion is rising in the east. Using the goto telescopes in the observatory see how many deep sky objects you can find. *Sky images generated with Skymap version 6.*



ASTRO NEWS

By Nerida Langcake



Japan's Hayabusa2 spacecraft successfully drops rovers on asteroid Ryugu

The Japan Aerospace Exploration Agency (JAXA) spacecraft Hayabusa2 was launched in December 2014 and travelled for four years before encountering Ryugu, successfully arriving at the asteroid on 27 June 2018.

Afterwards, for several weeks, the spacecraft remained at a distance of about 20 km above the asteroid. During the week of July 16, operations were begun to lower this hovering altitude, eventually bringing the spacecraft to less than 6 km from the asteroid surface. The Hayabusa2 mission includes four rovers with various scientific instruments. The encounter and release of the first two of the small rovers occurred early on September 21 at a distance of 313 million km from Earth.

On September 22, 2018, JAXA confirmed the two rovers had successfully touched down on Ryugu's surface. This marks the first time a mission has completed a successful landing on a fast-moving asteroid body.

According to JAXA, the MINERVA-II rovers were released from an altitude of about 55m. They look more like cylinders or robotic wheels than the jeep-like rovers we see on Mars. They use capacitors and small solar cells for power. Each rover measures about 18 cm in diameter and has a pair of cameras and a thermometer among its instruments. Images sent by the Hayabusa2 spacecraft and its rovers take more than 17 minutes to reach our planet. The rovers are designed to autonomously hop around the surface without human intervention using small, rotating motors. Thanks to Ryugu's weak gravity, they can stay afloat for 15 minutes, and move 15 meters in any direction.

MINERVA stands for the "Micro Nano Experimental Robot Vehicle for Asteroid, the second generation," and is the successor project to a similar rover that flew aboard the first Hayabusa spacecraft that visited asteroid Itokawa. That MINERVA rover missed the asteroid's surface and tumbled into deep space after deployment in 2005.

Although the mission will measure Ryugu's gravity, it is estimated to be some 60,000 times weaker than Earth's gravity. That's why, instead of roving over the surface of Ryugu, the rovers will hop and rotate over the surface, which is a wise design for exploring the huge asteroid despite its weak gravity.

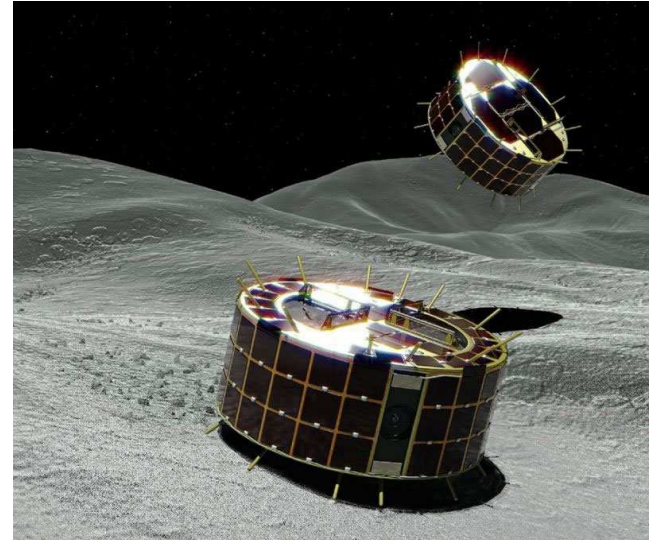
Ryugu is a space rock with a diameter of about 1 km and classified as a potentially hazardous asteroid, with an orbit that occasionally brings it into Earth's vicinity.

Ryugu orbits the Sun at a distance of 0.96–1.41 AU once every 16 months (474 days). It has a minimum orbital intersection distance with Earth of 95,400 km (0.000638 AU), which translates into 0.23 lunar distance.

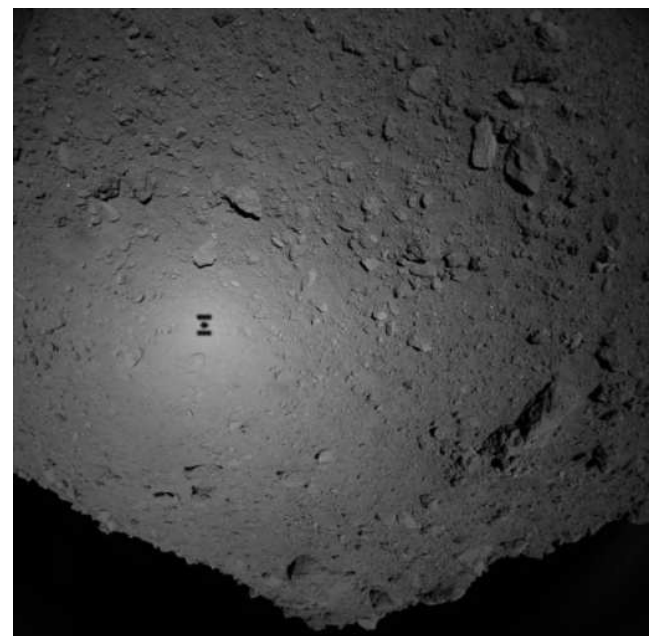
On October 2, a shoebox-sized lander called the Mobile Asteroid Surface Scout (MASCOT) was deployed from the Hayabusa2 spacecraft and came to rest on Ryugu shortly thereafter. The lander's first photo of asteroid Ryugu shows a rocky world, and even MASCOT's own shadow. MASCOT has already started gathering data with its four onboard science instruments — a camera, a radiometer, a spectrometer and a magnetometer — mission team members said. The 10 kilogram lander must make haste, because its battery is expected to die just 16 hours after touchdown.

The primary goal of Hayabusa2 is to collect a sample from the surface, as early as October, and will be studying Ryugu until December, 2019, when it is expected to start traveling back to Earth with collected samples from the asteroid surface, to be analysed by scientists in laboratories.

The return capsule with samples will plummet back to Earth one year later, on December, 2020.



An artist's illustration of Hayabusa2's hopping rovers, MINERVA-IIIA (back) and MINERVA-IIIB (foreground), exploring the surface of the asteroid Ryugu. Credit: JAXA



Japan's Hayabusa2 spacecraft snapped this photo at around the time it deployed the two tiny MINERVA-II rovers toward the surface of the asteroid Ryugu. Hayabusa2's shadow is clearly visible. Credit: JAXA

Smartphone Astrophotography

Do not underestimate the capabilities of your mobile phone! Whilst you won't obtain the same quality of imaging in comparison to a DSLR, you CAN still take some excellent astronomy photos with your smartphone connected to a telescope.

It all comes down to adjusting your phone camera advanced settings, and a good adapter to connect the phone to the telescope. Using your handheld phone in "auto" mode will not produce the image that you're after.

Smartphone Adapter:

There are a few smartphone adapters out there, and some are much better than others. The first one I used worked okay - it did the job - but there was nothing to hold the phone in from the bottom (sides only) so after slewing the telescope around to view different objects, eventually the phone slid out and smashed yet another tempered glass protective screen (luckily, they're easily and inexpensively replaceable).

After testing a few other adapters out, my favourite is definitely the Celestron NexYZ 3-Axis Universal Smartphone Adapter. It's compatible with all smartphones, fits 1.25" and (most) 2" eyepieces, has 3-axis control to obtain perfect alignment over the eyepiece, and most importantly it has a shelf at the bottom for the phone to sit on and never slip out! It clamps and tightens onto the eyepiece and can also be used on binoculars, microscopes, etc. It's super easy to align the phone camera precisely by turning the X- and Y- axis adjustment knobs to adjust the phone up or down, and the Z-axis knob to lower the phone to and from the eyepiece until you have the perfect shot lined up. This makes changing eyepieces and keeping the phone aligned (with only minor tweaks) very convenient. Please note that MPAS have purchased two of these excellent adapters for members to use at the site.



Celestron NexYZ 3-Axis Universal Smartphone Adapter

iPhones:

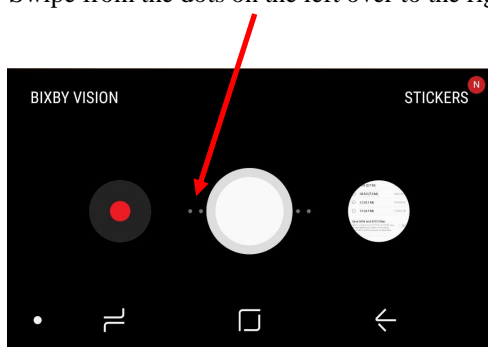
If you have an iPhone, your best option to get the most out of the phone camera is to download a third-party app called "NightCap Camera" and adjust your camera settings via the app. NightCap Camera is a powerful app that takes amazing low light and night photos, videos and 4K time lapse. There are 4 dedicated astrophotography camera modes. Stars Mode is ideal for a starry sky or Northern / Southern Lights (Aurora), or leave your device capturing in Star Trails Mode and watch the stars paint circles in the sky. There are also modes for easy photography of the International Space Station (ISS) and meteors (shooting stars). So iPhone users, download the app, then watch a tutorial to get the most out of your settings.

Android Phones:

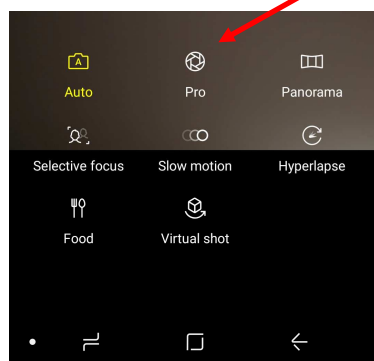
If you are using an android smartphone then the chances are that your phone already has the option to change the camera settings built in. Referring specifically to Samsung phones, I'll use screenshots (cropped) from my Samsung Galaxy S8 to show how to find and adjust the camera settings on your phone.

Changing from Auto to Pro Mode:

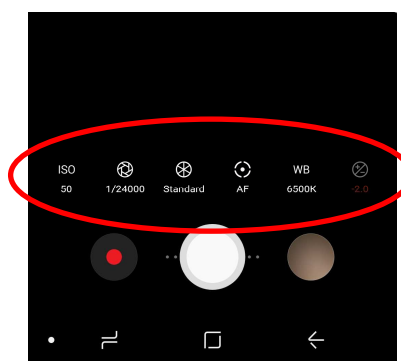
Firstly, the camera needs to be changed into "Pro" mode. As shown in screenshot 1, there are dots to the left and right of the shutter button. Swipe from the dots on the left over to the right and you will discover another menu (screenshot 2). From this menu select "Pro".



Screenshot 1



Screenshot 2



Screenshot 3

At the lower part of the screen you will see that you now have more advanced settings (screenshot 3). Once your phone is connected via the adapter to the telescope and focused, adjust the camera settings according to the object you would like to image.

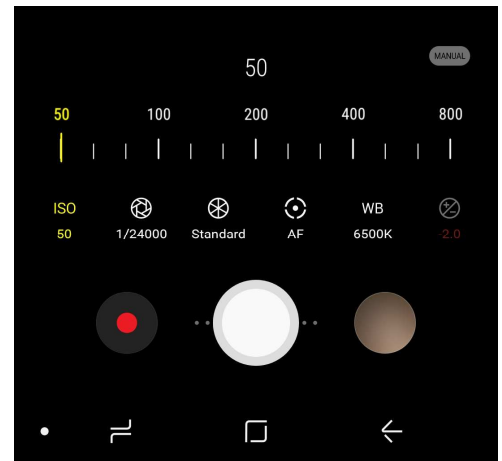
ISO setting (screenshot 4):

Adjust the ISO setting by using your finger on the screen to slide the marker left or right to a higher or lower ISO number setting.

“ISO” typically means how “sensitive” the camera is to light. The more sensitive it is (higher ISO), the brighter the picture will be. The downside though is the more sensitive it is, the more “noise” the camera will pick up. This makes photos at a very high ISO very grainy, but if you combine a slow shutter setting with it you can take very good quality photos even in extremely poor light.

Example, to take a photo of the Moon with the Samsung S8 I would generally use ISO 50 and a faster shutter speed of 1/500s, due to the brightness of the Moon. However, to take a photo of nebula (and most DSO’s) I would use the maximum ISO 800 and the slowest shutter speed of 10 seconds to gather as much light as possible.

To image Jupiter and include some planet detail, I would use ISO 50 and 1/90s shutter speed, as Jupiter is very bright. But if I turn up the ISO to 100 and change the shutter speed down to 1/4s then Jupiter is totally overexposed but the Galilean moons are captured (see photos at bottom). So, play with the settings to see what best suits the object you’re trying to photograph.



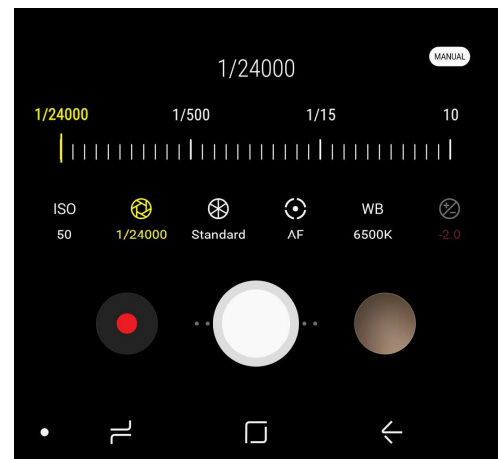
Screenshot 4

Shutter Speed (screenshot 5):

The shutter speed or exposure time is the length of time for which the shutter is open exposing light onto the camera sensor. Similar instructions to the ISO setting where bright objects (like the moon) will use a faster shutter speed, but objects that you need to collect more light from, such as nebula, clusters, some planets, etc, will require a longer exposure time/ slower shutter.

Please note: your telescope will need to have tracking to be able to use an exposure time greater than two seconds, as the object you are imaging will noticeably move in that time.

** Leave the next two settings as they are Standard tone and Auto Focus. Adjust your focus with the telescope.



Screenshot 5

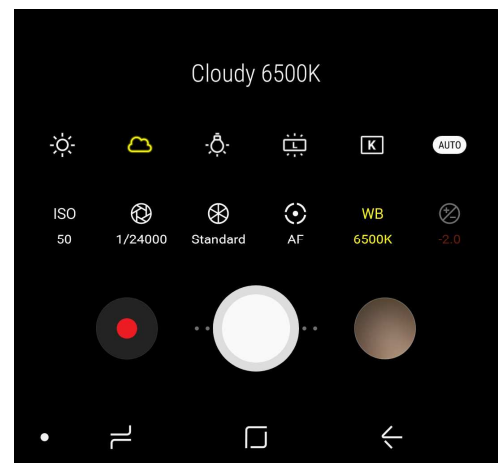
White Balance / WB (screenshot 6):

White balance is the process of removing unrealistic colour casts, so that objects which appear white in person are rendered white in your photo. Proper camera white balance has to take into account the “colour temperature” of a light source, which refers to the relative warmth or coolness of white light.

Adjust this setting according to the object you’re taking a photo of. Some planets might look better with a “Cloudy 6500K” setting but a globular cluster might appear whiter with a Daylight 5500K” setting.

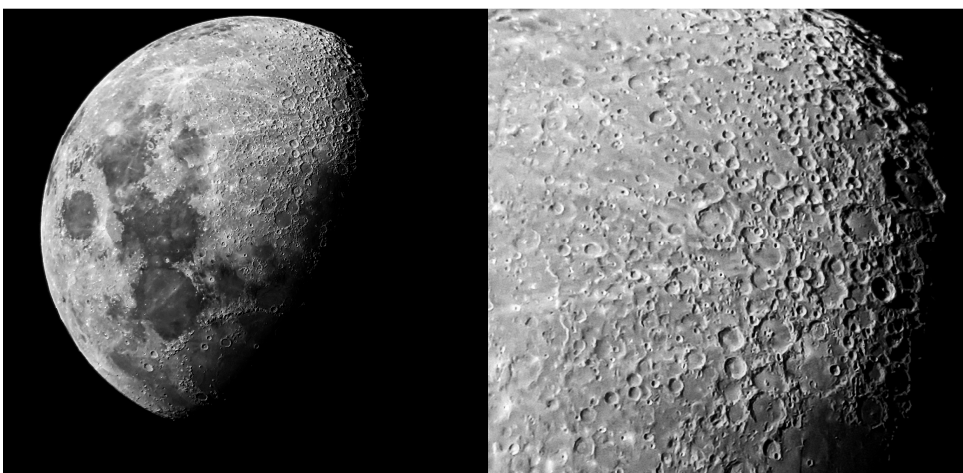
Finally, in the top right corner of the camera screen is a little cog for the standard camera settings. I always use the highest setting possible for the Rear Camera Picture Size (4:3 - 12M, 4032x3024) to ensure the best quality resolution that the phone can produce.

By Nerida Langcake



Screenshot 6

Moon: ISO50, 1/500s ~ left image with 25mm eyepiece, right image with 15mm eyepiece



JUPITER: Left image with some planet detail taken at ISO50, 1/90s. Right image overexposed but with Galilean moons at ISO100, 1/4s.

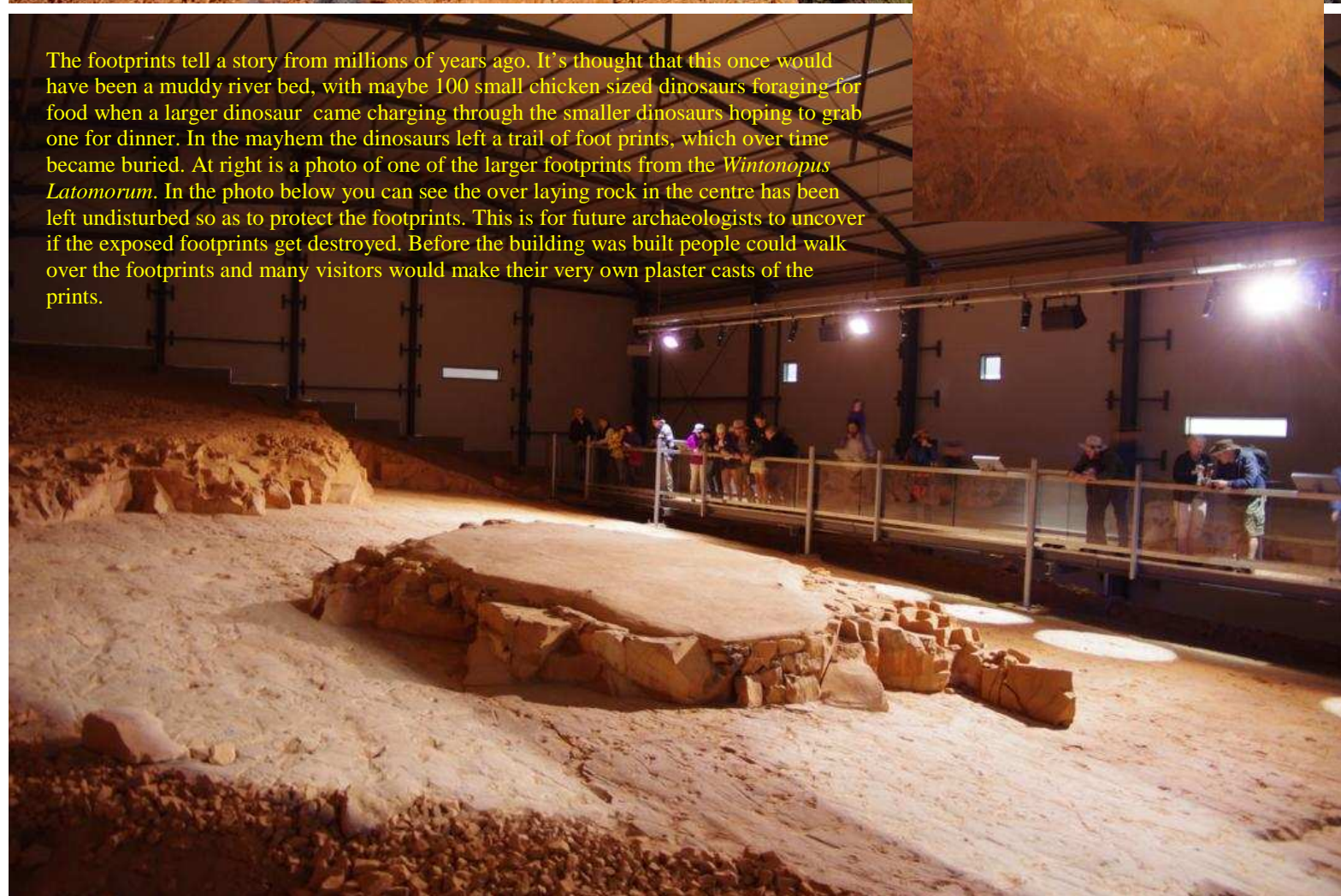
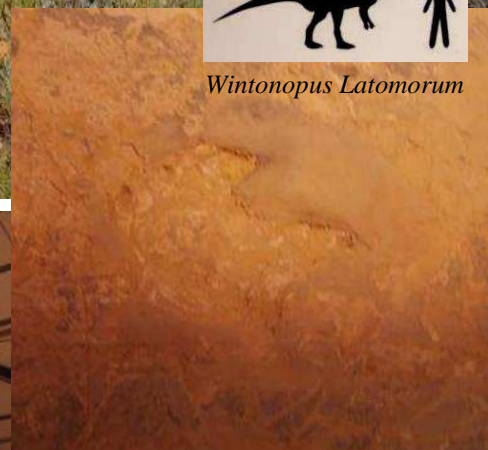
Outback Queensland Dinosaurs

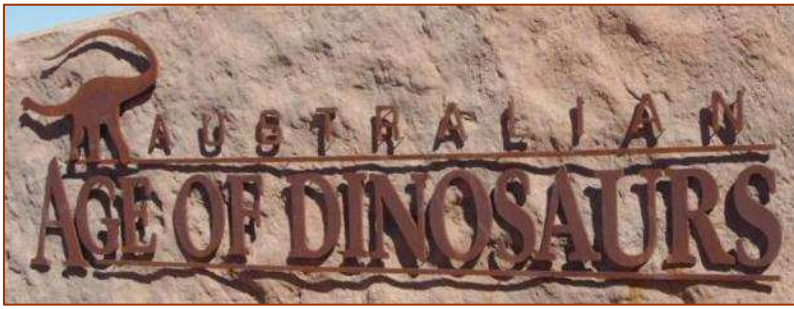
Drive through outback Queensland along the Dinosaur trail and you'll see a land of contrasts. With no city smog the sky is so blue and the clouds so white, while the land is from a dull grey to bright orange. Near Winton we visited the Dinosaur Stampede at Lark Quarry trackways, where a large temperature controlled building has been constructed over a bed of fossilized Dinosaur footprints.



Wintonopus Latomorum

The footprints tell a story from millions of years ago. It's thought that this once would have been a muddy river bed, with maybe 100 small chicken sized dinosaurs foraging for food when a larger dinosaur came charging through the smaller dinosaurs hoping to grab one for dinner. In the mayhem the dinosaurs left a trail of foot prints, which over time became buried. At right is a photo of one of the larger footprints from the *Wintonopus Latomorum*. In the photo below you can see the over laying rock in the centre has been left undisturbed so as to protect the footprints. This is for future archaeologists to uncover if the exposed footprints get destroyed. Before the building was built people could walk over the footprints and many visitors would make their very own plaster casts of the prints.





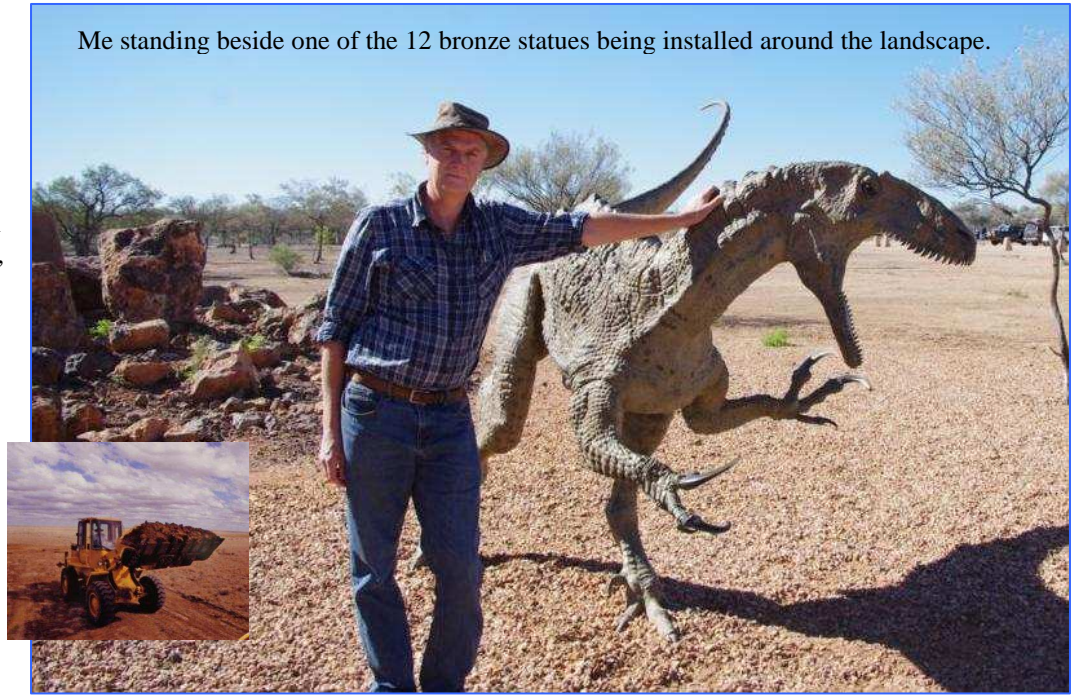
Just up the road still in the Winton area you can find the Australian Age of Dinosaurs Museum, which houses one of the largest collections of dinosaur fossils. Most museums have only replicas but here they are the real thing. This museum started by chance after a local farmer came across some rocks that did not look like anything

he had seen before in the area. At the time he was busy rounding up sheep and thought I will come back to look at these rocks, which he did many month after taking them home and putting them on the kitchen table. His wife started cleaning them and they realized they could be bones. So a call was made to the Queensland Museum, which some months after sent out some experts to look at the rocks. They were surprised to see such large fossilized bones. The next visit brought a large team to dig the site where the bones were found, but did not find much. After they left the farmer got a little impatient and used his digging machine to dig much deeper and unearthed many more bones. The news travelled and other locals also started finding fossils, so many that the museum did not know what to do with them. The locals

decided it would be good for the community if the fossils could stay in the area instead of just being shipped off to the Queensland museum. So it was decided to set up their own museum with the help of the Queensland Museum and the State Government. A local land owner donated a small bit of rocky unfarmable land which turned out to be many hundreds of acres. So it began. Now it houses the largest collection of dinosaur bones in the world and laboratories for cleaning, preserving and cataloguing all manner of fossils. The fossils keep coming too, with the locals dropping off fossils all the time, often phoning saying we found some fossils and turning up with a large truck full of fossils, like the fossilized tree laying along side of the shipping container in the photo below left. In fact the fossils have been arriving much faster than can be clean and preserved. See a rack full of stored fossils waiting their turn in the photo below right.



Me standing beside one of the 12 bronze statues being installed around the landscape.





The ground in this part of Queensland has a strange property, in that as the soil gets wet with the changing seasons, the light fossils rise to the surface, so each year brings more fossils.

Right - A large team of trained volunteers give up their holidays each year to clean the fossils, most coming back year after year. It's thought it would take at least 2 years to catch up with the backlog, if nothing else was found.

In another building on the site, you can see a display of finished fossils.

A presenter takes you through to a room of real dinosaur bones and talks about how these bones are some of the most complete dinosaur skeletons ever found in the world.

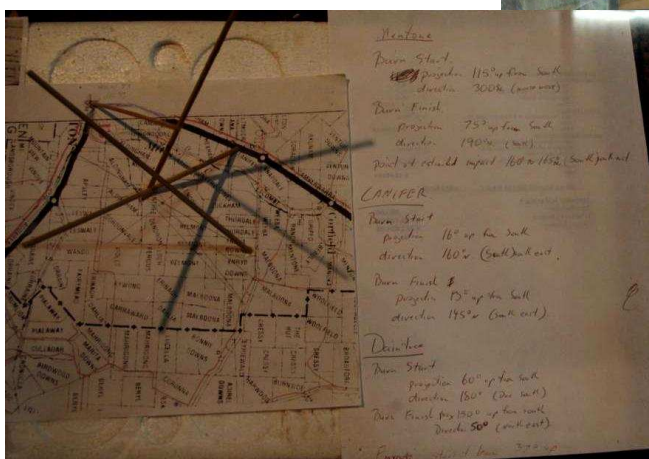
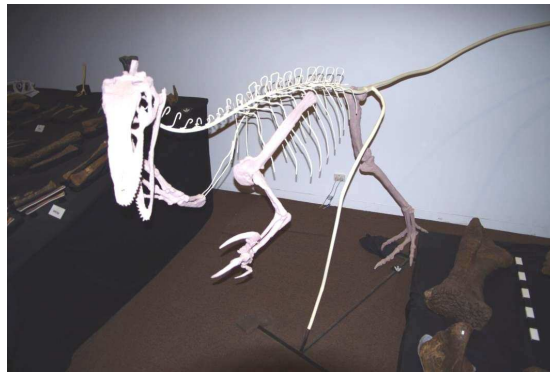
Right centre is a mock up skeleton of a dinosaur named Matilda which is a representation of what this clawed hunter looked like.

Far right and centre are photos of the real dinosaur bones from Matilda.

Far right shows that Matilda could grow to 4 metres in height.

With all this interest many locals and visitors walk the land looking for more fossils, but sometimes uncover other treasures. Like the 40 kg Winton Belmont meteorite shown in this glass cabinet below, also below a photo of the notes recorded about the fall and a map used to locate the meteorite fragments.

Photos & Story by Greg Walton





NGC4622, NGC4603, NGC4650 - Galaxy Group - I found this group of galaxies one morning panning through my planetarium program. Roughly centre is a small, but interesting face on unbarred spiral galaxy called NGC4622, who grabbed my attention by its lovely circular, outer shell like arms. To frame this region, I needed a suitable guide star, and luckily found one that provided me this field of view of rotation, that allowed the inclusion of NGC4603 [outer left], and NGC4650 [outer right]. Throughout the field are many smaller galaxies, with some interesting blue objects to be found. The whole left hand side of the image, and in the middle reaching to the right side is heavily influenced by integrated flux nebula [IFN]. The term was coined by Steve Mandel-Wilson who defined them as "high galactic latitude nebulae that are illuminated not by a single star (as most nebula in the plane of the Galaxy are) but by the energy from the integrated flux of all the stars in the Milky Way. These nebulae clouds, an important component of the Interstellar Medium, are composed of dust particles, hydrogen and carbon monoxide and other elements" [from the Wiki]. This IFN was very distracting, shrouding many of the objects in the affected half of the image. I reduced the impact of the IFN, leaving it subtly in the background of the image, so if you look hard enough, you will see it.

By Steve Mohr



NGC2327 - Emission Nebula - Forming a small part of what is more commonly called the Seagull Nebula [IC2177], NGC2327 is actually the dark and reflection nebula located to the left side of the image. NGC2327 is located in the constellation of Canis Major, it is best viewed in the month of January. *By Steve Mohr*



OFFICE BEARERS OF THE MORNINGTON PENINSULA ASTRONOMICAL SOCIETY

President: Peter Lowe
Vice President: Greg Walton
Committee: Anders Hamilton, Trevor Hand,
 Simon Hamm, Neride Langcake
 & Rohan Baumann

Secretary & Phone Contact: Peter Skilton
Treasurer: Jamie Pole
Web master: Dave Rolfe
Scorpius editor: Greg Walton
Librarian: Fred Crump

SOCIETY MEETINGS

Meeting Venue: MPAS Astronomy Centre
 The Briars, Nepean Hwy, Mt Martha
 (Melways ref. 151/E1)
Society meetings: Don Leggett Astronomy Centre
 8pm on the third Wednesday of the month
 (except December)
 (See map at right & Below)

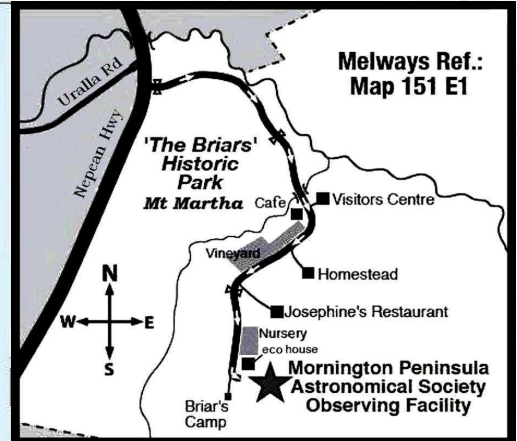


**Please Note - 2018
 Society meetings
 will be at the Briars.**

For addition details:
 Internet: www.mpas.asn.au
 email: welcome@mpas.asn.au

Phone: 0419 253 252

Mail: PO Box 596, Frankston 3199, Victoria, Australia



LIBRARY

The Society also has books & videos for loan from its library, made available on most public & members nights at The Briars site. Contact Fred Crump

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 & events information as well as being able to join in discussions & ask questions with other members.

To join, to go: www.groups.yahoo.com/e-scorpius and sign up to Yahoo groups - you are required to sign up to Yahoo groups to join E-Scorpius. Once you have signed up at Yahoo groups, email welcome@mpas.asn.au say that you want to join E-Scorpius & you will be added to the E-Scorpius list.

facebook MPAS - <https://www.facebook.com/mpas0/> MPAS members - <https://www.facebook.com/groups/MPAS1/>

VIEWING NIGHTS - MEMBERS ONLY

Viewing Night - 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 9776 2074 or 0415172503 if they need help getting to The Briars site. Upon arrival at the site, remember to sign the attendance book in the observatory building.

For additional details:

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

Phone: 0419 253 252

Mail: PO Box 596, Frankston 3199, Victoria, Australia



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

Send them to the editor: Greg Walton gwmpas@gmail.com

MPAS Scorpius on face book - <https://www.facebook.com/Scorpius-MPAS-1694951307446763/>

SCORPIUS The journal of the Mornington Peninsula Astronomical Society

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