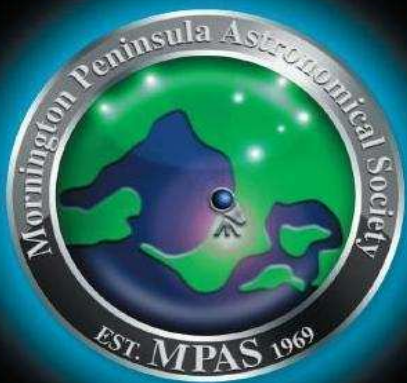


Cover image - The Lagoon Nebula, by Sylvie Grandit



SCORPIUS

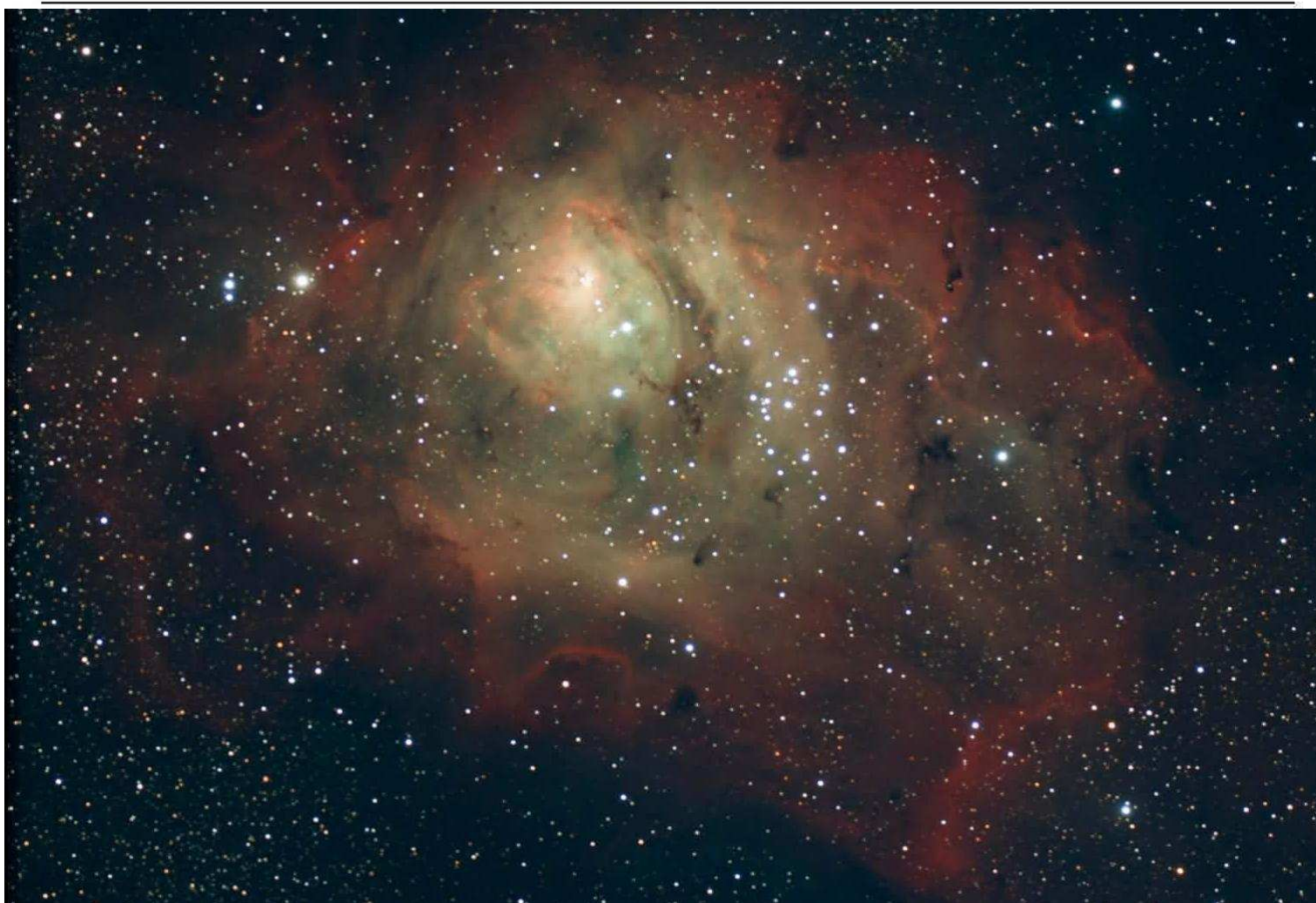
THE JOURNAL OF THE
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The Mornington Peninsula Astronomical Society (formerly the Astronomical Society of Frankston) was founded in 1969 with the aim of fostering the study and understanding of astronomy by amateurs and promoting the hobby of amateur 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.



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

SOCIETY NEWS



Public Viewing Night July 3rd - It was a chilly wind from the Antarctic last night at the Briars for the July public night, following rain in the preceding days. Nevertheless 64 healthy visitors were stout of heart enough to brave the conditions, with a high proportion of families amongst them. And, despite best efforts last month by the Shire, wascally wabbits were seen hopping around by people as they drove to the site.

The power was off in the auditorium when I arrived and, after some investigation, it was eventually traced to a wall switch in the barbecue shed, where there appeared to have been some water incursion causing the safety switch to trip. With judiciously applied paper towels to soak up the moisture, the power was re-established and held for the remainder of the evening.

With 80% clear skies on arrival, but threat of more cloud approaching, observing on the telescopes was done for the first half hour. Neither planets nor Moon were visible at that hour and at an elevation able to be seen from the site. Venus was visible low in the west by eye on approach to the site. Then the skies clouded over and the group moved indoors to hear Guido Tack give the talk.

Following the talk, the skies had cleared and thinned with open patches, enabling everyone to view the craters and mountains of the waning gibbous Moon as it rose above the east horizon.

Other members present and helping on the night included Jessica & Stuart Lees, Angela & Dylan Goile, Ben Claringbold, Jamie Pole, John Goodall, Fred Crump, Peter Skilton, Adrian Boschetti, Greg Walton, Simon Hamm and Chris Kostokanellis. *Regards, Peter Skilton*

International Olympiad on Astronomy and Astrophysics viewing night July 6th - Last night saw the Briars visited by 30 especially selected Year 11 & 12 students from around Australia who are going to compete in the 19th International Olympiad on Astronomy and Astrophysics. To a certain extent the selection needed a highly switched-on science teacher in their individual schools, who not only was aware of this Olympiad, but was also willing personally to put in the extra supporting hours for each student at no recompense.

This Olympiad will be in Vietnam later in the year, and the visit to us was part of their boot camp preparations, which include theoretical aspects and also practical ones on an unmotorised Newtonian Equatorial telescope. The Australian boot camp was organised by the John Monash Science School, Monash University in Clayton.

In addition to the students, Simon Hamm quickly established that the other adults attending were all physics teachers. Perhaps a secret handshake or wink of the eye was involved. One came down from Tamworth as well. There were a couple of Year 12 students present, including one from Langwarrin, who'd attended the Olympiad last year in Mumbai and were there to share their experiences and mentor the new cohort.

Although the students were senior high school, the questions were closer to those we experienced in the past when we were invited a few times to speak to Monash University first-year astronomy students on annual camps adjacent to Flinders foreshore.

The visitors arrived over half an hour late, after underestimating the traffic journey time for the bus, which ended up being an hour and a half, and influenced by the ravenous hunger of the passengers for the local McDonalds as they reached Mornington on the way.

Then the Briars evening began indoors in earnest with the talk given by Katherine McCoy and Peter Skilton and, for a change, we didn't get many questions about Black Holes. We had Sylvie's Herald-Bobroff ASTROATLAS at the front, the undisputed gold standard of hardcopy atlas, and my equatorial Newtonian that is very similar to what they'll be tested on while in Vietnam.

There were heaps of heavy questions as the talk progressed, and occasionally I had the feeling one or two already knew the answer but were testing us to see if they could trip us up (they didn't), and I'm pretty sure I noticed a handful of males fact-checking on their phones!

The group then moved outdoors to the telescopes. It was a clear night, no wind, but was a chilly 10 degrees Celsius. The dew was heavy on the telescopes by the time the students were there, somewhat impacting the images, but the viewing of the moonless sky continued for about another hour. In the meantime, Simon sold plenty of merchandise to the students, who seemed to be quite cashed up in anticipation or splashing it on their (or their parents') credit cards.



By John Cleverdon

Members helping outdoors on the telescopes included John Cleverdon, Sylvie Grandit, Jessica & Stuart Lees, Ben Claringbold, Adrian Boschetti, Juno Jones and Karoline Hohlweg, with Simon also dusting off his manual telescope operating skills. In addition to those who signed the attendance log, Fred Crump was also there to help for some of the evening before needing to leave.

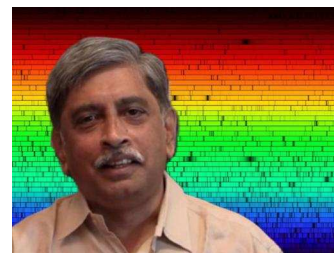
It was a challenging evening, not least because we weren't briefed on the group, or the Olympiad actual requirements, until a couple of days beforehand, and then with very minimalist detail, so we were going in fairly blind for matching expectations. Nevertheless, as MPAS always seems to achieve, the evening was a great success.

I do feel sorry for the students who will be tested in the Northern Hemisphere (almost all the Olympiads have been in Northern Hemisphere countries) on finding unfamiliar northern objects with a manual instrument and aligning it with Polaris rather than the South Celestial Pole. And they can't practice under the sky before arriving. Australia has never won the Olympiad, but perhaps this time will be a first.

Regards, Peter Skilton

Cosmology meeting July 11th - went ahead at 1:45pm as usual at the Briars.

AGM & Society Meeting July 15th - The main topic was about “Decoding Our Universe Through Spectroscopy”, by Prof. Raghunathan Srianand, Cosmologist, Astrophysicist and founding Director of the Inter-University Centre for Astronomy and Astrophysics in India. He is a leading scientist about the early Universe, and also was part of the international team that discovered the Higgs Boson. This public talk was delivered at the IUCAA in Pune, and covers most basic aspects about spectroscopy and how it’s used to understand what occurs at great distances from Earth, though I did notice that he didn’t mention using the polarisation of light to deduce conditions in the furthest reaches of the cosmos.



There was no Astrophotographic challenge for the month, with the previous one carrying forward. Guido Tack then presented Sky for the Month, including showing a geocentric view of the solar system for the month.

A science video then followed about why light bends in glass and water, for those who’ve wondered about refraction and why it actually happens – not just that it happens.

Closure showed the NASA simulated violent merging of two neutron stars, giving a massive gamma ray burst as a result. Such a merger either leaves a more massive single neutron star or a black hole, depending on the masses involved.



Most recent video on the channel: <https://www.youtube.com/channel/UCm6XOkIcIflt4y0XRBXpXuww>

or watch it on the MPAS site once it’s refreshed for this month: <https://www.mpas.asn.au/meeting-recordings/> Regards, Peter Skilton

School viewing night July 20th & 21st - We had 2 nights this week on the 20th and 21st July for the Toorak College Year 7 girls from Mount Eliza, who continue to be a regular feature on our outreach calendar.

Both nights were unfortunately 95% cloudy, but fortunately it was only high level cloud, meaning that the Moon and Venus could at least be seen with the telescopes, albeit not optimally in much detail. So the stargazing outside was done first up, followed by the talk indoors, given by Katherine McCoy and Peter Skilton.

The Monday evening group of students spent what seemed to be half an hour asking questions all about Black Holes, so it took quite a while to progress much past slide 2 in the pack due to their intrigue on the topic. There were lots of questions on both nights and far too many to answer in the available time before the coach driver needed to take them all back to the school grounds. Handball to the teachers to answer them the next day.....

Other members helping on Monday included Mark Stephens, Anne Danne, Fred Crump, Chris Kostokanellis, Sylvie Grandit and Adrian Boschetti. And on Tuesday it was Mark, Fred, Chris, Sylvie, Adrian and Ben Claringbold.

The girls from this school always ask good questions (except for a conspiracy theory one about the Earth being flat, which I wasn’t sure was serious, or merely being tongue in cheek. Regards, Peter Skilton

Working bee & members Night BBQ July 18th - The Members BBQ had 22 members attend to help with maintenance on our site, and enjoy a meal and a chat. Adrian Boschetti grabbed the push mower straight off the bat, and Ben Claringbold took control of the ride on, while Greg Markowski grabbed the whipper snipper. Other members wiped down the telescopes and de-webbed the buildings and all areas were cleaned and tidied. A few of us took some time to spot Venus early in the afternoon well before sunset. It was just a couple degrees below the crescent moon, and nice views of its gibbous shape were seen through Big Blue.

Right: Work. Ben Claringbold on the Ride-On with other members at work in the background.

A switch in the BBQ room had been shorting out and was found to be the cause of a safety circuit tripping and causing critical power outages in the auditorium equipment. This caused some frantic trouble shooting at the start of the August PVN to find the cause of the light and computer system outages. Roland Knabe expertly replaced the faulty switch with a new one, managing to avoid too many fireworks in the process.

More work was also done in the new eastern field to determine some ground levels to help prepare plans for a new observatory. And Adrian also made some adjustments to the small dome observatory to make it easier to secure the dome in position when shutting it.

Jamie Pole and Ben Claringbold cooked up a feast on the BBQ, while Sheryl Brown, Simon Hamm, Anne Dane, and other members helped prepare the other delicious dishes and desserts inside.



Right: Eat. Steve Mohr gives the Members BBQ the thumbsup.

After the meal, several members set up telescopes and cameras on the slabs. It was more about testing equipment than doing any serious imaging, as there was light cloud wafting past all evening. Ben Claringbold downloaded some images from his ASIAIR to the MPAS Imaging computer for processing, which we'll have to tackle at a future Astrophotography Group Meeting.

Right below: Play. Testing out the Laowa 12mm lens with a capture of the Milky Way over MPAS.

Thanks to all of the members who chipped in and helped. Many hands make light work, and it's always good to catch up with MPAS members.

If you haven't been to an MPAS working bee / BBQ, or if it's been a while since you've visited, come down to the next one. It's a great way to familiarise yourself with the place, chat astronomy, and learn to use the MPAS telescopes.

Members who attended and signed in were John Goodall, Charlotte Swart, Fred Crump, Andrew Marshal, Sheryl Brown, Anne and Geoff Dane, Ben Claringbold, Roland Knabe, Sylvie Grandit, Adrian Boschetti, Domenic Lucarelli, Tim Ruwoldt, Simon Hamm, David Rolfe, Jamie Pole, Steve Mohr, Nerida Langcake, Greg and Isaac Markowski, and Chris Kostokanellis. Apologies if I missed anyone, but please remember to sign the attendance book when you are at MPAS.

Clear skies. Chris Kostokanellis.



School daytime talk July 24th - July 24th was a busy day with two outreach events scheduled. At the start of the day, Peter Skilton visited 80 Year 1 and 2 pupils at St. John's Catholic Primary school in Frankston East, for a daytime talk on space for the littlies, with some dinosaur mentions as well, answer their questions and to hand around some curious things for them to touch. No telescopes were involved, but binoculars were introduced to them as something they could try at home right away if their families owned any.

Well, they sat without a break through well over an hour of me rabbiting on about this and that, and answering questions, and appeared totally absorbed by everything that was said. I had thought beforehand that I might have to super-simplify a lot of concepts, and there'd be a lot of fidgeting, but they were well-behaved throughout and right on top of the topics even as 7 and 8 year olds, and they weren't going to let me go home early.

Although they might have been very young Primary level children, most of their questions were surprising, including some that I'm pretty sure I've never been asked about before after talking to schools now for nearly 36 years, which I let them know at the time for encouragement.

One of the youngest girls there asked why shooting stars didn't look starlike in shape in the sky, and also didn't look like that either when they landed on the ground. A boy enquired about the shape of the path that a shooting star makes as it goes across the sky, and another girl asked about bushfires starting from meteorite landings and whether there were more bushfires during meteor showers. Another boy enquired about how many other Universes there are, and why, while another girl asked about how we know how far away the Moon is and why is it just the right size for making eclipses. I was thoroughly impressed. And I was even asked if they could drive in a racing car or in an aeroplane to make an eclipse go longer for the one coming in 2028. If only the Concorde was still in service.

One of their teachers came up to me afterwards and shared that she's never seen all the boys sit still that long and keep engaged on anything, ever. While I was in their staffroom before the talk, I noticed on a poster that part of their school motto was Perseverance. Well, you can guess what I talked about when I got to the Mars slides.

This is the first time we've visited this school in Frankston, and hopefully they'll ask us again in the future! Goodness knows what calibre of questions these kids will be asking 10 years from now, but it wouldn't surprise me if Australia gets some new future scientists from that cohort. *Regards, Peter Skilton*

Scout viewing night July 24th - The second outreach event was at the Briars at 8pm later that day, when 33 Scouts and leaders from Mount Eliza Ranelagh braved totally overcast skies for the quarterly Scouts, Cubs and Guides night. And, yes, black holes were asked about. The only observing hope beforehand was a quick view of Venus and the gibbous Moon through the high level cloud.

Then indoors the talk was given by Katherine McCoy and Peter Skilton. The cloud conditions weren't conducive to observations after the talk, but plenty of merchandise was sold at the glass counter.

Other members helping on-site and eagerly ready to roll out the instruments were Sylvie Grandit, Simon Hamm, Chris Kostokanellis, Mark Stephens, Fred Crump, Ben Claringbold and Adrian Boschetti. *Regards, Peter Skilton*

School viewing night July 29th - Saw the return of the Jewish Orthodox Girls' school from Ormond, this time for 21 of the Year 5-8 girls who bussed down to the Briars especially for the stargazing. This time there was also 1 young boy as well, who I think was there because his mother was one of the teachers. Throughout the evening, cloud and light rain came in waves every 15 minutes or so, punctuated by large patches of clear sky, and it was quite cool despite there being no wind. Fortunately, the rain was more a pitter patter so that the speaker wasn't audibly drowned out.

So, fuelled by Tim Tams, the talk indoors was started by Katherine McCoy and marched a few slides forward before the group was hauled outside by Sylvie Grandit during the next clear interval. The Moon is quite important ceremonially to this Orthodox school and, naturally, it was organised to be Full Moon for them. The group spent quite some time again inside the main observatory, where Anne Danne and Sylvie looked after them, and Katherine was outside with her refractor, with Peter Skilton quietly supporting in the background just in case a were-rabbit appeared.

Everyone had a good look at the partial phase of Venus setting in the west, and at the Moon rising in the East over the roll-off-roof. While Scorpius (which they knew as Scorpio) and Sagittarius were visible high in the sky, the very bright Moon significantly reduced the contrast. They also have Hebrew names for their 12 constellations. Then it was back indoors for Katherine to continue the talk and answer their questions, before the bus driver needed to return to the school.

One student appeared to be using her phone in real time for fact checking Katherine when she mentioned the time it takes for radio signals to go from Earth to Mars so as to control the Perseverance Rover. It ranges from 3 minutes to 20 minutes, depending on whether the Earth and Mars are at their absolute closest approach to each other, or at their furthest possible distance apart in their orbits. Katherine batted all questions without controversy and finished just on time for the bus driver.

This time we had no hat-seeking moths to pluck from the air, however, the auditorium power to the computer and projector was a little temperamental before the bus arrived, repeatedly shutting down and turning on the emergency lighting without warning. For those who've not experienced it, it's like battle stations have just been called by Sean Connery on the submarine in the movie Hunt for Red October, and the lighting suddenly dims right down, albeit not to red light. Fortunately, the visitors were blissfully unaware of the technical hitch as it had resolved itself before they arrived. It was a very successful night, and special thanks to our skilled ladies who carried the show. Time for another Tim Tam. *Regards, Peter Skilton*

School viewing night August 6th - Last night saw 17 students and teachers from Year 10 at Balcolme Grammar school come to the Briars for a visit. Despite being a nearby co-ed school, just up the hill from us, and originally having about 40 planned to come from that year level, there was only a couple of females present in the audience, with one being a teacher and the other may have actually been an accompanying child of the teacher. Additionally, 80% of the audience sat on the car park side of the auditorium, so just as well we weren't sitting in an aircraft otherwise we might have flown in circles! We can only speculate on the curious demographics that evening.

Indoors, the talk was given by Katherine McCoy and Peter Skilton. It was an added challenge this time because the group was very quiet, very subdued, and didn't ask many questions at all. Now, it might have been that they were all dog-tired from their day's learnings at school, or were just stereotypical males in their mid-teens, being reluctant in any way to stand out from the crowd in front of their peers.

Unfortunately, the skies ranged from totally clouded to there being drizzle at times, and a heavier short burst of rain at the start of the evening. The downpour proved to be quite loud on the roof, but mercifully was short-lived so we didn't need to rely on the microphones. The talk necessarily went the duration, then the group was given a tour of the observatory facilities.

Other members outside, helping run the night were Sylvie Grandit, Cathie Dethick, Mark Stephens, Chris Kostokanellis and Adrian Boschetti. *Regards, Peter Skilton*

Public Viewing Night August 7th - The first public night for the month was held on August 7th at the Briars, and saw 70 visitors attend on a coolish evening that averaged about 30% cloud cover.

The evening started with the telescopes outdoors, just in case the cloud thickened as the evening progressed. Then it moved indoors after half an hour to hear Manfred Berger talk about where we are in the Universe, which is a good choice of subject as we all fill in our Census form at the moment. He even had one keen young lad of early-to-mid Primary school age steadfastly fire dozens of questions, and shared dozens of "statements", throughout the presentation. His mum eventually escorted him outside to give respite to the speaker and allow the slides to advance. It was clearly a very engaging talk given by Manfred, and had certainly hit the spot with the boy.

Among the visitors were over a dozen boarders from Toorak College in Mount Eliza, who bussed in for the evening for the talk and some stargazing under southern skies. Fortunately the skies were kind and obliged nicely. Curiously, some of these girls were seen during the evening to photograph, with much care and attention, some accompanying dolls of special significance to them, after carefully curating them in the right light/dark conditions on various pieces of furniture in various poses relative to the observatory instruments, including the microscopes in the warm room. I've seen tourists before now bring along fluffy toy mascots to do something similar, presumably accompanying their owners on their travels around the country and internationally, with the photos destined for sharing online. However, in the case of these dolls, it was thought it was more likely something of cultural or deep personal significance to the girls, rather than something to share on Instagram or Facebook or similar social media.

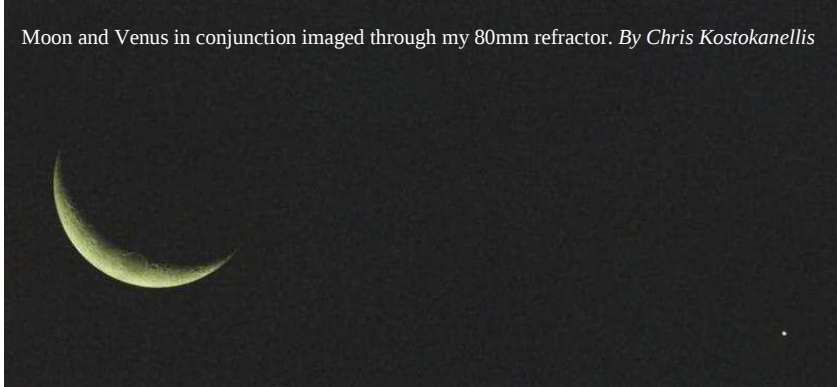
Other members present and helping run the evening included Greg Walton, Sylvie Grandit, Simon Hamm, Chris Kostokanellis, Jennifer Quinlan, Peter Skilton, Juno Jones, Karo Hohlweg, Mark Stephens, Anne and Geoff Danne, Ben Claringbold, Adrian Boschetti, Guido Tack and John Goodall. The next public event is on Friday 14th August with Indigenous Astronomy, and a second regular public night is due to be held on August 28th with Trevor Hand speaking. *Regards, Peter Skilton*

Indigenous Astronomy Public Viewing Night August 14th - The bimonthly public stargazing night, with an indigenous knowledge theme, was held on August 14th, and saw 14 visitors attend on an almost completely overcast Winter's night. The talk was given by Tim Patston and touched not only on aspects of the Australian indigenous peoples, but also from those around the world in the Americas, Japan, Philippines, Pacific Islands and elsewhere where there were similarities across the cultures. Following the questions, there was but a fleeting glimpse of Crux and Pointers and so return cards were issued to the visitors.

Members present and helping were Sylvie Grandit, John Goodall, Peter Skilton, Mike Smith, Simon Hamm, Greg Walton, Ben Claringbold, Chris Kostokanellis, and Jamie Pole. *Regards, Peter Skilton*

Members viewing night August 16th - Last night at the Briars, we had the 14 inch Meade on Venus at 150 times magnification. Venus was quite a sight to see. Some members thought Venus was the Moon, as Venus had a similar crescent shape. As the Moon and Venus moved to the west we could see that the gap between them was slowly getting larger.

Moon and Venus in conjunction imaged through my 80mm refractor. By Chris Kostokanellis



We also had the 11 inch Celestron on the Moon at 70 times magnification which showed whole Moon in the eyepiece. Members commented that they could see features on the darker unlit side of the Moon. I said, this is lit by sunlight bouncing of the Earth. We also seen the Petavius Rill which is a thin dark line which runs through a crater making it look a bit like a clock. This Rill can only be seen for 2 days each month.

Chris said, there is a comet in the sky near the 13th magnitude galaxy ngc7204. So we tracked it down, then attached a camera and got some shots. The comet turned out to be 7th magnitude 10P Tempel. *See above right*

Very cold but plenty views and a successful night. *Regards Greg Walton*

School viewing night August 17th - We had 15 Year 10 girls and teachers from Strathcona Baptist Girls Grammar visit us last night at the Briars for some stargazing. The evening started outdoors with the telescopes, primarily because the International Space Station was due to appear low in the South West soon after the start time, followed by the Chinese Space Station about 7 minutes later.

As it turned out, the ISS was hidden behind the tree line to the south of the observatory, and so no-one was able to spot it continuously during its passage, other than some flashes between branches. However, the CSS (which is the new name that Heavens Above uses to refer to Tiangong), was easily visible at magnitude -1.8, rising above the auditorium to the west, and rapidly ascending to 66 degrees altitude toward the northwest over the next 3 minutes.

Following half an hour outside viewing Venus, the Moon and other objects through the telescopes, it was indoors to hear Katherine McCoy and Peter Skilton give the talk. This group, on their first night at camp, were very obviously worn out by the day's activities, with few questions and a couple even sitting with their eyes closed throughout. Thankfully there was no snoring.

Other members present and helping on the night included Sylvie Grandit, Adrian Boschetti, Chris Kostokanellis, Ben Claringbold, Greg Walton and new arrival, Victor Sekulov. *Regards, Peter Skilton*

Scout viewing night August 18th - We had 2 outreach events on 18th August during Science Week.

The first during the afternoon was a talk by Trevor Hand down at Rosebud Library and was attended by 30 members of the public. No telescopes were involved in this event.

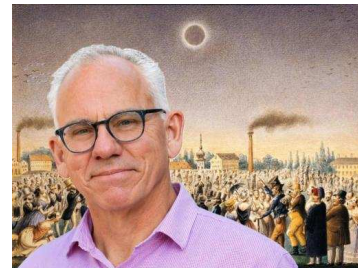
The second was an evening for the Baden Powell Park Scouts held at their scout hall in Frankton South. This saw 55 present, including Joeys and Cubs mainly. The talk was given by Katherine McCoy and Peter Skilton, and to say the crowd was lively would be an understatement. Nevertheless, they settled into the talk and behaved well, especially considering the night was totally overcast, with only the Moon appearing poorly through the cloud. And, yes, they almost all wanted to hear about Black Holes.

Outside on the telescopes, pointing at street lights and other terrestrial sights (but not at the house window across the road), were Sylvie Grandit, Adrian Boschetti, Greg Walton and Mark Stephens, with Steve Lomax with his SeeStar and iPad, which was miraculously somehow cutting through the clouds and showing the Moon brilliantly sharp and detailed. Well, that's our story at least.

Regards, Peter Skilton

Society Meeting August 19th - Peter Skilton started with a round up of past and next months events. Then briefly spoke about the Nancy Grace Roman space telescope, JWT newly discovered black hole at the edge of the universe and recent solar eclipse. Chris Kostokanellis presented the Astrophotography challenge for the month and gave a run down about the new DwarfLab smart telescopes. Guido Tack then presented Sky for the Month.

The main topic was about “Omens From Above: A Curious History Of Eclipses”, by Prof. Paul Deslandes, Historian, at the University of Vermont. This public talk covers a few continents and many eras, including a brief mention of an early Australian expedition to see a solar eclipse.



Closure showed the most up-to-date animation of what the Milky Way looks like from the trillions of data points captured by the European Space Agency’s Gaia space observatory over more than a decade of operation at the L2 Lagrange point of Sun-Earth. Data will continue to be released into 2030 due to the vast amount of it, even though the craft was permanently shutdown when its propellant ran out, and was boosted into a graveyard orbit around the Sun nearly 18 months ago.

You can also watch it here by clicking on this link and going to the most recent video on the channel:

<https://www.youtube.com/channel/UCm6XOkIcIft4y0XRBXpXuw>

or watch it on the MPAS site once it’s refreshed for this month: <https://www.mpas.asn.au/meeting-recordings/> *Regards, Peter Skilton*

Mornington Library August 20th - As another National Science Week draws to a close, which we’ve been involved in since its Australia-wide inception in 1997, the 20th August saw us deliver yet another 2 outreach events simultaneously.

Down at Mornington Library, Trevor Hand gave a 6:30pm talk about meteorites and was attended by 30 members of the public. No telescopes were involved in this event, but there were plenty of selfies taken with the meteorites.

School viewing night August 20th - At the same time, we had 4 members travel to Ainslie Parklands Primary school in Croydon, which is our first encounter with this small school, and we had pretty much the whole school turn up. They put on a science fair for the day, and we were the culmination in the evening. They also had an impressive luminescence display that the kids had put together using phosphorescent paint and judicious use of a UV lamp and the fluorescent whitening agents added to nearly all laundry detergents to give the impression of whiteness and hence perceived cleanliness.

So we had 105 buzzing folk in attendance, and began the evening outdoors with the telescopes on their basketball court, as the forecast appeared to be further cloud coming from the West. The sky was about 80% patchy cloud, so the first quarter Moon and Venus were the main targets in between clouds, with the occasional appearance of Crux and the Pointer stars. On the telescopes were Chris Kostokanellis, Katherine McCoy, Steve Lomax and Peter Skilton. The international space station and Chinese space station were due to pass early in the evening, however, the very low angle and the cloud cover would have rendered them impossible to see over the treeline.

After about 40 minutes, everyone moved indoors for hot chocolate and to listen to Katherine and Peter give the talk and answer questions. There certainly were some keen questioners in the audience, rattling them off like a Gatling gun, and no shortage of “statements”. We didn’t bring up the subject of Black Holes this time, to see if anyone would notice, but it wasn’t too many minutes into the talk before the questions swung us around to just that topic. It seems there’s no escaping a Black Hole!

By the time the talk finished, just prior to 8:30pm, the cloud had closed in and the rain was just starting to arrive. On the drive home, it poured all the way on Eastlink, so it was a wise call to look through the instruments first up. Steve had his SeeStar and iPad set up and captured some good lunar views, which we shared with the organising teacher who was going to write up an article for their school newsletter, and who’d also been approached by their local Maroondah newspaper for an article about the evening.

I spoke with their Principal on the night, and they were super impressed by the experience and couldn’t believe they’d never heard of us years ago, and I think this might be the first encounter of many with this school. Katherine suggested they might want to consider coming to the Briars Camp as well, visiting us next door as part of the experience, and they were really keen with that idea, though it wouldn’t be a whole-of-school night there due to cabin limits. Something, nevertheless, for their planning for next year. *Regards, Peter Skilton*

Cosmology meeting August 22nd 1:45pm - A very warm welcome to all our new members who joined us at the meeting. It was wonderful to see so many new faces, and we hope you enjoyed the afternoon as much as we did. We had another fantastic meeting, with plenty of interesting discussion and enthusiasm for cosmology especially all the questions from Gio incredible boys. Unfortunately, Brian was unwell and unable to present, but with Katherine’s assistance, we were able to keep everything on track. During our housekeeping discussion, we took a vote on the starting time for future meetings. It was agreed that, from now on, all Cosmology meetings will commence at 1:30 pm sharp. The earlier start will give our presenters more time to complete their presentations comfortably, without having to rush through the final sections. Our next meeting – 10th October starting at 1.30 sharp.

Don’t forget our Special Public Cosmology Meeting in November. A reminder that our Special Public Cosmology Meeting is coming up on Saturday, 14 November. This is an important event for our group and MPAS and a great opportunity to introduce friends, family and anyone who has an interest in astronomy, cosmology or the mysteries of the Universe.

Please remember to book your place and, if you can, bring along a friend who may be interested in joining MPAS and our cosmology group. The more people we can introduce to the fascinating world of cosmology, the better! Until next time, keep looking up at the stars and keep asking questions. *Warm regards, Eden White*



Working bee & members Night BBQ August 22nd - We had a good turnout for the Working bee. Leigh ran the ride-on mower while Geoff used the push mower around the trees, Chris and Steve did the whipper snipping. Other members removed the weeds from around the young trees, cutting back dead branches on some of the trees and cleaned the roof on the garden shed. Members also did some cleaning in the observatory and reorganized the shipping container. Dennis cleaned and lubricated the hatch on the Sirius Dome. Adrian cleaned out the smaller dome observatory and cleaned a bino-chair. Andrew measured the 11 inch Celestron and made a template for an aperture mask and also zeroed paths. I washed the mirror in the 8 inch Newtonian in the observatory, then reassembled and collimated the mirrors. Jamie arrived with the supplies and members started cooking. After the BBQ we had many different desserts on offer. Then the Astrophotography Group meeting started. *See below.*

As the sky was cloudy there was no viewing, making an early night with all members leaving by 9:30 pm.
Big thanks to all members who helped out on the day. *Regards Greg Walton*

Astrophotography Group meeting after the August 22nd Working Bee - Unfortunately cloud cover prevented any imaging from taking place on Saturday. However, Liam Laube demonstrated a lunar image alignment program he has been working on. The program reads your lunar TIFF images, then rotates, aligns, and geometrically corrects them if required, and places the corrected files in a new directory so they can then be stacked in "Autostakkert". It is the process usually carried out by the PIPP program, but Liam thinks his does a much better job, and does it faster by optimising its performance based on your computer hardware. The results in his demonstration are certainly impressive. We have to wait until Liam is done with testing and preparing some "How To" documentation before it is made available.

Clear Skies, Chris Kostokanellis

Public Viewing Night August 28th - Under 70% clouded skies, the special Science Week public night on August 28th was held at the Briars, and began outdoors on the instruments. It was Full Moon, so the contrast was necessarily reduced throughout the evening.

With fairly cool and windless conditions, there was noticeable dew condensing on the instruments by the end of the evening and there were clear signs of mist starting to rise in the valley to the East of the observatory.

There ended up being 60 public attendees, with 107 having booked originally. About a dozen indicated they were unwell on the night, and the rest must have considered it a tad too cool and cloudy to leave their homes in Winter.

After half an hour, everyone was rounded up and funnelled inside into the auditorium to hear Trevor Hand give the night sky talk, ably aided at the front of the room by Kate Hemphill who confidently delivered some of the talking, and some comedic lines, while demonstrating the many props that supported the talk. Not least was the achievement of raising Trevor's 11.2 kg meteorite to head height so everyone could see it. This week had been work experience week for Kate, who was a visiting Year 10 student from central Victoria, and the special public night was the culmination of the visit.

By the end of the talk, the skies were cloudier and many of the visitors decided to leave. However, the more optimistic ones stayed on the site, just in case the conditions improved. And they did improve. Within 20 minutes, ringed Saturn and Titan were visible rising in the East with the Moon being especially bright in the enlarging gaps in the cloud. Good views were had of Alpha Centauri and the Jewelbox, but attempts to find the globular cluster, 47 Tuc, were less successful due to its altitude and the poor sky contrast in the moonlight. Kate was outdoors operating one of the Dobsonian telescopes, and sharing some facts with the public, and this was her first time seeing Saturn through a telescope.

The evening ended about 11pm when the last of the visitors departed.

Other members present and helping with evening included Adrian Boschetti, Anne & Geoff Danne, Peter Skilton, Greg Walton, Ally Midwood, Phil Peters, Sylvie Grandit, Chris Kostokanellis, Simon Hamm, Mark Stephens, Angela & Dylan Goile, Mel Perry, Ben Claringbold and John Goodall.

More details about the week of work experience will be in a separate article.

Regards, Peter Skilton

Work experience student August 23rd to 28th - Take a bow Phil, Trevor, Sylvie, Greg, Manfred, Chris and Ally. Been a big week this week and an inspiring one.

Well, that just about wraps up another work experience student visit, and I think we've found the winning formula. I know of other organisations just putting a student on photocopying, filing or cleaning for the whole week and hating the time. The aim is stated to be to give the student experience in what your organisation does.

I enjoyed this time more than any previous one, and by drawing on many different people's expertise it made it a lot more interesting for the student, and she also had more hours with us than we previously offered. It certainly helps to have more retired (or self-employed) knowledgeable folk available, since it has to be a Mon-Fri thing.

The first big plus with Kate, who found us via Google on her own initiative, was that she applied in March and her school knew the date at that time, allowing me to ring-fence the date range from other activities. Each school seems to have their own inflexible dates and so we can't plan on a fixed week each year in our calendar, and date-wise that's the usual kiss-of-death.

We've been approached many times over the years by students. In the early days, we'd immediately shy away on the belief that it only applied to those who run a payroll. But when you read the doco, it's clear that NFPs, charities etc. Are perfectly fine.

Kate was our 5th student, with 2 of those having the rug pulled from under them by covid.

We've additionally referred students to Ballarat Observatory who used to take them on (they didn't this year), and more often Melb Uni when they used to collaborate with the planetarium but, alas, they no longer do it after the coordinator changed jobs. CSIRO at Aspendale and Highett also sometimes would take them, but that died out when they suffered big staff cuts some years back.

With Kate this week, Trevor gave her a framed meteorite (Sikhote-Alin?), Phil gave her a big red torch, and I surprised her and her mum with a 90mm manual equatorial refractor that a member of the public donated and dropped off at the Briars yesterday, and which looked to be in clean, unused condition, with all the bits present.

As we've done previously, we offer them a family membership to end 2027. Once I get the mum's other details, I'll let you know, Nerida.

I spoke with the school's co-ordinator yesterday afternoon by phone and gave him a glowing report about Kate, and let him know how impressed I was with how she handled "drinking from the fire hydrant" this week and managing the info overload.

Plus she was brave enough to be standing up in front of a room full of strangers with Trevor for the talk, and then showing them the Moon outside afterwards.

Aside from a write-up for e-scorpius, I'll write her a reference as well to add to her CV. If you have any specific observations from your time with her this week, that you'd like me to add to it, just let me know by Monday.

If the school does a written survey, I'll do that as well, but they don't always if you've already spoken with the co-ordinator.

Regards, Peter Skilton

By the end of the week, Kate was very competent with all the telescopes, including the solar telescopes in the small dome. *Photos above* Even getting many quality images during the day of the Sun, Venus and brightest stars through the telescopes with her smart phone.

MPAS observatory open nights.

We do our best to open the observatory to members on moonless nights without clouds. Lately its been hard to predict the weather. But as the days get warmer we should be able to open the observatory more frequently.

We have purchased new T ring adaptors for Canon and Nikon DSLR cameras, we have also purchased a coma corrector for the 200mm Newtonian and a field flattener for the 100m refractor in the small dome. These will help improve the quality of your images. *See image right*

We need more members to run the observatory and help train others on the use of the telescopes and astrophotography.

We come along and get involved. *Regards Greg Walton*



Vale Roland Knabe

With shock and much sadness I have to relay the unexpected, sudden passing of long-standing member, Roland Knabe, last weekend.

Roland joined MPAS in 2002, and regularly attended most social events and society monthly meetings, always being a perennially positive, polite, very affable and friendly fellow, able to strike up a conversation with just about anyone, and possessing a good memory for people's names. He owned a few good telescopes at his home in Red Hill South.

Roland was a frequent helper at the society monthly working bees, with his last being the very recent one on Saturday, July 18th.

He is survived by his wife, Anna, and 4 children, grandchildren and great grandchildren.

Roland last gave a talk in 2019 at one of the Briars monthly society meetings, recounting his visit to meteorite craters in central Australia. This can be watched on our YouTube channel: <https://www.youtube.com/watch?v=iDEkn7g9Bfg>

A Le Pine service was held on Friday, 14th August, 2pm at Deoro By The Bay, 21 Skinner Street, Hastings.

It was open to friends and family, there was one condition that was asked, though, which epitomises the man Roland was – “Please wear colours and leave the black at home”.

From the stars we come, to the stars we go. Peter Skilton

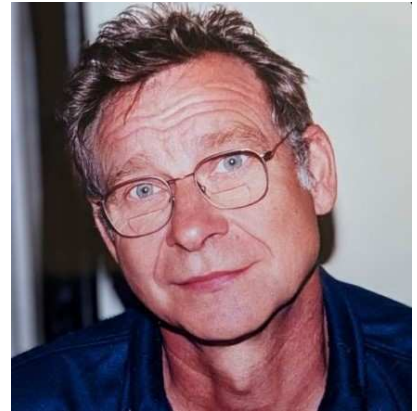
Roland was a true friend. Always willing to help with a smile and a laugh. Roland rarely stopped, with always another project underway. He spent much of his life working at BHP Newcastle & Lysath Hastings as a electrician.

Roland built an observatory for his 16 inch light bridge Dobsonian. The observatory sat on wheels which run on a round metal track. It was powered by an electric drill, making the whole observatory turn including the floor.

When Roland push the start button, the observatory took off like a Melbourne tram and you had to hold on to stop yourself from falling over. The Observatory was equipped with a necessary viewing aid, a flagon of Port with a tap, which was bolted to the wall.

Roland was a man with many experiences offering advice on most topics. Usually starting with want not to done, as he had fallen into most traps. We will miss those stories.

Also see - Asteroid fly-by as seen in Red Hill, by Roland Knabe - Scorpius p12, 3 2013



Greg Walton



OBSERVATORY UPDATE

By Chris Kostokanellis



Welcome to the 2 new additions to MPAS, Happy and Doc, generously donated to MPAS by Dwarf Lab.

Happy will be going to a new home as the door prize at our Astrophotography workshop in October. Every ticket purchased will be in with a chance to win Happy.

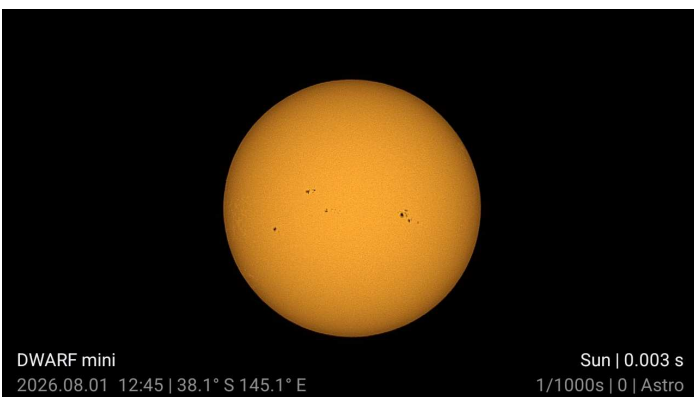
Doc will be a permanent resident at MPAS, taking an active role at our outreach events and will be available for members to use at The Briars.

We will need operators for Doc, so if you are willing to learn to use Doc to show people deep sky objects at our PVNs and other events, let me know.

For members thinking about purchasing a DWARF LAB product, when buying from the DWARF website, enter the promotional code **MPASMEMBER** to receive a 10% discount.

Regards, Chris Kostokanellis

Meet our new Dwarf Mini.



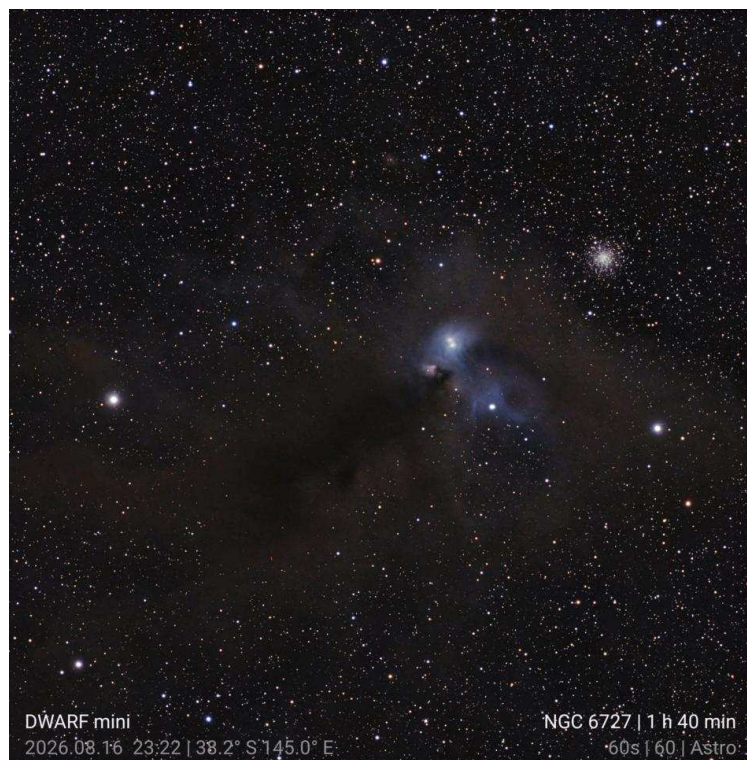
of the tripod, you can use it in EQ mode. No further equipment is required. It weighs 840 grams, and has a battery life of around 4 hour, but can be run of mains power or a battery pack with a USB-C connection.

It comes with a solar filter which must be attached over the lens for solar imaging (above), and has internal “Dark”, “Astro” and “Duo-Band” filters.

The Dark filter is used to capture Dark Calibration Frames, which the Dwarf does automatically, and sorts them by sensor temperature as well as gain and exposure time.

The Astro filter is a broad band visible light filter (430-690 nm), and when used in mosaic mode, nicely captures reflection and dark nebulae like in the image I captured of NGC 6727 in Corona Australis.

The Dwarf Mini is operated through an app from an Android or Apple device. It can be set up in either Alt Az or Equatorial mode, and the set up procedure for both is quite easy. It has a standard screw connection that will attach to any camera tripod, and so long as you can tilt the head





The Duo Band is a dual band H-Alpha (653.6nm) and OIII (500.7nm) filter for capturing emission nebulae, such as the image of M20 - The Lagoon shown here.

The telephoto lens has the equivalent FoV of a full frame camera on a 1000mm FL telescope like our F5 Newtonian in the Observatory.

The wide-angle lens has the equivalent FoV of a full frame camera at 45mm FL and is able to capture nightscape images and panorama mosaics, or wide field images of the Milky Way like the one shown here.

Dwarf Labs offers a “One Touch Image Processing” function via an online service accessed in the App. The images are uploaded to Dwarfs Servers where you can instantly have your image stretched, denoised, have star reduction, and star removal carried out on the spot. All the images shown here have been processed in this way. These have been taken with very little imaging time, but still giving quite satisfactory results. You can also download the raw FITS files to process yourself if you wish.

The DWARF Mini is available to members who may want to capture their own images, but we also need operators who are willing to use it to show different objects to people during our outreach events.

If you would like access to the DWARF Mini contact me by saying my name 3 times at any MPAS event or emailing me at c.kostokanellis@mpas.asn.au.

By Chris Kostokanellis



Astrophotography Workshop, Saturday October 3rd, 2026

What to Bring: Camera, tripod & suitable clothing. Capacity: 85 attendees - Booking essential.

12 PM Registration. 2:30 PM. Break. 4:40 PM Break. 6:30 PM Pizza. 6:27 PM Sunset - 7:30 PM Twilight.

MC to introduce speakers and topics.

Introduction to Astrophotography

The Night Sky

SLR Photography

Aurora & Nightscape Photography. *Barb to confirm topics.

Time Lapse

Smart Telescope Astrophotography

Tracked and stacked Image Acquisition

Image Processing

Remote Observatories and Remote Imaging

Demonstrations

ASIAIR

Practical Imaging Session

Telescope imaging though MPAS telescopes

Dwarf Smart Scope Demo

Frankston Camera House / Canon / Lawoa / Celestron / will be attending for advice and sales.

8 PM - In the event of clouds a Q&A session with the guest speakers

11 PM - Event concludes

Please note this is a paid event.

If you wish to help on the day, we do need all the help we can get. Especially if you can operate the MPAS telescopes and advise attendees on how to use their cameras. Canon, Nikon, Pentax DSLR's.

**Contact committee members or
Greg Walton - gwmipas@gmail.com
Mob - 0415172503**

2026 TIMETABLE OF PUBLIC EVENTS



SEPTEMBER

Friday 4th, 8pm Briars. Public stargazing. Speaker Trevor Hand. 105 booked.

Monday 7th, 7pm Briars. Our Lady Of Help Christian School, 50 pupils on camp. Speaker Katherine McCoy & Peter Skilton.

Thursday 10th, 7pm Briars. Brighton Beach Primary School, 50 pupils on camp, year level unknown. Speaker TBD. Being confirmed.

Thursday 17th, 7pm Briars. Mt. Martha Probus Club, 30 anticipated. Speaker TBD.

OCTOBER

Friday 2nd, 8pm Briars. Public stargazing. Speaker Trevor Hand. 100 planned.

Saturday 3rd, 12:30pm Briars. Astrophotography Workshop & BBQ. Speakers various. 12 booked. 85 planned. Bookings essential.

Friday 9th, 8pm Briars. Public Indigenous Astronomy stargazing. Speaker Tim Patston. 100 planned. 9 Booked. Members free.

Wednesday 14th, 7:30pm Briars. Yarra Valley Grammar on camp, 55 Year 3 pupils. Speaker Katherine McCoy & Chris Kostokanellis.

Friday 23rd, 8pm Briars. Scouts, Cubs & Guides. Speaker Katherine McCoy & Peter Skilton. 0 booked, 100 planned.

Saturday 24th, 4pm Briars. Telescope Learning Day, BBQ & Buy/Sell/Swap (public & members). Speaker TBD. 2 booked, 100 planned.

NOVEMBER

Wednesday 4th, 8pm Briars. St. Michael's Grammar on camp, 35 Year 3 pupils. Speaker Katherine McCoy & Peter Skilton.

Friday 6th, 8pm Briars. Public stargazing. Speaker TBD. 100 planned.

Saturday 14th, 2pm Briars. Cosmology Discovery Day (public). Speakers various. 6 booked, 100 planned. Members are free.

Bookings www.trybooking.com/DNKOW

DECEMBER

Friday 4th, 8pm Briars. Public stargazing. Speaker Trevor Hand. 100 planned.

Saturday 5th, 6:30pm Briars. BBQ & Christmas Astro Concert with South. Pen. Concert Band. Public & members.

MC Peter Skilton & Barry Fletcher. Bookings open. 1 booked, 85 planned.

To attend the school events and scout/girl guide events, these days you need to have a Working With Children check done first. It takes about a fortnight from the time you apply online to when you get the card in the mail. For volunteers it is free. It's essentially a check of police and justice records over the decades that sees if there might be anything in the past that would preclude participating in these sorts of outreach events involving kids. Once you receive your card, let the Secretary know your card number and expiry details as we are required as an organisation to record them.

<https://www.workingwithchildren.vic.gov.au/>

Regards, Peter Skilton

★ New Members Welcome ★

Anthony Axarlis
Kieran Allen & family
Anthony Holt
Kiran Kiran & Shreya Ramesh
Taj Alcott
Vanessa Remman & family
Victor Sekulov
Colin & Carol Brewster

MPAS SUBSCRIPTIONS 2026

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 2026 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 2026 fees is:

Subscriptions can be paid in a number of ways: **SOCIETY FEES**

- On-line (preferred, see at right)
- Cash payments to a committee member
- Send a cheque, made out to "Mornington Peninsula Astronomical Society", to MPAS, The Briars, 450 Nepean Highway, Mount Martha VIC 3934 (The P.O. Box in Frankston is no longer used).
- Make a direct electronic payment into the society working bank account (state your name clearly).

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.



You can renew your membership online using the link included in the annual mailout email, which is sent near the end of each year. Please ensure to renew before Feb 1. Any late renewals may be required to re-join as a new membership.

CALENDAR		September / 2026					Red Days indicate School Holidays
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
This month - Neptune rises 8pm Saturn rises 8.40pm Uranus rises 1pm Mars rises 4am		1	2	3	4 Public night 8pm Last Quarter	5	
6 Fathers Day	7 Moon at 368,259km Our Lady Of Help Christian School	8	9	10 Brighton Beach Primary School	11 New Moon	12	ASV - Galactic Centre Star Party @ LMDSS
13	14 Venus 2° SE of Moon	15	16 Society Meeting 8pm	17 Occultation by mag 1.1 Antares 11:59pm Mt. Martha Probus	18	19 First Quarter Working Bee 4pm BBQ 6pm Moon at 404,221km	
20	21	22 Equinox	23	24	25 AFL Public Holiday	26 Full Moon	
27	28	29	30				

Events**Public nights** - 8pm to 10pm on the 4th @ The Briars**Society Meeting** - 8pm to 10pm on the 16th @ The Briars (Public & members)**Working Bee** - 4pm, **Members night BBQ** - 6pm on the 19th @ The Briars

CALENDAR		October / 2026					Red Days indicate School Holidays
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
				1	2 Public night 8pm Moon at 369,334km	3 Last Quarter Astrophotography Workshop	
4 Daylight Savings Starts Saturn at opposition	5	6	7 Jupiter 5° W of the Moon	8	9 Indigenous Astronomy 8pm	10 Cosmology group meeting	
11 New Moon	12	13	14 Yarra Valley Grammar on camp	15	16	17 Moon at 404,643km	
18	19 First Quarter	20	21 Society Meeting 8pm	22 Scorpius Deadline	23 SCAG	24 TLD 4pm Buy/Sell/Swap BBQ 6pm	
25	26 Full Moon	27	28	29 Moon at 364,407km Occultation by mag 1.7 Beta Tauri, 11:53pm	30	31 Halloween	

Events**Southern Comets website** - <http://members.westnet.com.au/mmatti/sc.htm>**Public night** - 8pm to 10pm on the 2nd @ The Briars**Astrophotography Workshop** - 12pm to 11pm on the 3rd @ The Briars - Booking Essential**Indigenous Astronomy Public night** - 8pm to 10pm on the 9th @ The Briars (Public & members)**Cosmology group meeting** - 1:30pm to 4pm on the 10th @ The Briars**Society Meeting** - 8pm to 10pm on the 21st @ The Briars (Public & members)**Scouts Cub & Guides night** - 8pm to 10pm on the 23rd @ The Briars**TLD - Telescope Learning Day**, Buy/Sell/Swap & BBQ - 4pm on the 24th @ The Briars (Public & members)

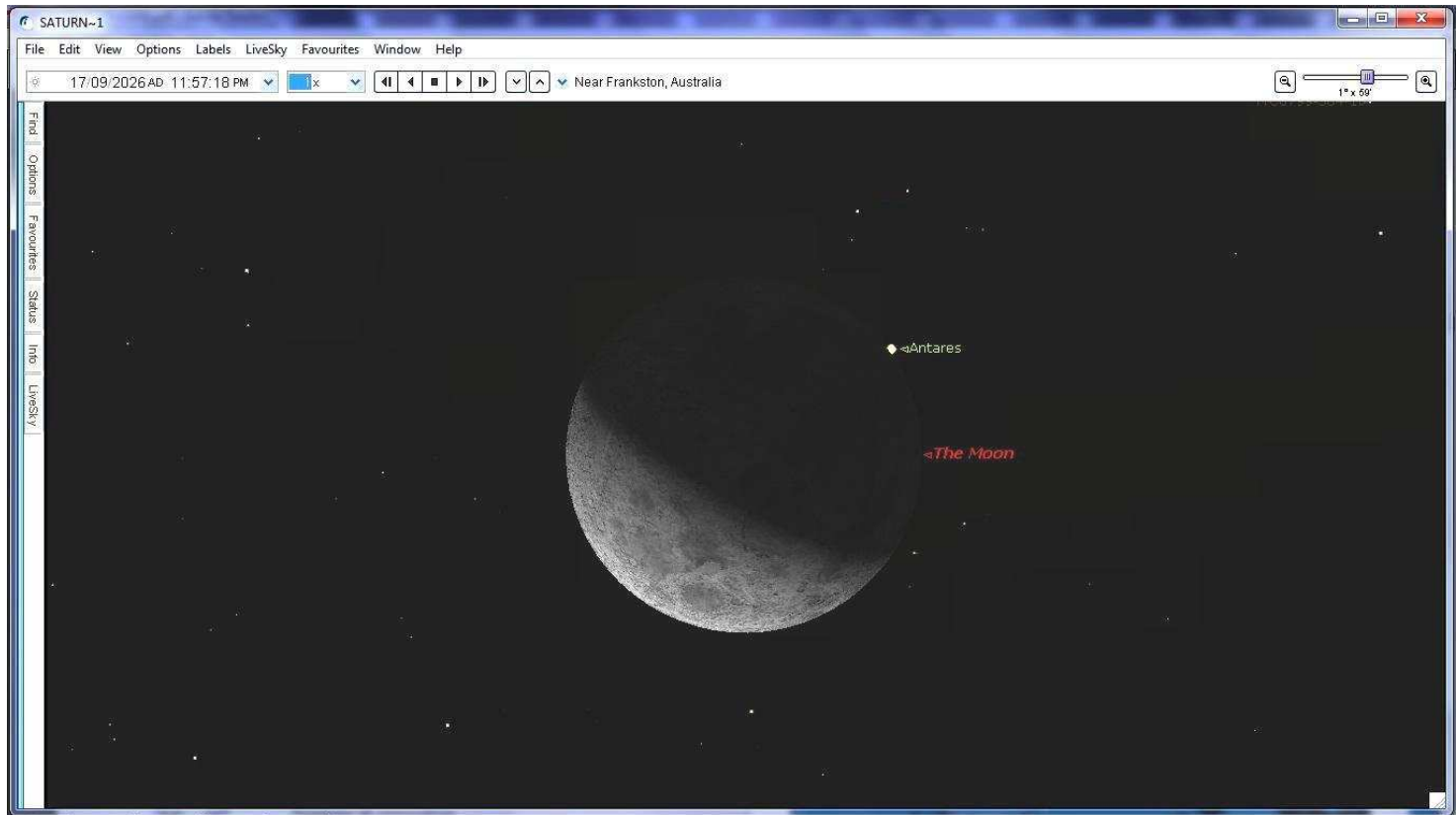
THE BRIARS SKY

By Greg Walton



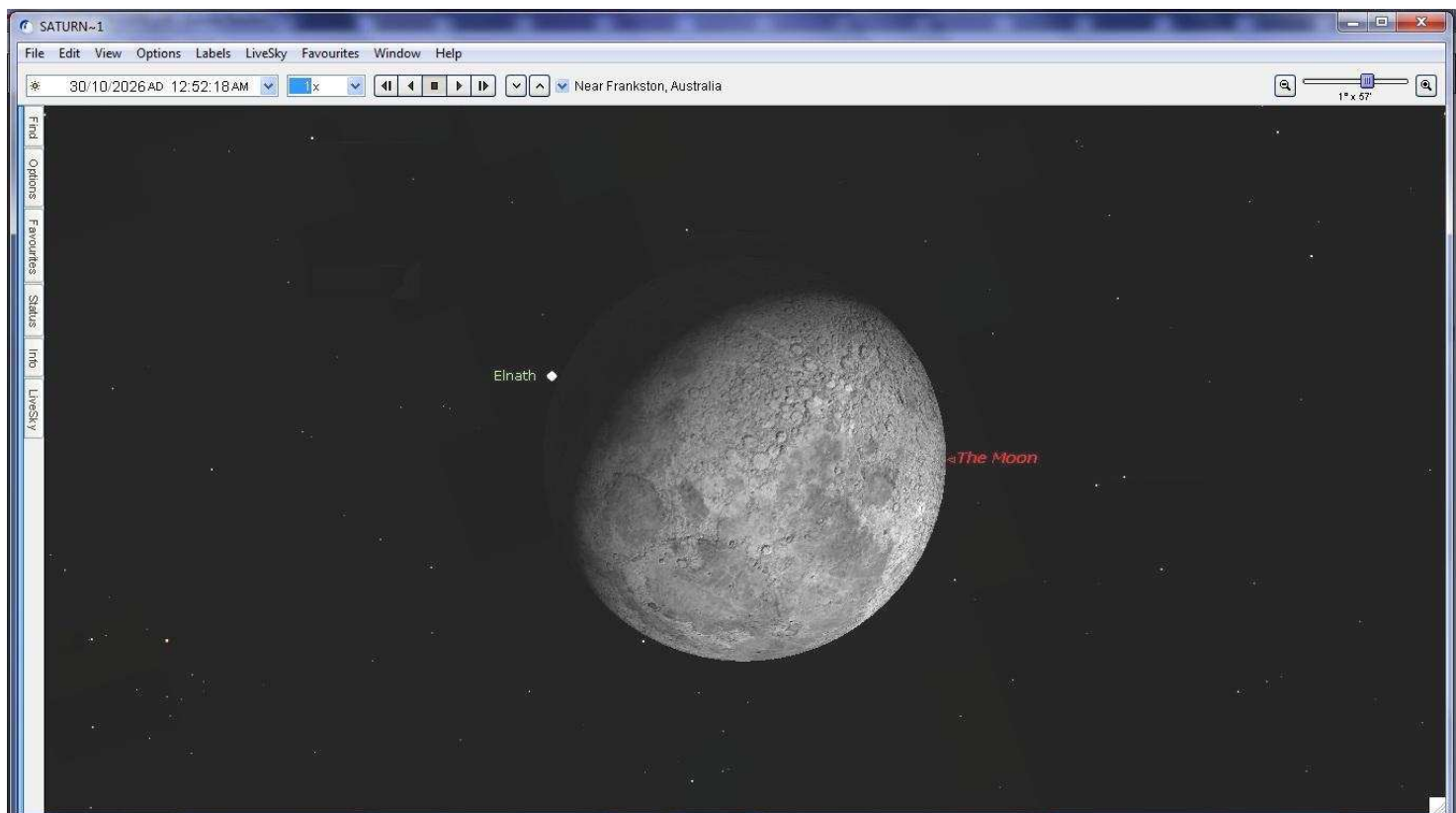
On the 17th of September at 11.57pm the Moon will pass in front of the bright star Antares.

It will be a challenge to see this event, as it occurs one hour before the Moon sets in the western sky. *See below*
 You will need to find a location with a clear western horizon, like the beach. Best to use a telescope to witness this event and any telescope will do. This occurs on the side of the Moon which is in shadow. By the time Antares reappears on the other side of the Moon, the Moon will be below the horizon.



On the 30th of October at 12.52am DST the star Beta Tauri (Elnath) will reappear from behind the Moon.

It will also be a challenge to see this event, as it occurs one hour after the Moon rises in the eastern sky. *See below*



Nancy Grace Roman Space Telescope launch

The Nancy Grace Roman Space Telescope is set to launch Sunday, August 30, 2026. The launch will be on a SpaceX Falcon Heavy rocket from Launch Complex 39A at Kennedy Space Center. Amazingly, the space telescope is eight months ahead of schedule!

The space telescope arrived at Kennedy Space Center in Florida on June 21. It underwent testing there, and now the telescope is ready for its journey to L2, the 2nd sun-Earth Lagrange point... one of astronomy's most valuable space-based "parking spots."

The Observatory, named after NASA's first chief of astronomy, Dr. Nancy Grace Roman, is designed to give scientists an extraordinarily wide view of the cosmos. At the heart of Roman is its Wide Field Instrument, a 300-megapixel camera composed of 18 detectors. A single image from the telescope is so large that it would take up roughly 37 4K Ultra HD screens tiled together to display at its native resolution.

The enormous field of view will allow Roman to survey large portions of the sky while maintaining sharp detail. Scientists expect the mission to observe nearly a billion galaxies, helping researchers study some of the biggest mysteries in astronomy. This includes dark energy and the evolution of the universe.

Roman will also work toward turning its attention closer to home. Repeated infrared surveys will allow for scientists to create a detailed look at the crowded centre of the Milky Way and conduct what NASA says will be the largest census yet of stars and planets near our galaxy's core.

Those observations are expected to reveal around 100,000 previously unknown worlds.

The telescope is also set to carry a coronagraph instrument, which is designed to reduce the glare from nearby stars. The technology will allow astronomers to directly observe Jupiter-sized planets and disks of material orbiting stars that would otherwise be hidden by starlight.

The coronagraph is primarily a technology demonstration, but NASA hopes that what scientists learn from it will pave a way for future telescopes capable of even more advanced imaging.

Roman will also repeatedly observe the same areas of the sky, essentially creating high resolution time lapses of the universe. This feature could give scientists a better understanding of how events change over time, including exploding stars and more.

All of this observing will create an enormous amount of information. NASA expects Roman to generate about 1.4 terabytes of information each day, with the mission's scientific data made publicly available.

Roman will join NASA's other major space observatories, including the Hubble and James Webb space telescopes, but its ability to capture wide portions of the sky at a higher resolution will allow for astronomers to utilize a different tool for exploring the universe.



YOUR ASTRO QUESTIONS



Why does this galaxy have a dark line through it?

The galaxy is Centaurus A, commonly known as the Hamburger galaxy or catalogue number NGC 5128 or C77.

The dark line was a separate edge-on spiral galaxy that now surrounds Centaurus A after they collided. This galaxy was much younger, with a large amount of dark material which hasn't had time to be converted into stars. Much like our own Milky Way galaxy which has dark lanes of material.

Centaurus A is an elliptical galaxy, meaning the galaxy is an out-of-shape ball or Australia rules football shape. Elliptical galaxies are this shape because they have been involved in a collision with one or more equal in size other galaxies. All the stars have chaotic orbits around the massive black hole at its centre, whereas in our Milky Way spiral galaxy, most of the stars have similar orbits around the central black hole.

Centaurus A is a close neighbour at a distance of 12 million light years and is the 5th brightest galaxy in the southern sky.



When did they collide? The spiral galaxy crashed into the giant elliptical galaxy hundreds of millions of years ago.

Other facts about Centaurus A from Google.

Centaurus A was discovered in 1826 by Scottish astronomer James Dunlop from his home in Parramatta, in New South Wales, Australia.

Centaurus A galaxy has a very strong radio signal coming from its core, which was discovered in 1949 by John Bolton, Gordon Stanley, and Bruce Slee working with the CSIRO Radio physics Laboratory at Dover Heights field station in Sydney, Australia.

This radio signal is generated by the very large active black hole at the core with a mass of 55 million solar masses. A large amount of material / stars are falling in to the black hole and before this material falls into the black hole it is ripped apart and whipped up to speeds approaching the speed of light. This material then gives off radio waves from x-ray to gamma rays.

By taking radio observations of the jet separated by a decade, astronomers have determined that the inner parts of the jet are moving at about half of the speed of light. X-rays are produced farther out as the jet collides with surrounding gases, resulting in the creation of highly energetic particles. The X-ray jets of Centaurus A are thousands of light-years long, while the radio jets are over a million light-years long.

Where do I find Centaurss A - NGC5128 - C77?

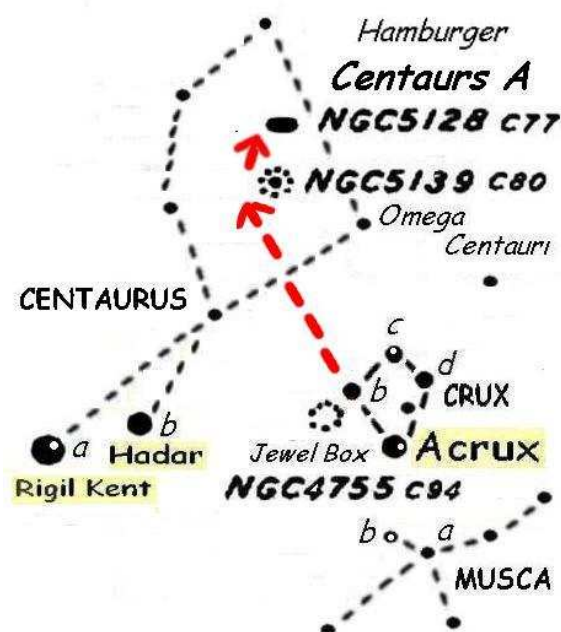
Located in Centaurus, NGC5128 is about 4 degrees from Omega Centauri. And from a dark sky location on a moonless night, you should be able to easily spot NGC5128 with a 50mm finder scope or binoculars.

To get to Omega Centauri, I usually scribe a line through the 2 brightest stars in CRUX the Southern Cross and then guess about 4 times that distance. Then from there, continue away from the CRUX, in the direction A & D CRUX. This should place you in the location of Centaurus A - NGC5128. Once you have found Centaurus A - NGC5128, you will keep returning to it for the rest of your life.

Winter is the best time of year to view Centaurus A - NGC5128 as it will be at its highest. From a dark sky site, I often view Centaurus A - NGC5128 with my 100mm binoculars at 20 times magnification. At first glance it looks like a bright comet sitting in the stars. The stars are actually much closer than Centaurus A. Then you notice the dark lane running through its centre. No, I haven't found a comet in Centaurus A - NGC5128. A closer look and you will notice that Centaurus A - NGC5128 isn't quite round. There's a bright halo extending out on either side. This view is almost impossible to achieve with a high powered telescope. My 6 inch F6 refractor with a 40mm eyepiece also shows the bright halo extending out on either side. Most astrophotographers tend to lose the halo around Centaurus A - NGC5128. In the image at the top, I have increased the brightness to show the halo.

Viewing Centaurus A - NGC5128 with my 100mm binoculars or 6 inch F6 refractor, is an unreal experience, you can never achieve this view with a camera no matter how hard you try.

By Greg Walton



BLAST FROM THE PASS

By Peter Lowe



Total Solar Eclipse @ Frankston 1976.

Recent discussions on the Scorpius Chat line about the 2028 eclipse through New South Wales got me thinking about my experience with eclipses. All up I've witnessed six total eclipses and lost count of the various partials. Eclipses are "never forget" events and I'll never forget my first at Frankston with the ASF members. In 1976 a total solar eclipse passed across Victoria and directly over Melbourne and Frankston. The TV media went crazy. The Astronomical Society of Frankston had plans for an observing site at a Carrum Downs farm. (Yes, Carrum Downs was farming land in those days) The TV stations of course wanted "Astronomy Experts" and the ASF obliged. The ASV objected because they claimed we were putting the public at risk claiming people would look at the Sun and all go blind. The ASF's reply was "BS". It's safe to look during totality but not during the partial phases and proceeded to appear on several TV shows. This greatly enhanced our public image and increased membership much to the angst of the ASV. No one went blind. There were plenty of solar glasses available for sale.



At the viewing site over a hundred people attended including some groups from the local universities. The viewing site was a sea of telescopes. I had my Celestron 8" telescope with a video camera. The plan was to film and time any Bailey's Beads. Another group had a sky photometer and they planning to record the mysterious shadow bands reported at other eclipses. On the other side of the bay at Laverton Airfield some ASF members were using the weather bureau radar to track and observe the Sun at 4.6Ghz.

As the eclipse time approached there was a lull and people went silent, the animals went silent preparing for night. Only the beep, beep, beep of the time signals could be heard. The sky was 90% clear and it looked promising. Suddenly a small cloud started to head toward the Sun and panic ensued. Murphy law was about to hit. We needed to relocate about 100m across the field but "No time". Some people went for their cars, some people stayed put with their equipment. I abandoned my equipment and ran across the field hoping my equipment would still work unattended. The sky was starting to dim. Totality darkness came instantly and we got to see the eclipse through thin cloud. There were a few "Wows" from the crowd but most people just silently gazed in wonder. Then as fast as it went dark it suddenly went bright light and the eclipse was over. A quick diamond ring appeared and then was gone.



The crowd burst into cheers and people became completely animated babbling about the experience. The animals (and insects) also became animated notably the birds that were flying around at the new morning sunrise. I wish I still had my before and after sound recording because it not something to forget. I've since experienced the same at a few other eclipses. After that there was only one thing to do: PARTY. The maps were out for planning to next eclipse.

In the aftermath we brought our observations together. My video recorded Bailey Beads and these were sent to Canberra for analysis. Unfortunately the vidicon tube in the camera was burnt out and had a perfect image of the Sun on the tube surface. The RMIT people did not detect any shadow bands. The radar observations at Laverton detected a 60% reduction at totality, which allowed us to estimate the solar diameter at 4.6Ghz. The data collected was retained by the weather bureau. The ASV wanted our entire recordings for publication their magazine. We declined and said we would provide a summary article because the data was copy righted to other organisations.

All in all it was an exciting event creating life long memories. From there I went on to five more total eclipse events.

2028 SOLAR ECLIPSE

By Greg Walton



We have less than 2 years before the 2028 Total Solar Eclipse, which will occur on the 22nd July 2028.

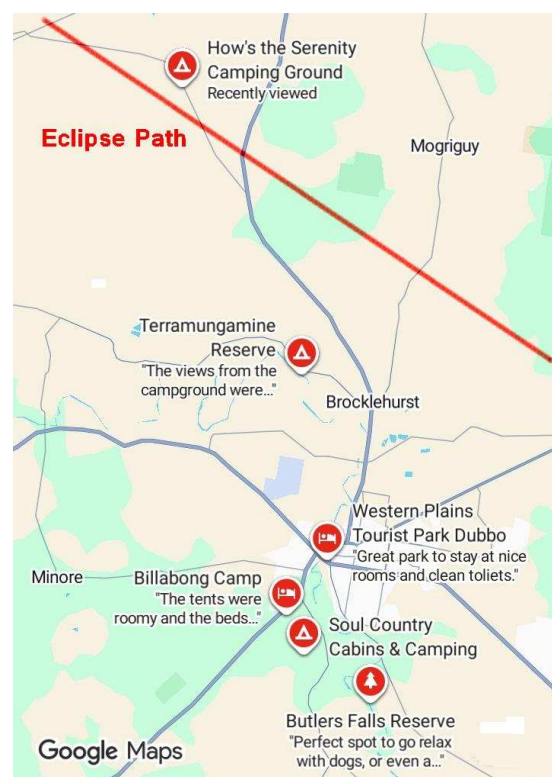
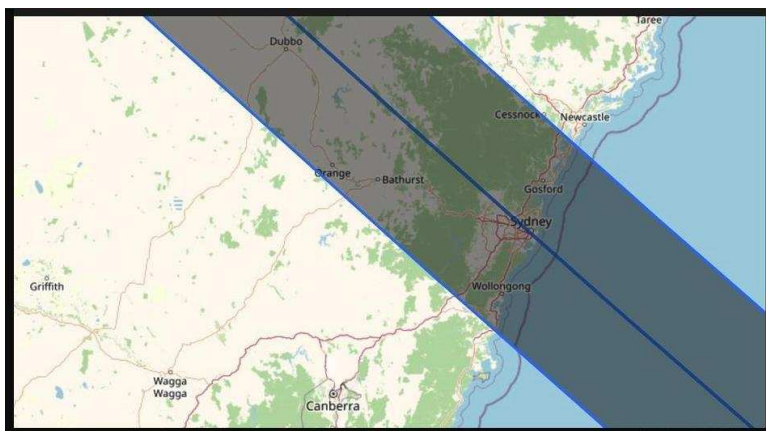
This could turn out to be the best solar eclipse ever seen in Australia. I say could, because it all depends on the weather. The eclipse starts in Sydney and then tracks across the entire width of Australia finishing in Kimberley WA.



The biggest decision is where to view the eclipse. Should I go to the heart of Sydney and be swept up by the excitement of viewing the eclipse with an enormous crowd of people. And getting that perfect shot with the eclipse over the Sydney Harbour Bridge, which would be on many photographers mind. But being winter, the eclipse could be clouded out and then it would be a big fizzer. From Sydney the totally will be 3 minutes 44 seconds, starting at 45 seconds past 1:59pm and ending at 30 seconds past 2:03.

The next option is to go inland hundreds of kilometres from the coast, where you will most likely get better weather. A big part of the path of the eclipse will be tracking across parts of Australia where there are no good roads.

The path of the eclipse will cross 30 kilometres north of Dubbo NSW, this will be the most likely option for most; and some motels in the area are already taking bookings. Probably best to arrive a day or 2 early so you can scout out a good place to view the eclipse. From Dubbo, totally starts at 17 seconds past 1:55pm and ends at 24 seconds past 1:59pm. If you wish to image the whole of the eclipse, then you need to find a location clear of trees. Sometimes local councils provide a viewing area and hopefully some farmers will also open their properties.



Next option is to drive up through the centre of Australia to near Tennant creek NT, which is almost on the path of the eclipse. The eclipse path is actually 70 kilometres to the south of Tennant creek, closer to the Devils Marbles where you can camp if you get there early. There is also a caravan park with a UFO theme nearby. I'm sure they will make a big thing out of the total eclipse. As throughout the galaxy, total solar eclipses are very rare, so if there was a good reason for aliens to come to earth, it would be a total solar eclipse. You never know, you maybe standing next to an alien while viewing the 2028 total solar eclipse. From central NT, the eclipse starts at 29 sec past 12:18pm and ends 55 sec past 12:22pm giving you 4 minutes 26 seconds, about 40 seconds more than Sydney.

Last option is fly or drive to the Kimberley, WA, where you will get the longest totally of 5 minutes and 10 seconds. If you have never been to the Kimberley, then this would be an excellent reason to go and killing two birds with one stone. Pia and I drove through the Kimberley 10 years ago. The ever changing landscapes against the deep blue cloudless skies are breathtaking. Pockmarked by Boab trees, each one more interesting than the last. I think we photographed 200 Boab trees, some have writing carved into them with dates older than a hundred years. The highway from Darwin to the Kimberly is made and the mobile phones rarely dropped out. The windscreen of the car becomes a big screen TV. Please take the time to stop when you see something interesting, as you most likely won't get back there for awhile. Definitely one for the Bucket list.

EXOPLANET EXTRAVAGANZA

Peter Lavelle



Looking in the sky with diamonds

What exactly is a diamond exoplanet?

A diamond exoplanet is one that started off with relatively more carbon in its makeup than Earth.

The Terrestrial and Super-Earth types are thought to form with a layer of graphite on the surface and very compressed carbon shells deep within. If you compress carbon enough it turns into diamond. Being covered in graphite (which gets called 'lead' in pencils), they are liable to be disappointingly dark to an observer, rather than sparkly and shiny.

The larger gaseous exoplanets would have carbon in some chemical form in the atmosphere which gets compressed and heated to form diamond deeper down.

On the hotter carbon-rich exoplanets, carbon would sublime (solid converted to gas) off the surface or from deep down in the atmosphere to form soot clouds which then precipitate diamond rain back down.

Where did all that carbon come from?

Exoplanets, just like the planets in our own Solar System, form from the leftover bits of gas and dust swirling around after the central part of the cloud in that volume of space has collapsed in on itself by gravitation to form the central star, or often several stars.

These clouds were formed by the novae and supernovae of previous generations of stars.

Small clumps of dust and gas gradually get bigger by gravitational attraction and colliding with others. Eventually a planet may grow.

In some regions of space there just happens to be more carbon atoms floating around than in the cloud which gave birth to the Solar System.

First there was physics:

The nucleus of an atom contains protons (each with a positive electric charge of one) and neutrons (neutral).

Similar electric charges repel by the **electromagnetic force**, but the more powerful **strong nuclear force** keeps the protons in a nucleus from flying apart. It tightly binds the protons and neutrons together.

If two nuclei approach each other, the positive electric charges of the protons will repel and try to keep them apart.

The closer they get, the stronger the repulsion.

However, if two nuclei approach each other with sufficient velocity (i.e. high kinetic energy caused by the high temperature which in turn is caused by the high pressure in the core of a star), they can get close enough for the very short-range strong nuclear force of each nucleus to 'grab hold' of the other and overcome the repelling electromagnetic force.

A nucleus of a new element forms from the combined protons and neutrons. This is called thermonuclear fusion.

In the process, a small fraction of the mass of the particles turns to kinetic energy of the particles (movement), and an even smaller fraction of the mass to pure energy as gamma rays (photons). That energy production is enough to counterbalance gravity pulling the mass inwards so that the star settles to a stable size for a long time.

It can actually be a good deal more complicated than that, with intermediate elements forming briefly.

In some fusion reactions one or more of the neutrons are also flung out. These don't last long separated from a nucleus and decay into a proton, electron, and electron anti-neutrino.

During fusion a proton can also decay into a positron (antimatter equivalent of electron) and an electron neutrino (which has a tiny mass and zero charge) by a process called beta-plus decay which involves the **weak nuclear force**.

The energy of the photons eventually makes its way from the core to the surface, having been spread out across many electromagnetic wavelengths by its absorption and re-emission from countless atoms along the way, and shines out as the spectrum of the star, including x-rays, ultraviolet, visible light, infrared (heat), and radio waves.

Fusion builds the elements:

In the aftermath of the Big Bang the universe consisted of about 75% hydrogen (atomic number $Z=1$) and 25% helium ($Z=2$), with minute amounts of lithium ($Z=3$) and beryllium ($Z=4$). The **atomic number** is a count of how many protons are in the nucleus of an element.

The stars have later made every other element through thermonuclear fusion.

For about 4.6 billion years the Sun has been fusing hydrogen ($Z=1$) to helium ($Z=2$) in its core at a temperature of about 15 million °C.

Every second about 596 million tonnes of hydrogen becomes helium, while 4 million tonnes of mass are converted into energy.

After the hydrogen has been used up, the core then has more helium, which is more massive, so the pressure and temperature increase to the point where helium can start fusing to producing carbon ($Z=6$). This can repeat as each element is used up and higher- Z elements are produced.

The more protons in a nucleus (higher Z) means more electromagnetic repulsion of an approaching nucleus, so it takes a higher temperature to overcome this and allow fusion. In its later red giant phase, as the temperature in the core increases, the Sun will fuse elements including up to carbon ($Z=6$) and oxygen ($Z=8$).

The mixture of elements in the outer layers will be blasted out into space when the Sun eventually goes nova.

A bigger star, upwards of five times the mass of the Sun, can create elements up to iron ($Z=26$).

Bigger still, around eight times the mass of the Sun or more, the star will eventually go supernova, creating elements all the way up to uranium ($Z=92$) in its last few cataclysmic seconds.

Then there was chemistry:

Atoms have a tiny nucleus containing protons and neutrons, except the simplest form of hydrogen which just has one proton.

Each proton carries an electric charge of plus one and the neutrons have zero electric charge.

Around this is a much bigger fuzzy cloud of electrons arranged in shells.

There can be up to two electrons in the innermost shell, eight in the next, etc. The exact number follows several principals, taking into account quantum rules.

Each electron has an electric charge of minus one, and they are equal in number to the protons, so that the atom overall is neutral.

The electrons in only the outermost shell can form chemical bonds (there are several different kinds) with other atoms by completely exchanging or just sharing electrons.

Nature drives an atom to have its outer shell filled with electrons, as this is the least energetic state. This may mean 'giving' some electrons to another atom so that the next shell inwards effectively becomes the outer one, or else 'accepting' some electrons from the other atom to fill up the outer shell. It depends how many electrons short of a full outer shell the atom is as to which way it goes.

The **noble gases** helium, neon, etc. have full outer electron shells already and so do not readily bond with anything else.

Two or more atoms chemically bonded is called a molecule.

Note: There is actually a fair bit more to chemistry than this!

What does Earth have instead of a lot of carbon?

Earth, in fact, does have a great deal of carbon. It is estimated to amount to about 0.02% of Earth's mass. That may not sound much but it's essential to us and every other living organism. Something like 99% of this carbon is buried underground as coal, oil, and a multitude of other compounds. It's in carbon dioxide and methane in the atmosphere. It's dissolved in the oceans as a very dilute carbonic acid.

Earth has relatively more oxygen and silicon, and less carbon, in its makeup than a diamond exoplanet.

The oxygen and silicon within Earth are mostly incorporated as silicate rocks (sand, quartz, granite, etc.).

Thankfully for us there is also some free oxygen left over in the atmosphere and, combined with hydrogen, as water.

A bit of biochemistry:

Complex life like animals use oxygen in chemical reactions within their cells to convert the food they eat to a form of chemical energy. This oxygen from the atmosphere is constantly replenished by plants, algae and cyanobacteria (blue-green algae) which convert carbon dioxide and water to glucose and oxygen by the process of photosynthesis.

It was the cyanobacteria, and later plants and algae, over several billion years that increased Earth's atmospheric content of free oxygen from almost nil to around the 21% it is today.

What's so special about carbon?

Carbon has four electrons in its outer shell which can readily form strong bonds with atoms of other elements or other carbon atoms.

It can form long chains or ring shaped molecules.

It can form into two dimensional sheets of atoms (graphite and graphene) or three dimensional crystalline configurations (diamond).

It can form amorphously, that is, with no regular structure (coal and soot).

It can exist in a very soft state (powdered graphite) or as the hardest naturally occurring mineral (diamond).

Carbon doesn't melt easily. At normal atmospheric pressure it goes straight from a solid to a gas (sublimates) at around 3,600 °C.

To get it to melt to a liquid needs around 4,500 °C and a pressure in excess of 10 MPa (megapascals) (100 times atmospheric pressure).

Combined mostly with hydrogen carbon can form long chains of hydrocarbon molecules (e.g. oils, propane (LPG/barbeque gas)).

Combined with hydrogen and oxygen it can form long chains of carbohydrate molecules (e.g. sugars, starches).

Carbon can form chemical bonds with itself and other elements to produce ring shaped molecules (e.g. benzene, caffeine).

With a relatively small number of other atoms such as hydrogen, oxygen, nitrogen, sulphur, and phosphorus it can form immensely complex 3D molecules such as amino acids, RNA, DNA, and proteins, which are the basic ingredients of all life. Carbon is so important to life we call its study **organic chemistry**.

No other element matches carbon's chemical versatility in forming large stable molecules of up to millions of atoms.

Any other contenders for 'most sociable' element?

Silicon also offers four bonds and can form chains, but the bonds are weaker than those of carbon, so the molecules are less stable and cannot grow as large.

Science fiction and fantasy stories have depicted 'rock monsters', often based on silicon chemistry, but in reality it can't happen.

Boron, sulphur, phosphorus, and various other elements can bond to form larger molecules, but nothing is comparable to carbon.

Getting back to diamond exoplanets, are we sure that any actually exist?

We can tell from the absorption lines in the spectrum of light from a star how much carbon and other elements it contains in its photosphere (the shiny bright surface). By inference, the cloud of gas and dust from which the system formed must have contained a similar proportion of these elements, and so any exoplanets there probably do as well.

For some exoplanets that transit directly in front of their star we can directly observe their spectrum as the starlight shines through the exoplanet's atmosphere.

It is calculated that, for these exoplanets to be the mass they are estimated to be, and above a certain level of carbon content, they must have a diamond layer forming from the pressure inside.

The process can be simulated on Earth by crushing graphite in a diamond anvil cell and heating it until it turns to diamond.

Laser-heated to 1,500 °C, this happens at pressures upwards of 12 GPa (gigapascals) (120,000 times atmospheric pressure). At room temperature it needs upwards of 17 GPa.

Any diamonds raining down closer to home?

It is thought that there may be diamond rain in the depths of Uranus and Neptune.

Abundant methane in their atmospheres would get roasted and compressed in the hot, high pressure depths to separate the carbon from the hydrogen in methane, then turn the carbon to diamond.

Some examples of diamond exoplanets:

PSR J2322-2650b, about 750 light years away, is a recently observed planet which is Jupiter-mass, but shaped like a lemon rather than a sphere due to the gravitational pull from the very close pulsar it orbits. Observations from the James Webb Space Telescope suggest it has an atmosphere dominated by helium and carbon, where hot carbon clouds may condense to form continuous diamond rain.

55 Cancri Ae (Janssen) is a Super-Earth exoplanet, about 41 light-years away, known for its extreme, hellish conditions, with surface temperatures exceeding 2,500°C. It is roughly twice the diameter and eight times the mass of Earth, orbiting its star in only 18 hours. It is likely to be lava-covered and tidally locked.

PSR J1719-1438b, about 4,000 light years away, is thought to be the exposed, crystallized core of a white dwarf star that was cannibalized by its companion pulsar. This stripped away the white dwarf's outer hydrogen/helium layers. This type of exoplanet formation is called the **black widow mechanism**. White dwarfs are roughly the diameter of Earth but contain the mass of the Sun. They are so dense that one teaspoon of their material would have a mass of around 10 tonnes.

How many exoplanets are there?

Confirmed as at July 2026: 6,416

Estimated in the Milky Way galaxy: 1×10^{12} (1 trillion).

Estimated in the visible universe: 1×10^{24} (1 septillion).

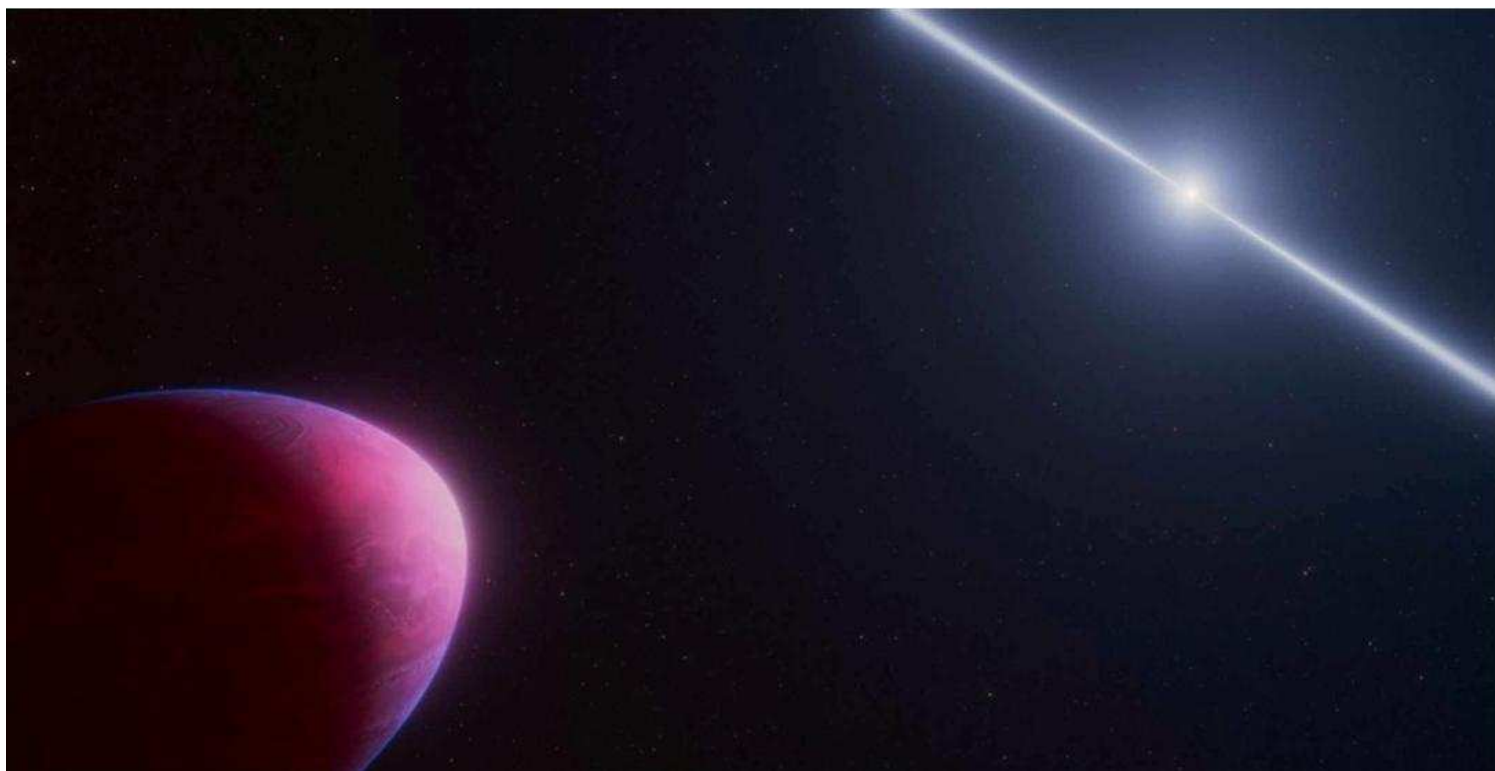
The visible universe extends out to about 46 billion light years.

At that distance the universe, according to current theories, is expanding at the speed of light so we cannot see anything beyond that.

If the universe is actually infinite in size then the number of exoplanets would be infinite.

Exoplanet example: PSR J2322-2650b:

Name	PSR J2322-2650b
Confirmed discovery	2017.
Discovered by	James Webb space telescope (JWST) survey, Spiewak et al.
Detection method	Pulsar timing. As the planet orbits the pulsar it makes the pulsar's position relative to Earth very slightly wobble, which can be detected as a tiny regular fluctuation in the timing interval of the radio emissions from the pulsar beams that reach Earth.
Distance from Earth	750 light years in the constellation Sculptor.
Star type	Pulsar: Very fast-rotating neutron star, emitting beams at radio wavelengths from its magnetic poles which sweep across Earth's direction. The pulsar is about 1.4 times the mass of the Sun and just 20 km diameter. It rotates 300 times per second.
Average distance from star	0.01 AU (Earth from Sun = 1 AU).
Estimated age	Unknown. It is highly unlikely for a Gas Giant exoplanet so close to its star to have survived the supernova of the original star that formed the pulsar. Nor does it fit the black widow mechanism of formation.
Orbital period around star	7.8 hours (Earth = 1 year).
Length of day	Tidally locked. One side always faces the star and the other is permanently dark.
Type	Hot Gas Giant.
Estimated radius	10 (Earth = 1). Roughly the same size as Jupiter. Pulled into a lemon shape because of its very close proximity to the pulsar.
Estimated mass	252 (Earth = 1).
Estimated atmosphere	Thick, mostly helium and carbon (soot clouds). There is likely a 'rain cycle' fed by carbon sublimating from the depths. It probably rains diamonds.
Estimated surface temperature	Permanently light side 2,000 °C. Permanently dark side 650 °C.
Habitability	Not habitable. This is a very harsh place.
Notes	1. PSR J2322-2650b may have layers of graphite and diamond deep under its atmosphere. 2. PSR J2322-2650b is the only Gas Giant exoplanet to have been found so far orbiting a pulsar.

Artist's impression of PSR J2322-2650b orbiting its pulsar:**Recent exoplanet news:**

Exoplanet Proxima Centauri b, which is the nearest known exoplanet and is in its star's habitable zone (right temperature for liquid water), may have a very strong magnetic field which would help protect its atmosphere and surface from the frequent stellar flares from the red dwarf Proxima Centauri. This could enhance the prospects for at least simple microbial life there.

The star is flaring about 25% of the time. This may be influenced by the magnetic field of the inner exoplanet Proxima Centauri d which orbits it every 5 days.

Proxima Centauri b orbits every 11 days and the chemistry of its atmosphere revealed by its spectrum also shows a matching 11 day cycle. One possible explanation is that both exoplanets have extremely powerful magnetic fields, at least 10 times stronger than Earth's and possibly considerably more.

Note: Recent news is sometimes highly speculative, with an element of wishful thinking!

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<https://www.iflscience.com/evidence-earths-closest-exoplanets-have-enormous-magnetic-fields-revives-prospects-for-life-on-proxima-b-83722>

Call for articles.

Members please write a story about your astronomy experiences, subject of interest, tips and tricks, how you got into astronomy, and also please add some pictures.

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

ASTROPHOTOGRAPHY TIPS



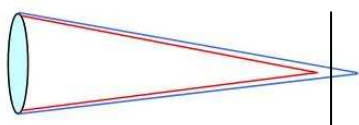
Astrophotography with lenses.

When imaging the night sky with camera lenses or refractor telescopes, you may have noticed that the stars are blue or red. This means that the focus is a tiny bit off.

If the stars are blue?

This means you need to move the camera closer to the lens, or focus inwards.

As blue light bends less than red light, the blue light focal point is farther away from the lens.



White light focal point

If the stars are red?

This means you need to move the camera farther away from the lens, or focus outwards.

As red light bends more than blue light, the red light focal point is closer to the lens.

If the stars are white?

This means the red light and blue light have cancelled each other out.

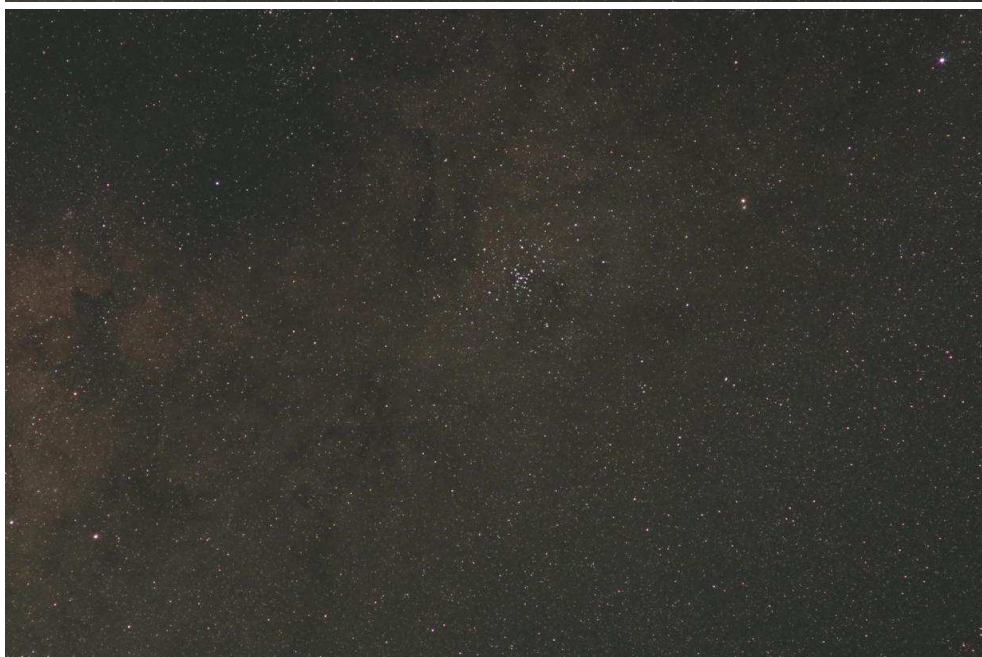
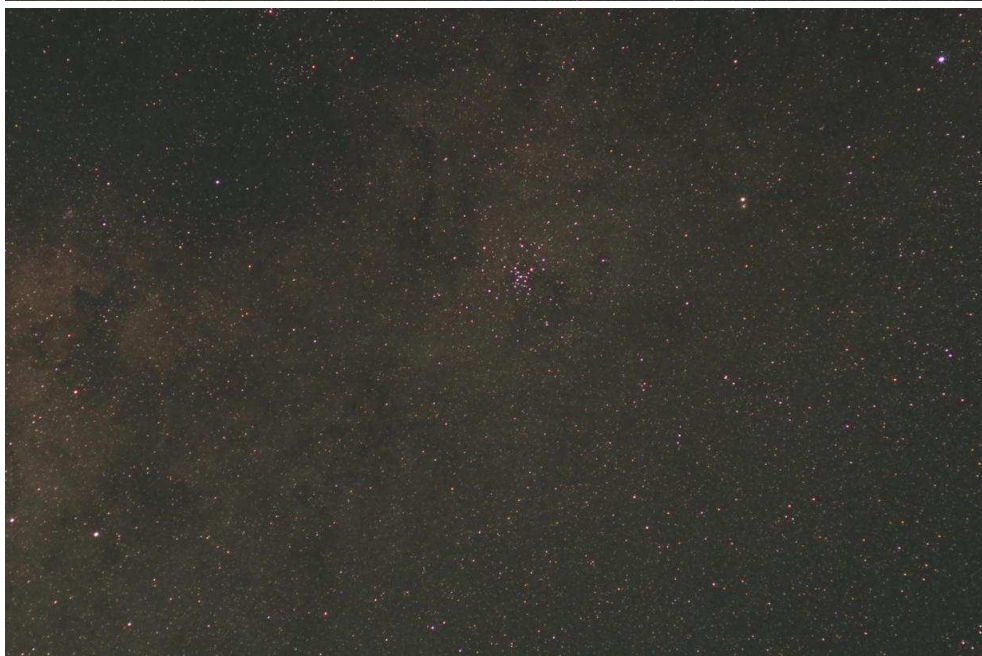
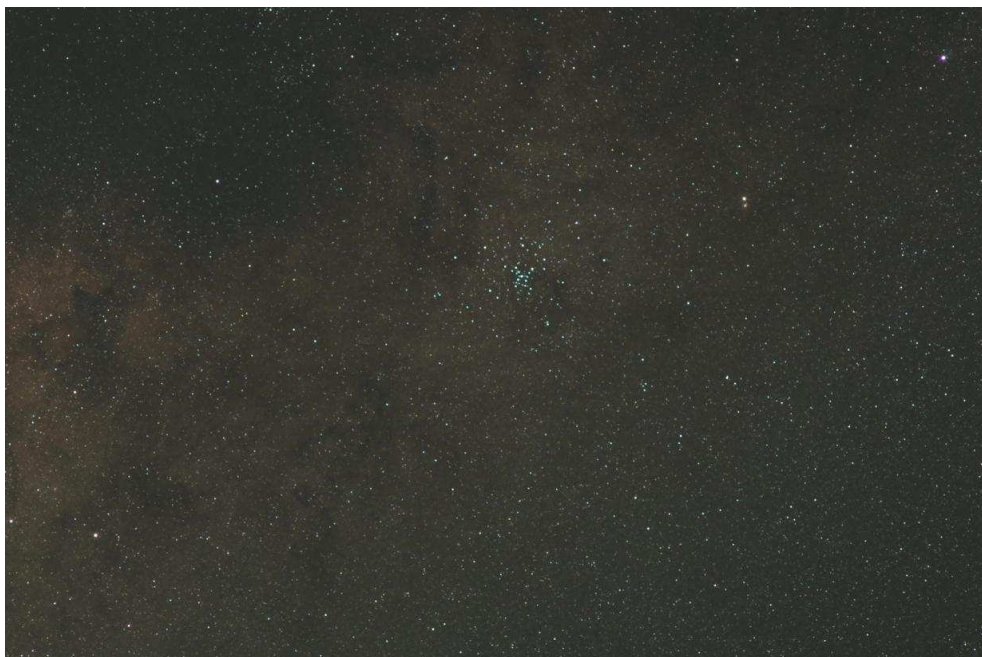
This means you are in focus.

It's best to spend a little bit more time to get the focus spot on, before you take a large batch of images. Also best to recheck the focus after an hour, as telescopes often get shorter as they cool.

It's very hard to correct coloured stars afterward.

All images were captured with 135mm lens on a DSLR camera. The star cluster in the centre is M7 Ptolemy's cluster.

By Greg Walton



MEMBERS GALLERY



This page - Collection of images, taken with a Seestar S50, by *Dennis Cooke*.

Moon, IC2872, NGC5128, M83, NGC 6357 the Lobster Nebula, IC4628 the Prawn Nebula.



Right -

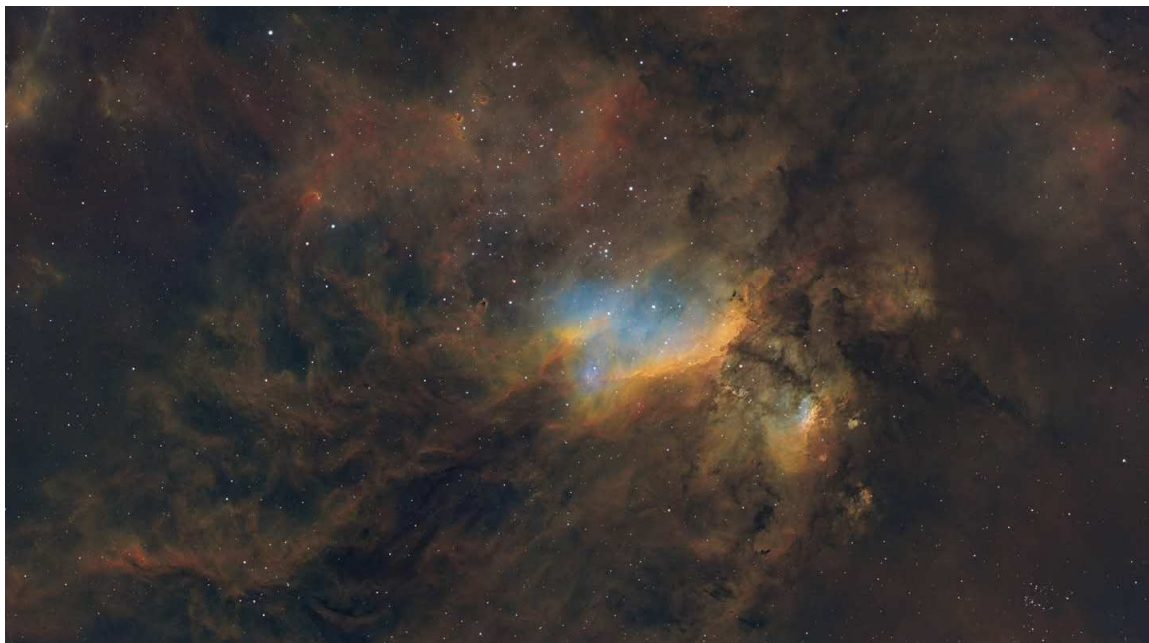
Captured the Prawn nebula with the SV545 scope, I like it so much I'm selling the Askar FRA300 just because of the extra reach.

SHO RGB stars taken over a few nights each 3-5 min subs (rgb 1 minute) 6 hours in total

Camera ZWO585MMpro
Scorpio 3nm filtersSHO

Astronomik RGB

By Nik Axaris

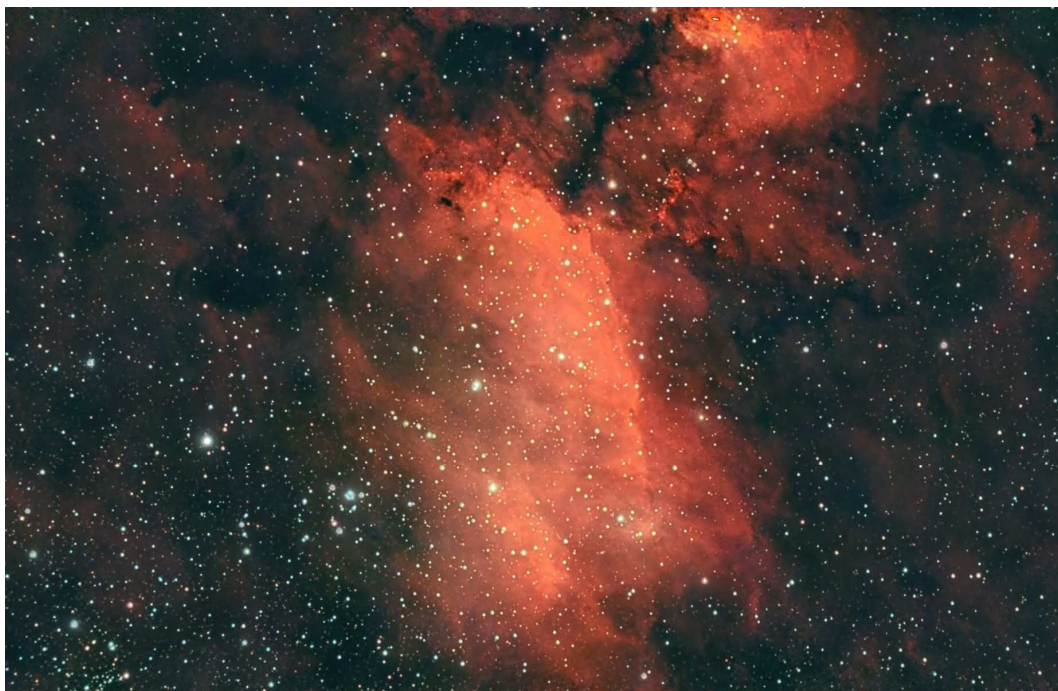
**Right -**

IC4628 Prawn Nebula

Seestar S50. Over 4 hours of 10sec exposures in the River Murray International Dark Sky Reserve last night.

Processed in Siril, veralux, syqon, and the new autogradientremoval script.

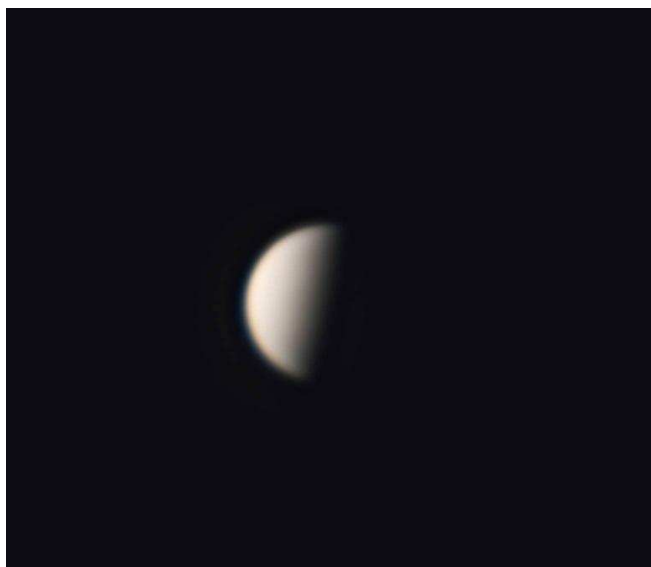
By Michael Barrow

**Right -**

Venus

My processed capture of Venus from tonight. Stacked the best 10% of 3900 frames in AutoStakkert, balanced the colours to remove the excess green, and sharpened it with Wavelets in Siril which cleaned up the edges, and slightly adjusted the brightness in Photoshop.

By Chris Kostokanellis





IC 4605. The Blue Angel Nebula. Imaged 14/6/2026 from my back yard.

This is a closer look with my 80mm refractor after it showed up in my wider image of Antares I posted previously, and is my first time imaging it.

The yellow glowing nebula on the top left is the Antares Nebula, with Antares being just outside the field of view towards the top left corner. The Blue Angel is quite obvious on the left side, and the dark nebulas of the Ophiuchi Cloud Complex dominate the centre and lower regions of the image.

Another interesting capture here is (481) Erita, a 116km diameter Asteroid, currently around 2.14 AU from us. It's the elongated streak in the bottom right quadrant of the image, and this is its motion captured between 8.20 PM and 3.07 AM. I noticed it in my stack and identified it using the Sky Safari app.

The image is the best 70 x 5 min exposures for the night using my 80mm refractor with 0.8 Flatteners / Reducer (400mm FL), Antila Triband filter, and ASI294 MC Pro on my AZEQ6, controlled by my ASIAir.

(PS. The top left corner of my image is a bit messed up. Will try to correct it and update the image once fixed)

Clear Skies. By Chris Kostokanellis



Right -

M16 and SH2-54 and
NGC 6604

Finally some nice nights in
the depths of a Melbourne
Winter.

SVBony SV545 - ZWO
585mmPro

Scorpio 3nm SHO filters

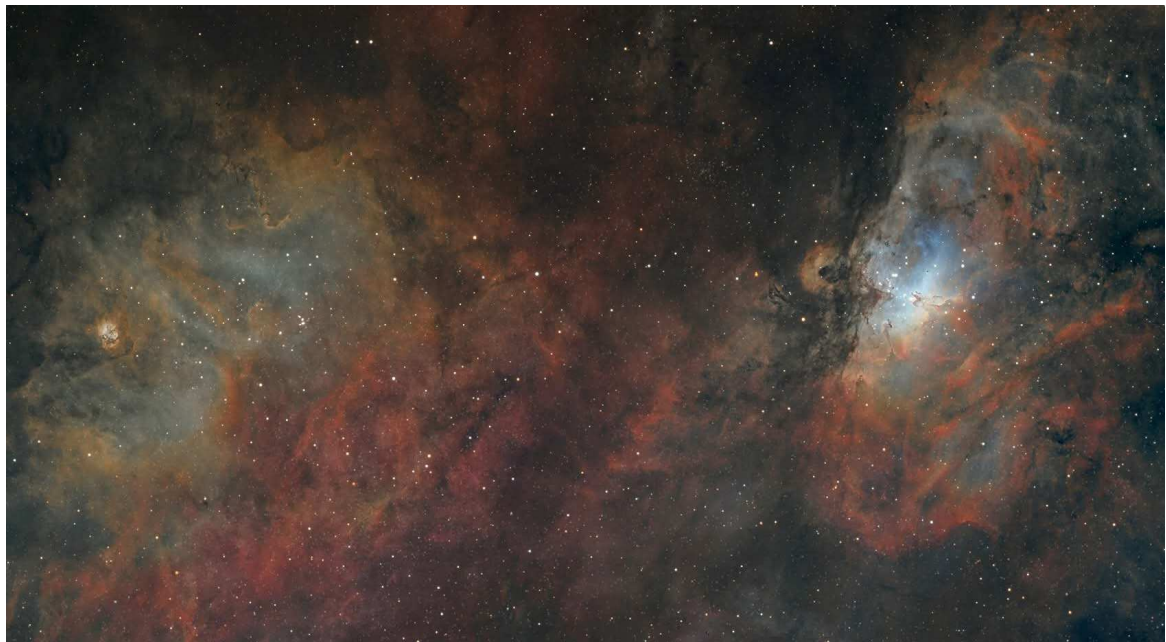
Astronomik RGB filters
for the stars

ASIAIR for acquisition

Juwei17 mount

5 hours total acquisition
time before the trees
ruined the rest of the night.

By Nik Axaris

**Below -**

And another M16
highlighting the Pillars of
creation, when you have 2
rigs you can play a bit.

TS-Optics 130 APO

ZWO asi294mc Pro

Optolong L-Ultimate Filter

Askar D2 SO filter

Astronomik L-3 filter for
the stars 5 hours in total

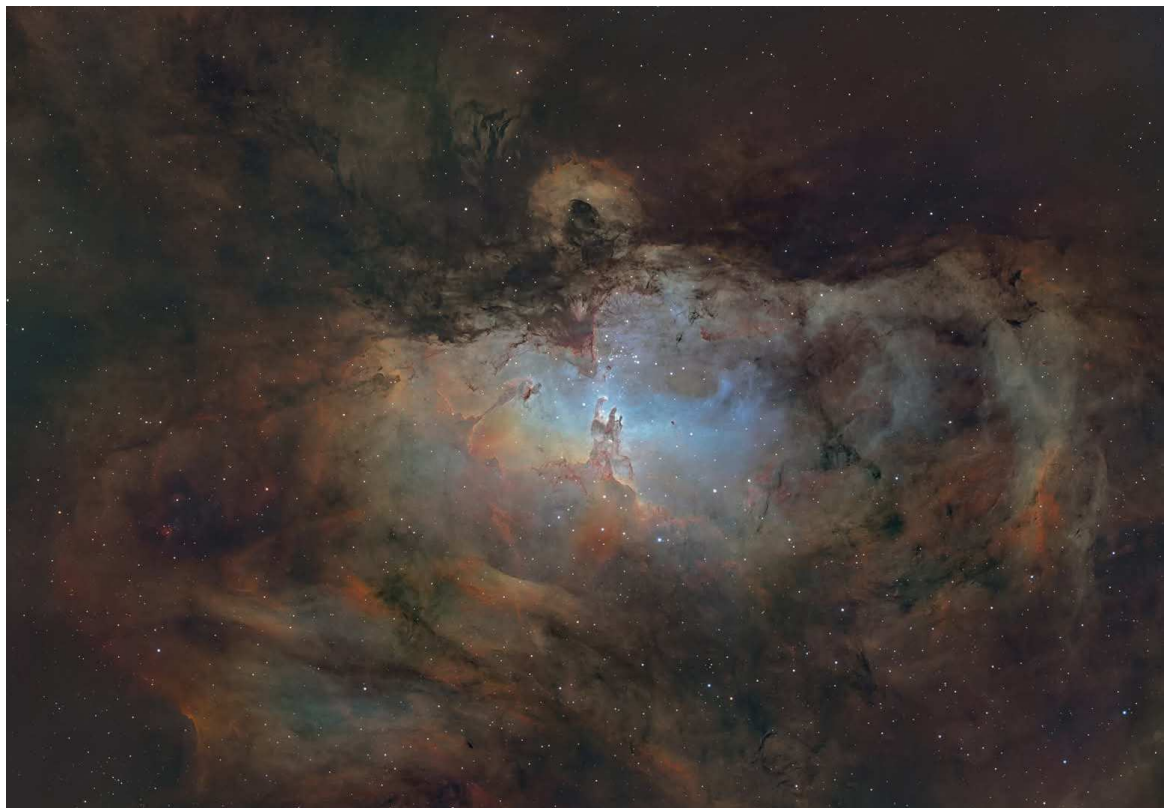
Processed with Pixinsight
stacked in Astropixel
processor

Sky-Watcher Eq6 mount

Riccardi 0.75 reducer

SVBony 60mm guide
scope

By Nik Axaris

**Right -**

Eagle Nebula M16 or Pillars of creation.

Imaged with Meade 350mm F10 EQ8

Canon 60D 18x30sec iso6400

Date - 17aug2026

By Greg Walton



Eagle Nebula M16 imaged with Meade 350mm F10 EQ8 Canon 60D 38x30sec iso6400 17aug2026 by Greg Walton

MO PHO CHALLENGE

Chris Kostokanellis



Mo Pho challenge #33: Sagittarius – The Archer.

Depicted as a Centaur drawing a bow and includes the commonly recognised asterism of “The Teapot”, with the spout of the teapot pointing towards the galactic centre and Sag A*. This was an open challenge for any equipment and focal length, and ran for 2 months until the August Member meeting.

Nine members captured 26 images of Sagittarius and objects within its boundaries. These members were Chris Kostokanellis, Dave Rolfe, Dennis Cooke, Greg Walton, Kelly Clitheroe, Mark Stephens, Michael Barrow, Michelle Sykes, and Sylvie Grandit.

Mo Pho challenge #34 will be Planetary Nebulae.

These are the colourful outbursts of stellar material thrown out into space by low mass stars like our own when they come to the end of their life. They only last about 10,000 years before the discarded stellar material is dispersed through the galaxy, destined to mix with other gas and dust to form new stars and planets. So you have to get in quick to grab your photo, because they are gone in the cosmic blink of an eye.





New Challenge. #34
August - September 2026:
Planetary Nebulae.

- Size does matter.
 - Focal length and aperture.
- Objects of interests:
 - NGC 7293 - The Helix (Right)
 - NGC 246 - The Skull
 - NGC 7709 - Saturn Nebula
 - NGC 6302 – The Bug

Submit photos to any of:

- MPAS Members Facebook page
- E-Scorpius Members. Subject “Astro Mo Pho”
- Email: c.kostokanellis@mpas.asn.au



What is a Planetary Nebula? by Greg Walton - Scorpius newsletter 4 2023, see page 17. [Link below](#)

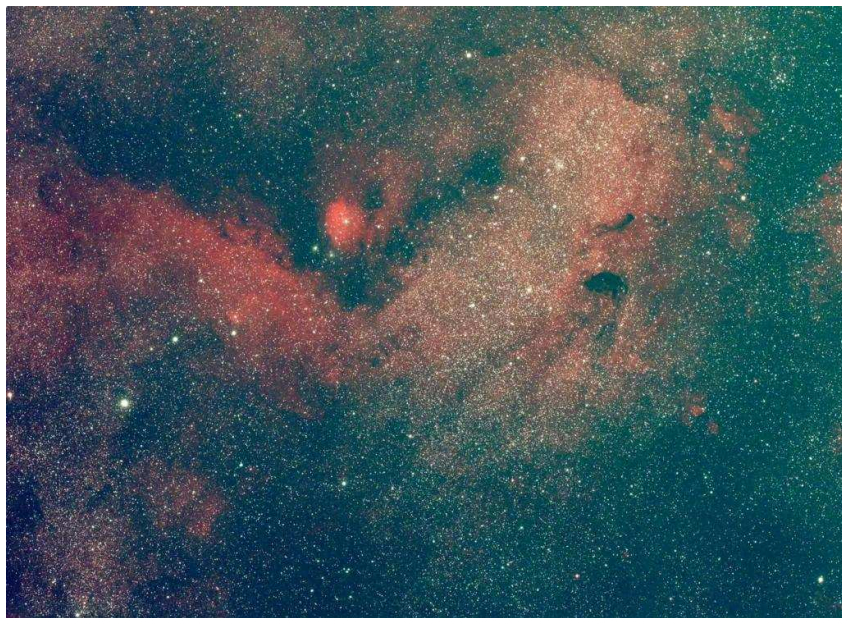
<https://drive.google.com/file/d/1li4Y1ifSBQ3ZFXg5-rVf1HoxFxiKgH90/view?usp=drivesdk>

Right -

ASTRO MO PHO – Messier 24 (M24), or the Small Sagittarius Star Cloud, is not a traditional star cluster or nebula, but a massive 600-light-wide transparent window through nearby cosmic dust clouds that reveals millions of distant stars in the Milky Way’s Sagittarius spiral.

Equipment: Redcat51, ASI 2600 MCPRO, L EXTREME filter, 24 x 180 sec stacked in DSO experimented/ played around in Siril.

By Sylvie Grandit



Left and Cover image - ASTRO MO PHO – taken on the 31/07/2026 – M8 Lagoon Nebula – is a giant emission nebula and active star-forming region located 4,000 to 5,200 light-years away in the constellation Sagittarius.

EQUIPMENT: Sky Rover 115 (focal length 805) , camera MC2600 PRO ZWO Optolong L extreme filter. 19 x 180 stacked no darks light or flat – flattener/ reducer was used so my actual focal length is 644.

By Sylvie Grandit

Right -

ASTRO MO PHO

- Lagoon and Trifid Nebula

Redcat51, ASI 2600 MC PRO, L'eXtreme filter.

The moon was at 87 % full.

I tried stacking, I tried Siril, played around god knows what I was doing

By Sylvie Grandit

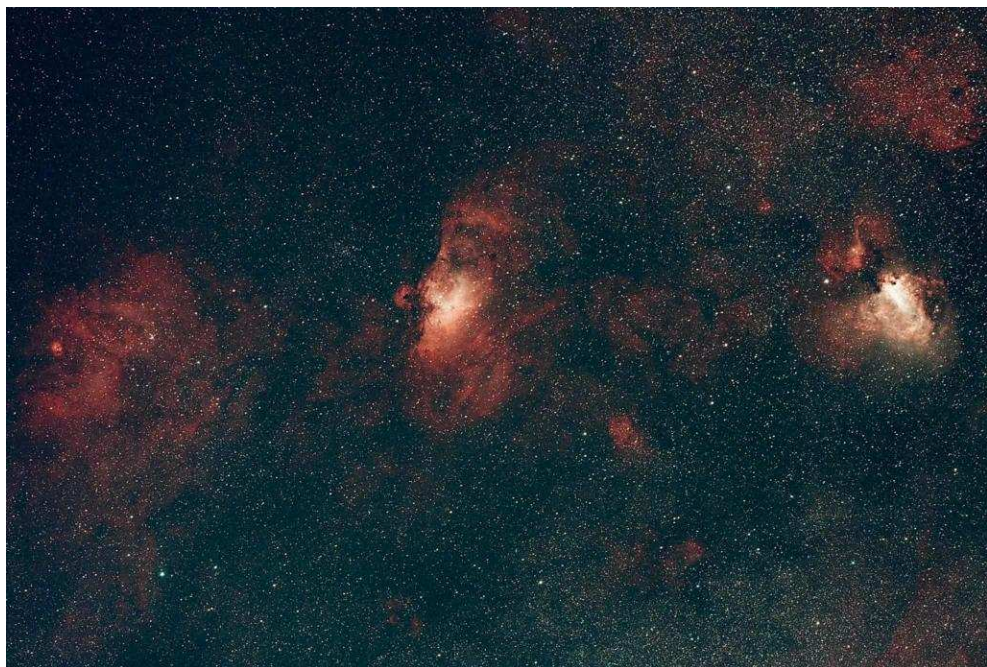
**Right below -**

ASTRO MO PHO – M16 Eagle Nebula and SH2-54 also known as “The Scary Face Nebula” in the constellation of Serpens BUT I did also capture M17 Omega Nebula located in Sagittarius this Nebula is also known as “The Swan Nebula or Lobster Nebula or Horseshoe Nebula roughly 5500 light years from Earth spans 15 to 40 light years across.

EQUIPMENT: Sky Rover 115 focal length 805 – ZWO 533 MC PRO, Optolong L - eXtreme filter I did stack in the ASIAIR DSO then played around in Siril. For the life of me I couldn't send my saved images as it was too “Large” to send so I had to use “the pov image” hehe

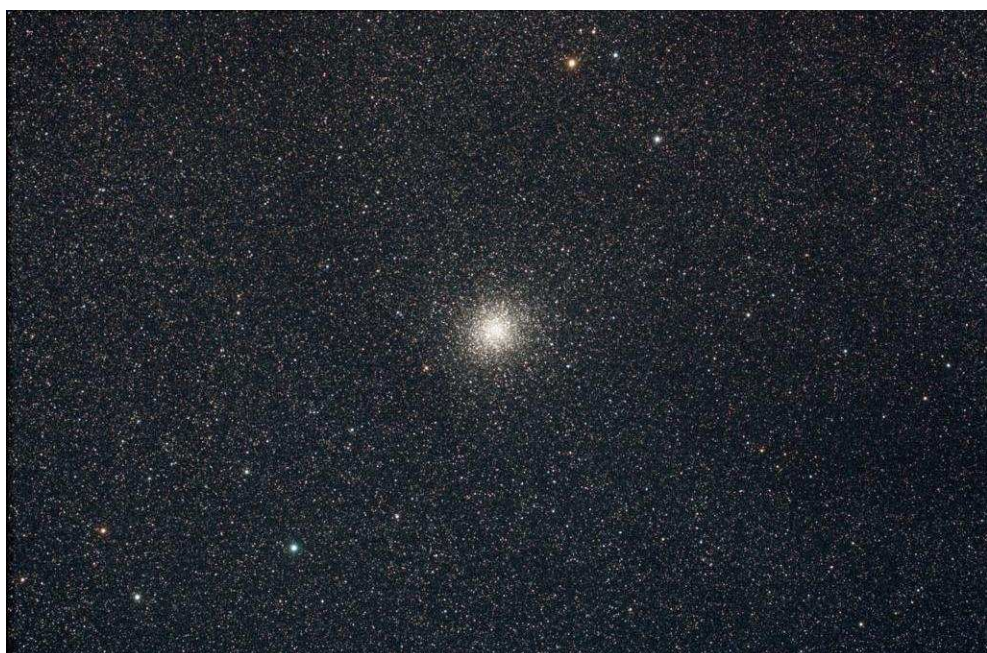
I don't know why on facie my images look really red as they don't look like this in my photo file, anyway

By Sylvie Grandit

**Right -**

ASTRO MO PHO – M22 cluster in Sagittarius- equipment SKY ROVER 115, ASI 2600 MC PRO, .8 REDUCER FLATENER focal length 644

By Sylvie Grandit



Right -

I put my new camera through its paces last night. Was battling some heavy dew collecting on the lens, hence the halo around M8 and M20, as well as light clouds drifting through, and significant sky glow and light pollution.

I managed a shot of M8 and M20, and a wide field shot of Sagittarius.

Canon R6 Mk II with the 24-240mm lens.
3200 ISO.

Mounted on my permanently fixed AZEQ6 in the back yard.

Images are stacked light frames only.

DSS and Siril Process.

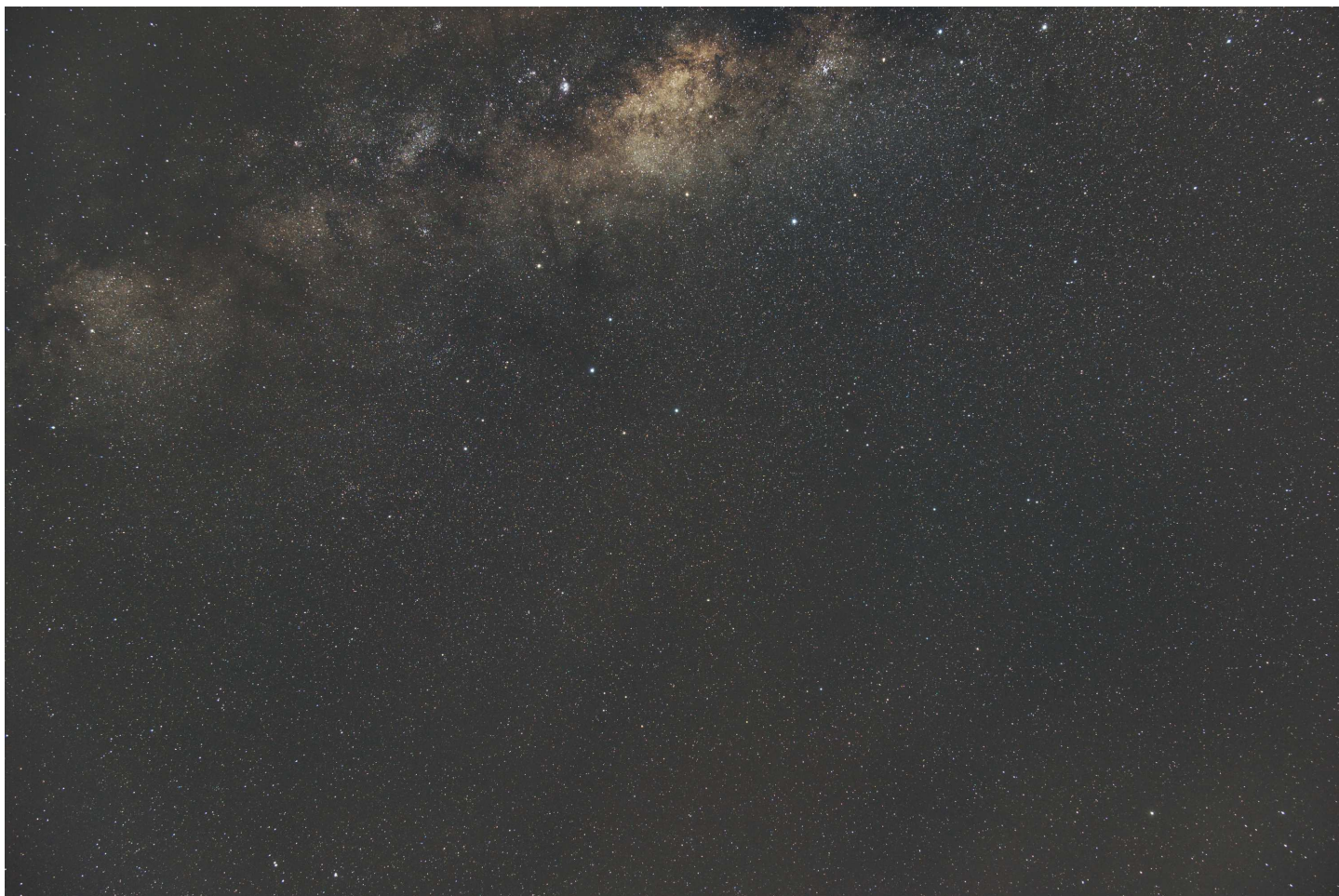
M8 and M20:

240mm FL, f/6.3, 72 x 15 Sec.

Sagittarius:

35mm FL, f/6/3, 31 x 15 Sec.

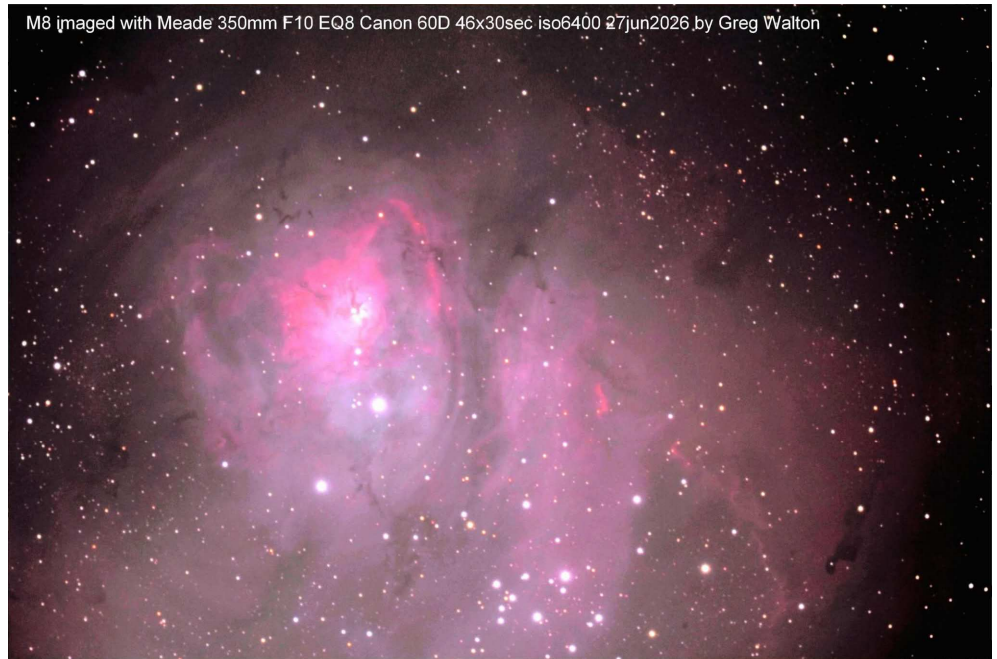
By Chris Kostokanellis



Right -

Sagittarius Mo Pho challenge
 Lagoon Nebula M8 imaged with the
 350mm Meade in the MPASS observatory
 on 27th June. The Moon was a few days
 off the full moon, which makes any
 imaging more difficult than without the
 moon. I had to do a bit more work than
 normal to get this result.

By Greg Walton

**Right -**

Sagittarius Mo Pho challenge

Lagoon Nebula M8
 Trifid Nebula M20
 Small open cluster M21
 Open cluster M6
 Star cluster M24

Imaged with the 135mm lens & Pentax
 K30 on Polaris tracker from Mt Little SA

By Greg Walton



M16 & M17 - 135mm Lens on Polaris tracker Pentax K30 26x30sec iso6400 Mt Little SA 16 July 2026 by Greg Walton

Right -

Sagittarius Mo Pho challenge

Lagoon Nebula M16
 Trifid Nebula M17
 Star cluster M24

Imaged with the 135mm lens & Pentax
 K30 on Polaris tracker from Mt Little SA

By Greg Walton



Right -

Sagittarius Mo Pho challenge

Swan or Omega Nebula M17

Imaged with Meade 350mm F10
EQ8 mount

Canon 60D 18x30sec iso6400

Date - 17 Aug 2026

By Greg Walton



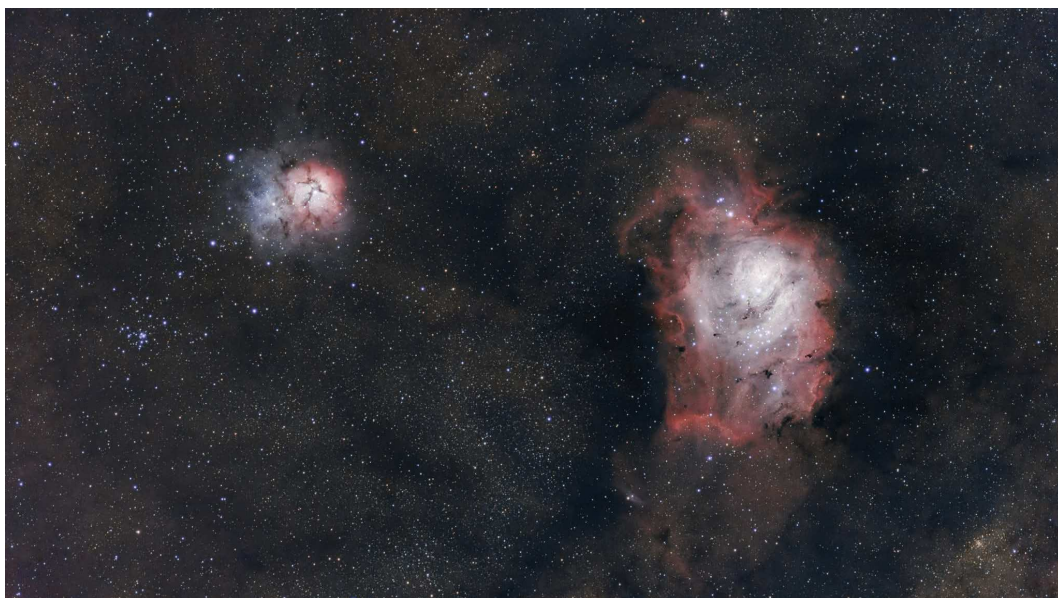
Swan Nebula M17 imaged with Meade 350mm F10 EQ8 Canon 60D 38x30sec iso6400 17aug2026 by Greg Walton

Right -

Astro Mo Pho M8 & M20 mosaic

My first mosaic with the Seestar S50. Over 1100 x 10sec exposures, stacked and edited in Siril with Nastronomy Smart scope script, Syqon and Veralux scripts.

By Michael Barrow

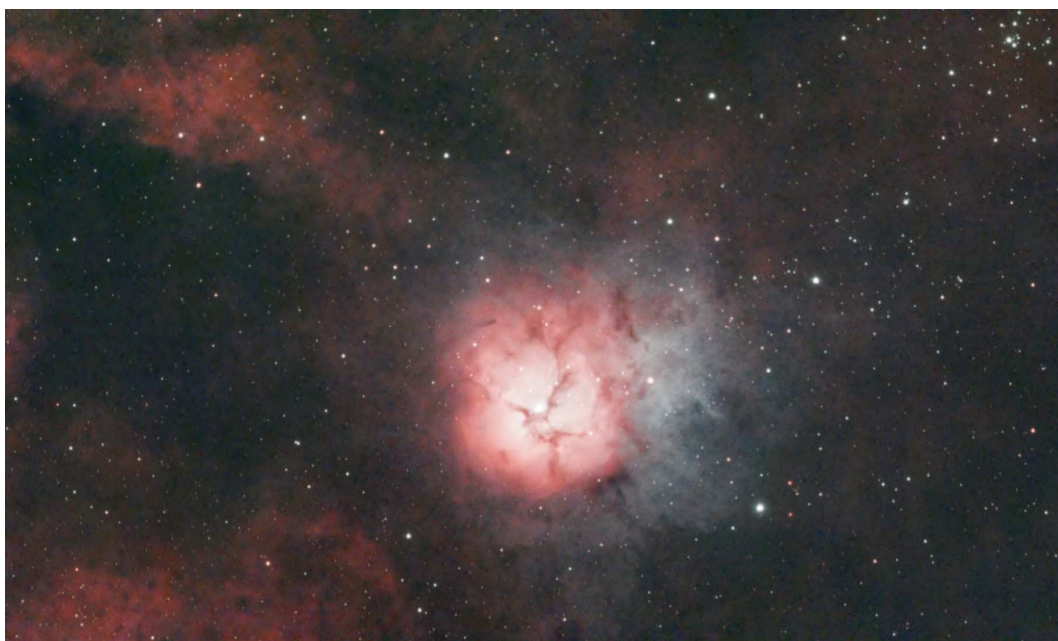
**Right -**

ASTRO MO-PHO, watching out for a lightning strike now.

Our journeys have finally brought us to the River Murray International Dark Sky Reserve. Last night was amazing. Just from the caravan park at Punyelroo the skies were truly incredible.

This is M20 (The Trifid) with the Seestar S50. A combination of 74 x 10sec and 245 x 20sec exposures. Processed in Siril with Veralux and Syqon modules. I have 4 more nights so I can but hope for another break in the clouds.

By Michael Barrow



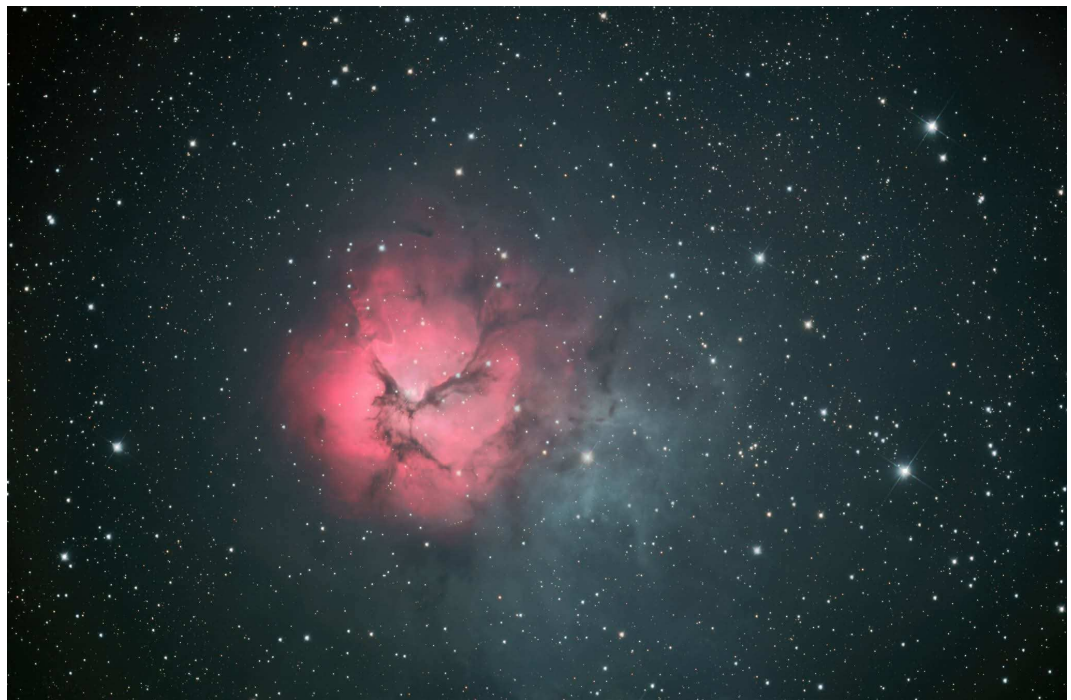
Right -

M20 Trifid Nebula. (Astro Mo Pho)
LRGB + Ha, 2 Nights of Data.

Imaged remotely from my VC200L
at Starview farm.

(This is nearly the full frame)

By David Rolfe



Right -

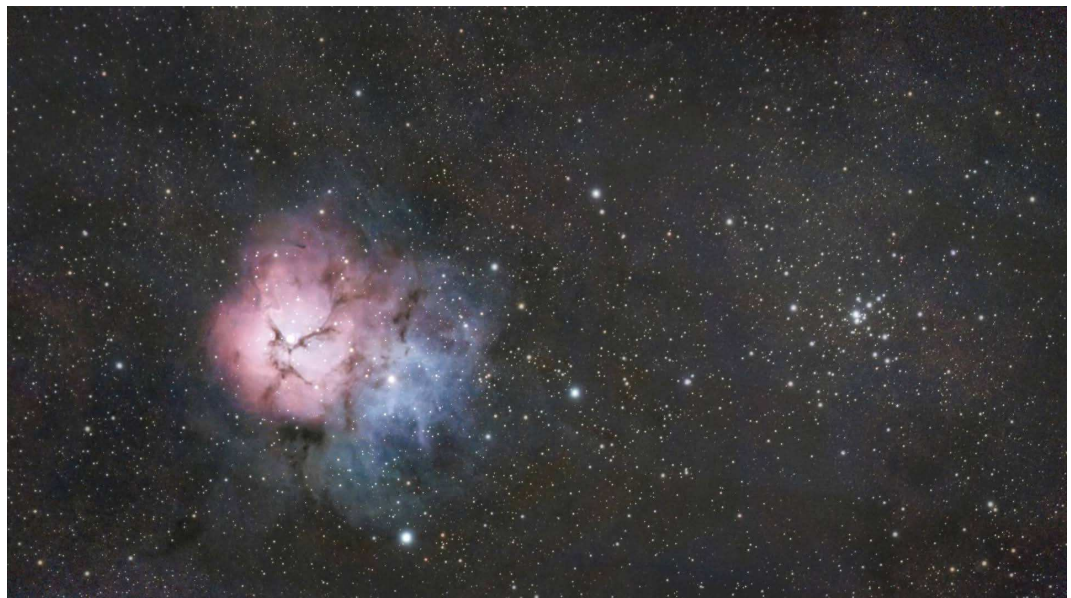
Astro Mo Pho. M20 and M21.

Seestar s30 Pro.

Downtown Clifton Springs.

By Kelly Clitheroe

M21 is the small group of stars
which look like a little spider, the
body being the perfectly round ring
of stars, the brightest stars being the
head and legs.



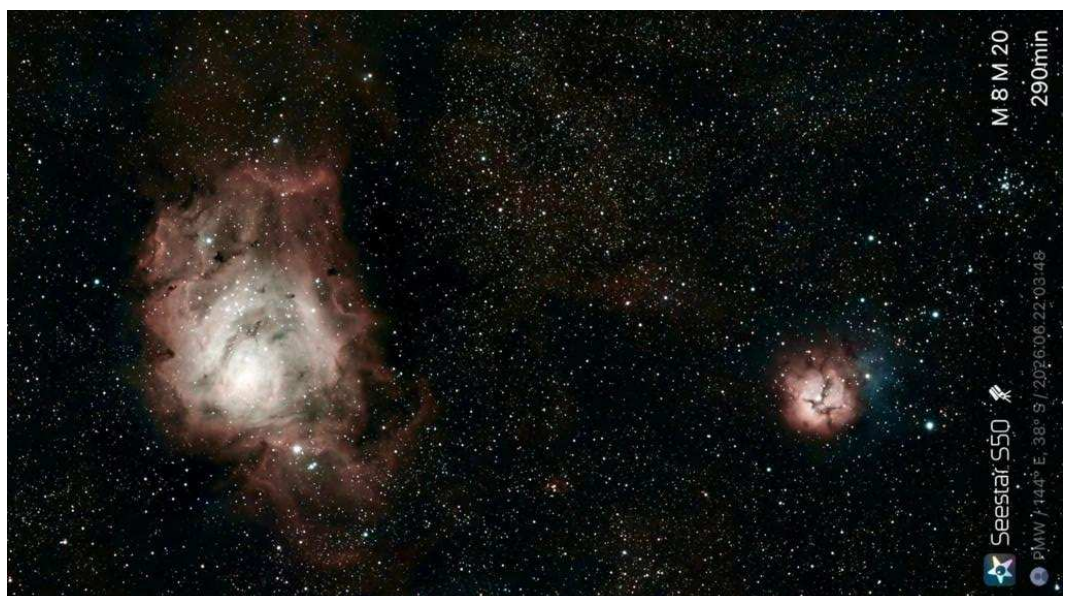
Right -

Astro Mo Pho -M8 and M20

Using the Seestar s50 in EQ mode,
mosaic, stacked and edited in the
Seestar app.

4hrs 50mins of 10sec exposures
Bortle 4 Rosebud

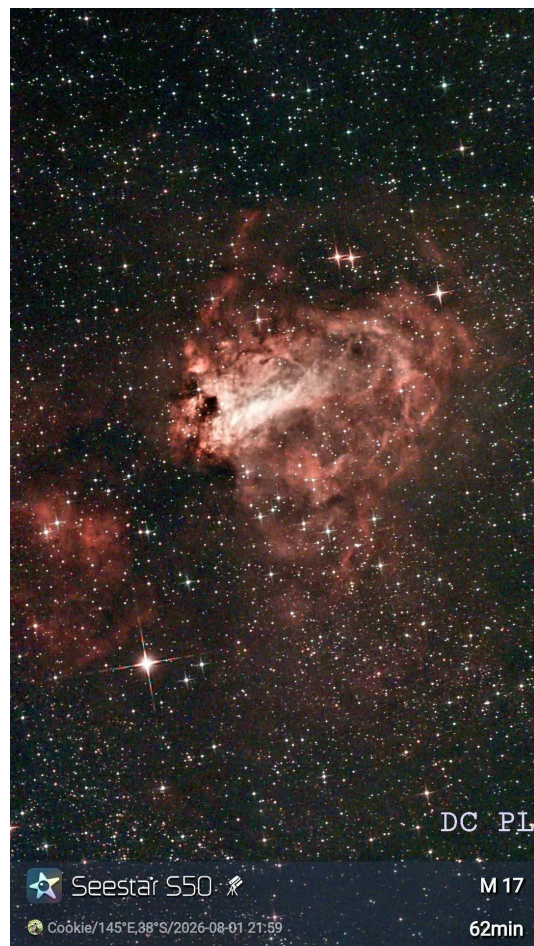
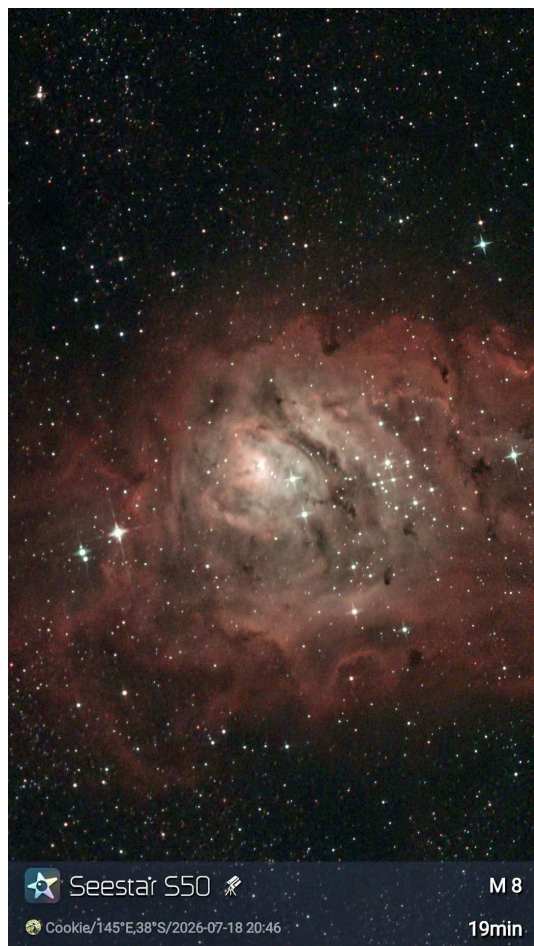
By Michelle Sykes



Right -

The Lagoon Nebula (Messier 8, NGC 6523) is a massive emission nebula and active stellar nursery located in the constellation Sagittarius, about 4,100 to 5,200 light-years from Earth. Spanning roughly 130 light-years across, it is famously known for its striking pink and red hydrogen gas clouds and the embedded young, hot stars of the open cluster NGC 6530. It was only clear for an hour or so in Patterson Lakes so I couldn't do a very long exposure.

By Dennis Cooke



Far Right -

M17 is the Omega Nebula in Sagittarius.

By Dennis Cooke

Far Right -

M20 the Trifid Nebula in Sagittarius.

By Dennis Cooke

Right -

Kaus Australis is the brightest star in Sagittarius and is about 144 light years away, note how many stars are visible with one and a half hours of 30 second exposures.

By Dennis Cooke



Right -

Some photos taken tonight with my Seestar for inclusion in Astro Mo Pho. These are both in Sagittarius and are M17 Swan or Omega nebula (54 x 10s pics) and M20 Trifid Nebula (60 x 10s pics) taken from my driveway in Langwarrin

By Mark Stephens

**Right -**

Some more Sagittarius objects taken tonight with my Seestar they are NGC6822 Barnard's Galaxy, a barred irregular galaxy (90 x 10s pics) and M22 Great Sagittarius cluster (30 x 10s pics).

By Mark Stephens



Last night I spent some time imaging the star fields in the direction of the centre of the Milky Way. I was trying to capture some of the dark patterns in the area.

About 50 minutes of 1 minute exposures on each with my 80mm Refractor and ASI294MC Pro Camera, Processed in Siril.

Chris Kostokanellis

Right -

Upper: LDN 1795, on the border of Sagittarius and Scorpius.

Lower: LDN 1771, The Parrot Head Nebula.



Below – NGC 6520 (Dead Man's Chest / Castaway Cluster), the open cluster at the centre top, and B 86 The Ink Spot Nebula below it

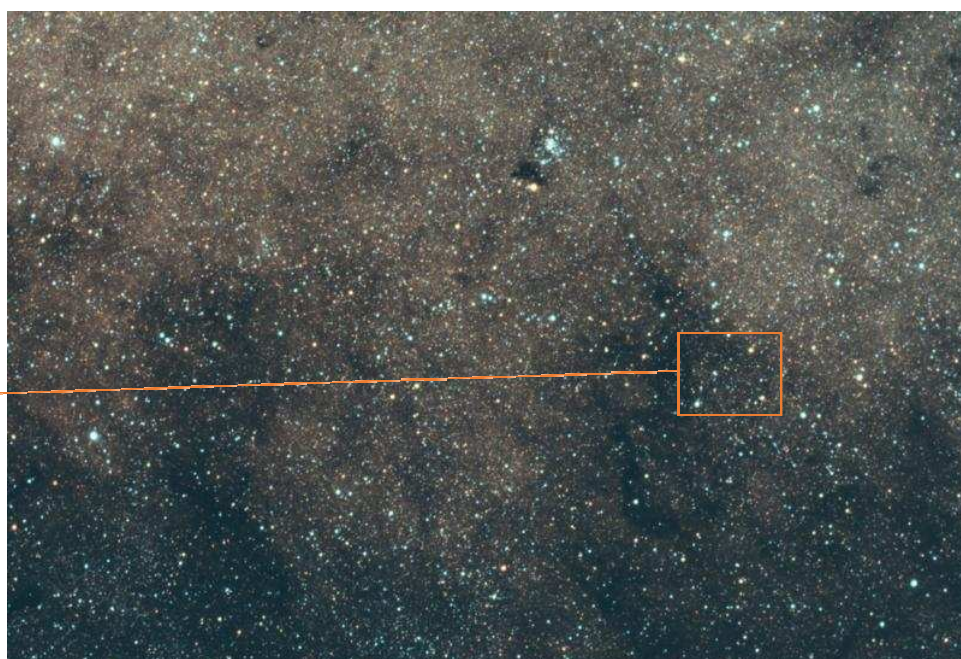
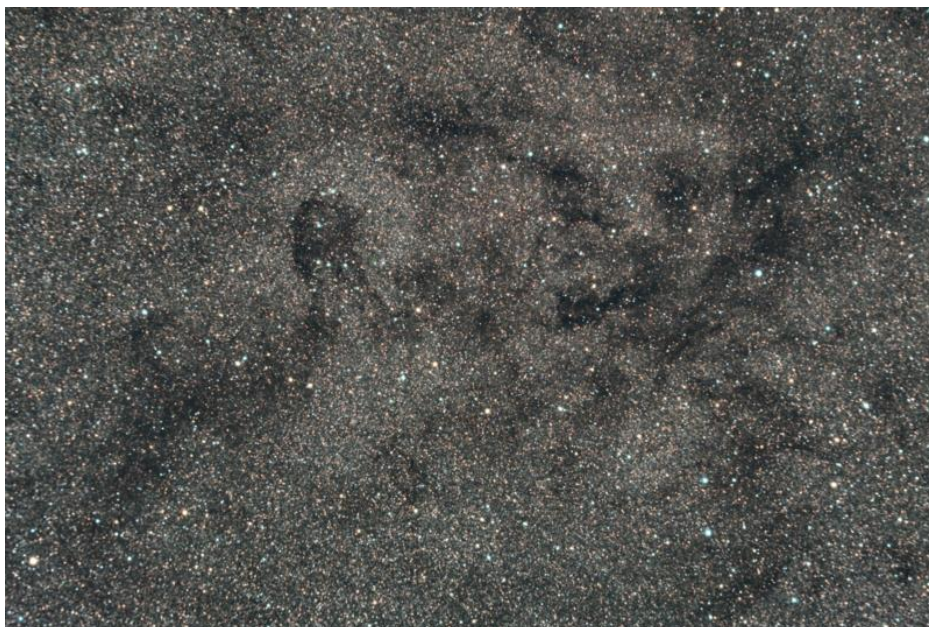
There are no green stars, right?

While I was processing my image of NGC 6920, I was inspecting the image to check the stars while I was working on them, and came across one that was particularly green.

I thought "that ain't right", so I ran the annotation script, and sure enough, it is in fact a planetary nebula, catalogued as IC 4673.

It is around 13th Magnitude, so needs a very large telescope to see it visually, and is around 10,000 LY away..

It's green colour comes OIII emissions.



OFFICE BEARERS OF THE MORNINGTON PENINSULA ASTRONOMICAL SOCIETY

President: Peter Skilton
Vice President: Chris Kostokanellis
Committee: Trevor Hand, Guido Tack
 Simon Hamm, Ben Claringbold
 and Sylvie Grandit

Secretary: Nerida Langcake
Treasurer: Jamie Pole
Web master: Guido Tack
Scorpius editor: Greg Walton
Site manager: Greg Walton

SOCIETY MEETINGS

Meeting Venue: MPAS Astronomy Centre
 The Briars, 450 Nepean Hwy, Mt Martha
 (Melways ref. 151/E1)

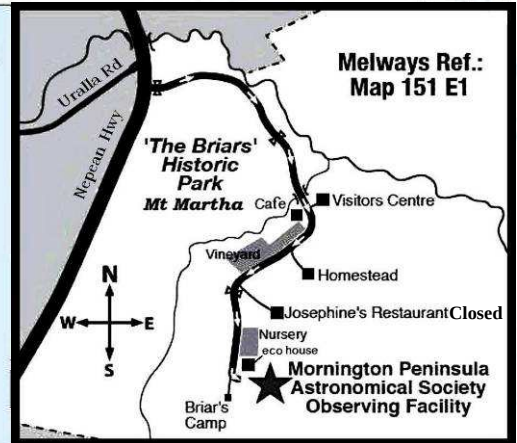
Society meetings: Don Leggett Astronomy Centre
 8pm on the third Wednesday of the month
 (except December)
 (See map at right & Below)



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

Phone: 0419 253 252

Mail: Mornington Peninsula Astronomical Society
 450 Nepean Hwy, Mount Martha, Victoria, 3934



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 - Librarian

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, email welcome@mpas.asn.au say that you want to join E-Scorpius & you will be added to the E-Scorpius list.



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

VIEWING NIGHTS - MEMBERS ONLY

Members only Viewing Nights - any night at The Briars, 450 Nepean Hwy, Mt Martha. Members visiting The Briars for the first time must contact Greg Walton on 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: Mornington Peninsula Astronomical Society
 450 Nepean Hwy, Mount Martha, Victoria, 3934



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

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

MPAS newsletters online - https://drive.google.com/folderview?id=0ByvkxzZG19g_SUNmZVhkZTFGWTA

SCORPIUS The journal of the Mornington Peninsula Astronomical Society

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