

Cover image - Helix Nebula by Nik Axe



SCORPIUS

THE JOURNAL OF THE
MORNINGTON PENINSULA ASTRONOMICAL SOCIETY INC.

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

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



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

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Mornington Peninsula Astronomical Society



SOCIETY NEWS



Public viewing Night November 4th - Oh, the November public night had a wonderful buzz to it. Eight-nine visitors, including many families, came along excitedly for an evening of stargazing. Guido Tack warmed up the crowd with his talk indoors (supported by his personal cheer squad of a brother visiting from Germany) then, not long before 9pm, everyone moved outdoors to watch the International Space Station pass brightly and silently from left to right across the West to North to North Western skies. Then everyone moved back indoors for the talk continuation. Following that, most visitors moved outdoors again just in time to see the Chinese Tiangong space station passing from right to left overhead across the Southern sky, and easily visible to the unaided eye. Apparently one member's phone app had predicted an earlier pass-over of Tiangong during the evening that was then seen by several people present, though the gold standard www.heavens-above.com website failed to predict anything earlier for it, or indeed for any other object that would have been even faintly visible to the eye. So a bit of a mystery and an unidentified flying object. Or perhaps there was group hallucination occurring that evening under the beautifully clear skies and mild conditions. In support of that idea, reports also came in of one surprised member seeing a couple of huge kangaroos bouncing by them earlier that evening in the Briars. At the time of writing, no reports of little green men have been received yet. Later in the evening, the Chinese rocket booster that was predicted to re-enter Earth's atmosphere in an uncontrolled manner either that evening or the following morning, passed across the same part of the sky, before it later fell in the Pacific ocean. Many visitors stayed quite late, with great views of the Moon, Saturn, Jupiter and 47 Tucanae and many others. Helping operate the telescopes and run the shebang outdoors were Phil Peters, Simon Hamm, Ben Claringbold, Nerida Langcake, Peter Skilton, Mark Stephens, Katherine McCoy, Sylvie Grandit, Fred Crump, Bonnie Cass, Chris Kostokanellis and his 30+ metre Ethernet cable. Other members noticed included Yvonne Hsu checking out the library, Gavin Curnow, Maria Gabriela Queirozs, Alan Predjak, Jason Heath, Luke and Ally Kelly. And to finish the evening on yet another mystery note, one member thought they saw Orion and the Saucepan high in the sky, which is most unusual for this time of the year. Perhaps the milk or Lamingtons were out of date that evening? *Regards, Peter Skilton*

Lunar eclipse viewing Night - November 8th didn't have any reports of wolves or blood at the Briars, but the Full Moon was very evident all evening once it cleared the cloud layer in the East. There was a wonderful evening buzz to it at the observatory for the 90 expectant public visitors and 30 members present for the lunar eclipse. Under lovely mild conditions, starting at 7:30pm, Trevor Hand prepared the crowd indoors with a talk about the history and circumstances of lunar eclipses, while the cloud hovering on the Eastern horizon slowly moved on. Moonrise during the early penumbral ingress phase of the eclipse couldn't be seen due to the cloud in the general direction of Hastings, and it wasn't until the Moon had risen about a handspan above the horizon, did it then peek over the cloud front and remain visible for the remainder of the night. At this stage the whiteness level of the Moon was definitely more subdued than what you'd expect to see for a normal Full Moon. Progressively the pale white Moon was overtaken by Earth's shadow as it rose, with the unmistakable curved bite of the shadow being visible on the lunar surface as the dark limb steadily took on a definite red hue. By 9:16pm, the Moon had entered fully into the darker umbral "inner" shadow and was distinctly brick red, reaching its darkest at the midpoint at 9:59pm. Totality ended at 10:42pm with the Moon egressing the shadow. The shadow then continued to move faster through the sky than the Moon did, with the redness becoming paler, and the white crescent shape re-emerging and growing on the trailing side, signalling the final penumbral exit stage. Several diehard folk who planned ahead and had arranged not to be working the following morning, stayed until just before the end of the eclipse at 12:58am on Wednesday, when the brilliant white Full Moon remained. Members helping outside with telescopes and binoculars on the evening, and those attending during the evening, included Phil Peters, Nerida Langcake, Guido Tack, Peter Skilton, Katherine McCoy, Simon Hamm, Ben Claringbold, Sylvie Grandit, Brian & Jenny Thomas, Fred Crump, Chris Kostokanellis, Stewart Gangell, Alan Predjak, Jason Heath, Connor Mathieson, Graeme Barnes, Nerissa McDonald, Linda Germana & Samuel Hewitt, Julie McErlain, Chris Kirk, Maria Gabriela Queirozs, Gavin Curnow, David Connet, Frank Bradley, Mary Marshall, Craig Turner and Leigh Hornsby. My apologies if I missed anyone. Members are requested to sign the log book near the glass counter in the vestibule area, and that way we know you were there for sure. There were many instruments in use during the evening, several from newer society members who were trying them out on their first lunar eclipse. Practice makes perfect, especially if trying to photograph a lunar eclipse, because there is a huge exposure difference between the bright white Full Moon, and very dimly lit dark redness at this mid-eclipse. I heard later of one member of the public who didn't attend, but with their wife tried to find the Moon by eye at the midpoint from their home in the Eastern suburbs, failed to find it in the sky at all and gave up. And there was no cloud there either! And one member at the Briars tried valiantly to image the Moon at mid-eclipse and only captured grey sky background. No, the lens cap wasn't on. Well, there'll be another lunar eclipse in a couple of years to try again. Another very recent arrival to the society, Thai Peck, took a great mid-eclipse red photo with her simple camera (without telescope assistance) from home in the south eastern Bayside beach area. It was a lot better than my own miserable handheld iPhone camera attempt. Early in the evening, the Tiangong space station passed quite high across the southern sky and was readily seen by everyone by eye. Then just over 90 minutes later, it had circumnavigated the globe and the Chinese Space Station was seen again almost due west and rising vertically upwards until disappearing towards the zenith. Its location had changed because the Earth had rotated beneath it during that time interval of one orbit. Great images were also taken of other objects during the evening, such as Uranus that was fairly near to the Moon, and of the Tarantula and other nebulae, and hopefully some pictures from the night will be in the next Scorpius edition. *Regards, Peter Skilton.*

Lunar eclipse 8th November 2022 By David Stock





Society meeting November 16th - For those of you who are not yet subscribed (it's free) to the MPAS YouTube channel, this month's meeting has been uploaded for viewing. The meeting features Linda Geddes, Cell Biologist, Bristol, on the topic of "How Sunlight Affects Our Bodies and Minds" courtesy of the Royal Institution and U3A. Also covered is the Artemis launch, Sunscreen SPF, World's largest camera lens, and the detailed appearance of the Moon for all of 2023. If subscribed, you should be notified of this automatically by YouTube. 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/UCm6XOkIcIflt4y0XRBXpXuw> 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 November 17th - MPAS visited Camp Manyung in Mt. Eliza last night under nicely clear conditions, with 97 Year 6 pupils from Good Samaritan Primary, plus teachers. The evening started with the talk indoors being given by Peter Skilton, while we waited for the Sun to set. Then the group moved up to the oval under twilight conditions, to look through the assembled telescopes. Operating the instruments were Phil Peters, Ben Claringbold, Mark Stephens, Nerida Langcake, Fred Crump, Dave & Jamie Rolfe and Chris Kostokanellis. Aside from the planets on show, there were meteors, several satellites and the Chinese space station reported, though it was a Moonless evening. Conditions were mild temperature and no wind after some rain earlier in the week. And that seemed to encourage the mosquitoes for a little while, but nothing that the wonderful CSIRO invention, Aerogard, couldn't handle. Feedback from the organising teacher was that they had an absolutely fabulous time and learned a lot that they'd not realised before. Job done.
Regards, Peter Skilton

Members BBQ & Working Bee November 19th - Today the lawns were mown, the edges were whipper snipped, and inside the auditorium and kitchen had a good dust and wipe down until everything sparkled. Nerida and Phil were gathering bits and pieces, including brochures, posters and signage, to take to the Bentleigh Festival the following day, while Dave and Jamie were doing the same for the Rosebud Radiofest. The large MPAS banner was popular and seemed to magically move from car to car, but eventually got locked in Nerida's car to take to Bentleigh. As always, the barbeque was delicious and enjoyed with about 20 members in attendance, before we cleaned up for an early night with a busy day ahead for everyone the following day. Thanks to all who helped at the working bee during the day!
Regards, Nerida Langcake

Bentleigh Street Festival - Sunday 20th, 11am-5pm, main street of Bentleigh.



Bentleigh Festival, there were thousands! My voice is almost gone after talking to at least one hundred people about astronomy, meteorites and MPAS. I think we did a great job today, fellow MPASians.
Trevor Hand



We had a great day at Bentleigh Festival! Literally thousands of people walked the 1km street festival and stopped to look through our telescopes, hold a real meteorite and ask lots of questions. There were rides, roaming musicians, lots of food, etc. The rain was light on only a few occasions, until pack up time when the skies opened.
Nerida Langcake



After some years in hibernation, the annual all-day Bentleigh Street Festival was resurrected by the local council and proved to be a ripper fun event last Sunday. Melbourne put on its best weather show - a fine variety performance of just about all meteorological conditions in the one day. MPAS was set up in a 6x3m marquee on the southern side of Centre Road, offering some protection from the elements, unless you stood underneath the roof join during the rain. Our position had a good view of the thin crescent Moon and the Sun towards the North. There was a pleasant breeze all day, so the risk of potential COVID-19 infection from the crowd was greatly diminished.

The Society's solar telescope, plus a crisp, clean, white 10-inch Dobsonian, and a sleek, black refractor were set up prominently and operated throughout the event. The Dob was focused mainly on the Moon but, when that wasn't possible due to cloud, was rotated down to spying on the unsuspecting Ferris wheel occupants about three quarters of a kilometre further down the road. Accidentally forgetting its friction tensioning handles, this proved to be an interesting sight all day long, with its anonymous operator needing to balance, stretch, manoeuvre and hold, and keep it in position like they were both in a yoga class together. Or perhaps playing the game, Twister. Even Victoria Police took more than a passing interest in this at one point as it was quite a sight to behold.



The refractor was strategically parked smack bang in the middle of the road, peering at the distant crowd and, by all appearances, this opportunity to spy on others from afar proved most irresistible to the passers-by, keeping Phil very occupied. The large "Aussie" meteorite was a great talking point all day long, together with other samples on the display table, and we ran out of society leaflets that day, with Connor skilfully handing them out with quite a zeal to anyone daring to make eye contact.

Running the show all day were Nerida Langcake, Phil Peters, Peter Skilton, Chris Kostokanellis, Connor Mathieson, Trevor Hand, with Kathryn Hand for part of the day as well. It was a long day, but very worthwhile, having attracted a lot of interest.

My crowd estimate at one point was 6400, based on the ground area and density of people, but this is likely to be an underestimate as people came and went throughout the day. You can see from the photo that it was a light to medium crowd, akin to say what you get inside the Briars auditorium when filled with 100 people.

There was plenty of music from passing bands. We had a jazz band park next to our marquee at one point. Pass the earplugs please. There were colourful superhero musicians in daggy, saggy pants and we all learned from Trevor, clearly a notable superhero connoisseur, who the all-purple guy was. There were also regular marching bands and the obligatory Santa during the day. And, naturally, being almost Summer in Melbourne, there were Brazilian Copacabana female dancers in bikinis and each adorned with headdress, accompanied by shirtless male drummers with maracas, strutting and dancing up and down the road. For some reason, no-one had the presence of mind to take a photo of them at the time, so you'll have to use your imagination, and the public didn't seem that interested in the telescopes as they moved by. Perhaps we need to consider adopting a more competitive dress standard for telescope operators at MPAS events next time. It was undoubtedly a bit, brrrrr, nippy for them in the breeze when the clouds came over and the showers descended, but would have encouraged them to dance more frenetically for the appreciative audience. All during the festival, the weather oscillated from clear to cloudy to showers, and this cycle was repeated several times, necessitating a few quick dashes to bring the instruments in under the marquee's cover. What's not to love about Melbourne weather.

When a radio presenter from Gold FM, Craig "Huggie" Huggins I think his name was, came over to interview us, everyone suddenly got too busy and scarce, except for Trevor who dropped everything and strode valiantly forward to engage the questioning fellow and ride the airwaves for MPAS. He was broadcast up and down Centre Road on the loudspeakers and, shortly afterwards after some judicious editing, was probably on the FM radio as well. There was mention made by the presenter that Trevor's was the longest interview of the day for him, but that didn't surprise any of us in the slightest!

But it wasn't all work all day. There was time for some rostering off to get a bite to eat. Knowing absolutely no shame, Phil and Nerida found a lovely nearby clean cafe, called The Laundry Hub. It was out of the wind, had seating and a bench where they were able to eat their BYO meat pie and chicken kebab in peace and quiet, not disturbed by any other diners, looking out through the window at the world passing by. It had a most unique and spartan decor, and a background ambience unlike anything I've experienced while eating. And it advertised that it was cleaned and sanitised daily, which I guess is a plus, so I hope it received a 5-star review online from them both for prospective future diners in the area.



At the end of the day, as the sunburn started to soak in from UV through the clouds, and exhaustion approached from standing up for hours on end, the hail descended as a parting gesture and drenched the marquee, just in time for packing it down and bumping out. Naturally. It certainly cleared the crowd quickly! Fortunately, Nerida had brought her family bus with her, so there was ample room to fit everything in wet and not yet properly folded.

A sign of a most successful event day is when you go home with hoarse voice from talking too much, aching legs from standing too long, damp from the rain, and sore back from the telescope version of "downward facing dog". Namaste.

Regards, Peter Skilton

MPAS at Rosebud Radiofest - Jamie Pole (VK3YD), Landon and myself attended the annual radiofest at Rosebud on the 20th of November. The day had vendor stalls and talks by various community groups all focussed on Ham radio, CBs and radio comms in general. We had set up a solar telescope and had info-graphics and conversations about how space weather affects radio communications. Over the day we had several setups and retreats with alternating patterns of bright sunshine and heavy rain. I estimated there was about 500 people in attendance and we had many visitors to our stand, including several current & past MPAS members. Regards, David Rolfe (VK3JL)



Public viewing Night December 2nd - The final Friday public stargazing night for 2022 had great weather conditions at The Briars, with 77 public visitors, plus members on top of that, under almost entirely clear skies and mild temperature. Summer has arrived. Lots of telescopes were whirring, beeping and blinking all evening, and at one point we had a live view of the Orion Nebula beamed onto the big screen inside the auditorium. Trevor Hand gave a talk inside about meteorites, bringing several specimens along, with some in the audience from the Bentleigh Street festival last month.

Other members helping and present included Nerida Langcake, Anders Hamilton, Mark Stephens, Sylvie Grandit with her lovely new telescope that now tracks the southern sky, Peter Skilton, Jamie Pole, Chris Kostokanellis, Simon Birch, Ben Claringbold with his telescope on Orion, Simon Hamm selling all sorts of things pre-Christmas, Guido Tack, Fred Crump & Bonnie Cass, Kitty Penfold, Thai Peck, Phil Peters, Yvonne Hsu, Brian & Jenny Thomas, Michelle Moore & grandson Sebastian, Jeremy Kenner & son Akiva enjoying the conditions on a picnic rug, Colin Heagney with his telescope on the lower slab, Tammy Halliday and son Django. Many tried their hand at taking a photograph of the Moon through eyepiece projection with their phones or handheld cameras, with varying degrees of focus success. It can take a bit of practice and some tricks of the trade. There is always next month to try again, of course. Everyone seemed to enjoy a most pleasant evening out under the stars to wrap up the public nights for the year.
Regards, Peter Skilton

Beautiful 80% waxing gibbous. Taken with my phone through my 10" dob on the PVN. *By Nerida Langcake*



Members Xmas BBQ December 17th - December 17th saw the annual MPAS Christmas dinner at The Briars, with a traditionally free roast meal for the 60 or so members who booked and were present. There was a handful of absentees this year due to COVID-19, travelling and other unexpected reasons. The meal was set up indoors with the doors open, but could have been able to be outdoors if needed, with the weather conditions being suitable.

Nerida Langcake had begun the indoors preparations days before, but ended up on the day having to isolate and instruct Phil Peters, with assistance from Simon Hamm, remotely over the phone with pictorial maps, on where to find the special table cloths, lights and other hidden festive paraphernalia. It looked pretty spiffy on the day.

The roast was running a little late and was delivered in a strangely clean-looking black off-road vehicle like something out of the movie "Men in Black". So Dave Rolfe must have taken the long route and stuck to the roads on the way from Reddy Roast in Frankston with the precious cargo onboard the Jeepmobile.



Within minutes of arrival on-site the plates were being filled and the diners quickly formed lines to the survery area in the kitchen, after trying some planet spotting by eye in the blue sky. Some members also remembered to bring a plate of things to share, which was a practice we temporarily suspended during the height of the pandemic restrictions.

Among those helping deposit the food on the plates was the Vice President, who carefully calculated and rationed out the carbohydrates to one roast potato per plate. I heard from a reliable source a little detail that we ended up with what looked like 200 roast potatoes left unclaimed at the end of the night in their original trays. Perhaps we try more per plate next year?

While the members were busily hoeing into their Christmas fare, Jamie and Landon Rolfe skilfully provided trumpet carols at the front of the room. Mercifully, Dave's kind offer to sing us all a carol didn't eventuate.

Then the race was on for the desserts, being a choice between apple crumble and something else that was an also-ran, while stocks lasted. It looked to me that the apple crumble was the clear favourite. And unfathomably not many opted for an additional spud or two with their crumble and custard.

The Saturday was pleasantly warm, with enough air movement to keep any mosquitoes away. The skies were clear after somewhat damp conditions in the days leading up to the night. While the observatory was open, I'm not sure how many took the chance for some stargazing, especially since the Christmas dinner is a time when we see many members who otherwise might not be able to attend during the year. There was a good mix of newly arrived members, and those who've been around for a long while, and a chance to begin forging new friendships.

For the benefit of those unable to attend, it was one of the best and wildest parties we've had on-site at the Briars ever, never to be repeated. Allegedly, the astrophotographers captured enviable detail of the lunar surface features in the hours before moonrise. Such amazing processing software these days. The solar telescope was in hot demand after twilight and, of course, Mars looked as large as the Full Moon, just as predicted in that font of all reliable human knowledge - Facebook.



A special thanks to all the helper Elves behind the scenes who toil away selflessly to make these events successful. We already have the date set for the next Christmas Party, so put it in your diary when you receive the calendar in the mail, if you haven't already picked it up in person on the night of the dinner.

At the end of the night, the remnants of food were scraped together by Phil and a care package was assembled for contactless delivery to some of the astronomically-deprived the next morning. Yum, cold potatoes and pav for breakfast. *Regards, Peter Skilton*



Snake Valley Astro Camp

This was my first time attending the Snake Valley Astro Camp, and members from MPAS, including Dave Rolfe, Guido Tack and his brother, Achim (who was visiting from Germany), were outnumbered by members of the Astronomical Society of Geelong (ASoG) with about 15 attendees in total. After we chose our cabins – of which only two cabins had the luxury of power points (I moved into one, which had 8 bunks for me to choose out of, with Guido and Achim next door in the other) we proceeded to setup our telescopes in preparation for the night ahead. The field usually used for observing was quite soft and muddy, so only a few setup there with the rest of us choosing to setup in the centre of the cabin block and kept the cabin lights turned off throughout the evening.

I had ZERO phone reception! Luckily for me Dave was kind enough to let me hotspot to his phone so I could stay connected to the world, but he found it amusing that even when I knew I wasn't connected, I still opened social media apps on my phone just from habit.

The first night was beautifully clear and so very dark. I only took my 10" dob as the forecast wasn't favourable, so I spent more time viewing than taking images. I did take a tripod for some widefield smartphone images though and took a few of the LMC for the Astro Mo Pho challenge. Dave had brought his awesome new 126mm Vixen binoculars along, and Guido had his 10" reflector on EQ6 mount.

The following day Achim was flying out of Australia to return home, so Guido took him to the airport then headed back to Chelsea as the weather wasn't expected to be great for the remainder of the weekend. Dave, Jen (from Swan Hill Astronomy Group) and myself decided to take a 2+ hour road trip to Heathcote and gatecrash the ASV Starbque Xmas Party. I hadn't been to the ASV site before so I was given a tour of the facilities by some lovely ASV members, before we had our bbq dinner, and participated in a trivia quiz and bingo. Then it was time to get back on the road for the 2+ hour trip back to Snake Valley. It was a long drive for a sausage, but it was a good day trip nonetheless. While we were at Heathcote it turns out we missed an amazing thunderstorm back at camp, but by the time we returned the sky was clearing again and telescopes were pointing up between breaks in the cloud for the rest of the night.

The next morning, I was woken to Dave packing his car at 7am to head off in time to get back to an event for his sons, so I decided I should have some breakfast then pack myself up too and beat the traffic. I was home by



10:30am, much to the surprise of my family who don't usually see me get out of bed until after that time on a normal weekend. It was a good weekend where I met lots of interesting people from different societies who I've stayed in touch with since, some of who are really keen to come and visit us at the Briars soon and I look forward to seeing them again!

*Regards,
Nerida Langcake*



WHAT'S ON



The 2023 timetable of public events.

JANUARY

Friday 6th, 8pm The Briars. Public stargazing night. Speaker Katherine McCoy & Peter Skilton. 70 anticipated.
 Friday 13th, 8pm The Briars. Public stargazing night. Speaker Katherine McCoy & Peter Skilton. 70 anticipated.
 Friday 20th, 8pm The Briars. Public stargazing night. Speaker Trevor Hand. 70 anticipated.
 Friday 27th, 8pm The Briars. Public stargazing night. Speaker Guido Tack. 70 anticipated.

FEBRUARY

Friday 3rd, 8pm The Briars. Public stargazing night. Speaker Manfred Berger. 70 anticipated.
 Saturday 18th, 4pm The Briars. TLD Telescope Learning Day. Speaker Various. 70 anticipated. Members are welcome.

MARCH

Friday 3rd, 8pm The Briars. Public stargazing night. Speaker Trevor Hand. 70 anticipated.
 Saturday 4th, 6pm The Briars. Concert Band and Trivia Night with Southern Pen. Concert Band. 100 anticipated & public anticipated.
 Monday 13th, 9am-5pm Somerville. Public Somerville Family Fun Day. No speaker. 1000 anticipated.
 Wednesday 22nd or Thu 23rd, 8pm Briars. Strathaird Primary at Briars Camp. 80 Year 6 pupils. Speaker Nerida Langcake & Peter Skilton.

APRIL

Friday 7th, 8pm The Briars. Public stargazing night. Speaker Nerida Langcake & Peter Skilton. 70 anticipated.

MAY

Friday 5th, 8pm Briars. Public stargazing night. Speaker TBD. 70 anticipated.
 Friday 26th, 8pm Briars. Scout, Cubs & Guides night. Speaker TBD. 70 anticipated.

JUNE

Friday 2nd, 8pm Briars. Public stargazing night. Speaker TBD. 70 anticipated.

JULY

Friday 7th, 8pm Briars. Public stargazing night. Speaker TBD. 70 anticipated.
 Friday 28th, 8pm Briars. Scout, Cubs & Guides night. Speaker TBD. 70 anticipated.

AUGUST

Friday 4th, 8pm Briars. Public stargazing night. Speaker TBD. 70 anticipated.
 Friday 18th, 8pm Briars. Science Week public stargazing night. Speaker TBD. 70 anticipated.

SEPTEMBER

Friday 1st, 8pm Briars. Public stargazing night. Speaker TBD. 70 anticipated.
 Saturday 16th, 2pm Briars. Astrophotography Workshop. Public & members. Speakers Various. 70 anticipated.

OCTOBER

Friday 6th, 8pm Briars. Public stargazing night. Speaker TBD. 70 anticipated.
 Saturday 21st, 4pm Briars. Telescope Learning Day. Public & members. Speakers Various. 70 anticipated.
 Friday 27th, 8pm Briars. Scout, Cubs & Guides night. Speaker TBD. 70 anticipated.

NOVEMBER

Friday 3rd, 8pm Briars. Public stargazing night. Speaker TBD. 70 anticipated.

DECEMBER

Friday 1st, 8pm Briars. Public stargazing night. Speaker TBD. 70 anticipated.

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

Mornington Peninsula Astronomical Society Member Survey

Dear MPAS Members,

Every now and then, we like to pick your brain about your thoughts on our Society. We have put together a quick survey for you to fill out so we can get an idea of what you expect from your experience as an MPAS member. You can let us know what the Society is doing right and perhaps not so right, and what we can do better.

It's also an opportunity for you to tell us how you would like to engage with the Society, and perhaps what you feel you may have to offer.

The Survey is completely optional, and you may wish to let us know who you are, or you may wish to remain anonymous. You can complete the survey by clicking the link below:

<https://forms.office.com/r/tLMHQX5Jgn>

We look forward to reading your feedback. Yours Sincerely, The Mornington Peninsula Astronomical Society Committee



New aerial photo of MPAS Briars site, dated mid-October 2022, sent in by *John Cleverdon*

★ New Members Welcome ★

Donna & David Casper
Tracey Morgan
Neil Thomson
Thai Peck
Issam Mukhtar

Tammy & Django Halliday
Alex A & Jazzy B
Alan Smith & family
David Sims
Peter Wylie

MPAS SUBSCRIPTIONS 2023

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 2023 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 2023 fees is:

Subscriptions can be paid in a number of ways:

- On-line (preferred, see at right)
- Cash payments to a committee member
- Send a cheque, made out to "Mornington Peninsula Astronomical Society", to MPAS, P O Box 596, Frankston 3199
- Make a direct electronic payment into the society working bank account (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.

SOCIETY FEES

- \$50 – Full Member
 - \$45 – Pensioner Member
 - \$65 – Family Membership
 - \$60 – Family Pensioner Membership
- See more options on-line*



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		January / 2023					Red Days indicate School Holidays
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
1	2 NYD Holiday	3 Mars is right of the Moon and Pleiades left of the Moon	4 Mars is left of the Moon	5 Moon at 405,494km	6 Public night 8pm Io shadow 11:22pm S	7 Full Moon Public night 8pm	
8	9	10	11	12 Mars is stationary	13 Public night 8pm	14	
15 Last Quarter Io transit 9:57pm F	16	17	18 Society Meeting 8pm Moon at 363,328km	19	20	21 Working bee 4pm BBQ 6pm OT 8pm	
22 New Moon Io shadow 9:42pm S Io transit 10:44pm F	23	24	25	26 Australia Day	27 Public night 8pm	28 Cosmology 2pm	
29 First Quarter	30 Moon above Pleiades	31 Mars is left of the Moon					

Monthly Events**Public night** - 8pm to 10pm on the 6th, 7th, 13th & 27th @ The Briars MPAS**Society Meeting** - 8pm to 10pm on the 18th @ The Briars**Working Bee** - 4pm - **Members night & BBQ** - 6pm on the 21st @ The Briars**OT = Observatory/telescope Training** - 8pm on the 21st @ the Briars.**Cosmology member discussion meetings** - 2pm on Saturday 28th @ the Briars.**Watch your emails, as on any clear nights the Observatory may be opened for members only viewing.**

Jupiter Moon code
 Io = Io
 Eu = Europa
 Ga = Ganymede
 Ca = Callisto
 S = start
 F = finish

CALENDAR		February / 2023					Red Days indicate School Holidays
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
			1	2	3 Public night 8pm Eu shadow 9:52pm F	4 Moon at 405,430km	
5	6 Full Moon	7 Io shadow 10:13pm F	8	9	10	11	
12	13	14 Last Quarter Valentines Day	15 Society Meeting 8pm	16	17	18 TLD 4pm BBQ 6pm Moon at 363,328km	
19	20 New Moon	21	22	23 Scorpius Deadline	24	25	
26 Moon left of Pleiades	27 First Quarter	28 Mars is left of the Moon					

Monthly Events**Southern Comets website** - <http://members.westnet.com.au/mmatti/sc.htm>**Public night** - 8pm to 10pm on the 3rd @ The Briars MPAS**Society Meeting** - 8pm to 10pm on the 15th @ The Briars**TLD Telescope Learning Day** - 4pm on the 18th @ The Briars this is a public event. Members are welcome.**Members night & BBQ** - 6pm on the 18th @ The Briars

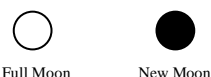
Mornington Peninsula Astronomical Society - 2023 Calendar

Day	January	February	March	April	May	June	July	August	September	October	November	December	Day
1	<u>Su</u>	W	W	S	M	Th	<u>S</u>	T	F 8pm Public Night	<u>Su</u> Daylight Savings Starts	W	F 8pm Public Night	1
2	<u>M</u> NYD Holiday	Th	Th	Su Daylight Saving Ends	T	F 8pm Public Night	<u>Su</u>	W ○	S	M	Th	S	2
3	<u>T</u>	F 8pm Public Night	F 8pm Public Night	M	W	S	<u>M</u> ○	Th	Su Fathers Day	T	F 8pm Public Night	Su	3
4	<u>W</u>	S	S Trivia Night	T	Th	Su ○	<u>T</u>	F 8pm Public Night	M	W	S	M	4
5	<u>Th</u>	Su	Su	W	F 8pm Public Night	M	<u>W</u>	S	T	Th	Su	T	5
6	F 8pm Public Night	M ○	M	Th ○	S ○	T	<u>Th</u>	Su	W	F 8pm Public Night	M	W	6
7	S 8pm Public Night	T ○	T ○	F 8pm Public Night	Su Mothers Day	W	F 8pm Public Night	M	Th	S	T Cup Day	Th	7
8	<u>Su</u>	W	W	<u>S</u> Easter	M	Th	<u>S</u>	T	F	Su	W	F	8
9	<u>M</u>	Th	Th	<u>Su</u> Easter	T	F	<u>Su</u>	W	S	M	Th	S	9
10	<u>T</u>	F	F	<u>M</u> Easter	W	S	M	Th	Su	T	F	Su	10
11	<u>W</u>	S	S	<u>T</u>	Th	Su	T	F	M	W	S Remembrance Day	M	11
12	<u>Th</u>	Su	Su	<u>W</u>	F	M	W	S Vastroc?	T	Th	Su	T	12
13	F 8pm Public Night	M	M SFFD Labor Day	<u>Th</u>	S	T King's Birthday	Th	Su NSW	W	F	M ●	W ●	13
14	<u>S</u>	T ● Valentines Day	T	<u>F</u>	Su	W	F	M NSW	Th	S	T	Th	14
15	<u>Su</u>	W MPAS Meeting 8pm	W MPAS Meeting 8pm	<u>S</u>	M	Th	S	T NSW	F ●	Su ●	W MPAS Meeting 8pm	F	15
16	<u>M</u>	Th	Th	<u>Su</u>	T	F	Su	W MPAS Meeting 8pm	S APWS 1pm	M	Th	S Members Xmas Dinner	16
17	<u>T</u>	F	F ● St Patricks day	<u>M</u>	W MPAS Meeting 8pm	S	M	Th NSW	<u>Su</u>	T	F	Su	17
18	W MPAS Meeting 8pm	S 4pm Members	S 4pm Members	<u>T</u>	Th SPSP	Su ●	T ●	F 8pm Public Night	<u>M</u>	W MPAS Meeting 8pm	S 4pm Members	M Scorpius Deadline	18
19	<u>Th</u>	Su	Su	W MPAS Meeting 8pm	F SPSP	M	W MPAS AGM 8pm	S 4pm Members	<u>T</u>	Th	Su	T	19
20	<u>F</u>	M ●	M	Th WA Solar Eclipse	S 4pm Members	T	Th	Su	W MPAS Meeting 8pm	F	M	W	20
21	S OT 4pm Members	T	T	<u>F</u> DRIFT	Su SPSP	W MPAS Meeting 8pm	F	M	<u>Th</u>	S TLD 4pm Members	T	<u>Th</u>	21
22	<u>Su</u> ●	W Scorpius Deadline	W ●	S 4pm Members	M	Th	S 4pm Members	T	<u>F</u>	Su	W	<u>F</u>	22
23	<u>M</u>	Th	Th	<u>Su</u> DRIFT	T	F	Su	W Scorpius Deadline	S 4pm Members	M	Th	<u>S</u>	23
24	<u>T</u>	F	F	M DRIFT	W	S Solstice BBQ 4pm	M	Th	<u>Su</u>	T	F	<u>Su</u>	24
25	<u>W</u>	S TLD 4pm	<u>S</u>	T ANZAC Day	Th	<u>Su</u>	T	F	<u>M</u>	W Scorpius Deadline	S	<u>M</u> Xmas Day	25
26	<u>Th</u> Australia Day	Su	Su	W Scorpius Deadline	F SCAG	M Scorpius Deadline	W	S	<u>T</u>	Th	Su	<u>T</u> Boxing Day	26
27	F 8pm Public Night	M	M	Th DRIFT	S	<u>T</u>	Th	Su	<u>W</u>	F SCAG	M ○	<u>W</u> ○	27
28	<u>S</u> Cosmology	T	T	F DRIFT	Su	<u>W</u>	F SCAG	M	<u>Th</u>	S	T	<u>Th</u>	28
29	<u>Su</u>		W	S DRIFT	M	<u>Th</u>	S	T	F AFL ○ Public Holiday	Su ○	W	<u>F</u>	29
30	M		Th	Su DRIFT	T	<u>F</u>	Su	W	<u>S</u>	M	Th	<u>S</u> New Years Eve	30
31	T		F		W		M	Th ○		T			31

Colour code

- Green Boxes - Public nights @ the Briars 8pm
- Yellow Boxes - MPAS Meeting @ the Briars 8pm to 10pm
- Blue Boxes - Members BBQ nights @ the Briars 6pm, working bee starts 4pm
- Khaki Boxes - SCAG Scout, Cubs & Guides @ the Briars 8pm to 10pm
- Grey Boxes - Weekends & Public Holidays
- Bold Underlined Days - School Holidays
- L/E - Lunar eclipse
- Solar Eclipse Western Australia 20th April

- Autumn Equinox - March 21
- Winter Solstice - June 21
- Spring Equinox - September 23
- Summer Solstice - December 22



- OT = Observatory/telescope Training 21st Jan 8pm after w/bee & BBQ
- TLD = Telescope Learning Day 18th February @ the Briars 4pm (Public)
- Trivia Night = 4th March @ the Briars
- SFFD = Somerville Family Fun day 13th March (Labor Day)
- Solstice BBQ 24th June @ the Briars 4pm
- NSW = National Science Week 13th to 19th August (Public)
- APWS = Astrophotography Workshop - 16th September @ the Briars 1pm
- TLD = Telescope Learning Day 21st October @ the Briars 4pm (Public)
- Vastroc 2023 = 12th August - Hosted by ?
- SPSP = South Pacific Star Party - 18th to 20th May @ Ilford NSW
- Drift Festival #2 - 21 April to 30 April.

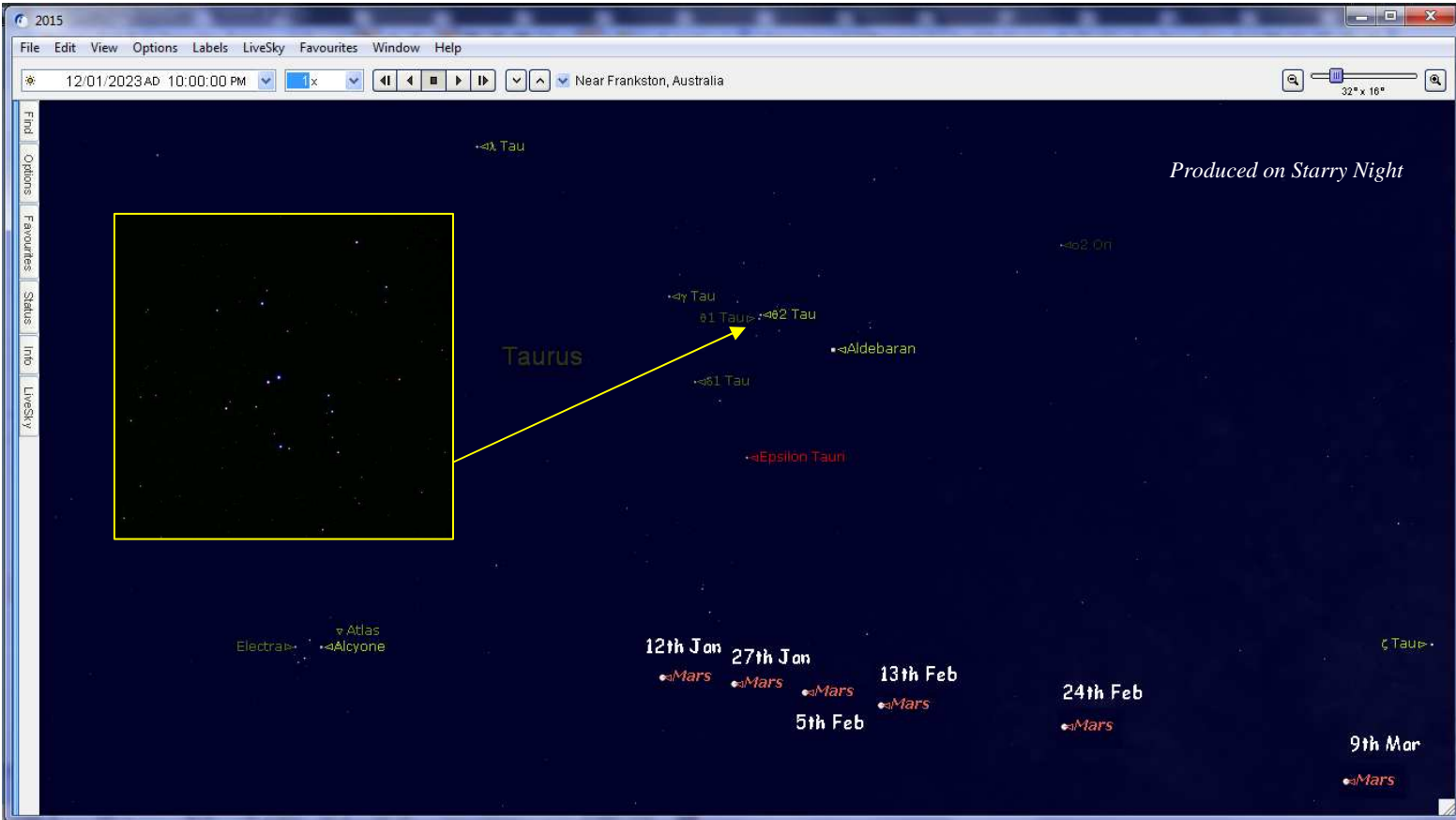
THE BRIARS SKY

By Greg Walton



On the 12th of January 2023 at 10 pm looking almost dead north, Mars will be at its highest point above the horizon, only 27 degrees. On this night Mars will be stationary in the sky. If you have been watching Mars the weeks before, you may have noticed Mars move across the sky's starry background to the west. This is call Retrograde. After the 12th of January Mars will start to move to the east and with each night Mars will move faster and faster across the sky's starry background.

Sitting above Mars, you probably have noticed a star with the same colour, Aldebaran the bloodshot eye of the Bull -the constellation Taurus. The V shaped cluster of stars make up the face of the Bull. Aldebaran is at a distance of 65 light years and 44 times larger and 153 times brighter then our sun. Just left of Aldebaran is the tilted house which is best viewed with binoculars.



To the left of Mars lies the bright open star cluster Pleiades M45 the Seven Sisters, which also lies in the constellation of Taurus at a distance of 444 Light years.

Viewed in the city lights, to the unaided eye at first glance you will count only 6 stars, even though it's called the Seven Sisters. Finding the 7th star can be a bit of a challenge. In the image at right you will see 2 stars marked as 7 which will probably be the seventh star you will see, even though stars marked as 8 & 9 are slightly brighter.

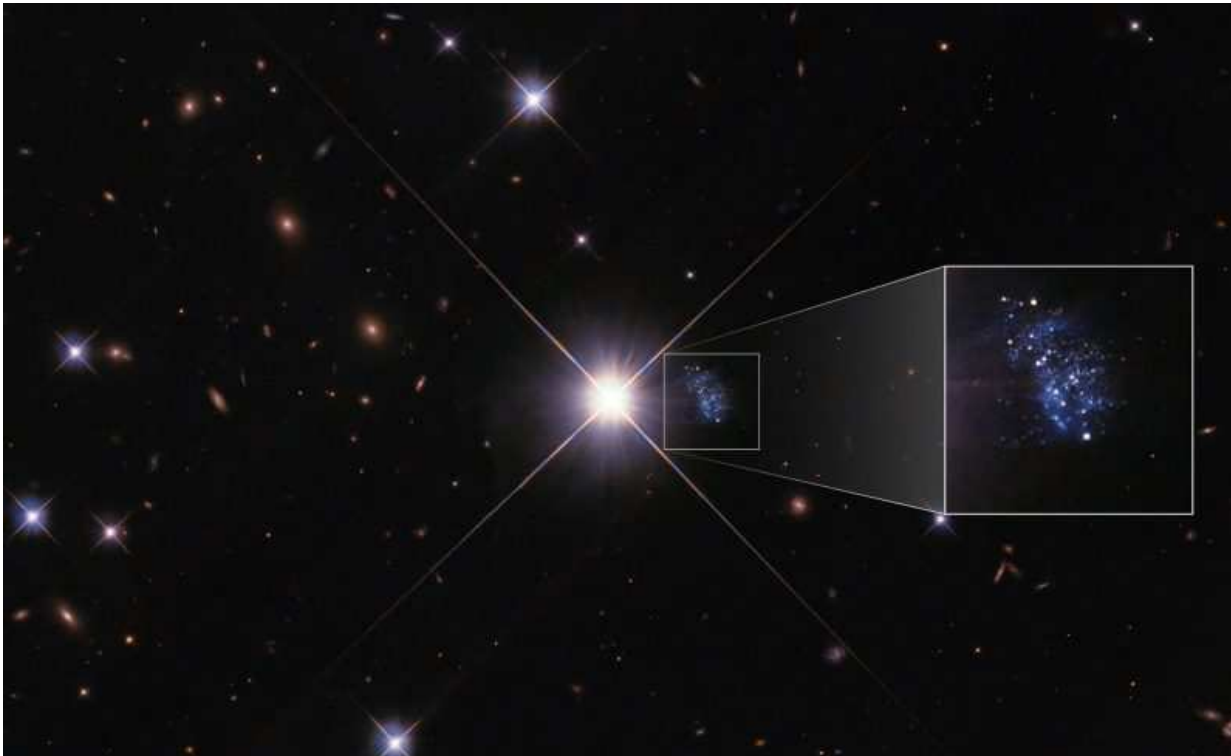
After many nights of looking at Pleiades and sketching the star cluster some claim to have seen up to 16 stars. See how many stars you can see.



Peekaboo Galaxy emerges from behind a star

Astronomers said in December, 2022 that they've discovered a little galaxy peeking out from behind the glare of a bright foreground star. At 20 million light-years from Earth, the Peekaboo Galaxy is relatively nearby. But it has characteristics more like galaxies in the distant, early universe. Only 1,200 light-years across – in contrast to 100,000 light-years for our home galaxy, the Milky Way – the tiny galaxy HIPASS J1131–31 got the nickname Peekaboo because of its emergence in the past 50-100 years from behind a fast-moving star that previously had obscured it from view.

The discovery is a combined effort of telescopes on the ground and in space. That includes confirmation by NASA's Hubble Space Telescope. Together, the research shows tantalizing evidence that the Peekaboo Galaxy is the nearest example of the galaxy formation processes that commonly took place not long after the Big Bang, 13.8 billion years ago.



A close-up on the Peekaboo Galaxy from the Hubble Space Telescope. It's official name is HIPASS J1131–31. Image via [NASA/ ESA/](#) and Igor Karachentsev (SAO RAS)/.

Gagandeep Anand of the Space Telescope Science Institute in Baltimore, Maryland, was co-author of the new study on Peekaboo's intriguing properties. He said "Uncovering the Peekaboo Galaxy is like discovering a direct window into the past, allowing us to study its extreme environment and stars at a level of detail that is inaccessible in the distant, early universe". The Monthly Notices of the Royal Astronomical Society have accepted the results for publication.

Discovery of the Peekaboo Galaxy

Bärbel Koribalski first detected Peekaboo as a region of cold hydrogen. That was more than 20 years ago with the Australian Parkes radio telescope Murriyang, in the HI Parkes All Sky Survey. Koribalski is an astronomer at Australia's national science agency CSIRO and a co-author of the latest research study on Peekaboo's metallicity. NASA's space-based Galaxy Evolution Explorer mission's far-ultraviolet observations showed it to be a compact blue dwarf galaxy. Koribalski said, "At first we did not realize how special this little galaxy is. Now with combined data from the Hubble Space Telescope, the Southern African Large Telescope (SALT), and others, we know that the Peekaboo Galaxy is one of the most metal-poor galaxies ever detected".

NASA's Hubble Space Telescope was able to resolve about 60 stars in the tiny galaxy. Almost all the stars appear to be a few billion years old or younger. To complete the picture, SALT took measurements of Peekaboo's metallicity. Together, these findings underline the major difference between Peekaboo and other galaxies in the local universe. Galaxies in the local universe typically have ancient stars that are many billions of years old. Peekaboo's stars indicate that it is one of the youngest and least chemically enriched galaxies ever detected in the local universe. This is very unusual, as the local universe has had about 13 billion years of cosmic history to develop. Due to Peekaboo's proximity to us, we can conduct detailed observations, opening up possibilities of seeing an environment resembling the early universe in unprecedented detail.



Perspectives On Binoculars For Astronomy and Other Uses.

1. I don't exactly know how many pairs of binoculars I own, I just love buying them and using them. It all started when I was a student and bought a book called "Astronomy with Binoculars" by James Muirden which had charts at the back of everything that could be seen with 7x50 binoculars. I spent the next five years hunting down the objects with my parents' 8x30 Zenith and 10x50 Super Zenith binoculars. Nowadays, I'd consider the Super Zenith binoculars as being very inferior compared to what's available at inexpensive prices. But regardless - they did the job. That old pair that you may have in the cupboard could still be useful on the stars.

Focusing Binoculars.

2. I've met numerous people who thought binoculars weren't much good – including a chap in a shop that sold binoculars. After showing them how to focus the binoculars, they all decided that they were really good after all. The procedure is simple - one aims at a star, with right eye closed, and adjusts focus with the central wheel using the left eye. Then one closes the left eye, and uses the right eye to adjust focus on a star by turning the right eyepiece. Open both eyes, and one should have a nice sharp image.

3. Many people have zero difficulty doing this focusing procedure – especially those who, from the time they were little kids, have been shutting one eye while pretending to shoot a toy pistol or rifle. However, many others can't close one eye while keeping the other one open. They can still do the focusing exercise, but have to put the binoculars' dust cap in front of the right main lens first, focus with left eye, and then move the dust cap to the left main lens and focus with right eye.

Problem with Sharing Binoculars.

4. Everyone's individual eyes' distances from the binocular eyepiece lenses are different. This means that usually you can't just pass a pair of binoculars which you've focused properly for your eyes to someone else, and expect the pair to be sharp in his or her eyes. He or she would have to do the focusing exercise too, in order to get the best focused image. (Unusually, my wife and I do have the exact same eye distances, and can share binoculars – which I speculate could be one basis for a successful marriage).

Don't Get a Headache – Collimate.

5. I think nearly half the second-hand binoculars on eBay are there because the owners think there's something wrong with them, but can't tell why. The problem is that the binoculars are often out of collimation. And this problem is also very common in new cheap binoculars, and does also sometimes occur even in some good well-known brands too. When binoculars are out of collimation, the two tubes aren't aligned, such that you have to go a bit cross-eyed to merge the two images. Thus, while looking at the stars or anything else, everything may look fine – but after 10 to 15 minutes one starts to get a headache. A small amount of mis-collimation one can handle, but it gets painful with a bigger amount.

There are two easy ways to tell if a pair of binoculars is out of collimation.

- a. Aim at a star or something far away, and alternately close one eye and then the other and keep repeating. If the star or object jumps back and forth, the binoculars are out of collimation, or
- b. Aim at a bright star, then slowly pull the binoculars away from your eyes while looking at the star. The star should remain a single dot. But if it immediately splits into two, the binoculars are out of collimation.

6. Newer binoculars that are out of collimation and have rubber casing around them can be fixed - though it takes me about 30 minutes of frustrating work with two small screwdrivers. Older ones require a lot more work to get to the screws, and this damages the outside of the binoculars. If you locally buy a new or second-hand pair that are out of collimation, send them back as defective. Though in some cases, like when I bought a new pair of 30x80s from the UK at a very good price, and I really wanted them, I just fixed them myself. I use the instructions at this site to collimate binoculars,

<https://oberwerk.com/collimation-instructionsfor-lw-series-and-mariner-series/>

Aiming Binoculars at Stars and Objects.

7. Some people get frustrated trying to find objects in the sky, by putting the binoculars to their eyes and then doing lots of searching around to find a deep sky object. The trick to minimise this, is to look directly at the object or star – and with deliberation put the binoculars between the objects and your eyes.

Easiest Way to See Objects in the Sky – Mini Lasers.

8. I've had numerous family and friends enjoy looking at the Orion Nebula, Omega Centauri, Eta Carina Nebula, the Seven Sisters, open clusters in Scorpius, objects in Sagittarius etc, with binoculars and having no difficulty finding them what-so-ever. I just use a legal, cheap 1mW Green laser from eBay, point it at the objects, and tell them to follow the laser light to the object. Though it's best to buy two or three lasers, as one of them is usually a bit too faint.

SPECIFICATIONS

The Basics.

9. Binoculars are usually designated by the figures written on them, namely, Magnification x Diameter and Degrees (Field of View). So, for example, my Celestron binoculars have 12x60 and 5.3° written on them, which means they magnify 12 times, have a 60mm diameter front lens, and have a 5.3° field of view. The bigger the Field of View, the more sky one can see with them. To illustrate, a pair of binoculars with a 5° field of view will show the top three stars of the Southern Cross, while a pair with 7° field of view will show all four main stars of the Southern Cross

10. However, sometimes Field of View is designated in a different manner like "367 ft / 1000 yds" or "112 metres at 1,000 metres", meaning you'll see 367 feet maximum diameter at a 1000 yards distance. To convert to degrees, divide 367 by 3 to get yards. Halve that amount, divide by 1000 yards, then find the arcTan of that figure, then multiply by 2. This gives the result of 7°. Alternatively, for an approximate figure, just divide the first number by 52.4, or divide the metres number by 16.



Corruption of Binocular Designation System.

11. This simple formerly universal system of the Magnification x Diameter designation has been corrupted by marketers in recent years to mislead customers. Thus you'll often see binoculars advertised as say 100 x 180 – which has nothing to do with magnification and diameter, but is instead length by width. Don't buy that rubbish.

Exit Pupil and Brightness.

12. The Exit Pupil of binoculars is the main factor in determining the brightness of extended objects in binoculars (other lesser factors are light transmission, internal coatings and size of internal prisms). The Exit Pupil of binoculars is the size of the little circles of light in the binocular's eyepieces. They can be measured with a ruler, or calculated by dividing the Diameter of the front lens by the Magnification. So, for example, the Exit Pupil of my Celestron 12x60 binoculars is 60 divided 12 which equals 5mm.

13. The average person during daylight has a pupil size of between 2 to 2.5mm in his or her eyes. In the dark at night, a youngish person has a maximum pupil size of 7mm. And, as one gets into the older years, the eyes' maximum pupil size drops to 6mm or less. This small daylight pupil size means that in daylight, what one sees when using small binoculars like 6x18, 7x21 or 10x25, are exactly the same size and brightness that one sees in the respective magnification of bigger 6x30, 7x50 or 10x60 binoculars – because the small 2 to 2.5mm pupil size in one's eyes limits the light coming in from the larger binoculars. But as twilight and then darkness comes on, the bigger binoculars become vastly superior in terms of what can be seen.

14. The brightness in binoculars of extended objects (like nebulas, galaxies and the background sky itself) with the same exit pupil, is the same. Thus, the brightness levels of extended objects in:

- binoculars with an approximate 7mm exit pupil like 7x50, 8x56, 9x63, 10x70, and 11x80 are the same, and
- those with an approximate 5mm exit pupil like 6x30, 7x35, 8x42, 10x50, 12x60 and 15x70 are the same, and
- those with an approximate 4mm exit pupil like 6X24, 8x32, 10x42, 12x50 and 25x100 are the same, and
- those with an approximate 3mm exit pupil like 6X18, 7x21, 8x25, 15x50s and 25x70 are the same.

15. However, the brightness of point sources (like stars and open clusters) is dependant on the diameter of the front lens (or to be more specific – the front area). So that, for example, stars in a pair of 12x60s will be much brighter than stars in a pair of 7x35s, even though they have the same 5mm exit pupil. And, for example, at the same magnification a pair of 12x60s will always have brighter stars than a pair of 12x50s because of the larger front lenses.

Best Binoculars For Beginners.

16. All the old books on this subject say that the best binoculars for beginners are 7x50s because,
- They are easy to view through, as their low power minimizes the effect of shaking from hand-holding, and
 - Their 7mm Exit Pupil delivers the maximum brightness to the eyes of people with 7mm pupils, and
 - Their wide 7° Field of View makes it easier to locate objects and star patterns in the sky.

17. However, the newer books tend to now favour 10x50 binoculars because,
- Their 10x magnification isn't too difficult for most people to hold steady, and
 - Having the maximum brightness isn't necessarily the best thing, as the sky background is too bright, especially in these times of light pollution – something that wasn't as big an issue when the older books were written, and
 - While beginners will appreciate having the wider field of view of the 7x50s when first starting out, they will quickly learn their way about the sky and wish they had the better images from the 10x50s.

18. In his book “Binocular Astronomy” by Craig Crossen, the author points out that at a dark sky site, a pair of 10x50 binoculars will enable someone with good vision to spot around 50 galaxies, while only a handful of galaxies will be spotted with a pair of 7x50.

19. So, that should be the end of the story:
- If one lives somewhere with dark skies and has shaky arms that can't keep 10x binoculars steady enough for pleasant viewing, 7x50s are the best binoculars for that beginner, or
 - Otherwise, 10x50s would be the best beginner binoculars.

But it's not so simple. I have a friend who just got into astronomy a few years back. She really liked her 7x35 binoculars for looking around the sky. But she didn't like her 10x50 binoculars much. One day I lent her my Celestron 12x60 pair, and next thing I knew, she was messaging me asking if she could buy them from me as they are the best thing ever (I did sell them to her).

20. Plainly, it is worth checking out other people's binoculars before making a decision in relation to what size binoculars one can hold, what they show, and ease of finding things in the sky. In my case and in my friend's case, it was better initially having small low powered, wider-angle binoculars, then moving up to bigger higher powered ones.

7mm Exit Pupil Binoculars – What are they Good For?

21. One would think from reading what I previously wrote that I'm not a fan of 7x50 or other 7mm Exit Pupil binoculars, but that's not quite right. I do enjoy the 7x50's wider fields when there's no haze in the sky. But where they really excel is when looking at star fields of the Milky Way and Magellanic Clouds at a dark sky site. While my 7x50s are very good for that, my Nikon 10x70s are superb for that.

22. As well as the 7x50 Meibo pair I also have a 7mm Exit Pupil pair of Orion Mini Giant 9x63 binoculars which I'm also fond of using in my moderately light polluted backyard too.

The Nuisance of Astigmatism in One's Eyes.

23. If one is long- or short-sighted, that's not a problem with using binoculars. But if one has astigmatism, it can be a problem. When one looks up at the sky with naked eyes, one sees flares from all the stars, and not the dots that they actually are. And when one then looks into 7mm Exit Pupil binoculars, one sees even bigger flares from those stars.

24. Back in the late 1990s, it was either Sky and Telescope or Astronomy magazine that rated the Nikon 10x70s the absolute best astronomy binoculars on the market on a number of criteria. I happened to be walking past a camera shop in Melbourne when I saw them in the window reduced to half price. After buying them and using them, I was disappointed as the astigmatism in my eyes made using them too annoying. In the end, I had to get the lenses of my eyeglasses ground down to circles. The circles had marks to indicate where their top points were, and which were the left- and right-eye ones. I then stuck them into the binocular's eyepieces with Bluetack to finally get a good view. I could have just used the binoculars with my eyeglasses, but that significantly reduced the size of entire field of view.

25. I have a pair of rubber armoured Fujinon 7x50s where I have the same annoying astigmatism problem as with the Nikon 10x70s. In contrast, I also have a pair the earlier Fuji Meibo 7x50s where the astigmatism doesn't bother me at all. Similarly, my eyes' astigmatism doesn't bother me when using my Orion 9x63s. I've never been able to fathom why the astigmatism in my eyes is a problem with the most expensive and sharpest 7mm Exit Pupil binoculars I own, but not with the less expensive ones.

26. I find that with 5mm Exit Pupil binoculars, the astigmatism effect from my eyes is greatly reduced, and it is almost eliminated with 4mm Exit Pupil binoculars. Thus, I have a few pairs of 10x42 binoculars I like using when I want sharp star images.

Binocular Quality.

27. You get what you pay for. Views from old binoculars tended to be sharp in the middle 40 to 50% of the field of view, then soften as it went towards the edge of the image. Views from newer binoculars are sharp for around two thirds of the field, then soften towards the edge. I even saw one Nikon pair that was sharp for 90% of the field, and pretty awful at the edges. But the expensive premium binoculars are razor sharp across the entire field.

28. I'm not that finicky as I tend to focus on objects in the central area of binoculars, and am not annoyed by a bit of edge softness. But I know a few people who would find such softness at the edges as intolerable. If you are one of the latter type, you need to take that into consideration when deciding what to buy – read reviews and be prepared to pay more.

29. However, it is not just sharpness which is a factor in binocular image quality. The binocular's contrast is another big factor too. Once when I wanted a little pair, I was going through a table of them in a camera shop and looking across the street. I tried one after the other, all seemed similar, but then a little Bushmaster pair had pop in the image – it just stood out as better than all the others. Its contrast was much better, and that's the one I bought.



30. Similarly, back in the early 2000s I wanted to purchase a pair of Nikon 10x50 binoculars which had had a good rating in a magazine, and I went to a Melbourne camera store. The Nikon pair cost \$250 and I looked across the road at people walking – I was not impressed, as it was the one that was 90% good and 10% bad at the edges that I mentioned above. Then the chap handed me a \$400 Meade pair and I looked across the road at the people walking – and the image was much better. Then the chap handed me an \$800 pair, I looked across the road at the people – and the image was much better still. Finally, the chap handed me a pair of \$2500 Leica 10x42 binoculars, and I looked across the road at people walking – and I automatically dodged to the side, as I thought the person was about to walk into me. I had just seen binocular perfection.

31. I relate that story to try to convey an idea of what one is paying for with higher prices. Fortunately, with new technology, many companies are now producing extremely good quality, nearly comparable to that of the premium brands, but at significantly lesser prices. For example, I don't think my Vanguard Endeavour II ED 10x42 binoculars are that much lesser in quality than those Leica 10x42's which so impressed me.

Rating Binoculars' Usefulness for Astronomy.

32. There are a few rule of thumb methods for rating binoculars' usefulness or "goodness" for their use in astronomy. The two most common are:

- a. The Bishop Method where one just multiplies the diameter by magnification. Thus, a pair of 7x50s scores 350, a pair of 12x40s scores 480 and a pair of 10x50s scores 500, and
- b. Later came the Adler Method which multiplies the square root of the diameter by the magnification. Thus, a pair of 7x50s scores 49.5, a pair of 12x40s scores 75.9 which now outscores a pair of 10x50s at 70.1. I have a Russian pair of 12x40s, and they've always impressed me beyond what I would have thought.

How Much Binocular Magnification Can One Hand-Hold?

33. Most people can hand-hold moderately heavy binoculars with 7x or 8x magnification. And a somewhat fewer number can hand-hold 10x magnification, though smaller binoculars like 7x21s and 10x25s will always be shakier from their lack of mass. I can easily hand-hold my 15x70 and 18x80 binoculars when looking at the night sky – and I'm hardly the muscly type. At 20x, 25x and 30x I need to take other action.

34. The problem with determining what magnification one can hand-hold when viewing the night sky, is that one has great difficulty determining it in a shop during daylight hours. Looking at cars or trees during daylight hours just doesn't seem so shaky compared to looking at stars. Ideally a shop would let you take higher powered binoculars outside during night time hours with a clear sky, or you could borrow someone else's high-power binoculars at a Viewing night, in order to make a good decision.

35. In his book "Touring The Universe Through Binoculars" by Phil Harrington, he writes that many larger high powered binoculars that one is having difficulty with from the shaking image of hand-holding, can indeed be hand-held by using his trick. His trick is to hold the binoculars with hands placed on the tubes next to the front lenses, rather than further back where they are usually held. I've tried it with my heavier binoculars and it does work, but only for a short amount of time. I prefer my own trick with a tripod, which I describe below in the next section.

Binoculars and Tripods.

36. Most magazines tell you that mounting binoculars on tripods or on those parallelogram binocular mounts will give one a steady image. And they do. Only problem is I find the parallelogram mounts to be a case of too much mucking around in setting them up. I've only used mine a few times. As for the tripods, I eventually get a sore neck sitting behind the tripod, and get frustrated when what I want to look at is too high in the sky. Plus there's nuisance of having to move the seat and tripod around to look somewhere else in another part of the sky.

37. Here are my tips that the magazines and books do not tell you about:

- a. Mount the binoculars backwards on the tripod, so that the panning handle doesn't hit your chest. You quickly learn to use the panning handle on the far side of the tripod;
- b. When you want to look higher in the sky than is comfortable with the three tripod legs on the ground, simply pull the tripod back onto two legs and raise the height of the binoculars. I have to do this all the time with my 25x100 binoculars; and
- c. Physically pick up the mount with the binoculars attached, hold it against your chest, and look anywhere in the sky with the binoculars. The extra mass of the tripod reduces the image shake – consider it as cheap image stabilisation. That's chiefly how I use my 20x80, 25x75 and 30x80 binoculars.

Manufacturer's Cheat – My Most Used Pair of Binoculars.

38. The pair of binoculars I use most when looking at the northern hemisphere sky in Italy is a pair of Celestron SkyMaster 15x70s. I have a really good pair of York Optical 10x50s that I keep there too, but I don't use them much. And I'll often use my other pair of Celestron 15x70s here too. They aren't that heavy, and I can hold them steady enough and get good views of deep sky objects. But I was always a bit puzzled by them, as I also have a much heavier pair of Andrews 15x70 binoculars – and the image always seemed brighter in that Andrews pair (though I got sorer arms using them). Did the Andrews pair have superior light transmission properties, I wondered?

39. One day, to my dismay, I found the answer. My most used pair of binoculars were compromised – they should have had an Exit Pupil of $70/15 = 4.7\text{mm}$. But with a ruler I measured it at around 4.1 to 4.2mm. This meant that my 15x70 binoculars were in reality 15x61 or 15x63 binoculars. Reading around the internet, it transpires that there indeed were cases of budget binoculars having cheap prisms which effectively cut down the light coming from the main lenses, and mine were among them. If I want the real 4.7mm Exit Pupil from Celestron, I'd have to buy the Pro version of their 15x70s.

Image Stabilized Binoculars.

40. I do have a pair of Canon 15x50 IS image stabilized binoculars. They are a marvel. Look at the sky and the shaking image of stars, press a button, and the shaking disappears – as if the binoculars were on a tripod. So, why are they not my most used pairs of binoculars? Why don't I actually use them all that much? The answer is that time and again, when I've compared them to my hand-held, fake 15x70 Celestron binoculars, I prefer the view in the Celestron. The main reason for this is that the Canon pair has a smaller 3.3mm Exit Pupil, and so the image isn't as bright as in the Celestron pair. However, the Canon pair is the one I always use for lunar eclipses, and for showing friends the Moon. They find them spectacular, as there is a 3D feel about it.

41. To be fair, if one can't hand-hold regular 15x binoculars steady, the Canon 15x50s would be the best thing ever.

Nebula Filters on Binoculars.

42. I once saw a pair of 1" nebula filters advertised for binoculars, promising to show greater detail in nebulas. So I ordered them, stuck them in the back of each binocular eyepiece with BluTack, then looked at the Eta Carina area, and I was totally underwhelmed. Yes, the nebula filters worked, but I was looking at a very dark, unsatisfying image. "Well, that was a waste of money", I thought to myself.

43. However, some time later, I had a bright idea. I went and looked at the same area, but with only one nebula filter attached. The result was much better. My brain merged the unfiltered bright image with that of the nebula filter's image. I then swapped the filter to the other eyepiece, and noticed I had a different image. One eye was delivering a better overall image of the nebula than the other.

44. Many people with telescopes have 1.25" nebula filters. If they have binoculars with large enough eyepieces to attach a nebula filter into one of them with BluTack, the exercise I think would be worthwhile.

Binoculars for Birdwatching.

45. My wife is into birdwatching. The books she read mainly recommended 7x or 8x binoculars for birdwatching. I bought her a pair of Andrews 8x42s, and later bought her an even better pair of Kowa 8x32 DCF. She liked them on birds. Only problem is, despite what the books said, she now doesn't use them all that much.

46. I had bought a pair of Pentax 16x60s. Their quality was excellent, and razor sharp across the field. But the field of view was only 2.8° , and I found them too frustrating to use for finding objects in the sky. So, I gave them to my wife. Next thing she told me was that they were fabulous. She had taken them down to the local duck pond, sat on a seat, put elbows on her legs and found them spectacular to use on the bird life. And today she uses them hand-held standing up to see strange birds landing in our backyard over 100 metres away.

47. Similarly, when we are travelling around Europe and looking at distant towns or villages from mountains, or looking at distant birds, my 10x50s barely get used, as they seem lame compared to the image in my Celestron 15x70s. My wife can easily hand-hold them too – and she doesn't have the arm strength I have.

48. Plainly, hand-holding 15x and 16x binoculars is not something most articles or books are going to recommend to most people for any of astronomy, bird watching or being a tourist. But our experience is that it is worth testing out higher powers than those articles and books typically recommend, as the more powerfully magnified views are far more satisfying.

Cheap Binoculars on eBay.

49. It would be fair to say that there are many useless cheap binoculars being sold on eBay. The quality of the image may be inferior or just barely passable compared to good brand name ones, but very often they are also hopelessly out of collimation - which makes them useless, as there is no easy way to fix them.

50. However, I have found some genuine cheap bargains on eBay, namely

a. Sakura 20x80 binoculars that cost me around \$62. They weren't really 20x80s – comparing them to my 20x80s and 15x70s showed them to be more like 17x with the light coming through being equivalent to a 75mm diameter. Still, 17x75 pair of binoculars for \$62 is good value.

b. I bought two pairs of 20x80 binoculars which didn't have a brand name on them. The blue box just said "Binoculars". And the cost for both pairs was \$50. I wasn't expecting much, but the images were quite reasonable. The only problem with them was that they didn't have the screw socket on them to attach to a tripod. I sold a pair to a friend for \$25, who enjoys using them to look at ships going through the Bay.

c. Very recently, I obtained a pair of 25x75 Komodo binoculars for \$62. The outside quality was as good as that of my Celestron 15x70s, but they had just one little problem – the manufacturer didn't know what they were doing, as these are unambiguously 12x binoculars. Surprisingly, I like the view from these 12x70 binoculars a little bit more than that from Celestron SkyMaster 12x60 binoculars (since the stars are brighter, though field of view is a tad smaller).

Zoom Binoculars.

51. Wouldn't it be great to have binoculars with variable magnification, so that only one pair could be used to do the job, and one wouldn't have to muck around buying all these different magnification binoculars? They do exist - and pretty much every article and astronomy book says to avoid them like the plague. I don't disagree with that assessment from the ones I've tried. The stars weren't sharp enough, and the widest apparent field of view is at the highest power, while when zoomed down to the lowest power, the apparent field of view shrinks and it seems like one is looking down a well. Totally unsatisfying.

52. Out of idle curiosity, I bought a second-hand pair of Tasco 12-36x70 Zoom binoculars from eBay for \$60. When the pair arrived, I saw why the chap had sold them so cheap – it was impossible to focus the two eyepieces on a star, since the left eyepiece was sticking out towards me more than the other. I thought about it for a while, then got a thick elastic band, put it around the left tube and over the left eyepiece arm. The binoculars then worked properly. As expected, I was unimpressed with the very narrow field of view at 12x, but was surprised with the 36x view, which showed Saturn and its rings. I still wouldn't recommend it to anyone though.

53. If anyone has bought or seen through a pair of zoom binoculars which they find to be very useful for astronomy without the limitations I've mentioned, please let me know about them.

The Oddity of Old Russian Binoculars.

54. One often sees old Russian binoculars on eBay with people sometimes asking ridiculous prices for them. I have two, a pair of Tenta 10x50s and a pair of Helios 20x60s. They have a number of characteristics in common, namely:

a. They have very shallow eye-relief;

b. They are extremely sharp in the centre area; and

c. The stars soften as they go to the edge of the field.....except that, unlike every other pair of binoculars I've ever seen, there is no sharp well-defined edge. Very puzzling how this can be.

55. When viewing through the Helios 20x60s on a cold night, the very shallow eye relief often means that my eyeballs fog up the eyepieces. Yet I like this pair as it makes Jupiter look more like a marble than a little disk. I remember buying this pair in a camera store in the city for \$120 and taking them back to the office. I mentioned it to a fellow astronomer there who owned a 14" Celestron SCT, and he asked to see them. He looked out the window at buildings around Melbourne, then stopped, turned to me and said he was really angry – as he had just spent \$890 on a pair of Tascos, and that my \$120 pair was better than his.

My Most Annoying Pair of Binoculars.

56. Minox is a fairly expensive brand that makes very high quality binoculars. Bintel sells the Minox 8X52 HD ones for \$1399 a pair. I happened to win a brand-new pair of them on eBay for way less than that, and I was expecting perfection. But that wasn't what I got. I was extremely disappointed in that:

a. Though it wasn't their fault, my eyes' astigmatism made the view unpleasant (like that with my 10x70 Nikons and 7x50 Fujinons);

b. This was their fault - there was absolutely no laxity to where I placed my pupils – the very slightest movement one side or the other caused blanking out of part of the image on one side or the other in the binoculars. It was extremely hard to keep the whole image in view. I've never had a pair of binoculars do that before.

57. I know it's not just a fault of my pair alone, as a Binocular Review site in Poland mentioned the issue with their pair. Though they're better for daylight viewing, the question remains as to how such a high-end pair can be manufactured like that? I know that Minox can do better, as I have a superb pair of Minox 8x33 HG.

My Most Memorable Observation with 25x100 Binoculars.

58. I don't use my 25x100 binoculars much because of light pollution around here, and because they are somewhat awkward to use, having to mount them on a heavy tripod. However, I used to observe at an extremely dark sky site off a road outside of Benalla, where all I could see was a small light many kilometres away. Virgo was at a convenient altitude in the sky when I aimed the 25x100 binoculars there. With every random sweep across Virgo I could easily see 10 to 20 tiny galaxies. I saw 60 or 70 galaxies in a few minutes – I was astounded.

58. Plainly, if one lives at a place with very dark skies, or has access to such a site – I think it'd be worth getting 25x100 binoculars just for this exercise.

Porro-Prism vs Roof-Prism Binoculars.

60. Roof-prism binoculars are more compact than Porro prism binoculars. I note that with my roof-prism Celestron Noble 10x50s and Meade 9x63s that the image is a tiny bit further away (as in looking down a well) in them than in their Porro-prism counterparts of my Celestron 10x50 Ultimas and Orion 9x63 Mini-giant binoculars – yet the fields of view are the same, and images excellent. I don't see that difference between the two types of binoculars when comparing my 10x42 or smaller roof-prism binoculars to their Porro-prism counterparts.

61. One concern I've had with roof-prism binoculars is that if they were to be out of collimation or go out of collimation like Porro-prism ones have, I'd have no idea how to go about fixing them myself. On the other hand, I've never seen any quality roof-prism binoculars actually being or going out of collimation. I keep a rugged pair of Andrews 10x42 roof-prism binoculars in the boot of my car for general usage, or for when I forget to take binoculars to somewhere dark when we're visiting people. That pair has been bouncing around the boot of my car for the last 16 or 18 years, and the collimation is fine.

3D Astronomy Binoculars.

62. I read stellar reviews of the Russ Lederman 3D Astronomy 8x42 Space Walker binoculars, which use the Lederman optical array in the left tube to give the illusion of 3D views of the stars. Some reviews said that after using these binoculars, you'll never go back to the old ones. However, others noted that they only work in dark skies, and didn't give the 3D effect in light-polluted or moon-lit skies.

63. I finally got a pair. Really nice optics. But I had great difficulty getting any 3D effect in my backyard for quite some time. However, one dark night at 3am in the morning I tried 3D binoculars on the Eta Carina region and Orion Nebula, and yes – it was like looking at them in 3D. Certainly an interesting optical illusion. But I can't say it worked as well for me when just looking at random stars or at the Southern Cross.

Solar Observing with Binoculars.

64. It's easy enough to make solar filters for any pair of binoculars by buying a sheet of solar filter and using cardboard to make up the slip-on filters. However, I have some commercial filters that fit snugly onto my pairs of 15x70 binoculars.

65. Basically, any pair of binoculars – even small 7x ones – will show sunspots on the sun. However, any telescope with the same solar filter will give a much better view because of the higher magnifications that eyepieces deliver. To my mind, the main use of binoculars with solar filters, is to go out and have a quick view of the sun, in order to decide whether it's worthwhile taking one's telescope out and having a proper view.

My Favourite Star Atlas for Binoculars.

66. I'm a big fan of Wil Tirion's "Bright Star Atlas" which was designed for binoculars and small telescopes. Most nebulae, star clusters and globular clusters listed in it will be observable in moderately sized binoculars, though only the brighter galaxies will have much of a chance of being spotted at a dark site.

Binoviewers on Telescopes.

67. Many people are fans of binoviewers connected to telescopes. It's a simple way of getting stereo vision on deep sky objects. They do, however, require getting matched eyepiece pairs to work well – one can't just go and buy two of the exact same eyepieces from a manufacturer and expect them to be matched. If lucky, some might be, or some might be close enough that they are still useable, but many won't be.

68. I have two binoviewers, a Takahashi Twin View and a Denkmeier unit. I rarely use those binoviewers, as I find the mucking around to use them not worth the effort for what, to me, is a very marginal gain. It's no surprise to me that a very common item on sale at the IceInSpace Classifieds are binoviewers.

My Latest Purchase.

69. My new pair of Kenko UltraView 6x30 waterproof binoculars with 8.3° Field of View arrived by DHL Courier from Japan. It delivers very contrasty images and is ideal for observing constellations – something that the more high-powered binoculars aren't as good for.

Conclusion.

70. I hope that you may have found something of interest in this article that you may not have been aware of before, or that will be of help to you in considering any future binocular purchase. Should you wish some clarification or further explanation regarding anything I have written above, please feel free to email me at ra57@bigpond.com.

Regards, Renato Alessio

Photos By Greg Walton

Also see an article on Bino chair Page 16 Scorpius 5 sep-oct-2021

MEMBERS GALLERY



Henize 70 - Super Bubble

From the Wiki...

The Henize 70 Super Bubble is located approximately 170,000 light-years from Earth in the constellation Seabream, and is within the Large Magellanic Cloud. A superbubble or supershell is a cavity which is hundreds of light years across and is populated with hot gas atoms, less dense than the surrounding interstellar medium, blown against that medium and carved out by multiple supernovae and stellar winds. The winds, passage and gravity of newly born stars strip superbubbles of any other dust or gas.

Thanks for looking, take care.

Size: 46.9 x 31.3 arcmin

Radius: 0.470 deg



Instrument: Planewave CDK 12.5 | Focal Ratio: F8
 Camera: STXL-11000 + AOX | Mount: AP900GTO
 Camera Sensitivity: Lum, Ha: BIN 1x1, RGB: BIN 2x2
 Viewing Location: Central Victoria, Australia.
 Observatory: ScopeDome 3m
 Date: Aug 2018 - Mar 2022

By Steve Mohr

NGC 2070, the Tarantula Nebula in the Large Magellanic Cloud. This is 11 hours of data over two nights. 132 x 300 seconds, Sky Watcher 250 PDS, ASI294MC, L-extreme filter. Processed in PixInsight.

Giudo Tack



NGC2070 - Tarantula nebula
in the LMC

Over 20 hours of data taken
over several nights and over
a year of old and new data.

Combination of 180, 300 and
600 second subs then
combined in Astropixel
processor.

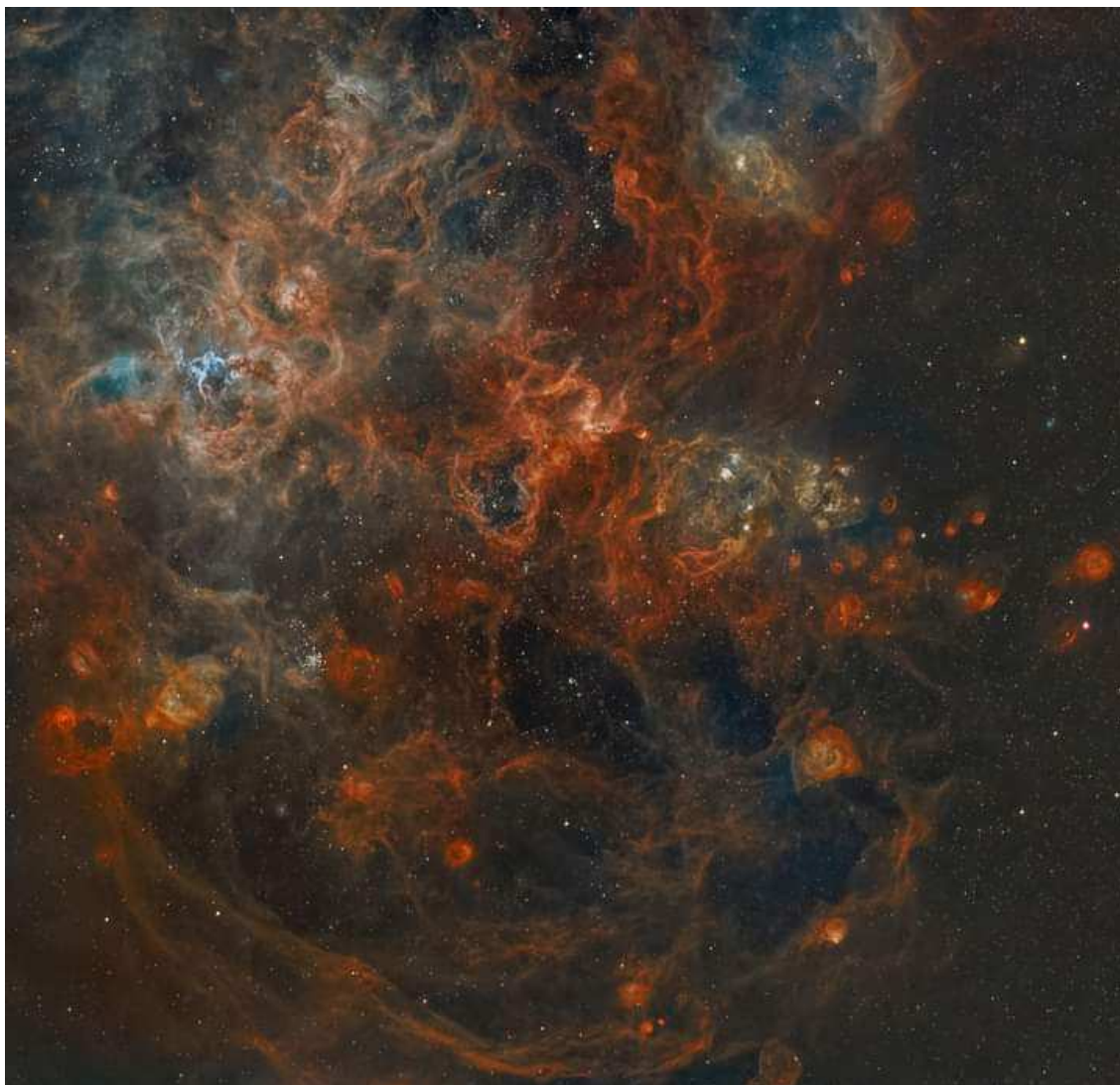
RGB and Ha extracted and
used as a luminance layer.

One shot colour ZWO 294mc
pro and the Optolong L
Extreme.

TSOptics 130mm with the
riccardi 0.75 reducer

I have reworked the original
image for a more accurate
rendition

By Nik Axe



NGC6188 the Dragons and
their egg

Total rework of data plus
newly added data so a total
of 9 hours of data I
experimented with

Astropixel processor and
combined 2 stacked and
calibrated images in HA and
O3. One image from my

Skywatcher ed72 and one
from my ts130 so I then let
Astropixel processor do its
things and it combined them

both into one giant image I
then had to downsample, the
result is a much better

version, I combined them in
Photoshop and processed
and voila. About 3 hours and
a half of 10 minute total
integration with the ED72

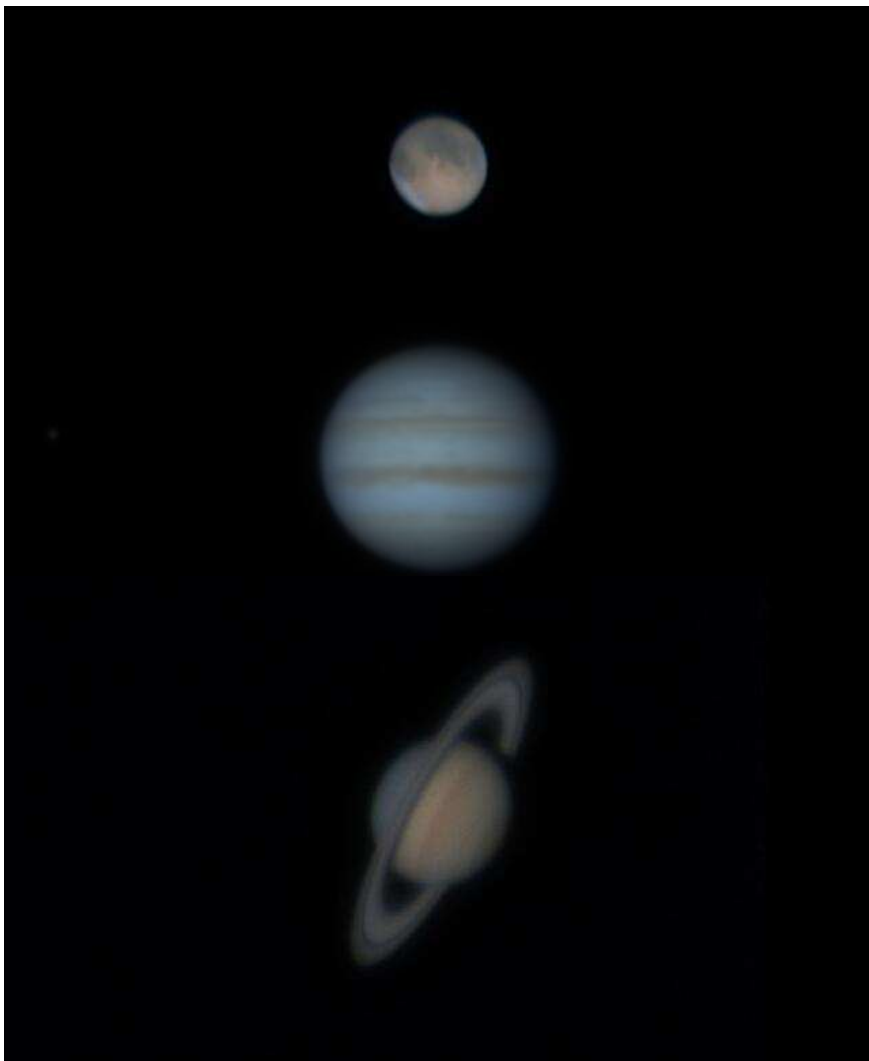
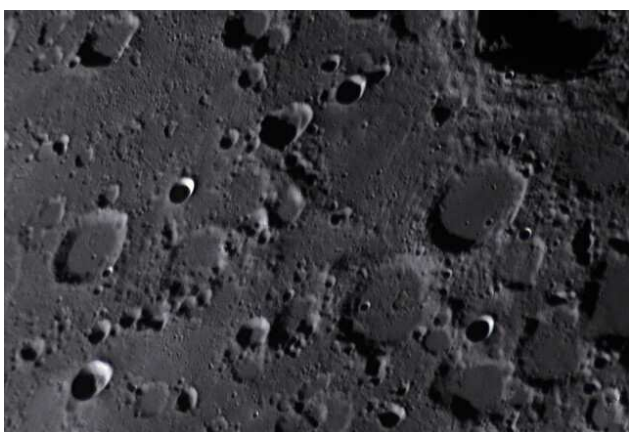
and 5 hours with the TS
optics 130 APO All with the
294mc pro and the optolong
L-Extreme on the
Skywatcher NeQ6 mount

By Nik Axe



Hi all, Well -the clouds stayed parted, so managed some nice shots. Unfortunately I was a bit slow getting my telescope out to acclimatise so my earlier objects (Saturn / Jupiter) were battling thermal currents. Managed one good Mars; unfortunately, the temp. dropped drastically prior to its peak elevation, meaning I had fogging and dew on the secondary mirror. Very happy to obtain the sharpest close-up images of the Moon I've ever managed.

Cheers, Russell Smith



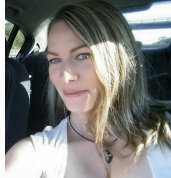
SOCIETY INFORMATION



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Mark Stephens



Nerida Langcake



Jamie Pole



Anders Hamilton



Trevor Hand



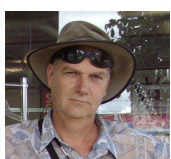
Chris Kostokanellis



Guido Tack



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

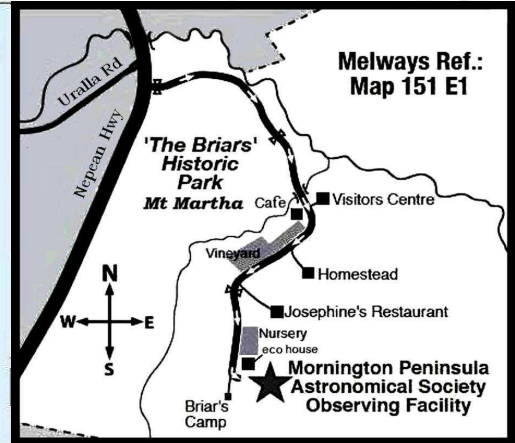
Society meetings: Don Leggett Astronomy Centre
 8pm on the third Wednesday of the month
 (except December)
 (See map at right & Below)



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

Phone: 0419 253 252

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Melways Ref.: Map 151 E1

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 or Lara Conway



Fred Crump

E-SCORPIUS NEWSGROUP

M.P.A.S. main line of communication is the online newsgroup called E-Scorpius. Here you will be kept up to date with the latest M.P.A.S. news & events information as well as being able to join in discussions & ask questions with other members. To join, email welcome@mpas.asn.au say that you want to join E-Scorpius & you will be added to the E-Scorpius list.



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VIEWING NIGHTS - MEMBERS ONLY

Viewing Night - Members only any night, at The Briars, Nepean Hwy, Mt Martha, starting at dusk. Members visiting The Briars for the first time must contact Greg Walton on 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:
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Members please write a story about your astronomy experiences and add some pictures. Send them to the editor: Greg Walton gwpas@gmail.com

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