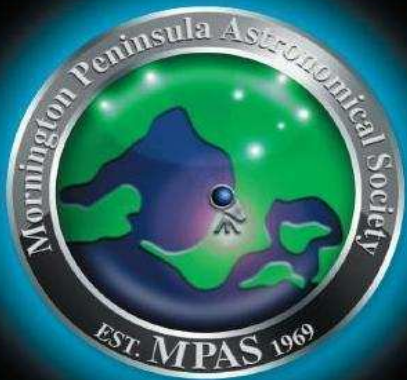


Cover image: Looking at Saturn through Big Blue at May PVN. By Greg Walton



SCORPIUS

THE JOURNAL OF THE
MORNINGTON PENINSULA ASTRONOMICAL SOCIETY INC.

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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.



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

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

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

Mornington Peninsula Astronomical Society

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SOCIETY NEWS

By Greg Walton



Public Night May 4th - The weather had been rainy and cloudy all day. As a result we decided not to advertise on Facebook, thinking that if 200 turned up we would not be able to accommodate them. Even then we had about 70 in attendance. But as the sun went down and the sky darkened, amazingly the sky cleared. Many members of the public had arrived early hoping to look through the telescopes before the talk started. That paid off with excellent views of Jupiter through Big Blue, being only 2 weeks before opposition (Jupiter being at its closest to Earth). We also showed many other deep sky objects through the telescopes in the observatory before the Moon rose at just before 9 pm. By the time the talk finished Saturn was starting to rise which kept the public hanging around till past 10 pm. At right, a young astronomer looking at Saturn.



Society Meeting at the Briars May 16th - saw 30 members in attendance. Peter Lowe chaired the meeting. Peter Skilton received a Star-man award from Ian Sullivan. Trevor Hand talked on astronomy on the high seas. Trevor did a series of astronomy talks on a cruise ship travelling from Sydney to Perth. He talked about life working on the ship as opposed to being a guest and getting to see parts of the ship you would not normally see. Afterwards members chatted over coffee. There was no viewing on the night due to cloud. The meeting finished up at 10:30 pm.



SCAG May 18th - starting at 8 pm Scouts Cubs and Guides viewing night. The sky was mostly cloudy with a few drops of rain. Peter Skilton did the talk, while Phil Holt, Jamie Pole and Greg Walton operated the telescopes. Half way through the talk the sky cleared enough so everyone was sent outside and got to see Jupiter through gaps in the cloud. After the second part of the talk Saturn had climbed high enough to be seen, which impressed everyone. Others helping out were Simon Hamm, Peter Lowe and Josh Pole.

Members BBQ Saturday May 19th - saw about 25 plus members in attendance. The royal wedding didn't stop members from coming to the BBQ. Pia set up the tables with a royal wedding theme with purple table cloths, candles and photos of the royals. We also had the wedding on the TV. The shed felt warm thanks to the new air conditioner. Around 7:30 a fire truck arrived at the adjacent camp after a fire alarm was triggered. We enticed the fire crew down to the observatory to look at the telescopes. At 8 pm I did a brief talk on astrophotography and showed time-lapse videos of comets traversing the sky. The talk finished just before the long-winded wedding ceremony began. Those who did not wish to watch the wedding opened the observatory and got some excellent views of Jupiter. We also looked at some bright star clusters with the spectrum grating, that shows a rainbow of colours in a line from each star. The clouds got too thick by 10 pm so we shut the observatory. Thank you to all who cooked, cleaned and brought cakes.



Stargazing Live Wednesday May 23rd starting at 7 pm - Thanks to all the members who attended the night We had plenty of helpers when needed. We officially had 201 people registered for the count (if the clouds had parted). This excluded officials and non-participating guests! The registration desk and parking attendants were busy for hectic 15 minutes. I also had plenty of positive feedback with Peter's talk using the new PA system. Additionally I think we have (or will have) several new memberships as well. Regards, *Dave Rolfe*



The Briars was buzzing last night at the ANU/ABC Stargazing Live event as part of the Brian Cox/Julia Zemira TV programme series. We've had 6 new memberships in the lead-up few days to the evening, and one on the evening, with a couple of hot prospects. Leanne, Simon and I marshalled traffic away from the ditches and bollards in the dark and were impressed at how many mobility-impaired individuals made the effort to come on the evening as well. Two ladies I shuffled down from the carpark on my arm, and another had his knee replaced the week before and was hobbling without crutches or frame. Now that is keenness to attend. Two families present I spoke with were totally unaware of the existence of MPAS before this ABC TV coverage and there probably might have been others. It just goes to show that you have to keep putting the message out there by all sorts of different communication channels. It was an impressive sight to behold 201 instruments in 5 set-aside areas on the Briars site, each marked out like the lines painted on a football field. If the weather had been a lot better, I'm certain we'd have had many unannounced drop-ins as well to bolster the numbers even more, just like what happens at our regular public nights. There would have been even more instruments brought to bear if the prospects of



seeing the Moon had been more hopeful on the evening to warrant bringing them out. All the society instruments could have been added to the tally, and doubled with finder scopes removed, and I had a dozen more instruments of various sizes in the back of my car to share around with otherwise non-participants if the clouds had thinned. Other members present were very probably the same. To be a participant and be included in the official count, you needed to have an instrument to yourself, even if borrowed. Alas, the clouds did not clear, except for a couple of minutes earlier in the evening when a small patch opened enabling the Moon to be seen tantalisingly. Our count of attendees will still be of interest to the national organisers for knowing the true scale of the event across Australia, even though the weather meant the Briars site was therefore disqualified and our number won't be in the official Guinness final count. Being disqualified unfortunately means we won't be eligible for any certificate issued by Guinness if the national count breaks the record. At the time of writing this, the tally is unknown but is very likely to beat soundly the 2015 successful record of just under 8,000 instruments Australia-wide. Great organisation effort and teamwork on many levels before, during and after the event by a lot of members produced a fun evening despite the weather. Take a bow one and all who participated. Regards, *Peter Skilton*



I'd like to extend a Major Thanks to all the organisers, volunteers and member participants at last night's Stargazing Live event. We estimated about 240 people in attendance all up and it was one of our most successful "Fully Cloud Out" events. Although we got scrubbed from the Record Attempt due to weather, people seemed quite happy. There are too many people to thank individually so this is a general thanks for making the event such a success. The indoor live TV was quite successful and I got a lot of positive feedback from the outdoor cinema presentations audience. Lots of questions. The new sound systems both indoor and outdoors worked a dream although I'll have to watch what I say wearing a radio mic !! It was a most enjoyable night. Cheers President *Peter Lowe* Photos by *Rohan Baumann*



Melbourne Essence Group viewing night at The Briars starting at 6:30 was a big success with more than 100 visitors. Peter Lowe did the talk, then one of the group also spoke on astronomy. The sky was clear so everyone got to see the Moon, Saturn, Jupiter, Mars and some deep sky objects. On the telescopes were Fred Crump, Nerida & Piper Langcake, Simon Hamm, Peter Skilton, Heath & Ethan Lewis, Pia Pedersen and myself. Special thanks to Pia who mopped all the floors in the big shed. Also special thanks to Bonny who worked all night in the kitchen making sure everything was topped up and kept clean. Bonny and Fred also set up the chairs while Heath set up the sound system. *Greg*



Photo: Greg Walton

Benton Junior College May 28th - Monday night clouds foiled us with only a glimpse of the Moon through the clouds. Then students went inside for Peter Lowe's Astro talk. On the telescopes were Dave Rolfe, Jamie Pole, Fred Crump, Nerida Langcake, Phil Holt, Pia Pedersen and myself. *Greg Walton*

Nice to see the kids from Benton Junior College getting into their space week! Impressive library of Astronomy books. *Dave Rolfe*



Photo: Dave Rolfe

Benton Junior College May 29th - Tuesday night was very busy at the telescopes with 60 students. Full Moon and mostly clear skies. Jupiter showed a shadow transit just above one of its cloud bands. Fred, Philip, Nerida, Joanna, Dave and Jamie, Pia and myself were on the telescopes. After the viewing Peter Lowe gave his Astro talk finishing at 8:30 pm. *Greg Walton*



Photo: Dave Rolfe



Photo: Greg Walton

Jamie Rolfe running his new scope for the first time at Benton Junior College. He was stoked he had a line! *Dave*



Photo: Greg Walton

Phillip Island school camp May 30th - It was a damp evening to the sound of breaking waves on the shoreline yesterday at the YMCA camp on Phillip Island for a viewing night for Strathcona Baptist Girls Grammar from Canterbury. This camp is a sister site to Camp Manyung in Mt. Eliza. We were deemed to be the highlight of their visit of 43 year-5 girls, so we couldn't disappoint on that expectation. So six supremely optimistic (some might describe them a little differently) MPAS souls drove about 100 km in the dark down to the island in constant drizzle and rain all the way. One keen one adorned with Bunnings umbrellas arrived an hour early just to be sure. It's still a very dark road despite all the major improvements made to it over the years for the raceway revellers. The talk indoors in the camp's bean-bagged recreation room was given by Peter Lowe on the planets up to Earth, and by Peter Skilton on meteorites and cornercube reflectors. Present with instruments onboard were Simon Hamm, Nerida Langcake (who we discovered was skilled in moth removal), Heath Lewis and Greg Walton. However, the skies did not clear for sufficiently long during the talk to get everyone outside under the stars. So the girls headed for bed at 8:30 pm. By Murphy's law, as we were packing up the gear in the cars, the skies parted between waves of rain; and the Moon, Jupiter and Saturn were visible for about 5 minutes, but too late to retrieve the audience and show them the sky. Better luck next time. Then the next wave of rain swept in just in time for the 100 km drive back north from the island. MPAS has given a stargazing evening on the island before, but at a different location, and that too was clouded out. We've also had members living on the island at various points in the past. Like the Stargazing Live Guinness Record attempt earlier in the month, and like many other field trips we've done over the years to far-flung places for some astronomical event or other, despite the outcome it was nevertheless overall an adventure for all involved. Special thanks to the resilient members who braved the cool and wet conditions of the evening helping to spread the love of the night sky to others. Regards, *Peter Skilton*



Public Night June 1st - Pia and I arrived early to set up telescopes and help with general cleaning. The day before the PVN we were able to pick up another 100 kid's telescopes from the ABC for those who missed out. The night was very cold with a 100% clear sky at the Friday PVN with around 125 members of the public in attendance. Many arrived early to look at Jupiter, Saturn and the Moon before Trevor Hand's talk about Saturn, as it's almost at opposition. We sold lots of kids telescopes left over from the Stargazing night. After the talk Mars had risen showing its bright polar cap. Also many deep sky objects were on offer in the observatory. It was very good to see so many new members helping out running the telescopes. The whole night had a very good feel about it, with many a praiseworthy comment from the public. *Greg Walton*



Viewing night June 5th - Tuesday was a fairly cool winter evening at Camp Iluka in Shoreham (Red Hill to Google Maps) last night when MPAS visited a group of 30 visiting Singaporean families who were glamping on the site. This site was formerly owned by the Girl Guides (the street sign even still says G.G. Iluka), but is now in private hands. My daughter even spent a night or two there while she was in gumnuts many, many moons ago. The usual interactive talk and slideshow indoors was dropped on the night, at the organiser's request, in favour of a walk and talk followed by telescopes. Peter Skilton first led the bilingual group through the carpark after a quick rundown about Crux, Scorpius and handing around the meteorite. Then it was down winding bush paths in the dark and then up the hill to the "henge" near the pinnacle. The amassed crowd had explained to them what Pipehenge is about, and how to use it to find south, map the planets along the ecliptic in winter and, indeed, how to climb on its cold, steel frame, which several of the younger visitors with no temperature receptors in their fingers did. The main constellations and Milky Way features were also pointed out. The differences in the sky with that experienced in Singapore (marginally north of the equator) was also relayed. This clearly was an engrossing talk because the organiser tried leading the group away to the telescopes by waving his torch and moving down the hill. He reached halfway down before realising no-one was following him! The skies were wonderfully dark, with no Moon, and clear from horizon to horizon, at least on the hill top by the henge. After about 45 minutes, everyone backtracked and made their way to where the telescopes were set up next to the billabong. There, Robin Broberg had his 20 inch Dobsonian set up after unloading it from his trailer, and giving a great view of 47 Tucanae, and Nerida Langcake had her trusty 6 inch getting its first ever look at Saturn between the trees. Jupiter and its four main moons were also clearly visible. There were lots of questions before the group dispersed to their glamping tents, and we all packed up to return home. It felt quite Pagan in nature under the stars with the henge there. Not sure what might have transpired if we were a tad closer to the solstice. Regards, *Peter Skilton*



Viewing night June 9th - While there were no party pies nor red lemonade to be had, last night saw a post-party activity under the stars at the Briars for 12-year-old Elliot and a small group of his friends and immediate family. They had just arrived after another activity in the sculpture park at McClelland Gallery. The air was cool, with no wind and a fair bit of condensation later, though the skies were cloud-free. Charlotte Swart kindly opened up the roll-off roof and showed Jupiter and its moons, with and without filters, and also the Jewel Box with the refractor. Then Peter Skilton gave an outside commentary on some of the constellations that were visible, and showed them a gibbous Venus in the western sky on the upper slab with his 15-cm Celestron. The planet was too low to see above the observatory building walls. There was about a dozen satellites seen passing overhead given the early start time. Fred Crump and his friend Bonnie used their smart phone app to show some of the constellations in the east and within minutes all the kids had unholstered their phones and were madly downloading the free Sky-view program. Nerida Langcake, supported by Piper, Ashley and Jamie Grierson, then showed Saturn through the big Dobsonian Sky Drover. Saturn was barely a degree or two above the eastern horizon so, with the Dob prostrate and almost horizontal to the ground, the seeing was pretty ordinary and gave an opportunity to talk about twinkling. Nevertheless, the ring was visible, albeit without any finer details at all. Peter then finished indoors in the warm with a short talk about meteorites as he handed around his Campo Del Cielo iron from Argentina. The birthday boy managed to keep a tiny piece that had chipped off and stuck to a neodymium magnet. This meteorite is believed to have fallen about 5000 years ago, but was only discovered by non-indigenous inhabitants of the area less than 500 years ago. Thank you to those members who were able to come along and help out at very short notice. The evening finished before 8 pm when the facility was locked up. If I left off any other member there, do please let me know, and remember to put your name in the observatory log book next time. Regards, *Peter Skilton*

Viewing night June 12th - A somewhat cool and damp evening awaited our members attending Camp Manyung last night. While there was a brief view of Jupiter and Leo up on the oval before fast moving cloud set in; unfortunately we couldn't get the kids up there early enough to catch it. So instead they heard Peter Lowe give the standard planet talk in the hall and Nerida Langcake kindly set up her glittering black 6-inch telescope on stage for a brief rundown on how a reflector works. All 46 boys from Year 6 of Camberwell Grammar seemed to enjoy the evening, judging by the number of questions being asked. With telescopes onboard, ready to be offloaded at a moment's notice were also Philip Rea, Phil Holt and Peter Skilton. We also think Tony Nightingale might have been there, but no-one was sure if he flew in and flew out given the weather, or whether he just got lost or bogged elsewhere on the large camp grounds and wasn't seen again. Regards, *Peter Skilton*



Society Meeting at the Briars

June 20th - saw 26 members in attendance. Peter Lowe chaired the meeting and updated members on recent events. Ian Sullivan talked about **TIMEBALLS and TELEGRAPHS**. **Ian's talk in brief:** In the era of Captain Cook, navigation became a major scientific endeavour; and to measure longitude at sea, the chronometer was invented in England in 1773. Cook first sailed with one on his second voyage. By 1830's, ships of all nations were similarly endowed, and in need of a time service in all major ports. In 1830 at Portsmouth an English RN Captain Wauchope tested the first TIMEBALL, a hollow copper ball up to a metre in diameter, from a height at an appointed hour, and 1 pm was chosen. A nearby observatory sent the time signal by telegraph and ships could sight the drop by telescope to correct their chronometers. Nearly 200 time-balls were constructed worldwide, and about sixty still exist as historic relics from the 1920's - as radio supplanted time-balls and telegraphs. Telegraph was developed in parallel with time-balls, having a much larger commercial value. Undersea cables, like in the Atlantic in 1866, proliferated and circled the globe. All six colonies of Australia still retain old time-balls and telegraph stations. Then Greg Walton did sky for the month. Afterwards members chatted over coffee and looked at Mars with one of the telescopes in the observatory.



Photo: Nerida Langcake



Photo: Nerida Langcake



Photo: Nerida Langcake

Members BBQ Saturday June 23rd - saw about 20 members in attendance. The sky was mostly cloudy with fine drizzle. Around 8 o'clock the skies cleared enough enabling members to see Jupiter, Mars and the Moon through one of the 8 inch Dobsonian telescopes. Members all pitched in setting up tables and cooking up the food. Meanwhile Mark and I did repairs on some of the telescopes. We also played some Mars documentaries on the TV. Thank you to all those member who cleaned up afterwards. *Greg Walton*

Viewing night June 28th - Arriving at Osborne primary school Mt Martha under an almost 100% cloud cover, with only the Moon trying to peek through the clouds. We all through this will be a very short viewing section, but we setup the telescopes anyways. Peter Lowe did the talk to about 200 students and just as many parents. Then as the students started to come outside, the sky cleared. Mark Stephens, Peter Skilton, Philip Rea, Fred Crump, Nerida Langcake, Phil Holt, Gabriel Thelen, Pia and myself all had long cues at the telescopes with no end in sight. The students and parents were truly amazed at Saturn, Jupiter and the Moon. Mars only climbed high enough to see, just before we started packing up. A big thanks to all those who helped out on the night. *Greg Walton*



Photo: John Cleverdon



Photos: Nerida Langcake

Big congratulations from all at MPAS!

Alex Cherney: I have finally completed my Masters degree in Astronomy and recently graduated from Swinburne University!



My major project was on measuring close double stars using speckle interferometry technique with a relatively inexpensive telescope. Amazingly I was able to get close to the diffraction limit of the 8" Celestron telescope and measure double stars only 0.65 arc-seconds apart from my backyard! That can be

compared to identifying an Australian 10c coin in Singapore from Melbourne. With that part of my astronomy journey behind, I hope to get to do wide-field astrophotography more often again (weather permitting).

A few pics from the graduation ceremony are attached. Thanks [Swinburne University of Technology](#) and [Swinburne Astronomy Online](#) for great fun along the journey!



Big congratulations from all at MPAS!

Joanna Shepherd: When it came to deciding what to do at uni, all I knew is that I liked computers and astronomy, so naturally I tried to combine the two! I am currently in my 4th year of a double bachelor's degree in Science and Computer Science at Monash University, majoring in Astronomy & Astrophysics as part of my Science degree.

When people ask where I wish to go with my studies, I usually say "I picked the longest degree I could find to avoid thinking about that question for as long as I can!". I was hoping that being at uni would give me a better idea of what was available and where I wanted to go, but there is so much going on in the academic world that I fear I have only become more confused! One of the things I love about what I study is that there are so many discoveries being made all over the world every day, from simple things like new star systems to massive breakthroughs like gravitational waves! All I know is I want to be a part of the excitement and help contribute to this fascinating field.

I've just started an internship with ADACs, an organisation that creates, develops, and adapts software and tech solutions for astronomers. I will likely be working on a project while I'm there, using computing to help benefit the astronomy community. It's been really cool to find something that combines my passion for astronomy with my love of IT, and I'm looking forward to working in the field. (Thanks again Peter Skilton for sending through the opportunity!)

I joined MPAS to try and meet some of the lovely people who have a passion for astronomy as great as mine (if not greater!). I also enjoy sharing my love of astronomy, just like others in MPAS, so attending public and school nights with my telescope has been an awesome experience for me! I'm still quite a new member, so please come and say hi! I'd love to meet all of you!



MPAS members please consider a position on committee, as we have much work to be done over the next year, leading up to the MPAS 50th year celebrations & Vastroc.

MPAS - Society AGM

The AGM is in July each year.

Current Committee

President: Peter Lowe (Acting)

Vice President: Greg Walton

Secretary: Peter Skilton

Treasurer: Jamie Pole

General Committee: Tony Nightingale, Stewart Gangell, Fred Crump, Heath Lewis, Anders Hamilton, & Dave Rolfe

Life Members are automatically committee members

AGM Invitation

18th July 2018 at 8 PM
The MPAS Briars site
Don Leggett Astronomy Centre
Nepean Hwy, Mt Martha
(Melways ref. 151/E1)

Agenda

1. Apologies
2. Confirm Minutes of previous AGM
3. President's Report
4. Treasurer's Report
5. Election of Incoming Committee
6. Special Business (none notified)
7. Other Thanks
8. Close of AGM.

We hope to get more members on committee.

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 please give some thought to becoming an Office Bearer or committee member.

The Annual General Meeting will be held on Wednesday 18th of July, 2018. 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, stating which position on the committee you would like to nominate for.

2018 AGM Committee Position Nomination -
(Leave blank if not applicable)

I
..... would like to nominate for the position of
(circle)

PRESIDENT VICE PRESIDENT
SECRETARY TREASURER
GENERAL COMMITTEE

for the Mornington Peninsula Astronomical Society
committee of 2018/2019.

Seconded by

..... Dated/...../ 2018

Both the nominee and the seconder need to be financial members of MPAS at the time of the AGM. Nominations must reach the Secretary by the 12th July, 2018.

★ New Members Welcome ★

Thomas Sioukas and family
Adrian Taylor and family
Colin Reynolds
Dave Haddon
Mark Lockens and family
Souren Harutyunyan
Leigh Hornsby
Gavin Curnow
Michelle Cleland and family
Samantha Blair
Christine Morgan and family
Lindsay McKenna
Dale Matheson
Donna Brett
John Butler and family
Tara Shepherd



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
gwpmpas@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/0ByvkxzZGI9g_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		July / 2018					Red Days indicate School Holidays
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
1	2	3 Mars moons 9:45pm	4 Comet C/2016 M1 Near NGC6352	5 Comet C/2016 M1 Near NGC2506	6 Last Quarter Public Night 8pm	7 Mars moons 9:30pm	
8	9 Mars moons 12:00pm	10 Venus right of Regulus Mars moons 10:30pm	11 ASV Meeting Mars moons 10:00pm	12 Mars moons 9:00pm	13 New Moon Mars Public Night 8pm	14 Comet C/2016 M1 Near NGC6152 Mars Moons 11:00pm	
15 Mercury left of crescent Moon	16 Venus left of crescent Moon Mars Moons 8:30pm	17	18 AGM Society Meeting 8pm	19 Mars Moons 9:30pm	20 First Quarter Comet C/2016 M1 Near NGC6067	21 Members Night BBQ 6pm Jupiter left the Moon	
22 Mars moons 10:00pm	23 Mars moons 9:00pm	24	25 Saturn above the Moon	26 Mars moons 10:00pm	27 Mars right the Moon Mars at Opposition	28 Full Moon Mars moons 12:00pm	
29 Mars moons 10:00pm	30	31 Mars at closest 57,600,000 km Mars moons 12:00pm					

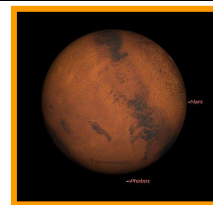
Monthly Events

Public nights - 8pm start on the 6th @ the Briars

Special Mars Public nights - 8pm start on **Friday 13th** @ the Briars

Society Meeting - 8pm to 10pm on the 18th @ the Briars

Members Night BBQ - 6pm on the 21st @ the Briars



CALENDAR		Aug / 2018					Red Days indicate School Holidays
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
National Science Week 12-20 August 2018 Public Night will be 17th starting at 8pm			1	2 Mars moons 10:00pm	3 Public Night 8pm	4	
5 Last Quarter Mars moons 11:00pm	6	7 Mars moons 9:00pm	8 ASV Meeting Uranus stationary	9 Mars moons 10:00pm	10 Mars moons 9:30pm	11 New Moon	
12 Mars moons 11:00pm National Science Week	13 National Science Week	14 Jupiter left the Moon Mars moons 9:00pm National Science Week	15 Society Meeting 8pm National Science Week	16 National Science Week	17 Saturn above Moon Public Night 8pm National Science Week	18 First Quarter Members Night BBQ 6pm National Science Week	
19 Comet C/2016 M1 NEAR NGC5662	20 Mars above the Moon	21 Mars moons 9:00pm	22 Scorpius Deadline Mars moons 9:00pm	23	24 SCAG - 8pm Combined Scout, Cubs & Guides	25	
26 Full Moon 402,720km Mars moons 8:00pm	27 Mars moons 10:00pm	28 Mars stationary	29 Mars moons 9:00pm	30 Mars moons 11:30pm	31 Venus left of Spica Mars moons 10:00pm		

Monthly Events

Public nights - 8pm start on the 3rd & 17th @ the Briars

Society Meeting - 8pm to 10pm on the 15th @ the Briars

Members Night BBQ - 6pm on the 18th @ the Briars

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

SCAG - Combined Scout, Cubs & Guides
24th August 2018 starting at 8pm

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 - gwmpas@gmail.com

THE BRIARS SKY

By Greg Walton



Finding Phobos & Deimos

I have often been asked if I have seen Mars' 2 moons Phobos & Deimos. I can say yes, thanks to MPAS member Alois Dvornik.

At an MPAS public night 15 years ago Alois brought along his 7 inch Maksutov F10 telescope and by using a specially modified eyepiece we could see Phobos & Deimos.

You really need a telescope with a long focal length 2,000 mm or longer. Also you need to modify a cheap 10mm eyepiece or even shorter eyepiece. Give a magnification of about 200 times and the best chance to see the moons.

Mars is way too bright to be able to see Phobos & Deimos. You need to cut a strip of aluminium foil 3mm wide and attach it to the centre of the back of the eyepiece. Cut up aluminium can.

While looking through this modified eyepiece at Mars, you will need to get Mars dead centre. Then rotate the eyepiece so the occulting bar only occults Mars but not Phobos & Deimos. Also it helps to know where Phobos & Deimos are and the best time when they're as far away from Mars as possible.

Phobos is closest to Mars at 4,700 km, orbiting once every 7 1/2 hours, and is 10 km in diameter with a magnitude (brightness) of 12.

Deimos is 12,000 km from Mars, orbits once every 30 1/3 hours and is 6 kilometres in diameter with a magnitude (brightness) of 13.

So getting Phobos timing is more important.

Software Starry Night can help predict the best time to view Phobos & Deimos.

Read the full article @

<http://www.skyandtelescope.com/observing/celestial-objects-to-watch/the-martian-moons-in-200708/>

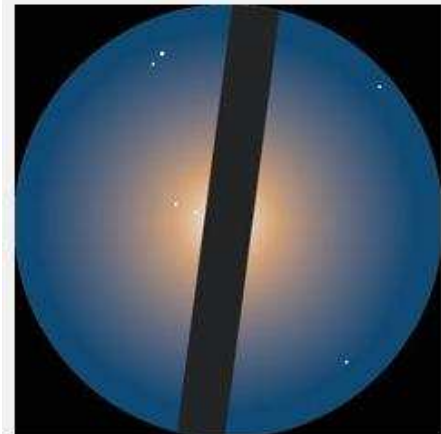
I have added the best times to see Phobos & Deimos to the monthly calendar, see above

Below are some examples of what you can expect to see at these dates and times.



An eyepiece with an occulting bar is not readily available commercially, so you need to do a bar as a temporary modification to a normal eyepiece. A narrow strip of aluminum foil works well, as does a strip of deep-blue or violet Wratten gelatin filter.

S&T photo by Craig Michael Utter.



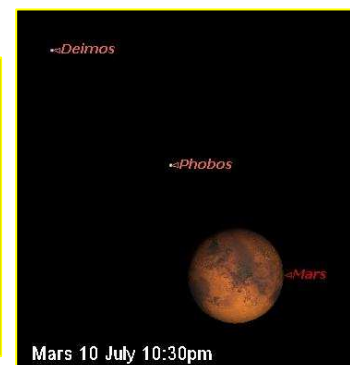
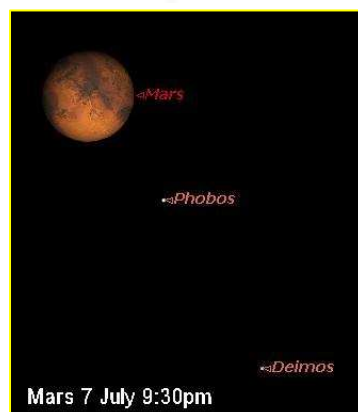
Because Phobos and Deimos lie roughly east or west of Mars at their greatest elongations, rotate the eyepiece so that your homemade occulting bar runs roughly north-south. Then try to spot the dim moons in the planet's background glow. Here, they're both to the left of the bar, at center.

S&T illustration.



On August 29, 2003, at 5:39 Universal Time, Arizona astrophotographer James McGaha captured these images of Mars and its tiny moons Phobos and Deimos using a ToUcam webcam on a 0.9-meter (36-inch) reflector atop Kitt Peak. To pick up the faint moonlets, McGaha had to overexpose the planet (left), so he made a composite (right) to show all three objects well.

Courtesy James McGaha, Grasslands Observatory.



ASTRO NEWS



Getting to Mars. Mars' average distance from the Sun is 227,900,000 km.

Every 26 months the Earth overtakes Mars on its inner orbit.

On 31st July, 2018 the distance from Earth is at the closest point of 57,600,000 km; that's 380 times further than the distance to the Moon. It took 3 days for man to travel to the Moon back in 1969. If we travelled at the same speed it would take around 1,000 days to get to Mars which is far too long so we need to travel at least 6 times faster, giving a travel time of 200 days. Once at Mars, slowing down would also need a large amount of fuel or the space craft could use the Mars atmosphere to gradually slow the craft by making many passes through the upper atmosphere, but this would take at least 6 months to slow the craft sufficiently so it could land. The next problem is when man went to the Moon the astronauts only had to sit in their chairs for 3 days. It would not be practical or humane to have the Mars astronauts sitting in their chairs for 200 days, so we would need a much larger craft for the journey. NASA are testing an inflatable space craft, once in space it expands to 50 times its original size, see right. With all this space the astronauts would be able to live comfortably and perform many experiments on their way to Mars. When they approach Mars they would deflate the craft ready for touch down. Once on Mars the craft could reinflate and be reused as a permanent home for the astronauts. Most likely the inflatable spacecraft would be transported to an underground cave before reinflating, as the surface conditions on Mars are not safe for long periods.

Life on Mars would not be easy. Mars' average temperature is minus 55 Celsius, the highest temperature at the equator is 20 C, while at the polar caps the temperature is only -195 C where even carbon-dioxide freezes solid. The atmospheric pressure is 100 times less than Earth's, so the astronauts would need to bring their own oxygen or extract it from the rocks. The atmosphere being so thin and with no magnetic field, this permits dangerous cosmic radiation which bake everything on its surface, including the astronauts. They would need to wear their space suits on the surface of Mars and be well shielded from the cold, X rays, and Gamma rays which would destroy living cells. After travelling the 200 days to Mars you would have lost some of your strength so Mars Gravity at only 37.5% of Earth's would help you recover your usefulness faster than when arriving back on earth. The Mars day = 24 hours 37 minutes, so sleep patterns would have little need to change. But a Mars year = 687 Earth days so you will not see as many birthdays. Mars is smaller than earth, about 6 Martian diameters would fit inside the Earth. Earth is 10 times heavier. Realistically it will be more than 20 years before humans get to Mars, when all the technologies we need will start coming together. Many companies are working at personal robots which run from your mobile phone. These robots will be sent to Mars ahead of humans to set thing up for us. Also in the mean time we could do some terra forming on Mars, increasing the water and temperature by using rockets to redirect comets so they smash on to Mars surface.

By Greg Walton

DIANNE McGRATH

THIS LADY IS BOUND FOR MARS - LATER THIS CENTURY !

On 19 Sep Dianne addressed the ASV Diurnals Section meeting and described her aspirations for space travel in an expedition organised by MARS ONE, a private organisation. It is planning a series of one way trips to Mars and Dianne has been chosen as one of a group of 100, from which 24 will man the first permanent base.

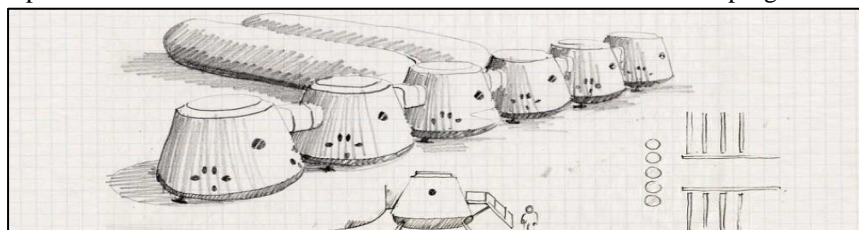
At 48 she is already training, and if successful she will be 62 (arriving 2032 ?) when she will fly (about 7 months), and then spend her remaining years on the red planet. Physical training will be continued after landing for 2.5 hours per day, which is about what is expected of her at present.

She is now doing a Ph D full time, after several lesser degrees and understands that as part of a team she must know scientific facts which are vital to herself and other team members. They will have to live inside a controlled atmosphere, and gradually enlarge the communal area to accommodate more manpower, increasing shared options of movement in their Martian microcosm.

Governments, and other private groups, will be welcomed by MARS ONE. The obvious danger is their degree of co-operation, and observance by other nationalities, in combating temperatures of 100°C less than on Earth, in an outside atmosphere not much denser than that on the Moon. We can follow her progress as long as our own lives allow, and be thankful for this opportunity to appreciate the space age.

Meanwhile, at the current Adelaide Aerospace Conference, both Lockheed Martin and Elon Musk, have announced their plan to be there a decade before Dianne, offering public participation - but not free rides!

By Ian Sullivan



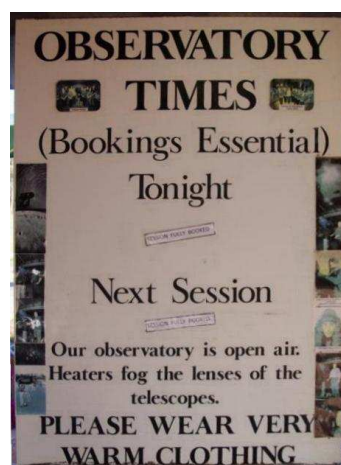
CHARLEVILLE COSMOS CENTRE

Driving through outback Queensland approaching the town of Charleville, we spotted a sign saying COSMOS CENTRE, Turn right 50m. Well this must have something to do with astronomy. The sign directed us to the airport, obviously there must be an observatory out here away from the town lighting. We thought it's most likely set up to attract visitors to the town. Well we are here now, so we best have a look.



We found the Cosmos Centre is operated by the local Murweh Council & has a modern feel with new buildings, large roll off roof observatory, many interactive displays, café, theatre and sale area. We asked about night time viewing with the telescope and we were told they were totally booked out for weeks. In the winter months they have so many people travelling though the town heading north chasing the sun. So you need to book in advance. They also run day time astronomy for school groups on a daily basis. There's a large theatre screening different astronomy documentaries every 1/2 hour all day.

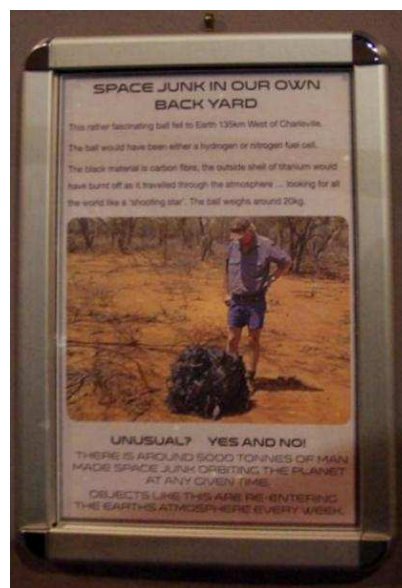
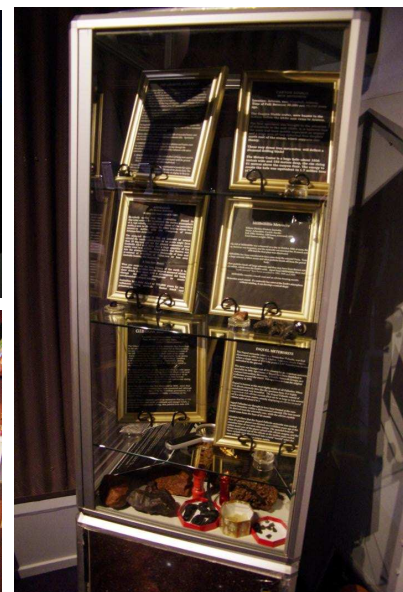
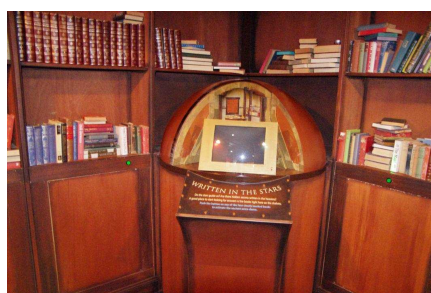
We paid our entrance fee and headed to the theatre to watch some movies. Afterwards we looked at all the displays, bought a few things in the shop, then had coffee and scones in the café.



Having the Cosmos Centre at the airport meant that many visitors could just fly in to look through the telescopes and I found packages can be purchased on the web.

Photos below are of the many displays, such as interactive consoles, meteorite collection, posters and a 20-kilo piece of space junk that had landed on a farmer's property some 135 km west of Charleville.

CHARLEVILLE COSMOS CENTRE



UNUSUAL? YES AND NO!
THERE IS AROUND 5000 TONNES OF MAN MADE SPACE JUNK ORBITING THE PLANET AT ANY GIVEN TIME.
OBJECTS LIKE THIS ARE RE-ENTERING THE EARTH'S ATMOSPHERE EVERY WEEK.

SPACE JUNK IN OUR OWN BACK YARD
This rather fascinating ball fell to Earth 135km West of Charleville.
The ball would have been either a hydrogen or nitrogen fuel cell.
The black material is carbon fibre, the outside shell of titanium would have burnt off as it travelled through the atmosphere ... looking for all the world like a 'shooting star'. The ball weighs around 20kg.



The main observatory is massive, built mostly from heavy steel beams. The roof is divided into 4 separate sections which can be moved independently. This is good if you just wish to use just one of the telescopes without exposing all the telescopes to the elements such as dew and winds. Also the roof sections can be moved to either end along the railway tracks, which continue out from each end of the observatory about 16 metres. The fixed walls are 1.2 metres high offering unobscured view of the night sky. A system of steel cables and winches move the roof sections.

We did not get to see inside the observatory, however I found this photo at right on the web. The observatory is well insulated and well sealed against dust, due to the hot and dusty condition in outback Queensland. My first thought was such a large building to house only 3 telescopes. Each of the telescopes are mounted on electrically operated lift piers, which I thought a bit odd as the walls did not obstruct the view of the telescopes.

There are 2 smaller domed observatories built into the main building which house telescopes used by the University of Queensland.

The Cosmos Centre also has a Lunt solar telescope which is used on a daily basis.

We were very impressed with the whole setup, with lots of good ideas here. I dream maybe MPAS could do something like this one day. Next time we pass Charleville we will book the Cosmos Centre night tour. By *Greg Walton*



Cosmos Centre <http://www.cosmoscentre.com/>
 Charleville Cosmos Centre <http://www.murweh.qld.gov.au/cosmos-centre>



A brief history of photography ----- The word photography comes from Photo = light / Graph = draw

What is a camera? Goggle gave me many different answers, depending on when you asked the question. The word **camera** comes from *camera obscura*, which means dark chamber and is the Latin name of the original device for projecting an image of external reality onto a flat surface. The first camera could be an eye connected to a brain. Today's cameras are a photon collecting device connected to a silicon chip.

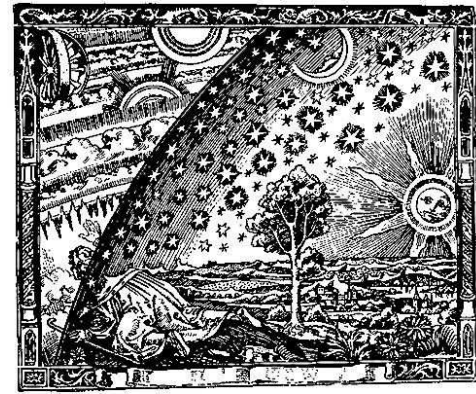
My school teacher was always saying, **THERE IS NOTHING NEW UNDER THE SUN.** In this fast moving world, I'm beginning to doubt this. But in the case of the camera this would be true. The human eye is a camera, collecting photons and storing them as a retrievable electronic image in the brain. In this way I can recall images from my past, pick up a pen and draw a close resemblance to what I have seen.

Early man would draw images of animals on cave walls as a hard copy. Hundreds of years before the film camera, man would carve 3D images on to wood, called a wood cut. This could be covered in ink to reproduce on paper or cloth.

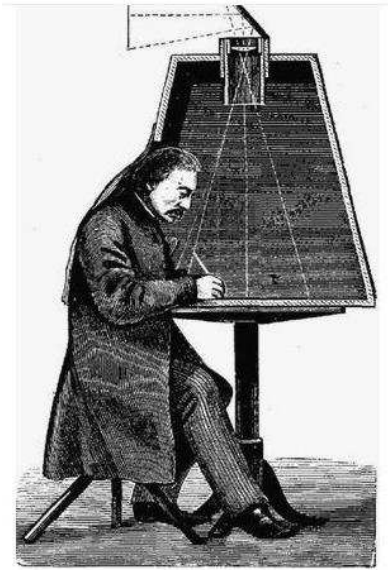
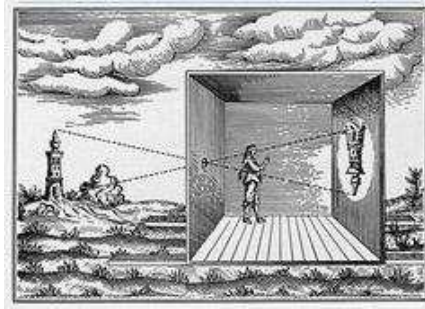
To get a more accurate image a portable projection light room was used. A person would sit in this dark room with only pin hole in one wall. The light would project onto a board and the person could quickly copy what they see. This is still basically how a camera works today. But the person inside the light room has been replaced by a piece of light sensitive paper, film or electronic sensor, and the pin hole has been replaced by a lens.

What started this story is many times I have been asked, why in old photos are the people not smiling? It's hard to hold a smile for very long. Early film speeds were very slow, meaning you would need to hold a smile for 5 minutes. The first films were made by putting chemicals on a metal plate.

The world's first photograph made in a camera was taken in 1826 by Joseph Nicéphore Niépce. The photograph was taken from the upstairs windows of Niépce's estate in the Burgundy region of France. This image was captured via a process known as heliography, which used Bitumen of Judea coated onto a piece of glass or metal; the Bitumen then hardened in proportion to the amount of light that hit it, often taking many hours. See below



Above - Early wood cut



Camera

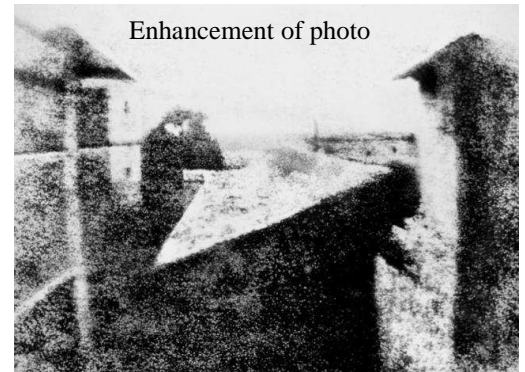
Sleeping man waiting many hours for a chemical reaction.



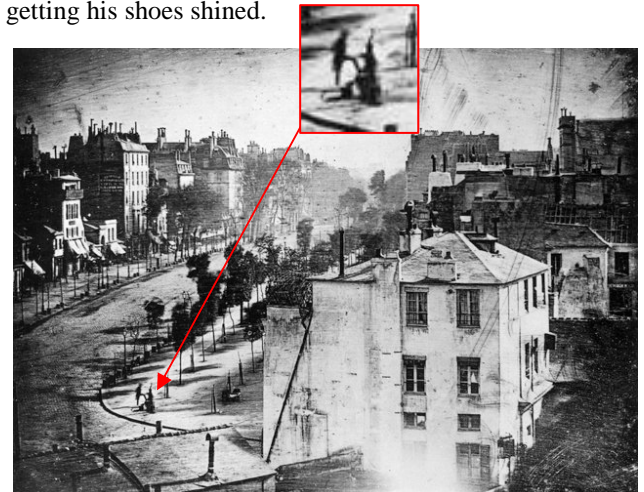
First photo ever taken



Enhancement of photo



Early photographers looked for subjects that did not move. Luckily Stonehenge was just what the photographers were looking for. Today we have countless photos of Stonehenge. Most people have seen Stonehenge as a neatly lined up almost complete collection of stones. Photo below Left of Stonehenge taken in 1877, before any reconstruction had taken place. Below right - The first people ever to be photographed by Louis Daguerre near the Boulevard du Temple in Paris. Man getting his shoes shined.



Soon everybody wanted their photo taken or to purchase a camera. Cameras became big business employing thousands of people. The development of better cameras and fast films progressed very quickly. But owning a camera was still beyond most people.

George Eastman (1854 to 1930) went to carpentry school and had an interest in all things mechanical. He started work as a bookkeeper at the age of 13 and kept a book noting every thing he bought throughout his life. By his early twenties he owned the business and was earning \$1,400 a year. George decided to go on a holiday, buying a horse, camping supplies and a camera costing \$95, then equal to 6 months wages. The camera intrigued George so much he never went on the holiday, instead working on ways to improve and simplify the camera and perfecting the film. In 1900 George first marketed the box brownie camera with a roll of film, at a price of \$1. Once you had taken your photos you took the camera to a shop that removed the film and sent it to George's company Kodak for processing. You picked up your photos and the developed film some weeks later. George became very rich but gave most of his money away to schools and hospitals. George's famous saying was: **It's more enjoyable to give money away while you're alive.** George became ill in his mid-70's and decided to shoot himself dead in 1930. Till then most photos were taken in black and white. As colour films had not been perfected until 1932 when Kodak colour-chrome was invented. Till then true colour films had taken 40 years to perfect. The first colour films were made with dyed potato starch and did not produce the right colours. Some companies were hand painting black and white photos with watercolours which gave true colours.

Up until 1963 you had to wait for your colour photos to come back from Kodak. Edwin Land (1909-1991), inventor of the polarizing lens, bought a camera in 1943 to take photos of his family at the beach while on holiday. His wife said, why can't we get the photos straight out of the camera. Edwin was a scientist and while at the beach redesigned the camera. He told his family the holiday was over and raced home to start work building and patenting his new camera. In 1947 Edwin demonstrated the black & white instant camera at the Optical Society of America. The Polaroid camera was born hitting the market in 1948. It was not until 1963 when the colour version came on the market. Just take your shot and wait one minute for your finished photo. The photos from these cameras tended to fade over time, plus there was no negative to make more photos. So the film camera did not die; it became even better.

One camera came to dominate the photograph world. 35mm film cameras are the most versatile cameras with an enormous range of interchangeable lens. The very reliable work horse of the camera world with 1000's of different types on the market. The first film format was introduced into still photography as early as 1913 but first became popular with the launch of the Leica camera, created in Europe by Oskar Barnack in 1925. Oskar works on the design of a camera for 35 mm motion picture film. The result materialized early in 1914 with the legendary "Ur LEICA", vindicating the concept "small negative large pictures". 50 exposures 18x24 on 35mm film in special cassettes. Later designs incorporated a flip mirror enabling you to view through the main lens call the SLR (single lens reflex). It did not matter which lens you attached to the camera, you view through the lens to achieve perfect focus.

By removing the lens and adding a threaded "T" ring and 2 inch adaptor, your camera can now slide straight into the focuser on your telescope, making the telescope a lens.



Cameras collection at the Antiques road show - <https://www.youtube.com/watch?v=GCqsuxCWmFU>

As film speeds increased moving pictures were possible. Thought to have been first invented by Auguste and Louis Lumiere. The first movie ever made in history 1896 by "The Lumière brothers" <https://www.youtube.com/watch?v=b6Ppp5902Yg>

Moving pictures were further developed by Thomas Edison who had many patents on camera equipment.

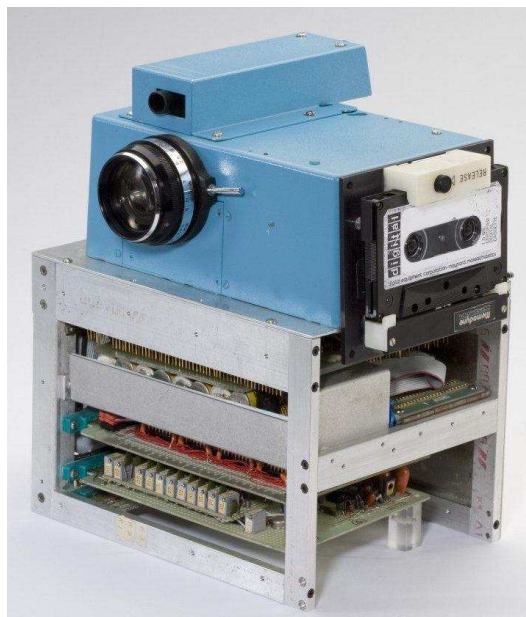
First experimental movie that Thomas Edison made in 1889 - <https://www.youtube.com/watch?v=dDmAxdlvQ4>

Le voyage dans la lune - Georges Méliès - www.youtube.com/watch?v=mYWM9fYcdUa - <https://www.youtube.com/watch?v=FrVdKlxUk&t=270s>

World's first feature film made in Australia, The Story of the Kelly Gang (1906) - <https://www.youtube.com/watch?v=iZYRCzMYCvI>

1975 - The digital age has begun.

Kodak was one of the companies which spent a fortune on developing a digital camera. In 1975 they first prototyped a digital camera that recorded the black and white image onto a standard digital tape. It was only 0.01 MP (100x100) and weighed 3.6 kg. See below.



First Kodak digital camera documentary <https://vimeo.com/22180298>

THE WORLD'S FIRST DIGITAL CAMERA, INTRODUCED BY THE MAN WHO INVENTED IT - <https://www.diyphotography.net/worlds-first-digital-camera-introduced-man-invented/>

Kodak - <https://fstoppers.com/education/story-worlds-first-digital-camera-told-its-inventor-215236>

1989 Kodak first sold a digital camera -the Ecam; it was taken off the market soon after. See right.



1988 Nikon first sold a DSLR, the Nikon QV-1000C 0.38 MP black and white still video camera, floppy disk storage, costing US\$20,300. It was an ordinary SLR with a CCD mounted in the back door and you need a play back device, computer or TV monitor. These first practical digital cameras were very expensive, taking poor quality photos, but you did get the photos instantly.



First Nikon QV-1000C <http://www.nikonweb.com/qv1000c/>

1991 Nikon NASA F4 digital camera built especially for NASA and used on the space shuttle for most of the 1990's

2003 saw the first affordable DSLR cameras with fair image quality - Pentax ist and Nikon D1, both using Sony 6 megapixel sensor. Canon also released a DSLR. These cameras were not quite good enough for astrophotography as they had a lot of noise at high ISO. These cameras proved very reliable and they were sold to the professional photographer, costing around \$1,800

However, if you wanted the very best of high quality photos, you still needed to use a film camera. But it was not long before the digital camera started to overtake the film camera. Many people said, they will never change to digital. Today I don't know anyone using film and as a result the film manufacturers have closed or gone broke including the great Kodak.

Film is Dead

Now we grab our phone, snap an image and it's instantly sent to the cloud where the whole world can see it. Even the DSLR camera has connectivity now, sending the photo straight to your home computer. The digital camera means we are now taking more photos than ever, documenting all aspects of our lives, storing them but rarely looking at them again, because we are too busy taking more photos. One of the drawbacks of digital photos is if the hard drive on your computer fails. All your photos are gone. The digital age means we are now losing more information than ever before. Computers constantly rewrite the information on the drive, move bits of digital code to make more space. Every time you copy a photo something is lost. Computers have software which automatically repairs information and looks for damaged part on hard drives and silicon chips so as to avoid these areas. But we are fighting a losing battle. As the cameras get more megapixels and the computer get more storage, the circuits are getting smaller and fail faster. So we are losing more and more information and most computers usually last less than 10 years.

So get some photos printed as they will last one or two life times !!!!

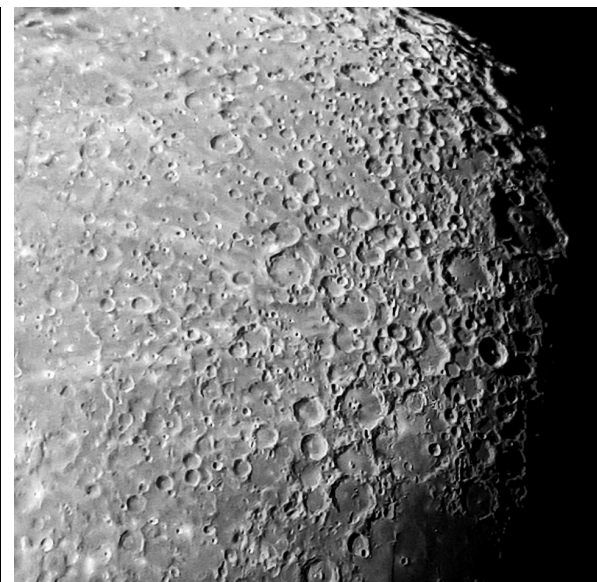
By Greg Walton

Time line: History of Astrophotography - <https://drive.google.com/open?id=1yc61-qrPha6Cp4FmdqNCOvC4BqmKEGCT>

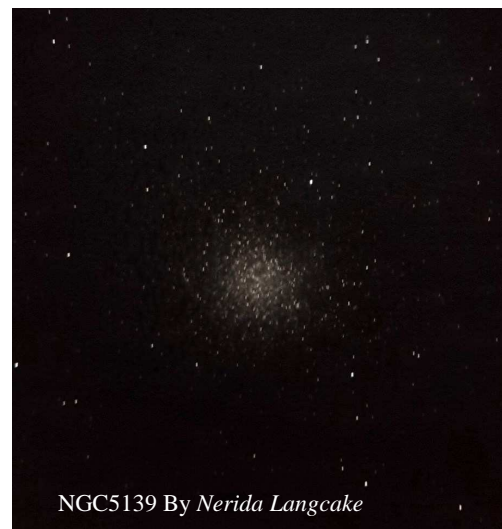
MPAS Gallery

Nerida Langcake has just upgraded her telescope to a 10 inch Newtonian on an EQ6 Goto mount. She is already producing great images with just her mobile phone. At right, 2 images of the Moon taken on 22nd June

Nerida has also imaged M8 and NGC5139 Omega Centauri, below right.



M8 By Nerida Langcake



NGC5139 By Nerida Langcake

Mark Hillen has also been producing great results with his mobile phone and a telescope. See Jupiter, Saturn and Mars below.

Jupiter imaged with mobile phone through a telescope.



Date - 22 June 2018

By Mark Hillen

Saturn imaged with mobile phone through a telescope.



Date - 22 June 2018

By Mark Hillen

Mars imaged with a mobile phone through a telescope.



Date 22 June 2018

By Mark Hillen

Below - Moon image with a mobile phone through a 60 year old Unitron telescope, By Greg Walton



Moon By Greg Walton



Right - Jupiter imaged by Dave Rolfe from Cranbourne on 21st June 2018. Note the Io shadow transit just below the lower cloud belt.



MPAS Gallery



NGC6559 & IC1274 - LRGB Hi Everyone! Another interesting group of emission and reflection nebula that are all closely grouped at the end of the better known Lagoon Nebula [otherwise catalogued as M8], in the constellation of Sagittarius. The image is compiled from a range of sub-exposures through the filters of Luminance, Red, Green and Blue. I love the snaking black river of dust stemming from NGC6557, known as Barnard 303. *Steve Mohr*

Information about the image: Instrument: Planewave CDK 12.5 | Focal Ratio: F8 Camera: STL-11002 + AOX | Mount: AP900GTO Camera Sensitivity: Lum, Red, Green, Blue: Bin 1x1 Exposure Details: Lum: 47 x 900sec [11.75hrs], RGB: 600sec x 8 each [4hrs] Viewing Location: Central Victoria, Australia. Observatory: ScopeDome 3m Date: May-Jun 2018



Just a couple of images from the 28th May - Mars really starting to grow in size - make sure you all get ready for July it will be a lot bigger than this! (12" dob, 2x Barlow qhy163m), *Russell Smith*

OFFICE BEARERS OF THE MORNINGTON PENINSULA ASTRONOMICAL SOCIETY

President: Peter Lowe
Vice President: Greg Walton
Committee: Tony Nightingale, Stewart Gangell,
 Fred Crump, Heath Lewis,
 Anders Hamilton & Dave Rolfe

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

SOCIETY MEETINGS

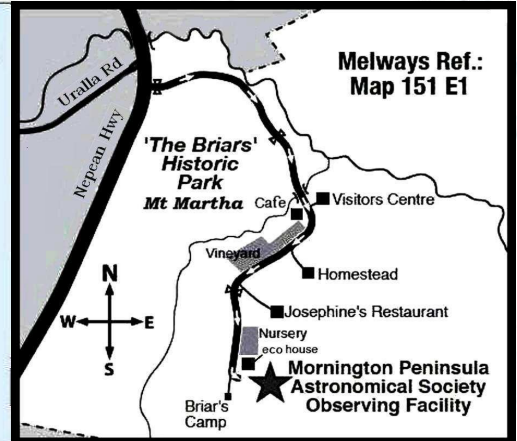
Meeting Venue: MPAS Astronomy Centre
 The Briars, Nepean Hwy, Mt Martha
 (Melways ref. 151/E1)
Society meetings: Don Leggett Astronomy Centre
 8pm on the third Wednesday of the month
 (except December)
 (See map at right & Below)

**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
 it's 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 addition 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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